



MR-2312-S

SMART RELAY MODULE

Installation Manual

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1.0 Introduction

The Model MR-2312-S Smart Relay Module provides twelve supervised configurable relays and comes complete with a white MR-2312-SW12 or red enclosure MR-2312-SR12.

2.0 Mechanical Installation

To mount the MR-2312-S open the front door, and mount the backbox to the wall using the four screws provided. This enclosure may also be mounted to a 4" square electrical box. There are two conduit areas provided at the bottom of the enclosure.

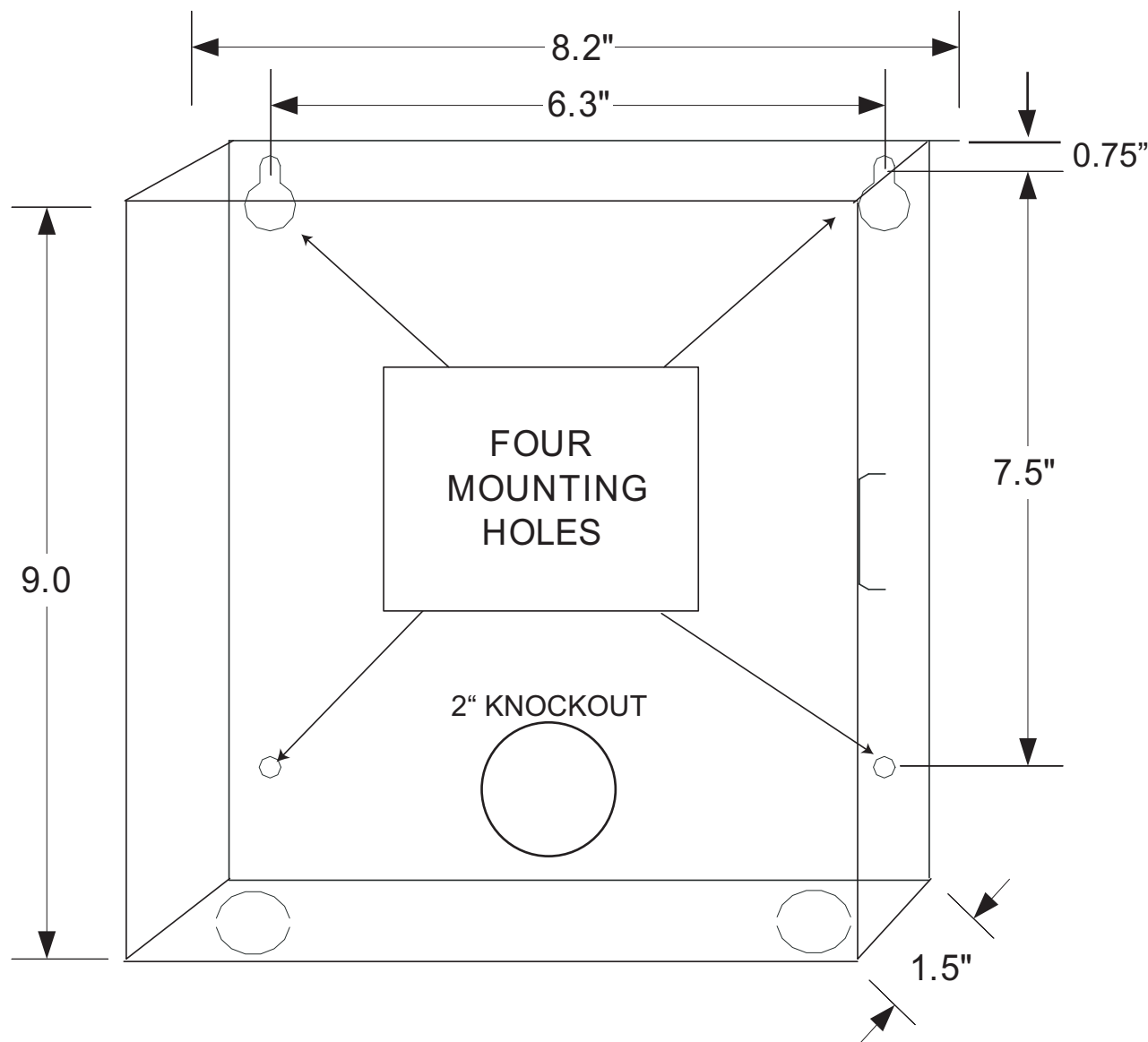
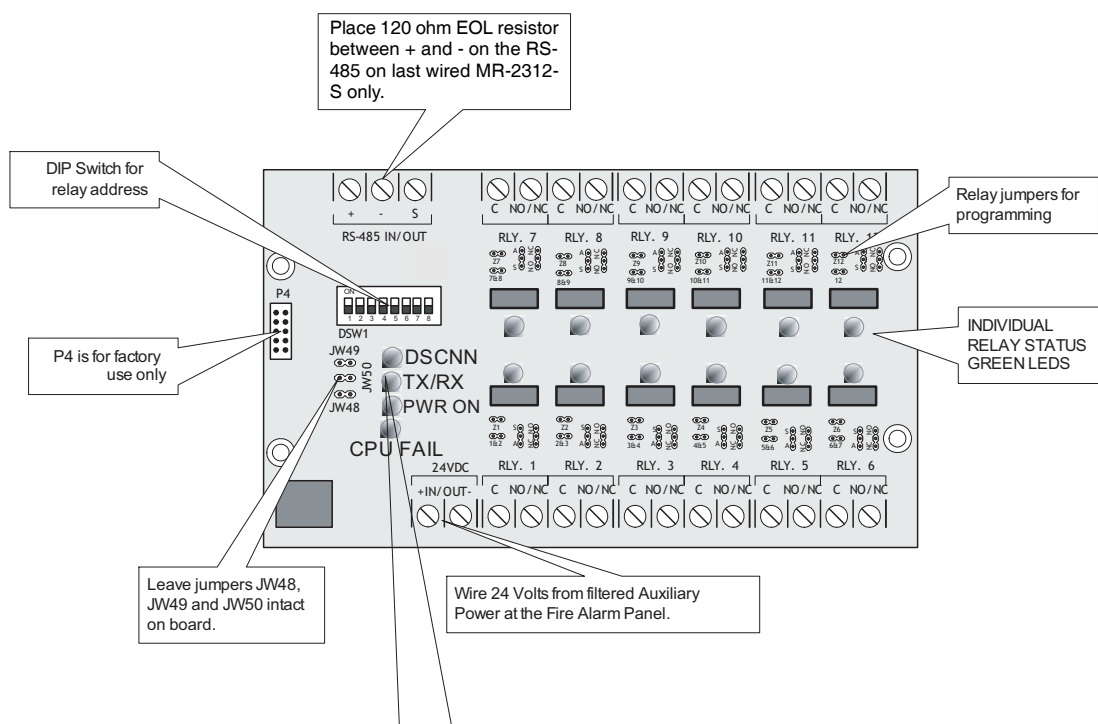


Figure 1 MR-2312-S Mounting Dimensions



LEDs:

DSCNN - if enabled (via DIP switch DSW1-4), this LED illuminates steadily (amber) when auxiliary disconnect is activated at the Fire Alarm Panel.

TX/RX - transmit/receive LED flashes (green as long as there is communication with the Fire Alarm Panel.

PWR ON - illuminates steadily (green) as long as there is power to the relay board.

CPU FAIL - will illuminate steadily (amber) when CPU fails at the Fire Alarm Panel.

Figure 2 MR-2312-S Board Layout

3.1 Jumpers

Table 1 Jumper Settings

Jumper	Jumper Function
JW48	FACTORY USE ONLY (JUMPER INSTALLED)
JW49	FACTORY USE ONLY (JUMPER INSTALLED)
JW50	FACTORY USE ONLY (JUMPER INSTALLED)

3.2 DIP Switches



Attention: Dip Switch DSW 1-6, DSW 1-7 and DSW 1-8 are always to be set to OFF.

There is one bank of DIP switches to be set. DSW1 is found at the top left hand corner and is used to select the smart relay address. Valid addresses are 1 to 6 inclusive. DIP switches 6 to 8 are not used. Set address as shown in 3.2.1 Dip Switch DSW1-1 to 1-3.

3.2.1 Dip Switch DSW1-1 to 1-3

Table 2 MR-2312-S DIP Switch Address Setup

Address	DSW1-1	DSW1-2	DSW1-3
1	ON	OFF	OFF
2	OFF	ON	OFF
3	OFF	ON	ON
4	ON	OFF	OFF
5	ON	OFF	ON
6	ON	ON	OFF

3.2.2 Dip Switch DSW1-4

Used to disable the Auxiliary Disconnect function from the MR-2300 Series Fire Alarm Panel.

Table 3 Enable or Disable Auxiliary Disconnect Function

DSW1-4 Position	Function
ON	Enable auxiliary disconnect function from the MR-2300 Series fire alarm panel.
OFF	Disable auxiliary disconnect function from the MR-2300 Series fire alarm panel (Aux. disconnect will not disconnect these twelve relays). This is the default setting. The DSCNN (Aux Disconnect) LED is not active when Aux Disconnect is active on the MR-2300 Series Fire Alarm Control Panel in this mode.

3.2.3 Dip Switch DSW1-5 (MR-2320 only)

Used to enable added support for hazard zone message for the MR-2320. This option is enabled by putting DSW1-5 to the “ON” position. When this option is enabled, relay 1 to 6 will show the status for Hazard Area 1 and Hazard Area 2 as shown in the table below.

Table 4 Enabled MR-2320 Hazard Area Status Description

Hazard Area 1			Hazard Area 2		
RLY1	RLY2	RLY3	RLY4	RLY5	RLY6
Alert	Alarm	Release	Alert	Alarm	Release

3.2.4 Dip Switch DSW1-6

Always set to OFF.

3.2.5 Dip Switch DSW1-7

Always set to OFF.

3.2.6 Dip Switch DSW1-8

Always set to OFF.

4.0 Configuration of the Relays

The twelve Relays may be configured to operate alone or in combination with other relays on the board. This configuration is accomplished by jumper selection on the Smart Relay module. The following illustration explains how the relays are configured.

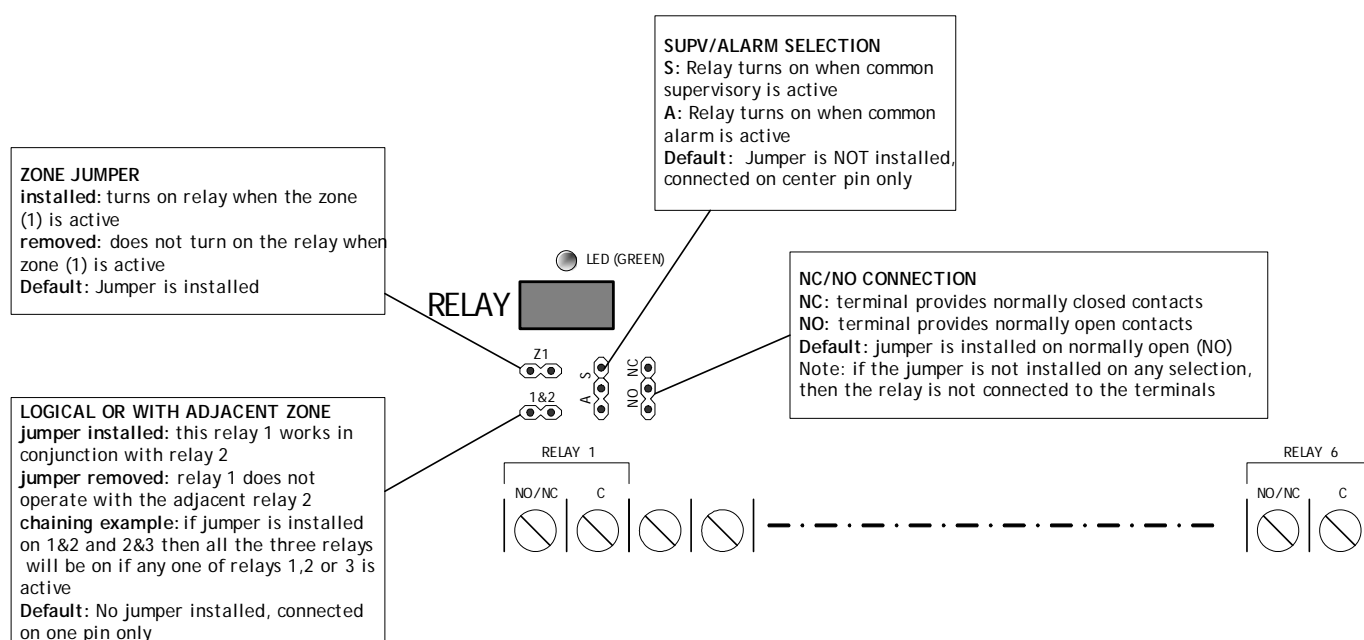


Figure 3 Relay Configuration

5.0 Wiring

Wire from the last MR-2312-S to the next MR-2312-S and so on; then from the first MR-2312-S to the Fire Alarm Panel. There are only two connections to be made, one for power and one for the RS-485 loop.



Note: Ensure that the 120 E.O.L. resistor is connected to the RS-485 positive and negative terminals on the last SRM-312.

The **RS-485 Wiring** to the MR-2312-S is recommended to be *Twisted Shielded Pair*. The wire gauge may be:

- 22 AWG up to 2000 ft.
- 20 AWG up to 4000 ft.

The 24V DC field wiring needs to be of an appropriate gauge for the number of smart relays and the total wiring run length. See *Current Drain for Battery Calculations*, page 9 and calculate the *Maximum* current for all smart relays summed together.



Note: All circuits are power limited and must use type FPL, FPLR or FPLP Power Limited Cable.



Caution: Accidentally connecting any of the 24V DC wires to the RS-485 wiring will result in damage to the Annunciator and/or to the Fire Alarm Control Panel to which it is connected.

Table 5 Wiring Table

Total Maximum Current	MAXIMUM WIRING RUN TO LAST SMART RELAY								MAX. LOOP RESISTANCE
	18AWG		16AWG		14AWG		12AWG		
Amperes	ft	m	ft	m	ft	m	ft	m	Ohms
0.06	2350	716	3750	1143	6000	1829	8500	2591	30
0.12	1180	360	1850	567	3000	915	4250	1296	15
0.30	470	143	750	229	1200	366	1900	579	6
0.60	235	71	375	114	600	183	850	259	3
0.90	156	47	250	76	400	122	570	174	2
1.20	118	36	185	56	300	91	425	129	1.5
1.50	94	29	150	46	240	73	343	105	1.2
1.70	78	24	125	38	200	61	285	87	1.0

6.0 Specifications & Features

6.1 Enclosure

- Enclosure may be mounted on a 4" square Electrical Box or on a wall.

6.2 Electrical Specifications

- 24 VDC nominal voltage.
- Common LEDs DISCNN (Aux. Disconnect), TX/RX (Transmit/Receive), PWR ON, CPU FAIL and individual relay status LED indicators.
- 28V DC, 1A maximum per contact (resistive load)
- 12 programmable relays available.
- Not Expandable.
- Standby 30 mA Max., Alarm 140 mA Max. All LEDs illuminated 140 mA Max.

6.3 Current Drain for Battery Calculations

The maximum normal current drain will be during Lamp Test when all lamps are illuminated on one chassis at a time. Thus the currents are:

Normal Standby = 30 mA

Maximum = 140mA

The **Normal Standby Current** is used for Battery Size Calculations (see the MR-2300 or MR-2320 Series Fire Alarm Control Panel manual for battery calculations) and includes the current drain for the common LEDs. The **Maximum Current** is used to calculate the wire size (see **Wiring** section above).

7.0 Warranty and Warning Information

7.1 Warning Please Read Carefully



Note: This equipment is subject to terms and conditions of sale as follows

7.2 Note to Installers

This warning contains vital information. As the only individual in contact with system users, it is your responsibility to bring each item in this warning to the attention of the users of this system. Failure to properly inform system end-users of the circumstances in which the system might fail may result in over-reliance upon the system. As a result, it is imperative that you properly inform each customer for whom you install the system of the possible forms of failure.

7.3 System Failures

This system has been carefully designed to be as effective as possible. There are circumstances, such as fire or other types of emergencies where it may not provide protection. Alarm systems of any type may be compromised deliberately or may fail to operate as expected for a variety of reasons. Some reasons for system failure include:

7.3.1 Inadequate Installation

A Fire Alarm system must be installed in accordance with all the applicable codes and standards in order to provide adequate protection. An inspection and approval of the initial installation, or, after any changes to the system, must be conducted by the Local Authority Having Jurisdiction. Such inspections ensure installation has been carried out properly.

7.3.2 Power Failure

Control units, smoke detectors and many other connected devices require an adequate power supply for proper operation. If the system or any device connected to the system operates from batteries, it is possible for the batteries to fail. Even if the batteries have not failed, they must be fully charged, in good condition and installed correctly. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage electronic equipment such as a fire alarm system. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

7.3.3 Failure of Replaceable Batteries

Systems with wireless transmitters have been designed to provide several years of battery life under normal conditions. The expected battery life is a function of the device environment, usage and type. Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. While each transmitting device has a low battery monitor which identifies when the batteries need to be replaced, this monitor

may fail to operate as expected. Regular testing and maintenance will keep the system in good operating condition.

7.3.4 Compromise of Radio Frequency (Wireless) Devices

Signals may not reach the receiver under all circumstances which could include metal objects placed on or near the radio path or deliberate jamming or other inadvertent radio signal interference.

7.3.5 System Users

A user may not be able to operate a panic or emergency switch possibly due to permanent or temporary physical disability, inability to reach the device in time, or unfamiliarity with the correct operation. It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm.

7.3.6 Automatic Alarm Initiating Devices

Smoke detectors, heat detectors and other alarm initiating devices that are a part of this system may not properly detect a fire condition or signal the control panel to alert occupants of a fire condition for a number of reasons, such as: the smoke detectors or heat detector may have been improperly installed or positioned; smoke or heat may not be able to reach the alarm initiating device, such as when the fire is in a chimney, walls or roofs, or on the other side of closed doors; and, smoke and heat detectors may not detect smoke or heat from fires on another level of the residence or building.

7.3.7 Software

Most Secutron Inc. products contain software. With respect to those products, Secutron Inc. does not warranty that the operation of the software will be uninterrupted or error-free or that the software will meet any other standard of performance, or that the functions or performance of the software will meet the user's requirements. Secutron Inc. shall not be liable for any delays, breakdowns, interruptions, loss, destruction, alteration or other problems in the use of a product arising out of, or caused by, the software.

Every fire is different in the amount and rate at which smoke and heat are generated. Smoke detectors cannot sense all types of fires equally well. Smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches or arson.

Even if the smoke detector or heat detector operates as intended, there may be circumstances when there is insufficient warning to allow all occupants to escape in time to avoid injury or death.

7.3.8 Alarm Notification Appliances

Alarm Notification Appliances such as sirens, bells, horns, or strobes may not warn people or waken someone sleeping if there is an intervening wall or door. If notification appliances are located on a different level of the residence or premise, then it is less likely that the occupants will be alerted or awakened. Audible notification appliances may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners or other appliances, or passing traffic. Audible notification appliances, however loud, may not be heard by a hearing-impaired person.

7.3.9 Telephone Lines

If telephone lines are used to transmit alarms, they may be out of service or busy for certain periods of time. Also the telephone lines may be compromised by such things as criminal tampering, local construction, storms or earthquakes.

7.3.10 Insufficient Time

There may be circumstances when the system will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time enough to protect the occupants or their belongings.

7.3.11 Component Failure

Although every effort has been made to make this system as reliable as possible, the system may fail to function as intended due to the failure of a component.

7.3.12 Inadequate Testing

Most problems that would prevent an alarm system from operating as intended can be discovered by regular testing and maintenance. The complete system should be tested as required by national standards and the Local Authority Having Jurisdiction and immediately after a fire, storm, earthquake, accident, or any kind of construction activity inside or outside the premises. The testing should include all sensing devices, keypads, consoles, alarm indicating devices and any other operational devices that are part of the system.

7.3.13 Security and Insurance

Regardless of its capabilities, an alarm system is not a substitute for property or life insurance. An alarm system also is not a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation.

IMPORTANT NOTE: End-users of the system must take care to ensure that the system, batteries, telephone lines, etc. are tested and examined on a regular basis to ensure the minimization of system failure.

7.4 Limited Warranty

Secutron Inc. together with its affiliates (collectively, the “Mircom Group of Companies”) warrants the original purchaser that for a period of three years from the date of shipment, the product shall be free of defects in materials and workmanship under normal use. During the warranty period, Secutron Inc. shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labor and materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The original owner must promptly notify Secutron Inc. in writing that there is defect in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period.

7.4.1 International Warranty

The warranty for international customers is the same as for any customer within Canada and the United States, with the exception that Secutron Inc. shall not be responsible for any customs fees, taxes, or VAT that may be due.

7.4.2 Conditions to Void Warranty

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover:

- damage incurred in shipping or handling;
- damage caused by disaster such as fire, flood, wind, earthquake or lightning;
- damage due to causes beyond the control of Secutron Inc. such as excessive voltage, mechanical shock or water damage;
- damage caused by unauthorized attachment, alterations, modifications or foreign objects;
- damage caused by peripherals (unless such peripherals were supplied by Secutron Inc.);
- defects caused by failure to provide a suitable installation environment for the products;
- damage caused by use of the products for purposes other than those for which it was designed;
- damage from improper maintenance;
- damage arising out of any other abuse, mishandling or improper application of the products.

7.5 Warranty Procedure

To obtain service under this warranty, please return the item(s) in question to the point of purchase. All authorized distributors and dealers have a warranty program. Anyone returning goods to Secutron Inc. must first obtain an authorization number. Secutron Inc. will not accept any shipment whatsoever for which prior authorization has not been obtained. NOTE: Unless specific pre-authorization in writing is obtained from Secutron Inc. management, no credits will be issued for custom fabricated products or parts or for complete fire alarm system. Secutron Inc. will at its sole option, repair or replace parts under warranty. Advance replacements for such items must be purchased.

Note: Secutron Inc.'s liability for failure to repair the product under this warranty after a reasonable number of attempts will be limited to a replacement of the product, as the exclusive remedy for breach of warranty.

7.6 Disclaimer of Warranties

This warranty contains the entire warranty and shall be in lieu of any and all other warranties, whether expressed or implied (including all implied warranties of merchantability or fitness for a particular purpose) And of all other obligations or liabilities on the part of Secutron Inc. neither assumes nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

This disclaimer of warranties and limited warranty are governed by the laws of the province of Ontario, Canada.

7.7 Out of Warranty Repairs

Secutron Inc. will at its option repair or replace out-of-warranty products which are returned to its factory according to the following conditions. Anyone returning goods to Secutron Inc. must first obtain an authorization number. Secutron Inc. will not accept any shipment whatsoever for which prior authorization has not been obtained.

Products which Secutron Inc. determines to be repairable will be repaired and returned. A set fee which Secutron Inc. has predetermined and which may be revised from time to time, will be charged for each unit repaired.

Products which Secutron Inc. determines not to be repairable will be replaced by the nearest equivalent product available at that time. The current market price of the replacement product will be charged for each replacement unit.

The preceding information is accurate as of the date of publishing and is subject to change or revision without prior notice at the sole discretion of the Company.

WARNING: Secutron Inc. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

NOTE: Under no circumstances shall Secutron Inc. be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability, or any other legal theory. Such damages include, but are not limited to, loss of profits, loss of the product or any associated equipment, cost of capital, cost of substitute or replacement equipment, facilities or services, down time, purchaser's time, the claims of third parties, including customers, and injury to property.

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