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COMPONENTS

2023

PTI SECURITY SYSTEMS

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EN6040 Network Coordinator
Installation Instructions

1 Overview

The EN6040 network coordinator is a gateway that uses reliable frequency-hopping, spread-spectrum technology to coordinate signals between end devices, high-power repeaters and the application controller in a common serial data format.

1.1 Installing an Inovonics Security System

An EchoStream survey kit should be used to establish an EchoStream system. The EchoStream survey kit measures the signal strength of high-power repeater and sensor messages to help optimize your EchoStream system.

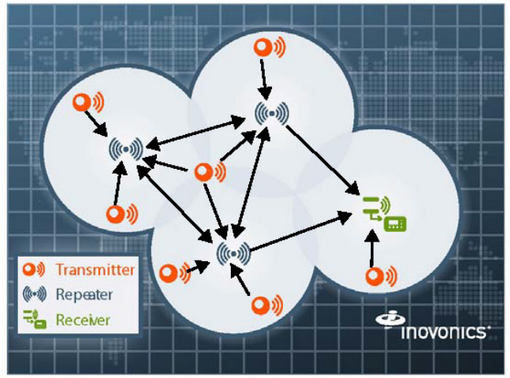

Figure 1 Sample EchoStream system

The EchoStream survey kit provides you with two signal strength measurements: signal level and signal margin.

Signal level

The signal level is the measurement of the overall decibel level of the message.

Signal margin

The signal margin is the measurement of the decibel level of the message, minus the decibel level of any interfering signals. Inovonics equipment should be placed within a facility such that all end-devices produce signal margin readings of at least 4 decibels.

Both the signal level and signal margin are measured in decibels. Because signal strength and signal margin are measured on a logarithmic scale, the difference between a decibel level of 3 (Weak) and a decibel level of 4 (Good) is a much larger difference than it would be on a linear scale.

Note: For more information about the EchoStream survey kit, see the *EN7016SK EchoStream® Survey Kit Installation and Operation Manual.*

1.2 Inovonics Wireless Contact Information

If you have any problems with this procedure, contact Inovonics Wireless technical services:

- E-mail: support@inovonics.com
- Phone: (800) 782-2709; (303) 939-9336

1.3 EN6040 Network Coordinator Front Panel

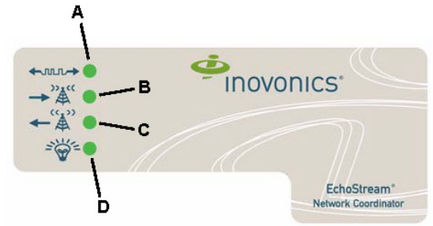

Figure 2 EN6040 network coordinator front panel

A Serial Data LED **B** RF Receive LED **C** RF Transmit LED **D** Power LED

Operation LEDs

Serial Data LED: Lit when the EN6040 network coordinator is receiving or transmitting serial data.

RF Receive LED: Lit when the EN6040 network coordinator is receiving a RF transmission from another Inovonics Wireless device.

RF Transmit LED: Lit when the EN6040 network coordinator is transmitting an RF transmission to an end device or high-power repeater.

Power LED: Lit when the EN6040 network coordinator is receiving power.

1.4 EN6040 Network Coordinator Internal Components

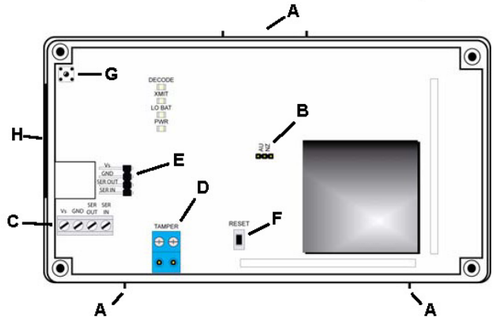

Figure 3 EN6040 network coordinator internal components

A Housing release tab **B** Frequency band selection pins
C Serial data and power terminal **D** Tamper terminal
E Serial data and power port **F** Reset button
G Housing tamper switch **H** Side cabling knockout

1.5 What's In The Carton

- Two drywall anchors
- Two mounting screws
- Two pieces of mounting tape
- One frequency band selection shunt

2 Installation and Startup

2.1 Installation Notes

- These products are designed to be maintained by professional security technicians
- Products are tested for indoor use
- All products should be manually tested weekly

2.2 Connect Power, Serial, and Tamper Cabling

Caution: Long cable runs should not be adjacent to high current power feeds. Keep cable lengths as short as possible to minimize noise pickup. Measure voltage at the EN6040 network coordinator on long cable runs.

1. Use a small screwdriver to press the top housing release tab and separate the housing (Figure 3).
2. If using the Inovonics ACC643 serial and power cable to connect the EN6040 network coordinator, connect it to the serial data and power port (Figure 3).
3. If using a serial data and power cable of your own design, connect it to the serial data terminal (Figure 3). Cabling should meet the following specifications:
   - A maximum cable length of 50 feet (15.25 meters).
4. If an external tamper switch is needed, connect a cable to the tamper terminal (Figure 3). Tamper cabling should meet the following specifications:
   - A maximum cable length of 50 feet (15.25 meters).
5. Route the cabling through the side cabling knockout (Figure 3).

2.3 Select the Frequency Band

EchoStream products are able to use a range of radio frequencies, and must be configured for your geographic area. This product ships with a default frequency range of 902-928 MHz for use in North America. If you are using the product in North America, skip to section 2.4, "Mount the EN6040 Network Coordinator"; if you are using the product in Australia or New Zealand, you will need to configure the EN6040 network coordinator.

6. Place a selection jumper on the frequency band selection pins appropriate to your geographic area (Figure 3).
   - Place the jumper on the right two pins, marked NZ, to set the frequency range to 921-928 MHz for New Zealand
   - Place the jumper on the left two pins, marked AUS, to set the frequency range to 915-928 MHz for Australia.
7. Press the reset button to complete configuration (Figure 3).

2.4 Mount the EN6040 Network Coordinator

Caution: Mount the EN6040 network coordinator in a location removed from metal. Metal objects (duct work, wire mesh screens, boxes) will reduce RF range.

Note: A best practice is to ensure the EN6040 network coordinator is mounted in an easily accessible location for future maintenance.

8. If using the mounting tape included in the installation packet, apply the tape to the back of the housing and to the wall.
9. If using the mounting screws to mount the EN6040 network coordinator to drywall, install the drywall anchors included in the installation packet.
10. Use the provided screws to mount the EN6040 network coordinator.
11. Once the EN6040 network coordinator has been mounted, close the housing.

3 US Patent Numbers

- 7,154,866
- 7,554,932
- 7,746,804

4 Specifications

Housing dimensions: 165 mm x 89 mm x 25 mm (6.5" x 3.5" x 1")
Weight: 161 g (5.7 oz)
Power requirement: 10-14 VDC at 200mA
Radio: Inovonics Wireless EchoStream
Operating frequency: 915-928 MHz (Australia), 921-928 MHz (New Zealand), 902-928 MHz (USA)
Operating environment: -20 - 60°C (-4°- 140°F), 90% relative humidity, non-condensing
Accessories: ACC643: serial data and power cord

5 Television and Radio Interference

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

6 FCC Part 15 and Industry Canada Compliance

This device complies with part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

7 Warranty and Disclaimer

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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 thirty-six (36) 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. 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.

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EN1941 Family One-Way Binary RF Module
Installation and Operation Manual

1 Overview

EchoStream RF modules are designed to be easily interfaced with your electronic remote application controller (RAC), allowing the assimilation of any user-specific application into an EchoStream system. Once integrated with existing products, RF modules provide you with complete EchoStream functionality.

One-way binary RF modules are end-devices that use a logic-level connection to interface with your RAC.

Figure 1 One-way system components

The one-way binary RF module is available in the following configurations:

Part #	Check-In
EN1941	3 minutes
EN1941-60	60 minutes

The one-way binary RF module is available in North America, Australia and New Zealand; the radio frequency band has been configured for the appropriate geographic area at the factory.

Note: For UL 2560 installations, refer to the *EN6080 Area Control Gateway Installation Instructions* or *EN6040-T Network Coordinator Installation Instructions*.

1.1 Maximum Number of Repeaters for a UL 2560 Installation

To achieve the 99.99% alarm message reliability required for UL 2560 compliance, system installations must operate within the following limits for end device and repeater counts.

End Devices	Maximum Repeaters
150	397
250	386
350	375
500	360
1000	313
2000	238
3000	184

1.2 Inovonics Wireless Contact Information

For product and installation videos visit us at www.inovonics.com/videos or use the QR code below.

If you have any problems with this procedure, contact Inovonics Wireless technical services:

- E-mail: support@inovonics.com.
- Phone: (800) 782-2709; (303) 939-9336.

1.3 Installation Notes

- These products are designed to be installed and maintained by professional security technicians.
- Products are intended for indoor use.
- Manually test all products weekly.

2 One-Way Binary RF Module Components

The EN1941 is a universal one-way binary RF module with two alarm input pins, allowing the use of dual inputs. Input one is the primary alarm, bit 0; input two is the secondary alarm, bit 1.

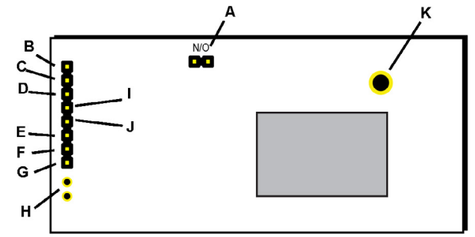

Figure 2 One-way binary RF module components

A N/O selection pins
B Reserved
C Reserved
D Secondary alarm
E Power
F Ground
G Primary alarm
H LED contacts
I Tamper input
J Reset input
K Mounting hole

N/O selection pins Place a jumper to select normally open inputs; remove the jumper to select normally closed.

Note: The EN1941 is shipped with the jumper unattached. With the jumper unattached, the EN1941 defaults to normally closed.

Secondary alarm Connects a secondary end-device to provide RF alarm data for any user-specific application.

Primary alarm Connects a primary end-device to provide RF alarm data for any user-specific application.

Tamper input Connects a tamper input to send a message when user-specific end-device is tampered with.

Reset input Connects a reset input to reset the one-way binary RF module after a frequency band selection change or N/O - N/C selection change, and to initiate an RF transmission.

Power Connect power cabling to an external power supply of 2.6 to 5.5 volts.

Ground Connects to ground.

Mounting hole Used to mount the one-way binary RF module to the user-specific product. The mounting hole should only be used with a nylon standoff, never metal.

LED contacts Use to control an LED switch. Not designed to drive LED power.

3 One-Way Binary RF Module Dimensions

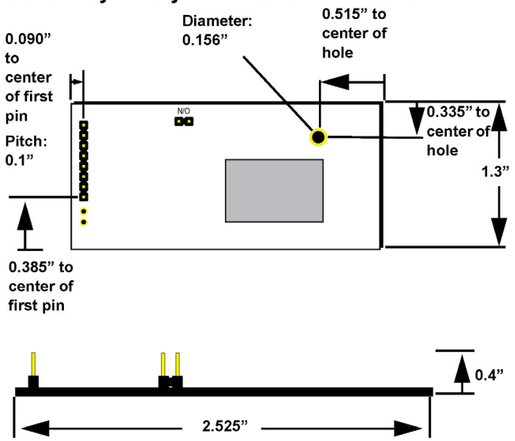

Figure 3 One-Way binary RF module dimensions

4 One-Way Binary RF Module Connections and Output Jumpers

	Connection	Output Jumper N/O	Output Jumper N/C
Primary Alarm	Open	Alarm Clear	Alarm
	Ground	Alarm	Alarm Clear
Secondary Alarm	Open	Alarm Clear	Alarm
	Ground	Alarm	Alarm Clear
Tamper	Open	Alarm	Alarm
	Ground	Alarm Clear	Alarm Clear
Reset	Open for normal operation; connect to the ground and release for a board reset.		

5 Installation Notes

- One-way binary RF modules are designed to be easily interfaced with your electronic remote application controller, however integration must conform to the following:
- The RF module must only be connected at the eight pin header or eight pin plated through-holes.
- All cables and wires must be routed away from the component side of the RF module.
- The integrated antenna must not be tampered with; no connection to an alternate antenna is provided.
- The application module must not include an integrated secondary colocated radio module.
- The one-way binary RF module antenna should be placed so that it is facing away, or otherwise isolated from, your device’s ground plane.
- Components that are sensitive to RF transmission, such as high gain circuits, should be isolated from the antenna to prevent interference.
- One-way binary RF modules should not be mounted on metal surfaces or inside metal enclosures. They should also not be mounted where sheet metal ductwork, wire mesh screens, etc. might block transmissions.

6 One-Way Binary RF Module Requirements

6.1 Power Requirements

The one-way binary RF module has an on-board voltage regulator. Connect power cabling to an external power supply (Vcc) of 2.6 to 5.5 volts. Voltage must be sustained at 2.6 volts or above and supply 100 milliamps during the transmit cycle.

	EN1941	EN1941-60
Check-In Interval	3 minutes	60 minutes
Average Current Draw, Based on One Alarm Message per Day on Average	32 uA	5 uA
Peak Transmitted Current	Less than 100 mA	Less than 100 mA
Increase in Average Current for Alarm/Restore Cycle, Based on One per Hour	15 uA	15 uA

Note: For UL 2560 installations, transmitters must have a minimum check-in time of 60 minutes.

6.2 Low Battery Condition

The one-way binary RF module measures battery voltage every three and a half hours, and, when the battery measures 2.6 volts, a serial message is sent indicating a low battery condition.

6.3 Temperature range

-20°C to +60°C, non-condensing

6.4 RF network compatibility

EchoStream commercial mesh network.

6.5 Input Requirements

Caution: Input levels must not exceed 3.3 V.

Open When an active source (open collector or dry contact) is used to drive the alarm or tamper input, the voltage should be between 0.75xVcc and Vcc. A passive input should have an impedance of greater than 5.1k ohm between the input and ground.

Closed When an active source is used, the voltage should be less than 0.25xVcc. A passive input should have an impedance of less than 240 ohm.

6.6 LED Requirements

The LED output is an active output from the microprocessor, with a 1k series resistor to limit current draw. Default state is low, and the LED pin is pulled high during transmit.

7 Compliance Requirements

7.1 UL and cUL Requirements

The module holds a UL and cUL Recognized Component Mark and is intended to be factory installed in another device, system or end-product. The suitability of the module for use in a UL and/or cUL listed (certified) device, system or end-product, is restricted as follows:

- The EN1941 was evaluated as a UL/cUL Recognized Component compliant to UL 2610, UL 639, ULC-S306 and ULC/ORD-C1076 as specified in the Conditions of Acceptability of the UL Report.
- The Supply Line Transient tests shall be added to the RAC UL evaluation program if it is powered by an AC/DC adapter rather than a low voltage battery.
- If intended use includes UL2610, UL639 installations, the RAC shall be evaluated for Short Range RF Device tests.
- Compatible UL receivers (except for UL 2560) include EN4216MR, EN4232MR and EN7285. Refer to the *EN4216MR Installation and Operation Manual*, the *EN4232MR Installation and Operation Manual* or the *EN7285 Installation Instructions*.
- The EN1941-60 is a UL2560 unlisted component.

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- The compatible receivers for UL 2560 installations are the EN6080 area control gateway and EN6040-T network coordinator. Refer to the *EN6080 Area Control Gateway Installation Instructions* and the *EN6080 Area Control Gateway User Manual*, or the *EN6040-T Network Coordinator Installation Instructions*.
- The compatible repeater for UL 2560 installations is the EN5040-20T.
- When selecting frequency band, only devices set for use in North America are configured for UL and cUL installations.
- In a UL 2560 installation, the EN1941-60 one-way binary RF module may be used with completed emergency call systems for assisted living and independent living facilities
- For UL 2560 certified system installations, the following Inovonics EchoStream devices are approved for installation within maximum system configuration limits defined in section 1.1 of this document:
  - EN6080 area control gateway or EN6040-T network coordinator.
  - EN5040-20T high power repeater.
  - End devices (transmitters) with a minimum 60-minute check-in interval, as follows:

    Fundamental devices which are subject to UL2560 certification (pendant transmitters and OEM products using the Inovonics RF module)

    Supplemental devices which are not subject to UL2560 system certification but which may be used within a UL2560 certified system (e.g. universal transmitters and activity sensors)
- Users that have achieved certification and will install UL 2560 certified systems are responsible for labeling all fundamental devices with the UL 2560 system certification mark.

7.2 FCC Requirements for the RF Module

The one-way binary RF module has received a Modular Grant to FCC/IC regulations. The integrator is responsible to test the final installation to verify compliance to FCC/IC regulation for unintentional emissions. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The integrator is responsible for properly labeling the product containing the one-way binary RF module. Labels must be placed on the outside of the product, and must include a statement indicating that the product contains the module, along with the FCC and IC number.

Example 1 “Contains One-Way Binary RF Module
FCC ID: HCQTBA
IC: 2309A-TBA”

Example 2
“Contains FCC ID: HCQTBA
Contains IC: 2309A-TBA”

8 Television and Radio Interference

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

9 FCC Part 15 and Innovation, Science and Economic Development Canada (ISED) Compliance

This device complies with part 15 of the FCC Rules, and ISED license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

10 Radiation Exposure Limits

10.1 FCC

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm during normal operation and must not be co-located or operating in conjunction with any other antenna or transmitter.

10.2 ISED

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme avec ISED RSS-102 des limites d'exposition aux rayonnements définies pour un environnement non contrôlé. Cet émetteur doit être installé à au moins 20 cm de toute personne et ne doit pas être colocalisé ou fonctionner en association avec une autre antenne ou émetteur.

EN5040/EN5040-T/EN5040-20T High Power Repeater with Transformer

Installation and Operation Manual

1 Overview

The Inovonics high power repeater receives, decodes and retransmits signals at enhanced power from Inovonics devices. It acts as a range expander for any valid Inovonics transmission, including signals from other high power repeaters. High power repeaters can be layered as necessary, allowing Inovonics systems to scale from small commercial sites to complete campuses consisting of several buildings. The high power repeater features AC power loss and jam detection, as well as case tamper and wall tamper detection. Input power is provided by listed UL1310 class 2 transformer, MPI-NEO Co., Ltd. W48A-J1000-2T.

Note: For UL 2560 installations, refer to the *EN6080 Area Control Gateway Installation Instructions* or the *EN6040-T Network Coordinator Installation Instructions*; for other UL installations, refer to the *EN4216MR Installation and Operation Manual*, the *EN4232MR Installation and Operation Manual*, or the *EN7290 Installation Instructions*.

1.1 Maximum Number of Repeaters for a UL 2560 Installation

To achieve the 99.99% alarm message reliability required for UL 2560 compliance, system installations must operate within the following limits for end device and repeater counts.

End Devices	Maximum Repeaters
150	397
250	386
350	375
500	360
1000	313
2000	238
3000	184

1.2 Installing an Inovonics Security System

An EchoStream survey kit must be used to establish a UL system. The EchoStream survey kit measures the signal strength of high-power repeater and sensor messages to help optimize your EchoStream system.

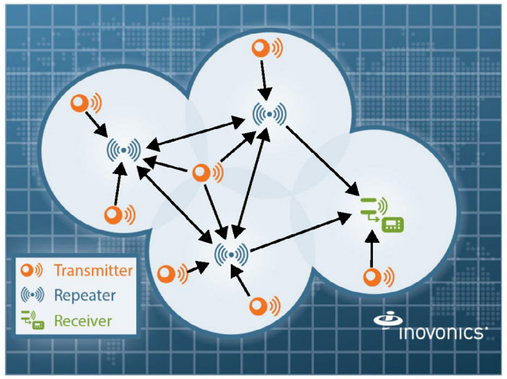

Figure 1 Sample EchoStream system

The EchoStream survey kit provides you with two signal strength measurements: signal level and signal margin.

Signal level

The signal level is the measurement of the overall decibel level of the message.

Signal margin

The signal margin is the measurement of the decibel level of the message, minus the decibel level of any interfering signals. Inovonics Wireless equipment should be placed within a facility such that all end-devices produce signal margin readings of at least 4 decibels.

Both the signal level and signal margin are measured in decibels. Because signal strength and signal margin are measured on a logarithmic scale, the difference between a decibel level of 3 (Weak) and a decibel level of 4 (Good) is a much larger difference than it would be on a linear scale.

Note: For more information about the EchoStream survey kit, see the *EN7016SK EchoStream™ Survey Kit Installation and Operation Manual* or the *EN7017 Survey Kit and App Installation and Site Survey Instructions*.

Caution: The EchoStream system should be tested regularly to ensure operation. To test: place the system in test mode, activate an end device, and ensure an appropriate response.

1.3 RF Signal Propagation

While wood, drywall and glass usually let the RF signals pass, some materials may inhibit or attenuate radio frequency (RF) signal propagation by blocking, reflecting, deflecting or absorbing RF signals.

Consider anything between transmitters and repeaters and/or the receiver. Is there concrete and steel construction? Are there earthen berms or hills? Are there a lot of trees? Devices should be mounted such that they are least affected by these elements.

For best results, transmitters and repeaters should be mounted at the optimal height to achieve line of sight to repeaters and/or the receiver. Usually this means they will be mounted as high as possible.

Following are some typical obstacles to RF signal propagation:

Material	Affect	Recommendation
Metal construction, including ductwork; pipes; studs; stucco, plaster or concrete with wire mesh; satellite dishes, metal-lined rooms such as walk-in coolers or freezers; metal siding, safes, etc.	Can reflect, absorb and/or disrupt RF signals.	Perform a site survey using an Inovonics wireless survey kit to verify the RF signal is acceptable, and, when necessary, to determine where to locate repeaters.
Completely enclosed metal boxes/enclosures.	Can restrict RF signals.	
Solar panels, cinder block walls, windows with built-in solar tinting.	Can absorb and/or reflect RF signals.	
Vegetation.	Can attenuate RF signals. The RF environment can alter as trees shed or sprout leaves.	Add repeaters as issues arise.
Automobile and truck traffic.	Can disrupt RF signals.	Mount Inovonics devices at a height sufficient to achieve line of sight above traffic.

1.4 Inovonics Contact Information

For product and installation videos visit us at www.inovonics.com/videos or use the QR code below.

If you have any problems with this procedure, contact Inovonics technical services:

- E-mail: support@inovonics.com.
- Phone: (800) 782-2709; (303) 939-9336.

1.5 High Power Repeater Front Panel

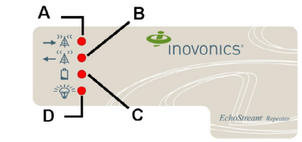

Figure 2 High power repeater front panel

A Decode LED **B** Transmit LED **C** Low Battery Fault LED **D** Power LED

Operation LEDs

Decode LED: Flashes when any recognizable RF transmission is received.

Transmit LED Lit when transmitting an RF transmission.

Low Battery Fault LED: Lit when the high power repeater has a low battery.

Power LED: Lit when receiving power. The LED lights green when the unit is receiving line power; red when receiving battery power.

Note: If mapped to an output, the high power repeater will send the AC loss message to the EN6080 area control gateway when receiving power from the backup battery.

1.6 High Power Repeater Internal Components

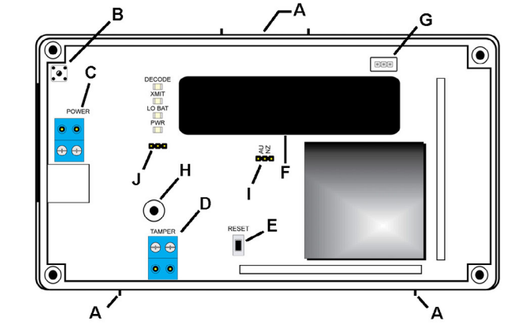

Figure 3 High power repeater internal components

A Housing release tabs **B** Tamper button spring **C** Power **D** Tamper input **E** Reset button **F** Backup battery **G** Battery connector **H** Tamper mounting hole **I** Frequency selection pins **J** Messaging mode selection pins

1.7 What's in the Carton

- One 120VAC@20VA/12VAC@1000mA power transformer.
- Three drywall anchors.
- Three mounting screws.

2 Installation and Startup

2.1 Installation Notes

- These products are designed to be maintained by professional security technicians.
- Products are tested for indoor use.
- Do not mount wireless smoke detectors, co detectors, initiating device transmitters or repeaters to removable surfaces, such as ceiling tiles.
- All products should be manually tested weekly.

2.2 Select the Frequency Band

EchoStream products are able to use a range of radio frequencies, and are shipped from Inovonics set for your geographic area.

- The jumper will be set on the two pins marked NZ to set the frequency range to 921-928 MHz for New Zealand.
- The jumper will be set on the two pins marked AU to set the frequency range to 915-928 MHz for Australia.
- The jumper will be removed to set the frequency band to 902-928 MHz for North America.

1. Use a small screwdriver to press the housing release tab; separate the housing.
2. Ensure the frequency band is set for your geographic are.
3. If the frequency band is not set for your geographic area, place a selection jumper on the appropriate frequency band selection pins to select Australia or New Zealand, or remove it for North America.

Note: Only devices set for use in North America are configured for UL installations.

4. If you have changed the frequency band and the device is powered on, press the reset button to complete configuration.

2.3 Choose Messaging Mode

The EchoStream commercial mesh network includes two kind of messaging: broadcast messaging and directed messaging. The high power repeater includes a messaging selection option to protect the integrity of your system. The high power repeater ships with a default setting of broadcast messaging. If you are installing the high power repeater in a directed messaging network, you will need to configure it.

Note: For UL2560 installations, directed messaging must be selected.

Note: If directed messaging is selected, you will need to configure the network ID (NID). To configure the NID, refer to your Inovonics RF gateway's installation and operation literature.

5. To set the high power repeater to directed messaging, remove the selection jumper installed on the messaging mode selection pins.

2.4 Connect Power Cabling

Power must be connected to the high power repeater. To connect power to the high power repeater:

6. Use a small screwdriver to press the housing release tab on the top or bottom of the high power repeater (Figure 3); separate the housing.
7. Connect power cabling (Figure 3).
   - Wire should be two-conductor 20AWG (or larger) stranded-tinned copper with PVC insulation rated to 300 volts at 26°C (80°F). Wire length should not exceed 100 meters (328 feet).

Note: For all UL installations, cabling must be UL Listed or Recognized, Class 2 wire suitable for the application. Use two-conductor 20 AWG (or larger) stranded-tinned copper, rated 300 volts, 60°C minimum. Wire length must not exceed 30 meters (98.5 feet).

- See section 1, "Overview" on page 1 for approved Class 2 transformers.
- Route the cable from the transformer to the unit through the left side of the repeater, or through the oval knock-out section in the rear.
- Torque screw terminal to 0.25 N-m (2.18 inch-pounds).

Note: Do not secure transformer for Canadian installations.

2.5 Connect Battery Power

The high power repeater is shipped with a fully-charged backup battery. You will need to connect the battery:

8. Plug the connector cable from the backup battery into the battery connector (Figure 2).

2.6 Register the High Power Repeater

Although the high power repeater is functional upon startup, Inovonics strongly recommends you register it. Inovonics recommends all high power repeaters be supervised. When supervised, the EN5040 and EN5040-T will send a check-in message to the receiver every three minutes; the EN5040-20T will send a check-in message every 20 minutes.

Note: In UL 2560 installations, the repeater sends a check-in message every 20 minutes.

Note: Registration and supervision are required for UL installations.

Caution: The reset bit will not be sent when the high power repeater has a low battery. Before registering the high power repeater, ensure the battery is fully charged.

Caution: A missing/inoperative repeater shall be reported as a latching trouble signal at the control panel within four hours or less.

2.7 Mount the High Power Repeater

Caution: Mount the high power repeater in a location removed from metal. Metal objects (duct work, wire mesh screens, boxes) will reduce RF range.

Caution: In UL 2560 installations, the unit must be mounted with the cable opening facing downward.

9. Use the provided anchors and screws to mount the high power repeater in a location accessible for future maintenance.
   - In large installations, high power repeaters should be mounted so that every transmitter has multiple transmission paths to the RF gateway. This kind of redundancy preserves system integrity in the event of temporary interruptions of any transmission path in the system.
   - For maximum efficiency, high power repeaters should be mounted with as few obstacles as possible between them and the RF gateway.
   - Always perform a walk test after mounting, activating each transmitter and ensuring an appropriate response.

2.8 Enable the Wall Tamper

The wall tamper must be enabled. If the high power repeater is removed from the wall, the cutout on the back of the housing will detach, activating a tamper alarm. To enable the wall tamper.

10. Attach one of the mounting screws to the wall through the tamper mounting hole (Figure 2).

2.9 Close the Housing

The housing must be closed and the tamper spring in place to ensure the security of your system.

11. Check that the tamper spring is in place and makes contact with the high power repeater housing.
12. Close the housing.

3 Specifications

Housing: 6.5" x 3.5" x 1" (165 mm x 89 mm x 25 mm).

Weight: 7.14 oz (204 g).

Operating environment: All UL installations: 32 to 140°F (0 to 60°C), 90% relative humidity, non-condensing; all other installations: -4 to 140°F (-20 to 60°C), 90% relative humidity, non-condensing.

Power requirement: 14 VAC, 60 Hz, 250 mA.

Power supply: 120VAC@20VA/12VAC@1000mA.

Battery capacity: 3.6 VDC nominal, 2900 mAh.

Typical back-up battery life: 24 hours.

Operating frequency: 915-928 MHz (Australia), 921-928 MHz (New Zealand), 902-928 MHz (USA).

Battery charger operating environment: 32 to 140°F (0 to 60°C), 90% relative humidity, non-condensing.

For UL 985, if an EN5040-T repeater is required to be employed with smoke detectors or CO detectors, two repeaters must be installed to cover each smoke detector and/or CO detector. Do not mix fire alarm transmitters with burglar alarm or any other type of transmitter.

Accessories: ACC650: weatherproof plastic enclosure for outdoor installations; BAT850: replacement lithium-ion battery assembly.

Power supply specifications: Efficiency level VI, ≤ .210 W max power in no-load mode.

UL certifications for EN5040-T: UL 365, UL 636, UL 985, UL 1023, ULC/ORD-C1023-74, UL 1076, UL 1610.

UL certifications for EN5040-20T: UL 2560 (see conditions below).

Note: For UL 2560 installations, Inovonics repeaters must have 20 minute check-in times. Inovonics transmitters must have a minimum of 60 minute check-in times.

Note: For UL 2560 installations, the EN5040-20T high power repeater may be used with completed emergency call systems for assisted living and independent living facilities

For UL 2560 certified system installations, the following Inovonics EchoStream devices are approved for installation within maximum system configuration limits defined in section 1.1 of this document:

- EN6080 area control gateway or EN6040-T network coordinator.
- EN5040-20T high power repeater
- End devices (transmitters) with a minimum 60-minute check-in interval, as follows:
  - Fundamental devices which are subject to UL2560 certification (pendant transmitters and OEM products using the Inovonics RF module)
  - Supplemental devices which are not subject to UL2560 system certification but which may be used within a UL2560 certified system (e.g. universal transmitters and activity sensors)

Note: Users that have achieved certification and will install UL 2560 certified systems are responsible for labeling all fundamental devices with the UL 2560 system certification mark.

Compatible receivers for UL 2560 installations: EN6080; EN6040-T.

Compatible receiver for all other UL installations: EN4200, EN4204R, EN4216MR, EN4232MR, EN7290.

US patent number 7,746,804.

Note: Inovonics supports recycling and reuse whenever possible. Please recycle these parts using a certified electronics recycler.

4 Television and Radio Interference

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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5 FCC Part 15 and Innovation, Science and Economic Development Canada (ISED) Compliance

This device complies with part 15 of the FCC Rules, and ISED license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

6 Radiation Exposure Limits

6.1 FCC

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm during normal operation and must not be co-located or operating in conjunction with any other antenna or transmitter.

6.2 ISED

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme avec ISED RSS-102 des limites d'exposition aux rayonnements définies pour un environnement non contrôlé. Cet émetteur doit être installé à au moins 20 cm de toute personne et ne doit pas être colocalisé ou fonctionner en association avec une autre antenne ou émetteur.

› WARRANTY

Warranty & Disclaimer

PTI Security Systems warrants its products and equipment to conform to its own specifications and to be free from defects in materials and workmanship, under normal use and service, for a period of one year from the date of shipment. Within the warranty period, PTI Security Systems will repair or replace, at its option, all or any part of the warranted product which fails due to materials and/ or workmanship. PTI Security Systems will not be responsible for the dismantling and/or re-installation charges. To utilize this warranty, the customer must be given a Return Materials Authorization (RMA) number by PTI Security Systems. The customer must pay all shipping costs for returning the product.

This warranty does not apply in cases of improper installation, misuse, failure to follow the installation and operating instructions, alteration, abuse, accident, tampering, natural events (lightning, flooding, storms, etc.), and repair by anyone other than PTI Security Systems.

This warranty is exclusive and in lieu of all other warranties, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. PTI Security Systems will not be liable to anyone for any consequential or incidental damages for breach of this warranty or any other warranties.

This warranty will not be modified or varied. PTI Security Systems does not authorize any person to act on its behalf to modify or vary this warranty. This warranty applies to PTI Security Systems products only. All other products, accessories, or attachments used in conjunction with our equipment, including batteries, will be covered solely by their own warranty, if any. PTI Security Systems 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 our products. This warranty does not cover the replacement of batteries that are used to power PTI Security Systems products.

The customer 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 ensure or guarantee that there will be no death, personal damage, and/or damage to property as a result. PTI Security Systems 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. PTI Security Systems products should only be installed by qualified installers. The customer is responsible for verifying the qualifications of the selected installer.

PTI Security Systems shall have no liability for any death, injury, or damage, however incurred, based on a claim that PTI Security Systems Products failed to function. However, if PTI Security Systems is held liable, directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, PTI Security Systems's maximum liability will not in any case exceed the purchase price of the Product, which will be fixed as liquidated damages and not as a penalty, and will be the complete and exclusive remedy against PTI Security Systems

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› WARRANTY

Warning: The User should follow all installation, operation, and maintenance instructions. The User is strongly advised to conduct Product and systems test 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: PTI Security Systems 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 PTI Security Systems Products are installed. PTI Security Systems does not authorize the use of its Products in applications affecting life safety.

Notice. Some PTI Security Systems products use 900Mhz wireless technology. Other devices at the site such as cordless telephones or alarm components may cause interference that will disrupt the operation of the system or may be interfered with by the system. PTI Security Systems assumes no liability for any problems caused by interference. It is the sole responsibility of the user to identify and correct such problems.

PTI SECURITY SYSTEMS

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Since 1979, PTI Security Systems™ has provided the self-storage industry with proven security and access control systems. Known for our complete and innovative solutions that deliver advanced and cost-effective security systems, self-storage owners and operators can efficiently manage their facility from anywhere, lower operating costs, and enhance the tenant experience.

For more information about PTI Security Systems or StorLogix, please contact a PTI representative or visit our website.

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