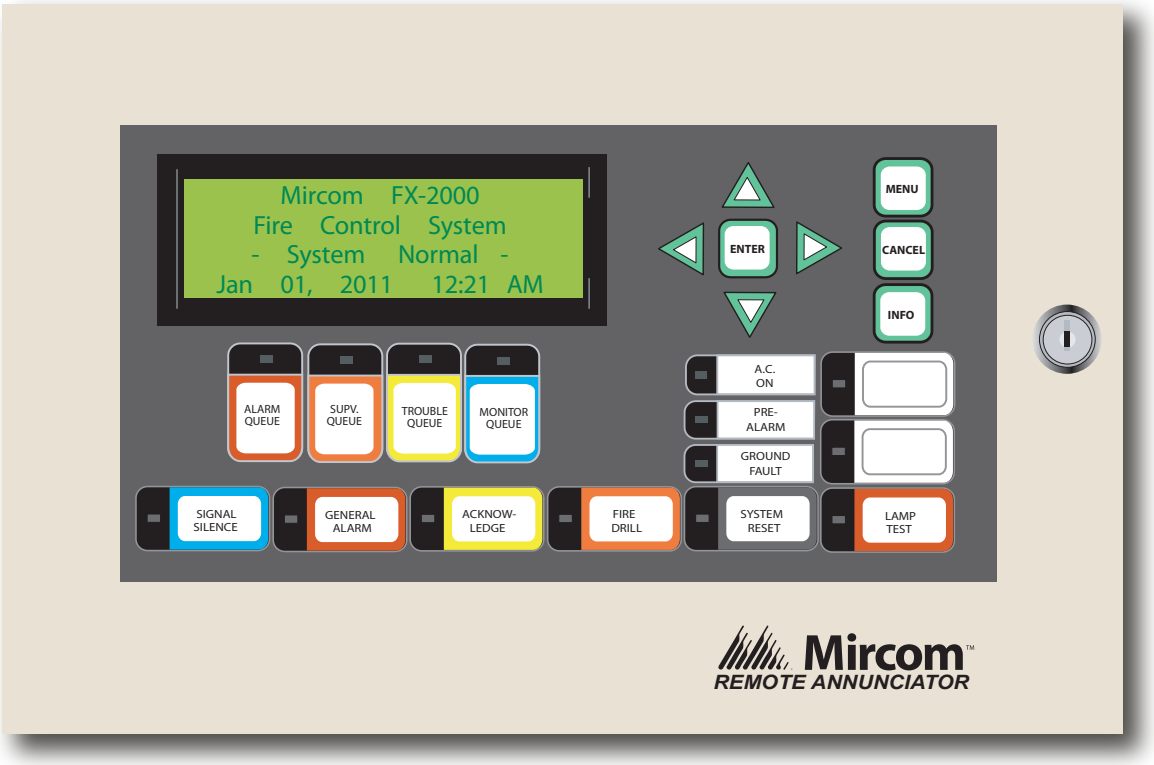
RAX-LCD

Remote FX-2000 Annunciator Panel



Installation and Wiring Manual

LT-856 Rev. 7.1
November 2011

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1.0 Introduction

Mircom's FX-2000's remote shared display is the RAX-LCD. The RAX-LCD shared display provides an exact replica (less 16 zone LEDs) of the main FX-2000 Fire Alarm Panel display at a remote location. It is equipped with a large 4 line x 20 character back-lit alphanumeric LCD display that uses a simple menu system complete with a directional keypad and switches for Enter, Menu Cancel and Info. The display expands with up to a total of four RAX-1048TZ Adder Annunciator or six IPS-2424 Programmable Input Switches Modules. There are five types of enclosure available: the BB-1001, BB-1002, BB-1003, BB-1008, and BB-1012 which can take 1,2,3,8,12 chassis respectively. It may also be mounted in the BB-5008 and the BB-5014.

1.1 Contact Us

For General Inquiries, Customer Service and Technical Support you can contact us Monday to Friday 8:00 A.M. to 5:00 P.M. E.S.T.

1.1.1 General Inquiries

Toll Free	1-888-660-4655 (North America Only)
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Email	mail@mircom.com

1.1.2 Customer Service

Toll Free	1-888-MIRCOM5 (North America Only)
Local	905-695-3535
Toll Free Fax	1-888-660-4113 (North America Only)
Local Fax	905-660-4113
Email	salessupport@mircom.com

1.1.3 Technical Support

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	888-647-2665
International	905-647-2665
Email	techsupport@mircom.com

1.1.4 Website

www.mircom.com

2.0 Installation Instructions

Table 1 Backboxes

Backbox	Height H (in.)	Mounting A (in.)	Mounting B (in.)
BB-1001	9.0”	9.95”	7.5”
BB-1002	18.0”	9.95”	16.5”
BB-1003	26.5”	9.95”	24.9”
BB-1008	33.0”	20.9”	35.2”
BB-1012	45.0”	20.9”	52.0”

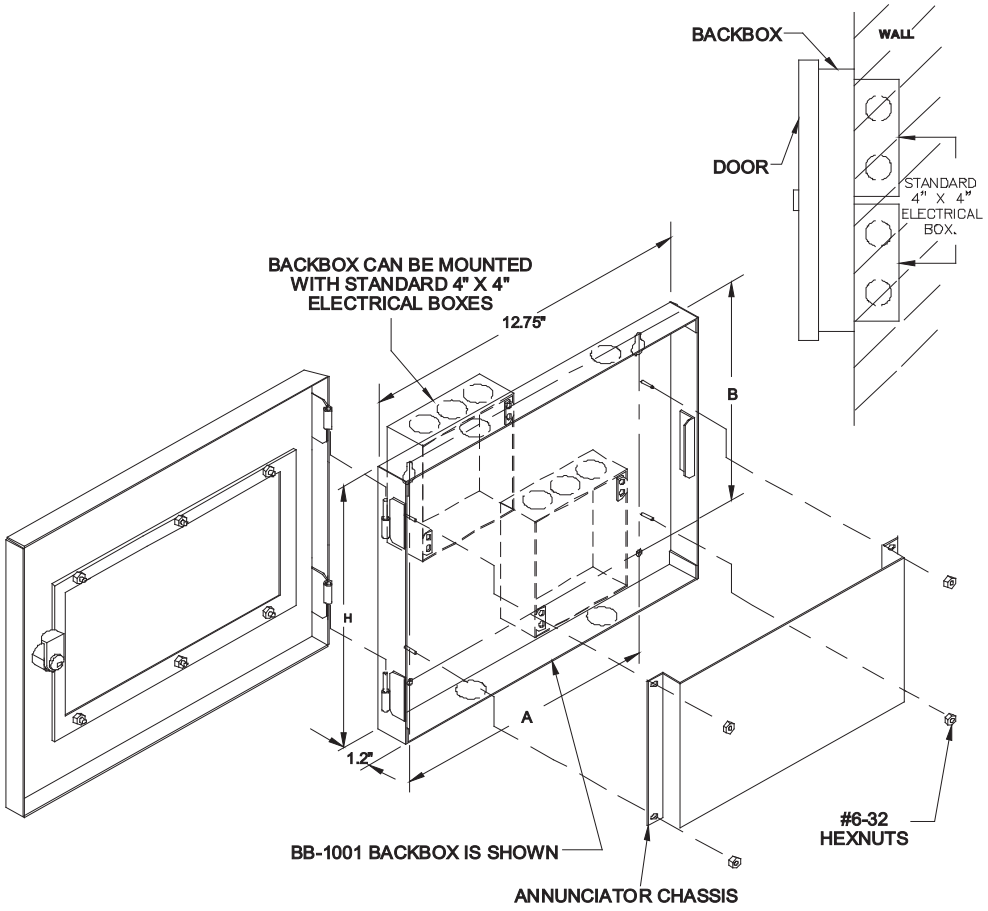


Figure 1 Mechanical Assembly Diagram

The RAX-1048 is supplied with the NP-681 Blank Laser Printable Label Sheet.

Note: The RAX-1048 normally displays Initiating circuit status (no individual circuit troubles); however, model RAX-1048TZ will allow individual circuit trouble indication as well. Indicating and relay circuits are not remotely displayed. For more details, see the fire alarm control panel manual that the annunciator is connected to.

3.0 Wiring Instructions

The RS-485 wiring to the RAX-LCD Display Module is recommended to be twisted shielded pair as shown in the diagram to the right. The wire gauge may be:

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

The RS-485 wiring from the fire alarm control panel to the annunciator(s) must be point-to-point from the fire alarm panel to the first annunciator, then to the next annunciator, and so on. No star wiring or T-tapping is allowed. Each RAX-LCD Shared Display has a 120 ohm end-of-line resistor on its RS-485 output terminals. This is removed on all except the last wired module.

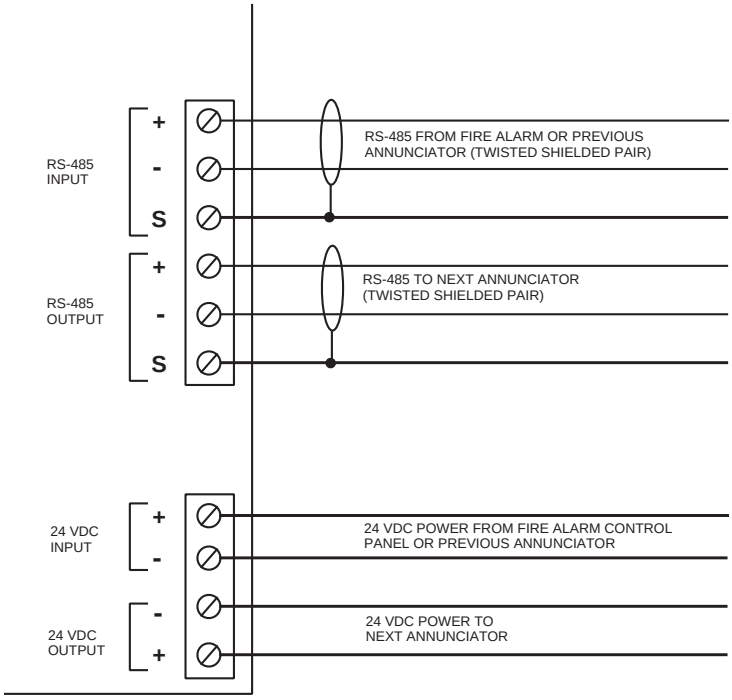


Figure 2 Wiring Diagram

The 24 VDC field wiring needs to be of an appropriate gauge for the number of annunciators and the total wiring run length. Use the *Current Drain for Battery Calculations* on page 16 to calculate the maximum current for all annunciators summed together.

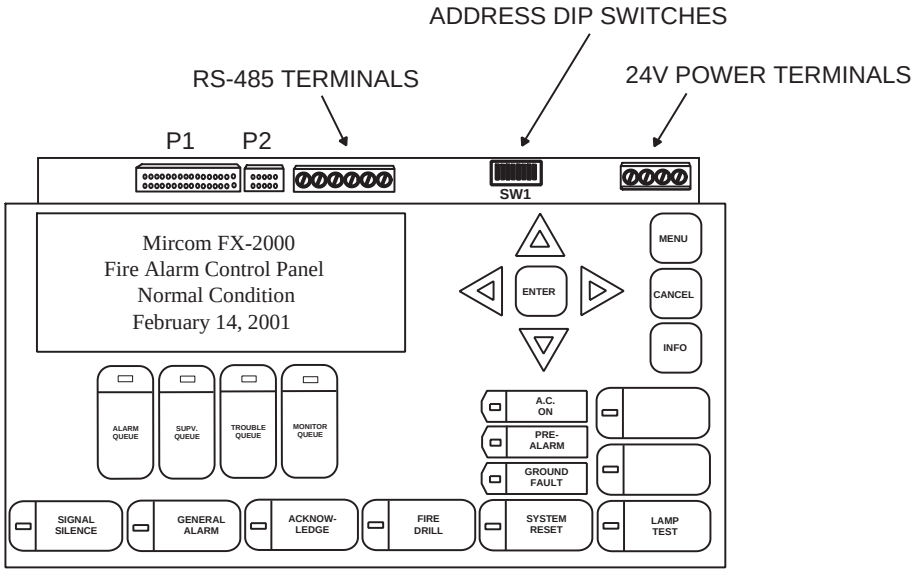


Figure 3 Annunciator Panel Connections

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

Attention: **Accidentally connecting any of the 24 VDC 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 2 Maximum Wiring Run to Last Annunciator

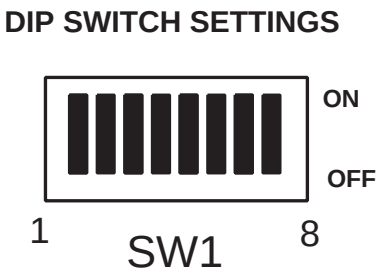
Max for all Annunciators	18AWG		16AWG		14AWG		12AWG		Max Loop Resistance
Amperes	ft	m	ft	m	ft	m	ft	m	Ohms
0.12	1180	360	1850	567	3000	915	4250	1296	15
0.30	470	143	750	229	1200	366	1900	579	6
0.60	235	71	375	114	600	183	850	259	3
0.90	156	47	250	76	400	122	570	174	2
1.20	118	36	185	56	300	91	425	129	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

4.0 DIP Switch Settings

Each RAX-LCD Shared Display Annunciator needs to be assigned a unique address via the switch SW1.

The RAX-LCD DIP switches are set as:

SW1-1	=	Address A0
SW1-2	=	Address A1
SW1-3	=	Address A2
SW1-4	=	Address A3
SW1-5	=	Address A4
SW1-6	=	Address A5(OFF)
SW1-7	=	not used
SW1-8	=	Put in “OFF” position for firmware restore during power up. At all other times put in “ON” state.



DIP switches are for assigning an address to the RAX-LCD. Binary addresses 33 to 63 are available with the least significant bit being switch SW-1 and the most significant bit being SW-6. The OFF setting is active binary. DIP switches SW1-7 and SW1-8 are not used. For example, address 33 is set by setting SW1-6 and SW1-1 OFF and all the other DIP switches are ON.

The OFF setting is active. The addresses available for the RAX-LCD are 33 to 63. Set the address as follows in the table below:

Table 3 Annunciator "Address" Settings

Address	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	Address	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5
33	OFF	ON	ON	ON	ON	49	OFF	ON	ON	ON	OFF
34	ON	OFF	ON	ON	ON	50	ON	OFF	ON	ON	OFF
35	OFF	OFF	ON	ON	ON	51	OFF	OFF	ON	ON	OFF
36	ON	ON	OFF	ON	ON	52	ON	ON	OFF	ON	OFF
37	OFF	ON	OFF	ON	ON	53	OFF	ON	OFF	ON	OFF
38	ON	OFF	OFF	ON	ON	54	ON	OFF	OFF	ON	OFF
39	OFF	OFF	OFF	ON	ON	55	OFF	OFF	OFF	ON	OFF
40	ON	ON	ON	OFF	ON	56	ON	ON	ON	OFF	OFF
41	OFF	ON	ON	OFF	ON	57	OFF	ON	ON	OFF	OFF
42	ON	OFF	ON	OFF	ON	58	ON	OFF	ON	OFF	OFF
43	OFF	OFF	ON	OFF	ON	59	OFF	OFF	ON	OFF	OFF
44	ON	ON	OFF	OFF	ON	60	ON	ON	OFF	OFF	OFF
45	OFF	ON	OFF	OFF	ON	61	OFF	ON	OFF	OFF	OFF
46	ON	OFF	OFF	OFF	ON	62	ON	OFF	OFF	OFF	OFF
47	OFF	OFF	OFF	OFF	ON	63	OFF	OFF	OFF	OFF	OFF
48	ON	ON	ON	ON	OFF						

4.1 The RAX-1048 Adder Annunciator Chassis

P1: Connects to the main annunciator chassis, or to the previous RAX-1048TZ or IPS-2424.

P2: Connects to the next RAX-1048TZ or IPS-2424.

4.2 The IPS-2424 Programmable Input Switches Module

P1: Connects to the main annunciator chassis, or to the previous RAX-1048TZ or IPS-2424.

P2: Connects to the next RAX-1048TZ or IPS-2424.

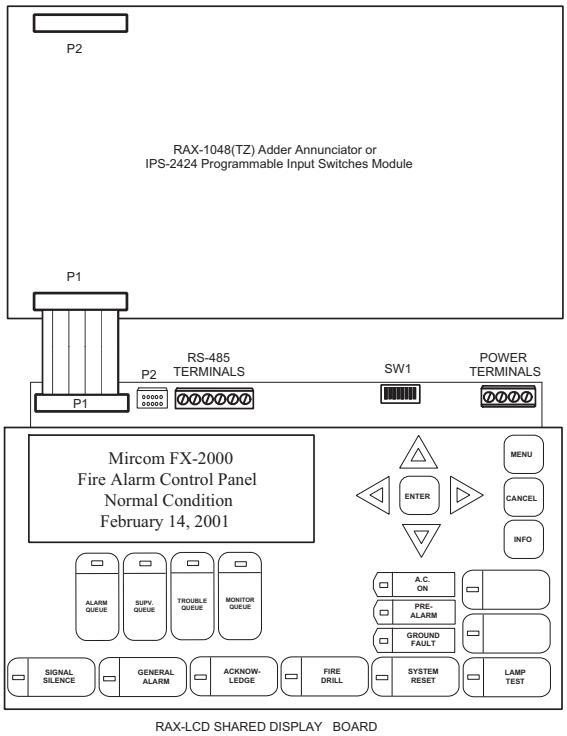


Figure 4 Annunciator Connections

4.3 The RAX-LCD Shared Display Chassis

P1: Connects to the first RAX-1048TZ or IPS-2424.

P2: BDM port.

Terminals: See *Wiring Instructions* on page 10 for details.

SW1: See above for details.

Note: The last annunciator must have 120 ohm E.O.L. resistor connected to RS-485 output terminals.

5.0 Specifications and Features

5.1 Enclosure Models

The finish of all enclosures is painted semi-gloss off white. For enclosure dimensions see 4.0 DIP Switch Settings

Table 4 Enclosure Model Descriptions

Modle Number	Material	Description
BB-1001	18 GA. (0.048") thick CRS	Backbox for one annunciator chassis with keylock door
BB-1002	18 GA. (0.048") thick CRS	Backbox for one annunciator chassis with keylock door
BB-1003	18 GA. (0.048") thick CRS Door is 16 GA (0.060”)	Backbox for one annunciator chassis with keylock door
BB-1008	16 GA. (0.060") thick CRS Door is 14 GA (0.075”)	Backbox for one annunciator chassis with keylock door
BB-1012	16 GA. (0.060") thick CRS Door is 14 GA (0.075”)	Backbox for one annunciator chassis with keylock door

5.2 Module Models

5.2.1 RAX-LCD Remote FX-2000 Shared Display LCD Annunciator

- 24V DC nominal, range of 20 to 39V DC.
- Interconnects via one ribbon cable (or wiring) to the FX-2000 Fire Alarm Panel or to previous RAX-LCD.
- Provides exact functions as the FX-2000 main display.
- Standby: 100 mA Max., All LED's "On": 150 mA Max.

5.2.2 RAX-1048TZ Adder Annunciator Chassis (48 Display Points)

- Interconnect via one ribbon cable from RAX-LCD or to previous RAX-1048TZ or IPS-2424 to the next RAX-1048TZ or IPS-2424.
- Annunciation of up to 48 additional points.
- Standby: 15 mA Max., All LEDs On: 100 mA Max.

5.3 Current Drain for Battery Calculations

The following are the currents for the RAX-LCD to which is added the number of RAX-1048TZ and/or IPS-2424 used:

Normal Standby Current = 1000 mA+ _____ X 15 mA = _____ X 10mA =_____
(number of RAX-1048TZ)(number of IPS-2424)

Maximum = 150 mA+ _____ X 15 mA= _____ X 144mA = _____
(number of RAX-1048TZ)(number of IPS-2424)

Use the “normal standby current” for battery size calculations (see the fire alarm control panel manual for battery calculations) and includes the current drain for the Trouble Buzzer, Trouble LED, and one alarm LED. Use the “maximum current” to calculate the wire size (see *Wiring Instructions* on page 12).

5.4 Environmental Specifications

This annunciator is intended for indoor use only.

6.0 Warranty and Warning Information

6.1 Warning Please Read Carefully

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

6.2 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.

6.3 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:

6.3.1 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.

6.3.2 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.

6.3.3 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.

6.3.4 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.

6.3.5 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.

6.3.6 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.

6.3.7 Software

Most Mircom products contain software. With respect to those products, Mircom 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. Mircom shall not be liable for any delays, breakdowns, interruptions, loss, destruction, alteration or other problems in the use of a product arising our 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.

6.3.8 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.

6.3.9 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.

6.3.10 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.

6.3.11 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.

6.3.12 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.

6.3.13 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.

6.4 Limited Warranty

Mircom Technologies Ltd. together with its subsidiaries and 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, Mircom 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 Mircom 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.

6.4.1 International Warranty

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

6.4.2 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 Mircom 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 Mircom);
- 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.

6.5 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 Mircom must first obtain an authorization number. Mircom will not accept any shipment whatsoever for which prior authorization has not been obtained. NOTE: Unless specific pre-authorization in writing is obtained from Mircom management, no credits will be issued for custom fabricated products or parts or for complete fire alarm system. Mircom will at its sole option, repair or replace parts under warranty. Advance replacements for such items must be purchased.

Note: Mircom'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.

6.6 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 Mircom 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.

6.7 Out of Warranty Repairs

Mircom 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 Mircom must first

obtain an authorization number. Mircom will not accept any shipment whatsoever for which prior authorization has not been obtained.

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

Products which Mircom 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: Mircom 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 Mircom 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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