

EE7016 EchoStream Survey Kit Installation and Operation Manual

1 Quick Start

By following this procedure you can quickly configure the supplied equipment to perform a site survey. Review the main body of this manual for additional options, features and a more detailed startup process.

- Slide off the battery cover on the back of the EE4016SK survey receiver.
 - Load four AA batteries into the survey kit receiver.
 - Use a small flat-blade screwdriver to press the housing release tab on the bottom of the ACC631 continuous alarm trigger, open the housing.
 - Place a selection jumper to choose either LED OFF or LED ON for the ACC631 continuous alarm trigger.
 - Place a selection jumper to choose a 20 MIN, 40 MIN, 80 MIN, 160 MIN, or 320 MIN duration of the survey for the ACC631 continuous alarm trigger.
 - Leaving some slack on the ACC631 cabling, close the housing.
 - Use a small flat-blade screwdriver to press the housing release tab on either end of the EE1210 and separate the housing.
 - Place a selection jumper on the EchoStream Select compatibility selection pins.
 - Connect the cabling leads from the ACC631 to the EE1210 terminal block.
 - Polarity does not matter when connecting the ACC631 to the EE1210.
 - Close the EE1210 housing.
 - Press the **Power** button to turn on the survey kit receiver.
 - Press the **Enter** button to advance to MAIN MENU.
 - Select REGISTER POINT on the MAIN MENU.
 - Select POINT 1 on the REGISTER POINT menu.
 - Press the EE1210 **Reset** button. The transmitter should now be registered.
 - Close the EE1210 housing.
 - Press the ACC631 activation button. The activation LED should begin to flash.
 - Place the universal transmitter where you plan to mount your network coordinator or receiver.
 - Walk the receiver to the first point you plan to use a transmitter.
-
- Note:** Reversing the position of the end device and the repeater will make the survey easier to perform. This equipment reversal will not affect the accuracy of the results.
-
- Press **Exit** to return to the MAIN MENU.
 - Select POINT STATUS on the MAIN MENU.
 - Select POINT 1 or POINT 2 to view signal information.

2 EE7016 Overview

The EchoStream survey kit is a portable, easy-to-use system for conducting EchoStream site surveys to determine optimal location of Inovonics wireless receivers, repeaters and end devices.

2.1 Measuring Signal Strength

The EchoStream survey kit measures the signal strength of repeater and end device messages to help optimize your 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.

2.2 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.

2.3 EchoStream Survey Kit Components

The EchoStream survey kit is battery-powered for portability. The following components are included in the survey kit:

- An EE4016SK EchoStream survey receiver.
- An EE1210 universal transmitter for testing the location of all other end devices.
- An ACC631 continuous alarm trigger to activate the EE1210 universal transmitter.
- A flat-blade screwdriver.
- A reversible flat-blade/Phillips screwdriver.
- The EE7016 EchoStream Survey Kit Installation and Operation Manual.

You will also need:

- A set of four fresh AA alkaline batteries, or four fully-charged AA NiMH rechargeable batteries, for the receiver.

You may also want:

- Headphones with a 3.5 mm plug.
- A battery charger, if using rechargeable batteries.

Note: Inovonics Wireless recommends either the Rayovac PS5/PS6 or the Energizer CH30MNCP-4

3 Configure the Universal Transmitter

3.1 Configure the ACC631 Continuous Alarm Trigger

The ACC631 continuous alarm trigger toggles a contact every eight seconds to keep the EE1210 universal transmitter in nearly continuous transmission.

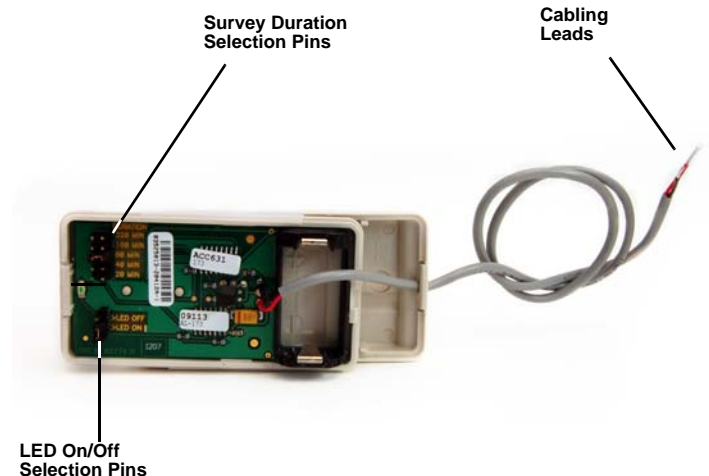


Figure 1 ACC631 Continuous Alarm Trigger Internal Components

To configure the ACC631 continuous alarm trigger to perform site surveys:

- Use a small flat-blade screwdriver to press the housing release tab on the bottom of the ACC631 continuous alarm trigger; open the housing.
- Place a selection jumper to choose either LED OFF or LED ON for the ACC631 continuous alarm trigger.
 - Choosing LED ON will cause the LED to light with every transmission. This can be useful to confirm operation.
- Place a selection jumper on 20 MIN, 40 MIN, 80 MIN, 160 MIN, or 320 MIN.
 - This selects the duration of the survey. Unless the battery is removed from the continuous alarm trigger, transmissions will be sent every eight seconds until the duration chosen here expires.
- Leaving some slack on the ACC631 cabling, close the housing.

3.2 Configure the EE1210 Universal Transmitter

During a site survey, the EE1210 universal transmitter sends the RF signals that provide survey data.

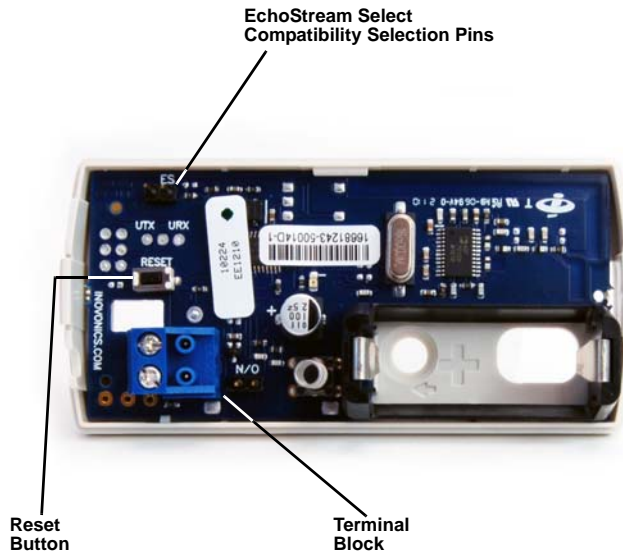


Figure 2 EE1210 Universal Transmitter Internal Components

To configure the EE1210 survey transmitter to perform site surveys:

1. Use a small flat-blade screwdriver to press the housing release tab on either end of the EE1210 and separate the housing.
2. Place a selection jumper on the EchoStream Select compatibility selection pins.
3. Connect the cabling leads from the ACC631 to the EE1210 terminal block.
 - Polarity does not matter when connecting the ACC631 to the EE1210.
4. Close the housing.

4 Configure the Survey Receiver

The EE4016SK EchoStream survey receiver sets the parameters of the site survey, and provides the data.

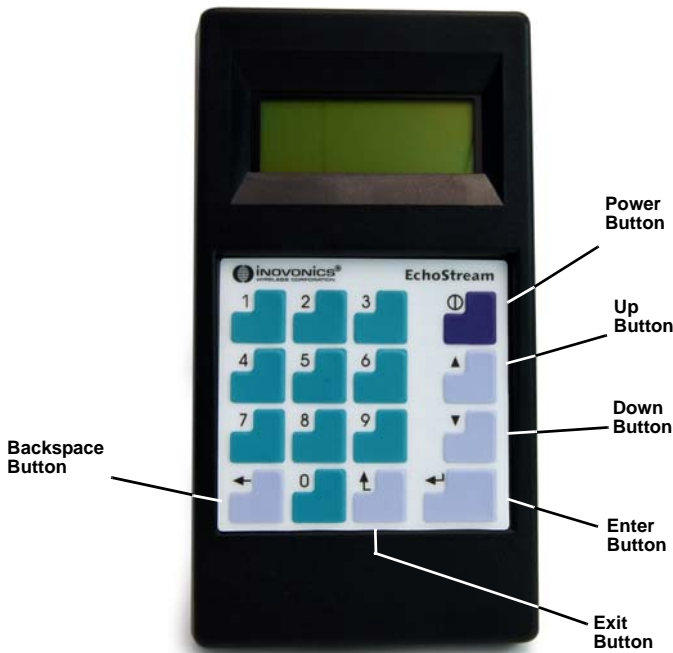


Figure 3 EE4016SK Survey Receiver

Observe the following rules to navigate the display screens and select options:

- Press the **Up** and **Down** buttons to highlight menu items on the display screen.
- Press the **Enter** button to select highlighted menu items.
- Press the **Exit** button to exit the current display screen. The display will return to the last higher-level display screen.

Note: The EE4016SK survey receiver will turn itself off if no key is pressed for 30 minutes, unless the survey receiver is in one of the POINT STATUS screens. If in one of the POINT STATUS screens, the survey receiver will turn itself off after five hours.

1. Press the **Power** button on the EE4016SK keypad to power on the receiver. When the receiver information screen displays, press **Enter** to advance to the main menu.

The MAIN MENU displays:

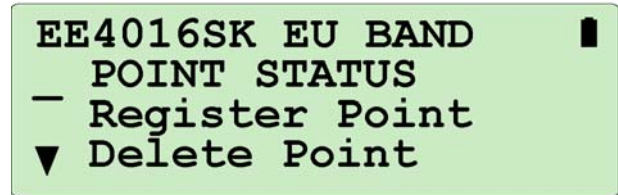


Figure 4 The Main Menu, Point Status Highlighted

The MAIN MENU displays the model number and frequency band on the first line. If the battery is low, the first line will also display the low battery symbol. The low battery symbol will also display on many other screens.

The MAIN MENU offers the following choices:

Point Status Select to view point status. See section 7, "Perform a Site Survey using Universal Transmitters" for more information.

Register Point Select to register a point. See section 5, "Register End Devices" for more information.

Delete Point This is selected to delete any particular point or all points that have been registered.

Receiver Setup Select to configure the receiver.

2. Press the **Down** button three times to highlight RECEIVER SETUP.

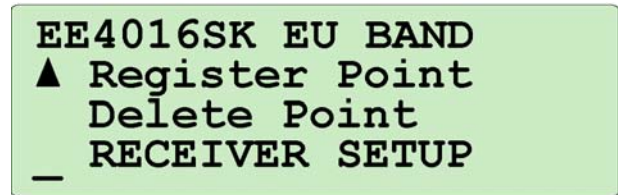


Figure 5 The Main Menu, Receiver Setup Highlighted

3. Press **Enter** to select. The RECEIVER SETUP menu displays.

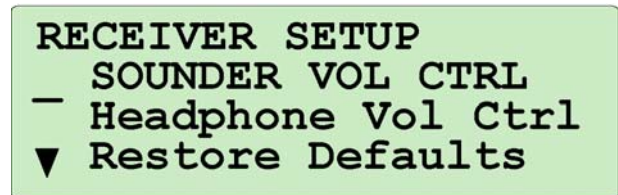


Figure 6 The Receiver Setup Menu, Sounder Vol Ctrl Highlighted

RECEIVER SETUP includes the following options:

Sounder Vol Ctrl Select to change the volume for the EE4016SK sounder. The volume is given as a percentage, with a default of 100%. Press the **Up/Down** buttons to raise or lower the volume.

Headphone Vol Ctrl Select to change the volume for the optional headphones. The volume is given as a percentage, with a default of 100%. Press the **Up/Down** buttons to raise or lower the volume.

Restore Defaults Select to restore all default receiver configuration settings.

Caution: Choosing restore defaults will erase all programmed points. If you choose to restore defaults you will need to re-register all points.

4. Press the **Exit** button until the MAIN MENU displays.

5 Register End Devices

Before beginning the site survey, you must register all end devices you will use to conduct the survey. To register end devices:

1. Highlight REGISTER POINT on the main menu.

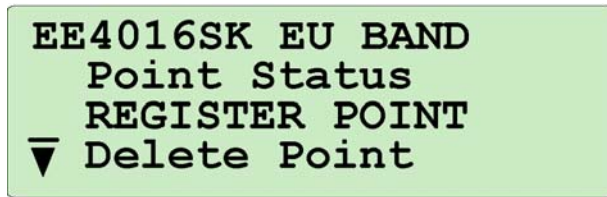


Figure 7 The Main Menu, Register Point Highlighted
2. Press **Enter** to select. The REGISTER POINT menu displays.

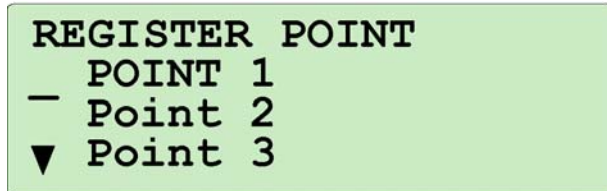


Figure 8 The Register Point Menu, Point 1 Highlighted

Note: The survey receiver can register end devices to up to 16 points. Only points that do not already have an end device registered to them will display. If all points have an end device registered to them, the ALL POINTS ARE REGISTERED message displays. If this is the case, use the DELETE POINT option to delete a point, and return to the REGISTER POINT screen to register an end device.

3. Use the **Up/Down** buttons to highlight a point, and press **Enter** to select. The PRESS RESET BUTTON message displays.

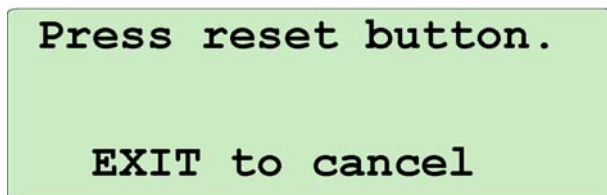


Figure 9 The Press Reset Button Message

4. Press the **Reset** button on the end devices to be registered.
5. The registration complete message displays.

Note: If there are no repeaters present in the site under survey an EE1210 may also be used to simulate the transmit power output of a repeater.

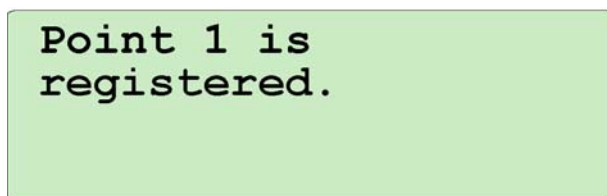


Figure 10 The Registration Complete Message

6. Repeat these steps for each end device you want to register.

6 Register Repeaters

If no repeaters are registered to a point, the EE4016SK will use every repeater in your EchoStream system to determine the end device RF signal strength for the first hop and last hop, displaying the results on the point status signal strength screen.

If you would like to see the first hop results from specific repeaters, you will need to register the repeaters to be monitored. (Last hop information from an end device, however, will continue to be influenced by all repeaters in the system.) High-power repeaters are registered in the same way as end devices. Refer to section 5, "Register End Devices" to register a repeater, pressing the repeater **Reset** button to complete registration.

If you want to monitor signal strength from just a registered repeater (as opposed to an end device), refer to section 7, "Perform a Site Survey using Universal Transmitters", and choose the point to which you registered the repeater. Messages the repeater is repeating are not included in the signal strength information; only supervision, reset/restoral and tamper messages count towards signal strength information.

7 Perform a Site Survey using Universal Transmitters

The EchoStream survey kit provides continuous monitoring of the signal strength of end devices and repeaters using the end device and repeater transmission received symbols (* and +) on the display screen and the sounder or headphones. If receiving a good signal, the transmission symbols will beat once a second and the survey kit will beep accordingly.

1. Prepare a site map, indicating where you plan to mount all end devices and the receiver.
2. Place the universal transmitters where you are planning to mount your network coordinator or receiver.

Note: Place the universal transmitters as close as possible to the point where you will place the receiver. Pay attention to height; if you are planning to mount the receiver at a six-foot height, position the transmitter at the same height.

3. Press the ACC631 activation button to begin test transmissions.
4. Walk the receiver to the first point of coverage and place the receiver where you will locate the first end device.

Note: To ensure an accurate signal reading, place the receiver as close as possible to the point where you will mount the end device. If mobile end devices will be used, check signals from the most difficult locations from which users may activate alarms.

From the main menu, highlight POINT STATUS, and press **Enter** to select. The REGISTER POINT menu displays.

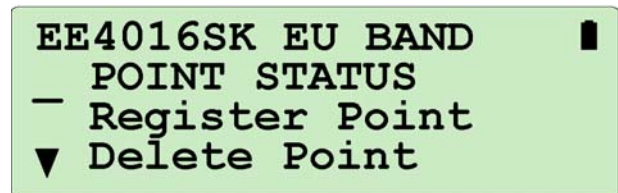


Figure 11 The Main Menu, Point Status Highlighted

5. All registered points display. Highlight the point for the end device that will be placed in this location, and press **Enter** to select. The POINT STATUS SUMMARY screen displays.

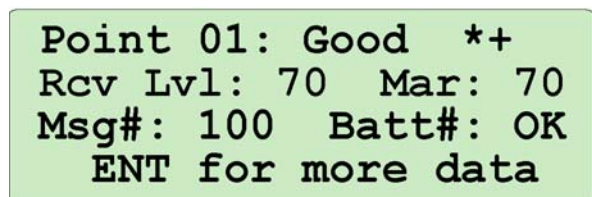


Figure 12 The Point Status Summary Screen

The POINT STATUS SUMMARY screen contains the following information:
Point # The point number you've selected displays here along with the signal level of the selected end device. GOOD indicates a signal sufficient for EchoStream functionality; WEAK indicates a signal insufficient for EchoStream functionality; N/S indicates no signal received.
GOOD displays when the signal margin is 4 decibels or more. WEAK displays when the signal margin is less than 4 decibels.
N/S displays when no recognizable message is received at all, no matter how weak.

End-device transmission symbol: The end device transmission symbol, *, is displayed when the receiver is hearing a signal directly from a selected end device; the receiver beeps accordingly.

High-power repeater transmission symbol: The repeater transmission symbol, +, is displayed when the receiver is hearing a signal from the selected end device that has been passed on by a repeater.

Rcv Lvl Indicates the overall strength of messages received from the selected end devices and repeaters, in decibels.

Rcv Mar Indicates the signal margin of messages received from the selected end devices and repeaters, in decibels.

Msg# Indicates the total number of messages received, up to 999.

- Batt Indicates the battery status of the end device as either OK or LOW.
6. Press **Enter** for more signal information. The POINT STATUS MESSAGE COUNT screen displays.

```
Point 01: Good *+
Act#: 100   Tmp#: 100
Res#: 100   Sup#: 100
ENT for more data
```

Figure 13 The Point Status Message Count Screen

Act# Indicates the total number of activation messages received, up to 999. An activation message is defined as a message that does not fall into the Tmp, Res and Sup categories described below. For example, an alarm message on a pendant transmitter would be displayed as an Act message.

Tmp# Indicates the total number of tamper messages received, up to 999.

Res# Indicates the total number of reset and restoral messages received, up to 999.

Sup# Indicates the total number of supervisory messages received, up to 999.

7. Press **Enter** for more signal information. The POINT STATUS SIGNAL STRENGTH screen displays.

```
Point 01: Good *+
Dir Lvl: 70   Mar: 70
1st Lvl: 70   Mar: 70
Lst Lvl: 70   Mar: 70
```

Figure 14 The Point Status Signal Strength Screen

Dir Lvl Indicates the overall strength of messages received directly from the selected end device, in decibels.

Dir Mar Indicates the signal margin of messages received directly from the selected end device, in decibels.

1st Lvl Indicates the overall strength of first hop end device messages received by repeaters, in decibels.

1st Mar Indicates the signal margin of first hop end device messages received by repeaters, in decibels.

Lst Lvl Indicates the overall strength of last hop repeater messages received by the survey kit, in decibels.

Lst Mar Indicates the signal margin of last hop repeater messages received by the survey kit, in decibels.

8. Repeat all steps for the next point on your site map.
9. Press the EE4016SK **Power** button to turn off the survey receiver.

8 Perform a Site Survey without using the ACC631 Continuous Alarm Trigger

The EE4016SK site survey receiver can be used to monitor the signal strength of any end device or repeater in your EchoStream system.

- Register the end device or repeater you want to monitor.
 - Refer to section 5, "Register End Devices" to register an end device; refer to section 6, "Register Repeaters" to register a repeater.
- Place the EE4016SK site survey receiver where your network coordinator or receiver is normally located.
- Activate the end device.
- Monitor signal strength.
 - Refer to step 4 through 7 in section 7, "Perform a Site Survey using Universal Transmitters" to monitor signal strength.

9 Specifications

Operating frequency: 868 MHz (Europe).

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

Measurement accuracy: +/- 2dB @ 25°C (77°F), +/- 3dB @ 0°C - 60°C (32°F-140°C).

Receiver type: Frequency hopping spread spectrum.

Battery life and ordering information: EE4016SK: Eight hours of continuous use, 1.5V, AA alkaline or NiMH; EE1210: 200 hours of continuous use, 3.0V, Inovonics Wireless part number BAT604.

EE1210SK RF output power: 25mW.

EE1210SK firmware revision: 90770, v3.2.

EE4016SK firmware revision: 90324, v1.20.

Countries in which Inovonics European products can be distributed: Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Note: Specifications and data are subject to change without notice.

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

10 Simplified Declaration of Conformity

Hereby, Inovonics declares that the radio equipment type EE7016 is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following Internet address: www.inovonics.com

11 US Patent Numbers

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