

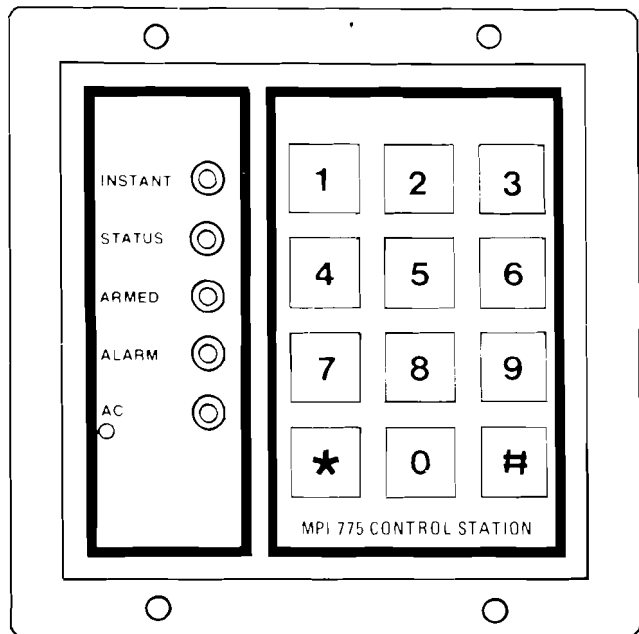
# Security Control

## FEATURES

- Instant and delay burglar protective loops with end-of-line resistor supervision.
- 24 hour keyboard panic.
- Burglar alarm output switched thru 6 amp dry relay contact.
- 12 digit keypad with 900,000 code combinations.
- Arm/disarm code keyboard programmable from 1 to 6 digits in length (numbers may repeat).
- Entrance, exit, and alarm cutoff times are programmable from keyboard.
- Auxiliary arm/disarm code which erases after a programmed number of uses.
- Instant, circuit, armed, alarm memory, and AC power front panel status LED's.
- Built in pre-alarm.
- Lamp output.
- +12 volt DC operation.
- Keypad, pre-alarm, and status LED's may be remoted with MPI-275.
- Five stage lightning/transient protection.
- Auto-shunt violated burglar loops after alarm cutoff.
- Mounts to standard two gang electrical box.

## SPECIFICATIONS

- Twelve (12) digit keypad:
  - (1) Over one million operations.
  - (2) .1" (2.2mm) key stroke.
- Red Instant Mode LED.
- Green Circuit Status LED.
- Yellow Armed LED.
- Red Alarm Memory LED.
- Green AC On LED.
- Pre-alarm: Steady Tone Piezo Resonator, 2800 Hz., 90 db at 10 feet.
- +8 volts DC to 15 volts DC power supply operation.
- Operating temperature range: 0 degrees C. to 70 degrees C.
- Operating current: 25 milliamps at 14 volts DC non-alarm, 100 milliamps at 14 volts DC alarm.
- Maximum loop resistance 1000 ohms.
- Indoor or covered outdoor environment.
- Dimensions: 4.6" x 4.5" x 1.63" (Two gang electrical plate).
- Light tan plastic injection molded case with aluminum front plate.



# MPI-775 HOOKUP

## Test Weekly

Note: Central monitoring station should be notified before beginning test of the control.

- (1) Arm the control.
- (2) Allow exit time to expire. Violate instant loop. Alarm should sound.
- (3) Disarm control.
- (4) Arm control.
- (5) Allow exit time to expire. Violate delay loop. Pre-alarm should sound then alarm at the end of the entrance time.
- (6) Disarm control.

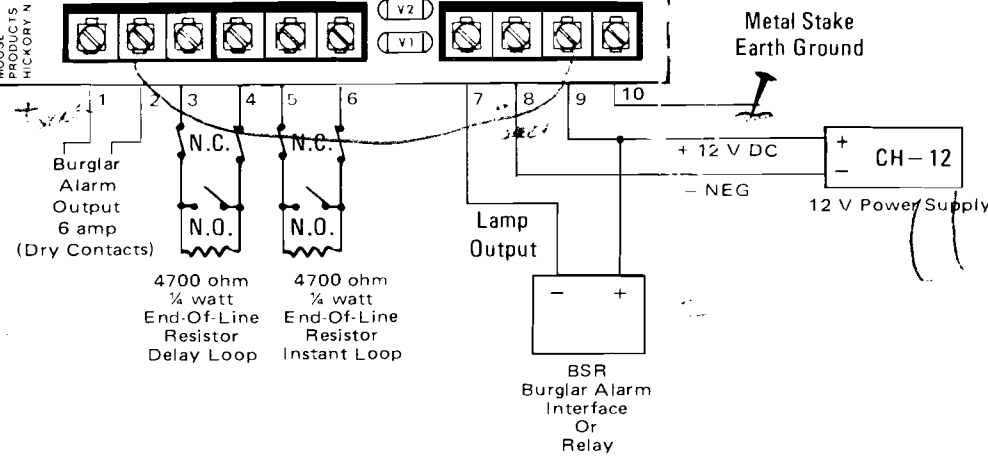
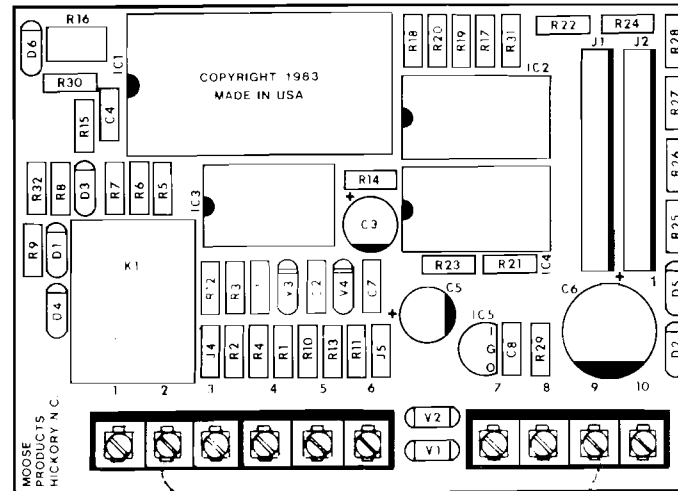
## Lightning Protection

In order for lightning/transient suppressors to be effective, the MPI-775 must be "earth" grounded to a direct earth ground. Do not use a gas pipe or building's electric ground.

Warning: Under no circumstances should the negative side of the power supply be connected to earth ground. Possible circuit damage may result from reverse earth ground transients.

## Connector J1 And J2

- Pin 12 (-) Instant LED Output
- Pin 11 (-) Circuit Status LED Output
- Pin 10 (-) Armed LED Output
- Pin 9 (-) Alarm Memory LED Output
- Pin 8 (-) AC LED Input \*
- Pin 7 (+) AC LED Input
- Pin 6 A Keyboard Input
- Pin 5 B Keyboard Input
- Pin 4 C Keyboard Input
- Pin 3 D Keyboard Input
- Pin 2 (-) Pre-Alarm Output
- Pin 1 (+) 12 VDC Output



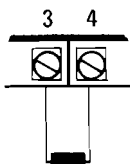
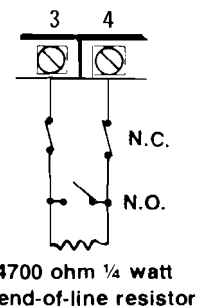
\* Note: Install a 120 ohm 1/2 watt resistor in series with the negative (-) AC LED at the power supply to prevent shorting the negative (-) AC LED lead to (+) 12 VDC Pin 1.

Notice: Specifications are subject to change without notice.

## MPI-775 TERMINAL STRIP HOOKUP INSTRUCTIONS

**Terminals 1 and 2 – Burglar Alarm Output** – Terminals 1 and 2 provide 6 amp dry relay contact closure upon activation of the burglar or panic input channels.

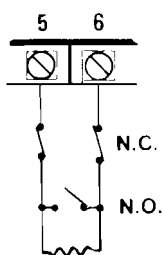
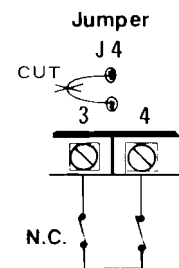
**Terminals 3 and 4 – Delay Burglar Circuit** – Terminals 3 and 4 provide a class “B” end-of-line resistor supervised delay burglar circuit. The resistor provided is a 4700 ohm ¼ watt resistor which should be placed across Terminals 3 and 4 at the most distant switch in the delay loop. This enables normally closed switches to be placed in series along the loop and normally open switches to be placed in parallel along the loop. If the loop is opened or shorted, a violated condition will result. The delay circuit enables the owner to enter the premise within a pre-set entrance time which will activate the burglar alarm output, on Terminals 1 and 2, if the control is not disarmed within the entrance time set. When the control is in the Instant Mode and the exit time has expired, the delay circuit will activate the alarm instantly when triggered.



Should the delay burglar circuit not be used, the 4700 ohm ¼ watt end-of-line resistor must be placed across Terminals 3 and 4 for proper operation.

4700 ohm ¼ watt end-of-line resistor

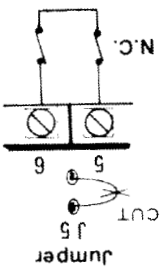
Should a class “B” end-of-line resistor circuit not be required and only normally closed switches used, wire jumper J4 may be cut and the end-of-line resistor is not required.



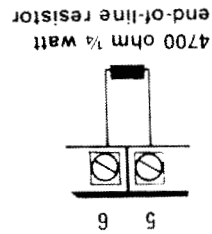
4700 ohm ¼ watt end-of-line resistor

**Terminals 5 and 6 – Instant Burglar Circuit** – Terminals 5 and 6 provide a class “B” end-of-line resistor supervised instant burglar circuit. The resistor provided is a 4700 ohm ¼ watt resistor which should be placed across Terminals 5 and 6 at the most distant switch in the instant loop. This enables normally closed switches to be placed in series along the loop and normally open switches to be placed in parallel along the loop. If the loop is opened or shorted, a violated condition will result. When the control is armed and the exit time has expired, any violation of the instant burglar circuit will result in a instant alarm condition unless certain program options have been implemented (see programming options for details).

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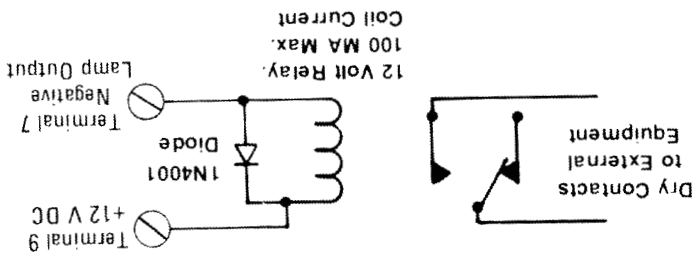
Should a class "B" end-of-line resistor may be cut and the end-of-line resistor is not required.



Should the instant burglar circuit not be used, the 4700 ohm 1/4 watt end-of-line resistor must be placed across terminals 5 and 6 for proper operation.

**Note: Auto-Shunt Of Violated Burglar Loops** — If the burglar alarm output resets and the instant or delay protective loop remains violated, the violated loop will be shunted out and the remaining, non-violated loop, will still function. When the violated loop is restored, the shunt will be removed to allow the loop to function as normal.

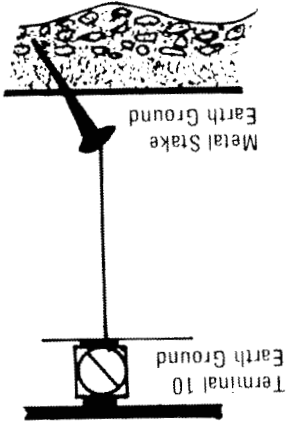
**Terminal 7** — Lamp Output (Switched negative, 100 milliamps maximum) — Terminal 7 provides a switched negative point to trigger a relay or line carrier to light a lamp or other device. The lamp output is active for 2 minutes each time a keyboard key is pressed or the control is disarmed. Upon arming the control, the lamp output is active for the exit time. Upon violating the delay circuit when entering the premise with the control armed, the lamp output will be active for the entrance time and the burglar alarm cutoff time.



**Terminal 8** — Negative Power Supply Input — The negative side of the +12 volt DC power supply should be connected to Terminal 8.

**Terminal 9** — Positive Power Supply Input — The positive side of the +12 volt DC power supply should be connected to Terminal 9.

**Terminal 10** — Earth Ground — Metal Oxide Varistor (MOV) and spark gap lightning/transient protection is utilized on the MPI-775 to protect from damaging voltage transients. In order for these components to be totally effective, Terminal 10 should be connected to a low resistance earth ground. The best possible ground would be a metal earth ground stake driven into the ground to an appropriate depth depending on local soil conditions. Contact a local licensed electrician for more information on local earth grounding conditions. Gas lines, electrical grounds, and many water pipe grounds are not recommended as an earth ground source due to poor ground characteristics, reverse ground transients, and high electrical noise.



**Note:** Under no circumstances should the negative side of the power supply be connected to earth ground. Possible circuit damage may result from reverse earth ground transients.

## 24 HOUR PANIC

A 24 Hour Panic is available by depressing keyboard buttons Star (\*) and number (#) simultaneously. The burglar alarm output and the pre-alarm output will activate. The alarm will remain active for the alarm cutoff time or until the arm/disarm code is entered into the keyboard.

## CONNECTOR J1 AND J2 HOOKUP INSTRUCTIONS

**Note:** Connector J1 and J2 are wired in parallel, therefore each pin on connector J2 corresponds to the same pin on connector J1.

The MPI-275 is a pin for pin compatible remote station to connector J2 providing a twelve (12) digit keypad, five (5) status LED's, and pre-alarm.

**Connector J2—Pin 1** — +12 Volts DC — J2—Pin 1 provides a common +12 volts DC to power remote stations.

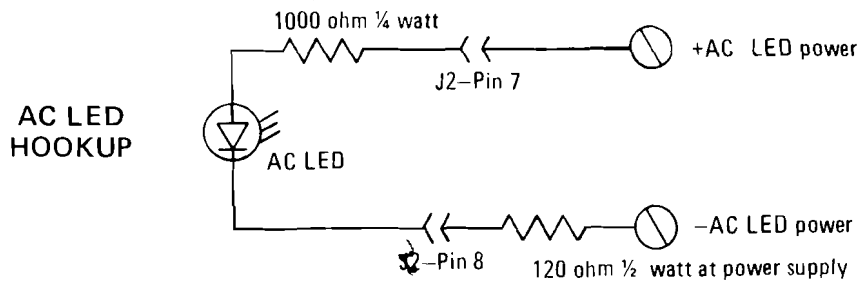
**Connector J2—Pin 2** — Pre-Alarm Output (Switched negative, 100 milliamps maximum) — J2—Pin 2 provides a switched negative pre-alarm output. The pre-alarm output is a multi-purpose output. It emits the normal pre-alarm signals, but also provides a beep, a continuous error tone and a variety of programming signals described later in the instructions. Due to the multiple signals generated from the pre-alarm output, this should not be used for a pre-alarm only output. **Note:** The pre-alarm output does not contain a series current limiting resistor. Drawing current in excess of 100 milliamps may damage the output driver transistor.

**Connector J2—Pin 3, 4, 5, 6** — Remote Keyboard Input — A remote binary keyboard such as the MPI-275 may be connected to J2—Pins 3, 4, 5, 6. This input utilizes a positive binary format. A one (1) represents +12 volts DC and zero (0) represents no input. Use the chart at right for determining the appropriate inputs.

**Connector J2—Pin 7 and 8** — AC LED — J2—Pin 7 provides the positive connection for the AC LED and J2—Pin 8 provides the negative connection for the AC LED. It is advisable to install a 120 ohm ½ watt resistor in series with the negative AC LED connection at the power supply AC LED output to guard against an intruder shorting the power supply.

J2	Pin 3	Pin 4	Pin 5	Pin 6
	D	C	B	A
No Key	0	0	0	0
Digit 1	0	0	0	1
Digit 2	0	0	1	0
Digit 3	0	0	1	1
Digit 4	0	1	0	0
Digit 5	0	1	0	1
Digit 6	0	1	1	0
Digit 7	0	1	1	1
Digit 8	1	0	0	0
Digit 9	1	0	0	1
Digit 0	1	0	1	0
Instant	1	0	1	1
Panic	1	1	1	1

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Connector J2-Pin 9 – Alarm Memory LED – J2-Pin 9 provides a switched negative output for the Alarm Memory (Violation) LED.

Note: The Alarm Memory Output does not contain a series current limiting resistor. Drawing current in excess of 100 milliamps may damage the output driver transistor.

Connector J2-Pin 10 – Armed LED – J2-Pin 10 provides a switched negative output for the Armed LED.

Note: The Armed Output does not contain a series current limiting resistor. Drawing current in excess of 100 milliamps may damage the output driver transistor.

Connector J2-Pin 11 – Circuit Status LED – J2-Pin 11 provides a switched negative output for the Circuit Status LED.

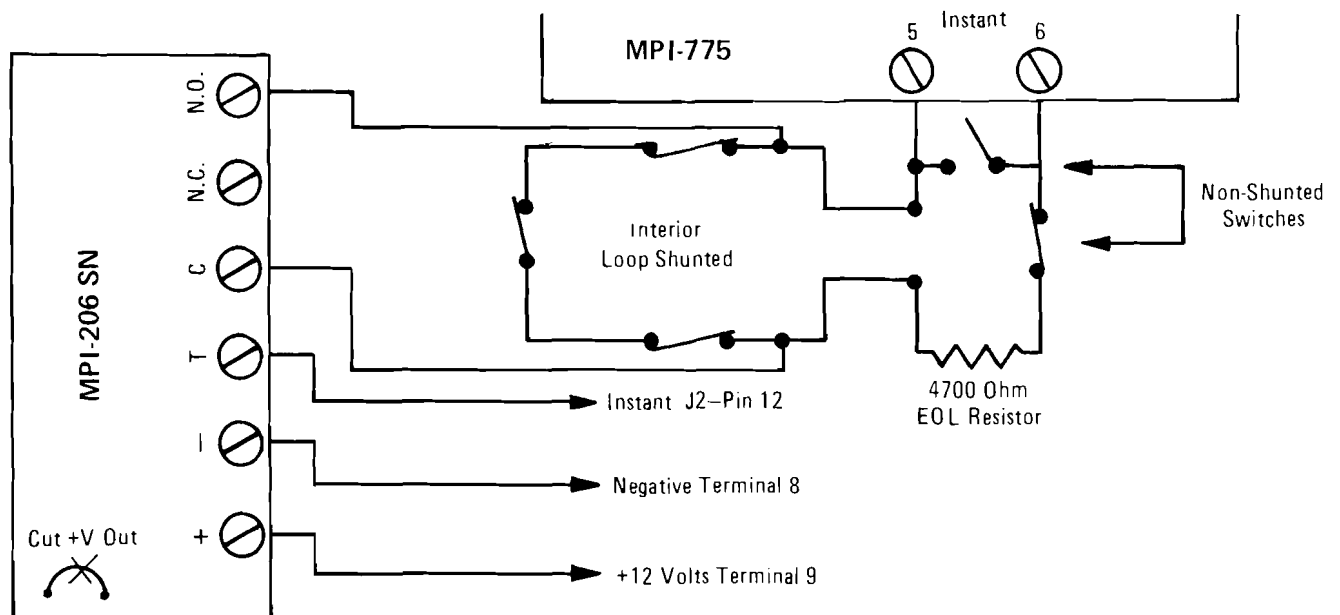
Note: The Circuit Status Output does not contain a series current limiting resistor. Drawing current in excess of 100 milliamps may damage the output driver transistor.

Connector J2-Pin 12 – Instant Mode LED – J2-Pin 12 provides a switched negative output for the Instant Mode LED.

Note: The Instant Mode Output does not contain a series current limiting resistor. Drawing current in excess of 100 milliamps may damage the output driver transistor.

A relay may be connected to this output to provide interior loop shunting when the control is in the Instant Mode of operation.

Use the following hookup to shunt interior traps when in the Instant Mode.



When control is in the Instant Mode, the MPI-206 SN is energized and the interior loop is shunted out of circuit.

## SUMMARY OF CONNECTOR J1 AND J2

Pin 1	-	(+) 12 VDC Output
Pin 2	-	(-) Pre-Alarm Output
Pin 3	-	D Keyboard Input
Pin 4	-	C Keyboard Input
Pin 5	-	B Keyboard Input
Pin 6	-	A Keyboard Input
Pin 7	-	(+) AC LED Input
Pin 8	-	(-) AC LED Input *
Pin 9	-	(-) Alarm Memory LED Output
Pin 10	-	(-) Armed LED Output
Pin 11	-	(-) Circuit Status LED Output
Pin 12	-	(-) Instant LED Output

Note: Install a 120 ohm ½ watt resistor in series with the negative (-) AC LED at the power supply to prevent shorting the negative (-) AC LED lead to (+) 12 VDC Pin 1.

## POWER UP THE CONTROL

After all circuit connections have been made, apply power to the control.

When power is first applied to the control, the Pre-Alarm (piezo resonator) will beep continuously until a keyboard key (0 to 9) is depressed for 1 second.

The MPI-775 control automatically sets certain program options on power-up as follows:

Arm/Disarm Code – 1245  
Program Code – 112456  
Exit Time – 40 Seconds  
Entrance Time – 20 Seconds  
Cutoff Time – 5 Minutes  
Loop Response Time (Instant and Delay Loops) – 40 Milliseconds  
Auxiliary Code Usage Count – 2  
Delay Before Burglar Alarm Time – 0 Seconds

If the burglar instant and delay loops are in a non-violated state (all doors and windows are closed), the Status LED on the front panel will be illuminated. Should any door or window be open, the Status LED will not be illuminated. The control cannot be armed until the Status LED is illuminated.

Note: When depressing the keyboard buttons, contact must be maintained for 1/10 second for the audible beep to occur. If the audible beep does not occur when pressing the buttons, then the control did not accept the button entry.

## **ARMING THE CONTROL**

1. Select Instant or Delay Mode of operation by depressing the Star (\*) button. The Instant LED will be illuminated in the "Instant" mode indicating the delay loop has no time delay upon entry. The "Instant" mode is normally used when going to bed at night. All burglar protective loops will activate an alarm instantly (after the exit time has expired) if an intruder attempts entry.
2. The Status LED should be illuminated (the control will not arm if the status LED is not illuminated).
3. Enter the arm/disarm code (power-up arm/disarm code is 1245).

The pre-alarm (piezo resonator) will beep 6 times and the Armed LED will illuminate when the control arms or a 2 second continuous error tone will sound if the control is unable to arm. The arm/disarm entry code must be completed within 7 seconds, else a 2 second continuous error tone will sound and all arm/disarm keyboard entries entered to that point will be erased.

## **DISARMING THE CONTROL**

Enter the arm/disarm code (power-up arm/disarm code is 1245). The pre-alarm (piezo resonator) will beep 2 times and the Armed LED will go out when the control disarms. The arm/disarm code must be completed within 7 seconds, else a 2 second error tone will sound and all arm/disarm keyboard entries entered to that point will be erased.

## **RESETTING KEYBOARD ERRORS**

If an error is made while entering the arm/disarm code, the wrong entry can be corrected by:

1. Waiting 7 seconds for the keyboard timer to run out. A 2 second continuous error tone will sound at the end of the 7 second keyboard timeout and all keyboard entries entered to that point will be erased.
2. Depress the Star (\*) button. If the control is disarmed, the Star (\*) button must be depressed twice to return to the desired instant or delay mode.

## **PROGRAMMING THE CONTROL**

1. With the control disarmed, key in the program code combination (power-up program code is 112456). The Pre-Alarm (piezo resonator) will beep 4 times indicating the control is now in the program mode.
2. Select the program option as described below. After entering the program option, enter the program option numbers as needed with each option. When the program option numbers have been entered, the control will automatically revert back to the regular running mode of operation.

**Note:** Write down exactly what keyboard entries will be entered before entering the program mode. There is a 7 second timer that is activated after entering the first digit of the option numbers. If programming is not completed within the 7 second time interval, a 2 second continuous error tone will sound and the control will revert back to the regular running mode of operation. The program code must be re-entered after each program option is completed in order to program another option.

## PROGRAMMING OPTIONS

0. Return to regular running mode of operation.
1. Set exit time in seconds (3 keyboard digits).  
 Example: 023 = 23 seconds  
           005 = 5 seconds  
           255 = 255 seconds  
 Operating Range = 1 to 255 seconds (Do not make an entry out of this range).
2. Set entrance time in seconds (3 keyboard digits as in option 1 above).
3. Set burglar and panic cutoff time in minutes (3 keyboard digits as in option 1 above).  
 If 000 is entered, the alarm will not cutoff until disarmed with the keypad.
4. Set delay before burglar alarm time in seconds (3 keyboard digits as in option 1 above).  
 000 = No Delay

This option sets a delay before the burglar alarm output activates. It is used to cut down on the customer caused false alarms sent to a central station.

5. Set main keyboard arm/disarm code (6 keyboard digits required).

Example: 100000 = 1 arm/disarm code  
           123000 = 123 arm/disarm code  
           654021 = 654021 arm/disarm code.

Total code combinations with 10 digits = 900,000.

Note: Trailing 0's must be added during programming to complete a code shorter than 6 digits as in the example above. Therefore, 0 cannot be used as the last digit in an arm/disarm code. Example: 1230 cannot be used as an arm/disarm code because the final digit is a 0.

The arm/disarm code length may be between 1 to 6 digits in length and the numbers used may repeat. Example: 111233.

6. Set new program code (6 keyboard digits as in option 5 above).

This option allows the changing of the program access code. It is recommended to use a 6 digit code.

The program code can be set to the same number as the arm/disarm code should the installer not want the end user to have access to the program mode. If this is done and access to the program mode is desired, all power must be removed from the control so that the control can reset as in initial power-up.

7. Set auxiliary arm/disarm code (6 keyboard digits as in option 5 above, except do not use a number starting in zero).

The auxiliary arm/disarm code allows the owner to give out an arm/disarm code to someone like the maid, gardner, or repair man. When the code has been used the number of times set in program Option 95, the code is erased and will not arm or disarm the control. Upon power-up, the auxiliary arm/disarm usage count (Option 95) is set for 2 usages before being erased. The usage count should be set before the auxiliary arm/disarm code is set for proper operation.

8. Loop test (pre-alarm will beep continuously if any burglar loop is violated), press any keyboard key (0 to 9) to return to the regular operating mode.

This option is used to trouble shoot the protective loops with one person.

91. Set instant loop response time in 20 millisecond increments (3 keyboard digits required).

Example: 001 = 20 milliseconds loop response  
002 = 40 milliseconds loop response  
003 = 60 milliseconds loop response  
015 = 300 milliseconds loop response

Range: 001 to 015 (20 to 300 milliseconds)  
Power-up default value – 40 milliseconds.

**Note:** The loop response time is the amount of time a switch must remain violated before the control will acknowledge it as a valid alarm. The longer the loop response time, the fewer false alarms that will be generated from loose switches or window foil. Vibration contacts and some glass break detectors require pulse extenders for proper operation.

92. Set delay loop response time in 20 millisecond increments (3 keyboard digits required as in Option 91 above.)

93. Set/reset “shunt instant loop if delay loop is violated first” (3 keyboard digits required).

111 = Activate option.

000 = De-activate option.

On power-up this option is de-activated.

When entering the premise, if the delay door is not opened first, the instant loop will activate the burglar alarm as normal. If the delay door is opened first, the instant loop is shunted and will not cause an instant burglar alarm. However, the burglar alarm channel is triggered by the delay door and will activate the burglar alarm at the end of the entrance time if the control is not disarmed. During the exit time all loops (instant and delay) are shunted.

This option allows motion detectors to be installed on the instant loop to protect areas that would otherwise activate the burglar alarm when entering the delay door. Delay doors are normally the main doors used then entering or leaving the house such as kitchen or garage doors.

94. Set/reset circuit status monitor (3 keyboard digits required).

111 = Activate option.

000 = De-activate option.

On power-up the option is de-activated.

This option beeps the pre-alarm each time the circuit status LED goes out. It may be used as an annunciator or entry warning when the control is disarmed.

95. Set auxiliary arm/disarm usage count (3 keyboard digits required).

Example: 001 = 1 use before code erasure.

009 = 9 usages before code erasure.

Range – 001 to 009 (1 to 9 code usages before code erasure).

On power-up the usage count is set for 2 code usages before the auxiliary arm/disarm code is erased.

This option enables the user to program a set number of code usages in which the auxiliary arm/disarm code may be used before it is erased. The usage count should be set before the auxiliary arm/disarm code is set for proper operation. The usage count number will not be erased and need not be re-programmed each time the auxiliary arm/disarm code is re-programmed.

## PROGRAMMING EXAMPLES

MPI-775

### Programming Example A: Change exit time to 45 seconds.

1. Enter program code – 112456 (default program code). Four (4) beeps indicates entering program mode.
2. Select exit time option – 1. Three (3) beeps indicates option accepted.
3. Enter 45 seconds with 3 keyboard entries – 045. Three (3) beeps indicates return to regular running mode of operation.

### Programming Example B: Change arm/disarm code to 1144.

1. Enter program code – 112456 (default program code). Four (4) beeps indicates entering program mode.
2. Select main keyboard arm/disarm code change Option – 5. Three (3) beeps indicates option accepted.
3. Enter new arm/disarm code with 6 keyboard entries – 114400. Three (3) beeps indicates return to regular running mode of operation.

### Programming Examples For Each Type Of Programming

Each example shows the program code a 112456, the program option, and the programming entries for the particular option.

1. Set exit time to 30 seconds.  
112456      1      030
2. Set entrance time to 120 seconds.  
112456      2      120
3. Set alarm cutoff time to 18 minutes.  
112456      3      018
4. Set delay before burglar alarm time to 200 seconds.  
112456      4      200
5. Set main keyboard arm/disarm code to 531.  
112456      5      531000
6. Set program code to 553214.  
112456      6      553214

**Note:** To access the program mode after executing Option 6 above, 553214 should be substituted for the power-up program code of 112456.

7. Set auxiliary arm/disarm code to 21.  
112456      7      210000
8. Activate loop test.  
112456      8

Depress any keyboard button (0 to 9) to end loop test.

- 91. Set instant loop response time to 300 milliseconds.  
112456      91      015
- 92. Set delay loop response time to 20 milliseconds.  
112456      92      001
- 93. Set "Shunt instant loop if delay loop is violated first".  
112456      93      111
- 94. Set circuit status monitor.  
112456      94      111
- 95. Set auxiliary arm/disarm code usage count to 7 usages.  
112456      95      007

## TROUBLE SHOOTING SUGGESTIONS

- 1. Piezo resonator does not beep upon initial power-up.
  - A. Check for proper input voltage on Terminals 8 and 9.
  - B. Piezo Resonator possibly defective. Check pre-alarm output operation with external piezo resonator such as a Moose Products MA-2. Replace circuit board if defective.
- 2. No Status LED.
  - A. Instant and/or delay loop violated. Check voltage across Terminals 3 and 4 and Terminals 5 and 6. The voltage should read between 5 and 9 volts. The protective loop is violated if the Voltage across Terminals 3 and 4 and Terminals 5 and 6 is not between 5 and 9 volts.
  - B. Instant or delay loop is unused and no end-of-line resistor has been placed across the unused protective loop terminals.
- 3. Unable to Arm Control.
  - A. Instant or delay loop violated. Status LED must be illuminated before control will arm.
  - B. Arm/Disarm code has been changed. If program code is unknown, disconnect all power and re-program arm/disarm code from an initial power-up condition.
- 4. No Alarm Output.
  - A. Control not armed.
  - B. Relay contacts dirty. If an audible relay click can be heard when the alarm is triggered, the relay contacts could be dirty. Replace the circuit board. The relay contacts are not field cleanable.
  - C. Printed circuit foil may have been burnt into by a short circuit. Replace board or solder a wire across burnt printed circuit foil if found.
- 5. Control does not function properly according to options programmed into it.
  - A. Improper programming. Re-program options or disconnect all power from the control and start over from an initial power-up condition.