LE4050M Installation manual



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About this document

This document was developed and wholly owned by M2M Services. It is intended to facilitate trained personnel with the installation of LE4050M. M2M Services reserves the right to modify and revise this manual without notice.

Agency Listings and Approvals

FCC/ISED CANADA CLASS B DIGITAL DEVICE NOTICE

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- · Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or experienced radio/television technician for help CAN/ICES-3 (B) / NMB-3 (B)

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC/ISED CANADA WIRELESS NOTICE

This equipment complies with FCC and ISED Canada radiation exposure limits set for an uncontrolled environment. The antenna should be installed and operated with minimum distance of 20 cm between radiator and your body. Cet appareil est conforme aux limites d'exposition aux rayonnements de la FCC et ISED Canada pour un environnement non contrôlé. L'antenne doit être installé de façon à garder une distance minimale de 20 centimètres entre la source de rayonnements et votre corps.

Antenna gain must be as per below. Gain de l'antenne doit être comme ci-dessous:

Table 1: LTE Antenna gain

| Frequency band / Bande de fréquence | Frequency gain / Gain de fréquence |
|-------------------------------------|------------------------------------|
| B1 | 1.315 dBi |
| B2 | 1.3525 dBi |
| B3 | 1.4 dBi |
| B4 | 1.5 dBi |
| B5 | 1.3375 dBi |
| B8 | 1.6075 dBi |
| B12 | -0.18 dBi |
| B13 | 0.1125 dBi |
| B18 | 1.6125 dBi |
| B19 | 1.265 dBi |

Table 1: LTE Antenna gain

| Frequency band / Bande de fréquence | Frequency gain / Gain de fréquence |
|-------------------------------------|------------------------------------|
| B20 | 1.695 dBi |
| B25 | 1.3525 dBi |
| B26 | 1.40875 dBi |
| B27 | 1.875 dBi |
| B28 | 0.35575 dBi |
| B66 | 1.4 dBi |
| B85B26 | -0.18 dBi |

Table 2: 2G antenna gain

| Frequency band / Bande de fréquence | Frequency gain / Gain de fréquence |
|-------------------------------------|------------------------------------|
| 850 | 1.69 dBi |
| 900 | 1.4 dBi |
| 1800 | 1.4 dBi |
| 1900 | 1.5 dBi |

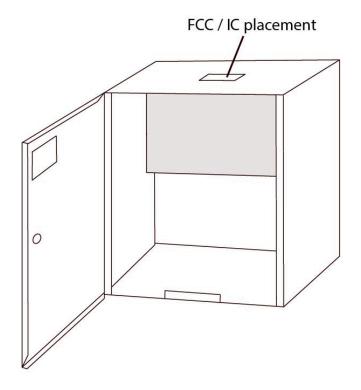
This transmitter shall not be co-located or operating in conjunction with any other antenna or transmitter. L'émetteur ne doit pas être colocalisé ou fonctionner en conjonction avec une autre antenne ou émetteur.

FCC/ISED CANADA LABEL

This modular transmitter is labeled with its own FCC ID and IC number. When the module is installed inside the host device (Alarm System PowerSeries, or NEO PowerSeries) and the FCC ID/IC of the module is not visible, the host device shall display the provide label referring to the FCC ID and IC of the enclosed module. This label is shipped together with the model LE4050M and it is the responsibility of the integrator to apply it to the exterior of the enclosure as displayed in the following figure. Cet émetteur modulaire est étiqueté avec son propre ID FCC et son numéro IC. Lorsque le module est installé à l'intérieur du dispositif hôte (Alarm System PowerSeries ou NEO PowerSeries) et que FCC ID / IC du module ne siot pas visible, le dispositif d'accueil affiche l'etiquette fournie se référant à ID / FCC at IC du module ci-joint.Ce label est livré avec le module et il est de la responsabilité de l'intégrateur de l'appliquer de l'enceinte, comme indiqué dans la figure suivante.

Contains FCC ID: RI7ME310G1WW Contains IC: 5131A-ME310G1WW

Figure 1: Label placement



These approvals apply only to the module specified in this document.

- ETL Standards for United States
 - UL 2610:2021 Commercial Premises Security Alarm Units and Systems
 - UL 985:2015 Household Fire Warning System Units
 - UL 1023:2017 Household Burglar-Alarm System Units
- ETL Standards for Canada
 - ULC S304:2016 Control Units, Accessories and Receiving Equipment for Intrusion Alarm Systems
 - ULC S545:2002 Residential Fire Warning System Control Units

Safety instructions

- This unit must be checked by a qualified technician once a year.
- The LE4050M device contains a radio transceiver operating in LTE CAT-M1 band.
- Do not use the Device with medical devices, or where it can interfere with other devices and cause any potential danger.
- Do not expose the Device to high humidity, chemical environment, or mechanical impacts.
- Do not use the Device in hazardous environment. Don't store or install the Device in overheated, dusty, wet, or overcooled places.
- The Device is mounted in limited access areas. Any system repairs must be done only by qualified, safety aware personnel. Don't disassemble or refit the Device. Do not attempt to personally repair it.
- Mains power must be disconnected before any installation or tuning work starts. The device installation or maintenance must not be done during stormy conditions.
- The device must be powered by DC 12-15V power supply of the alarm panel.
- Blown fuses or any other components of the Device must not be replaced by the user.
- Keep the Device dry. Any liquid, i.e. rain, moisture, may destroy or damage the inside circuitry.
- Handle carefully. Don't vibrate or shake it violently.
- Don't clean it with chemicals, detergent.
- Please read the user manual carefully before installation and operation of the Device. Otherwise, it may not work properly or be destroyed.

DSC connect technical support

- Phone:1 800 387-3630
- Email:techsupport@connect24.com
- Website:https://www.dsc.com/

Product description

The LE4050M is a digital serial port alarm communicator. It represents the latest communication technology for the security industry. The communicator is equipped with dual-SIM supporting multiple carriers per country.

This communication solution is a complete communication platform for data transfer from alarm systems at remote sites to Central Monitoring Stations (CMS). The platform allows bi-directional data transmission by using LTE CAT-M1 network.

Main features

- Direct RS232 Serial Port connection supporting event reporting from DSC PowerSeries and DSC PowerSeries NEO alarm panels.
- Exceptional Redundancy Dual-SIM device
- High reliability due to the new LTE CAT-M1 network and redundant servers.
- Web-based software and smartphone app for devices configuration and administration
- Remote firmware updates.
- End-user smartphone app for remote alarm panel control and live push and email notifications.
- · Remote panel upload/download

Technical specifications

| Criteria | Value |
|---|---|
| Brand | DSC |
| Model | LE4050M |
| Product name | Cellular Alarm Communicator |
| Country of origin | Bulgaria |
| Use | Communicates signals from protected premises alarm system to supervising station and enduser application. For use in dry, indoor, ordinary locations |
| Internal radio module/modem(s) | Telit ME310G1-WW CAT-M1/2G/NB-IoT Module |
| TAC Number (Assigned to internal radio module/modem) | 35451359, 35594652 assigned to internal radio modem |
| Cellular Operation Frequency bands (transmission and reception) | LTE Bands: B1,B2, B4, B5, B8, B8_US, B12, B13, B18, B19, B25, B26, B27, B28, B66, B71, B85 2G Bands: B2, B3, B5, B8 |
| Cellular Maximum EIRP | LTE: 23 dBm (Power Class 3) GSM/GPRS 33 dBm (Power Class 4) |
| Cellular Modulation Type | GSMK, BPSK, 8PSK, QPSK, 16QAM |
| Cellular Emission Designator | 244KGXW,245KGXW,247KGXW,249KG7W,247KG7 W,186KG7D,129KG7D, 1M12G7D,1M12W7D,185KG7D,1M11G7D,184KG7 D,127KG7D,1M10G7D, 1M10W7D,128KG7D,130KG7D,1M11W7D |
| Standard communication protocols | LTE Cat M1, LTE NB2, GPRS (2G) |

| Criteria | Value |
|-----------------------|--|
| SAR Certificate | N/A (device operated at >20cm from human body) |
| Operating temperature | Operating temperature: 0°C to 49°C (32°F to 120°F) |
| Dimensions | 1,73" x 3.58" (44 x 90mm) |
| Weight | 0.05kg (excluding the antenna) |

LE4050M package contents

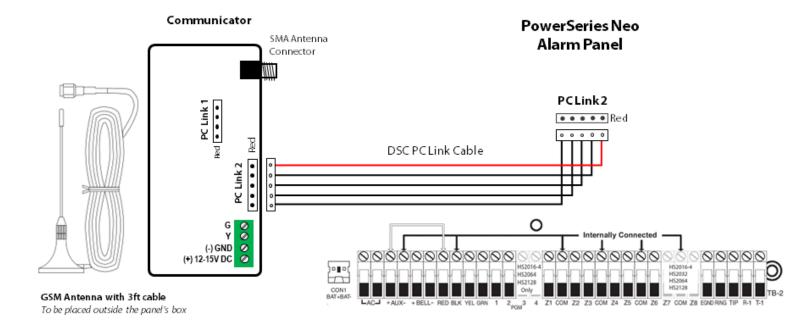
Inside the box of the LE4050M you will find the following items:

- LE4050M Cellular Communicator
- GSM Antenna with 1 m (3 ft) cable, SMA connector
- 4-pin + 1-pin PC Link cables*
- 3 pcs. plastic standoffs for device mounting withing the alarm panel box
- Leaflet with credentials for the DSC Connect end-user mobile app and the Config Key and Serial Number needed to register the device on the DSC Installer App/Portal.
 - *4-pin cable is used for wiring to the DSC PowerSeries
 - 4-pin + 1-pin cable altogether are used for wiring to the DSC PowerSeries Neo Alarm Panels.

Wiring the communicator to the DSC Power Series Neo alarm panels

- Recommended location and wiring methods must be in accordance with the National Electrical code, ANSI/NFPA 70.
- The communicator must be powered by a control panel.
- The system should be tested once per week.
- The wiring should be done only when the panel is powered down.
- For dry/indoor use only.
- The wiring methods shall be in accordance CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations; CAN/ULC S302, Standard for the Installation, Inspection and Testing of Intrusion Alarm Systems; and CAN/ULC S301, Standard for Signal Receiving Centre Intrusion Alarm Systems and Operations.
- Canadian installation standard for residential fire warning systems CAN/ULC-S540.

Figure 2: Wiring diagram for DSC PowerSeries Neo alarm panels



| Callout | Description |
|---------------------------|--|
| PC link | Connect this terminal to PC Link 2 of the DSC PowerSeries NEO Panel, using the provided 4-pin and 1-pin PC Link Cables |
| PC Link 1, G, Y, (-), (+) | Not used |

DSC Powerseries NEO panel programming

Configure the following sections on the alarm panel:

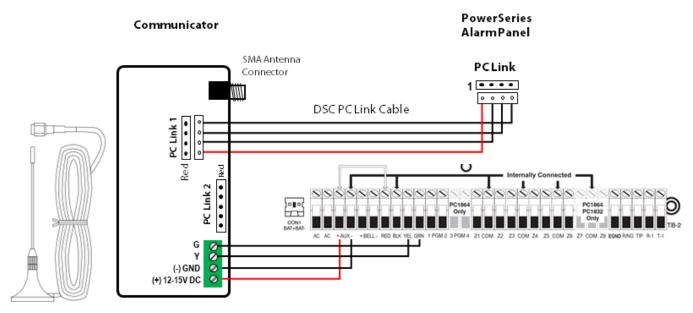
- Section 382 >> enable option 5 "Alternate Comm."
- Section 300 >> set Receiver 1 to Alt. Comm Auto"
- Section 015 >> Option 7 >> Disable TLM Monitoring
- Section 310 >> Set System Account Code

Wiring the communicator to the DSC PowerSeries alarm panels

- Recommended location must be in accordance with the National Electrical code, ANSI/NFPA 70.
- The communicator must be powered by a control panel.
- The system should be tested once per week.
- The wiring should be done only when the panel is powered down.
- For dry/indoor use only.
- The wiring methods shall be in accordance CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations; CAN/ULC S302, Standard for the Installation, Inspection and Testing of Intrusion Alarm Systems; and CAN/ULC S301, Standard for Signal Receiving Centre Intrusion Alarm Systems and Operations.
- Canadian installation standard for residential fire warning systems CAN/ULC-S540.

The LE4050M communicator is equipped with 2 Terminals for power supply and a 5 PIN connector that should be wired and mounted into the box of the DSC PowerSeries alarm panel.

Figure 3: Wiring diagram for DSC PowerSeries alarm panels



GSM Antenna with 3ft cable

To be placed outside the panel's box

| Callout | Description |
|-----------|--|
| (+) | Connect this terminal to AUX + of the DSC PowerSeries alarm panel |
| (-) | Connect this terminal to AUX – (GND) of the DSC PowerSeries alarm panel |
| G | Connect this terminal to GRN of the DSC PowerSeries alarm panel. |
| Υ | Connect this terminal to YEL of the DSC PowerSeries alarm panel. |
| PC link 1 | Connect this terminal to PC Link terminal of the DSC PowerSeries Panel via DSC PC Link Cable |
| PC link 2 | Not used |

Important notes

- Use only PC link cabels provided with LE4050M communicators.
- Note the "Red" marking on the Communicator and the "1" marking on the Panel
- Always connect the device to a current limited power source. Never connect it to a battery directly

DSC PowerSeries panel programming

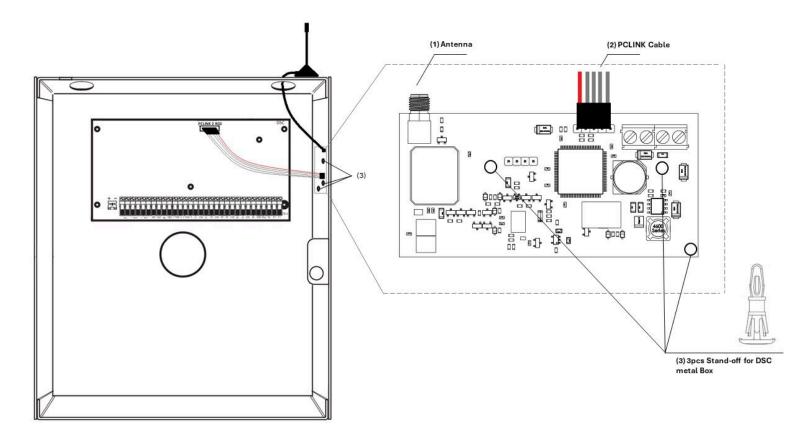
Configure the following sections on the alarm panel

- Section 301 >> Program HEX digits DCAA as a telephone number. Verify that the remaining digits to the end are "F". Leading digit D is usually programmed by default and LED keyboards usually do not display it. In this case, enter only the last three digits [CAA]
- Section 350 >> Program SIA or Contact ID communication format
- Section 380 >> Ensure Communications are enabled (Toggle 1 ON)
- Section 381 >> Ensure AUTO-SIA is disabled (Toggle 3 OFF)
- Section 382 >> Enable the PC-Link Active option (Toggle 5 ON)
- Section 383 >> Toggle 7 ON, Toggle 8 ON
- Sections 351 to 376 >> Toggle 1 ON, Toggle 5 ON for all relevant sections in the range. Ensure corresponding partitions are enabled.
- Section 015 >> Disable Telephone line monitoring (Toggle 7 OFF)
- Section 406 >> Set number of rings to 001

Mounting the communicator

This communicator comes together with 4-PIN and additional 1-PIN serial cable, external antenna, and mounting standoffs.

The device must be installed within a DSC PowerSeries/ PowerSeries NEO metal enclosure. The communicator has mounting openings matching the panel openings. The mounting is done via plastic standoffs, provided with the communicator. The antenna must be installed on top of the enclosure, removing one of the knockouts, as per the installation instructions.



- 1. Mount the communicator using the provided plastic standoffs as shown in Figure 3 above.
- 2. Connect the antenna to the communicator. The antenna is supplied with SMA connector, that allows easy connection to the communicator. The body of the antenna has a magnet bottom and can be attached to the wall of the metal alarm panel box or use double sided adhesive type to securely attach the antenna to the box. The antenna should be positioned perpendicular to the ground, either right side up or upside down. Try to keep the antenna away from sources of RF interference or where metal objects can shield it or otherwise block the cellular radio RF signal.
- 3. Wire the communicator to the alarm panel refer to the wiring sections of this manual.
- 4. Power up the panel.

LED indicator status

| LED status | Indication | Action |
|---|---|---------------------------------|
| The LED is off | The unit is not connected to | Verify the wiring, refer to the |
| | the panel. The power from | wiring diagram. Measure |
| | the panel is out. The unit is | the AUX output of the panel. |
| | damaged | Replace the unit |
| Slow flashing | Trying to establish connection. There is no signal available | Reposition the antenna |
| Constantly ON, blinking every 5 seconds | Connection established at low signal level | Reposition the antenna |
| Blinking – 2 seconds ON, 1 second OFF | Server to Monitoring Station connection error | |
| Constantly on | Connection established at good signal | |
| Fast blinking | Transferring data | |

Troubleshooting

If you have issues receiving the events:

- 1. Verify the communicator is connected to the network.
- 2. Verify the PC link cable is properly connected refer to the communicator wiring sections.
- 3. Verify that the DSC PowerSeries/PowerSeries Neo alarm panel is properl programmed.

Device registration in the DSC installer portal and DSC connect installer app

Register your company at https://connect.dsc.com use your existing account to login the web portal

Adding monitoring station reporting channel

Contact your monitoring station and request your M2M Dealer Code.

Login to the DSC Installers Portal and add monitoring station reporting channels from My Devices > Monitoring Stations > Add Reporting Channel:

- Choose your preferred monitoring station from the Partner Monitoring Stations List.
- Type in the M2M Dealer Code and Save to submit your request to the monitoring station.

Adding a new device

Make sure you have the device Serial Number and the Config Key from the leaflet provided with the device package.

Adding a device from the DSC installer web portal

- 1. Go to My Devices > Devices > Add New Device.
- 2. Select the preferred monitoring station/reporting channel.
- 3. Type in the device Serial Number and Config Key and Save.

Adding a devoce from the DSC Connect Installer app

1. Go to My Devices > Devices > Add New Device.

- 2. Select the preferred monitoring station/reporting channel.
- 3. Type in the device Serial Number and Config Key and Save.

The same credentials used for the DSC Installer Portal are applicable for the DSC Connect installer App.

(i) **Note:** The cellular service will be deactivated if the device is powered before registering it on the DSC Installers Portal or the DSC Connect App

Limited warranty

Digital Security Controls ("DSC"), a division of Tyco Safety Products Canada Ltd, a part of the Johnson Controls group of companies ("JCI"), warrants the original purchaser that for a periodof twelve months from the date of purchase, the product shall be free of defects in materials and workmanship under normal use. During the warranty period, JCI 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 or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The original purchaser must promptly notify JCI 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. There is absolutely no warranty on software and allsoftware products are sold as a user license under the terms of the software license agreement included with the product. The Customer assumes all responsibility for the proper selection, installation, operation and maintenance of any products purchased from JCI. Custom products are only warranted to the extent that they do not function upon delivery. In such cases, JCI can replace or credit at its option.

International Warranty

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

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

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 JCI 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 JCI);
- 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.

Items Not Covered by Warranty

In addition to the items which void the Warranty, the following items shall not be covered by Warranty: (i) freight cost to the repair center; (ii) products which are not identified with JCI's product label and lot number or serial number; (iii) products disassembled or repaired in such a manneras to adversely affect performance or prevent adequate inspection or testing to verify any warranty claim. Access cards or tags returned for replacement under warranty will be credited or

replaced at JCI's option. Products not covered by this warranty, or otherwise out of warranty due to age, misuse, or damage shall be evaluated, and a repair estimate shall be provided. No repair workand will be performed until a valid purchase order is received from the Customer a Return Merchandise Authorization number (RMA) is issued by JCI's Customer Service.

JCI'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. Under no circumstances shall JCI be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability, or anyother 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. The laws of some jurisdictions limit or do not allow the disclaimer of consequential damages. If the laws of such a jurisdiction apply to any claim by or against JCI, the limitations and disclaimers contained here shall be to the greatest extent permitted by law. Some states do not allow the exclusion or limitation of incidental or consequential damages, so that the above may not apply to you.

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 JCI. JCI neither assumes responsibility for, 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.

WARNING:JCI 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.

Out of Warranty Repairs

JCI 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 JCI must first obtain an authorization number. JCI will not accept any shipment whatsoever for which prior authorization has not been obtained. Products which JCI determines to be repairable will be repaired and returned.A set fee which JCI has pre-determined and which may be revised from time to time, will be charged for each unit repaired.

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

WARNING - READ CAREFULLY Note to Installers

This warning contains vital information. As the only individual in contact with system users, it is yourresponsibility to bring each item in this warning to the attention of the users of this system.

System Failures

This system has been carefully designed to be as effective as possible. There are circumstances, however, involving fire, burglary, or other types of emergencies where it may not provide protection. Any alarm system of any type may be compromised deliberately or may fail to operate as expected for a variety of reasons. Some but not all of these reasons may be:

Inadequate Installation

A security system must be installed properly in order to provide adequate protection. Every installationshould be evaluated by a security professional to ensure that all access points and areas are covered. Locks and latches on windows and doors must be secure and operate as intended. Windows,doors, walls, ceilings and other building materials must be of sufficient strength and construction to provide the level of protection expected. A reevaluation must be done during and after any construction activity. An evaluation by the fire or police department is highly recommended if this service is available.

Criminal Knowledge

This system contains security features which were known to be effective at the time of manufacture. It is possible for persons with criminal intent to develop techniques which reduce the effectiveness of these features. It is important that a security system be reviewed periodically to ensure that its features remain effective and that it be updated or replaced if it is found that it does not provide the protection expected.

Access by Intruders

Intruders may enter through an unprotected access point, circumvent a sensing device, evade detection by moving through an area of insufficient coverage, disconnect a warning device, or interfere with or prevent the proper operation of the system.

Power Failure

Control units, intrusion detectors, smoke detectors and many other security devices require an adequate power supply for proper operation. If a device operates from batteries, it is possible for the batteries to fail. Even if the batteries have not failed, they must be 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 lengthare often accompanied by voltage fluctuations which may damage electronic equipment such as a security system. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

Failureof Replaceable Batteries

This system's 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 alow 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.

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.

System Users

A user may not be able to operate a panic or emergency switch possibly due to permanent or temporaryphysical 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.

Smoke Detectors

Smoke detectors that are a part of this system may not properly alert occupants of a fire for a number of reasons, some of which follow. The smoke detectors may have been improperly installed or positioned. Smoke may not be able to reach the smoke detectors, such as when the fire is in a chimney, walls or roofs, or on the other side of closed doors. Smoke detectors may not detect smoke from fires on another level of the residence or building. Every fire is different in the amount of smoke produced and the rate of burning. 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 detectoroperates as intended, there may be circumstances when there is insufficient warning to allow all occupants to escape in time to avoid injury or death.

Motion Detectors

Motiondetectors can only detect motion within the designated areas as shown in their respective installation instructions. They cannot discriminate between intruders and intended occupants. Motiondetectors do not provide volumetric area protection. They have multiple beams of detection and motion can only be detected in unobstructed areas covered by these beams. They cannot detect motion which occurs behind walls, ceilings, floor, closed doors, glass partitions, glass doorsor windows. Any type of tampering whether intentional or unintentional such as masking, painting, or spraying of any material on the lenses, mirrors, windows or any other part of the detection system will impair its proper operation. Passive infrared motion detectors operate by sensing changes in temperature. However, their effectiveness can be reduced when the ambient temperature rises near or above body temperature or if there are intentional or unintentional sources of heat in or near the detection area. Some of these heat sources could be heaters, radiators, stoves, barbeques, fireplaces, sunlight, steam vents, lighting and so on.

Warning Devices

Warningdevices such as sirens, bells, horns, or strobes may not warn people or waken someone sleeping if there is an intervening wall or door. If warning devices 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 warning devices may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners or other appliances, or passing traffic. Audible warning devices, however loud, may not be heard by a hearing-impaired person.

Telephone Lines

Iftelephone lines are used to transmit alarms, they may be out of service or busy for certain periods of time. Also, an intruder may cut the telephone line or defeat its operation by more sophisticated means which may be difficult to detect.

Insufficient Time

There may be circumstances when the system will operate as intended, yet the occupants willnot 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 to protect the occupants or their belongings.

Component Failure

Althoughevery 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.

InadequateTesting

Most problems that would prevent an alarm system from operating as intended can be found by regular testing and maintenance. The complete system should be tested weekly and immediately after a break-in, an attempted break-in, a fire, a storm, an earthquake, an accident, or any kind of constructionactivity 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.

Security and Insurance

Regardless of its capabilities, an alarm system is not a substitute for property or life insurance. Analarm 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.

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