NAPCO

OPERATING AND INSTALLATION INSTRUCTIONS

MAGNUM ALERT 2500
CONTROL PANEL/COMMUNICATOR

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COMPLETE KEYPAD INSTRUCTIONS INCLUDED

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U.L. Pending: Household Fire & Burglary Warning System Control Unit

WI413 8/88

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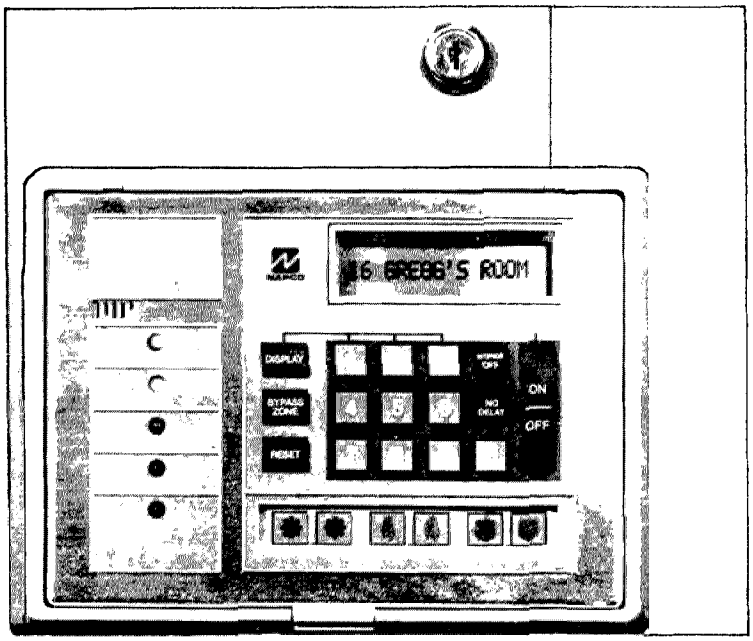
1. INTRODUCTION

GENERAL DESCRIPTION



The Magnum Alert 2500 is a state-of-the-art microcomputer-based 16-zone commercial and residential alarm control panel. The system, with integral siren driver and communicator, is contained within a wall-mounted enclosure. Included are a keypad and transformer.

The keypad features an LCD (liquid-crystal display) readout for English-language messages. In normal daily use, the LCD is used for zone identification and status messages. Conventional LEDs (light-emitting diodes) and a sounder are also provided for annunciation.

The control panel may be fully programmed in its secondary mode of operation by the keypad. In the programming modes (there are two: Dealer and User), the LCD shows memory address, data entry, programming prompts, and the alphanumeric characters required for entering up to 16 user codes and custom zone messages.

The panel may also be programmed from a PROM (programmable read-only memory), which is itself programmed on an accessory programmer. Or, data may be quickly and easily downloaded directly using a NAPCO PRO2000 programmer.

FEATURES

Control Panel Features

- User-customized English-language zone messages, reprogrammable as required.
- English-language prompts and system status messages simplify operation.
- 16 end-of-line-resistor burglary zones programmable for Exit/Entry Delay, Interior, Follower, Day Zone, and Swinger Shutdown.
- Reports alarm, restore, and trouble by zone.
- Supervised Fire.
- Two programmable entry delay times.
- Dynamic battery test removes battery from system for test under load.
- Integral dual-tone siren driver.
- Siren driver selectable for sweep, steady, or pulse by zone.
- Exclusive *V.A.L.I.D.* (TM) feature (Verifying Automatic Line-Integrity Diagnostic) reduces false alarms due to changes in loop resistance.
- Chime by zone; programmable duration.
- Non-volatile RAM retains memory during power losses.

Communicator Features

- Compatible with all major receiver formats, including BFSK and 4/2.
- Rotary dial and TouchTone(TM) with Rotary backup.
- Three 18-digit telephone numbers.
- Backup Reporting; Split Reporting.
- 15 User Codes with Opening/Closing Reporting by user.
- Ac Failure Reporting with programmable report delay.
- Communicator Confidence test.

Keypad Features

- English-language LCD display.
- LED and sounder annunciators.
- Accepts up to seven 4-wire keypads.
- Provisions for medical emergency, fire, panic alarms at keypad.
- Locate and Fault-Find Modes facilitate testing and trouble-shooting.

MA2500 SPECIFICATIONS

Operating Temperature:	0-49 degrees C (32-120 degrees F)
Input Power:	16.5Vac via Class 2 Plug-In Transformer TRF12 (19.2VA) or TRF9 (20VA)
Loop Voltage:	10 to 13Vdc
Loop Current:	2.5mA with 2.2k-ohm end-of-line resistor
Loop Resistance:	500 ohms max.
Alarm Outputs:	
Siren/Bell Output:	(Selectable for Speaker or Bell) Siren: 15W, 8 ohms; 30W, 4 ohms min. Sweep; Steady; Pulsing Sweep Bell: 12Vdc, 2A max.
Relay Outputs 1 & 2:	SPDT dry contacts, 2A resistive
Auxiliary Output:	12Vdc regulated
Remote Power Output:	12Vdc regulated (for keypads)
Combined Standby Current:	(Remote Power + Auxiliary Output) 450mA max.
Remote Station Current:	40mA typ.
Additional Stations:	7 max.
Standby Time:	4 Hours with 1 RBAT4* (4AH) 7 Hours with 1 RBAT6* (6AH) *optional
Fuses:	
Remote Power:	1A, 1AG (F1)
Auxiliary Power:	3A, 1AG (F3)
Speaker/Bell:	3A, 1AG (F4)
Siren Driver/Alarm Power:	4A, 1AG (F5)
Enclosure Dimensions:	12.6" x 12.6" x 3.6" (HWD) 32cm x 32cm x 9.1cm (HWD)
Shipping Weight:	14 lb (approx.) 6.4kg (approx.)

ORDERING INFORMATION (* = U.L. Accessory Pending)

Equipment Supplied

MA2500	16-zone (plus Fire & Panic), 12-volt alarm control panel with integral communicator and siren driver; RP2500 Keypad (1); TRF9 or TRF12 Transformer (1)

Optional Accessories and Peripherals

RP2500*	Dual-Mode Keypad
RBAT4	Rechargeable Battery, 12Vdc, 4AH
RBAT6	Rechargeable Battery, 12Vdc, 6AH
RBATH1*	Dual Battery Harness
TRF9	Transformer, 16.5Vac, 20VA Class 2
TRF12	Transformer, 16.5Vac, 19.2VA Class 2
FT2200*	End-of-Line Relay/Resistor Supervisory Module
TPS2	Tamper Switches, set of 2
RPB2000	Surface-Mount Backplate for Keypad
PRO410/410M	PROM Programmer
PRO2000	PROM Programmer w/PROCHIP1
PROCHIP1	Personality Chip for MA2500, MA850, MA854 & MA900
PF160	PROM Programming Record Sheets
PF161	Keypad Programming Record Sheets
DD493BNK	Blank PROM
OI123	Instruction Manual
A256	Dealer Brochure
A257	Consumer Brochure, Residential
A257COM	Consumer Brochure, Commercial

SUMMARY OF U.L. REQUIREMENTS (U.L. Pending)

U.L. Classification. Household Fire & Burglary Warning System Control Unit.

U.L. Requirements. FT-2200 End-of-Line Relay for Fire; Alarm Time-Out, 4 minutes min.; Exit Time, 60 seconds max.; Entry Time, 45 seconds, max. Battery Standby Time, 4 hours min.

Recommended U.L. Listed Devices

Bells:	Ademco AD8-12, AD10-12 Amseco MBL-8/12V, -10/12V;
Speakers:	Ademco 713 Atlas Sound VT-158U
Smoke Detectors:	BRK 1812; 2812TH (6 max.) Pyrotector 3212, 7212 (6 max.)

NOTE: The MA2500 may not be used for fire protection where prohibited by local codes.

2. INSTALLATION

MOUNTING

Control Panel. Choose a mounting location accessible to (a) a continuously-powered ac source, (b) a cold-water-pipe ground ideally no further away than 10 feet, and (c) telephone lines (keep telephone wiring away from speaker wires). Remove appropriate knockouts for cables. Place the control panel at a convenient viewing height and mark the mounting holes.

Keypad. A keypad should be located near the exit/entry door. A mounting template is supplied to accommodate recessed mounting into a wall; an optional backplate (Model RPB2000) is available for surface wall mounting (see **ORDERING INFORMATION**).

Recessing the Keypad into a Wall. Choose a convenient mounting height. Mount the supplied metal template onto the wall using the six #6 sheet-metal screws through the six larger holes. Cut away the rectangular portion within the template. For maximum strength, back up the sheet-metal screws from behind the wall with the Tinnerman nuts supplied. Attach the keypad to the mounting template with the four #6-32 self-tapping screws, one at each corner.

Surface Mounting onto a Wall Using the RPB2000 Backplate. There are two adjacent wire-entry holes in the backplate, one at the bottom and one at the rear. If necessary, use a sharp knife to cut away the rectangular recessed area for additional wire-entry space. Keypad wires may have to be shortened to fit inside the backplate.

Orient the backplate with the word *"TOP"* at the top. Secure the backplate to the wall using four #6 screws suitable for the surface material. ***Important:*** Use only the four mounting holes labelled *"MTG"* -- the other holes are not for mounting purposes and will not work! Raise the keypad front panel and secure the keypad to the backplate with the four #6-32 self-tapping screws provided, one at each corner.

NOTE: Do not overtighten the screws! Uneven walls may cause the keypad to become distorted. Should the hinged cover tend to bind when raised or lowered, back the mounting screws out slightly until smooth operation is restored.

GROUNDING

Connect the control-panel grounding screw to a metal cold-water pipe. Do *not* use a gas pipe, plastic pipe or ac ground connections. Use at least 16-gauge wire. Make the run as short and direct as possible, without any sharp bends in the wire.

TAMPER SWITCHES

Tamper switches may be installed to prevent opening of the control-panel door or removal of the cabinet from the wall. Ideally, tamper switches should be connected to a zone that is active at all times, thus it may be necessary to program that zone for 24-Hour Protection. When used on a normally-open zone, normally-closed tamper switches (normally open when set) should be wired in parallel. On a normally-closed zone, install NAPCO TPS-2 normally-open tamper switches (normally closed when set) in series. There are two places in the cabinet to mount tamper switches:

(1) To prevent cabinet removal from the wall, there are three mounting holes on the left side of the cabinet, another hole on the back that allows the switch button to contact the wall.

(2) To prevent opening the cabinet door, there are three mounting holes on the right side of the cabinet. When mounted, the switch button should contact the inside of the door. Be sure to alert the user that opening the enclosure door will cause a tamper alarm.

NOTE: Each NAPCO tamper switch is furnished with three machine screws for mounting, and a single self-tapping screw. The sole purpose of the self-tapping screw is to tap the holes for the machine screws. It is then removed and may be discarded.

WIRING

Refer to the Wiring Diagram for terminal connections; it contains valuable information not available elsewhere in this manual.

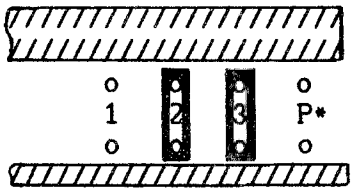
Keypad Assignment. Up to 7 keypads may be connected to the panel. If more than one keypad is installed,

(a) each must be assigned its own unique keypad address number (that is, no two keypads may be numbered alike);
(b) keypads must be numbered consecutively (that is, missing numbers are not permitted); and
(c) only Keypad No. 1 can be used for programming.

In multiple keypad configurations, the total number of keypads must be programmed in address 996. The number in address 996 must agree with the total number of keypads in the system, or a [KEYPAD FAIL XX] system trouble will result. (Correct the condition, then reset the control panel; see **Control-Panel Reset**.)

Keypad address numbers are "programmed" by selection of the Address Jumpers, the four-block jumper strip at the extreme lower-right corner of the board (as viewed from the front). Referring to the following table, program the keypad address by *shorting* the respective pair(s) of terminals with a jumper, as indicated by "[:]" (":" indicates *open*).

Keypad No.	Address Jumper 1	2	3	P*
1	:	[:]	[:]	:
2	[:]	:	[:]	:
3	:	:	[:]	[:]
4	[:]	[:]	:	:
5	:	[:]	:	[:]
6	[:]	:	:	[:]
7	:	:	:	[:]



Address Jumpers
(Keypad "1" shown)

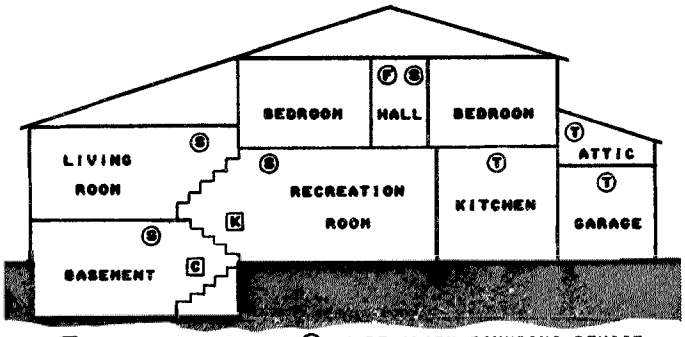
*Parking position for unused jumper (located nearest the corner).
: = Jumper pins open; [:] = Jumper pins shorted.

TYPICAL FIRE INSTALLATION (Where permitted by local codes)

At least one smoke detector should be installed directly outside each sleeping area. If there is more than one floor, additional smoke detectors should be installed on each level, including the basement. The living-area and basement smoke detectors should be installed near the stairway of the next upper level.

For increased protection, additional detectors should be installed in areas other than those required, such as the dining room, bedrooms, utility room, furnace room, and hallways. Heat detectors, rather than smoke detectors, are recommended in kitchens, attics, and garages due to conditions that may result in false alarms and improper operation. Large areas and areas with partitions, ceiling beams, doorways, and open joists will require additional detectors.

Refer to NFPA Standard No. 74 (National Fire Protection Association, Batterymarch Park, Quincy, MA 02269) for additional information, including proper mounting of detectors.



Typical Fire Installation.

TESTING THE SYSTEM

After installation is completed, test the system as follows. Call the central station to inform them of the test. Initiate an alarm (preferably on a zone that activates a steady siren) and verify proper signalling. Then, call the central station to confirm their receipt of a good transmission.

INSTRUCTIONS: Should removal of the circuit board be necessary, use this wiring legend to relocate leads to their proper terminals. Enter wire identification number or color code in WIRE NUMBER column; enter wire function in DESCRIPTION column (optional).

TERMINAL NUMBER	WIRE NUMBER	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
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43		
44		
45		

NOTES:

3. PROGRAMMING

The control panel is programmed by (a) programming a PROM using an accessory programmer and downloading PROM data; (b) programming the control panel directly from the keypad; or (c) direct local downloading from a NAPCO PRO2000 Programmer. Method (a) or (b) requires its own set of programming sheets, which are reproduced in the pages that follow.

PROM PROGRAMMING

A DD493BNK blank PROM may be programmed using a PRO410/410M or PRO2000 Programmer. Refer to the manual furnished with the programmer for operating instructions. All features may be programmed except

- Arm/Disarm Codes
- Exit/Entry Times
- Subscriber Identification Numbers
- Number of Keypads
- Test-Timer Offset
- Test-Timer Interval
- English-Language Zone Messages

Downloading PROM Data. The data programmed in the PROM are saved in system memory as follows (refer to the Wiring Diagram).

1. At the control panel, with ac and battery power off, insert the programmed PROM into the MEMORY CHIP socket. Align the dot on the PROM with the dot on the circuit board.
2. Apply power (see **INSTALLATION: POWER-UP SEQUENCE**).
3. Place the Program-Mode Jumper in the DEALER position.
4. Access address 999 (see **Dealer Keypad Programming**) then press the SAVE Button ([ON/OFF]) to load all data, including blanks.
5. Remove the PROM from the socket (with power on).
6. Replace the Program-Mode Jumper in the USER position.

NOTE: Do not leave the PROM installed (remove with power on). A PROM left in the PROM socket will result in a system-trouble condition.

PROM Programming Sheets. PROM Programming Sheets (PF160) similar to those which follow are completed when planning system features and communicator information for the particular installation. These sheets should be retained for future reference. Refer to the glossary for programming information and instructions.

KEYPAD PROGRAMMING

NOTE: Only the main keypad (designated Keypad No. 1) may be used for programming (see **Keypad Assignment** in Section 2).

Keypad Programming may be divided into two subgroups: User (Program 1) Mode and Dealer (Program 2) Mode. **USER KEYPAD PROGRAMMING** (covered in Section 5) is limited to user codes, exit/entry times and zone messages. In the Dealer Program Mode, the keypad will be capable of all programming *except zone messages*.

Dealer Keypad Programming. Set the keypad to the Dealer Program Mode: open the control panel and move the Program Jumper (to the left of the round lithium battery) from USER to DEALER. The display will briefly read [PROGRAM2 #XXXX], and then indicate [ADDR=000 DATA=••]. (Dots in the data display represent *blanks*.) Raise the keypad cover to expose the subpanel markings (shown in parentheses) indicating the buttons' secondary functions.

In this mode of operation, the numeric keys no longer perform as expected: Keys [1] and [2] position the cursor left and right respectively within the display; Keys [4] and [7] scroll up and down respectively through ADDR numbers 0-9; and DATA numbers 1-9, 0, and letters B, C, D, E, F, and • (dot, which represents a *blank*) at the selected cursor position. The following buttons also take on new meanings in the Program 2 Mode:

- [NO DELAY] (NEXT) scrolls the display line forward to the next address and reads the data in that address (hold down NEXT for fast forward).

- [INTERIOR OFF] (PRIOR) scrolls the display line backward to the previous address and reads the data in that address (hold down PRIOR for fast reverse).

- Key [0] (READ) reads the data in the address manually selected (when the address is manually entered, the data in that address are not read until the READ Button is pressed).

- Key [5] (BLANK) clears the display at the cursor position.

- [ON/OFF] (SAVE) stores the programmed data in memory.

Keypad Programming Sheets. Keypad Programming Sheets (PF161) similar to those which follow are completed when planning system features and communicator information for the particular installation. Many of the addresses shown comprise two data "bits", a left and a right. Program the left bit on the left data-display segment, and the right bit on the right segment. For those addresses having only one programmable bit, program the right segment *only*; the left segment should display a dot (blank).

Refer to the glossary for programming information and instructions. Save these sheets for future reference.

LOCAL DOWNLOADING FROM A PRO2000

Data may be programmed, saved, and then downloaded directly into system memory using a NAPCO PRO2000 Programmer through the MA2500

LOAD jack (J3) on the control panel. The PRO2000 features step-by-step on-screen prompts, making programming quick and easy. Refer to the manual furnished with the PRO2000 for instructions.

GENERAL PROGRAMMING STEPS

1. Contact the central station to confirm receiver format, data format, event codes, subscriber numbers and telephone number(s). Two receiver descriptions and telephone numbers, and up to 4 Subscriber Identification Numbers may be required.

2. Complete the Programming Sheet. Reference record sheets for the MA2500 are furnished in the following pages. Select the desired features by circling the respective "address" boxes. Refer to the **GLOSSARY** for guidance in selecting "data" entries (1,2,4,8).

3. To program the subscriber PROM, follow the instructions furnished with the programmer. While programming, remember to keep the address ***page number*** in mind, and be sure that the position of the PAGE switch (PRO410/410M) is set accordingly.

   NOTE: If using the PRO410/410M, before attempting to program either page, be sure that all data in programmer memory are erased (press [ERASE], then [EXECUTE]).

4. Program the data entries in the boxes on the Programming Record Sheets into the respective locations or addresses. The display will show the entry numerically, but will display "0" for the number "10", and letters "B" or "b", "C", "D" or "d", "E", and "F" for the numbers "11" through "15", respectively. To program a "10", program [0]. To program "11" through "15", enter [B] through [F] respectively. If using the PRO410/410M, use the [PLUS] key to enter any two or more digits that add up to the desired entry.

Entry Total:	10	11	12	13	14	15
Display:	0	B	C	D	E	F

   (PRO410/410M only): To program "13", enter either [d] *or* [8] [PLUS] [5], *or* [8] [PLUS] [4] [PLUS] [1], etc. Similarly, to *add* to an existing PROM location, *first press the* [PLUS] *key*, then the complementary digit, otherwise the digit entered will *replace* the digit in memory. Refer to the PRO410/410M instruction booklet for further programming details.

MA2500 KEYPAD PROGRAMMING SHEET

EXIT DELAY TIME (SEC)	ENTRY DELAY 1 TIME (SEC)	ENTRY DELAY 2 TIME (SEC)
000	001	002
x16 | x1	x16 | x1	x16 | x1

USER ARM/DISARM CODES

USER 1						USER 2						USER 3						USER 4					
003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024	025	026

USER 5						USER 6						USER 7						USER 8					
027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050

USER 9						USER 10						USER 11						USER 12					
051	052	053	054	055	056	057	058	059	060	061	062	063	064	065	066	067	068	069	070	071	072	073	074

USER 13						USER 14						USER 15						USER 16					
075	076	077	078	079	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095	096	097	098

SERVICE CODE						PROGRAM CODE						ACCESS CODE						AMBUSH	
099	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118

FORMAT

RCVR	DATA
208	209
210	211
212	213

TELEPHONE #1																			
128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147

TELEPHONE #2																			
148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167

TELEPHONE #3																			
168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187

ENTRY	RECEIVER FORMAT
BLANK	ADEMCO SLOW, SILENT KNIGHT SLOW
1	SESCOA, VECTOR, DCI, FRANKLIN
2	RADIONICS FAST
3	SILENT KNIGHT FAST
4	RADIONICS, DCI, FRANKLIN SLOW
5	RADIONICS 8FSK
6	(RESERVED)
7	(RESERVED)

DATA FORMAT			
ENTRY		ENTRY	
1	SUM CHECK	1	2300Hz HANDSHAKE
2	(NOT USED)	2	2300Hz KISSOFF
4	(NOT USED)	4	2-DIGIT OR 4/2
8	(NOT USED)	8	SINGLE DIGIT ONLY

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SUBSCRIBER I.D. NUMBERS

TELEPHONE #1

OPEN/CLOSE				BANK 0				BANK 1				BANK 2			
248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263

TELEPHONE #2

OPEN/CLOSE				BANK 0				BANK 1				BANK 2			
288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303

TELEPHONE #3

OPEN/CLOSE				BANK 0				BANK 1				BANK 2			
328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343

OPENING/CLOSING CODES

OPEN	CLOSE	FORCE ARM*
368	369	370

INDIVIDUAL REPORT CODES

BANK 0

FIRE	NOT USED	FIRE TBL	AMB	PANIC	LOW BAT	AC FAIL
371	372	373	374	375	376	377

BANKS 1 AND 2 (POSITION OF ZONE IN A BANK)

1st	2nd	3rd	4th	5th	6th	7th	8th
378	379	380	381	382	383	384	385

*LEAVE BLANK IF NOT REPORTING FORCE ARM; NOT USED DURING STATUS REPORT OR 4/2 FORMAT.

ALARM TYPE CODES

EVENT	BANK 0	BANK 1	BANK 2
ALARM	386	390	394
ALARM RESTORE	387	391	395
TROUBLE/STATUS	388	392	396
TROUBLE RESTORE	389	393	397

NOTE: FIRE TROUBLE, LOW BATTERY AND AC FAIL USE BANK-0 TROUBLE AND TROUBLE RESTORE ALARM TYPE CODES.

	BANK 2									BANK 1									BANK 0					
	ZONE					ZONE				ZONE					ZONE									
FEATURE	16	15	14	13	ADDR	12	11	10	9	8	7	6	5	ADDR	4	3	2	1	AC LB PA			ADDR	AA	FT x FI
LOOP RESPONSE 50mS	8	4	2	1	624	8	4	2	1	8	4	2	1	576	8	4	2	1	x	x	x	528	x	x x x
LOOP RESPONSE 10mS	8	4	2	1	625	8	4	2	1	8	4	2	1	577	8	4	2	1	x	x	x	529	x	x x x
PRIORITY ZONE	8	4	2	1	626	8	4	2	1	8	4	2	1	578	8	4	2	1	4	2	1	530	x	4 x 1
PRIORITY W/BYPASS	8	4	2	1	627	8	4	2	1	8	4	2	1	579	8	4	2	1	4	2	1	531	x	4 x 1
AUTO-SHUNT	8	4	2	1	628	8	4	2	1	8	4	2	1	580	8	4	2	1	x	x	x	532	x	x x x
SELECTIVE SHUNT	8	4	2	1	629	8	4	2	1	8	4	2	1	581	8	4	2	1	x	x	x	533	x	x x x
GROUP SHUNT	8	4	2	1	630	8	4	2	1	8	4	2	1	582	8	4	2	1	x	x	x	534	x	x x x
24-HOUR PROTECTION	8	4	2	1	631	8	4	2	1	8	4	2	1	583	8	4	2	1	x	x	x	535	x	x x x
SWEEP SIREN	8	4	2	1	632	8	4	2	1	8	4	2	1	584	8	4	2	1	4	2	1	536	x	4 x 1
PULSE-SWEEP SIREN	8	4	2	1	633	8	4	2	1	8	4	2	1	585	8	4	2	1	4	2	1	537	x	4 x 1
STEADY SIREN	8	4	2	1	634	8	4	2	1	8	4	2	1	586	8	4	2	1	4	2	1	538	x	4 x 1
RELAY OUTPUT 1	8	4	2	1	635	8	4	2	1	8	4	2	1	587	8	4	2	1	4	2	1	539	x	4 x 1
RELAY OUTPUT 2	8	4	2	1	636	8	4	2	1	8	4	2	1	588	8	4	2	1	4	2	1	540	x	4 x 1
EXIT/ENTRY 1	8	4	2	1	637	8	4	2	1	8	4	2	1	589	8	4	2	1	x	x	x	541	x	x x x
EXIT/ENTRY 2	8	4	2	1	638	8	4	2	1	8	4	2	1	590	8	4	2	1	x	x	x	542	x	x x x
E/E FOLLOWER	8	4	2	1	639	8	4	2	1	8	4	2	1	591	8	4	2	1	x	x	x	543	x	x x x
AUTO-RESET	8	4	2	1	640	8	4	2	1	8	4	2	1	592	8	4	2	1	x	x	x	544	x	x x x
SWINGER SHUTDOWN	8	4	2	1	641	8	4	2	1	8	4	2	1	593	8	4	2	1	x	x	x	545	x	x x x
CHIME ZONE	8	4	2	1	642	8	4	2	1	8	4	2	1	594	8	4	2	1	x	x	x	546	x	x x x
ABORT DELAY	8	4	2	1	643	8	4	2	1	8	4	2	1	595	8	4	2	1	x	x	x	547	x	4 x 1
POWER-UP DELAY	8	4	2	1	644	8	4	2	1	8	4	2	1	596	8	4	2	1	x	x	x	548	x	x x x
DAY ZONE OPEN	8	4	2	1	645	8	4	2	1	8	4	2	1	597	8	4	2	1	x	x	x	549	x	x x x
DAY ZONE SHORT	8	4	2	1	646	8	4	2	1	8	4	2	1	598	8	4	2	1	x	x	x	550	x	x x x
ALARM ON DAY ZONE	8	4	2	1	647	8	4	2	1	8	4	2	1	599	8	4	2	1	x	x	x	551	x	x x x
REPORT TELCO #1																								
ALARM	8	4	2	1	648	8	4	2	1	8	4	2	1	600	8	4	2	1	4	2	1	552	8	4 x 1
ALARM RESTORE	8	4	2	1	649	8	4	2	1	8	4	2	1	601	8	4	2	1	4	2	1	553	x	4 x 1
TROUBLE	8	4	2	1	650	8	4	2	1	8	4	2	1	602	8	4	2	1	x	x	x	554	x	x x x
TROUBLE RESTORE	8	4	2	1	651	8	4	2	1	8	4	2	1	603	8	4	2	1	x	x	x	555	x	x x x
REPORT TELCO #2 (BACKUP REPORTING)																								
ALARM	8	4	2	1	652	8	4	2	1	8	4	2	1	604	8	4	2	1	4	2	1	556	8	4 x 1
ALARM RESTORE	8	4	2	1	653	8	4	2	1	8	4	2	1	605	8	4	2	1	4	2	1	557	x	4 x 1
TROUBLE	8	4	2	1	654	8	4	2	1	8	4	2	1	606	8	4	2	1	x	x	x	558	x	x x x
TROUBLE RESTORE	8	4	2	1	655	8	4	2	1	8	4	2	1	607	8	4	2	1	x	x	x	559	x	x x x
REPORT TELCO #3 (DOUBLE AND SPLIT REPORTING)																								
ALARM	8	4	2	1	656	8	4	2	1	8	4	2	1	608	8	4	2	1	4	2	1	560	8	4 x 1
ALARM RESTORE	8	4	2	1	657	8	4	2	1	8	4	2	1	609	8	4	2	1	4	2	1	561	x	4 x 1
TROUBLE	8	4	2	1	658	8	4	2	1	8	4	2	1	610	8	4	2	1	x	x	x	562	x	x x x
TROUBLE RESTORE	8	4	2	1	659	8	4	2	1	8	4	2	1	611	8	4	2	1	x	x	x	563	x	x x x

USERS OPENING/CLOSING															
	USER					USER				USER					USER				
	16	15	14	13	ADDR	12	11	10	9	8	7	6	5	ADDR	4	3	2	1	
CLOSING REPORT TELCO #1	x	4	2	1	565	8	4	2	1	8	4	2	1	564	8	4	2	1	
OPENING REPORT TELCO #1	x	4	2	1	567	8	4	2	1	8	4	2	1	566	8	4	2	1	
CLOSING REPORT TELCO #2	x	4	2	1	569	8	4	2	1	8	4	2	1	568	8	4	2	1	
OPENING REPORT TELCO #2	x	4	2	1	571	8	4	2	1	8	4	2	1	570	8	4	2	1	
CLOSING REPORT TELCO #3	x	4	2	1	573	8	4	2	1	8	4	2	1	572	8	4	2	1	
OPENING REPORT TELCO #3	x	4	2	1	575	8	4	2	1	8	4	2	1	574	8	4	2	1	

	429		
RESET TEST TIMER ON ANY REPORT	1	1	BACKUP REPORTING TELCO #1/#2
(RESERVED)	2	2	TOUCHTONE DIALING ONLY
(RESERVED)	4	4	TOUCHTONE WITH ROTARY BACKUP
(RESERVED)	8	8	REPORT TEST TIMER ON ZONE 16

TEST TIMER OFFSET TIME (HOURS)	430		431		TEST TIMER REPORT INTERVAL (DAYS)
	x16	x1	x16	x1	

	969		
(RESERVED)	1	1	INTERIOR NORMALLY BYPASSED
(RESERVED)	2	2	DISABLE LOCAL DAY ZONE INDICATION
(RESERVED)	4	4	RESET DAY ZONE WITH ARM/DISARM ONLY
(RESERVED)	8	8	WATCH ON WITH FUNCTION 2

	970		
ACCESS CONTROL ON RELAY 2	1	1	AUTO BELL TEST UPON ARMING
EASY ARM WITH ON/OFF BUTTON	2	2	AUTO RESET AFTER ALARM TIME-OUT
REPORT SERVICE CODE AS USER 15	4	4	COME UP ARMED AFTER POWER FAILURE
(RESERVED)	8	8	DISABLE SMOKE RESET ON RELAY 1

	971		
ENABLE RED BUTTONS AS FIRE ZONE	1	1	OPENING REPORT ONLY AFTER ALARMS
ENABLE GREEN BUTTONS AS ZONE 15	2	2	CLOSING REPORT ONLY ON FORCE ARM*
ENABLE BLUE BUTTONS AS PANIC ZONE	4	4	REPORT SELECTIVE/GROUP SHUNT AS TROUBLE
TELCO TEST ON KEYPAD TEST BUTTON	8	8	STATUS REPORT

*AUTO SHUNTS WILL REPORT AS TROUBLES

TIME-OUTS	x16	x1
RELAY OUTPUT 1 TIME (MINUTES)	960	
RELAY OUTPUT 2 TIME (MINUTES)	961	
RELAY OUTPUT 2 ACCESS CONTROL TIME (SECONDS)	962	
SWEEP SIREN TIME (MINUTES)	963	
PULSE-SWEEP SIREN TIME (MINUTES)	964	

TIME-OUTS	x16	x1
STEADY SIREN TIME (MINUTES)	965	
ABORT DELAY TIME (SECONDS)	966	
CHIME TIME (SECONDS)	967	
AC FAIL REPORT DELAY (MINUTES)	968	

NUMBER OF KEYPADS: 996

LOC
997: NOT USED (LEAVE BLANK)
998: LOAD DEFAULT PROGRAM (SEE GLOSSARY)
999: LOAD PROM (SEE GLOSSARY)

DEFAULT PROGRAM:

USER 1 ARM/DISARM CODE: 7-8-9; PROGRAM CODE: 1-2-3-4-5-6; EMERGENCY BUTTONS ENABLED
SWEEP SIREN: ZONES 1-16; TIME-OUT: 5 MIN.; PULSE-SWEEP SIREN: PANIC
STEADY SIREN: FIRE; PRIORITY: FIRE/FIRE TROUBLE
EXIT/ENTRY 1: ZONE 1; ENTRY DELAY, 30 SEC.; EXIT DELAY, 45 SEC.
EXIT/ENTRY 2: ZONE 2; ENTRY DELAY, 15 SEC.; FOLLOWER ZONE: ZONE 8
AUTO-SHUNT: ZONES 1-16; SELECTIVE SHUNT: ZONES 1-16; GROUP SHUNT: ZONE 8
DAY ZONE OPEN: ZONE 9; CHIME: ZONE 10; CHIME TIME, 3 SEC.

4. GLOSSARY & PROGRAMMING INFORMATION

NOTE: Refer to the Keypad Programming Sheets for address numbers. Refer to the PROM Programming Sheets for location numbers (be sure to observe page number).

Abort Delay

A delay period that allows cancellation of the central-station report. This is done by disarming the control panel within the delay period. Program zones for Abort Delay; see **Time Selection** for delay time.

NOTE: If Abort Delay is selected for a 24-Hour Zone, the zone must be cleared before disarming the panel.

Ac Failure

If ac is removed from the control panel, the SYSTEM TROUBLE LED will come on. If an attempt is made to arm in this condition, [CHECK TROUBLE] will appear in the display; press the [ON/OFF] Button. To arm, first check the system trouble, then enter an Arm/Disarm Code. (If programmed for Priority with Bypass, also press the [RESET] Button prior to arming.)

Ac Failure may be programmed to activate any alarm output. An alarm and/or restore report to the central station will occur immediately unless an Ac-Fail Report Delay is programmed. See **Time Selection.**

Access Control on Relay 2

When selected, entering the Access Code while disarmed will trip Relay 2. This is commonly used to activate a door striker for the purposes of remotely unlocking a door. Also program Relay-2 Output Access Control Time (see **Time Selection**).

Access Number for Outside Line

Some subscribers will have a telephone system that requires one digit to access an outside line before the telephone number can be dialed. Also, the first dial tone encountered (prior to the access number) may have a frequency that is different from that of the accessed dial tone (440Hz). One or more 4-second Pre-Dial Delay "D"s may be entered before the access number instead of a dial tone with frequency "E". See **Pre-Dial Delay; Telephone Numbers.**

If the subscriber's system uses an access number, contact the telephone-equipment supplier to find out if a dial tone other

than 440Hz is received prior to dialing the access number. If the communicator must delay before dialing the access number instead of attempting to recognize the dial tone, find out how many 4-second delays must be programmed.

Alarm History

With the keypad cover raised, press [DISPLAY], then Key [3] to display past alarm conditions. Alarm History contains four memories. Alarm History #1 will contain all the alarms that have occurred since the panel was last armed. Alarm History #2 will contain the alarms that occurred during the prior arm/disarm interval, etc. Alarm History #1 always contains the most recent alarm(s).

NOTE: Bank-0 alarms are not stored in Alarm History.

Alarm Outputs

The MA2500 has an integral siren driver for both burglary and fire alarms, two Form-C dry relay contact outputs, and a communicator that can report alarms to a central station. A bell may be used on the siren output terminals if Jumper E is cut.

The following table summarizes wiring for signalling an alarm in typical installations. See **Time Selection** for time-out durations.

Output	Wiring	Remarks
Sweep Siren*	Speaker on 47, 48	See Note below
Steady Siren*	Speaker on 47, 48	
Pulsing Sweep* Siren	Speaker on 47, 48	
Steady Bell*	Bell on 47(-), 48(+)	Cut Jumper E for bell
Pulsing Bell*	Bell on 47(-), 48(+)	Cut Jumper E for bell
Relay Output #1	6(C); 7(N/O) 8(N/C)	
Relay Output #2	3(C); 4(N/O) 5(N/C)	
Smoke Reset	6(C)	Connect to AUX PWR (+) (Term. 12)
	8(N/C)	Connect to smoke detector power
*In U.L. installations, see **Time Selection** for time-out requirements.		

NOTE: Cut Jumper D to produce a two-tone alternating siren sound; cut Jumper C to prevent the fire signal from sounding a steady siren. For Speaker/Bell Output, connect one or two (in parallel) 8-ohm, 15-watt speakers across Terminals 47 (-) and 48 (+).

Alarm Type Codes

There are four Alarm Type Codes for each bank of zones: Alarm, Alarm Restore, Trouble, and Trouble Restore. If both Alarm Type Codes and Individual Report Codes are programmed, the Alarm Type Code is sent first to identify the type of alarm, then the Individual Report Code to identify the zone in the bank. Except in 4/2 data format, either code may be left blank and only the Alarm Type or Individual Report Code will be transmitted.

NOTE: Alarm Type Codes are not used in BFSK receiver format.

Ambush Code

A 2-digit code that is entered immediately prior to (and as part of) the regular Arm/Disarm Code. This will access the Ambush Zone, causing a silent report to be sent to a central station. Thus, should a user be forced to disarm by an assailant, he can silently signal an emergency while appearing to be merely disarming the system. The Ambush Zone will automatically report when programmed to report on alarm.

To program the ambush feature, (a) program Ambush to report on alarm; (b) enter 2 digits as the Ambush Code; and (c) enter an Ambush-Zone Alarm Report Code.

Inform the user what the Ambush Code is, and that his Arm/Disarm Code must be entered less than 10 seconds after the Ambush Code for an ambush report to be sent.

Anti-Jam Time

If the communicator does not detect a dial tone within 12 seconds, the Anti-Jam feature will be activated. That is, the communicator will go off line for a 16-second anti-jam interval in order to free the telephone circuit from an incoming call, then make another 12-second attempt at dial-tone detection. If still unsuccessful, the communicator will again go off line for 16 seconds, then proceed to dial anyway.

If a longer time is required for the Anti-Jam feature to function, change the anti-jam interval from 16 seconds: access address 427 (not on programming sheet) and program up to 15 additional seconds in the right-hand display segment. To test the Anti-Jam feature, call the alarm phone line from a different phone line, then activate an alarm. The incoming call should be disconnected by the control panel.

Arm Lug (Lug E4)

Lug E4 (ARM) will go to 0Vdc when the system is armed. This lug may be used for auxiliary equipment, such as an SG-1930 Shock-Guard Processor. For use, refer to the instructions furnished

2 *must* be entered, even if they are the same.

Bank

A group of zones. The MA2500 is divided into 3 banks arranged as follows:

- Bank 0: Fire; Fire Trouble; Ambush; Panic; Low Battery; Ac Fail
- Bank 1: Zones 1-8
- Bank 2: Zones 9-16

Alarm Type Codes are reported by bank, and position within that bank. The Fire Zone, for example, is Bank 0, Position 1; Zone 11 is Bank 2, Position 3, etc. See **Programming Record Sheet; Alarm Type Codes; Data Format.**

NOTE: Bank 0, Position 2 is not used in the MA2500; Bank-0 alarms are not recorded in Alarm History.

Battery

12Vdc standby power source in the control panel to provide backup protection in the event of a power loss. NAPCO's RBAT4 (optional) is rated at 4 ampere-hours, the RBAT6 (optional) at 6 ampere-hours. The battery is an integral part of the system and *must* be installed, even if ac power is present. Change the battery every 5 years or as required.

A lithium battery (supplied) provides additional backup for programming memory. Replace every 5 years or as required.

Burglary Lug (Lug E10)

Lug E10 (BURG) will go to approximately 1Vdc when a burglary alarm is tripped. E10 may be used to trip an LW-900 Long-Range Wireless Interface. Or, a relay (400 ohms minimum) may be connected between E10 and Terminal 12 (+ AUX. POWER) if a diode is inserted in series (cathode to E10; anode to relay).

Burglary Output See **Alarm Outputs**

Call Waiting See **Disable Call Waiting**

Chime

This annunciator feature may be used on any zone to sound a tone at the keypad while disarmed when the zone goes into trouble. Access Function 4 to enable or disable the Chime Mode. This feature is programmable for zone and for duration of tone (see **Time Selection**).

Closing Report
Closing Report Only on Force Arm
Force Arm
Report Selective/Group Shunt as Trouble
Status Report

On arming, the communicator can transmit a Closing Code for each user, a Force Arm Code, and a status report that identifies the problem zone to the central station. Note that Subscriber Identification Numbers and a Closing Code *must* be entered for any closing report.

Select which users will report closings for each telephone number, even if Closing Report Only on Force Arm is selected. Normally, a closing report will consist of the Closing Code and the number of the user that armed. If the user armed with an auto-shunted zone (or selective/group shunted zone if Report Selective/Group Shunt as Trouble was programmed), the Force Arm Code will also be sent. If a Force Arm Code will not be sent, leave it blank.

Select Closing Report Only on Force Arm to report *only* when arming with an auto-shunted zone (and selective-/group-shunted zone if Report Selective/Group Shunt As Trouble is programmed). This transmission will consist of a closing report followed by a Force Arm Code, or just a closing report if the Force Arm Code is blank.

Select Status Report to send a closing followed by a status report that identifies the problem zone(s). The Individual Report Code for each zone is used for this purpose.

A typical Status Report is represented by the following example.

Example. A burglar breaks into a commercial establishment during the night, breaking the window foil on Zone 5. The Open/Close Subscriber Identification Number is "123"; the Alarm Type Code for Bank 1 is "3". The Individual Report Code for Zone 5 is "5" (Burglary Zone 5); the Bank 1 Subscriber Identification Number is "789"; the Closing Code is "C". The communicator will send the following report to the central station.

When alarm occurs:

7893 - Alarm Bank 1.
3335 - Bank 1, Zone 5.

Closing Report:

123C - Closing: User returned; inspected damage; rearmed.
CCC1 - Closing: User 1
FFF5 - Zone status at time of closing: Window foil still broken. Zone 5 auto-shunts; repair required.

Come Up Armed After Power Failure

When this feature is programmed, the control panel will return in an armed state when:

- the unit is first powered up;
- the reset switch (on the control panel circuit board) is pressed;
- ac is restored after an extended power failure (and the backup battery is dead).

Data Format

Consult the central station to find out which of the following formats to use.

Extended Format. This is used to transmit two digits for an event yet still use a 3/1 format. The second digit will identify the zone or user. If Two-Digit or Single-Digit data format is not programmed for any telephone number, the format will default to Extended Format, or Single Digit if only one digit is programmed.

Example. An installation uses the following programmed transmission information: Subscriber Identification Number is "678"; an alarm is reported for Zone 16. The Alarm Type Code for Bank-2 alarms is 2 (Zone 16 is in Bank 2). The Individual Report Code for Zone 16 is "8" (Zone 16 is the 8th zone in the bank). The communicator will transmit:

6782 -
2228 - Alarm on Zone 2-8 (Bank 2, Position 8)

Single-Digit Event Code Format. The single digit sent for a particular event can be either the Alarm Type Code for the bank or the Individual Report Code for the zone. If the Alarm Type Code is blank, the single digit will be the Individual Report Code; this gives 16 possible codes (0 through F) for Zones 1-8 (Bank 1) and the same codes for Zones 9-16 (Bank 2), the difference being the Account Code used for each bank. If the Individual Report Codes are blank, the Alarm Type Code will be used (this gives only 1 Alarm Code per bank).

NOTE: To have a Single-Digit Event Code for one telephone number and Extended Format for the other, program an Alarm Type Code and Individual Report Code for those zones or events that require Extended Reporting. The telephone number with Single-Digit Reporting will use only the Individual Report Code. If either the Alarm Type or Individual Report Code is blank, Single-Digit Format will send the one that is entered.

Two-Digit or 4/2 Format. Some central-station receivers require that a four-digit Account Code followed by a two-digit Alarm Code

be sent in each report.

Example. In a certain installation, the Alarm Subscriber Number is "1234"; a burglary alarm occurs on Zone 1. The Alarm Type Code for Bank-1 alarms is "3". The Individual Report Code for Zone 1 is "1". The communicator will send "1234 31".

Sum-Check Format. Sum Check is a sophisticated data format used to enhance the speed and check the accuracy of the received transmission. This format should be preferred whenever the central station is capable of receiving it.

After transmitting the Subscriber Identification Number and the Alarm Code, the communicator sends a verifying digit that is the sum of both. The receiver compares the verifying digit with the sum of the other numbers to check transmission accuracy.

Day Zone (Open; Short)
Disable Local Day Zone Indications
Reset Day Zone With Arm/Disarm Only
Watch On With Function 2

A zone that will give an audible and visual indication at the keypad if there is a problem on the loop while disarmed. Open- and short-circuit conditions are programmed separately, by zone. This feature may be used to warn of a problem (a break in a window foil, for example) during the day, when the panel is not normally armed. When the Day Zone is tripped, the green STATUS LED on the keypad will go off, the sounder will pulse, and the display will indicate the problem zone(s). Press the [RESET] Button to silence the sounder and reset the keypad. Correct the problem to reset the Day Zone. If Reset Day Zone With Arm/Disarm Only is programmed, arm and disarm the panel to reset the audible Day-Zone indication (multiple troubles will still be reported). This added security is useful when using a Day Zone to monitor an entrance.

Report on Trouble is programmed in conjunction with Day Zone Open and Day Zone Short (the trouble reported will be that programmed under Day Zone Open and/or Day Zone Short). To turn off the local Day-Zone indication in this case, program Disable Local Day Zone Indications. See Trouble.

NOTE: Do not program a Day Zone for 24-Hour Protection. Keypad will annunciate as a Day Zone but panel will transmit an Alarm Code and a Trouble Code when tripped.

When Watch On With Function 2 is selected, zones programmed for Day Zone can only be activated when Function 2 is accessed. (See Section 5.) Arming and disarming will turn off the Watch Mode. If Report Trouble is selected, a trouble on a Day Zone will be reported only when the Watch Mode is on.

"E" Lugs (E3, E4, E5, E9, E10, E11, E12)

E3 - See Ground-Start Module, GSM-400
E4 - See Arm Lug
E5 - See Listen-In Module
E9 - See Fire Lug
E10 - See Burglary Lug
E11 - See Relay-2 Output
E12 - See Relay-1 Output

Easy Arm With On/Off

Permits quick arming by simply pressing the [ON/OFF] Button. Disarming still requires entry of the full code.

Enable Blue Keypad Buttons as Panic Zone See Panic Zone

Enable Green Keypad Buttons as Zone 15

This feature is used to enable the green keypad buttons for use as a medical or other emergency alert. Note that both keypad buttons must be pressed at the same time to activate Zone 15. When enabled, these buttons are automatically programmed for 24-Hour Protection, even if Zone 15 has not been.

Enable Red Keypad Buttons as Fire Zone See Fire Zone

Enable Telco Test on Keypad Test

If selected, pressing the small [TEST] Button (under the keypad cover, just below Key [0]) will test the telephone line for up to 12 seconds. This test does not send a report to the central station. When the button is released, [TESTING] will appear in the display. If the test is successful, the display will return to normal. Otherwise, the display will read [FAIL, HIT RESET] and a system trouble will be indicated. Press the [RESET] Button; a system trouble display will indicate [TELCO LINE FAIL]. To correct this system trouble, restore the telephone line and repeat the test.

Exit/Entry Delay

Permits exit and entry through the Exit/Entry Zone(s) after the system is armed without setting off an immediate alarm. Exit delay allows the user to leave the premises after the panel has been armed. Entry delay allows the user time to enter and disarm the panel. Upon entering, the keypad sounder will sound a steady tone to remind the user to disarm the panel.

Two individually-programmable entry-delay times are provided to accommodate different entry zones (one exit delay is sufficient

for all). If two or more Exit/Entry Zones are entered in succession, the delay programmed for the *last* Exit/Entry Zone entered will take precedence over all others.

Exit-Delay time and Entry-Delay time may each be programmed for up to 255 seconds (4-1/4 minutes). See **Time Selection**.

NOTE: In U.L. installations, Exit-Delay time may not exceed 60 seconds; Entry-Delay time may not exceed 45 seconds.

Exit/entry delay may be cancelled by pressing the [NO DELAY] Button prior to arming, however it will be restored automatically upon disarming. (When armed with *Instant* protection, an "I" will appear at the right side of the display.)

Exit/Entry Follower

A zone programmed as an Exit/Entry Follower will ignore detection during the exit delay, and *only* during entry delay if the Exit/Entry Zone is entered *first*. Thus, detection devices (passive infrared detectors, for example) along the path between the keypad and the exit/entry door will not signal an alarm during exit/entry delay under normal conditions. However, if a device in the Exit/Entry Follower Zone detects a violation when the exit/entry door has not first been entered, there will be no entry delay and the Exit/Entry Follower Zone will go into an instant alarm.

If the panel is armed with the entry delays cancelled (*Instant* protection), any violation on the Exit/Entry Zone or the Exit/Entry Follower Zone will cause an immediate alarm.

Extended Format

See **Data Format**

Fire Lug (Lug E9)

Lug E9 (FIRE) will go to approximately 1Vdc when a fire alarm is tripped. E9 may be used to trip an LW-900 Long-Range Wireless Interface. Or, a relay (400 ohms minimum) may be connected between E9 and Terminal 12 (+ AUX. POWER) if a diode is inserted in series (cathode to E9; anode to relay coil).

Fire Zone
Enable Red Keypad Buttons as Fire Zone

Normally-open devices are connected to the Fire Zone (Terminals 10 and 11). A short across this zone will cause a fire alarm: a steady-on red LED and a pulsing keypad sounder. An open circuit will cause a flashing red LED and a pulsing sounder after a 15-second delay. The sounder may be silenced using the [RESET] Button. The LED will go off within 30 seconds after reset if the alarm or trouble is cleared. For Smoke Reset, see **Alarm Outputs**.

If Enable Red Keypad Buttons as Fire Zone is programmed, both red buttons must be pressed at the same time to sound a fire alarm.

If the Fire Zone is selected to report on alarm or to restore, the Alarm Codes or the Restore Codes will be sent.

Force Arm see Closing Report

Ground-Start Module, GSM-400 (Lug E3)

If not continuously active, a Ground-Start Module will be required at Lug E3 to establish the dial tone. For installation, refer to the instructions furnished with the GSM-400.

Group Shunt

Removal of a preset group of zones from the system. Group shunting is often used to bypass all interior zones together so that the user may move freely throughout the premises but still be protected from intrusion through armed perimeter zones.

Group shunting is accomplished by pressing the [INTERIOR OFF] Button. The next time the control panel is disarmed, all shunted zones will automatically revert to non-shunted (disarmed) zones.

When group shunting is selected, the yellow ZONE BYPASSED LED on the keypad will light. Display the shunted zones by pressing the [DISPLAY] Button, then the BYPASSED Button.

Individual Report Codes See Alarm Type Codes

Interior Normally Bypassed

When this feature is selected, all zones programmed as Group Shunt will always be inactive. The yellow ZONE BYPASSED LED will always be on, indicating that subsequent arming will be with only partial protection. To temporarily restore interior protection, press the [INTERIOR OFF] Button (the ZONE BYPASSED LED will go out). However, the interior (group shunt) zones will once again be bypassed the next time the panel is disarmed.

Jumpers

Keypad Jumpers (A, B). These are mounted at the lower-left corner of the keypad circuit board (as viewed from the front). Jumper A is nearer the corner. Also see Address Jumpers (**Keypad Assignment**), Section 2.

Jumper A: **Disable Keypad Panic.** Cut Jumper A to disable the blue Keypad Panic Buttons.
Jumper B: **Disable Tactile Beep.** Cut Jumper B to silence the beep that sounds when a keypad button is pressed.

Control-Panel Jumpers (C, D, E). These jumpers are located on the control-panel circuit board. Refer to **Alarm Outputs** for use.

Keypad Panic See Panic Zone; Keypad Jumper A

Line-Reversal Module, M278

The Line-Reversal Module allows the control panel to be monitored by a central station through leased lines. On alarm, the module reverses normal line-voltage polarity. For details, refer to the instructions furnished with the module.

Listen-In Module (Lug E5)

If installation requires a Listen-In Module, connect the module to Lug E5. The voltage (12V) at E5 drops to zero when the communicator goes off-hook. When the communicator transmission is completed, the voltage at E5 returns and the Listen-In Module can occupy the phone line.

Load Default Program

The system will automatically load the default program if powered up with an exhausted or missing lithium battery, or upon the unlikely failure of the program stored in memory. To *manually* load the default program, in the Dealer Keypad Program Mode, access address 998 and press the [ON/OFF] Button (SAVE). Following are the default conditions:

- User 1 Arm/Disarm Code: 7, 8, 9
- Program Code: 1, 2, 3, 4, 5, 6
- Emergency Buttons: Enabled
- Sweep Siren: Zones 1-16; Timeout: 5 min.
- Pulse-Sweep Siren: Panic
- Steady Siren: Fire
- Priority: Fire; Fire Trouble
- Exit/Entry 1: Zone 1; Entry Delay: 30 sec; Exit Delay: 45 sec.
- Exit/Entry 2: Zone 2; Entry Delay: 15 sec.
- Follower Zone: Zone 8
- Auto-Shunt: Zones 1-16
- Selective Shunt: Zones 1-16
- Group Shunt: Zone 8
- Day Zone Open: Zone 9
- Chime: Zone 10; Chime Time: 3 sec.

Load PROM

Address 999 is used to download the contents of a programmed PROM into memory (in the Dealer Keypad Program Mode). See Section 3: **Downloading PROM Data.**

Loop Response

Loop response is the amount of time in milliseconds (mS) that a normally-closed circuit must remain open, or a normally-open circuit must remain closed, to trigger an alarm. The slower the loop response, the more immune the system will be to intermittents ("swingers"). Selectable loop-response times are:

750mS (.75 sec.): The slowest loop-response time, recommended for use with magnetic contacts, window foil, etc. Unless programmed otherwise, loop-response time will be 750mS for all zones.

50mS (.05 sec.): Used for momentary Panic Buttons and area-protection devices, such as photoelectric eyes, passive infrared sensors, floor mats, etc.

Low Battery

A low-battery alarm will signal when the battery terminal voltage drops to 11.0V. A low-battery condition may signal a local sounding device, report to a central station, or both.

Opening Report
Opening Report Only After Alarm

Opening and closing reports are generally used in commercial installations. On disarming, the communicator can send an Opening Code for Users 1-15 (Opening Report), or it may transmit only when the control panel is disarmed after an alarm has occurred (Opening Report Only After Alarm). Note that Subscriber Identification Numbers and Opening Codes *must* be entered for either opening report.

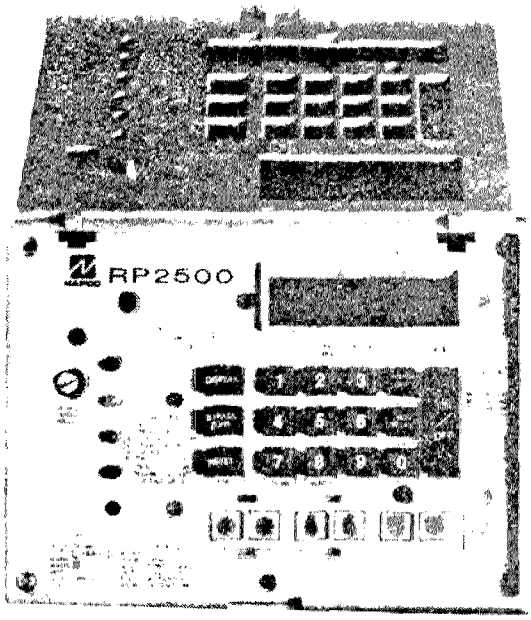
Program Opening Report Only After Alarm to report only when disarming after an alarm. This feature may be used by the central station to verify that the subscriber has responded to the alarm and disarmed the panel. If Opening Report Only After Alarm is selected, also select Opening Report for each user.

Panic Zone
Enable Blue Keypad Buttons as Panic Zone

Wire momentary-contact Panic Buttons to Terminals 42 and 43. When Enable Blue Keypad Buttons as Panic Zone is selected, the Panic Zone is also activated from the blue keypad emergency buttons when *both* buttons are pressed at the same time. The Panic Zone is always a 24-Hour Zone. (Also see **Keypad Jumper A.**)

Power-Up Delay

When programmed, power-up will be delayed for 5 minutes so that



RP2500 Keypad, cover raised.

1. Raise the keypad cover. Enter the system Program Code (default code *1,2,3,4,5,6*) then press the [ON/OFF] Button to access the Program 1 Mode. (Also see **Program Code**.) The LCD will briefly read [PROGRAM1 *XXXX], and then [USER 01 (789)].

2. With the keypad cover raised, the numeric keys no longer perform as expected: Keys [1] and [2] position the cursor left and right repsectively within the display; Keys [4] and [7] scroll up and down respectively through numbers 0-9, the alphabet, etc. (depending on what is being programmed) as shown on the display.

3. The following buttons also take on new meanings in the Program 1 Mode:

   - [NO DELAY] (NEXT) scrolls the display forward to the next line (hold down for fast forward).
   - [INTERIOR OFF] (PRIOR) scrolls the display backward to the previous line (hold down for fast reverse).
   - [ON/OFF] (SAVE) memorizes the programmed code, message, etc.

4. Closing the cover terminates the Program 1 Mode.

Arm/Disarm Codes. Up to 16 personal user codes may be programmed at the keypad.

Refer to **USER KEYPAD PROGRAMMING**. The first code entered should

replace the default code (*7,8,9*), which may not be selected as a user code. Enter up to six digits; a minimum of four digits is recommended. After the code has been entered, press the SAVE Button ([ON/OFF]).

NOTE: Do not attempt to enter any blank spaces in the code. The keypad will reject a code with a blank space and respond with a steady tone and a flashing blank space in the display. Silence the tone by pressing any button (except the emergency buttons at the bottom), then enter any digit, even 0, into the blank space to complete the code.

Press the NEXT Button ([NO DELAY]) once to advance to the next user code and repeat the above for the second user code. Advance to the next user code and repeat until all user codes have been programmed. Close the cover when finished.

Each user should be assigned his own dissimilar code and should be cautioned against divulging his code to anyone else. Thus should it become necessary to remove a user from the system, that one code may be cancelled without affecting other codes, and that user would then be prevented from entry.

Changing or Cancelling a Code. To change a user code, merely program over the existing code as previously described. Similarly, to cancel a code, blank out the existing each number of the code using the BLANK Button [5], then press the SAVE Button [ON/OFF].

Service Code. The Service Code is a temporary Arm/Disarm Code, and is programmed as any other user code. See **Arm/Disarm Codes; Function 3: SERVICE CODE.**

Program Code. The Program Code provides access to the Program Mode. The user authorized to program should have the Program Code committed to memory or recorded and safeguarded elsewhere, and should be cautioned not to divulge that code to anyone.

Raise the keypad cover and enter the default Program Code (*1,2,3,4,5,6*) to access the Program Mode. Hold down the NEXT Button [NO DELAY] to scroll the display to the Program Code. The Program Code *must be changed* in order to maintain system security. Program the Program Code as you would any Arm/Disarm Code (see **USER KEYPAD PROGRAMMING**).

Access Code. The Access Code is normally used to activate a door striker while disarmed to remotely unlock a door. (See **Access Control** on **Relay 2** in the glossary for programming required to enable this feature.) Program the Access Code as you would any Arm/Disarm Code (see **USER KEYPAD PROGRAMMING**). *Caution:* Do not use the same code as any Arm/Disarm Code.

Ambush Code. The Ambush Code is entered by the user just prior to disarming to access the Ambush Zone, causing a silent report to be sent to the central station. Thus, should the user be

forced to disarm by an assailant, he can silently signal an emergency while appearing to be merely disarming the panel. (Check the glossary for programming required to enable this feature.) Program the Ambush Code as you would any Arm/Disarm Code (see **USER KEYPAD PROGRAMMING**).

Exit/Entry Times. Exit delay and entry delay establish the amount of time that is available on the Exit/Entry Zone after arming and before disarming, respectively, before the system will go into alarm. Two separate entry delays are available.

Exit and entry times are programmed just as user codes. Enter the Program Mode and scroll past all the codes until the keypad displays [EXIT TIME (_)]. Use all three digits to enter the exit time, in seconds, even if leading "0"s are necessary. Thus, to program 30 seconds, enter "030"; to program 2 minutes, enter "120", etc. (Maximum programmable time is 255 seconds.)

Press the NEXT Button ([NO DELAY]) and repeat the above procedure to program ENTRY TIME 1. Press the NEXT Button once again and similarly program ENTRY TIME 2.

Zone Messages. Zone-messages follow exit/entry-times in the normal programming sequence ("01" will appear in the display, followed by the cursor). Refer to **USER KEYPAD PROGRAMMING**. Program the message letter by letter. With the keypad cover up, Keys [1] and [2] control the position of the cursor. When programming zone messages, Keys [4] and [7] will scroll not only through numbers 0-9, but through the alphabet and a series of punctuation marks and symbols as well. Roughly note the order in which the letters, numbers and symbols are displayed so that you will be able to determine the proper direction to scroll (up or down) for fastest access. As familiarity improves, so will programming speed. When the message has been entered and is satisfactory as displayed (e.g. [GARAGE]), press the SAVE Button [ON/OFF] to save it in memory.

Use the NEXT Button [NO DELAY] to advance to the next zone message. To return to the previous message, press the PRIOR Button [INTERIOR OFF]. Similarly, enter zone messages for all zones in use (up to 16) using the foregoing programming procedure.

The following words and phrases related to the home and office are stored in a message library. To help speed the programming process, any of these may be entered as a complete unit, thus eliminating or reducing the letter-by-letter programming required for that message.

ZONE NOT USED	COMPUTER ROOM	FRONT DOOR	LIVING ROOM
BASEMENT	DEPT	GARAGE	OFFICE
BATHROOM	DINING ROOM	HALL	STOCKROOM
BEDROOM	FAMILY ROOM	KITCHEN	STUDY

To choose from the list, you must be in the Zone-Message Program Mode. Press the WORDS Button (Key [8]) repeatedly until the

desired word or phrase is displayed (e.g. [01 _ DEPT]), then customize the message if necessary using the manual letter-by-letter method previously described. When the message is satisfactory as displayed (e.g. [01 SALES_ DEPT]), press the SAVE Button [ON/OFF] to save it in memory.

ARMING & DISARMING THE SYSTEM

NOTE: In the normal disarmed state, only the green STATUS LED will be on and the display will read [*SYSTEM READY*]. To silence an alarm, enter any Arm/Disarm Code, then press the [ON/OFF] Button.

Any of the user codes or the Service Code (when active, see **Function 3: SERVICE CODE**) may be used to arm or disarm.

Arming. To arm, enter the code using the numeric keys, then press the [ON/OFF] Button. The green STATUS LED will go off, the red SYSTEM ON/INTRUSION LED will go on, and the display will read [EXIT TIME XXX] ("XXX" representing the programmed exit-delay time, in seconds). The exit delay will immediately start counting down toward "000", indicating the available time remaining to exit through an exit/entry door.

NOTE: An "S" in the display (e.g. [EXIT TIME XXX S]) will appear as a reminder that the system is being armed with the Service Code *active*. (To turn off the Service Code, disarm using a regular Arm/Disarm Code.)

If an attempt is made to arm while the SYSTEM TROUBLE LED is on, the sounder will come on and the display will read [CHECK TROUBLE]. Press the [ON/OFF] Button to silence the sounder, then check and correct the system trouble (see **THE DISPLAY BUTTON**). It will now be possible to arm within 60 seconds if repairs cannot be made immediately.

Disarming. When the exit time has elapsed, the display will read [*****ARMED****]. This indicates that upon entering the premises through an exit/entry door, there will be an entry delay to allow time to disarm the panel. The keypad display will read [ENTRY TIME XXX] ("XXX" representing the programmed entry-delay time, in seconds). The entry delay will immediately start counting down toward "000", indicating the available time remaining to disarm the panel. To disarm the panel, enter the code using the numeric keys, then press the [ON/OFF] Button.

Arming with No Delay. To cancel the entry delay on the exit/entry zone, press the [NO DELAY] Button prior to or after arming. The display will read [*****ARMED**** I]. This feature may be used to provide instant protection while on the premises. It will be cancelled automatically upon disarming.

Priority Arming. A steady tone and [PRIORITY TROUBLE] displayed when attempting to arm indicates a priority condition; that is, a

problem exists on at least one zone that has been designated a Priority Zone. Enter an Arm/Disarm Code, or simply press the [ON/OFF] Button to silence the sounder.

The trouble(s) must be corrected before the panel can be armed. To check which zone is in trouble, lower the keypad cover and press the [DISPLAY] Button, then the STATUS Button (Key [1]). The display will read [ZONES IN TROUBLE], then scroll through all the problem zones.

BYPASSING ZONES

Those zones designated as *selective shunt* zones may be bypassed from the system prior to arming. With the keypad cover down, press the [BYPASS ZONE] Button, then the numeric key representing the zone number. The yellow ZONE BYPASSED LED will go on and the zone number will appear briefly on the display. Repeat for each zone to be bypassed. To recall which zones have been deactivated, press the [DISPLAY] Button, then the BYPASSED Button (Key [3]).

When the panel is disarmed, all bypassed zones revert to normal disarmed zones. Therefore, to cancel a bypassed zone, arm and disarm (which will cancel *all* bypassed zones simultaneously).

Interior Zones. All zones that have been designated as group-shunt zones will be bypassed at the same time when the [INTERIOR OFF] Button is pressed prior to arming. This feature is used to provide perimeter protection while keeping active interior zones disarmed. As above, the [DISPLAY] and BYPASSED Buttons may be used to display zones bypassed.

ALARM INDICATION

NOTE: To silence an alarm, enter the Arm/Disarm Code, then press the [ON/OFF] Button.

Should an alarm occur, the top red SYSTEM ON/INTRUSION LED will flash, and the display will read [ALARM], then scroll through all the zones violated. Disarm the panel; the display will read [ALARM MEMORY] and will continue to indicate the violated zones until the [RESET] Button is pressed or the panel is armed once again. The alarm conditions will then be stored in Alarm History (see **Alarm History**).

THE DISPLAY BUTTON

With the keypad cover lowered, the [DISPLAY] Button will provide a visual indication of the following conditions on the readout:

- **Zones in Fault ("Trouble") Condition.** Press the [DISPLAY] Button followed by the STATUS Button (Key [1]) to identify the zones in trouble (while disarmed).

- **Directory.** To scroll through a list of all programmed zone messages, press the [DISPLAY] Button, then the DIRECTORY Button (Key [2]). To return to the system, press the [RESET] Button at any time.

- **Zones Bypassed.** Press the [DISPLAY] Button then the BYPASSED Button (Key [3]) to list zones that have been deactivated.

With the keypad cover raised, the [DISPLAY] Button will provide a visual indication of the following conditions:

- **Fire Status.** To display the condition of the Fire Zone (if installed) press the [DISPLAY] Button, then the FIRE STATUS Button (Key [1]).

- **System Troubles.** Pressing the [DISPLAY] Button followed by the SYSTEM TROUBLE Button (Key [2]) will display system problems (LOW BATTERY, AC POWER LOSS, etc.).

- **Alarm History.** Alarm conditions occurring during the last four arm/disarm intervals are retained in memory. Alarm History #1 always contains the most recent interval, Alarm History #2 the next, etc. Press the [DISPLAY] Button, then the ALARM HISTORY Button (Key [3]).

SPECIAL FUNCTIONS

To access Functions 1 through 6, first raise the keypad cover, press the FUNCTION Button ([BYPASS ZONE]), then the respective function number key.

Function 1: BELL TEST. This test will activate the speaker/bell output (while disarmed) for about 2 seconds. To test the device, press the FUNCTION Button ([BYPASS ZONE]), then Key [1]. If the device does not sound, it may be defective.

Function 2: WATCH MODE. This option, if programmed, permits all zones designated as Day Zones to be turned on. To activate the Watch Mode (Day Zones on), press the FUNCTION Button ([BYPASS ZONE]), followed by Key [2]; a "W" will appear in the display as long as the Watch Mode is active. To deactivate the Watch Mode, arm, then disarm.

Function 3: SERVICE CODE. The Service Code is an Arm/Disarm Code that is easily activated when needed, and dormant at other times. It is intended for the occasional or temporary user (maid, repairman, etc.) who would otherwise be denied access to the premises. The Service Code is activated by enabling Function 3: press the FUNCTION Button ([BYPASS ZONE]), then Key [3]. When the panel is armed (using any Arm/Disarm Code) with Function 3 accessed, an "S" will appear in the display along with the exit-delay countdown, indicating that the Service Code is active. The Service Code will automatically become inactive the next time a

regular Arm/Disarm Code is used to *disarm* the system and will remain so until Function 3 is selected once again.

Function 4: CHIME MODE. This option will sound a tone at the keypad when a zone programmed as Chime Zone is violated while disarmed. The duration of the tone is programmable. To activate Function 4, press the FUNCTION Button ([BYPASS ZONE]) followed by Key [4]; a "C" will appear in the display as long as the Chime Mode is active. Repeat to deactivate Function 4, thus turning off the Chime Mode.

Function 5: LOCATE. This feature will help the user find zone troubles and indicate when they are repaired. To access Function 5, press the FUNCTION Button ([BYPASS ZONE]), then Key [5]. The sounder will come on and the display will read [LOCATE], then scroll through the zones in trouble. As each zone is corrected, the sounder will stop momentarily signalling its repair, and the display will indicate the remaining zones in trouble. The sounder and display will continue in this manner until all zones are repaired, or until the [RESET] Button is pressed.

Function 6: FAULT FIND. This troubleshooting aid will help the installer locate swingers. To access the Fault-Find Mode, press the Function Button ([BYPASS ZONE]), then Key [6]. When accessed, two things occur:

a. the loop response of each zone is set for the fastest response time, and
b. Causing *or* repairing a fault activates the sounder for about 3 seconds.

Tapping and poking at suspect points, the installer can easily locate swingers by listening for the beep. This eliminates the need of returning to the keypad to visually check after each attempt. Press the [RESET] Button to restore normal operation. (Arming the system automatically cancels the Fault-Find Mode.)

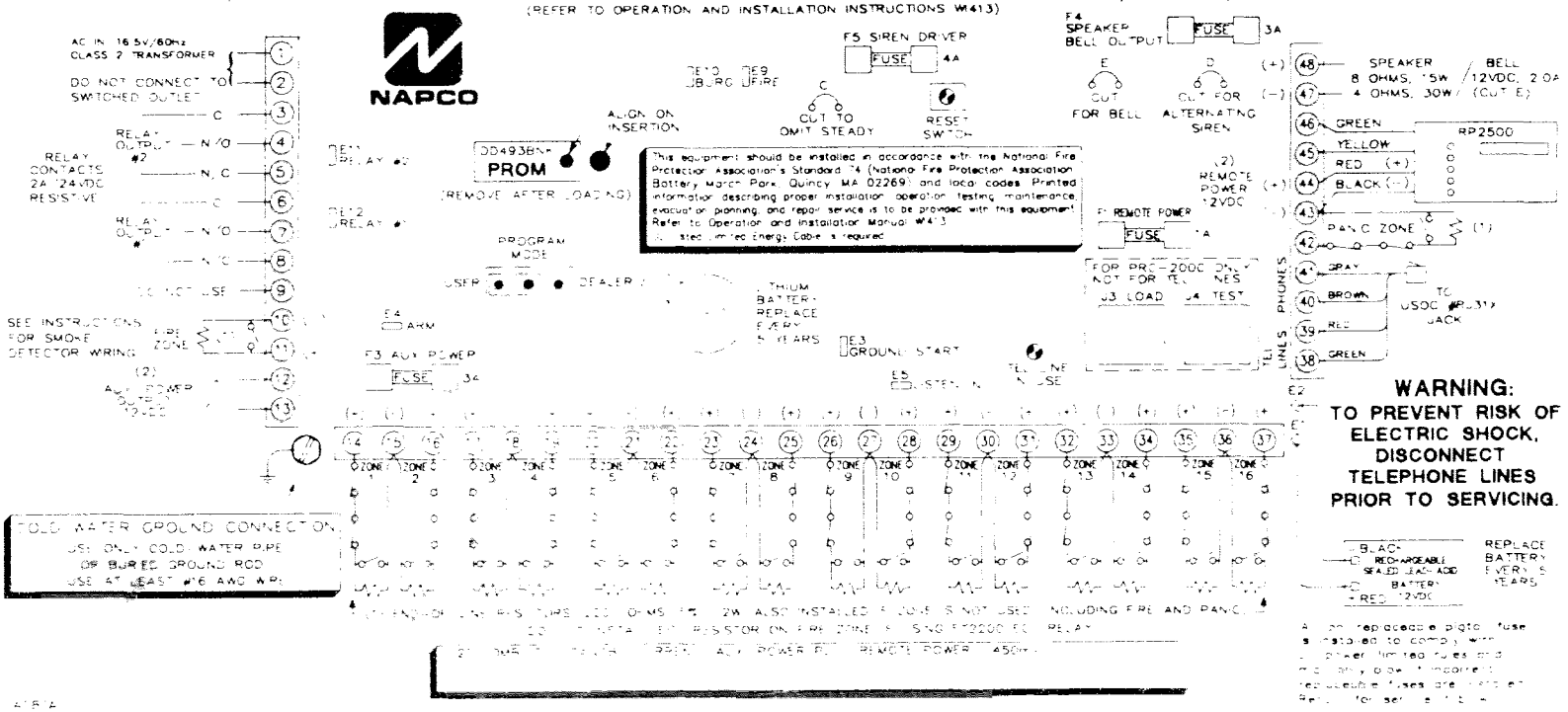
Control-Panel Reset. This small microswitch (S1) is located at top center of the control-panel board about 1/2" below and to the right of Fuse F5. Pressing S1 momentarily will initialize the panel as from power-up, however the program in memory will be retained. (If the lithium battery is exhausted or not installed, the default program will be loaded.) If Come Up Armed After Power Failure had been programmed, the system will arm (if no Priority Zones are in trouble).

NAPCO SECURITY SYSTEMS, INC
AMITYVILLE, N.Y. 11701

MAGNUM ALERT 2500

WIRING DIAGRAM

(REFER TO OPERATION AND INSTALLATION INSTRUCTIONS W413)



IMPORTANT

For continued protection against fire, replace only with fuses of same type and rating. Shorting fuses to either the case or to each other may cause damage to the circuit board. Always use fuse pullers.

WARNING:
TO PREVENT RISK OF ELECTRIC SHOCK, DISCONNECT TELEPHONE LINES PRIOR TO SERVICING.