

EchoView Host

Mini-Controller for Closed-Loop Portable Wireless Solutions

User's Guide



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WARNINGS

Read Before Operating

This manual must be carefully read by all individuals who have or will have the responsibility of using, maintaining, or servicing this product. The product will perform as designed only if it is used, maintained, and serviced in accordance with the manufacturer's instructions.

Warning:

Use only the Lithium battery or external rechargeable battery provided by RAE Systems. This instrument has not been tested in an explosive gas/air atmosphere having an oxygen concentration greater than 21%. Substitution of components may impair suitability for intrinsic safety. Replace batteries only in non-hazardous locations.

STATIC HAZARD: Clean only with a damp cloth.

For safety reasons this equipment must be operated and serviced by qualified personnel only. Read and understand instruction manual completely before operating or servicing. Any rapid up-scale reading followed by a declining or erratic reading may indicate a gas concentration beyond upper scale limit, which may be hazardous.

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1 Marking

The EchoView is certified according to the IECEx scheme, ATEX and CSA for US and Canada as protected by intrinsic safety.

The product is marked with the following information:




RAE SYSTEMS

3775 N. 1st. St., San Jose

CA 95134, USA

FMC-400

Serial No/barcode: XXX-XXXX-000

IECEx TSA 10.0016X Ex ia IIC T4 Ex ia I	 0575  IM1/II 1G Ex ia IIC T4 Ex ia I DNV 10 ATEX 83388X	 Class I, Gr. A,B,C,D T4 Intrinsically Safe
--	--	---

$-40^{\circ}\text{C} \leq T_{\text{amb}} \leq 50^{\circ}\text{C}$

Warnings:

- Use only RAE 500-0111-000 for internal battery. Do not replace internal battery in hazardous locations.
- U_i : 3.6V; C_i : 78 μ F; L_i/R_i : 3.5 μ H/ohm
- Understand User's Manual before operating or servicing.
- Substitution of components may impair intrinsic safety.
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

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Applied Standards

IECE _x	ATEX	North America
IEC 60079-0:2004	EN 60079-0:2006	CAN/CSA-C22.2 No. 0-M91
IEC 60079-11:2006	EN 60079-11:2007	CAN/CSA-C22.2 No. 157-92
		C22.2 No. 142-M1987
		UL 913
		UL916

Brazil Radio Specifications

Radio model: RM900

Frequency range: Within 902 to 907.5 MHz and 915 to 928 MHz,
use IEEE 802.15.4 channel 1, 6, 7, 8, 9 and 10

Modulation: 802.15.4 DSSS BPSK

RF power (Tx):10dBm

Data rate: 40kbps

1.1 Operation Area and Conditions

1.1.1 Hazardous Areas classified by Zones

EchoView is intended to be used in hazardous areas or mines susceptible to firedamp classified zone 0, zone 1 or zone 2, within the temperature range of -40° C to +50° C, where gases of explosion groups IIA, IIB or IIC and T4 may be present.

1.1.2 Hazardous Areas classified by Divisions

EchoView is intended to be used in hazardous areas classified for Class I Div. 1 or 2, within the temperature range of -40° C to +50° C, where gases of explosion groups A, B, C or D and temperature class T4 may be present.

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1.2 Instruction For Safe Use

Strictly follow the instructions for safe use. Application of the EchoView requires full understanding and strict observation of the instructions.

1.3 Use In Hazardous Areas

Equipment which is intended for use in explosive atmospheres and which has been assessed and certified according to international regulations may be used only under specified conditions. The components may not be modified in any way.

The appropriate regulations for service and repair must be properly observed during such activities.

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2 Standard Kit

EchoView Host Mini Controller

Antenna

Swivel Belt Clip

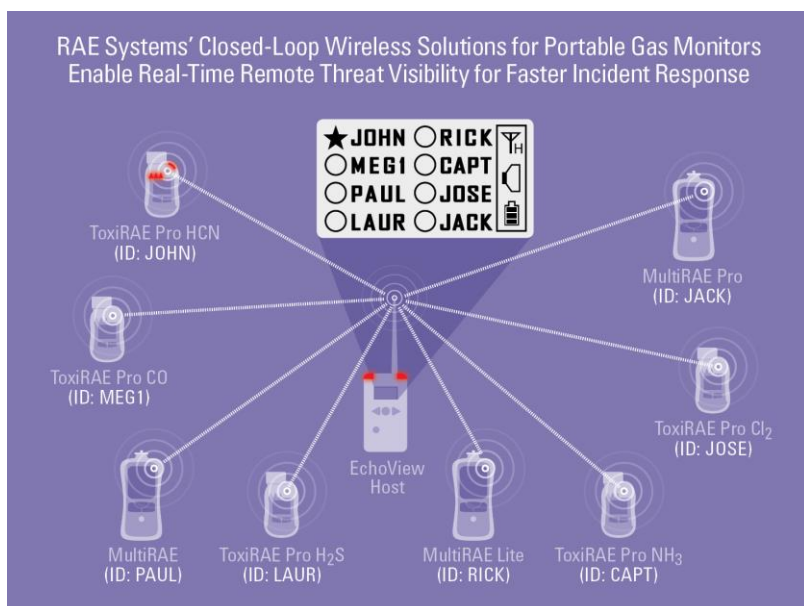
Maintenance/battery replacement tool

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3 General Information

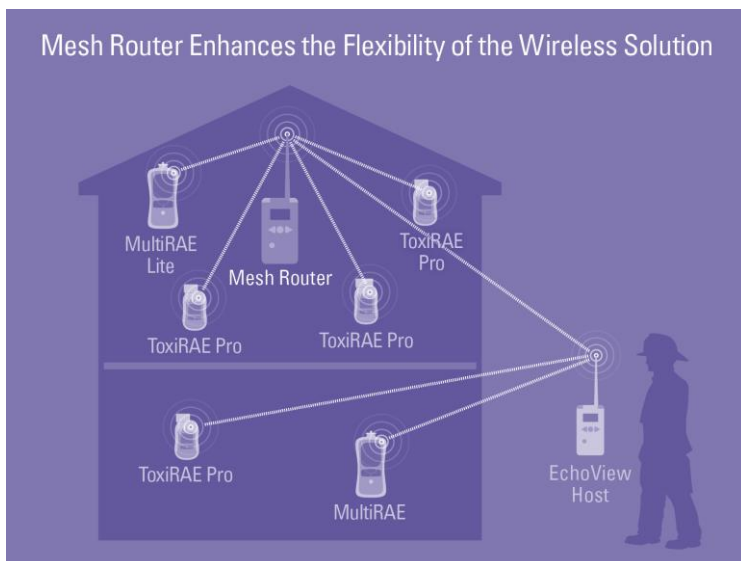
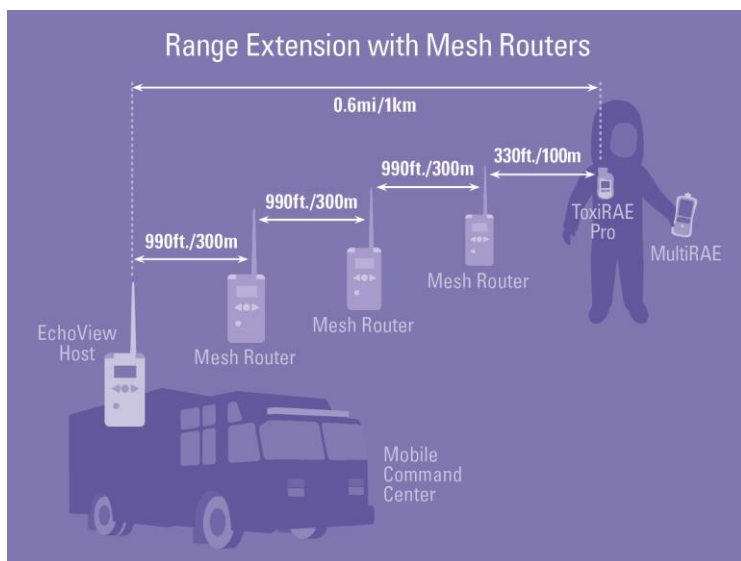
The EchoView Host Mini-Controller is the cornerstone of RAE Systems' Closed-Loop Wireless Solutions for portable gas monitors. This rugged handheld device can establish a self-sufficient network with up to eight supported RAE Systems portable wireless monitors and display their readings and alarm status in real time on an easy-to-read screen, supplemented by audible and visible alerts.

One EchoView Host and up to eight ToxiRAE Pro and/or MultiRAE monitors. The EchoView collects data from all eight monitors and displays it.



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Extending the range between monitors and an EchoView Host. If a long distance is between the portable monitors and the EchoView Host, Mesh Routers can be employed to extend the range. Up to three Mesh Routers can be used in this configuration, and each can extend the range by up to 300 meters, typical.



2.1. Key Features

- Remote wireless access to real-time readings and alarm status of portable gas monitors for faster incident response
- Establishes a closed-loop wireless network with and displays real-time readings and alarm status of up to eight portable gas monitors at the same time
- Communication range extendable to 1 km / 0.6 mi with Mesh Routers
- Field-replaceable battery with a 10-day runtime
- Bright-red high-visibility alarm lights
- Loud audio alarm, 90dB at 30cm
- Highly-resistant to electromagnetic and radio interference
- IP-65 water and dust ingress protection rating
- Intrinsically safe for Class I, Division 1 ATEX/IECEEx hazardous locations

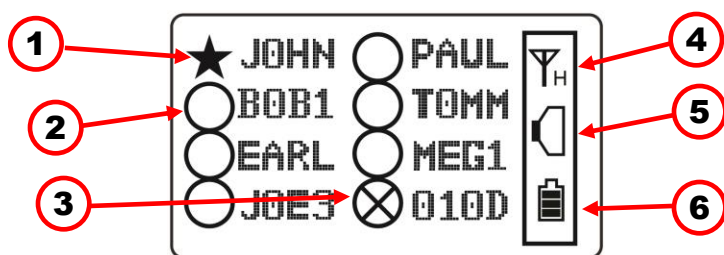
4 Physical Description



1	LED alarm
2	LCD (with backlighting)
3	Buzzer alarm
4	Battery cover (on bottom)
5	Y/+, MODE, and N/- keys
6	Antenna

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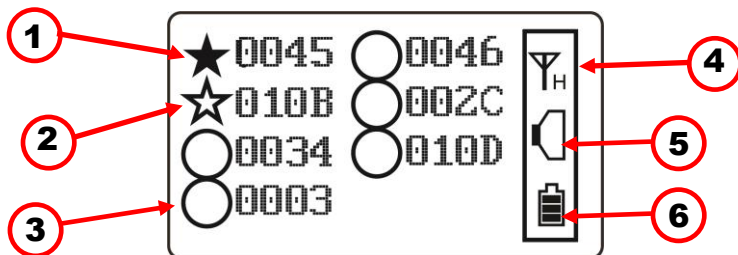
4.1 LCD Display (Monitoring)



1	Selected monitor (solid circle or star)*
2	Unselected monitor (open circle or star)
3	Offline monitor (open circle with "X")
4	Radio transmission indicator ("H" for "Host")
5	Audible alarm on/off indicator ("on" shown)
6	Battery indicator

Note: The Unit ID can be a device ID as well as a radio ID, depending on the portable monitor's setting.

4.2 LCD Display (In Alarm)



1	Monitor in alarm and selected (solid star)
2	Unselected monitor in alarm (open star)
3	Unselected monitor not in alarm (open circle)
4	Radio transmission indicator ("H" for "Host")
5	Audible alarm on/off indicator ("on" shown)
6	Battery indicator

5 Specifications

RF Certifications	FCC Part15 CE EN 300328
Display	Graphical LCD (1 x 1.5") with backlight
Audible alarm	90dB @ 30cm
Visual alarm	2 super-bright red LEDs
Calibration	None necessary
EM Immunity	No effect when exposed to 0.43mW/cm ² RF interference (5-watt transmitter at 12")
Operating Range	Up to 300 meters/990 feet to Mesh Router, or up to 100 meters/330 feet to wireless portable device, typical
User Interface	Three keys (Y/+, MODE, N/-)
Power Supply	D-size Lithium replaceable battery, +3.6V
Operation Time	Internal Battery: Up to 10 days External Battery: Up to 45 days
Operating Temperature	-4° to 122° F (-20° to +50° C)
Humidity	0% to 95% relative humidity, non-condensing
Dimensions	26.5cm x 9.5cm x 5.5cm (10.5" L x 3.7" W x 2.1" H)
Weight	0.6 kg (1.3 lbs)
IP Rating	IP-65
Mounting	Optional stainless-steel bracket with pole mount or magnetic mount

FCC Part 15 Statement

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

6 Operation

When turned on, the EchoView Host radio is always turned on and listening for remote units.

Whenever you start EchoView Host, it automatically tries to form a network with remote wireless devices configured to communicate on the same PAN ID and Channel.

Make sure the battery with sufficient charge is installed before operating the EchoView Host. Refer to page 39 for information on battery installation and replacement.

6.1 Turning The EchoView Host On

Hold down the [MODE] key and release it when the EchoView Host display and LED lights light up. The display indicates that the unit is now on:



During startup, the display shows the firmware version:



Next, it shows the firmware's build date and time:



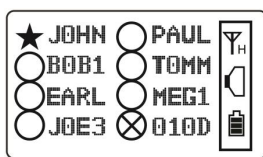
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This is followed by the Unit Mode and Modem Type:

Mode: Host	Modem type: 8
----------------------	----------------------

Note: Modem type relates to its permanently set operating frequency. For further information, refer to page 32.

Then the EchoView Host attempts to form a wireless network. When the network is created and communication with wireless monitors is established, the main screen is shown. It includes radio-on indicator, battery charge, buzzer on/off icon, and the identification numbers of all monitors on the network:



The monitor name shown on the EchoView Host screen is either the ID of the monitor's radio or the first four characters of the monitor's configurable USERID.

Important! Each name on a network must be unique. The automatically assigned radio ID is unique by default, but if a custom name is used for a monitor, it is a good idea to make sure the first four characters of the monitor's USERID (that form the custom monitor's name) are unique to each name. "JOSEPH1" and "JOSEPH2" programmed into remote instruments will both be interpreted and displayed by the EchoView Host as "JOSE."

Note: If no monitors are within the EchoView Host's range, its display will only show the radio-on indicator, battery charge, and buzzer on/off icon.



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6.2 Turning The EchoView Host Off

Hold down the [MODE] key through the “5...4...3... 2... 1... Power Off” sequence. The EchoView Host is off when the display is blank. Release the [MODE] key.

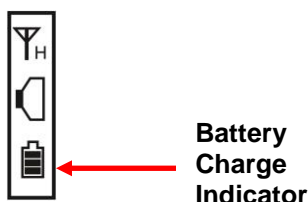


The EchoView Host is now off.

6.3 Battery Indicator

The EchoView Host's internal battery is designed to provide power for up to 10 days. When the battery gets low, the EchoView Host beeps once per minute and the battery icon is empty. See page 39 for the replacement procedure. It is recommended that the battery be changed immediately, to minimize potential downtime. When the battery is almost completely depleted, the LCD displays “Power off,” and the LED and buzzer alarms activate once per second. The battery icon also blinks on and off. The low battery alarm continues until the battery runs out. Then the unit shuts down automatically.

Battery power is indicated with an icon in the lower right corner of the screen, below the wireless communication indicator and buzzer icon:



Battery charge is shown from empty to full:





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Note: For a fixed-system application, an external power source, the RAE PowerPak, can be used as a substitute for the internal battery. Only remove the external battery adapter in non-hazardous locations.

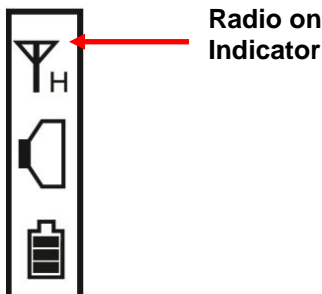
6.4 Buzzer (Audible Alarm) Off Indicator

The EchoView Host's buzzer (audible alarm) can be turned off, so the LED visible alarms flash but there is no sound when in alarm. The icon on the main screen indicates its state.

	Buzzer on
	Buzzer off

6.5 Wireless Communication Indicator

The display employs an antenna icon to show that the radio is on, and the letter "H" indicates that the Mini-Controller is operating in the Host mode. It is located in the upper right corner of the display:



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7 Deploying The EchoView Host

When deploying a wireless portable detector network that utilizes EchoView Hosts, make sure all units on the network have been set up with the same PAN ID and Channel number. The EchoView Host establishes a network automatically with up to eight instruments.

8 Programming The EchoView Host

Programming Mode is accessed by first providing the correct password.

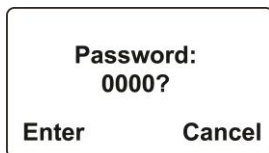
Press and hold [MODE] and [N/-] until you see this screen:



Input the 4-digit password:

- Increase the number from 0 through 9 by pressing [Y/+].
- Decrease the number from 9 through 0 by pressing [N/-].
- Step from digit to digit using [MODE].

Once all the four digits have been entered, press [MODE] again to see the following screen appear. Press [Y/+] to enter the password.



If you make a mistake, you can cycle through the digits by pressing [MODE] and then using [Y/+] and [N/-] to change the number in each position.

Note: The default password is 0000.

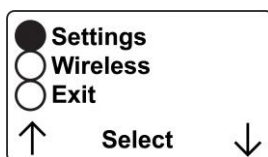
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If your password is incorrect, you see this screen:



After a few seconds, the EchoView Host exits to its main screen.

When you have successfully entered Programming Mode, you see this screen:



Note: If you do not make a selection in 60 seconds, the EchoView Host automatically exits to the main screen.

Press [Y/+] or [N/-] to scroll to “Settings,” “Wireless,” or “Exit.” Then press [MODE] to select your choice.

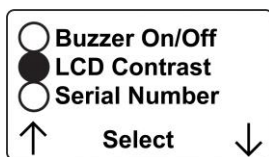
Settings provides information about your instrument. Some screens are read-only (you cannot edit them), but other screens allow you to change settings.

Wireless consists of parameters you can set/change that affect wireless functionality, network configuration, etc.

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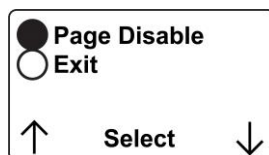
8.1 Settings

Settings include some read-only information (Serial Number and Firmware Version) and some settings that you can change.



Press [Y/+] to scroll up or [N/-] to scroll down.

Note: Two more screens contain additional options:



Note: The scrolling “wraps,” so once you reach the first or last item, it starts scrolling through the items again.

Eight choices (including Exit) are available:

- Buzzer On/Off
- LCD Contrast
- Serial Number (read-only)
- Firmware Version (read-only)
- Factory Reset
- Edit Password
- Page Disable
- Exit

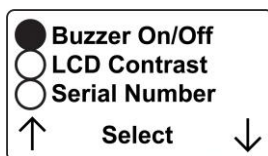
To make a selection, scroll until the circle to the left of your choice is black, and then press [MODE].

Note: If you do not make a selection in 60 seconds, it automatically exits to the main screen.

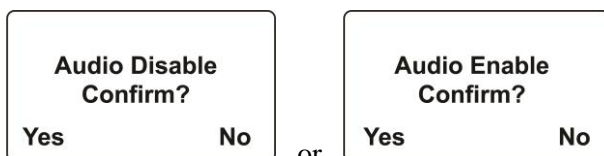
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8.1.1 Buzzer On/Off

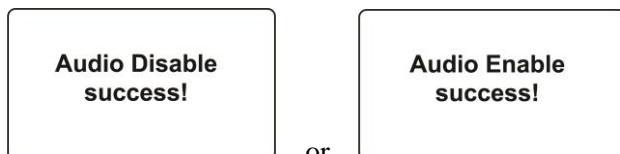
You can turn the buzzer (audible alarm) on or off. To access the parameter, press [MODE] when its name is highlighted (dark circle):



You are asked whether you want to disable (or enable, if it is already disabled) the audible alarm:

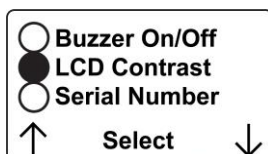


To toggle the audible alarm from on to off (or off to on), press [Y/+], and a confirmation message appears. To exit without performing the reset, press [N/-].



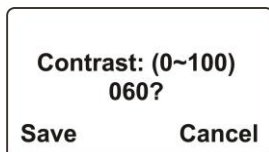
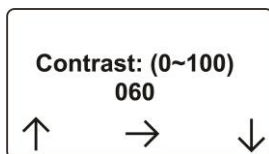
8.1.2 LCD Contrast

The display's contrast is adjustable via this menu. To access it, press [MODE] when its name is highlighted (dark circle):



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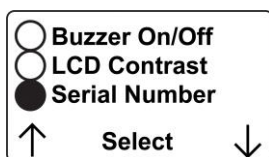
The contrast value is shown in the display. Step through the digits from left to right by pressing [MODE]. Change a digit's value by pressing [Y/+] to increase and [N/-] to decrease. After the third digit, you see a flashing “?”



- Save your changes by pressing [Y/+].
- Exit without saving changes by pressing [N/-].
- Step back to the first digit by pressing [MODE].

8.1.3 Serial Number

This shows the Serial Number of the EchoView Host. To view it, press [MODE] when “Serial Number” is highlighted (dark circle):



The serial number is shown in the display:

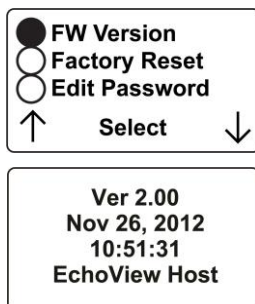


Press [MODE] to return to the Settings menu. If you do not make a selection in 60 seconds, the unit automatically exits to the menu.

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8.1.4 Firmware Version

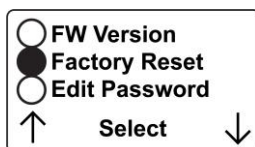
This shows the firmware version incorporated in the instrument. It is read-only. You cannot make changes to the information. To view it, press [MODE] when its name is highlighted (dark circle):



Press [MODE] to return to the Settings menu. If you do not make a selection in 60 seconds, it automatically exits to the menu.

8.1.5 Factory Reset

You can perform a factory reset to the instrument's original settings. To access it, press [MODE] when its name is highlighted (dark circle):



You are asked whether you want to perform the factory reset:



To perform the reset, press [Y/+]. To exit without performing the reset, press [N/-].

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While the EchoView Host is being reset to its original factory settings, the screen shows that the activity is taking place:



When the reset is complete, this screen appears:



Then the unit returns to the Settings menu.

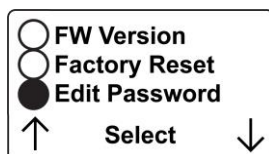
Note: Factory Reset changes all EchoView Host settings to factory-default values. These include:

- PAN ID: 999
- Channel:
 - 6 (for 9XX MHz)
 - 0 (for 868 MHz)

All custom-configured settings are removed and cannot be retrieved!

8.1.6 Edit Password

You can change the password by selecting “Edit Password.”



At this screen, input your new password over the old one (or the default):

- Increase the number from 0 through 9 by pressing [Y/+].
- Decrease the number from 9 through 0 by pressing [N/-].
- Step from digit to digit using [MODE].

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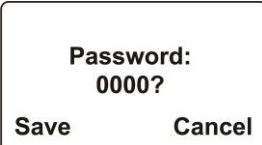
Note: If you make a mistake, you can cycle through the digits by pressing [MODE] and then using [Y/+] and [N/-] to change the number in each position.



A rectangular screen with a black border. At the top, the text "Password:" is displayed. Below it, the number "0000" is shown. At the bottom, there are three navigation arrows: an upward arrow on the left, a rightward arrow in the center, and a downward arrow on the right.

Once all the four digits have been entered, press [MODE] again to see the following screen appear.

- Save your changes by pressing [Y/+].
- Exit without saving changes by pressing [N/-].
- Step back to the first digit by pressing [MODE].



A rectangular screen with a black border. At the top, the text "Password:" is displayed. Below it, the text "0000?" is shown. At the bottom, there are two options: "Save" on the left and "Cancel" on the right.

Saving the password takes a moment, and a screen indicates that it has been successfully saved:

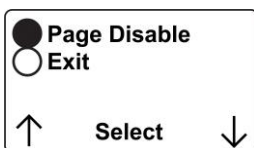


A rectangular screen with a black border. At the top, the text "Password:" is displayed. Below it, the text "Success." is shown.

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8.1.7 Page Disable

The Page feature can be enabled to allow up to four additional EchoView Host “mimic panels” to be used as part of a closed-loop system.



When the Page feature is enabled, the EchoView Host broadcasts instrument data. These data can be picked up by mimic panels. If no mimic panels are planned to be used, this feature should be disabled, in order to ensure data privacy. **Note:** The default value is “Disabled.”

To enable (or later to disable) the feature, press [MODE] to reach this screen (if it is already enabled, it will say “Page Disable?”):

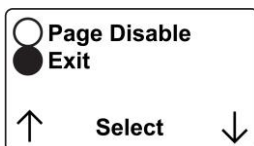


Press [Y/+] to change the setting. After the setting is accepted, this screen is shown (or one that says “Page Disabled”):



8.1.8 Exit

Scroll until “Exit” is selected.



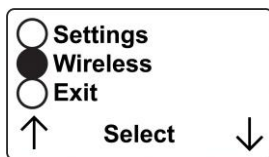
Press [MODE] to return to the Programming Menu.

Note: If you do not make a selection in 60 seconds, it automatically exits to the menu.

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8.2 Wireless

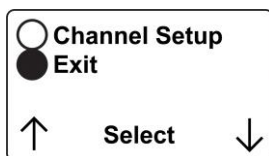
Wireless consists of editable parameters and actions to configure, form, and test a closed-loop wireless network.



Under Programming Menu, select “Wireless.”

Press [Y/+] to scroll up or [N/-] to scroll down through wireless sub-menus.

Note: When you reach the last item and continue scrolling, a second screen appears:



The scrolling “wraps,” so once you reach the first or last item of either screen, it starts scrolling through the items in the other screen again.

Five choices (including Exit) are available:

- Ping Net
- PANID Setup
- Form Net
- Channel Setup
- Exit

To make a selection, scroll until the circle to the left of your choice is black, and then press [MODE].

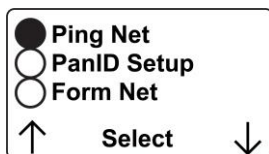
Note: If you do not make a selection in 60 seconds, it automatically exits to the main Programming Menu.

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8.2.1 Ping Net

Pinging tests the radio connection between the EchoView Host and other units on its network. (A “ping” is a short signal sent to the network to prompt a reply; it contains no other data.)

Scroll until “Ping Net” is selected.



Press [MODE] to ping the network. This message appears:



Press [Y/+]. The Echoview Host broadcasts a ping signal to its network. All devices in the network that receive the ping signal respond with a beep if they are within the range. (The Echoview Host does not beep or flash its LED lights.) You can also ping from an instrument in the network. If it is within range, the EchoView Host responds with a beep and an LED light flash.

If a network ping is unsuccessful, check the following:

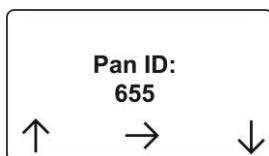
- Is the antenna attached?
- Does the PAN ID match the PAN ID of other instruments in the network?
- Does the Channel match the channel on which the other instruments are operating?
- Are the other instruments turned on and within range?

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8.2.2 PAN ID Setup

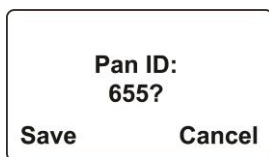
All units on a network must be programmed with the same PAN ID (Personal Network Identifier) to ensure communication compatibility.

When you see this screen, press [MODE] to view the current PAN ID or to change it:



Important! The allowed range for PAN ID numbers is 001 through 999.

The screen shows the PAN ID, with the cursor blinking on the first digit. Step through the digits from left to right by pressing [MODE]. Change a digit's value by pressing [Y/+] to increase and [N/-] to decrease. After the third digit, you see a flashing "?"



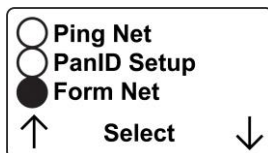
- Save your changes by pressing [Y/+].
- Exit without saving changes by pressing [N/-].
- Step back to the first digit by pressing [MODE].

Note: If you do not press a key within 60 seconds, the screen reverts to the programming Menu screen showing Settings, Modem, and Exit.

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8.2.3 Form Net

This screen is for forming a network. When you see this screen, press [MODE] to form a network. This function allows the radio to scan all available channels and choose the least-congested one:



The screen now displays a message asking if you want to confirm your choice to form a network:



- Press [Y/+] to form a network and automatically find the best channel to operate on.
- Press [N/-] to exit without creating a network.

While the instrument starts creating a network, this message appears:



Once the device has selected the least-congested channel and a network is formed, this message is displayed:



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8.2.4 Channel Setup

All units in a network must operate on a single channel. The available channels vary by the internal wireless modem's frequency, and channel ranges are set by RAE Systems to correspond with the wireless modem frequency.

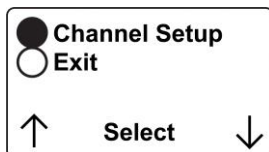
These are the modem frequencies and channel ranges:

869 MHz: Channel 0 (channel cannot be changed)

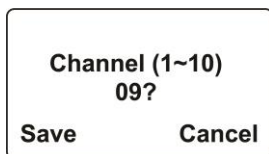
900 MHz: Channels 1 through 10

Note: You can use "Form Net" to automatically have the EchoView Host select the least-congested channel.

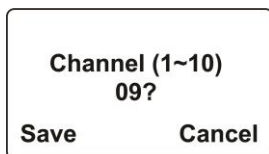
Scroll until "Channel Setup" is selected.



Press [MODE] to view or change the channel. The range of available channels is shown in parentheses. The screen also shows the channel number, with the cursor blinking on the first digit:



Step from digit to digit from left to right by pressing [MODE]. Change a digit's value by pressing [Y/+] to increase and [N/-] to decrease. When you press [MODE] you see a flashing "?" after the second digit:



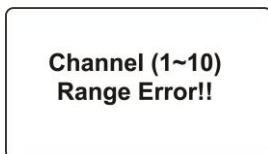
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- Save your changes by pressing [Y/+].
- Exit without saving changes by pressing [N/-].
- Step back to the first digit by pressing [MODE].

If you have saved the channel number successfully, you see this screen:

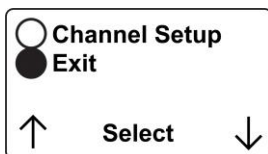


Important! Remember that the range of allowed channels for instruments on a EchoView Host's network depends on the wireless modem frequency. Therefore, you may not be able to change the channel to a number outside of its assigned set of numbers. If you select an incompatible channel number, you will see this screen, and then the EchoView Host returns to the Wireless menu.



8.2.5 Exit

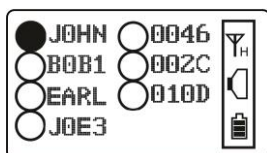
To exit Wireless and return to the main Programming Menu, scroll until "Exit" is shown:



With "Exit" selected, press [MODE]. The EchoView Host now returns to the Programming Menu screen.

9 Viewing Data From Connected Monitors

Whenever a monitor on the network goes into alarm the EchoView Host also receives it and displays it. When monitoring the network and when no alarms are present, the EchoView Host's display looks like this:



All monitors are represented with a unique identifier and a circle. (A filled—dark—circle indicates the monitor has been selected for viewing.)

To select a monitor: Press [Y/+] to scroll up or [N/-] to scroll down.

Note: The scrolling “wraps,” so once you reach the top or bottom item, it starts scrolling through the items again. If there are more monitors than the display can show on one screen, it advances to the next screen. When the last monitor on that screen is reached, it “wraps” back to the first item on the initial screen.

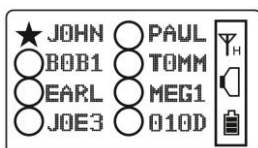
To make a selection: Scroll until the circle to the left of your choice is black, and then press [MODE].

Note: Only one monitor can be selected for viewing at a time.

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9.1 One Monitor In Alarm

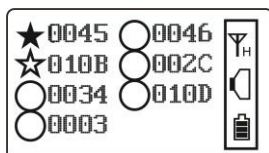
When a monitor on the network goes into alarm, the LEDs flash and the buzzer sounds. In addition, the circle to the left of the identifier changes to a star:



Regardless of where the monitor is in the list, when that monitor goes into alarm, it automatically moves to the beginning of the list and the circle next to it changes to a star.

9.2 Multiple Monitors In Alarm

If any other monitors on the network go into alarm while one is already in alarm, the circle accompanying second monitor in alarm also changes to a star. However, if the monitor is not the one currently selected, the star is unfilled:



To view a monitor's data:

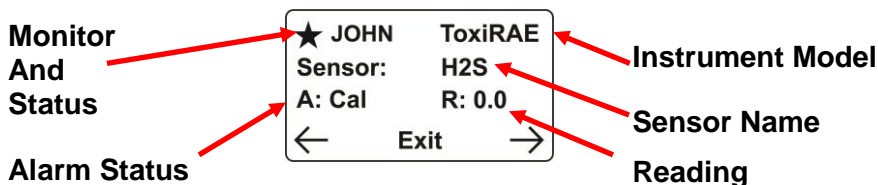
Scroll up or down through the list of monitors by pressing the [Y/+] or [N/-] key. As the selection advances down the list, each subsequent circle or star is filled (black).

Note: Only one monitor can be selected for viewing at a time.

When the icon of the monitor you want to view is highlighted, then you can make your selection.

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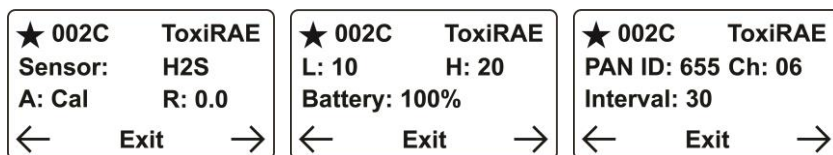
Press [MODE]. The screen changes to show the data. For example:



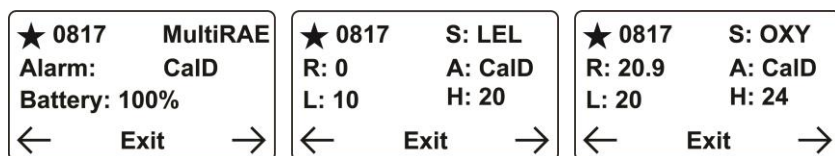
The arrows are soft keys for navigating to other screens for more data.

- Press [Y/+] to go back one screen.
- Press [MODE] to exit.
- Press [N/-] to advance one screen.

Here is an example of the sequence of screens for a ToxiRAE Pro:



Here is an example of the sequence of screens for a MultiRAE:



This provides you with an overview of the alarm state, and varies with the type and number of sensors.

To exit from this screen back to the main reading screen, press [MODE].

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9.2.1 Alarm Abbreviations

Because some alarm type names are too long to display completely on the EchoView Host, abbreviations are used. In some cases, the message is not shortened. This chart explains the messages:

Alarm Type	Displayed On EchoView Host
Super Alarm	Super (or Super Alarm)
Man Down Alarm	MDA (or MDown Alarm)
Man Down Warning	MDW (or MDown Warn)
LEL Off/Over	Over
VOC Lamp	Lamp
Sensor Fail	Fail
Max	Max
Over Range	Over
High	High
Low	Low
Neg	Neg
STEL	STEL
TWA	TWA
Dose	Dose
Cal Fail	Cal
Bump Fail	Bump
Cal Due	CalD
Bump Due	BumpD
Unit Fail	UFail (or Unit Fail)
Pump Stall	Pump (or Pump Stall)
Datalog Full	DFull (or Mem Full)
Battery Low	Bat (or Battery Low)
None	None

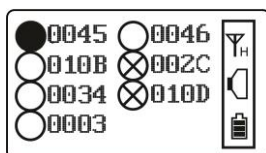
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9.2.2 Alarm Signal Summary

Alarm Mode	Buzzer & LED
EchoView Host low battery	1 beep per minute
Monitor fault (such as low battery, sensor error, etc.)	1 beep per second
Monitor low alarm	2 beeps per second
Monitor high alarm	3 beeps per second

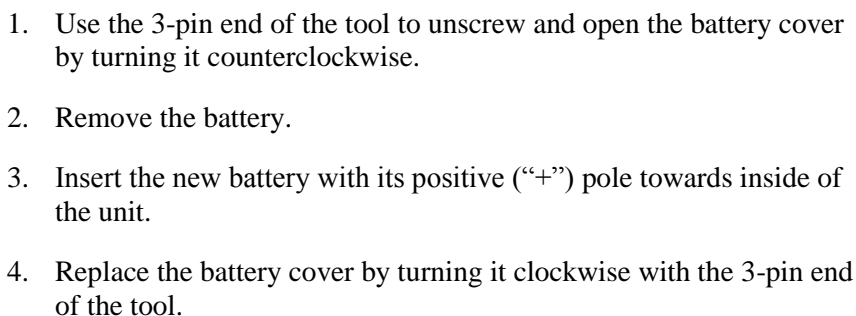
9.3 Offline Monitor(s)

If any other monitors on the network go offline, the circle accompanying the monitor's name changes to a circle with an "X" through it. In addition, offline monitors are moved to the last position in the list. If the monitor comes back online, then the "X" disappears.



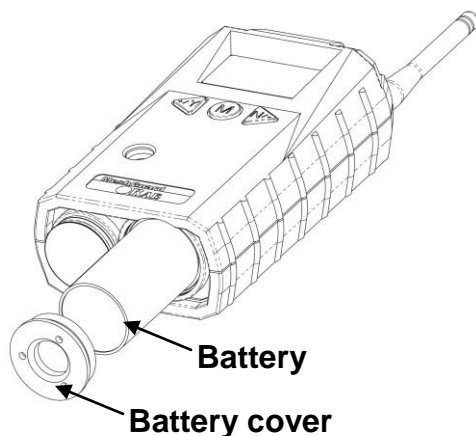
9.4 Backlight

Whenever you press any key while viewing the data, the backlight turns on for 15 seconds and then automatically shuts off.



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Note: After changing the battery, wait at least 60 seconds before turning the EchoView Host on.



Warning

Only change the internal battery in non-hazardous locations and use the battery RAE Systems provides (P/N: 500-0111-000), EVE ER34615 or XENO XL-205F).

10.1 Proper Battery Disposal



The Waste Electrical and Electronic Equipment (WEEE) directive (2002/96/EC) is intended to promote recycling of electrical and electronic equipment and their components at end of life. This symbol (crossed-out wheeled bin) indicates separate collection of waste electrical and electronic equipment in the EU countries. This product may contain one or more Nickel-metal hydride (NiMH), Lithium-ion, or Alkaline batteries. Specific battery information is given in

this user guide. Batteries must be recycled or disposed of properly.

At the end of its life, this product must undergo separate collection and recycling from general or household waste. Please use the return and collection system available in your country for the disposal of this product.

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11 Troubleshooting

Failure Symptom	Cause	Solution
Cannot turn on	Battery charge too low	Replace battery
	Battery has been changed	Wait at least 60 seconds to turn on EchoView Host Check RAE Systems' web site for information on batteries
EchoView Host cannot receive a monitor's signal	Too much distance between the EchoView Host and monitors	The distance should be around 100m/330 ft, line of sight. Relocate EchoView Host(s) or deploy MeshRouters to extend the range
	There is an obstruction between the EchoView Host and the monitor.	Relocate the EchoView Host or deploy one or more MeshRouters to extend the range
	Battery is low	Replace battery
	EchoView Host and monitor have different PAN ID and/or Channel numbers	Set all units to the same PAN ID and Channel number. Perform "Join Network" on the monitors.
Others		Turn EchoView Host off and on again. Consult RAE Systems Customer Service.

12 Year Of Manufacture

To identify the year of manufacture, refer to the serial number of the instrument.

The letter in the serial number indicates the year of manufacture. For example, “M” indicates the manufacturing year is 2010.

Letter	Year
J	2008
K	2009
M	2010
N	2011
P	2012
Q	2013
R	2014
S	2015
T	2016
U	2017
V	2018
W	2019