
RF5108-433 v1.0 Installation Manual

Thank you for purchasing the RF5108-433 Wireless Receiver. This product is the result of several years of development and will allow you to connect up to 8 wireless detection devices to the PC580, PC585, PC1555, PC1565, and the Power Series control panels.

The RF5108-433 operates at 433 MHz. It provides several advantages:

- supervisory transmissions are sent every 64 minutes at fixed time intervals for NA version, 12 minutes for the EU version.
- programmable supervisory window can be as long as 24 hours
- diversity antenna arrangement for better RF reception
- 2 PGM Outputs

In addition, the RF5108-433 features:

- **6 digit serial numbers for all wireless devices:** These new serial numbers include hexadecimal digits. *Please read Section 3.1 "A note on Electronic Serial Numbers (ESN)" for more information on enrolling 6-digit devices.*

We are confident you will find the RF5108-433 Wireless Receiver a unique and useful control panel enhancement.

Section 1: Introduction

This manual describes how to install, program and maintain the RF5108-433.

Before you install the RF5108-433 module, you should have completed the following steps in your system installation:

1. Plan the installation and wiring of the security system (see your system *Installation Manual*)
2. Install the control panel, and install and enroll at least one keypad to use for programming.
3. Install and enroll any hardwired zone expander modules (PC5108) you plan to use.

NOTE: *PC5108 zone expander modules occupy zones in 2 groups of 4 (e.g. zones 9-12 and zones 13-16). None of the zones assigned to a PC5108 module may be used for wireless devices.*

Program the RF5108-433 from a system keypad or using downloading software on a remote computer (e.g., DLS 2002). Read your system *Installation Manual* for more information.

1.1 How to use this Manual

Read this manual before you begin installing the RF5108-433. To install and set up the RF5108-433 and wireless devices, follow these steps. Refer to the sections listed below.

1. Temporarily mount and wire the RF5108-433 module (see *Section 2*)
2. Enroll and program wireless devices (see *Section 3*)
3. Complete zone and other programming on the system (see *Section 4*)
4. Test the placement of all the wireless devices (see *Section 5*)
5. Permanently mount the RF5108-433 receiver and wireless devices (see *Section 5*)

For additional information on trouble conditions, RF jamming signal detection and battery replacement, see *Section 6*. For help with troubleshooting, see *Section 7*.

WARNING: *This manual contains information on limitations regarding product use and function and information on the limitations as to liability of the manufacturer.*

1.2 Specifications and Features

- Current Draw: 40mA
- Frequency: 433 MHz
- Zones - receiver can receive signals from up to 8 wireless zones and 8 wireless keys
- Internal antenna
- PGM Outputs: 2 Open-collector PGM outputs
- Supervisory - programmable supervisory window, 4 - 24 hours, in 15 minute increments
- Location
 - can be wired up to 750 ft. / 230 m from the main panel with 22 gauge wire; the wiring used in this circuit connection must be insulated with PVC, TFE, PTFE, FEP, Neoprene or Polyimide
 - connects to Keybus
 - for longer wire runs, thicker gauge wire must be used.
- Compatibility: The RF5108-433 v1.x can be connected to the following panels: PC5020, PC501X, PC1555, PC1565, PC580, PC585

1.3 Compatible Wireless Devices

Please refer to the Instruction sheets of the following devices for more information.

The RF5108-433 v1.0 can receive signals from the following devices:

- | | |
|--------------------------------------|--|
| • WLS904L-433 Motion Detector | • WLS912L-433 Glass Break Detector |
| • WLS904PL-433 Pet Immune PIR | • WLS914 Pet Immune PIR |
| • WLS906-433 Smoke Detector | • WLS918-433 Panic Pendant |
| • WLS907-433 Universal Transmitter | • WLS919-433 Wireless Key |
| • WLS907T-433 Low Temperature Sensor | • WLS925L-433 Mini Door/Window Contact |
| • WLS909-433 Wireless Key | |

1.4 DLS Compatibility

The RF5108-433 can support up to 8 wireless devices that can be assigned to any of zones 1 to 32 or RF Jam Zone. If the DLS user enters valid serial numbers for more than 8 wireless devices and the wireless device serial numbers are downloaded, the RF5108-433 will accept the serial numbers of the first 8 wireless devices (in order, starting with the lowest zone number).

1.5 Batteries

The wireless devices are designed to use only specific brands and types of batteries. Please see the appropriate instruction sheet for detailed information on the battery brands and types.

NOTE: *Do not use brands of batteries other than those specified. Using any other brand may affect system operation.*

Section 2: RF5108-433 Set up & Wiring

This section describes how to set up and wire the RF5108-433 module.

2.1 Unpack the RF5108-433

Check that the following parts are in your RF5108-433 package:

- 1 WLS919-433 wireless key
- RF5108-433 in cabinet
- Hardware for mounting the cabinet
- LED indicator plate

2.2 Choose a Mounting Location for the RF5108-433

NOTE: Mount the RF5108-433 receiver and wireless devices after you have done placement tests with the wireless devices (see sections 5.1 and 5.2).

Find a place that is:

- Dry
- Central to the proposed placement of all wireless devices
- As high as possible
- Far from sources of interference, including: electrical noise such as computers, televisions and electric motors in appliances and heating and air conditioning units; large metal objects like heating ducts and plumbing which may shield the antenna.

Ensure the electrical wires will not run over the antenna(s) of the module when it is mounted.

NOTE: When mounting the RF5108-433 in a basement, place the module as high and as close to the underside of the first floor as possible. The range of the module will be reduced if the unit is mounted below ground level.

2.3 Antennas

The antennas have been installed at the factory.

CAUTION!: Do not attempt to touch or adjust the antennas.

2.4 PC5320 Compatibility

The PC5320 module can be used to add multiple wireless receivers to an installation to increase the coverage area. The PC5320 can be used to connect up to four wireless receivers of the same type:

- up to four RF5108-433 receivers or
- up to four RF5501-433 receivers or
- up to four PC5132-433 receivers

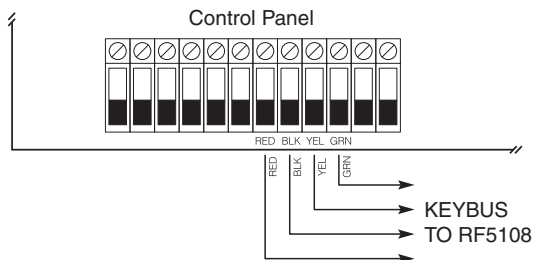
Please refer to the PC5320 Installation Instructions for more information.

NOTE: If the PC5320 module is used, the RF5108-433 PGM outputs can only be programmed as RF5108 PGM Pulse or RF5108 PGM Toggle (Options 15 or 16).

2.5 Connect the RF5108-433 Receiver

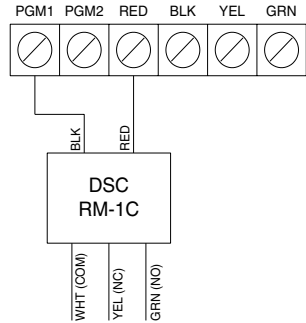
CAUTION: Remove all power from the system while connecting modules to the Keybus.

Connect the RF5108-433 to the 4-wire Keybus of the control panel according to the following diagram.

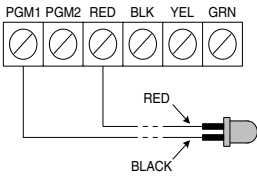


2.6 RF5108-433 Programmable Outputs - PGM1 and PGM2

Each PGM output is an open collector switch to ground. That is, when the PGM output is activated the terminal will switch to ground. PGM1 and PGM2 are able to sink up to 300mA of current. If more than 300mA of current is required a relay must be used. Refer to diagram shown at right.



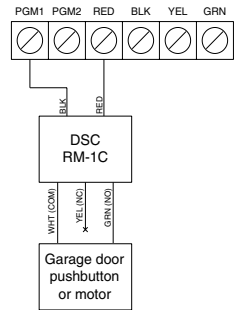
2.7 Connecting LED to the RF5108-433



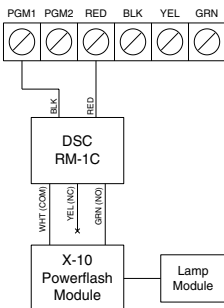
The LED can be used to indicate whether the system is armed or disarmed. If the output is programmed as an armed status output, the red LED will turn on when the system is armed and will turn off when the system is disarmed.

2.8 Connecting a Garage Door to the RF5108-433

Connect an output of the RF5108-433 across the wall-mounted push button or directly at the motor of the garage door opener (please consult the garage door opener instructions for proper connections). Set up the system and wireless key so that it is programmed to pulse an output for a short duration (5 seconds) so that every time the programmed key is pressed the garage door is opened or closed. The system can also be set up so that an output on the RF5108-433 will follow a main panel output that is programmed as a command output and is set up on the wireless key as such. Doing this will also activate an output on the RF5108-433 for 5 seconds (please refer to the control panel manual for a listing of available output types and their functions). PGM 1 and/or PGM 2 on the RF5108-433 can be set up to open a garage door (refer to Section 3.5).



2.9 Connecting an X-10 Powerflash Module to the RF5108-433



When connecting an X-10 Powerflash module to the RF5108-433, different lights within or outside the home can be controlled, such as table lamps, or porch and driveway lights that illuminate the entry / exit paths. This can be done by setting up the system and wireless key in one of several ways:

- The wireless key can toggle an output ON/OFF, triggering the X-10 Powerflash module, providing direct control of lighting.
- The wireless key can turn on an output for a programmable amount of time (5 seconds to 99 minutes and 99 seconds), turning on lights for the amount of time the homeowner requires.

- The RF5108 output can be programmed to follow a main panel output which can turn on lights when the panel is armed and turn them off when disarmed, turn on lights when an alarm occurs and turn them off when disarmed, etc. Please refer to the control panel Installation Manual for a listing of available output types and their function. PGM 1 and/or PGM 2 on the RF5108-433 can be set up for this operation (see Section 3.5).

After you have completed the wiring, reconnect the power to the security system.

Now that you have wired the RF5108-433, you should enroll and program the wireless devices. See section 3 for instructions.

Section 3: Enrolling Wireless Devices

This section describes how to enroll wireless devices and wireless keys. For more information on these devices, read the instruction sheet included with each device.

3.1 A Note about Electronic Serial Numbers

An electronic serial number (ESN) is printed on the back of each wireless device. ESNs are used to enroll the wireless devices with the RF5108-433 receiver.

In order to reduce the occurrence of wireless devices with the same serial number, 6-digit serial numbers are now printed on the back of each wireless device. The 6-digit serial numbers include hexadecimal digits. For instructions on programming hexadecimal numbers, see your system *Installation Manual*, section 4: 'How to Program'.

NOTE: *6-digit serial numbers are only supported on the following control panels: PC5020, PC501X, PC1555, PC1565 and PC580, PC585 v2.0 and higher.*

The WLS904L/904PL-433, WLS906-433, WLS907T-433, WLS912L-433, WLS914-433, WLS918-43 and WLS925L-433 devices have both a 5-digit and a 6-digit serial number printed on them. When connecting the RF5108-433 to a PC5010 v1.x panel, enter 5-digit serial numbers only. When connecting the RF5108-433 to a PC5015 v2.x and higher, PC5020, PC5010, PC1555/1565, or PC580/585 panel enter the 6-digit serial number.

3.2 Enrolling Wireless Devices

1. At a system keypad, enter [*][8][Installer's code] to go to the Installer Programming section.
2. Enter programming section [804].
3. Enter the 2-digit number corresponding to the zone the device is to occupy ([01] to [32]).

NOTE: *Hardwired and wireless devices cannot be assigned to the same zone. PC5108 zone expander modules occupy zones in 2 groups of 4 (e.g. zones 9-12 and zones 13-16). None of the zones assigned to a PC5108 module may be used for wireless devices. For more information on zone assignment, consult your system Installation Manual.*

4. Enter the device's ESN. Follow the instructions in section 3.1 above.
5. Record the serial number and the assigned zone number in the programming worksheets in the back of this manual.
6. Repeat steps 3 - 5 until you have enrolled up to 8 wireless devices.

NOTE: *The RF5108-433 supports programming of 8 wireless devices that can be assigned to any of zones 1 to 32 or RF Jam Zone. Once 8 wireless devices have been programmed the RF5108-433 will not allow further programming. An error tone will be heard at the keypad if further programming is attempted*

7. To exit press [#]. The device is now enrolled on the system.

NOTE: *The devices will not work properly until you complete zone and partition programming (see section 4).*

3.3 Enroll & Program Wireless Keys

For wireless keys to work on the system, you need to enroll them and then program the function buttons. Wireless keys are not assigned to zones and require no zone programming. You can enroll up to 8 wireless keys on the system.

Enroll Wireless keys

1. At a system keypad, enter [*][8][Installer's code] to go to the Installer Programming section.
2. Enter programming section [804].
3. Enter a 2-digit number [41]-[48] to assign the wireless key a slot. These numbers correspond to wireless key numbers 01-08.
4. Enter the key's ESN. The entry *must* be 6 digits. If an older key with a 5-digit ESN is being enrolled, add the digit [0] to the beginning of the ESN. (E.g., if ESN=61234, enter 061234)
5. The key is now enrolled on the system. Record the serial number and the assigned slot number in the programming worksheets in the back of this manual.
6. Repeat steps 3 - 5 until all wireless keys have been enrolled.
7. **(PC5020/PC501X only)** By default, all wireless keys are assigned to Partition 1. To assign keys to Partitions 2 to 8, program the appropriate partition number in section [69].

NOTE: A wireless key can only be assigned to one partition.

8. To exit press [#].

Program the Wireless Key Function Buttons

WLS909-433/WLS919-433 wireless keys have four programmable function buttons. By default, all wireless key function buttons are set for 03, 04, 27, 30 (Stay Arm, Away Arm, Disarm, Panic Alarm). The functions can be reprogrammed if desired. After the functions are programmed, when you press and hold one of the buttons for two seconds, the system will execute the programmed function.

For systems not using partitions: program the function buttons in section [61]. All wireless keys will have the same four functions.

For systems using more than one partition (PC5020/PC501X only): All wireless keys assigned to Partition 1 will have the four functions programmed in section [61]. Likewise, all wireless keys assigned to Partition 2 will have the 4 functions programmed in section [62], and all wireless keys assigned to Partition 8 will have the 4 functions programmed in section [68]. For example, if function button 1 in Section [61] is programmed for Stay arming, then pressing the first button on wireless keys assigned to Partition 1 will Stay arm Partition 1.

NOTE: Wireless keys will not work when the partition they are assigned to is being accessed for zone bypassing or programming.

1. At a system keypad, enter [*][8][Installer's code].
2. Enter programming section [804].
3. Enter programming section [61] to [68] for keys assigned to Partitions 1 to 8.
4. For each of the 4 function buttons, enter the 2-digit number of the function you want to select. See the programming worksheets in the back of this manual for a list of function key options.
5. Record your programming choices in the worksheets in the back of the manual.
6. To exit press [#].

3.4 Identified Wireless Keys

Reporting by the system of openings/closings by individual wireless keys and command output [*][7] activation by wireless key buttons may be supported on certain control panels. To do this, the system will reserve access codes 17-24 for wireless keys 01-08 respectively. You must program one access code for each wireless key (using [*][5] access code programming) for this feature to work correctly.

NOTE: Program these access codes on the system after you have connected the RF5108-433 to the Keybus (see section 2.4).

Refer to your system *Installation Manual* for information on access code programming.

Opening/Closing By Wireless Key Reporting

NOTE: The Identified Wireless Key Closing option is only available with the PC5020, PC501X, PC1555, PC1565, PC580, PC585 v2.0 and higher by turning section [015] option 4 off.

To enable the reporting of openings and closings by identified wireless keys:

- Make sure the control panel is v2.0 or higher
- Program a valid access code for each key
- Program a closing and opening reporting code for each key's access code
- Turn off the **Quick Arm** option in section [015] option [4] of the control panel programming

To ensure that an *unidentified wireless key* cannot disarm the system, turn off section [017], option [1] (in the control panel programming). This option is available in control panels with software version 2.1 or higher.

Command Output Activation

NOTE: The Identified Wireless Key Command Output Activation feature is only available with the PC5020, PC501X, PC1555, PC1565, PC580, PC585 v2.0 and higher.

To enable command output activation by wireless keys, ensure that:

- The control panel is v2.0 or higher
- Program a valid access code for each key
- Enable the PGM output attribute **Requires Access Code** for each PGM output programmed as [*][7][1-4] in sections [141] to [154].

3.5 RF5108-433 PGM Outputs

The RF5108-433 has two on-board open collector PGM outputs. Each of these can be individually programmed to:

1. Follow main panel PGM outputs 1 to 14.

NOTE: Please refer to your *System Installation Manual* for available PGM outputs.

NOTE: If the RF5108-433 is connected to the PC580/PC585/PC1555/PC1565/P-48/P-6B (all versions), PC5010 v1.x, P832 v1.x or the WSS5010 1.0, 2.1, the RF5108-433 PGM outputs cannot be programmed to follow main panel PGM outputs 1 or 2.

2. Activate for a programmable amount of time when a signal is received from a wireless key programmed with output option 31 or 32 (RF5108-433 PGM pulse) and the PGM output programming section [70] or [71] is programmed with option 15 (RF5108-433 PGM pulse). The amount of time that the PGM outputs can be programmed to remain on is programmed in sections [72] and [73]. The default activation time is 5 seconds.
3. Toggle state when a signal is received from a wireless key programmed with option 31 or 32 and the PGM output programming section [70] or [71] is programmed with option 16 (RF5108-433 PGM toggle).

3.6 Deleting Wireless Devices

To remove a wireless device from the system, follow the guideline for adding a wireless device. Program the ESN as [000000]. The wireless device for the zone will be removed.

Now that you have enrolled all the wireless devices, you will need to program the system to work properly with the devices. See section 4 for more information.

Section 4: Other Programming

4.1 Program Zones and Partitions

Now that you have enrolled the wireless devices, you should complete all zone programming on the system. Although the exact programming required varies depending on which control panel the RF5108-433 is connected to, you should check that the following programming areas are completed correctly for each wireless zone:

- Enable zones and/or assign zones to one or more partitions (programming sections [201]-[209], [201]-[265] for PC5020).
- Program the definition for each zone (programming sections [001]-[004]).

NOTE: *WLS906 wireless smoke detectors must be assigned to zones defined as Delay 24-hr fire (wireless) [87] or Standard 24-hr fire (wireless) [88] for proper supervision.*

- Enable the wireless zone attribute for each wireless zone (PC580, PC585, PC1555, PC1565, PC5020, PC501X v2.0 and higher only) (sections [101]-[132]).

See your system *Installation Manual*, for more information on each of the above programming sections.

4.2 Enable RF5108-433 Supervision

The control panel will supervise the RF5108-433 receiver via the Keybus after at least one device has been enrolled on the module (see section 3.2 “Enrolling Wireless Devices”). The RF5108-433 is supervised as a PC5132.

To activate module supervision, after you enroll the first device(s):

1. Exit and then re-enter Installer Programming.
2. Enter programming section [902]. Wait approximately 1 minute.
3. To exit press [#].

The system will generate a General System Supervisory trouble if the module is removed from the Keybus. If you need to remove the RF5108-433 module from an existing system, you will have to disable supervision of the RF5108-433.

NOTE: *Deleting all devices from the RF5108-433 or defaulting the RF5108-433 will cause a PC5132 supervisory fault*

To disable RF5108-433 supervision:

1. Disconnect the RF5108-433 from the Keybus
2. Enter [*][8][Installer's Code]
3. Enter [902]. The control panel will clear all supervision and re-scan the system for connected modules. The scan will take approximately one minute.
4. To exit press [#].

To review which modules the control panel is currently supervising:

1. Enter [*][8][Installer's Code]
2. Enter [903] to display all modules. On LED keypads, light [17] will indicate that the RF5108-433 is present on the system. On LCD keypads, scroll until the module name 'PC5132' appears on the display.
3. To exit press [#].

If the RF5108-433 module does not show on the keypad, one of the following conditions may be present:

- the module is not connected properly to the Keybus
- there is a problem with the Keybus wiring run
- the module does not have enough power
- no devices have been enrolled on the RF5108-433

4.3 Enable Supervision of Wireless Zones

NOTE: (for PC5010 v1.x control panels only) For UL Listed installation, Double EOL resistors must be enabled in the PC5010 for the wireless zones to be supervised. If normally Closed or Single EOL resistors are selected the PC5010 will not be able to supervise the wireless devices. If a wireless device stops sending a supervisory signal (the unit stops functioning) the panel will not indicate a supervisory trouble condition unless Double EOL resistors are used. In addition, all hardwire zones must be wired for Double EOL resistors. For more information, refer to your PC5010 v1.x Installation Manual.

NOTE: (PC5010 v2.0 and higher, PC5015 v2.2 and higher, PC5020, PC5008, PC1555, PC1565, PC580, PC585 only): For wireless supervision to work, you must enable the wireless zone attribute on all wireless zones (sections [101] to [132], option [8] ON).

Wireless Supervisory Window

Each wireless zone will send a supervisory signal at a fixed time interval (64 minutes for NA, 12 minutes for EU). If the receiver does not receive a signal within the time programmed for the **Wireless Supervisory Window**, it will generate a supervisory fault.

To program the wireless supervisory window:

1. Enter [*][8][Installer's Code] to enter Installer Programming.
2. Enter [804] to enter the RF5108-433 Module Programming.
3. Enter section [81].
4. Enter the time period for the supervisory window. The window is programmed in 15 minute increments.
 - The default programming for NA is 96 (x15 minutes), which is equal to 24 hours. Valid entries for NA are (16) - (96), equal to 4 - 24 hours.
 - The default programming for EU is 10 (x15 minutes), which is equal to 2.5 hours. Valid Entries for EU are (08) - (96), equal to 2 - 24 hours.
5. To exit press [#].

Disable/Enable Zone Supervision

All wireless zones have supervision enabled by default. To disable supervision for any zone, enter the following at any system keypad:

1. Enter [*][8][Installer's Code] to enter Installer Programming.
2. Enter [804] to enter the RF5108-433 Module Programming.
3. Enter section [82]-[85]. Enable or disable supervision for each wireless zone by turning each relevant option on or off.
4. To exit press [#].

NOTE: The RF Jam Detect zone must have the supervision option disabled.

4.4 Jamming Signal Detection

The RF5108-433 receiver detects jamming signals that can prevent the receiver from properly receiving transmissions from enrolled devices. When jamming signals are detected, the panel can report a jamming trouble condition in one of two ways. By default, the panel will report an RF Jam Trouble (General System Tamper on the PC5010).

To turn OFF jamming signal detection indicates Trouble:

1. Enter [*][8][Installer Code] to enter Installer Programming.
2. Enter [804] to enter the RF5108-433 Module Programming.
3. *Turn ON* section [90], option [7].
4. To exit press [#].

The RF5108-433 can also be programmed to indicate the jamming trouble condition with the RF Jam Zone. For RF Jam Zone to work, you must select an unused zone to be used as the RF Jam Detect zone. When the receiver detects an attempt to jam the RF signal, the RF Jam Detect zone will be violated and the system will generate a tamper signal. When the jamming signal is gone, the RF Jam Detect zone closes and the system sends a tamper restore signal.

To enable RF jamming detection:

1. Enter [*][8] [Installer's Code].
2. Enter programming section [804].
3. Enter section [93]. Enter the 2-digit number of the RF Jam Detect zone ([01] to [32]) in the programming section.

NOTE: *The RF5108-433 counts the RF jam zone as one of the 8 supported zones. If section [93] is programmed, only 7 wireless devices may be programmed. If 8 wireless devices are already programmed, section [93] will not be accessible.*

4. Disable supervision for the RF Jam detect zone by turning the relevant option off in section [82]-[85] (see section 4.3 for more information).
5. RF jamming detection is now enabled. To exit Installer programming, press [#].

NOTE: *A jamming condition will be indicated as RF Jam Zone if section [93] is programmed, regardless of the RF Jam indicates Trouble option (section [90], option [7]).*

4.5 RF5108-433 Software Default

Returning the RF5108-433 programming to factory default settings is a quick way to remove all the enrolled devices from the system and reset all the programming in section [804].

NOTE: *Performing this procedure will not change any programming sections except [804]. Resetting the control panel to factory default settings will not return the RF5108-433 module to factory default settings.*

To restore the RF5108-433 programming to the factory default settings perform the following:

1. Enter [*][8] [Installer's Code].
2. Enter programming section [996].
3. Enter the Installer's Code, followed by [996] again. The software for the RF5108-433 will be restored to its factory default settings.

For instructions on restoring the default programming of the control panel or any other connected module, see your system *Installation Manual*.

4.6 Deleting Wireless Devices

To remove a wireless device from the system, follow the guideline for enrolling a wireless device (see section 3.2). Program the ESN as [000000]. The wireless device for the zone will be removed.

Now that you have completed all RF5108-433 related programming, you can test and install the receiver and devices. See section 5 for more information.

Section 5: Testing & Mounting

5.1 Test the Reception of Wireless Devices

It is very important to test the proposed placement of each wireless device before it is mounted. Following these steps will test the signal strength between the RF5108-433 and the wireless devices.

You can test all of the devices together (global placement testing) or test each device individually. To test all the devices together, see *Testing All Wireless Devices Together*. To test wireless devices individually, see *Testing Individual Devices*.

Testing All Wireless Devices Together:

1. Temporarily put the wireless devices in the places you want to mount them.
2. At a system keypad, enter [*][8][Installer's Code].
3. Enable the Global Module Placement test by entering section [804]. Then enter sub-section [90] and turn on option [8].
4. Press [#] twice.
5. Enter programming section [904], then enter [01].
6. Activate one of the devices being tested until a result is displayed on the keypad or sounded by the keypad or bell:

WLS904-433/WLS904PL-433/WLS914-433: To perform a Placement Test on one of these devices, remove the detector from the backplate and then replace it. Once the detector is replaced on the backplate the LED on the detector will flash rapidly 5 times to indicate that it has sent a transmission. The panel will show and/or sound the result of the placement test on the keypad. To perform a 2nd and 3rd test, repeat this procedure. ***Carefully replace the backplate onto the detector, ensuring that "TOP" is facing upward, or you may damage the tamper switch.***

NOTE: When you remove the detector from the backplate (tamper the unit), the detector will also be put into "Detector Walk Test" mode. While in Walk Test Mode the detector will activate the LED when motion is detected. The detector will also send a signal to the receiver 5 seconds after motion is detected, indicated by 5 rapid flashes by the LED. The LED will only work in this fashion for 10 motion detections after a tamper/restore. Note, that the panel will ignore these transmission signals with respect to a placement test. The only way in which the panel will acknowledge a placement test, is if the backplate has, each time, been removed and restored.

WLS906-433: Remove the detector from its backplate, wait 5 seconds and reattach it, or hold a magnet near the raised line on the outer rim, then remove it.

WLS907-433/WLS925L-433: Open the contact by moving the magnet away from the unit. The keypad will show/sound the test result. After the first test result has been generated (about 10 seconds) close the contact to generate another test result. If the unit is attached to a door or a window, open and close the door or window to activate the device.

WLS909-433/WLS919-433: Press any function key at several different locations.

WLS912L-433: Press and hold the test mode tab for 5 seconds. Release the test mode tab.

Read the test results at the keypad.

Result	LED Keypad	LCD Keypad	Buzzer/Bell
Good	Light 1 On Steady	“Good”	1 Beep/Squawk
Bad	Light 3 On Steady	“Bad”	3 Beeps/Squawks

Activate the device until you get 3 good results in a row. You may mount the WLS devices where results were good. Devices indicating a bad result must be moved to another location. You may only have to move the device a few inches to correct a bad result.

NOTE: Do not mount any device where a “bad” test result was indicated.

7. Go to the next device to be tested and activate it until the test result is displayed/sounded.

NOTE: Wait until the placement test of one device is shown/sounded before beginning to test the next device.

Continue to test the devices until both the RF5108-433 and the devices are in good locations. If several wireless devices produce BAD test results, you may need to move the RF5108-433 to a better location (see section 2.2 for more information).

8. To exit the placement test and return to installer programming, press [#] twice.

Testing Individual Wireless Devices:

1. Temporarily place the wireless device in the place you want to mount it.
2. At a system keypad, enter [*][8][Installer’s Code].
3. Enable Individual Module Placement test by entering section [804]. Then enter sub-section [90] and turn off option [8].
4. Press [#] twice.

Testing Individual Wireless Keys:

You cannot use the individual device test described above to test WLS909-433/WLS919-433 wireless keys. To ensure that the RF5108-433 receiver is receiving transmissions from the devices, use the function keys on the Wireless Keys at several different points in the installation. If the wireless key does operate from all intended points of operation, you will need to move the RF5108-433 receiver. Moving the RF5108-433 higher will usually improve the reception. If you move the RF5108-433, you will need to repeat the tests described in Section 5.1 on all the wireless devices.

5.2 Mount the RF5108-433 and Wireless Devices

When you have tested reception of the RF5108-433 with all the wireless devices (see section 5.1) and you have a good mounting location, mount the RF5108-433:

1. Pull the Keybus wires through the hole at the bottom of the cabinet.
2. Mount the cabinet securely to the wall.

Mount the Devices

If you have conducted the placement test described in section 5.1 and got three “Good” results in a row for each device, you can mount the wireless devices. See the *Installation Sheet* for each device for mounting instructions.

Now that your RF5108-433 and wireless devices are mounted and working properly, read section 6 for information on potential wireless trouble conditions, RF jamming signals, and battery replacement.

Section 6: Additional Notes

6.1 Trouble Conditions

The control panel always watches for possible trouble conditions. If a trouble condition occurs, the keypad "Trouble" light will turn on and the keypad will beep. Press **[*][2]** to display the trouble conditions.

The following trouble conditions apply to the RF5108-433 and/or any enrolled devices.

General System Tamper - This trouble is generated when the RF5108-433 plastic cover is removed and/or if there is a jamming condition present.

General System Supervisory - This trouble will be indicated if the panel loses communication with any module connected to the Keybus. The event buffer will log a detailed description of the event.

Device Low Battery - This trouble is generated when a wireless device exhibits a low battery condition. Press **[7]** one, two, or three times to view which devices are experiencing battery failure. An LED keypad will indicate battery failure using zone lights 1 to 8.

Zone Tamper - This trouble is generated when an enrolled wireless device is removed from its mounting location.

Zone Fault - Each wireless zone will send a supervisory signal at a fixed time interval (64 minutes for NA, 12 minutes for EU). If the receiver does not receive a signal within the time programmed for the **Wireless Supervisory Window**, it will generate a zone fault.

Tamper Switches

There are 2 tamper switches on the RF5108-433 NA board. Removing the plastic cover and/or the RF5108-433NA from its mounting location causes a general system tamper.

6.2 Jamming Signal Detection

The RF5108-433 receiver detects jamming signals that can prevent the receiver from properly receiving transmissions from enrolled devices. See section 4.4 "Jamming Signal Detection" for information on jamming signal detection programming.

6.3 Wireless Zone Low Battery Transmission

Within any transmission, the device will indicate the status of the battery. If a battery is low, the system will indicate a Device Low Battery trouble.

The system will delay reporting the event to the central station for the number of days programmed for **Zone Low Battery Transmission Delay** in section [370]. This will prevent unnecessary reporting of the event if the user has been instructed on how to replace batteries.

Replacing Batteries in Wireless Devices

1. Remove the cover of the device from its back plate. This creates a tamper condition on the zone.
2. Refer to the battery installation instructions on the *Installation Sheet* of each component. Be sure to note the proper orientation of the batteries as you install them.
3. When the fresh batteries are in place, re-attach the cover to the back plate. The tamper is restored and the zone sends a battery trouble restoral signal to the RF5108-433. The battery trouble is now clear and the device should function normally.

NOTE: *When batteries in one device need to be replaced, the batteries in all devices may need to be replaced at the same time.*

Section 7: Troubleshooting

1. When I enter the 2-digit zone number when adding a wireless device, the keypad gives me a long beep.

You cannot enter ESNs unless a RF5108-433 wireless receiver is connected to the Keybus. See section 2 for instructions on setting up and wiring the RF5108-433 module.

2. I have entered the ESN for the device but when I violate the device, the zone does not show open on the keypad.

Check the following:

- Ensure the ESN has been entered correctly
- Ensure that the zone is enabled for the partition (if partition programming is used).
- Ensure that the wireless zone is not assigned to a zone used by PC5108 modules, an on-board zone, or a keypad zone.
- Ensure that the zone is programmed for something other than "Null Operation", and that the wireless zone attribute is turned on.

3. When I try a module placement test I get no result or "Bad" results.

Check the following (see sections 5.1 and 5.2 for more information on testing devices):

- Verify that you are testing the correct zone
- Verify that the correct ESN was entered when the device was enrolled
- Verify that the device is in range of the RF5108-433. Try testing the device in the same room as the receiver.
- Confirm that the RF5108-433 is properly connected to the Keybus (see section 2 for RF5108-433 set up and wiring instructions).
- Check that you are testing the zone correctly (see sections 5.1 and 5.2 for testing instructions)
- Check that the batteries are working and installed correctly.
- Look for large metal objects that may be preventing the signal from reaching the RF5108-433.

The device must be located where consistent "Good" results are obtained. If several devices show "Bad" results, move the receiver. See section 2.2 for tips on choosing a mounting location for the RF5108-433.

4. The LED on the motion detector does not turn on when I walk in front of the unit.

The LED is for walk test purposes only. See your WLS904-433/WLS904P-433 *Instruction Sheet* for walk test instructions.

Section 8: Programming Worksheets

[804] RF5108-433 Wireless Expansion Programming

- 6-digit entry is required. See Section 3.1 “A note on Electronic Serial Numbers” for details on programming 6-digit serial numbers.

Zone Serial Numbers

Default = 000000

- | | | | |
|--------------|----------------------|--------------|----------------------|
| [01] Zone 1 | <input type="text"/> | [17] Zone 17 | <input type="text"/> |
| [02] Zone 2 | <input type="text"/> | [18] Zone 18 | <input type="text"/> |
| [03] Zone 3 | <input type="text"/> | [19] Zone 19 | <input type="text"/> |
| [04] Zone 4 | <input type="text"/> | [20] Zone 20 | <input type="text"/> |
| [05] Zone 5 | <input type="text"/> | [21] Zone 21 | <input type="text"/> |
| [06] Zone 6 | <input type="text"/> | [22] Zone 22 | <input type="text"/> |
| [07] Zone 7 | <input type="text"/> | [23] Zone 23 | <input type="text"/> |
| [08] Zone 8 | <input type="text"/> | [24] Zone 24 | <input type="text"/> |
| [09] Zone 9 | <input type="text"/> | [25] Zone 25 | <input type="text"/> |
| [10] Zone 10 | <input type="text"/> | [26] Zone 26 | <input type="text"/> |
| [11] Zone 11 | <input type="text"/> | [27] Zone 27 | <input type="text"/> |
| [12] Zone 12 | <input type="text"/> | [28] Zone 28 | <input type="text"/> |
| [13] Zone 13 | <input type="text"/> | [29] Zone 29 | <input type="text"/> |
| [14] Zone 14 | <input type="text"/> | [30] Zone 30 | <input type="text"/> |
| [15] Zone 15 | <input type="text"/> | [31] Zone 31 | <input type="text"/> |
| [16] Zone 16 | <input type="text"/> | [32] Zone 32 | <input type="text"/> |

Wireless Key Serial Numbers

Default = 000000

- | | | | |
|-------------|----------------------|-------------|----------------------|
| [41] Key 01 | <input type="text"/> | [45] Key 05 | <input type="text"/> |
| [42] Key 02 | <input type="text"/> | [46] Key 05 | <input type="text"/> |
| [43] Key 03 | <input type="text"/> | [47] Key 07 | <input type="text"/> |
| [44] Key 04 | <input type="text"/> | [48] Key 08 | <input type="text"/> |

Partition 7 Wireless Key Options

[67] Function Key 1	03	<input type="text"/>	Function Key 3	27	<input type="text"/>
Function Key 2	04	<input type="text"/>	Function Key 4	30	<input type="text"/>

Partition 8 Wireless Key Options

[68] Function Key 1	03	<input type="text"/>	Function Key 3	27	<input type="text"/>
Function Key 2	04	<input type="text"/>	Function Key 4	30	<input type="text"/>

[69] Wireless Keys (1-8) Partition Assignments

Default = 01

Wireless Key 01	<input type="text"/>	Wireless Key 05	<input type="text"/>
Wireless Key 02	<input type="text"/>	Wireless Key 06	<input type="text"/>
Wireless Key 03	<input type="text"/>	Wireless Key 07	<input type="text"/>
Wireless Key 04	<input type="text"/>	Wireless Key 08	<input type="text"/>

Entry Description

00	Null (No Operation)	09	PC5208 PGM9
01	Main Panel PGM1	10	PC5208 PGM10
02	Main Panel PGM2	11	PC5204 PGM11
03	PC5208 PGM3	12	PC5204 PGM12
04	PC5208 PGM4	13	PC5204 PGM13
05	PC5208 PGM5	14	PC5204 PGM14
06	PC5208 PGM6	15	RF5108 PGM Pulse (local)
07	PC5208 PGM7	16	RF5108 PGM Toggle (local)
08	PC5208 PGM8		

[70] RF5108 PGM1 Output Option

Default 01

PGM1 Output Option

[71] RF5108 PGM2 Output Option

Default 02

PGM2 Output Option

[72] RF5108 - PGM1 Output Activation Time

Default 00

PGM1 Output Activation Time (Minutes)

Default 05

PGM1 Output Activation Time (Seconds)

[73] RF5108 - PGM2 Output Activation Time

Default 00

PGM2 Output Activation Time (Minutes)

Default 05

PGM2 Output Activation Time (Seconds)

NOTE: Sections [72] and [73] have a valid minimum programmable value of 00 minutes 01 seconds, and a valid maximum programmable value of 99 minutes 99 seconds.

Supervision

[81] Wireless Supervisory Window

Default NA = 96, EU=10

The window is programmed in 15 minute increments.

- The default programming for NA is 96 (x15 minutes), which is equal to 24 hours. Valid entries for NA are (16) - (96), equal to 4 - 24 hours.
- The default programming for EU is 10 (x15 minutes), which is equal to 2.5 hours. Valid Entries for EU are (08) - (96), equal to 2 - 24 hours.

[82] Zone Device Supervision Options (1-8)

Default = ON	Option ON	Option OFF
<input type="text" value="___"/> Option 1	Zone 01 Supervision enabled	Disabled
<input type="text" value="___"/> Option 2	Zone 02 Supervision enabled	Disabled
<input type="text" value="___"/> Option 3	Zone 03 Supervision enabled	Disabled
<input type="text" value="___"/> Option 4	Zone 04 Supervision enabled	Disabled
<input type="text" value="___"/> Option 5	Zone 05 Supervision enabled	Disabled
<input type="text" value="___"/> Option 6	Zone 06 Supervision enabled	Disabled
<input type="text" value="___"/> Option 7	Zone 07 Supervision enabled	Disabled
<input type="text" value="___"/> Option 8	Zone 08 Supervision enabled	Disabled

[83] Zone Device Supervision Options (9-16)

Default = ON	Option ON	Option OFF
<input type="text" value="___"/> Option 1	Zone 09 Supervision enabled	Disabled
<input type="text" value="___"/> Option 2	Zone 10 Supervision enabled	Disabled
<input type="text" value="___"/> Option 3	Zone 11 Supervision enabled	Disabled
<input type="text" value="___"/> Option 4	Zone 12 Supervision enabled	Disabled
<input type="text" value="___"/> Option 5	Zone 13 Supervision enabled	Disabled
<input type="text" value="___"/> Option 6	Zone 14 Supervision enabled	Disabled
<input type="text" value="___"/> Option 7	Zone 15 Supervision enabled	Disabled
<input type="text" value="___"/> Option 8	Zone 16 Supervision enabled	Disabled

[84] Zone Device Supervision Options (17-24)

Default = ON	Option ON	Option OFF
<input type="checkbox"/> Option 1	Zone 17 Supervision enabled	Disabled
<input type="checkbox"/> Option 2	Zone 18 Supervision enabled	Disabled
<input type="checkbox"/> Option 3	Zone 19 Supervision enabled	Disabled
<input type="checkbox"/> Option 4	Zone 20 Supervision enabled	Disabled
<input type="checkbox"/> Option 5	Zone 21 Supervision enabled	Disabled
<input type="checkbox"/> Option 6	Zone 22 Supervision enabled	Disabled
<input type="checkbox"/> Option 7	Zone 23 Supervision enabled	Disabled
<input type="checkbox"/> Option 8	Zone 24 Supervision enabled	Disabled

[85] Zone Device Supervision Options (25-32)

Default = ON	Option ON	Option OFF
<input type="checkbox"/> Option 1	Zone 25 Supervision enabled	Disabled
<input type="checkbox"/> Option 2	Zone 26 Supervision enabled	Disabled
<input type="checkbox"/> Option 3	Zone 27 Supervision enabled	Disabled
<input type="checkbox"/> Option 4	Zone 28 Supervision enabled	Disabled
<input type="checkbox"/> Option 5	Zone 29 Supervision enabled	Disabled
<input type="checkbox"/> Option 6	Zone 30 Supervision enabled	Disabled
<input type="checkbox"/> Option 7	Zone 31 Supervision enabled	Disabled
<input type="checkbox"/> Option 8	Zone 32 Supervision enabled	Disabled

[90] Other Options

Default = OFF	Option ON	Option OFF
<input type="checkbox"/> Options 1-6	For future use	
<input type="checkbox"/> Option 7	RF Jam Detect Disabled	RF Jam Detect Enabled
<input type="checkbox"/> Option 8	Global Placement Test	Individual Placement Test

RF Jamming Detection

[93] RF Jam Detect Zone

Default = 00

- Select an unused zone that will be set to the tamper state when a jamming signal is detected. (Valid entries = 01 - 32, 00 = No RF Jam zone selected)

Guidelines for Locating Smoke Detectors

Experience has shown that all hostile fires in family living units generate smoke to a greater or lesser extent. Experiments using typical fires in family living units indicate that detectable quantities of smoke precede detectable levels of heat in most cases. In existing homes, NFPA Standard 72 requires that a smoke detector be installed outside each sleeping area and on each additional story of the family unit.

On smooth ceilings, detectors may be spaced 9.1m (30 feet) apart as a guide. Other spacing may be required depending on ceiling height, air movement, the presence of joists, uninsulated ceilings, etc. Consult National Fire Alarm Code NFPA 72, CAN/ULS-S553-M86 or other appropriate national standards for installation recommendations.

Do not locate smoke detectors at the top of peaked or gabled ceilings; the dead air space in these locations may prevent the unit from detecting smoke.

Avoid areas with turbulent air flow, such as near doors, fans or windows. Rapid air movement around the detector may prevent smoke from entering the unit.

Do not locate detectors in areas of high humidity.

Do not locate detectors in areas where the temperature rises above 38°C (100°F) or falls below 5°C (41°F).

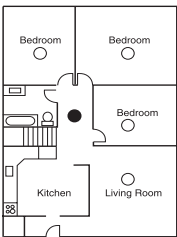
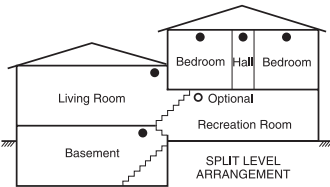
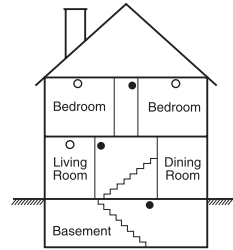
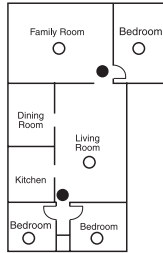
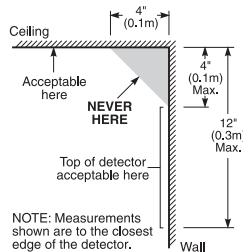


Figure 1



SPLIT LEVEL ARRANGEMENT



- Smoke detectors for better protection
- Smoke detectors for minimum protection

Smoke detectors should always be installed in accordance with NFPA 72, the National Fire Alarm Code. Smoke detectors should always be located in accordance with:

- Paragraph 2-2.1.1.1 of NFPA 72: "Smoke detectors shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms and on each additional story of the family living unit, including basements and excluding crawl spaces and unfinished attics. In new construction, a smoke detector also shall be installed in each sleeping room."
- Paragraph 2-2.1.1.2 of NFPA 72: "Split level arrangement. Smoke detectors are required where shown. Smoke detectors are optional where a door is not provided between living room and recreation room."

! The Smoke Detector is designed to use Eveready Energizer EN91 Alkaline Batteries. Do not use other brands of batteries with the Smoke Detector. Using brands other than the Eveready Energizer will void UL approval, and may affect the system's operation.

LIMITED WARRANTY

Digital Security Controls Ltd. warrants the original purchaser that for a period of 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, Digital Security Controls Ltd. shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labour 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 purchaser must promptly notify Digital Security Controls Ltd. 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 all software 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 DSC. Custom products are only warranted to the extent that they do not function upon delivery. In such cases, DSC 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 Digital Security Controls Ltd. 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 Digital Security Controls Ltd. must first obtain an authorization number. Digital Security Controls Ltd. 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 Digital Security Controls Ltd. 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 Digital Security Controls Ltd.);
- 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 centre; (ii) products which are not identified with DSC's product label and lot number or serial number; (iii) products disassembled or repaired in such a manner as 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 DSC'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 work will be performed until a valid purchase order is received from the Customer and a Return Merchandise Authorisation number (RMA) is issued by DSC's Customer Service.

Digital Security Controls Ltd.'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 Digital Security Controls Ltd. 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, downtime, 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 DSC, 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 Digital Security Controls Ltd. Digital Security Controls Ltd. 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: Digital Security Controls Ltd. 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

Digital Security Controls Ltd. 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 Digital Security Controls Ltd. must first obtain an authorization number. Digital Security Controls Ltd. will not accept any shipment whatsoever for which prior authorization has not been obtained.

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

Products which Digital Security Controls Ltd. 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.

FCC COMPLIANCE STATEMENT

CAUTION: Changes or modifications not expressly approved by Digital Security Controls Ltd. could void your authority to use this equipment.

This equipment generates and uses radio frequency energy and if not installed and used properly, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for Class B device in accordance with the specifications in Subpart "B" of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in any residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to television or radio 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:

- Re-orient the receiving antenna
- Relocate the alarm control with respect to the receiver
- Move the alarm control away from the receiver
- Connect the alarm control into a different outlet so that alarm control and receiver are on different circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the FCC helpful: "How to Identify and Resolve Radio/Television Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock # 004-000-00345-4.

This Class B digital apparatus meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Classe B respecte toutes les exigences du règlement sur le matériel brouilleur du Canada.

IC: 160A - RF5108

The term "IC": before the radio certification number only signifies that Industry Canada technical specifications were met.

NOTES

NOTES

WARNING Please Read Carefully

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.

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 installation should 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 and/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 length are 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.

■ **Failure of 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 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.

■ **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 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.

■ **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 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.

■ **Motion Detectors**

Motion detectors can only detect motion within the designated areas as shown in their respective installation instructions. They cannot discriminate between intruders and intended occupants. Motion detectors 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 doors or 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, barbecues, fireplaces, sunlight, steam vents, lighting and so on.

■ **Warning Devices**

Warning devices 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**

If telephone 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 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 to protect the occupants or their belongings.

■ **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.

■ **Inadequate Testing**

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 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.

■ **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.

