

EN4200 Security Only Serial Receiver Installation Instructions

1 Overview

The EN4200 serial receiver is a security only gateway that uses reliable frequency-hopping, spread-spectrum technology to decode radio frequency (RF) transmissions from security end devices and high-power repeaters, and then outputs the decoded data to the application controller in a common serial data format. The EN4200 is used for security only applications.

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.

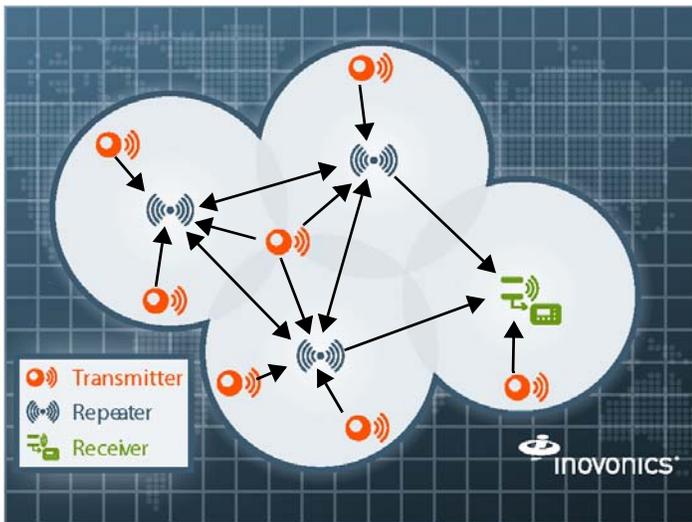


Figure 1 Sample EchoStream system

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 *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.

1.2 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.

1.3 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.

1.4 What's In The Carton

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

1.5 EN4200 EchoStream Serial Receiver Internal Components

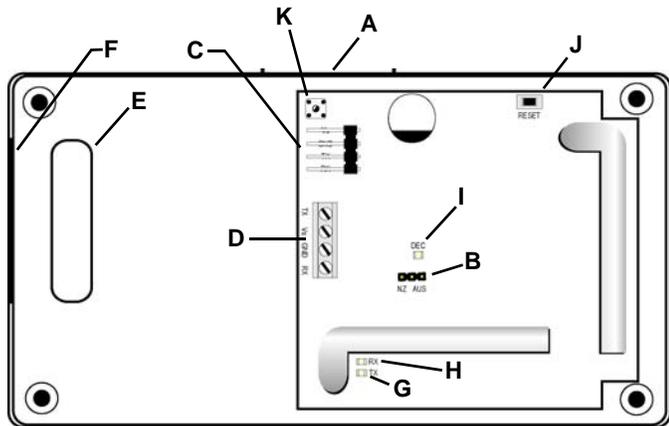


Figure 2 EN4200 serial receiver components

- | | |
|----------------------------------|--|
| A Housing release tab | B Frequency band selection pins |
| C Serial data port | D Serial data terminal |
| E Bottom cabling knockout | F Side cabling knockout |
| G Transmit LED | H Receive LED |
| I Decode LED | J Reset button |
| K Tamper button spring | |

1.6 EN4200 EchoStream Serial Receiver Operation LEDs

The following LEDs are used to monitor serial receiver operation.

Transmit LED: Lit when the serial receiver is transmitting data to the application controller.

Receive LED: Lit when the serial receiver is receiving data from the application controller.

Decode LED: Lit when the serial receiver is decoding an RF transmission from another Inovonics device.

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 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 2.3, "Connect the Serial Cable"; if you are using the product in Australia or New Zealand, you will need to configure the EN4200 EchoStream serial receiver.

1. Use a small screwdriver to press the housing release tab; separate the housing.
2. Place a selection jumper on the appropriate frequency band selection pins.
 - Place the jumper on the right two pins, marked AUS, to set the frequency range to 915-928 MHz for Australia.
 - Place the jumper on the left two pins, marked NZ, to set the frequency range to 921-928 MHz for New Zealand.
3. If the serial receiver is powered on, remove and restore the power source to reset.

2.3 Connect the Serial Cable

Caution: Long cable runs should not be adjacent to high current power feeds. Keep cable lengths as short as possible to minimize cable capacitance. Measure voltage supply at the serial receiver to ensure power requirement is met for long cable runs.

4. Connect a serial cable to either the serial data port or the serial data terminal. Cabling should meet the following specifications:

Cable requirements 4-conductor 20AWG (or larger) stranded-tinned copper with PVC insulation rated to 300 volts at 60°C (140°F). (Belden #8205, for example.)

Maximum cable length 30.5 meters (100 feet).

5. Route the cabling through either the bottom cabling knockout or the side cabling knockout.

2.4 Mount the Serial Receiver

Caution: Mount the EN4200 EchoStream serial receiver 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 EN4200 EchoStream serial receiver is mounted in an easily accessible location for future maintenance.

6. Use the provided anchors and screws to mount the serial receiver in a location accessible for future maintenance.
7. Close the serial receiver housing.

3 Specifications

Housing dimensions: 6.38" x 3.60" x 1.10" (162.0 mm x 91.4 mm x 27.9 mm).

Weight: 133 g (4.7 oz).

Power requirement: 10-13.5 Vdc, 100 mA.

Radio: Inovonics EchoStream.

Operating frequency: 902-928 MHz (USA) 915-925 MHz (AUS) 921-928 MHz (NZ).

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

UL listings: UL 365, UL 636, UL 985, UL 1023, ULC/ORD-C1023-74, UL 1610, UL 1076, cUL.

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.

5 US Patent Numbers

- 7,154,866.
- 7,554,932.
- 7,746,804.
- Other patents pending.