INOVONICS® WIRELESS CORPORATION

EN4216/R EchoStream® Receiver
Installation and Operation Manual - 04060C

1 Overview
The EN4216 receiver allows you to add up to 16 transmitters to any application. With diversity reception and advanced signal processing, Inovonics Wireless EchoStream technology is designed to minimize dead spots in transmission areas.

1.1 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

1.2 EN4216/R LEDs
Output LED: Lights when any transmitter is sending an alarm transmission (Fig. 1A).
Fault LED: Lights when any transmitter is sending a fault condition (Fig. 1B).
Armed LED: Lit when the receiver is armed (Fig. 1C).
Power LED: Lit when receiving power (Fig. 1D).
LCD Display: Shows status, event log and programming information (Fig. 1E).
Decode LED: Flashes when any recognizable transmission is received. This LED only accessible when the pry-out door on the front panel is removed (Fig. 1F).

1.3 EN4216/R Buttons
Up: Scrolls the display up (Fig. 1G).
Down: Scrolls the display down (Fig. 1H).
Back: Returns display to the previous menu, or when pressed in the main menu options, returns the unit to normal operating mode. When entering information in the display, returns to the last character entered (Fig. 1I).
Enter: Selects the currently displayed menu item. If in normal operating mode, sets the unit to menu mode (Fig. 1J).
Reset: Clears the current status for all points and resets all outputs and LEDs. Records a receiver reset entry in the event log and resets the supervision window timers. This button is only accessible when the pry-out door on the front panel is removed (Fig. 1K).
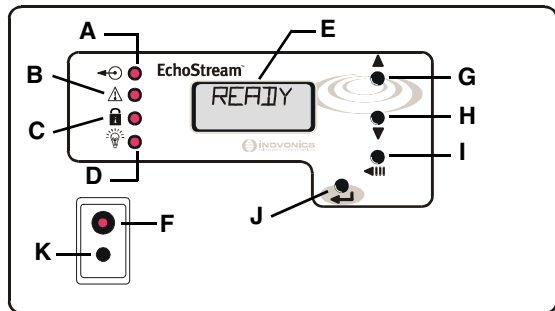

Figure 1 Receiver Buttons, LEDs and LCD

A. Output LED	**B.** Fault LED	**C.** Armed LED
D. Power LED	**E.** LCD display	**F.** Decode LED
G. Up button	**H.** Down button	**I.** Back button
J. Enter button	**K.** Reset button	

2 Installation and Startup
2.1 Connect Power Cabling
Before beginning startup, you will have to connect power to the receiver. To connect power to the receiver:
1. Connect power cabling to the Vs and GND connections (Fig. 7, Fig. 8).
- Power source should be 11-14 VDC. Power supply must be unswitched, uninterrupted, and regulated.

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. To configure the receiver:
1. Use a small screwdriver to press the housing release tabs on the top or bottom of the receiver (Fig. 2A, Fig. 3A); separate the housing.
2. Place a selection jumper on the appropriate frequency band selection pins (Fig. 2I, Fig. 3I).
- Place the jumper on the top two pins, marked AUS, to set the frequency range to 915-928 MHz for Australia.
- Place the jumper on the bottom two pins, marked NZ, to set the frequency range to 921-928 MHz for New Zealand.
- Leave the jumper off the pins to set the frequency range to 902-928 MHz for North America.

Note: North American is also selected when the jumper is only attached to one pin. This can prevent the jumper from being lost when selecting North America.

3. Cycle power to reset.

3 Programming and Operating the Receiver
3.1 Receiver Menus
There are three main menus: INSTALL & SERVICE, EVENT LOG and POINT STATUS. Select the INSTALL & SERVICE menu to program outputs, change password, view the signal strength, delete points, register transmitters or setup points for any of the programmed points.

Note: A password must be entered to access INSTALL & SERVICE. The default password is 3446.

3.2 Program Output
1. From the INSTALL & SERVICE menu, press **Enter** at the PROGRAM OUT prompt.
2. The output type OUT 01 FOLLOWER displays. Use the **Up**/**Down** buttons to scroll through the following options:
Follower: The output reflects the transmitter's alarm status.
  a. Press **Enter** to select.
  b. If using an EN4216, the display advances to OUT N/O, N/C. Use the **Up**/**Down** buttons to choose N/O or N/C; press **Enter** to select.
  If using an EN4216R, the display advances to PGM DONE, press **Enter** to program another output, or **Enter** and **Back** to return to the INSTALL & SERVICE menu.
Latching: The output turns on when activated and remains on until the receiver is reset.
  a. Press **Enter** to select.
  b. If using an EN4216, the display advances to OUT N/O, N/C. Use the **Up**/**Down** buttons to choose N/O or N/C; press **Enter** to select.
  If using an EN4216R, the display advances to PGM DONE, press **Enter** to program another output, or **Enter** and **Back** to return to the INSTALL & SERVICE menu.

Toggle: The output changes state each time the device sends a new activation. A minimum of five seconds must elapse before the output can send a new activation.
  a. Press **Enter** to select.
- INACTIVE displays when selected. Inactive time prevents output chatter. The default is 4.0 seconds. The valid range 2.0 to 99.5 seconds, in 0.5 second increments.
  b. Use the **Up**/**Down** buttons to scroll through the digits; press **Enter** to select and advance to the next digit.
  c. When finished, press **Enter** again to complete selection.
  d. If using an EN4216, the display advances to OUT N/O, N/C. Use the **Up**/**Down** buttons to choose N/O or N/C; press **Enter** to select.
  If using an EN4216R, the display advances to PGM DONE, press **Enter** to program another output, or **Enter** and **Back** to return to the INSTALL & SERVICE menu.
Momentary: The output turns on for even seconds, then turns off, regardless of the device status.
If using an EN4216:
  a. Press **Enter** to select
- MOMENT displays when selected. This sets the time that the output will stay activated. The default is 4.0 seconds. The valid range 0.5 to 99.5 seconds, in 0.5 second increments.
  b. Use the **Up**/**Down** buttons to scroll through the digits; press **Enter** to select and advance to the next digit.
  c. When finished, press **Enter** again to complete selection.
  d. If using an EN4216, the display advances to OUT N/O, N/C. Use the **Up**/**Down** buttons to choose N/O or N/C; press **Enter** to select.
  If using an EN4216R, the display advances to PGM DONE, press **Enter** to program another output, or **Enter** and **Back** to return to the INSTALL & SERVICE menu.
3. When PGM DONE displays, press **Enter** to program another output, or **Enter** and **Back** to return to the INSTALL & SERVICE menu.

3.3 Change Password
Passwords can be up to eight digits long. The default password is 3446. To change the password:
1. From the INSTALL & SERVICE menu, press **Enter** at the CHANGE PASSWORD prompt.
2. Use the **Up**/**Down** buttons to scroll through the digits; press **Enter** to select and advance to the next digit. To select a space, press **Enter** without selecting a digit.
3. When finished, press **Enter** again to complete selection.
4. When PASSWORD CHANGED displays, press **Enter** to return to the INSTALL & SERVICE menu.

3.4 Monitor Signal Strength
The SIGNAL STRENGTH option is used to measure signal strength and troubleshoot installation problems.
1. At the SIGNAL STRENGTH prompt, press **Enter**.
- POINT 01 displays, along with a signal quality of GOOD, WEAK or NO SIG.
2. Use the **Up**/**Down** buttons to scroll through the registered transmitters.
3. Press **Enter** again to view Level (LV) and Margin (MA).
- LV indicates the overall signal strength; MA indicates the signal strength minus the background noise.
4. To reset signal data, use the **Up**/**Down** buttons to leave and return to the transmitter you are monitoring.

3.5 Setup Point

Caution: When programming points, be careful not to map faults to the same output as alarms.

1. From the INSTALL & SERVICE menu, press **Enter** at the SETUP POINT prompt.
2. Use the **Up**/**Down** buttons to scroll through the points; press **Enter** to select the point to be setup.
- TX REGISTR'D displays if a transmitter is currently registered to this point; TX NOT REGSTR'D displays if no transmitter is registered to this point.
3. Press **Enter** to setup the point. The following setup options are available:
Supervision Time: Sets time limit on missing transmitter reporting.
- The valid range is 0 to 99 hours. The default is 60 minutes. Selecting 0 turns off supervision.

Caution: Turning off supervision is not recommended.

  a. Use the Up/Down buttons to adjust the supervision time.
  b. Use the Up/Down buttons to toggle between Hrs (hours) and Min (minutes); press Enter to select.
Inactive Out: Maps transmitter/repeater inactivity fault output.
  a. Use the **Up**/**Down** buttons to scroll through the output numbers. Choosing - - will disable inactivity reporting.
  b. Press **Enter** to select the output to use for this transmitter/repeater's inactivity transmission.
Tamper Out: Maps transmitter/repeater tamper fault output.
  a. Use the **Up**/**Down** buttons to scroll through the output numbers. Choosing - - will disable tamper output.
  b. Press **Enter** to select the output to use for this transmitter/repeater's tamper transmission.
Low Bat Out: Maps transmitter/repeater low battery fault output.
  a. Use the **Up**/**Down** buttons to scroll through the output numbers. Choosing - - will disable low battery output.
  b. Press **Enter** to select the output to use for this transmitter/repeater's low battery transmission.
Alarm Out: Maps transmitter alarm output.
  a. Use the **Up**/**Down** buttons to scroll through the output numbers. Choosing - - will disable alarm output.
  b. Press **Enter** to select the output to use for this transmitter's alarm transmission.
AC Loss Out: Maps repeater AC loss output.
  a. Use the **Up**/**Down** buttons to scroll through the output numbers. Choosing - - will disable AC loss output.
  b. Press **Enter** to select the output to use for this repeater's AC loss transmission.
Log Options: Chooses whether to log events for this transmitter/repeater at all times, or only when armed.
- The log armed option only logs transmitter/repeater events when a low is applied at the arm input.
  a. Use the **Up**/**Down** buttons to toggle between LOG ALWAYS and LOG ARMED; press **Enter** to select.
Text: Enter eight-character descriptive text for the transmitter/repeater
  a. Use **Up**/**Down** buttons to scroll through the alphanumeric characters; press **Enter** to select and advance to the next character. To select a space, press **Enter** without selecting a digit.

Note: If you do not use all eight characters, you must enter spaces to the end of the line.

  b. When finished, press **Enter** again to complete selection.
  c. REGISTER TXN displays. If you do not wish to register the transmitter/repeater at this time, press **Enter** to return to the INSTALL & SERVICE menu.
Register Transmitter: Register transmitter/repeater.
  a. Use the **Up**/**Down** buttons to toggle between N and Y; press **Enter** to select.
  b. At the RESET XMITTER prompt, press the transmitter/repeater's **Reset** button.
4. When TX REG'D displays, press **Enter** to finish and advance to the next point.

3.6 Point Status
1. From the READY, ALARM or FAULT prompts, press **Enter**.
2. When POINT STATUS displays, press **Enter** to display point status details.

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3. Use the **Up**/**Down** buttons to scroll through the points; press **Enter** again to view the outputs the displayed conditions are mapped to.
• Point status flags are defined as follows: A = Alarm (transmitter only); T = Tamper; B = Low Battery; L = AC loss (repeater only); I = Inactive.

Note: If - - displays, the displayed condition has been mapped to a null output.

3.7 Event Log
1. From the READY, ALARM or FAULT prompts, press **Enter**.
2. When POINT STATUS displays, press **Up** to advance to EVENT LOG, and press **Enter** to select.
3. Use the Up/Down buttons to scroll through events.
4. When viewing transmitter events, press **Enter** to see the output the events map to.

Note: No output will be displayed if the event is mapped to a null output.

3.8 Alarms and Faults
Points in alarm are immediately displayed as ALARM, with the point number. If more than one point is in alarm, the display scrolls to each point. Fault conditions are indicated by LEDs and by FAULT in the LCD display if there is no ALARM already displayed; point numbers are not displayed. POINT STATUS or EVENT LOG can be used to determine exact fault data.

4 Connect Output Cabling
1. Connect cabling to the arm input (Fig. 2D, Fig. 3D).
• The optional arm input controls event logging for points set to LOG ARMED. If the arm input is not connected, points set to LOG ARMED will not be logged.

Note: A low at the arm input enables logging for these points; a low at the arm input does not disarm the receiver.

2. Connect cabling to the tamper output (Fig. 2J, Fig. 3J).
• The optional tamper output is a normally open (N/O) output that reports receiver case tamper to an external device.
3. Connect cabling to the jam output (Fig. 2I, Fig. 3I).
• The optional jam output is a normally closed (N/C) output that opens when noise thresholds on all transmission channels remain above a predetermined value for more than 20 seconds.
4. Connect cabling to the reset input (Fig. 2H, Fig. 3H).
• The optional reset input circuit permits installation of a remote momentary normally open (N/O) switch to clear faults, unlatch outputs and reset the receiver to a normal state.
5. Connect cabling to the output terminals (Fig. 4-6).
• The EN4216 provides nine open collector circuits (Fig. 2H); the EN4216R provides six Form C relay circuits (Fig. 3H).
6. Close receiver housing.
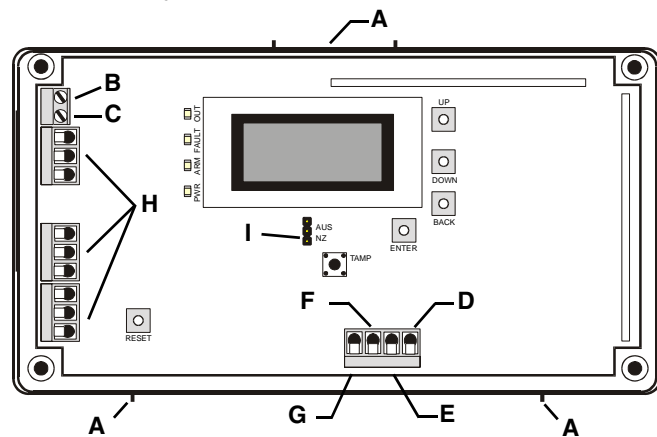
Figure 2 EN4216 Terminals

A. Housing release tab
B. Power (11-14 VDC)
C. GND connection
D. Arm input
E. Reset input
F. Tamper output
G. Jam output
H. Output terminals
I. Frequency selection pins
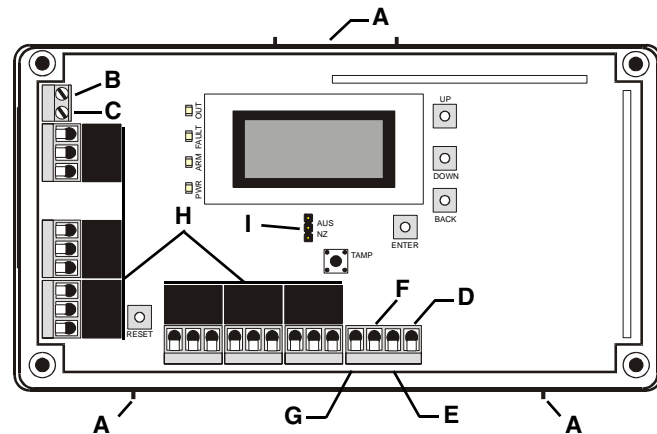
Figure 3 EN4216R Terminals and Relay Terminals

A. Housing release tab
B. Power (11-14 VDC)
C. GND connection
D. Arm input
E. Reset input
F. Tamper output
G. Jam output
H. Output terminals
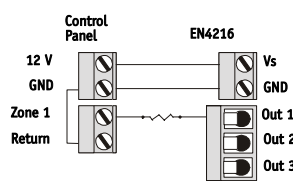**I.** Frequency selection pins

Figure 4 EN 4216 Cabling Option: Open Collector Out, Normally Closed, with an EOL Resistor
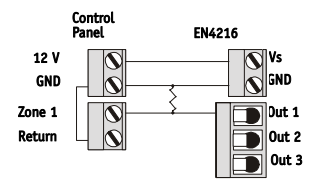

Figure 5 EN4216 Cabling Option: Open Collector Out, Normally Open, with an EOL Resistor
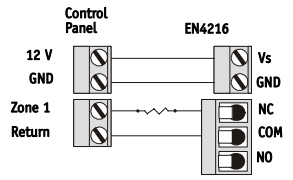

Figure 6 EN4216R Cabling Option: Relay Out, Normally Closed, with an EOL Resistor
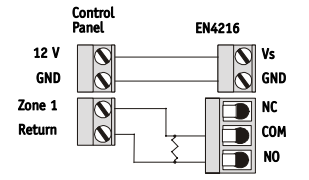

Figure 7 EN4216R Cabling Option: Relay Out, Normally Open, with an EOL Resistor

5 Mount the Receiver

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

1. Use the provided anchors and screws to mount the receiver in a location accessible for future maintenance.
2. Perform a walk test, activating each transmitter assigned to the receiver and ensuring an appropriate response.

6 Specifications
Housing: 162 mm x 92 mm x 28 mm (6.38" x 3.60" x 1.10")
Operating environment: 0°- 60°C (32°- 140°F), 90% relative humidity, non-condensing
Power requirement: 11 - 14 VDC; 150 mA (EN4216), 400 mA (EN4216R with all six relays energized)
Current consumption: Approx. 135 mA (EN4216); approx. 400mA (EN4216R with all six relays energized)
Output specifications: Open collector, drive down to .4V @ 100 mA (EN4216); Form C relay 1A @ 28 VDC, 0.5A @ 30 VAC resistive load (EN4216R); N/O receiver case tamper contact closure, N/O receiver jam input indication.
Input specifications: A low is less than .5 V; a high is greater than 2.5 V. Reset input: Contact closure, momentary low. Arm input: Low enables event logging for points set for LOG ARMED; high disables logging for these points. A low at the arm input does not disarm the receiver.
Receiver type: Frequency hopping spread spectrum
Operating frequency: 915-928 MHz (Australia), 921-928 MHz (New Zealand) 902-928 MHz (USA)
Number of points/Transmitters: 16
Number of outputs: EN4216: nine open collector outputs; EN4216R: six Form C relay outputs
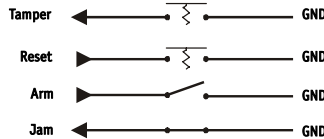**Event history log capacity:** 50 events (first-in, first-out replacement)

Figure 8 Tamper, Reset, Arm and Jam Circuits

7 Warranty/Disclaimer

Caution: Changes or modifications to this unit not expressly approved by Inovonics Wireless Corporation may void the installer's authority to operate the equipment as well as the product warranty.

Note: E-mail support@inovonics.com for a copy of the CE Declaration of Conformity.