

FA202 Frequency Agile® 900MHz Smoke Detector

Installation and Operation Manual - 02873E



IMPORTANT NOTES



THIS EQUIPMENT SHOULD BE INSTALLED IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION'S STANDARD 72.

- These products are designed to be installed and maintained by professional security technicians.
- Products, unless specifically noted, are intended for indoor use.
- Manually test all products regularly.
- All wiring to be used must be in accordance with the provisions of Article 210 of the National Electrical Code, ANSI/NFPA 70.
- It is the responsibility of individuals in the household that are capable of assisting others to provide assistance to those who may not be awakened by the alarm sound, or to those who may be incapable of safely evacuating the area unassisted.

PRODUCT SUMMARY

The FA202 Smoke Detector is a supervised wireless, battery powered photoelectric smoke sensor. The sensor includes a built-in sounder for alarm alerts, a visual status LED (light-emitting diode), and an Inovonics Wireless Frequency Agile® transmitter. The FA202 communicates with all FA-series Inovonics Wireless Frequency Agile receivers as featured in Inovonics' Wireless Guardian and Vision Plus systems; and as integrated with systems manufactured by Digital Monitoring Products, Bosch Security Systems, and Verex Monitor Integrated Security Management. Inovonics FA-series slave receivers can function as stand-alone systems or can be integrated with many other security systems and panels.

Under normal (non-alarm) conditions, the LED flashes once every 8 seconds while the sensor monitors the surrounding conditions. When the sensor detects smoke, the LED changes from flashing to on and the built-in sounder produces a loud temporal beeping pattern. The sensor also transmits an alarm signal, which the panel receives and processes accordingly. The smoke sensor uses two 3-volt lithium batteries, which are included.

The smoke sensor also provides the following features: • Self-diagnostics monitor sensor sensitivity and operational status. See *Testing the FA202*. • Replaceable optical chamber for easy maintenance when required. See *Maintaining the System*.

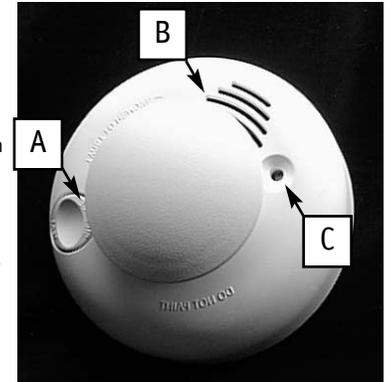


Figure 1: Sensor Features
A--Test/Silence Button B--Sounder Vent C--LED

INSTALLATION GUIDELINES

For your information, the National Fire Protection Association's Standard 72 reads as follows:

"2-2.1.1.1 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 shall be installed in each sleeping room."

"A-2.5.2.1 Smoke Detection--Are More Smoke Detectors Desirable? The required number of smoke detectors might not provide reliable early warning protection for those areas separated by a door from the areas protected by the required smoke detectors. For this reason, it is recommended that the householder consider the use of additional smoke detectors for those areas for increased protection. The additional areas include the basement bedrooms, dining room, furnace room, utility room, and hallways not protected by the required smoke detectors. The installation of smoke detectors in kitchens, attics (finished or unfinished), or garages is not normally recommended, as these locations occasionally experience conditions that can result in improper operation."

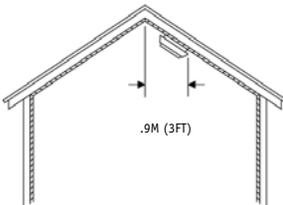


Figure 2: Sloped, peaked or gabled ceilings.

Recommended: Install a minimum of two smoke sensors in any household. • Put a smoke sensor in the hallway outside of every bedroom area. A minimum of two smoke sensors are required in homes with two bedroom areas. • Put a smoke sensor on every level of a multi-level residence. • In rooms with sloped ceilings, install smoke sensors 0.9m (3 feet) measured down from the highest point of the ceiling. (Figure 2.) • Install basement sensors on the ceiling as close to the center of the room as possible (Figure 3-F). If this is not practical, install it on the ceiling no closer than 10cm (4 inches) from any wall or corner (Figure 3-G). • DO NOT mount a smoke sensor to a drop-ceiling tile; mount it to a metal runner. • If ceiling mounting is not practical, install on an inside wall between 10 and 15cm (4 and 6 inches) from the ceiling (Figure 3-H). • Put smoke sensors at both ends of a bedroom hallway if the hallway is more than 9m (30 feet) long. Large rooms over 84 square meters (900 square feet) require more than a single sensor. • Areas with rough ceilings or short, transom-type walls coming down from the ceiling require additional smoke sensors. • Install second-floor

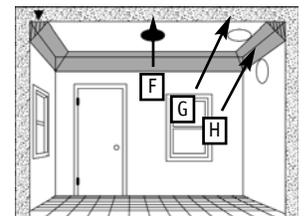


Figure 3: Smoke sensor mounting locations

smoke sensors on the ceiling at the top of the first-to-second floor stairwell. Be sure that no door or other obstruction blocks the path of smoke to the sensor.

IMPORTANT ! Regulations pertaining to smoke sensor installations vary. For more information, contact your local fire department or local authority having jurisdiction.

Do Not Locate Sensors: • In or near areas such as kitchens or garages, where smoke or vehicle exhausts normally occur. (Protect these areas with heat-detection devices.) •

• Near furnaces, hot water heaters, or gas space heaters. • In damp or very humid areas, or next to bathrooms with showers. Install sensors at least 1.5m (5 feet) away from bathrooms. • In very cold or very hot areas. • In dusty, dirty, or insect infested areas. • Near fresh air inlets or returns or excessively drafty areas. Air conditioners, heater, fans, and fresh air intakes and returns can drive smoke away from smoke sensors. • In dead air spaces at the top of a peaked ceiling or wall/ceiling intersect. Dead air may prevent smoke from reaching a smoke sensor. • Near fluorescent light fixtures. Install smoke sensors at least 3m (10 feet) away from fluorescent light fixtures.

Limitations: Smoke alarms can significantly help in reducing loss, injury and even death. However, no matter how reliable a detection device is, no warning system works perfectly under every circumstance. Users are advised that smoke alarms cannot ensure protection from any or all damage or loss.

All sensors are subject to possible compromise or failure-to-warn for a variety of reasons. For example: • Smoke sensors cannot detect smoke in chimneys, walls, roofs, or smoke blocked by a closed door. • Sensors may not detect smoke on other levels of the building. • Sensors may not warn in time when fires are caused by smoking in bed, explosions, improper storage of flammables, overloaded electrical circuits, or other hazardous conditions. • Smoke alarms may not be heard by sound sleepers or by individuals affected by alcohol, drugs or medications. • This device is not designed for the hearing impaired. • Smoke alarms may not provide warning early enough: they activate only when smoke reaches the sensor, so smoke from fires starting away from the immediate vicinity of the device may not reach the alarm at all, or may be detected too late for timely evacuation.

EVACUATION PLANS

Develop plans for a variety of emergency situations. Periodically discuss and rehearse emergency plans that include the following:

- Know which doors and windows are normally locked, open, closed.
- Feel closed doors. If they feel hot, find another escape route.
- Teach all occupants to escape as quickly as possible. Do not stop to gather belongings.
- During your escape, crawl and hold your breath as much as possible to minimize smoke inhalation.
- Meet at a designated outdoor location.
- Insist that no one should return to the premises if there is a fire.
- Notify the fire department from a neighbor's phone or by cell phone from outside the residence.
- Prepare a drawing of escape routes, using the following guidelines. See Figure 4.
 - Show all building levels.
 - Show all exits. (Two exits per room are recommended.)
 - Show the location of all components of the fire alarm system.
 - Show the locations of any fire extinguishers, hoses, ladders, etc.

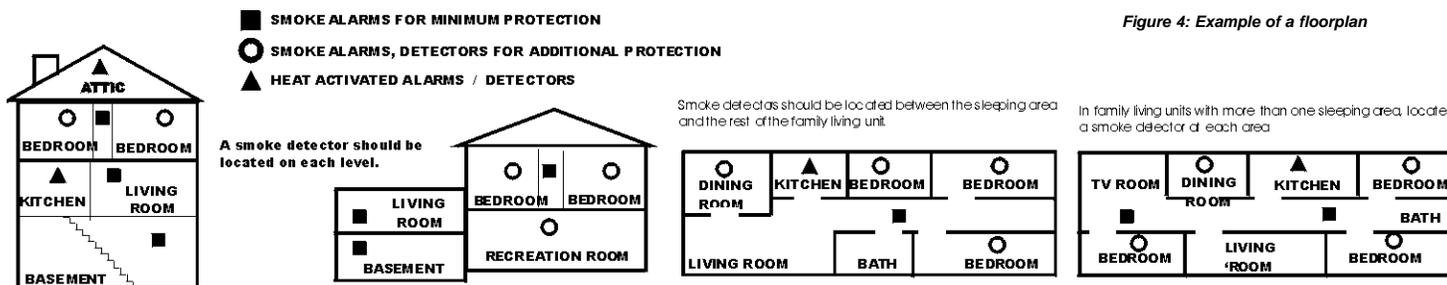


Figure 4: Example of a floorplan

PROGRAMMING THE FA202

Program the FA202 prior to installation. If units are programmed offsite, they should be repackaged with batteries installed and the red dust cover in place.

- (1) Locate the transmitter programming pins by disassembling the detector. (a) Remove the red dust cover containing the batteries from the smoke detector. (b) With the smoke detector facing you, remove the detector body from its Mounting Base by twisting the detector about 15 degrees counterclockwise with respect to the Mounting Base. See Figure 7. (c) Remove the Sensor Cap by first sliding a flatblade screwdriver part way into the slot on the side of the Cap. See Figure 8. Now, gently push the handle down while twisting the Sensor Cap counter-clockwise with respect to the Sensor. See Figure 5. (d) Remove the Sensor from the Body by pushing down on the Smoke Chamber while pulling up on the bottom of the body. See Figure 5. (e) Remove the Battery Cover that encloses the Battery Compartment by pushing on the area marked OPEN. See Figure 9. (f) Take the batteries out of the red dust cover holder and load them into the Battery Compartment. Make sure to observe battery polarity and make sure the battery removal ribbon rests under the batteries. (g) Refer to Figure 6 to locate the programming pins on the transmitter board.
- (2) Using an appropriate Inovonics programming device, set the programming options as follows:
 - External Switch Type: Normally Closed
 - EOL Resistor: No
 - Use Internal Contact: No
 - Check-in Time: 60 seconds
- (3) When prompted by the programming device to plug in the transmitter, connect the programming cable to the 3-pin header. See Figure 6. (Orientation of the cable with respect to the 3-pin header is not important; both outside pins on the 3-pin header are at ground potential.)
- (4) Press the Reset button on the transmitter. See Figure 6.



Figure 5: Removing the sensor from the detector body

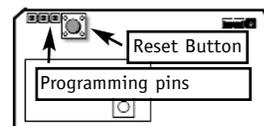


Figure 6: Transmitter board

When programming is complete, disconnect the cable, test the detector per the *Sensitivity Test* procedure, and reassemble the smoke detector.

Note: The FA202 retains registration data in non-volatile memory. It does not require re-programming after loss of power. Install a new battery and press the reset button to re-initialise the transmitter and restore registration.

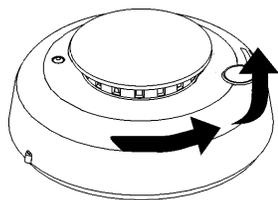


Figure 7: Removing cover from base.

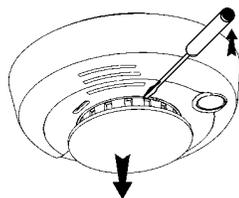


Figure 8: Removing the sensor cap

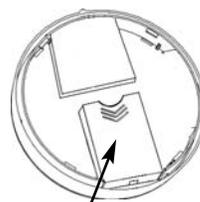


Figure 9: Battery compartment

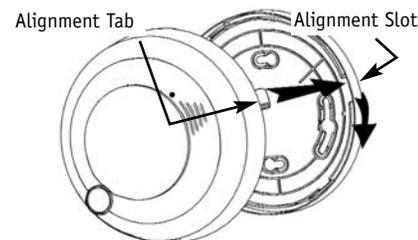


Figure 10: Cover-to-base assembly :
Align tab with slot and twist clockwise

INSTALLING THE SENSOR

(1) Remove the cover from the mounting base by turning the sensor counterclockwise about 15 degrees. The sensor should snap off of the mounting base. See Figure 7. (2) Slide the battery compartment cover away from the sensor to unsnap it and lift it off. See Figure 9. (3) If batteries are not installed, insert the two lithium batteries provided into the battery compartment (observing correct polarity) and replace the battery compartment cover. (4) Re-assemble the device by aligning tab on the detector to slot on the base. See Figure 10.

Important! The control panel alarm and all auxiliary functions should be verified for a complete test of the system.

TESTING THE FA202

CAUTION: To avoid a fire department dispatch, contact the central monitoring station or put the system into sensor test mode before activating the sensor using this method.

There are two ways to test the FA202 smoke detector. The procedure described under "Sensitivity Test" should be followed every week. At least once each year it is recommended that the sensor be tested with an aerosol smoke product, as described under "Smoke Test." Both procedures activate the alarm sounder and send alarm signals to the control panel.

The FA202 should also be tested after initial programming and each time the Smoke Chamber is changed or the batteries are replaced. To make wireless signals from the detector cause an alarm or trouble indication at the control panel, receiver and panel programming must be completed prior to this test.

Smoke Test

Smoke sensors should be tested in place annually using aerosol simulated smoke (ESL Smoke! In a Can® (ESL Part No. SM-200) is a patented formula, UL listed for all brands and models of photoelectric or ionization type smoke detectors. "Smoke! In a Can" is a registered trademark of ESL. ESL is a brand name of GE Interlogix.)

The LED should remain on while the built-in transmitter sends an alarm signal to the control panel. The sensor produces a 3-beep pattern until the test/silence button is pressed. The sensor automatically resets when smoke is no longer present. A sensor that fails to activate with either the sensor or smoke test may require cleaning. If a sensor still fails to activate after cleaning, return the unit for service.

Sensitivity Test

Each sensor includes a sensitivity level test mode that lets you check the sensitivity using the test button and the LED as follows: (1) Press and hold the test button for 4 seconds, then release it. The LED flashes one to nine times. (2) Count the number of LED flashes and use the following table to determine the status of the sensor sensitivity and what action to take, if any.

Flashes	Sensor Condition/Action
1	Self-diagnostics failure. Return sensor for service/replacement.
2-3	Sensor is becoming insensitive. Clean the sensor (see Maintaining the System) and retest. If error persists, replace sensor.
4-7	Sensor is within normal sensitivity range.
8-9	Sensor is becoming too sensitive. Verify that the smoke chamber is snapped down securely. Clean the sensor (see Maintaining the System) and retest.

UNDERSTANDING THE TEST/SILENCE BUTTON

The test button functions as follows: 1. **Sounder/Sensitivity Test** - Press the test button until the LED lights or the sounder activates (about 4 seconds) and release. The sensor performs a sounder test, a sensitivity test and sends an alarm transmission. 2. **Silence Low Battery Chirp** - Press and release to silence a low battery chirp. The low battery chirp resumes after 24 hours if the condition is not corrected.

UNDERSTANDING THE LED

The LED indicates the status of the sensor as follows: **FLASHING** = Flashes every 8 seconds to indicate normal operation. **ON** = Detects smoke, sending an alarm. **OFF** = Trouble. Maintenance is required. Check the control panel to determine what action to take. If the sensor has a hardware fault, it will stop reporting supervision signals to the panel.

SERVICING PANEL TROUBLE INDICATIONS

In the event that a Low Battery trouble indication appears on the control panel, service the FA202 as described in the following procedure:

- (1) Remove the FA202 from its Mounting Base and disassemble the unit as described in *Programming the FA202*. (The Sensor Cap needs to be removed from the Detector Body. See Figure 5.)
- (2) Perform a wireless sensitivity test on the unit as described in *Programming the FA202*.
 - (a) If the results of this test show that the detector does not need cleaning, press the Reset button on the transmitter to update the panel with the detector's latest operational status. If the panel trouble indication returns, the batteries need changing. Change the batteries and repeat this step. As indicated in the WARNING label on the Battery Compartment, wait at least 30 seconds after removing batteries before inserting new batteries. This is necessary to force an immediate test of the new batteries. If the panel trouble indication now remains off, servicing has been completed.
 - (b) If the results of this test shows that the unit does need cleaning, replace the Smoke Chamber and retest the unit. Now, press the Reset button on the transmitter to update the panel with the detector's latest operational status. If the panel trouble indication remains off, the unit is performing normally, the batteries do not need changing, and servicing has been completed. If, however, the panel trouble indication returns, the detector probably has a secondary Low Battery condition that requires that the batteries be replaced. Change the batteries as described in *Replacing Batteries*, wait about nine seconds until the detector LED begins to flash, and press the transmitter Reset button.

As indicated in the WARNING label on the Battery Compartment, wait at least 30 seconds after removing batteries before inserting new batteries. This is necessary to force an immediate test of the new batteries.

If the panel trouble indication now remains off, servicing has been completed.

MAINTAINING THE SYSTEM

Replacing Batteries

IMPORTANT: Always press the reset button and test the transmitter after changing batteries.

The sensor is powered by two 3 VDC lithium batteries. When the system indicates the sensor has a low battery, replace the batteries immediately. You must remove the batteries to reset the low battery signal before installing new batteries. **Important:** Replace both batteries when the sensor or panel notifies you that a battery is low. Recommended battery replacement is PANASONIC CR123A. Use of any other batteries may present a risk of fire or explosion. To prevent a low battery condition, you must install the batteries exactly as described.

CAUTION: Dispose of used batteries promptly according to the manufacturer's instructions and/or local authorities. Batteries can explode or cause burns if disassembled, recharged, or exposed to fire or high temperature. Keep away from children.

When the batteries are low, the sensor transmits a low battery signal for at least 7 days, allowing the monitoring company time to contact the customer for service. After 10 days, the sensor will chirp every 45 seconds until the batteries are exhausted. Press and release the test button to silence the low battery beeps for 24 hours. Constant exposure to high or low temperatures or high humidity may reduce battery life. Always test the system after replacing the batteries.

Cleaning

Clean the sensor cover with a dry or damp cloth as needed to keep it free from dust and dirt. Clean the sensor interior at least once each year. This requires replacing the optical chamber. Use only ESL model 211 Optical Chambers for replacement.

To clean the sensor chamber:

(1) Place the panel in sensor test mode. (2) Remove the sensor from the mounting base. (3) Remove the batteries. (4) Slide a flat-blade screwdriver in the slot on the sensor cap and gently push the handle down to pry the cap off. See Figure 8. (5) Squeeze the existing optical chamber where indicated and pull it up and away from the sensor and discard. See Figure 11. (6) Blow out or use a soft-bristled brush to remove dust and dirt from the smoke chamber base. (7) Align the new optical chamber with the base and snap down into place. (8) Replace the sensor cap by lining the cap up with the sensor, then press the cap onto the sensor and turn clockwise approximately 15 degrees. It should snap firmly into place. (9) Observing the proper polarity, reinstall the batteries and replace the battery cover. (10) Reattach the sensor to the mounting base. See Figure 10. (11) Test the sensitivity as described below.

Note: The base will not fit properly if the batteries are not installed.

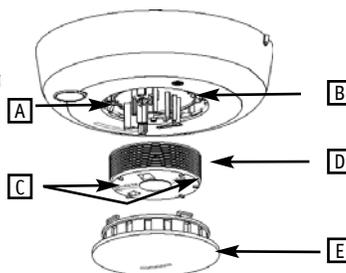


Figure 11: Sensor Parts

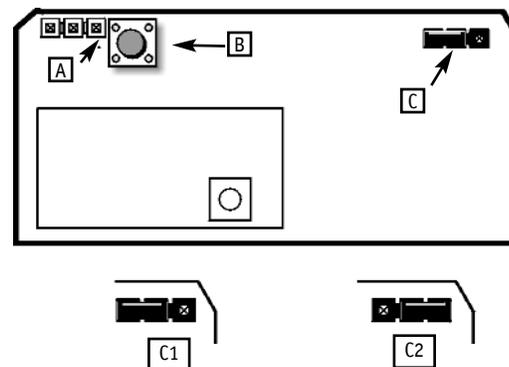
- A -- Optical chamber latch
- B -- Optical base
- C -- Alignment arrows
- D -- Optical chamber
- E -- Sensor cap

WIRELESS CLEANME® REPORTING

As the factory default condition, the FA202 combines the CleanMe signal with its Low Battery signal. If the control panel indicates a Low Battery trouble condition, this should be interpreted as a Maintenance Needed trouble indication. (The battery may be fine, but the detector needs cleaning.) If this multiple-condition panel indication is not desired, wireless reporting of the CleanMe status can be disabled by moving the jumper on the CleanMe 3-pin header to the inactive position (see Figure 12). When this is done, only a Low Battery signal will be sent from the detector, and only a Low Battery trouble condition reported at the panel. **NOTE:** Even if CleanMe notification is disabled, the sensitivity test will still indicate sensor condition.

Figure 12: FA202 Transmitter Board

- A -- 3-pin programming header
- B -- Reset button
- C -- CleanMe 3-pin header
 - C1 -- CleanMe enabled position: Select only with serial-output receivers compatible with ESL CleanMe® feature (CleanMe® is a registered trademark of ESL.)
 - C2 -- Low Battery only (CleanMe inactive): Transmitter sends low battery trouble signal.



TECHNICAL SPECIFICATIONS:

Dimensions:	Detector: 5.4" x 2.4" (14.2cm x 6.1cm) Base: 5.4" x 0.46" (13.7cm x 1.17cm)
RF Frequency:	902 - 928 MHz
RF Modulation:	Frequency hopping, spread spectrum
Temperature:	Operating Range 40° to 100° F (4° to 100° C)
Operating Humidity:	0 to 90% non-condensing
Voltage:	3 VDC
Batteries:	Two 3-volt lithium batteries of the same type. Panasonic CR123A is recommended.
Typical average standby current:	38.5 µA
Typical peak alarm current:	91.1 mA
Battery life:	1 year, minimum
Low battery beep reate:	1 every 45 seconds, ± 2 seconds
Listings:	UL, CSFM

SERVICE INFORMATION:

If an FA202 fails to operate properly, phone Inovonics Technical Support (800-782-2709) to request a Return Material Authorization ("RMA") number, then ship the unit to the address below. (Please include the RMA number on the package to expedite handling.)

Inovonics Wireless Corporation

RMA # _____

315 CTC Blvd

Louisville, CO 80027

WARRANTY & DISCLAIMER

Inovonics Wireless Corporation ("Inovonics") warrants its products ("Product" or "Products") to conform to its own specifications and to be free of defects in materials and workmanship under normal use for a period of twenty-four (24) months from the date of manufacture. Within the warranty period, Inovonics will repair or replace, at its option, all or any part of the warranted Product. Inovonics will not be responsible for dismantling and/or reinstallation charges. To exercise the warranty, the User ("User", "Installer" or "Consumer") must work directly through their authorized distributor who will be given a Return Material Authorization ("RMA") number by Inovonics. Details of shipment will be arranged directly through the authorized distributor.

This warranty is void in cases of improper installation, misuse, failure to follow installation and operating instructions, alteration, accident or tampering, and repair by anyone other than Inovonics.

This warranty is exclusive and expressly in lieu of all other warranties, obligations or liabilities, whether written, oral, express, or implied. There is no warranty by Inovonics that Inovonics product will be merchantable or fit for any particular purpose, nor is there any other warranty, expressed or implied, except as such is expressly set forth herein. In no event shall Inovonics be liable for an incidental, consequential, indirect, special or exemplary damages, including but not limited to loss of profit, revenue or contract, loss of use, cost of down time, or interruption of business, nor any claim made by distributor's customers, or any other person or entity.

This warranty will not be modified or extended. Inovonics does not authorize any person to act on its behalf to modify or extend this warranty. This warranty will apply only to Inovonics Products. All other products, accessories or attachments used in conjunction with Inovonics equipment, including batteries, will be covered solely by their own warranty, if any. Inovonics will not be liable for any direct, incidental or consequential damage or loss whatsoever, caused by the malfunction of Product due to products, accessories, or attachments of other manufacturers, including batteries, used in conjunction with Inovonics Products.

The User recognizes that a properly installed and maintained security system may only reduce the risk of events such as burglary, robbery, personal injury and fire. It does not insure or guarantee that there will be no death, personal damage, and/or damage to property. Inovonics does not claim that the Product may not be compromised and/or circumvented, or that the Product will prevent any death, personal and/or bodily injury, and/or damage to property resulting from burglary, robbery, fire or otherwise, or that the Product will in all cases provide adequate warning or protection.

Inovonics shall have no liability for any death, injury, or damage, however incurred, based on a claim that Inovonics Products failed to function. However, if Inovonics is held liable, directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, Inovonics' maximum liability will not in any case exceed the purchase price of the Product. This will be the complete and exclusive remedy against Inovonics.



Warning: The User should follow all installation, operation, and maintenance instructions. The User is strongly advised to conduct Product and systems tests at least once each week. Changes in environmental conditions, electric or electronic disruptions, and tampering, may cause the Product to not perform as expected.



Warning: Inovonics warrants its Product to the User. The User is responsible for exercising all due prudence and taking necessary precautions for the safety and protection of lives and property wherever Inovonics Products are installed. Inovonics strongly advises the User to program Products to be supervised when used in applications affecting life safety. Users are warned that unsupervised devices are subject to undetected failure due to malfunction, battery failure, tampering, or changes in environment.