

EN6080 Area Control Gateway Installation Instructions

1 Overview

The Inovonics EN6080 area control gateway bridges the proprietary Inovonics commercial mesh network to a standard TCP-IP over Ethernet LAN, adding Inovonics' unique capabilities to IP-enabled software applications. The EN6080 area control gateway is designed to allow software developers to easily integrate it into their applications through a RESTful API.

1.1 Installing an Inovonics 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.

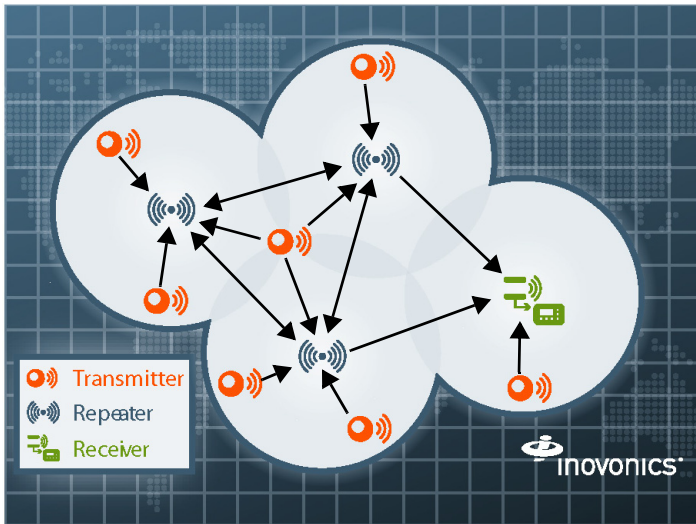


Figure 1 Sample EchoStream system

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* and *EN7017 Survey Kit and App Installation and Site Survey Instructions*.

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 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

1.4 Inovonics Contact Information



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 EN6080 Area Control Gateway Front Panel

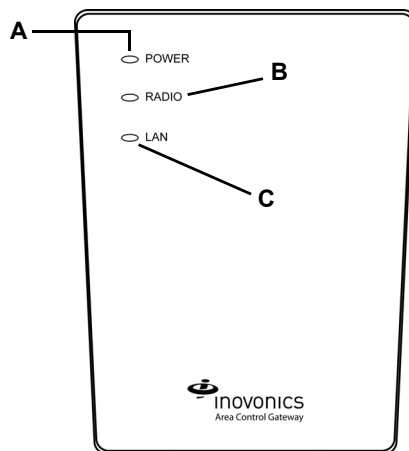


Figure 2 EN6080 area control gateway front panel

A Power LED **B** Radio LED **C** LAN LED

Operation LEDs

Power LED: Green indicates the presence of line power or power over Ethernet.

Radio LED: Green indicates that the device is decoding messages from the EchoStream wireless network.

LAN LED: Green indicates Ethernet link; flashing indicates Ethernet activity.

1.6 EN6080 Area Control Gateway Internal Components

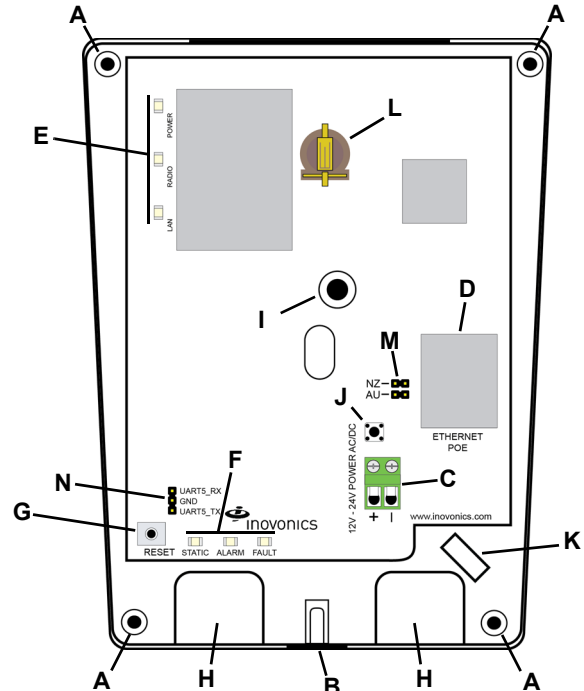


Figure 3 EN6080 area control gateway internal components

- | | | |
|--|--------------------------------------|--|
| A Wall mount holes | B Housing cover release screw | C Power connection terminal block |
| D RJ45 Ethernet jack | E Operation LEDs | F Diagnostic LEDs |
| G Reset button | H Cabling port | I Wall tamper mounting hole |
| J Housing tamper switch | K Cabling tie loop | L Battery holder |
| M Frequency band selection pins | N Factory reset pins | |

Diagnostic LEDs

Static LED: Yellow indicates the EN6080 is using a static IP address other than the default; green indicates the EN6080 is using a dynamic IP address obtained from the network; no illumination indicates the EN6080 has been configured to use a dynamic IP address but has not obtained one from the network, or is using the default static IP address, or there is no Ethernet connection.

Alarm LED: Red indicates an alarm in the EchoStream wireless network.

Fault LED: Yellow indicates a tamper, low battery or repeater line power loss fault in the EchoStream wireless network.

1.7 What's in the Carton

- One CR1220 memory backup battery.
- Five drywall anchors.
- Five 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.
- All products should be manually tested weekly.

2.2 Connect Power Cabling and Install Memory Backup Battery

Note: The EN6080 area control gateway is Power over Ethernet (PoE) capable on any network supporting the IEEE 802.3at-2009 PoE+ standard, and using a PoE switch. Power over Ethernet will only function when line power is not present.

To use line power, you will need to connect a power source to the EN6080 area control gateway. To do so:

1. Use a Phillips screwdriver to loosen the housing cover release screw (Figure 3).
2. Lift the cover off the hinges on the top of the housing.
3. Route the power cabling through the cabling ports on the bottom of the housing (Figure 3).
 - If not using the ACC610 14 VAC/20VA transformer, use 14-22 gauge wire for all cabling.

Note: For UL 2560 installations, all cabling must be UL Listed or Recognized, Class 2 wire suitable for the application. If connecting cabling to a DC power source, such as the ACC610 transformer, use two-conductor 14-22 AWG stranded-tinned copper, rated 300 volts, 60°C minimum.

4. Connect to the power connection terminal block.
 - If connecting cabling to a DC power source, ensure polarity corresponds to the + and - connections; an AC power source does not require specific polarity and can use either connection.
 - Ensure torque on the screw terminals does not exceed 0.35 - 0.4 Nm (3.1 - 3.5 inch-pounds).
5. Insert the memory backup battery in the battery holder (Figure 3).

Note: It is a best practice to install the backup battery just prior to powering on the EN6080 area control gateway. The backup battery must be installed to ensure operation.

6. Connect the power cabling to your power source.
 - The power source must be 12-24 VAC or VDC. The power supply must be unswitched, uninterrupted and regulated.

Note: For UL 2560 installations, a Class 2 plug-in transformer, rated 14VAC/120VAC-20VA, must be used with the EN6080 area control gateway if Power over Ethernet is not provided. Approved Class 2 transformers include the MPI-NEO Co., Ltd., Model W48A-K1429-2T transformer available from Inovonics as part number ACC610, as well as the Good Power Electronics, Ltd., Model T48141428V010G or T48141428V020G transformers.

2.3 Connect Ethernet Cabling

Note: For UL 2560 installations, a UL Certified PoE switch or injector must be used if the EN6080 area control gateway is to be powered with PoE.

The EN6080 area control gateway connects to network components in a wired local area network (LAN) using the RJ45 Ethernet jack. To connect to a LAN:

7. Connect one end of a RJ45 Ethernet cable to the RJ45 Ethernet jack on the EN6080 area control gateway (Figure 3).
8. Route the Ethernet cable through the cabling ports on the bottom of the housing (Figure 3).
9. Connect the other end of the RJ45 Ethernet cable to an RJ45 Ethernet jack connected to your LAN.
10. To relieve stress on the Ethernet and power cabling, secure it to the cabling tie loop with a tie (Figure 3).

2.4 Mount the EN6080 Area Control Gateway

Caution: Mount the EN6080 area control gateway in a location removed from metal. Metal objects (duct work, wire mesh screens, boxes) will reduce RF range.

Caution: Per FCC RF exposure requirements, the EN6080 should be mounted in a location where it will be no closer than 100 cm from nearby persons.

Note: To meet UL 2560 requirements, the EN6080 area control gateway must be mounted in a manner that allows the cable openings to face downward.

The EN6080 area control gateway includes a wall tamper. If the EN6080 area control gateway is removed from the wall, the cutout on the back of the housing will detach, activating a tamper alarm. The wall tamper will only

work if the EN6080 area control gateway is properly installed. To ensure the EN6080 is properly installed, carefully follow the mounting instructions:

11. If mounting the EN6080 area control gateway to drywall, install the drywall anchors included in the installation packet.

Caution: If the EN6080 area control gateway is mounted to drywall, the drywall anchors must be used. Without the drywall anchors, the back tamper will not activate if the device is removed from the wall.

12. Use four of the provided screws to mount the EN6080 area control gateway, making sure the EN6080 area control gateway is flush with the wall (Figure 3).
13. Attach one of the provided screws to the wall through the wall tamper mounting hole (Figure 3).

Caution: Tighten the wall tamper screw to a snug fit without over-tightening it. Overtightening the wall tamper screw can break the wall tamper cutout, disabling the wall tamper.

14. Check that the housing tamper spring is in place and makes contact with the top of the housing (Figure 3).
15. Close the housing.
16. Tighten the housing cover release screw.

2.5 Setup and Configuration

17. Navigate to <http://www.inovonics.com/product/area-control-gateway/> to access the *EN6080 Area Control Gateway User Manual* which will guide you through setup and configuration. Instructions for connecting to the EN6080 area control gateway are included.

3 Reset to Factory Defaults

Caution: If a factory reset is performed with the battery removed, the EN6080 may lose its serial number. Perform the factory reset procedure only with the battery installed.

The EN6080 area control gateway may need to be reset to factory defaults for any of the following reasons:

- The area control gateway was configured with an invalid network setting.
- The administration password has been forgotten.
- The area control gateway will be redeployed in a different system.

Restoring the area control gateway will permanently delete the following: all registered devices, partitions, contact information, passwords, the IP address, NTP servers, and all log entries.

The user-configured NID will be retained, and factory settings for the IP address, NTP servers, and administrator passwords will be restored.

To reset the area control gateway to factory defaults:

1. Use a Phillips screwdriver to loosen the housing cover release screw (Figure 3).
2. Lift the cover off the hinges on the top of the housing.
3. Disconnect external power and Ethernet.
 - If using PoE, only disconnect the Ethernet.
4. Remove the selection jumper from the bottom two factory reset pins, marked GND and UART5_TX (Figure 3).
5. Place the selection jumper on the top two factory reset pins, marked UART5_RX and GND.
6. Connect external power and Ethernet.
7. Press and release the reset button (Figure 3).

Note: After approximately 10 seconds, the power LED should blink slowly, indicating a successful factory reset. If the LED is blinking rapidly, check the jumper position and repeat the reset.

8. Disconnect external power and Ethernet.
 - If using PoE, only disconnect the Ethernet.
9. Remove the selection jumper and replace it in its original position on the bottom two factory reset pins, marked GND and UART5_TX.
10. Connect external power and Ethernet.

Note: The area control gateway will not operate normally until the jumper has been restored to its original, normal position and power is removed and restored.

4 Specifications

Note: For a list of supported end devices, refer to the *EN6080 Area Control Gateway User Manual*, available at www.inovonics.com.

Dimensions: 5.25" x 6.75" x 1.25".

Weight: 12 oz

Interface: 100Base-T Ethernet.

Operating environment: -4 to 140°F (-20 to 60°C), 90% relative humidity, non-condensing.

Power requirement: 12-24 VDC/AC; 500m.

Power over Ethernet: IEEE 802.3at-2009 compliant

Memory backup battery life: Without line power, the memory backup battery will retain stored information for up to 24 hours.

Operating frequency: 902-928 MHz, frequency hopping spread spectrum.

Tamper: Type B, fixed device.

UL certification: 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: In a UL 2560 installation, the EN6080 area control gateway 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 1.3 of this document:

- EN6080 area control gateway.
- 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.

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.

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

7 US Patent Numbers

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