

EN7290 Serial Receiver/Interface for Honeywell

Installation Instructions

1 Overview

The Inovonics EN7290 receiver/interface for Honeywell commercial VISTA panels converts Inovonics EchoStream wireless messages for compatibility with the Honeywell VISTA-128 and VISTA-250 panels. The EN7290 supports up to 127 registered devices with the Honeywell VISTA-128 panel and 249 registered devices with the VISTA-250 panel.

Note: Because a single device cannot be deleted from the EN7290 receiver/interface once registered, the 512 device limit is provided to allow for future device replacements.

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.

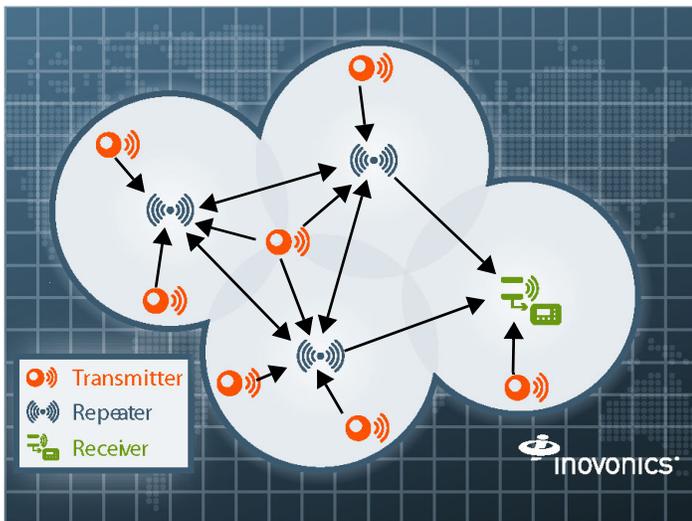


Figure 1 Sample EchoStream system

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: Inovonics offers two options for site surveys: the EN7017 survey kit and app and EN4016SK survey receiver. The EN4016SK survey receiver displays the decibel level, while the EN7017 survey kit and app displays only that the reception is good or weak. For more information, see the *EN4016SK Survey Receiver 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.

1.2 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 support:

- E-mail: support@inovonics.com.
- Phone: (800) 782-2709.



1.4 EN7290 Receiver/Interface Front Panel

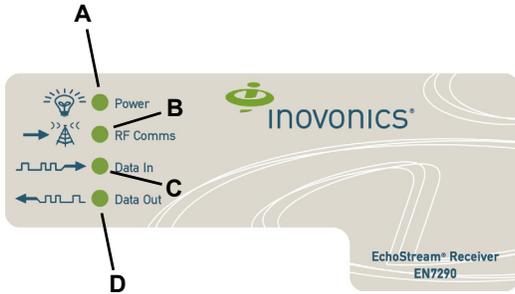


Figure 2 EN7290 receiver/interface front panel

A Power LED **B** RF Comms LED **C** Data In LED **D** Data Out LED

Operation LEDs

Power LED: Off when less than 9.5 VDC is applied to the EN7290 receiver/interface; lit when the EN7290 receiver/interface is receiving at least 10 VDC.

RF Comms LED: Blinks when the EN7290 receiver/interface is receiving an RF transmission from a registered Inovonics device or senses a tamper condition.

Data In LED: Blinks when the EN7290 receiver/interface is receiving data from the panel.

Data Out LED: Blinks when the EN7290 receiver/interface is sending data to the panel.

1.5 EN7290 Receiver/Interface Components

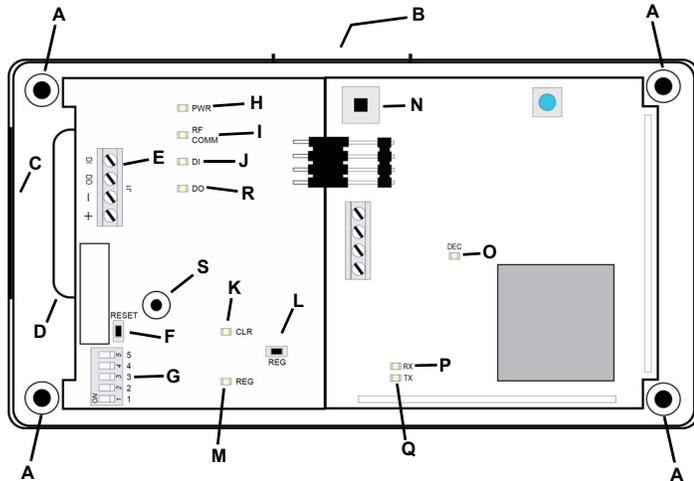


Figure 3 EN7290 receiver/interface internal components

A Mounting holes **B** Housing release tab **C** Side cabling knockout
D Bottom cabling knockout **E** EN7290 power/data terminal block **F** Reset button
G Device address DIP switches **H** Power LED **I** RF comms LED
J Data in LED **K** Clear LED **L** Registration button
M Registration LED **N** Housing tamper spring and switch **O** Decode LED
P Serial receive LED **Q** Serial transmit LED **R** Data out LED
S Wall tamper mounting hole

2 Installation and Startup

Caution: Do not remove the printed circuit boards (pcbs) from the housing. Removing the pcbs from the EN7290 receiver/interface housing can damage the connector between the two boards, as well as the board components.

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.
- The EN7290 must be installed within 30 m (98.5 ft) of control unit.
- Low power transmitters shall be limited to a single initiating device.
- Each manually operated holdup alarm initiating device shall be installed so that it cannot be observed by the public and so that it can be operated in a manner that will not be obvious to an attacking party.
- Each semi-automatic holdup alarm initiating device shall be installed so that it is not noticeable to an attacking party during a holdup attempt and is not noticeable to the public or an attacking party prior to a holdup attempt.
- Installation of holdup alarm units and systems shall be governed by the Standard for Installation and Classification of Burglar and Holdup Alarm Systems, UL 681.
- Installation shall be in accordance with CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations ; CAN/ULC S302, Standard for the Installation, Inspection and Testing of Intrusion Alarm Systems; and CAN/ULC S301, Standard for Signal Receiving Centres Configuration and Operations. Locations where installations are not recommended shall also be included.

3 Connect the EN7290 Receiver/Interface to Control Panel

Note: All field-wiring circuits that derive energy from power sources connected to a control unit shall be power limited. Route the cabling through the side cabling or back housing knockout.

The EN7290 receiver/interface can be connected to Honeywell Vista-128, VISTA-250 and ETL Listed Safewatch Pro 3000 series panels. To connect the EN7290 receiver/interface to a Honeywell VISTA-128 or VISTA-250 panel proceed to "Connect the EN7290 Receiver/Interface to VISTA Panel" on page 2; to connect the EN7290 receiver/interface to a Honeywell Safewatch Pro 3000 series panel skip to "Connect the EN7290 Receiver/Interface to Safewatch Pro 3000 Panel" on page 3.

3.1 Connect the EN7290 Receiver/Interface to VISTA Panel

Note: Use 18 - 22 gauge wire for all cabling, and ensure torque on the screw terminals is between 2.5 and 3.5 inch-pounds.

1. Referring to Figure 4, connect one end of a length of cabling to the EN7290 receiver/interface positive (+) screw terminal (figure 3, E); connect the other end to screw terminal 6 on the VISTA control panel.
2. Connect one end of a length of cabling to the EN7290 receiver/interface negative (-) screw terminal; connect the other end to screw terminal 7 on the VISTA control panel.
3. Connect one end of a length of cabling to the EN7290 receiver/interface data out (DO) screw terminal; connect the other end to screw terminal 8 on the VISTA control panel.
4. Connect one end of a length of cabling to the EN7290 receiver/interface data in (DI) screw terminal; connect the other end to screw terminal 9 on the VISTA control panel.

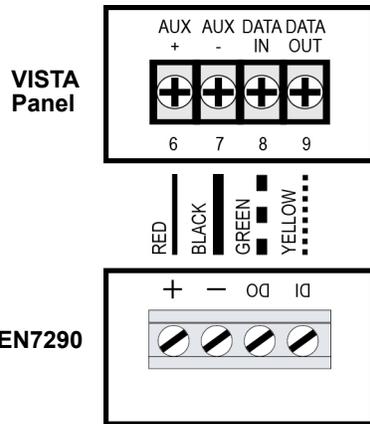


Figure 4 EN7290 receiver/interface to VISTA panel cabling

Set EN7290 Receiver/Interface Device Address DIP Switches for Vista Panel

By default the EN7290 receiver/interface device address is set to an address of 6.

To set the EN7290 receiver/interface's device address:

- The device address DIP switches are shipped with a protective film left over from the manufacturing process. Remove and discard the protective film.
- Referencing Figure 5, set the device address DIP switches to an unused address (figure 3, G).

Note: Inovonics recommends a device address of 6.

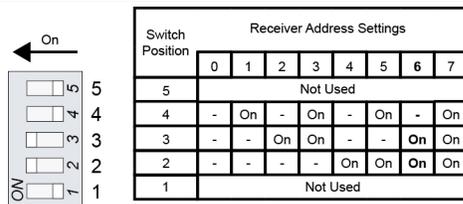


Figure 5 Device address DIP switch settings (6 shown)

Note: Switches 1 and 5 are not used. They should remain in the off position.

Program EN7290 Receiver/Interface Device Address to the Vista Panel

The EN7290 receiver/interface device address will need to be programmed to the control panel.

To program the receiver/interface device address to the control panel.

- Enter program mode on the control panel.
- Enter #93.
- Scroll to Device Prog.
- Enter the device address chosen in section .
 - For example: Using the recommended setting of 06, enter 06.
- Enter the device type 03 for RF receiver (expander)
 - a. House ID = 00
- Enter 00 to quit.
- Quit menu mode.
- Exit program mode.

3.2 Connect the EN7290 Receiver/Interface to Safewatch Pro 3000 Panel

Note: Use 18 - 22 gauge wire for all cabling, and ensure torque on the screw terminals is between 2.5 and 3.5 inch-pounds.

- Referring to Figure 4, connect one end of a length of cabling to the EN7290 receiver/interface positive (+) screw terminal (figure 3, E); connect the other end to screw terminal 5 on the Safewatch Pro 3000 control panel.

- Connect one end of a length of cabling to the EN7290 receiver/interface negative (-) screw terminal; connect the other end to screw terminal 4 on the Safewatch Pro 3000 control panel.
- Connect one end of a length of cabling to the EN7290 receiver/interface data out (DO) screw terminal; connect the other end to screw terminal 6 on the Safewatch Pro 3000 control panel.
- Connect one end of a length of cabling to the EN7290 receiver/interface data in (DI) screw terminal; connect the other end to screw terminal 7 on the Safewatch Pro 3000 control panel.

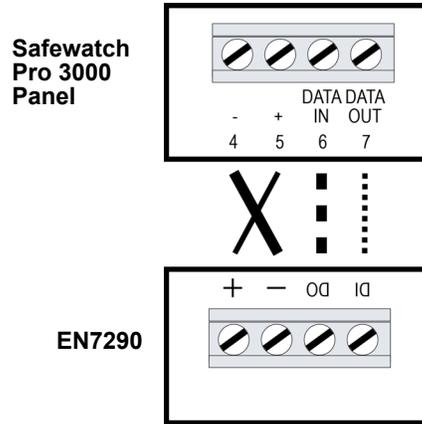


Figure 6 EN7290 receiver/interface to Safewatch Pro 3000 panel cabling

By default the EN7290 receiver/interface device address is set to an address of 6.

To set the EN7290 receiver/interface's device address for a Safewatch Pro 3000 panel:

- The device address DIP switches are shipped with a protective film left over from the manufacturing process. Remove and discard the protective film.
- Referencing Figure 7, set all device address DIP switches to the off position, indicating an address of 0, for the Safewatch Pro 3000 (figure 3, G).

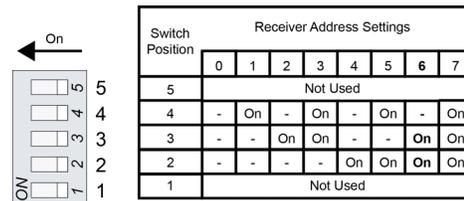


Figure 7 Device address DIP switch settings (0 shown)

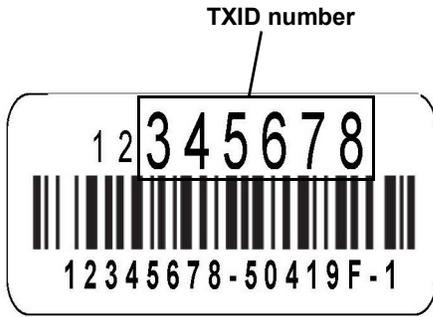
4 Register Inovonics Devices

Caution: Either the panel or the panel power supply should have a battery backup during registration. If power is lost during registration, data can be lost or corrupted. (See section 7, "Clear All Registered Devices" to clear a corrupted registration table.)

Note: During the registration process, it is possible for the EN7290 receiver/interface to miss alarm and status messages.

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

All devices must be registered with the EN7290 receiver/interface as well as the control panel, and must be registered with the EN7290 receiver/interface first. You will use each transmitter's six-digit TXID number for control panel registration. The TXID number can be found on a label on the device's pcb, as shown here:



Note: There is the small possibility of duplicate TXID numbers occurring on Inovonics devices. Before registration, make sure every TXID number is unique. If you find a duplicate TXID, contact Inovonics technical services.

Note: See the VISTA panel documentation for detailed registration instructions.

To register an Inovonics device to the EN7290 interface/receiver:

1. Toggle the housing tamper switch to ensure the receiver/interface is ready to enter registration mode (figure 3, N).
2. Referring to Figure 3, "EN7290 receiver/interface internal components" on page 2, press the registration button (figure 3, L).
 - When the EN7290 receiver/interface has entered registration mode, the registration LED will turn on and stay lit.

Note: If attempting to enter registration when power is too low, the registration LED will not light.

3. Press the reset button on the device to be registered.
 - Upon successful registration, the registration LED will flash five times quickly and remain on.
 - If the device has already been registered, the registration LED will blink once and then remain on.
4. Repeat step 3 for all devices that need to be registered.
5. When all devices have been registered, press and release the housing tamper switch (or replace the housing). You can also press the reset button to exit registration mode (figure 3, F).
 - When the EN7290 receiver/interface has exited registration mode, the registration LED will turn off.
6. When prompted by the Vista panel, enter a leading 0 followed by the six digit serial number of the Inovonics device.
7. Program the Inovonics devices to the control panel using the following table.

Note: Contact Inovonics for a list of other compatible devices.

Table 1: EN7290 Supported Transmitters

Model	Product	Input Type	Loop Number
EN1215EOL	Universal transmitter with wall tamper	RF	1
EN1215WEOL	Door/window transmitter with wall tamper and reed switch	RF	1 or 2
EN1223D	Double-button, water resistant pendant transmitter	RF	1
EN1235SF	Single-button, fixed position pendant transmitter	RF	1
EN1235DF	Double-button, fixed position pendant transmitter	RF	1
EN1244	Wireless smoke detector	RF	1
EN1245	CO detector	RF	1

Table 1: EN7290 Supported Transmitters

EN1249	Billtrap transmitter	RF	1
EN1261HT	High-traffic motion detector	RF	1
EN1941	One-way binary RF module	RF	1 or 2
EN5040-T	High power repeater	RF	1

5 Enable the Wall Tamper

The wall tamper must be enabled. If the EN7290 receiver/interface is removed from the wall, the cutout on the back of the housing will detach, activating a tamper alarm. To enable the wall tamper.

8. Making sure to be careful not to damage the pcb or components, use a Phillips screwdriver to attach one of the mounting screws to the wall through the wall tamper mounting hole (figure 3, U).

6 Mount the EN7290 Receiver/Interface

Caution: Mount the receiver/interface and attached components in a location removed from metal. Metal objects (duct work, wire mesh screens, boxes) will reduce wireless range.

Note: For UL listed systems containing a UL hold-up switch, the EN7290 must be located within three feet of a system keypad in a location out of sight from the protected premise.

Note: A maximum time delay of 60 seconds is used to prevent an alarm from activating during premises ingress and egress.

1. Route the cabling through either the side cabling knockout or the bottom cabling knockout (figure 3, C,D).
 - If using the bottom cabling knockout, it will need to be removed from the housing. Working from the back of the housing so as not to damage the pcb, use a pair of small diagonal cutters to cut the plastic ribs holding the knockout in place.
2. Referring to Figure 3, "EN7290 receiver/interface internal components," on page 2, mount the EN7290 receiver/interface through the four corner mounting holes using a Phillips screwdriver and the included mounting screws (figure 3, A).
 - Make sure the screwdriver does not come in contact with the pcbs. The connector between the two pcbs and/or pcb components can be damaged.
3. Check that the housing tamper spring is in place and makes contact with the top of the housing (figure 3, N).
4. Check to make sure the antennae will not be bent or damaged when closing the housing (figure 3, S).
5. Close the housing.
6. Perform a walk test, activating each transmitter assigned to the receiver and ensuring a good signal.

Caution: Always test the system for operation upon completion of the installation.

7 Clear All Registered Devices

Although the number of registered devices is limited by the Honeywell VISTA panel to either 128 or 250 devices, the EN7290 receiver/interface supports up to 512 registered devices. The reason for this is that single devices cannot be deleted from the EN7290 receiver/interface once registered, so the 512 device limit is provided to allow for future device replacements.

If the EN7290 receiver/interface ever does reach 512 devices, the registration LED will flash once and extinguish if the registration button is pressed.

Although individual devices cannot be deleted, the EN7290 receiver/interface can be cleared, deleting all registered devices. Registration information can also be cleared if it is corrupted.

To clear the EN7290 receiver/interface of all registration information:

1. Referring to Figure 3, "EN7290 receiver/interface internal components" on page 2, press and release the reset button (figure 3, F).
2. Wait one second.
3. Within four seconds:
 - a. Toggle the housing tamper switch (figure 3, N).

- b. Press the registration button three times (figure 3, L).
4. The clear registration LED will begin flashing four times per second. Within 15 seconds of the clear registration LED beginning to flash, press and hold the clear registration button until the clear registration LED lights solid, indicating that registration has been cleared.
- The clear registration button will need to be held for approximately five seconds.

Note: The clear registration LED will remain lit solid whenever there are no wireless devices registered, including immediately after it is shipped from the factory.

8 Troubleshooting

Problem	Possible Solutions
Receiver won't power up.	<ul style="list-style-type: none"> Verify your power and ground wires are securely connected to VS and GND on the power terminals. Meter incoming power to make sure it is operating at 12 VDC at 90-110mA. Verify both receiver and translating boards are securely connected at the four-pin connector. 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.
Messages from registered transmitters are not being received.	<ul style="list-style-type: none"> Verify receiver is getting enough power. Verify both receiver and translating boards are securely connected at the four-pin connector. Make sure the registration LED turns on after pressing the registration button. Verify you have the correct TXID registered or that you have pressed the correct transmitter reset button to register. Bring the transmitter close to receiver to verify it is in range and can be heard by the receiver.

9 Specifications

Housing dimensions: 6.54" x 3.62" x 1.05" (166.1mm x 91.9mm x 26.67mm).

Weight: 184g (6.5oz).

Power requirement: 12 VDC at 125 mA.

Operating environment: 32-122°F (0-50°C) up to 90% relative humidity (non-condensing).

Receiver type: Frequency hopping spread spectrum.

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

Regulatory certifications: Security Level 1 CAN/ULC S304:2016, UL 985, UL 1023, UL 2610.

Compatible repeater and transmitters for UL installations: EN5040-T, EN1215EOL, EN1215WEOL, EN1223D, EN1235SF, EN1235DF, EN1244, EN1245, EN1249, EN1261HT.

Compatible Honeywell panels: VISTA-128BPT, VISTA-128BPTSIA, VISTA-250BPT, VISTA-128FBPT, VISTA-250FBPT.

Compatible non-UL Listed panel that may be used with the EN7290: Safewatch Pro 3000 (Certified by Intertek).

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

Note: Contains FCC ID: HCQ3B6F; contains ID: 2309A-F.

10 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.

11 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.

12 Programming Examples for Wireless Alarm Zones and Receiver Supervision

Note: See the compatible VISTA-128 and VISTA-250 series panel with scheduling programming guide for details.

Description	Zone #	Zone Type	Input Type	Input S/N	Loop
Intrusion	Any	03 perimeter, burglary	03 supervised RF	A0nn-nnnn	N/A
Holdup	Any	06 24 hr. silent alarm	03 supervised RF	A0nn-nnnn	1
EN7290 receiver/ interface trouble	8xx ^a	05 trouble day/alarm night	N/A	N/A	N/A
Repeater tamper ^b	Any	05 trouble day/alarm night	03 supervised RF	A0nn-nnnn	1
Repeater AC loss	Any	08 24 hr. auxiliary	04 unsupervised RF	A0nn-nnnn	2
Repeater RF jam	Any	08 24 hr. auxiliary	04 unsupervised RF	A0nn-nnnn	3
Repeater low battery	Any	08 24 hr. auxiliary	04 unsupervised RF	Secondary input S/N + 10000 ^c	1

a. The EN7290 receiver/interface supervision zone # is 8xx, where xx is the EN7290's two-digit address. For example, an EN7290 with an address of 6 would report trouble to zone 806.

b. The EN5040-T high-power repeater uses four zones to monitor repeater conditions; one each for tamper, AC loss, RF jam, and low battery.

c. The repeater low battery is reported from a secondary input serial number created by the EN7290 receiver/interface. A repeater with an input S/N of 345678 will report a low battery on loop 1 with the input S/N 355678 (345678 + 10000).