

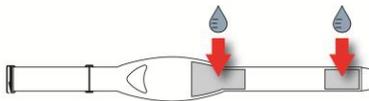
IMPORTANT! Follow all instructions here before operating the BioHarness 3. Make sure your strap is the correct size before using it (available in two sizes, Small XS-M or Large M-XL). For more details, refer to the BioHarness 3, RAELink3 (or RAELink3 Z1, which has the same functions), and ProRAE Guardian User's Guides or Quick References.

The BioHarness 3 measures the following parameters:

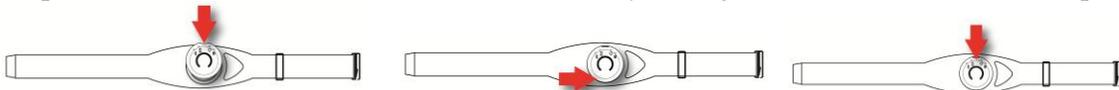
Sensor	Unit	Range	Definition
Breath Rate	Bth/m (breaths per minute)	0 to 120	
Heart Rate	Bts/m (beats per minute)	0 to 240	
Activity	VMU (Vector Magnitude Units)	±16	<0.2 = Low Activity <0.8 = Walking/Jogging >0.8 = Running
Posture	Degrees	0 to 180	0 = Vertical 90 = Horizontal 180 = Inverted
Temperature	Degrees F or C	50° to 140° F 10° to 60° C	

Operation

1. Moisten the gray sensor pads on the back of the strap with water.



2. Snap the BioHarness Echo Module onto the BioHarness 3 by clicking the bottom in first and then the top.

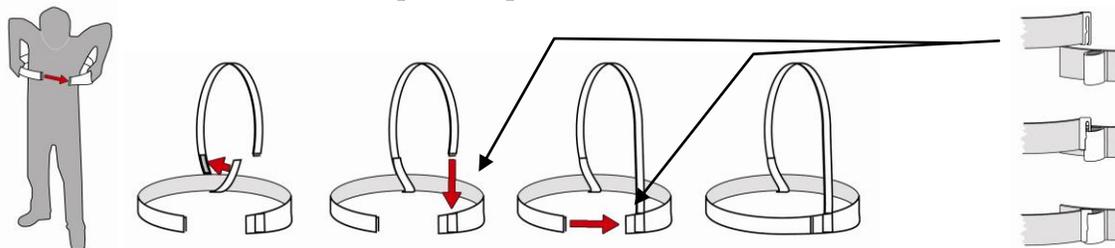


3. Power on the BioHarness Echo Module by pressing the button in the center until all four LEDs flash.



4. Link the BioHarness Echo Module to the RAELink3.
Note: It links automatically after the initial Bluetooth pairing.

5. Attach the shoulder strap with Velcro in the back and fit the clasp to the loop in the front, and then do the same with the clasp and loop in the front.



Note: BioHarness Echo Module should be under the left armpit when properly positioned.

- Adjust the shoulder strap and main strap tension by increasing or decreasing the length of the loop behind the tensioners.



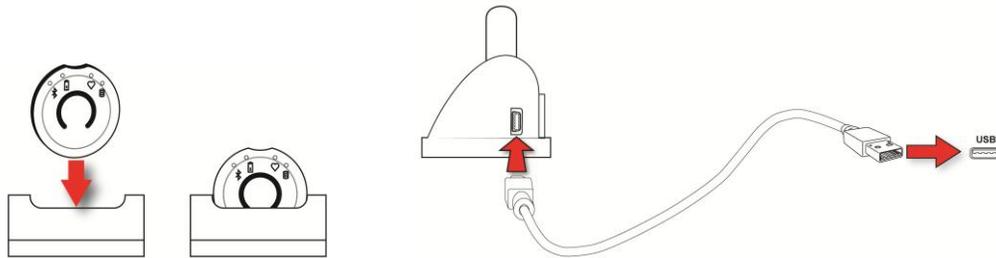
- Launch ProRAE Guardian on your computer. Units come online automatically.

Charging The RAELink3

Before using the RAELink3, charge its Li-ion battery. For more details, consult the RAELink3 User's Guide or Quick Reference.

Charging The BioHarness Echo Module

- Snap the BioHarness Echo Module into the Charging Cradle and use a USB cable to connect the Charging Cradle to a computer or the included USB charger.



- Snap the BioHarness Echo Module into the Charging Cradle and allow it to charge. Typical charging time for a full charge is 3 hours. A charge of 90% is typically reached in 1 hour. While charging, the BioHarness Echo Module's orange LED flashes. When fully charged, the orange LED glows continuously.
- Once it is charged, remove the BioHarness Echo Module from the Charging Cradle.

Pairing The BioHarness Echo Module And The RAELink3 Via Bluetooth

After an initial pairing of the BioHarness Echo Module with the RAELink3, the two will automatically find each other every time they are turned on. For initial pairing, follow the instructions below.

Note: When doing initial pairing, never turn on more than one BioHarness Echo Module and one RAELink3 at the same time.

- Enter Programming Mode on the RAELink3 by holding the [N/-] and [MODE] keys together.
 - Press [N/-] twice until you see "OP Mode" (Operation Mode).
 - Set the mode of operation to Remote.
 - Set the BT (Bluetooth) to BioHarness 3.
 - Press [N/-] until you confirm BT (Bluetooth) power is on.

2. Power on the BioHarness Echo Module. Press and hold its Power switch until the all four LEDs flash.
3. Perform a BT search using the RAELink3.
 - Press [N/-] until you see “Start Bluetooth Search?”
 - Press [Y/+] to initiate a search.
 - Once the units sync, the serial number of the BioHarness Echo Module is shown in the RAELink3 display with an asterisk next to it.
4. Click [MODE] to enter regular operation, and the RAELink3 automatically finds the BioHarness 3.



- When the units link, the blue Bluetooth LED on the BioHarness 3 flashes.
- The RAELink3 LCD indicates that it is linked to the BioHarness 3 by showing the link and the serial number of the BioHarness 3.

Setting The Unit ID

The Unit ID distinguishes between different wireless units within the ProRAE Guardian software. If the Unit ID has not been set to a unique identification number, you must set it.

1. Enter Programming Mode on the RAELink3 by holding the [N/-] and [MODE] keys together.
2. Press [N/-] until you can set the UNIT ID.
3. Select a number between 01 and 64.
4. Press and hold [MODE] for two seconds and save it.

Defining Alarm Levels

Important! Alarm limits should only be set after consulting trained medical professionals and getting stress test results for each individual who will be wearing the BioHarness 3.

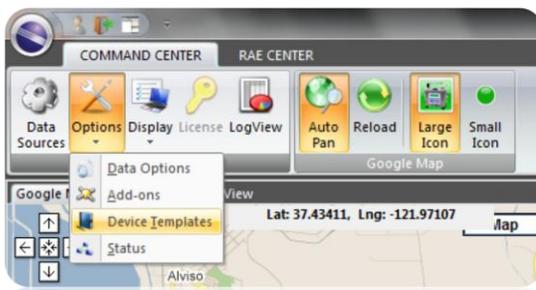
The default alarm template in ProRAE Guardian uses these alarm values:

Sensor	Low	High
Breath Rate (breaths per minute)	≤ 10	≥ 25
Heart Rate (beats per minute)	≤ 55	≥ 180
Activity	100	200
Posture (degrees)	NA	≥ 10
Device Temperature (°F or °C)	≤ 95° F (35° C)	≥ 105° F (46.6° C)

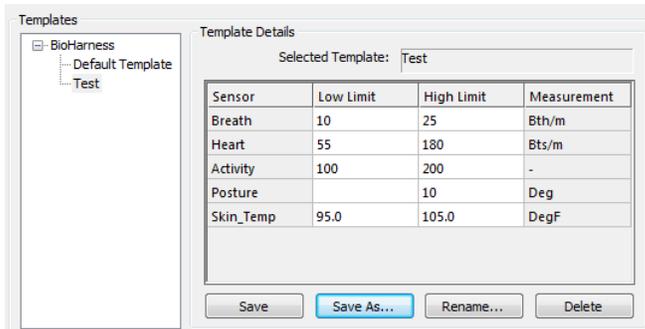
Setting Alarm Levels

Follow these steps to set alarms in ProRAE Guardian for each individual based on the stress test results.

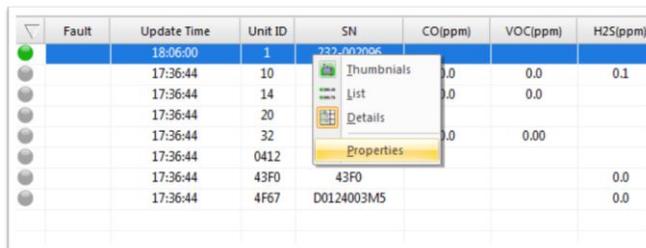
1. Under “Options,” choose “Device Templates”:



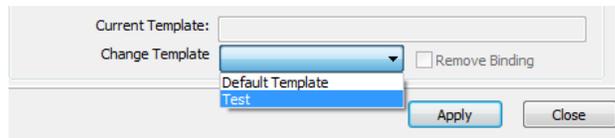
- Click “Save As” and give a name to the new alarm template.
 - Typically, the name of the person who will wear BioHarness 3 (“Test,” in this case).



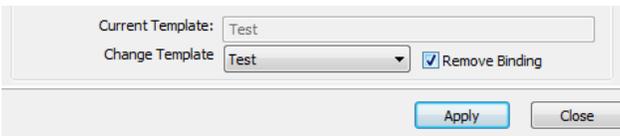
- Input the alarm levels for the individual, click “Save,” and close the dialog box.
- Within the Device Pane of ProRAE Guardian, right-click on the BioHarness 3 unit that you want to assign alarms to, and then select “Properties.”



- Choose the saved alarm template from the drop-down menu and then click “Apply.”



- To remove alarm levels from a BioHarness 3, choose “Remove Binding” and then click “Apply.”



BioHarness 3 Strap Care

The strap can be hand-washed or machine laundered, following these steps:

- Detach the BioHarness Echo Module.
- Hand wash using a mild soap or detergent or machine wash:
 - Cool temperature (40° C/104° F maximum)
 - Delicate setting
 - Wash pouch recommended
 - Spin dry or hang to dry out of direct sunlight

IMPORTANT! Do not use bleach or disinfectant. Do not tumble dry. Do not iron. Do not dry-clean.

Troubleshooting

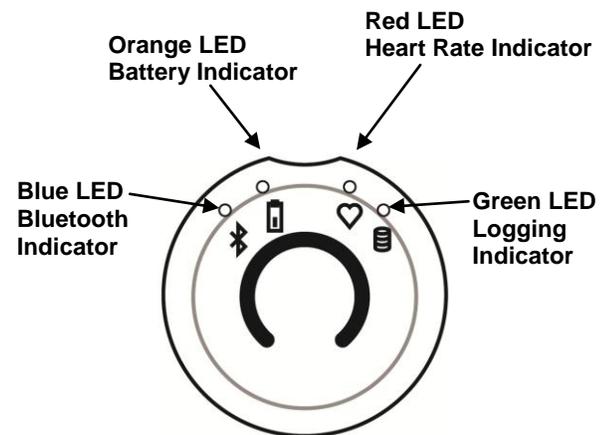
BioHarness 3 not linking to RAELink3:

- Make sure the BioHarness Echo Module is charged and turned on.
- Make sure the Bluetooth Power is on for the RAELink3.
- Make sure RAELink3 is set to Remote and BT: BioHarness 3.
- Confirm that the initial pairing has occurred between RAELink3 and BioHarness Echo Module.
- Make sure other BioHarness Echo Modules are not trying to establish a Bluetooth link at the same time.

LED indicators:

LED	State	On Subject
Orange	Off	<10% battery remaining
	Flash	>30% battery remaining
	Solid	<30% battery remaining
Blue	Off	Disconnected or disabled
	Flash	Bluetooth connection
	Solid	Bluetooth error
Red	Off	Heart rate not locked or device is not being worn
	Flash	Heart rate locked
	Solid	Error
Green	Solid	Logging error
	Flash	Logging
	Off	Not logging

LED	State	In Cradle
Orange	Off	No power or not fully in cradle
	Solid	Charged
	Flash	Charging
Blue	Off	Should be off at all times
Red		Should be off at all times
Green	Solid	Logging error
	Off	No logs/finished downloading
	Flash	Downloading



RAELink3 Remote not communicating with ProRAE Guardian software:

- Confirm that both the HOST RAELink3 modem and the RAELink3 modem connected to the BioHarness 3 have the same NETWORK ID.
- Confirm the correct communication port (COM port) for the RAELink3 Host modem is selected within ProRAE Guardian software.
- Make sure the RAELink3 is assigned a unique Unit ID.
- Confirm that the RAELink3 is not low on power.