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For use with version 5.1 or later

CLASSIFICATION



- Type BF Equipment
- Internally powered equipment
- Continuous operation



- Read Instruction Manual

CAUTION

- US Federal Law restricts this device to sale by or on order of licensed health care practitioners.

WARNING

- Do not operate active sensor within 10 feet (3m) of an operating cellular phone, similar radio transmitting device, other powerful radio interference producing sources such as arc welders, radio thermal treatment equipment, x-ray machines or any other equipment that produces electrical sparks.
- All encoders are totally isolated from line (110 or 220VAC) power due to battery operation and fiber optic connections to computers. However, many hospitals and the FDA require that computers, printers and any other equipment used with medical devices be electrically isolated from line voltage to UL or CSA medical safety standards.
- Do not connect inputs or outputs of the encoder or sensors to line powered devices, except through the fiber optic cable.
- The PC used with the encoder must be placed outside the patient/client environment (more than 3 meters or 10 feet) or the PC must comply with EN60601-1.1 (system safety).
- After use, the disposable electrodes may be a potential biohazard. Handle and, when applicable, dispose of these materials in accordance with accepted medical practice and any applicable local, state and federal laws and regulations.
- To diminish the risk of spreading communicable diseases, always use good hygiene practices with reusable EMG electrodes, particularly if abrasive substances are used. In all cases, refer to your facility's infection control procedure.
- Do not use in the presence of a flammable anesthetic mixture with air or with Oxygen or Nitrous Oxide.
- Not to be immersed in water.
- Take care in arranging patient and sensor cables to avoid risk of patient entanglement or strangulation.
- The operator is responsible for ensuring the safety of any devices controlled or triggered by Infiniti equipment or software, or by any software or hardware receiving data from Infiniti equipment. Infiniti equipment must not be configured or connected in such a way that failure in its data acquisition, processing or control functions can trigger patient feedback stimulus that poses an unacceptable level of risk.
- Use of any equipment in a biofeedback context should be immediately terminated upon any sign of treatment-related distress or discomfort.
- Not to be connected to a patient undergoing MRI, Electro surgery or defibrillation.

ATTENTION

- To prevent static discharge from damaging the sensor and/or encoders, use anti-static mats or sprays in your working area. A humidifier may also be used to help prevent static environments by conditioning hot, dry air.
- Not for diagnostic purposes. Not defibrillator proof. Not for critical patient monitoring.
- To prevent voiding warranty by breaking connector pins, carefully align white guiding dot on sensor plug with slot on sensor input.
- Sharp bends or winding the fiber optic cable in a loop smaller than 4 inches (10cm) may destroy the cable.
- A fiber optic cable not fully pushed into its receptacle may cause the unit not to operate; make sure that both ends of the cable are fully inserted into their receptive jacks and the nuts are tightened firmly.
- Make sure to remove electrodes from sensor snaps immediately after use.
- Apply conductive gel only to electrodes; never put gel directly on sensor snaps.
- Always use electrodes between the subject and the sensor.
- Sharp bends or winding the fiber optic cable in a loop smaller than 4 inches (10cm) may destroy the cable.

- A fiber optic cable not fully pushed into its receptacle may cause the unit not to operate; make sure that both ends of the cable are fully inserted into their receptive jacks and the nut is tightened firmly.
- Do not plug third party sensors directly into instrument inputs. Plug only Thought Technology active sensor cable connectors into instrument inputs. All EMG electrodes and third party sensors must be connected to active sensors, either directly or through an adapter.
- Remove batteries when the device is not being used for extended period of time. Please dispose of battery following national regulations.

INTENDED PURPOSE

- Biofeedback, relaxation and muscle re-education purposes.

CONTRAINDICATIONS

- Patients with limited or impaired physical and mental capacity

NOTE

- No preventative inspections required; maintenance must be performed by qualified personnel.
- The supplier will make available, upon request, circuit diagrams, component parts lists and description or other information required for the repair of product by qualified personnel.
- If a fiber optic or patient cable is damaged or breaks, please replace it.
- Due to the essential performance and intended use of the device, testing for immunity to electromagnetic disturbances was not required and was not performed. The device may be susceptible at levels below IEC60601-1-2 immunity test levels.
- The operator must be familiar with typical characteristics of signals acquired by this equipment, and be able to detect anomalies in the acquired signal that could interfere with treatment effectiveness. Depending on the importance of signal integrity, it may be advisable to continuously monitor the raw signals, in time and/or frequency domain, while the device is being used for biofeedback or other purposes. If anomalies are observed on acquired signals, and if you suspect a problem with electromagnetic interference, contact Thought Technology for a technical note on identification and remediation.

MAINTENANCE AND CALIBRATION

- Wipe encoder with a clean cloth.
- Factory testing and calibration ensure equipment accuracy and frequency response. The user may invoke a self-calibration function that will recalibrate certain device parameters (see section in hardware manual). Contact Thought Technology for factory recalibration if necessary.

STORAGE

- Store in its original case at up to 90% humidity / 85°F (30°C).

TRANSPORTATION

- Transport in its original case.

Guidance and manufacturer's declaration – electromagnetic emissions		
The Infiniti system is intended for use in the electromagnetic environment specified below. The customer or the user of the Infiniti system should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The Infiniti system is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions CISPR 11	Class B	
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Not applicable	

Manual No. SA2606 Rev. 5.1

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BioGraph Infiniti TT-pIR Mini-Suite

Welcome

The TT-pIR Mini-Suite is designed to accompany the TT-pIR Headgear device and give you the basic tools for doing passive infrared monitoring and biofeedback. The TT-pIR Headgear device is equipped with two passive infrared sensors (TT-pIR), mounted side by side. The suite includes a number of display screens for monitoring, performing biofeedback sessions, reviewing recorded data for the purpose of artifact rejection and generating reports. The suite can be used with any of three encoder types: ProComp Infiniti, ProComp 5 Infiniti and ProComp 2. The FlexComp device can be used with this suite if the DIP Switches are set to the ProComp Infiniti communication protocol (see the "DIP Switch Settings" topic in the on-line help manual – F1). Select the encoder type of your choice when you install the Suite.

Getting Started with BioGraph Infiniti

First Time Run

Setting up your System

Once the software is installed, you have to configure your system. This takes only a few minutes.

To start the program, simply double-click on the BioGraph Infiniti icon, on the Desktop:



The program always starts by showing the Main Menu screen:



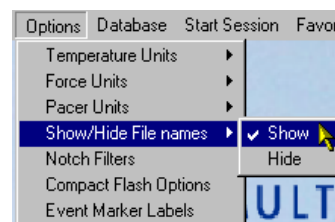
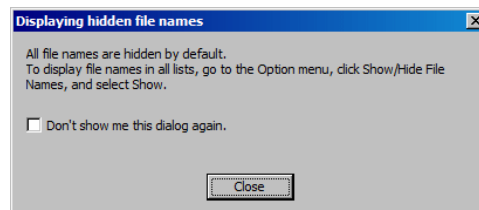
Anywhere in the software, you can access **contextual on-line help** by pressing the F1 key on your keyboard.



Show/Hide File Names:

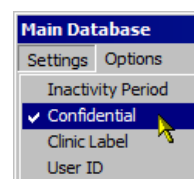
- Select **Options** at the top left of the main screen.
- Select **Show/Hide File names** from the drop-down menu.
- Select **Show** or **Hide**, according to your preference.

Note: This setting stays in effect unless you change it.



Optionally, enable the **Confidential** setting. This helps protect the privacy of your clients by masking their names in the client database.

- Click **Database** to open the Main Database window.
- From the **Settings** menu, select **Confidential**. The check mark indicates that the setting is enabled.



If you need to disable the **Confidential** setting, repeat these steps to remove the check mark.

Clients:	
Full Name	ID Num...
Ballance, Tara	1
Florimond, Dorian	4
Dorimond, Florian	6
Physiology, Jane	9

With the **Confidential** setting disabled

Clients:	
Full Name	ID Num...
Ba***** , T***	1
Fl***** , D*****	4
Do***** , F*****	6
Ph***** , J***	9

With the **Confidential** setting enabled

Starting a session

There are three ways to launch a recording session in BioGraph Infiniti. The type of session you select depends on what you need to do. Each type of session will be described in more detail in the next chapters.

Quick Start: Use this to run a **Favorite** session.

The TT-pIR Suite includes a number of favorite session configurations for standard protocols.

Start Open Display Session: Use this option if you want to run a session with your own selection of feedback screens.

Start Script Session: Use this option to run a script.

The TT-pIR Suite includes a script for a 5 trial passive infrared training session.



Hardware Setup

Before you can start recording a session, you have to set up your hardware. This section describes how to connect a ProComp Infiniti device but the process is similar when using other encoder types. For more information on using your particular encoder, please refer to the device's hardware manual.

Connecting TT-USB and ProComp Infiniti



Insert one end of the fiber optic cable carefully into the fiber optic port on the encoder. Tighten the nut gently so that the cable won't slip out.

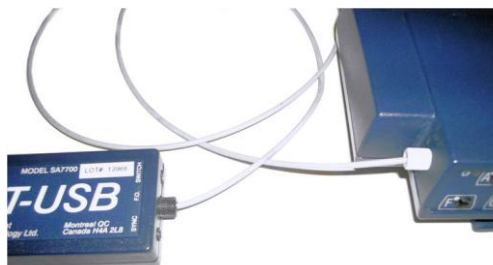


Do the same with the other end of the fiber optic cable and the fiber optic port of the TT-USB interface unit.

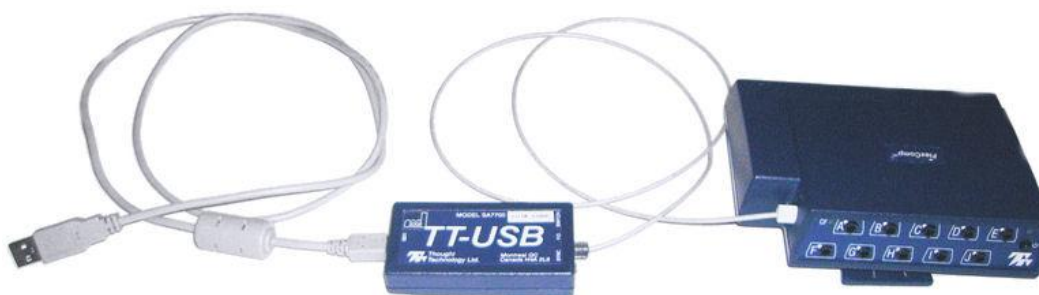


Insert the small connector of the USB cable into the USB port on the TT-USB interface device.

Insert the large connector of the USB cable into the USB port of your PC.



USB ports on a PC are generally located at the back of the base unit. You may also find a USB port at the front of your base unit; you can connect the other end of the USB cable to it. On a laptop, USB ports are usually located at the side or the back of the laptop. It is recommended to always use the same USB port for connecting the TT-USB to your computer.



Battery Placement

Opening the Compartment

Looking at the underside of the ProComp Infiniti device, you will see a long door in the plastic enclosure. Holding the encoder with the connectors facing you and with the door up, push lightly down and back with your thumbs on the door to slide it open.

Attention: The internal workings of the ProComp Infiniti encoder are not intended to be opened for repair except by qualified service personnel. The tamper-evident seal under the batteries in the battery compartment should not be removed or broken. Thought Technology may refuse to honor the unit's warranty if the seal is broken.



Polarity

When the compartment cover has been slid out, place four AA batteries in the slots, observing the correct battery polarity as embossed on the inside surface of the compartment.

Closing the Compartment

Slide the door back into the ProComp Infiniti case, gently pushing it in until you feel the click of the locking mechanism.

Keeping an Eye on the Battery Level

Since each sensor draws a small amount of power from the batteries when connected to the ProComp Infiniti, it is better to connect only the sensors that are going to be used for a session before you start recording; this will ensure maximal battery life. Most Thought Technology software applications will display a battery power indicator; we recommend that you replace the batteries as soon as this indicator falls below about 50% of the battery power.

Caring For the Fiber Optic Cable

A fiber optic (FO) cable is used for transmitting the sensor data to the computer. Although this technology provides maximal electrical isolation, signal fidelity and freedom of movement, some care has to be taken when handling the fiber optic cable, as it is much less flexible than a regular electric wire.



Be careful not to bend the fiber optic cable sharply or wind it in a loop smaller than 4 inches in diameter.

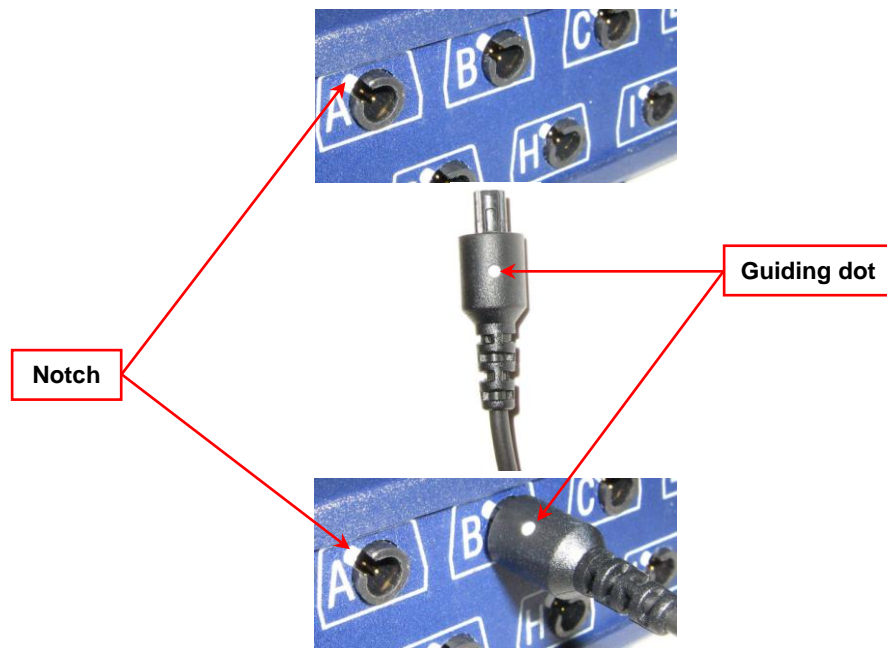
Physiological Sensors

The TT-pIR mini-suite is designed to work with two TT-pIR sensors (left and right) mounted on one TT-pIR Headgear device. Following is a description of how to connect the sensors to your encoder and how to hook them up to your client.

Encoder	Input A	Input B	Input C	Input D	Input E	Input F	Input G	Input H
ProComp Infiniti			TT-pIR (Left)	TT-pIR (Right)				
ProComp5 Infiniti			TT-pIR (Left)	TT-pIR (Right)				
ProComp 2			TT-pIR (Left)	TT-pIR (Right)				

Connecting the sensors

When connecting a sensor to the ProComp Infiniti, make sure to properly line up the guiding dot on the top of the plug with the notch in the protected pin socket. Forcing the plug into the socket in any other position may damage the equipment.

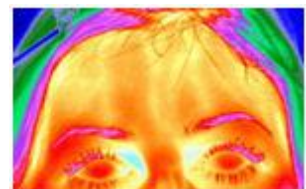


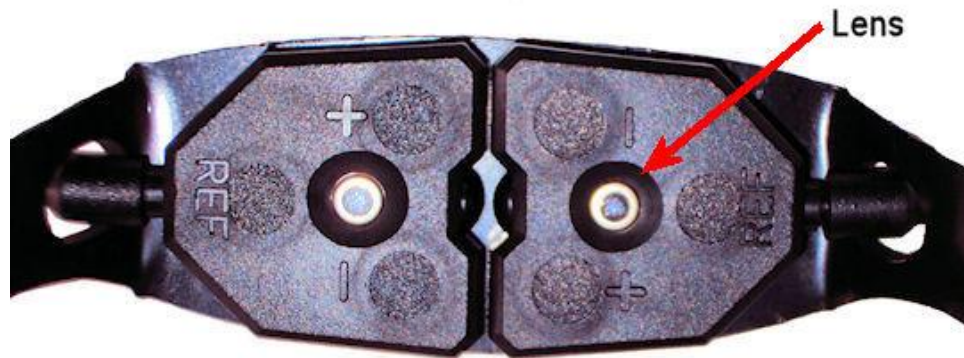
TT-pIR Sensor (P/N: SA2600)

The TT-pIR sensor is a passive infrared sensor which detects heat, as infrared light, emanating from the skin surface. Two TT-pIR sensors are snapped on the inside of one TT-pIR Headgear device and the device is placed over the client's head, holding the two sensors about 1.5 inches away from the skin, on each side of the midline of the forehead.



Used for frontal passive infrared temperature biofeedback. The sensors measure the temperature of the forehead.





Warning: Keep the lens of the pIR sensor clean to maximize performance of the sensor. Do not touch the lens directly. To remove dirt or fingerprints, rub gently with a soft cloth moistened with alcohol or camera lens cleaner.

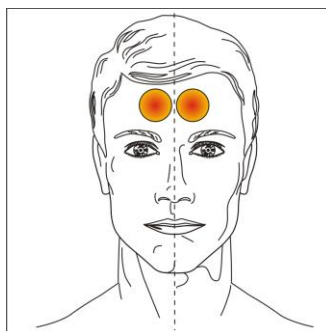
TT-pIR Sensor Placement

The package includes one TT-pIR Headgear device, composed of a hard plastic piece and an elastic strap, and two TT-pIR sensors which are firmly snapped onto the inside of the TT-pIR Headgear device.

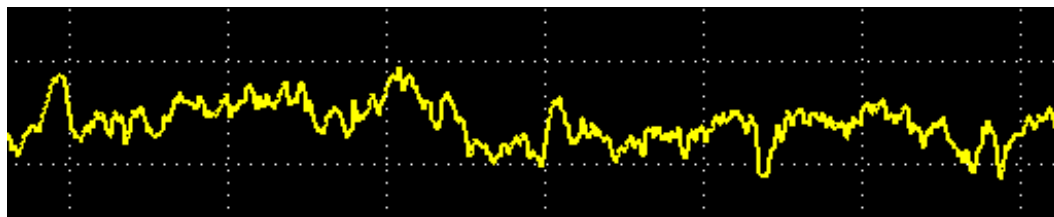
Place the TT-pIR Headgear device over the client's head so the clear plastic resting pads are on the top of the forehead and the sensors are hanging straight down, facing the center of the forehead. The sensors are not in contact with the skin. Slide the elastic strap up or down along the side slits to adjust the TT-pIR Headgear device so the sensors are as parallel as possible to the front of the forehead.



Strap the band tight enough to hold it firmly on the client's head but not so tight that the client can feel discomfort.



The most commonly used configuration for frontal pIR biofeedback is to measure the infrared emissions from two nearby areas of the forehead, 2 to 3 cm on each side of the midline (1 to 1.5 inch) and to average both measures into one combined signal which is used for biofeedback.



A NOTE ABOUT AMBIENT TEMPERATURE:

Ambient temperature can affect passive infrared forehead temperature biofeedback by introducing undesirable artifacts. Although these artifacts can be considered minimal, it is recommended to maintain a constant ambient temperature by avoiding sources of rapid changes in temperature, including:

- direct or strong sunlight
 - air draughts from ventilation or open windows
 - air conditioning or cooling fans cycling on and off
-

Recording an Open Display Session


1. Connect your encoder to the computer using the fiber-optic cable and the TT-USB Interface.
2. Plug your sensors into inputs C and D of the encoder.
3. Launch BioGraph Infiniti.
4. In the **Main Menu** screen, click the **Start Open Display Session** button.
5. Click **Add New Client** to open the Client Data dialog box.
6. Type in a **First Name**, **Last Name** (e.g., Guy Test) and, if you are planning to use the Z-Score add-on, a **Birth Date**. Click **OK** to create the client file. The new client's name is automatically selected.
7. Click **Define New Session** to open the screen selection dialog box.
8. In the Encoder Communication Protocol drop-down list, in the upper left corner, select what's appropriate for your encoder:

Encoder	Communication Protocol
ProComp Infiniti or ProComp 5 Infiniti	<i>ProComp Infiniti</i>
ProComp + or ProComp 2	<i>Legacy</i>

Note: Because the ProComp 5 Infiniti is a ProComp Infiniti with 5 channels instead of 8, the Encoder Communication Protocol is ProComp Infiniti for both.

9. Now find and select the **Passive infrared (pIR)** channel set. If you are using a ProComp 5 or a ProComp Infiniti, both channel sets are shown. Pick the appropriate one base on the file name and description prefix: PI for ProComp Infiniti and P5 for ProComp 5.
10. The available screens are listed in the table on the right. Select up to five screens by pressing the [Control] key while clicking on screen items. Then click **OK**.

Note: If this is the first time you record a session, please see [Entering Key Codes](#) on page 9.

11. Start the recording by clicking on the **Start** button  in the toolbar.

Recording a Script Session


1. Connect your encoder to the computer using the fiber-optic cable and the TT-USB Interface.
2. Plug your sensors into inputs C and D of the encoder.
3. Launch BioGraph Infiniti.
4. In the **Main Menu** screen, click the **Start Script Session** button.
5. Click **Add New Client** to open the Client Data dialog box.
6. Type in a **First Name**, **Last Name** (e.g., Guy Test) and, if you are planning to use the Z-Score add-on, a **Birth Date**. Click **OK** to create the client file. The new client's name is automatically selected.
7. Click **Select New Script** to open the script database dialog box.
8. In the Encoder Communication Protocol drop-down list in the upper left corner, select what's appropriate for your encoder:

Encoder	Communication Protocol
ProComp Infiniti or ProComp 5 Infiniti	<i>ProComp Infiniti</i>
ProComp + or ProComp 2	<i>Legacy</i>

Note: Because the ProComp 5 Infiniti is a ProComp Infiniti with 5 channels instead of 8, the Encoder Communication Protocol is ProComp Infiniti for both.

9. Select the **Passive infrared training – 5 trials** script from the list and click **OK**.

Note: If this is the first time you record a session, please see [Entering Key Codes](#).

10. Start the recording by clicking on the **Start** button  in the toolbar.

Recording a Favorite Session


The TT-pIR mini-suite includes a number of preset sessions called **Favorites**. You can find shortcuts to all the favorites in the Favorites table when you click the **Quick Start** button on the main BioGraph screen.

To run a favorite session:

1. Launch BioGraph Infiniti.
2. Click the **Quick Start** button on the main screen, select a **Client** from the list on the left, select a **Favorite** from the list on the right and click **OK**.

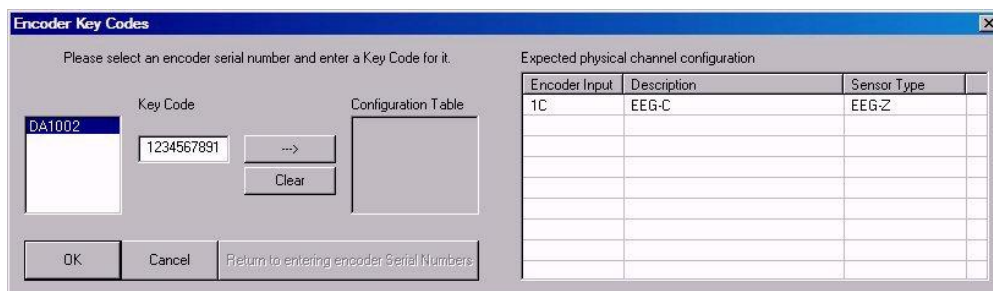
Note: If this is the first time you record a session, please see [Entering Key Codes](#).


The Favorite session presets allow you to run sessions with a minimum of mouse clicks. In order to accomplish this, each Favorite contains all the information BioGraph needs to run a session, including a list of recording and reviewing screens, a list of statistics and a number of other configuration elements. Favorite sessions run faster than regular open display or script sessions because you don't have to make the usual selections. Of course, before you can run a Favorite, you have to connect all sensors as described above and your encoder has to be turned on and connected properly.

3. Start the recording by clicking on the **Start** button  in the toolbar.

Entering Key Codes

If this is the very first time you are starting to record a session, you must enter key codes. After you have defined the session you want to record and click **OK**, the Encoder Key Codes dialog box opens.



1. Click to highlight your unit's serial number in the left table, for example, CA1422. This is the same serial number you can see on the back of the unit.
2. Type the **Encoder Key Code** (found inside the battery compartment) into the **Key Code** text box.
3. Click on the arrow key  to move the serial number from the left table to the right table. The serial number should now appear in the **Configuration Table**.
4. When done, click **OK**.
5. Now enter the **Application Key Code** for your system. This number is found with the encoder key code. Enter the number and click **OK** when done.



Note: Even if you are using more than one encoder, you need to enter only one Application Key Code.

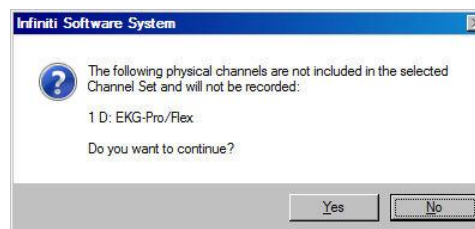


If the key codes have been entered properly and there is no problem with your encoder setup or your sensor connections, you should now see the recording screen.

Verifying Sensor Connections

If there are problems with your sensor connections, the program will report those, prior to accessing the recording screen. If, for example, you have sensors that are connected but are not required for this channel set, you will get a warning message.

You can remove the sensor if you want, or continue recording by clicking **Yes**. Keep in mind that no data is recorded for sensors that are not defined in the channel set.



Note: If there are sensor connection problems in addition to extra sensors, this information won't appear as a separate message. It will display in the Sensor Connections window.

If you have connected wrong sensor types, you will see the Sensor Connections window. All the sensors that are expected will be listed in the Expected Sensor column. The **Wrong Sensor Type** column shows which sensor type was actually detected.

You can remove the wrong sensor or replace it with the right one. Click **Repeat** to check the sensor connections again until the system no longer detects a wrong sensor type. The program will not allow you to record a session with the wrong sensors.

Channel	Description	Expected Sensor	Wrong Sensor Type	Replacement Signal Value
1 A	A: EMG	MyoScan-Flex		
1 B	B: EMG	MyoScan-Flex	EEG-Z	
1 C	C: EEG	EEG-Z		
1 E	E: Temp	Temp-Pro/Flex	Sensor is not detected	1
1 F	F: Abd Resp	Resp-Pro/Flex	Sensor is not detected	1
1 G	G: SC	SC-Pro/Flex		
1 H	H: BVP	HR/BVP-Pro/Flex	Sensor is not detected	1
1 D		not in Channel Set	EKG-Pro/Flex	

Note: If the **Wrong Sensor Type** column is empty, the correct sensor has been connected.

If you do not connect all the sensors that are required for the selected channel set, the message "Sensor is not detected" appears in the **Wrong Sensor Type** column. When a sensor is not connected, the program replaces its signal value by a constant value of "1". It is possible to record a session with missing sensors but the corresponding signal will be a flat line. Any calculations based on that signal will not reflect real physiological changes.

Important: You may see the following message, which identifies the **Expected Sensor** as a voltage isolator of an unrecognized **Wrong Sensor Type**.


This will occur if the pIR sensor is not included in the list of sensors recognized by your particular version of BioGraph Infiniti.

Even if you get this warning, you can record data with no problem. Simply click **OK** to continue.

Channel	Description	Expected Sensor	Wrong Sensor Type	Replacement Signal Value
1 C	C: Left TT-pIR	Voltage Isolator	Unrecognized	
1 D	D: Right TT-pIR	Voltage Isolator	Unrecognized	

Stopping a Session

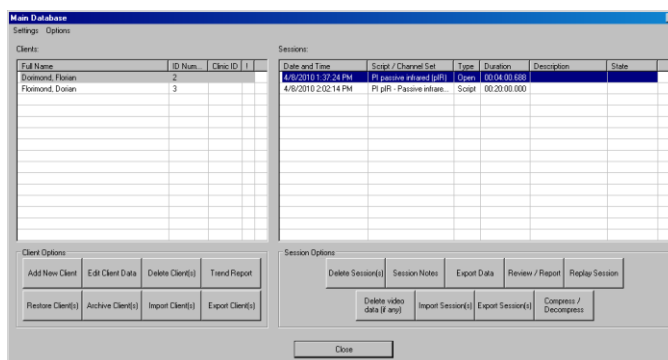
Script sessions end automatically when the script is finished. If you stop a script session before the script has finished running, no data will be saved.

1. To stop recording an open display session, click the **Stop** button: 
2. The program asks if you want to save the recorded data. You can save the session in compressed format but, unless your hard drive has very little space available or you do not need to review the saved sessions, we recommend that you always **Save**, which will use the non-compressed format. Compressed files can't be replayed, reviewed or trended until they are decompressed.
3. Then the **Session Notes** pop-up appears where you can enter, if you want, a treatment code (CPT), a session description and some notes.
4. Click **OK** to continue. Next, you are asked if you would like to review the session right away. You can switch to the review mode or the replay mode.
5. If you click **No**, the program asks if you want to record another session with the same settings.
6. If you click **No**, the program reminds you to turn your encoder off!
7. Clicking **OK** takes you back to the Main Menu Screen.

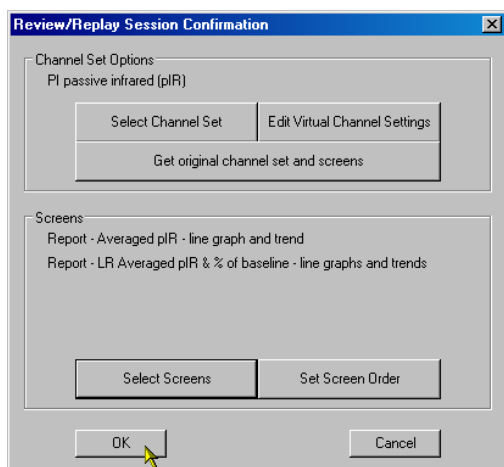
Replaying Sessions

Replaying a session allows you to playback a recorded session like a movie. This is especially useful if you have recorded video with audio data. You can replay the session from any point in time and skip to event markers or script activities and steps.

1. Select **Database** from the main screen.
2. In the **Main Database** window highlight the client whose session you want to replay.
3. Select the session from the right-hand table.
4. Click on **Replay Session** at the bottom.



Main Database window



Review/Replay Session Confirmation window

- If you are replaying a Script Session, click **OK** to close the **Edit Channel Set Setting for Current Client** window and go into replay mode.
- If you are replaying an Open Display Session:
 - a. Click on **Select Screens** in the **Review/Replay Session Confirmation** window.
 - b. In the **Select Screens** window select up to 5 screens and click **OK**.
 - c. Click **OK** in the **Review/Replay Session Confirmation** window to enter replay mode.

5. Click on the **Start** button  to replay the session.

Reviewing Sessions

After recording a session you can analyze the data by going into review mode. This mode allows you to scroll through the graphs, look at statistics, and print out a report displaying the data in graphical and/or statistical form.

Review

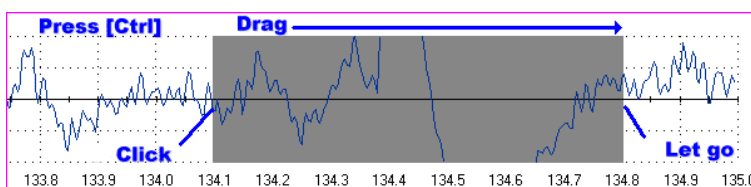
1. Select **Database** from the main screen.
2. In the **Main Database** window highlight the client whose session you want to review.
3. Select the session from the right-hand table.
4. Click on **Review/Report** to open the **Review/Replay Session Confirmation** window.
5. For an open display session, click on **Set Open Display Statistics** and select the statistics you want to be calculated.
6. Click on **Select Screens**.
7. Click on the column heading for **Category** to reorder the screens into groups, and scroll down to **Report-Review** category.
8. Select up to 5 screens and click **OK**.

- Click **OK** in the **Review/Replay Session Confirmation** window to enter review mode.

Rejecting Artifacts


The purpose of rejecting artifacts is to have reliable statistics, with the least amount of noise affecting the recording. Rejecting artifacts can be performed manually, while reviewing a session. First review the session to determine where the recording is most affected by noise. Then place artifact rejection segments at these locations, by following these steps:

- Select the line graph that contains the segment to be rejected. (Only line graphs can be used for artifact rejection. If you get an error message, select a screen containing a line graph to review the data.)
- Press and hold the **[Control]** Key.
- Place the cursor over one end of the rejected segment.
- Click and hold the left mouse button. (You can release the **[Control]** key at this point.)
- Drag the cursor across the segment to be rejected; it will be highlighted in gray.
- Release the mouse button at the end of the segment.



Note: There is no automatic rejection method for the TT-pIR signal.

Calculating Statistics

- To calculate statistics for a session, click the **Calculate Statistics** button  in the tool bar. A message confirms that the program is processing session data and then the **Statistics** window opens.
- Click **Close** to close the window.

Activity	Activity Description	Step	Step Description	Statistic Description	Value
1	Frontal temperature training - 5 w/1	2	Trial 1	Maximum LR Avg pIR (deg)	81.45
1	Frontal temperature training - 5 w/1	2	Trial 1	Mean LR Avg pIR (deg)	81.39
1	Frontal temperature training - 5 w/1	2	Trial 1	Minimum LR Avg pIR (deg)	81.31
1	Frontal temperature training - 5 w/1	3	Rest 1	Maximum LR Avg pIR (deg)	81.47
1	Frontal temperature training - 5 w/1	3	Rest 1	Mean LR Avg pIR (deg)	81.42
1	Frontal temperature training - 5 w/1	3	Rest 1	Minimum LR Avg pIR (deg)	81.36
1	Frontal temperature training - 5 w/1	4	Trial 2	Maximum LR Avg pIR (deg)	81.53
1	Frontal temperature training - 5 w/1	4	Trial 2	Mean LR Avg pIR (deg)	81.46
1	Frontal temperature training - 5 w/1	4	Trial 2	Minimum LR Avg pIR (deg)	81.40
1	Frontal temperature training - 5 w/1	5	Rest 2	Maximum LR Avg pIR (deg)	81.58
1	Frontal temperature training - 5 w/1	5	Rest 2	Mean LR Avg pIR (deg)	81.51
1	Frontal temperature training - 5 w/1	5	Rest 2	Minimum LR Avg pIR (deg)	81.47
1	Frontal temperature training - 5 w/1	6	Trial 3	Maximum LR Avg pIR (deg)	81.66
1	Frontal temperature training - 5 w/1	6	Trial 3	Mean LR Avg pIR (deg)	81.59
1	Frontal temperature training - 5 w/1	6	Trial 3	Minimum LR Avg pIR (deg)	81.51

Rejection Durations				
Activity	Activity Description	Activity Duration	Rejection Durations (sec)	Rejection Durations (%)
1	Frontal temperature training - 5 w/1	1200.00	0.00	0.00

Close

Note: This is the Statistics window for a script session. The Statistics window for an open display session is similar, but does not display a list of rejection durations for individual activities.

Generating a Session Report

BioGraph can generate a session report from any screen which includes line graphs or trend graphs. The TT-pIR mini-suite includes two report screens which can be used.

MS WORD Report

This type of report, also called a "session report", is generated in review mode. You can enter review mode in one of two ways:

- Immediately after recording a session (see [Stopping a Session](#)). After the session is saved, BioGraph asks if you want to switch to the review mode.
- From the **Database** window by selecting **Review/Report** (see [Reviewing Sessions](#)).

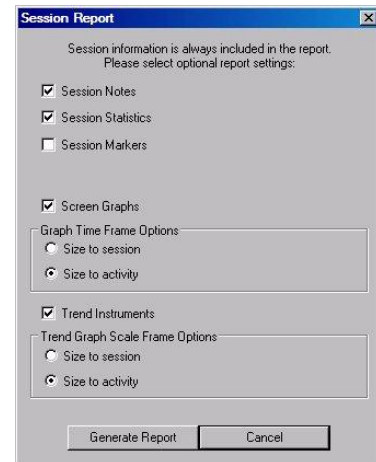
1. To create a session report, click the **Session Report** button



in the tool bar of the review screen.

2. Select **Generate Text Report**.
3. This opens the **Session Report** window, where you choose components to include in the report for the selected session.
4. Select report components by placing a check mark in the desired boxes and click **Generate Report**.
5. Word opens and displays your report as a document. You can print or save the report using Word's **Print** and **Save** functions.

Note: Microsoft Word must be installed on your system.



Using the TT-pIR Mini-Suite

The TT-pIR mini-suite offers a set of clinical tools which allow you to perform the following clinical tasks relating to frontal pIR training:

- **Monitoring:** You can monitor temperature changes while your client is performing specific tasks. The **Signal Verification screen** allows you to see moment by moment changes in temperature without providing the client with any feedback.
- **Training:** You can teach the client new self regulation strategies through frontal pIR biofeedback training by recording open display sessions with any 1 of three types of **training screens** or running the pIR – Passive infrared training - 5 trials **training script**.
- **Follow-up:** You can record pre- and post-training open display sessions to compare non-training with training states but it is not recommended to compare day to day measured pIR values because these measures are very variable and depend on many uncontrollable environmental and physiological factors.

Open Display Sessions and Training Scripts

There are two ways to train for frontal temperature using the TT-pIR mini-suite and BioGraph Infinity:

- **Open display sessions** allow you to load one or more feedback screens in one session and switch between screens, on the fly, by simply clicking a numbered button in the tool bar. There is no need to stop and re-start the session to change the biofeedback experience. You can pause and continue the session, at will, to coach the client in using different strategies and you can reset counters and percentages by clicking the **Reset** button.
- **Script sessions** are time-limited and pre-configured. The **pIR – Passive infrared training - 5 trials** script takes the client through 5 cycles of alternating periods of activation with feedback and rest without feedback. The script allows you to see how well your client can switch between states of activation and states of rest.

Screen Descriptions

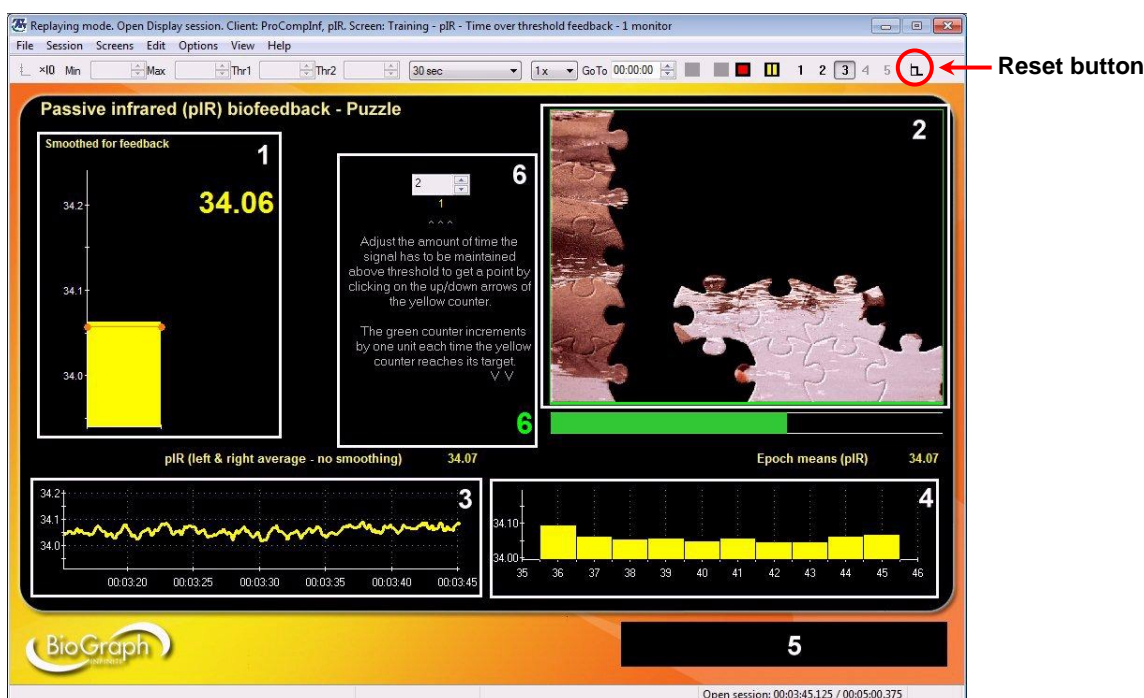
Screen Types

The TT-pIR mini-suite includes a number of display screens for a variety of tasks relating to frontal pIR training including:

- **Instructions:** The instructions screen guides you through the process of placing the pIR sensor on your client's head and verifying the quality of the recorded signal.
- **Signal Verification:** This screen is designed for monitoring frontal infrared changes without giving any feedback.
- **Training:** The suite includes three different training screens; two of them available in a one- or two-monitor configuration.
- **Reporting:** Two report screens can be used for reviewing your sessions and observing within session changes over time.

General Anatomy of a Feedback Screen

The feedback screens included in the TT-pIR mini-suite follow the same screen arrangement structure to facilitate their usage. These include the following general features:



1. **Signal bar graph & value:** The upper left area of the screen is where the signal being trained is shown. Bar graphs give an intuitive indication of a signal's tendency to increase or decrease while the number gives overall magnitude information. For feedback purposes, the signal is smoothed.
2. **Feedback area:** Any multimedia feedback (animation, DVD, etc) is shown in the upper right area on a single monitor screen. On a dual-monitor screen, all the feedback information appears on the second monitor.

Note: The TT-pIR suite comes with alternative animation and music files. You can select a different animation or music file prior to starting a session by right-clicking over the animation instrument and selecting the **Edit Instrument Settings** or **Edit Instrument Sound** options.

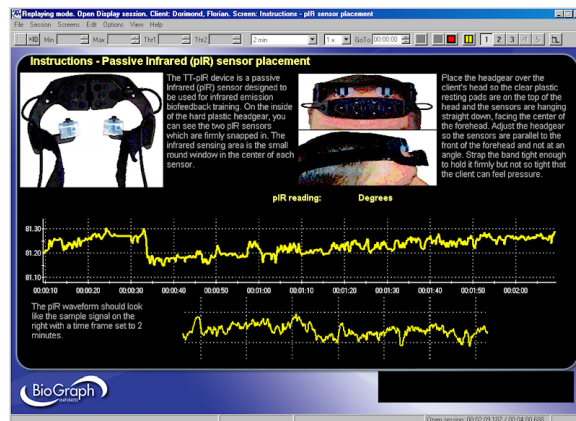
3. **Signal line graph:** The signal line graph shows the trained signal over a time period defined by the time scale setting. This graph is useful to see short term tendencies but it also allows you to check the quality of the signal. Signal quality is an important factor in successful biofeedback training.
4. **Real-time trend graphs:** This section displays longer term tendencies by plotting epoch means of the trained signal. The refresh period of the graph (epoch duration) is user-definable.
5. **Prompt area:** When the screen is used as part of a session script, any user instruction is posted in the lower right section of the display screen.
6. **Counter zone:** On some screens, the ability to sustain the "success" condition is rewarded by incrementing a counter. This section shows counters and counter settings. You can increase/decrease the required sustain period by setting the target number. Clicking the **Reset** button (left side of the toolbar) brings the count back down to zero.

Screen Descriptions

Note: The following screen captures show only screens for the ProComp Infiniti channel set. Screens for the ProComp 2 and 5 are identical to these.

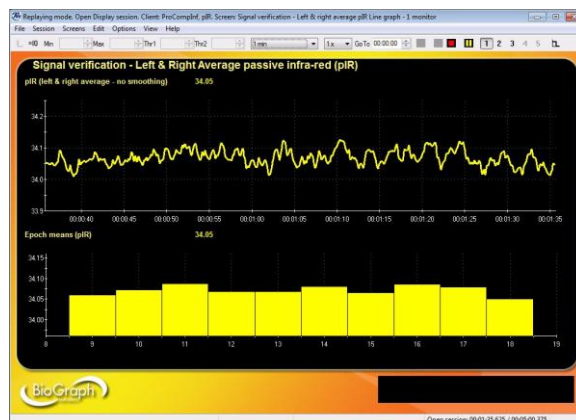
Instructions – pIR sensor placement

This instruction screen can be loaded as the first screen in a script to guide the user through proper sensor placement methods; it shows instructions at the top, the left and right pIR averaged signal trace in the middle and an illustration of what the signal should look like at the bottom. You can adjust the pIR sensor's placement until the recorded signal looks like the example.



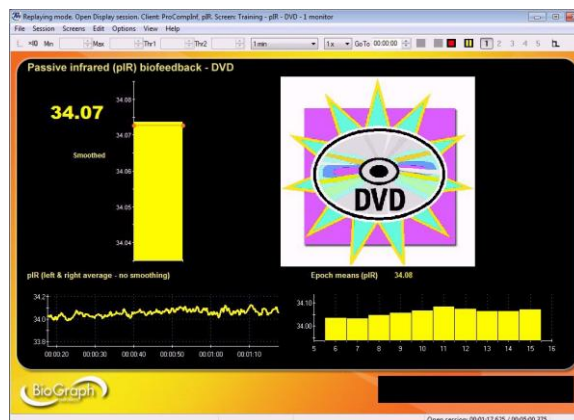
Signal verification – Left & right average pIR Line graph – 1 Monitor

This screen can be loaded as part of the 5 screen selection of an open display session to allow you to verify the quality of the recorded signal and record a baseline period, prior to doing a biofeedback exercise. The screen shows the signal trace, on top, and a trend graph of periodic means at the bottom.



Training – pIR – DVD – 1 Monitor

The signal drives the bar graph on the left, which is set to reward increasing pIR by turning the feedback on when the bar is over the threshold line; the threshold automatically follows the signal but stays just behind it, so any change of direction is immediately detected and fed back. The DVD image shrinks when the bar is under the threshold and enlarges when above threshold. The goal is to maintain the image at its largest size. You can easily set the instrument action to Pause/Resume the movie if you prefer.



Training – pIR – Animation and volume feedback – 1 Monitor

This is another basic training screen for doing passive infrared biofeedback. This screen is identical to the previous one except that the feedback is given via the animation instrument.



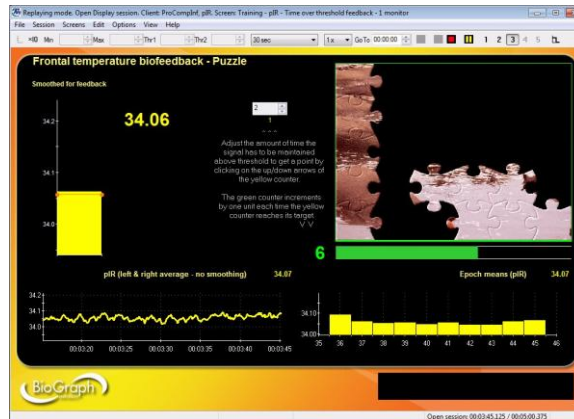
Training – pIR – Animation and volume feedback – 2 Monitors

This is a two-monitor version of the same screen. The bar graph and animation instrument are on the second monitor.



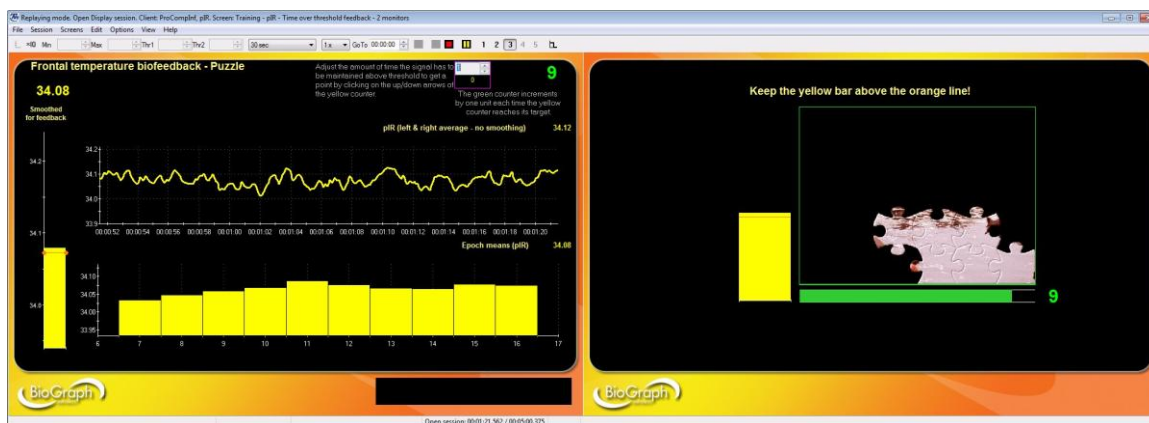
Training – pIR – Time over threshold feedback – 1 Monitor

This screen is similar to the previous ones but with the addition that the signal has to be maintained over threshold for a period of time before the client receives a discrete reward in the form of a counter point and a piece of the puzzle. When the reward condition is met (signal over threshold) the progress bar, under the puzzle, starts filling up. The reward is given when the end is reached. If the condition is lost before that, the progress bar is reset to zero.



Training – pIR – Time over threshold feedback – 2 Monitors

This is a two-monitor version of the same screen. The bar graph, progress bar and animation instrument are on the second monitor.



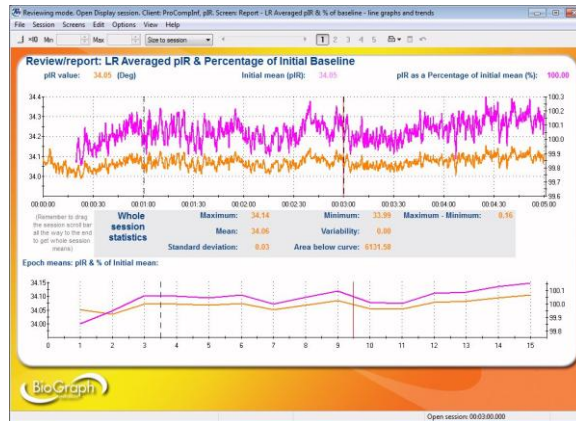
Report – Averaged pIR – Line graph and trend

This review screen shows the left and right averaged pIR signal in the top portion. The orange line is without smoothing while the blue line is the smoothed signal which is used for feedback. Session statistics are listed in the middle portion and a trend graph, at the bottom, shows periodic (epoch) means across the whole session.



Report – LR Averaged pIR & % of baseline – Line graph and trend

Same as above with a light purple signal representing the averaged pIR signal as a percentage of the mean baseline pIR value. The mean pIR value is calculated at the beginning of the session over a user-defined period of time. This percentage signal shows any change in frontal temperature as a relative measure (percentage of change) which can be compared from session to session.



Script Description

Training: PI pIR – Passive infrared training – 5 trials

Duration: 20 minutes (user re-definable).

The script takes the client through 5 steps, alternating between a feedback period and a resting period (with no feedback). This training script is useful for engaging the client in work/rest type training where the ability to enter a state of activation and quickly return to baseline is practiced.

An instruction screen at the beginning of the script allows you to hook-up the TT-pIR Headgear device and verify the quality of the recorded signal prior to starting the script.

You can review a script session using the **Report – Averaged pIR – Line graph and trend** screen and see how well the client was able to initiate activation at the beginning of each feedback step because the script places event markers between steps.

