Cadwell Easy® III
Operator's Manual

Part Number: 100840-620

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Cadwell Laboratories

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1. Have your customer identification number and serial number near the phone. Have a person who runs the equipment be prepared to speak to a service technician. This person should be able to provide an accurate description of the problem. It is best if the person calling is in front of the equipment when they call.
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Easy III Intended Use

The Easy III system is intended for the acquisition of EEG, PSG, and other polygraphic channels. The Easy III system is intended for use by a physician or a trained technician under the supervision of a physician. The Easy III intended recording environment is in a hospital, clinic, physician’s office, or other appropriate testing environments.

ApneaTrak Intended Use

The ApneaTrak system is intended for the acquisition of polysomnographic channels. The ApneaTrak system is intended for use by a physician or a trained technician under the supervision of a physician. The ApneaTrak intended recording environment is in a home, hospital, clinic, physician's office or other appropriate testing environments.

Easy Ambulatory Intended Use

The Easy Ambulatory system is intended for use by a physician or trained technician under the supervision of a physician for the acquisition of EEG and other polygraphic channels. The intended recording environment for the Easy Ambulatory is the home, hospital, and other testing environments.

Keyboard Hot Keys

*note: To order a keyboard hot key laminated strip for your monitor, call 800-245-3001 and speak with your customer service representative. Provide them with the part number of the strip you need.

Easy III EEG/LTM/ICU Keyboard Shortcuts (PN: 369031-627)

Repositioning Shortcuts (Place Mouse over Trace Window)

CTRL P - Reposition to start of photic stimulation (EEG)
CTRL H - Reposition to start of hyperventilation (EEG)
CTRL B - Go forward to next bookmark
Right arrow - Page forward
Pg Dn – Advance forward one page
Left arrow - Page backward
Pg Up – Advance backward one page
Space Bar – Advance forward one page
Home Key – Reposition to Start of Recording
End Key – Reposition to End of Recording
CTRL G - Go to page number tool will appear
CTRL + Auto page forward (press CTRL + again to increase paging speed, CTRL to decrease paging speed)
CTRL - Auto page backward (press CTRL + again to increase paging speed, CTRL to decrease paging speed)
CTRL right arrow- Advance to next page based on duration of current trace window with mouse focus. In other words, if the trace window is in a 2 minutes view, the control right arrow will advance to the next 2 minute window.
CTRL left arrow- Advance to the previous page based on duration of current trace window with mouse focus. In other words, if the trace window is in a 2 minute view, the control left arrow will backup to the previous 2 minute window.

Trace Data Shortcuts

CTRL up arrow - Decrease displayed paper speed of trace window with mouse focus
CTRL down arrow - Increase displayed paper speed of trace window with mouse focus
CTRL M - Display montage list
CTRL A - Change displayed montage with mouse focus back to ‘as recorded’
CTRL 1- 9 Change the displayed montage to the default montage specified for M1-M9
Up arrow- Increase linked sensitivity
Down arrow- Decrease linked sensitivity
C- Add comment to record

Other Shortcuts

F2 Event List
F3 Q-Video Player in review window only
F4 Default Report 1 (R1)

F5 Default Report 2 (R2)
F6 Default Report 3 (R3)

Easy III PSG Keyboard Shortcuts (PN: 369031-626)

Repositioning Shortcuts (Place Mouse over Trace Window)

CTRL L - Reposition to Lights Out (PSG)
CTRL S - Reposition to Sleep Onset (PSG) NOTE: Sleep Onset tool must be used to mark Sleep Onset for this Hot Key to work.
CTRL R - Reposition to REM Onset (PSG)
CTRL C - Advance to next CPAP/Bilevel pressure (PSG)
CTRL B - Go forward to next bookmark
Right arrow - Page forward
Pg Dn – Advance forward one page
Left arrow - Page backward
Pg Up – Advance backward one page
Space Bar – Advance forward one page
Home Key – Reposition to Start of Recording
End Key – Reposition to End of Recording
CTRL G - Go to page number tool will appear
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Down arrow- Decrease linked sensitivity
C- Add comment to record

Other Shortcuts

F2 Event List
F3 Q-Video Player in review window only
F4 Default Report 1 (R1)
F5 Default Report 2 (R2)
F6 Default Report 3 (R3)

Easy III PSG and EEG/LTM/ICU Keyboard Shortcuts (PN: 369031-625)
Repositioning Shortcuts (Place Mouse over Trace Window)
CTRL P - Reposition to start of photic stimulation (EEG)
CTRL H - Reposition to start of hyperventilation (EEG)
CTRL L - Reposition to Lights Out (PSG)
CTRL S - Reposition to Sleep Onset (PSG) NOTE: Sleep Onset tool must be used to mark Sleep Onset for this Hot Key to work.
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C- Add comment to record

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F2 Event List
F3 Q-Video Player in review window only
F4 Default Report 1 (R1)
F5 Default Report 2 (R2)
F6 Default Report 3 (R3)

New Features for Version 3.16

Release Notes for Easy III Version 3.16

Easy III version 3.16 includes the below features as well as the additions/improvements made in version 3.15 and its subsequent service packs.

New Q-Video Mobile 2

The Q-Video Mobile 2 device is a small video and audio recording device that will record and store synchronous video to the ambulatory EEG/PSG system. This device is easy for the patient to manage.

Q-Video Mobile 2 Features:

- Built in infrared lighting and light sensor, allow for the device to record in complete darkness. The device detects when the ambient light drops and automatically switches the camera to night mode recording. In the morning, the device detects the increase in ambient light and automatically switches to daytime recording.

- Q-Video Mobile 2 camera setup and preparation for use is simple. The camera is automatically configured when the Easy Ambulatory recorder is programmed for use. Just plug the Q-Video Mobile 2 camera and ambulatory recorder into the computer at the same time during the start of a recording.
- The camera has a 96 hour recording capability.

- Battery backup allows the Q-Video Mobile 2 camera to continue recording video and audio when the Q-Video Mobile 2 camera is in transit. Up to 16 hours of video data can be recorded on the Q-Video Mobile 2 camera before supplemental AC power is required.
- Minimal patient instructions are required, the patient does not have access to the power button and cannot interrupt the recording accidentally.
- Auto-dimming feature dims the display to conserve power (however the video and audio recording will continue). Tap the display to brighten the video picture display to see video quality.

Release Notes for Easy III Version 3.15

Note: *Users of Cadwell's ApneaTrak HST recorder must have a firmware upgrade as part of the Easy III 3.15 software install. To update firmware user must first install Easy III 3.15. User will then connect the ApneaTrak via USB data cable. An automated notice will state that a firmware upgrade is needed and presents user with a choice to accept or cancel the process. By accepting, the firmware will automatically be installed to the ApneaTrak recorder. The entire process should take only a couple of minutes per device.*

General Features:

Mouse Scrolling to change channel sensitivity.

In the last release mouse scrolling in the general area of trace window would advance or reverse paging. Similarly if user puts mouse arrow over a channel label, scrolling up

or down will increase or decrease sensitivity without the need of going into the channel's properties.

Actual Time in Event Log

Event time now shows both elapsed time and actual time for events.

Additional Paper Speeds

Paper speed options now include:
600 sec/page, 320 sec/page, 300 sec/page, 240 sec/page, 180 sec/page, 120 sec/page,
90 sec/page, 60 sec/page, 48 sec/page, 30 sec/page, 24 sec/page, 20 sec/page, 15 sec/page,
12 sec/page, 10 sec/page, 6 sec/page, 5 sec/page, 2 sec/page and 1 sec/page.

Scheduler Refresh Rates

Refresh rates on the scheduled patients tab for Record Data has been reduced to 30 seconds intervals.

EKG Flip

User can now flip the EKG channel through software.

Sync Multiple Trace Windows

Added Capability to sync multiple windows with different time bases. This includes dragging the sweep in a trace window of choice and the other window repositioning as well. The blue sweep for Q-Video playback can be repositioned anywhere on the page to specify where video playback should begin.

HD Video

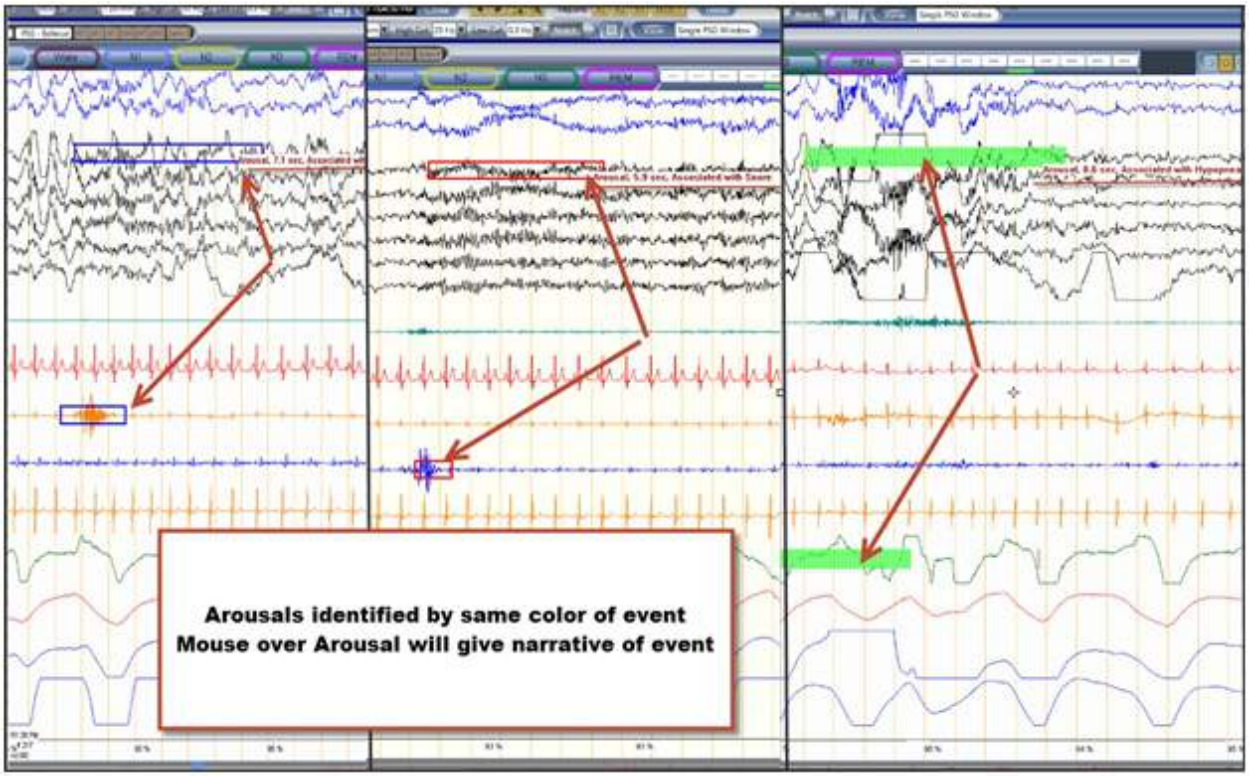
Now capable of recording and storing HD video quality. *note: please consider data storage needs and file sizes when determining whether or not to record with HD video.

PSG FEATURES:

Ability to Mark Artifact

User can score artifact similarly as they would any other event for EKG, SAO2, BPM, ETCO2 and CPAP leak. The only difference in scoring artifact is that user will hold down the “Ctrl” key while marking these events. Artifact scoring will be scored with dashed lines and will not be considered in reporting.

Arousal Identification

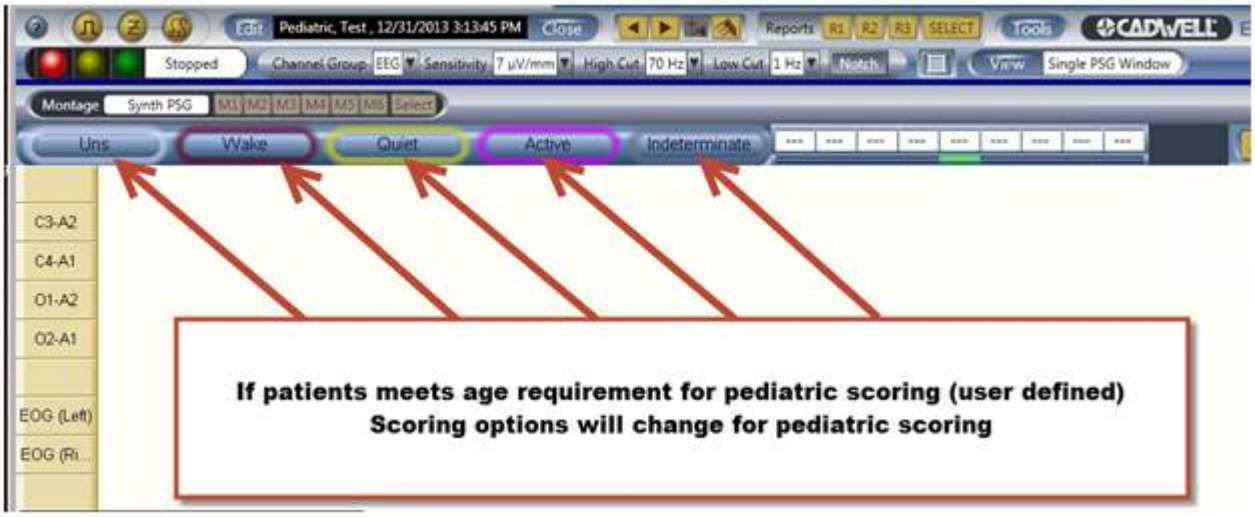


Arousals will now be color coded automatically to match the associated event that caused the arousal. This allows the user to identify with a glance the type of arousal. If user performs a mouse over on the arousal, the event provides an actual narrative as to what kind of arousal occurred.

View Study “As Scored”

User now has the ability to view the study “As Scored” just as they have been able to view a study “As Recorded”.

Infant Scoring Labels



Infant Scoring Labels will automatically appear based on patient's age. User sets the age defaults for this to happen in age in months in settings. If user chooses to never use infant labels they should set default age for less than 0. Corresponding tokens for generating reports have been added. A default Infant Scoring report was created for both PSG and PAP.

O2 to digital value panel

User now has an option to add O2 levels to the digital value panel.

Heart Rate can be taken off of EKG or Pulse Rate

In digital value panel user can now choose which channel they want to use to determine heart rate. New default value is set to EKG.

EKG User Defined Settings

User can choose a fixed value or a % increase/decrease value for program to pull from.

Captured Heart Rate

When highlighting an area of EKG user will see the actual HR for that segment and not an average over any period of time.

All Night Summary

Added RERA option to the all night summary window.

Epoch Grid Lines Added

User will now see clear epoch boundaries when looking at a page over 30 seconds.

Desat Event Markers

Desat event markers have been changed from yellow to red.

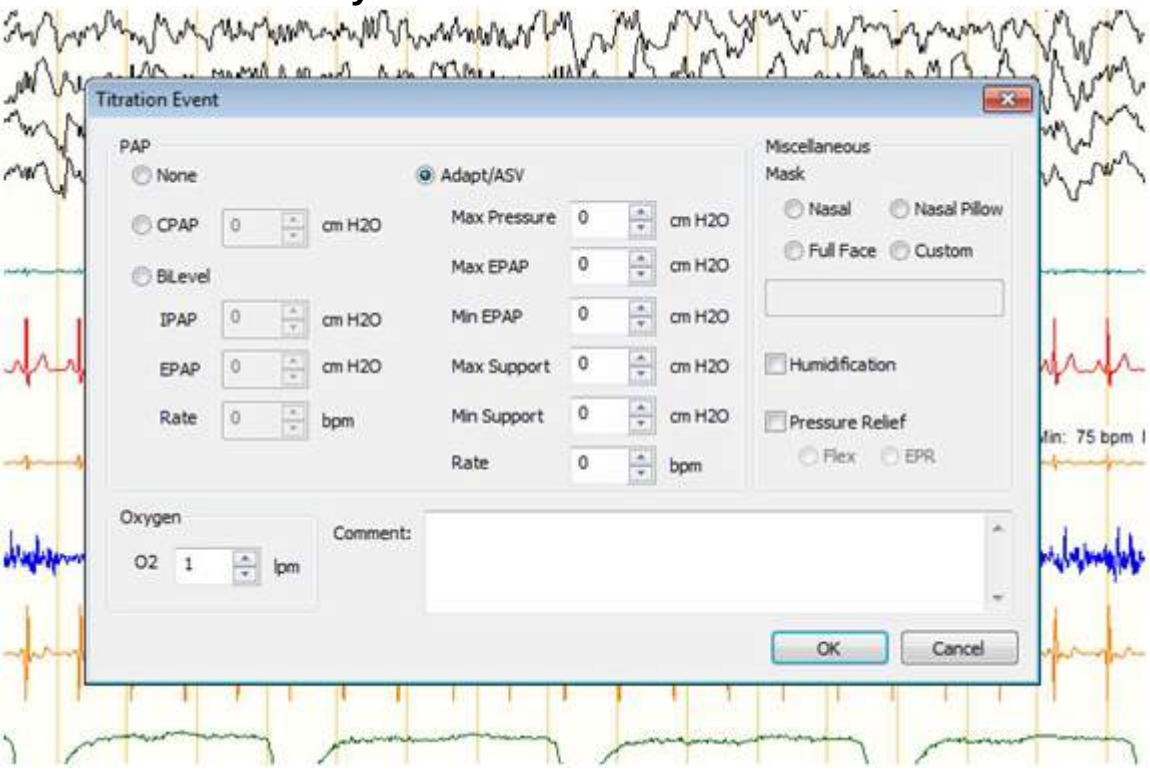
Performance Enhancement on Edit Scoring

When editing a scoring session the time to open the study has been greatly reduced.

Report Performance Enhancement

Report generation times have been significantly reduced. Reporting now compensates for different versions of Microsoft Office and preserves the formatting.

Enhanced PAP Entry

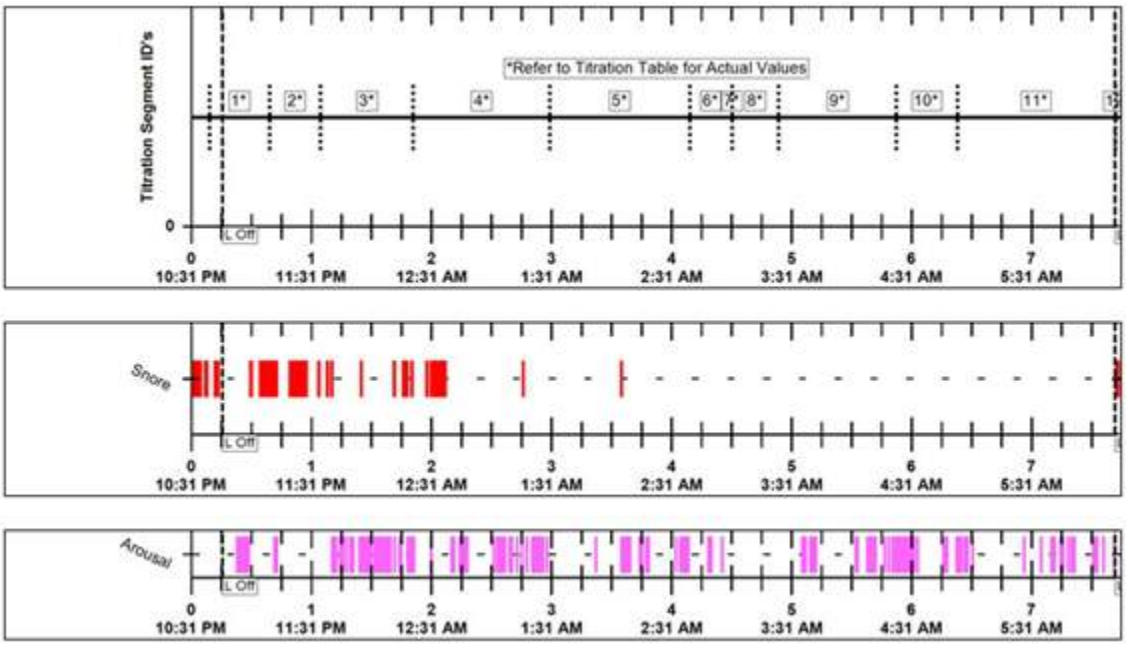


User can now choose CPAP, BiLevel or Adapt/ASV when titrating. User can switch between types of therapies. User can choose Backup Rates. PAP entry also allows for O2 adjustments that are in 1/8th increments. Release allows for Mask type, Humidification and pressure relief settings. There is a comment box for the user to add more detailed notes for items like: what type/size of nasal mask, was humidification heated or cool pass, etc. Any change in the entries that is unique will show statistics in reporting. Example: Patient at 7 cm CPAP with Nasal mask might be having events due to mouth breathing. If patient is placed on 7 cm CPAP with Full face mask the two entries will not be combined. This way a practitioner can clearly see if a pressure with a different mask makes a difference in RDI. New Tokens, PAP Reports and tables have been created for those that choose to use this more extensive PAP entry tool.

New PAP Reporting

ID*	Therapy Detail	Total Time (min.)	Sleep Time (min.)	REM (min.)	NREM (min.)	Hypop. Count	Apnea C/O/M	AHI	RDI	SpO2% Mean/Low
CPAP (CPAP/Mask/Humidifier/Pressure Relief)										
11*	13/C/-/-	78.61	75.11	32.00	43.11	4	0/0/0	3.20	3.20	94/91
5*	10/C/-/-	70.07	68.07	20.00	48.07	4	0/0/0	3.53	3.53	94/90
6*	11/C/-/-	20.99	16.34	0.00	16.34	1	0/0/0	3.67	3.67	92/89
2*	7/C/-/-	25.64	25.64	0.00	25.64	3	0/0/0	7.02	7.02	91/89
1*	6/C/-/-	23.45	14.95	0.00	14.95	11	0/0/0	44.15	44.15	92/89
7*	9/C/-/-	0.06	0.00	0.00	0.00	N/A	N/A/N/A/N/A	N/A	N/A	N/A/N/A
12*	4/C/-/-	0.00	0.00	0.00	0.00	N/A	N/A/N/A/N/A	N/A	N/A	N/A/N/A
Bilevel (IPAP/EPAP/Backup Rate/Mask/Humidifier/Pressure Relief)										
3*	8/4/0/F/-/-	46.25	38.75	0.00	38.75	28	0/2/0	46.46	46.46	93/88
ASV (Max Pressure/Max EPAP/Min EPAP/Max Support/Min Support/Backup Rate/Mask/Humidifier/Pressure Relief)										
4*	22/12/4/14/4/10/F/-/-	68.25	49.25	0.00	49.25	7	0/0/0	8.53	8.53	93/87
9*	21/15/11/10/4/10/F/H/F	58.94	16.00	0.00	16.00	4	0/0/0	15.00	15.00	94/91
10*	22/14/12/10/4/0/F/-/-	30.50	10.89	0.00	10.89	6	0/0/0	33.06	33.06	95/92
8*	19/13/9/10/4/10/F/H/F	23.25	0.00	0.00	0.00	N/A	N/A/N/A/N/A	N/A	N/A	N/A/N/A

**Refer to Titration Segment ID's graph to match ID's.*
Mask= N:Nasal, P:Nasal Pillow, F:Full Face, C:Custom | Humidifier= H:On, -:Off | Pressure Relief= F:Flex, E:EPR, -:Off



New reports for the new PAP entries will break down separately for each type of therapy (i.e. CPAP, BiLevel and Adapt/ASV)

Reporting will occur for any given change in Scenario. Example: There would be separate reporting for 7 cm using nasal mask and 7 cm for full face mask. This allows the physician to see AHI variations when changing variables. Another example might be 7 cm on room air vs 7 cm with 2 lpm O2 etc. Report values for PAP table are sorted in order of the lowest to highest RDI for each PAP group rather than in chronological order as default. This allows for greater ease of determining the appropriate pressure for the interpreting physician.

Each PAP entry also has a reference letter from “a” to “z” to reference this entry on trend reports. These values also identify the chronological order of the titration with “a” being the first pressure and so on.

Battery Level

ApneaTrak dashboard now shows actual battery level.

ApneaTrak User Defined Settings

When setting up a study on the ApneaTrak the user can manually choose a start time. User can set duration for 8, 10 or 12 hour recordings. User can choose the amount of days they want patient tested in increments of 1, 2 or 3 nights.

ApneaTrak Scoring

Sleep staging bar for ApneaTrak studies was removed. Sleep staging information on ApneaTrak reports was also removed.

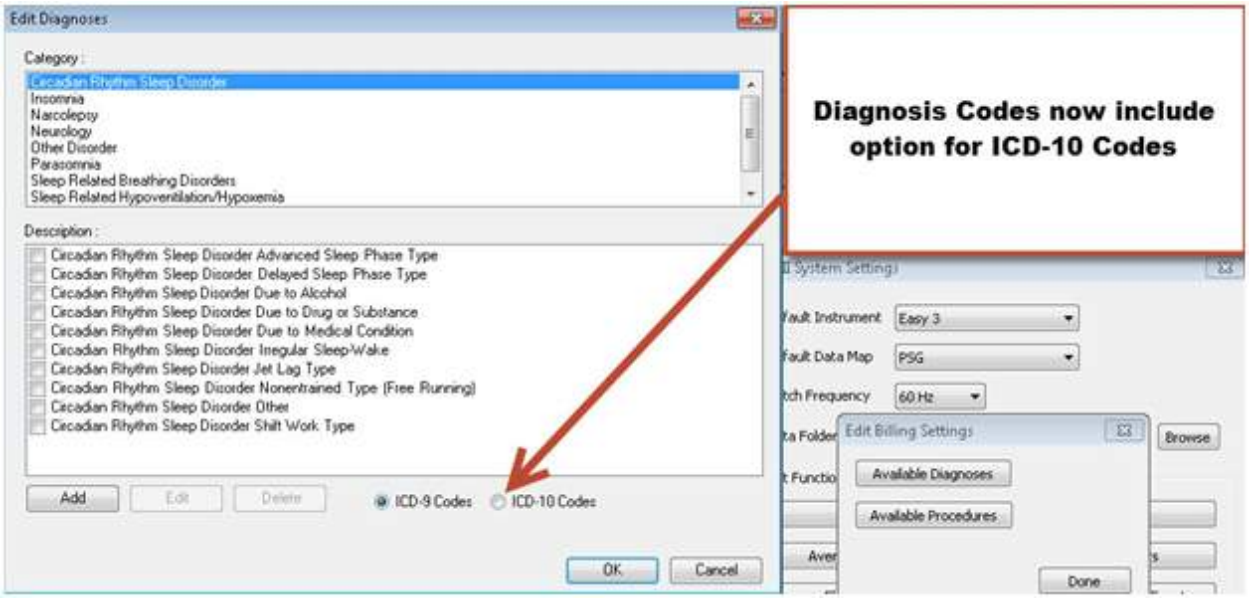
ApneaTrak Firmware Update

ApneaTrak has a firmware update to accommodate many of the changes in software. The process will start automatically once the software is on and ApneaTrak is plugged in and user agrees to update firmware.

Respiration Channel Flip

User can now flip the respiration channels through software on ApneaTrak studies.

ICD-10 Codes

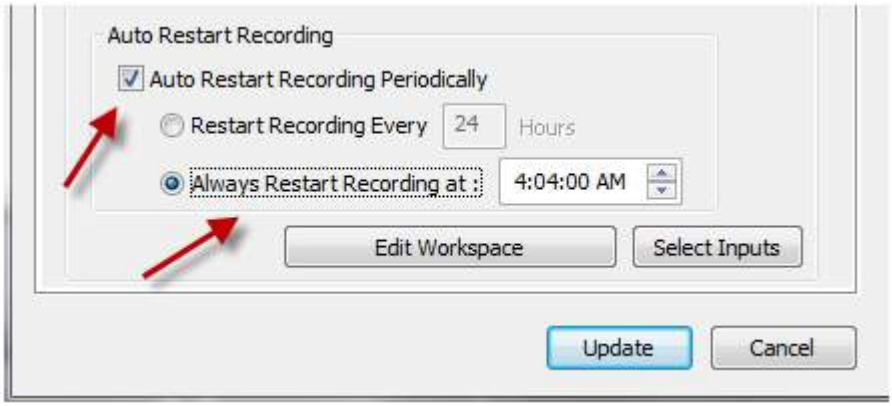


ICD-10 codes have been added to Easy III. User can manually choose ICD-9 or ICD-10. Default is set by user in settings.

EEG Features:

LTM Auto Start

Implemented an auto restart at a user defined scheduled time for long term monitoring. The user now has the option to either select the hour interval that the studies will restart or they can schedule an exact time for the study to restart. This setting is at the protocol level.

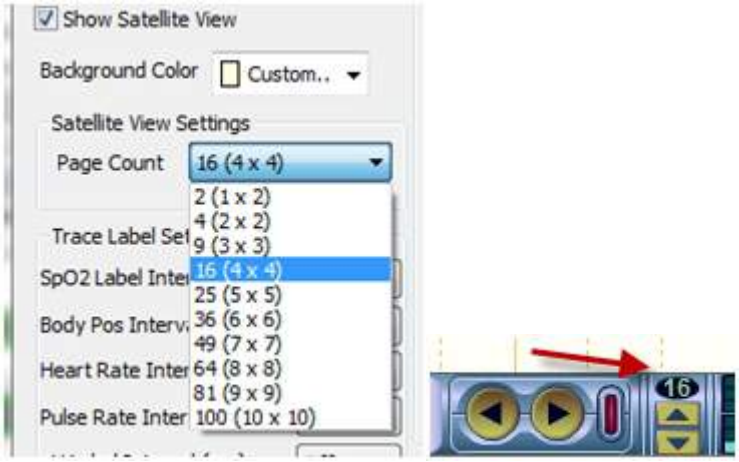


Centering of Events in the Trace Display

Events will center in trace window when chosen from the event list.

Paging Intervals

Paging intervals were made to match the satellite view sizes. The page interval control shows values that directly correspond to the grid options for satellite view. When users are in Satellite View mode, they can set the corresponding page interval that aligns with the satellite grid, and each time they page forward, they will get a new set of pages.

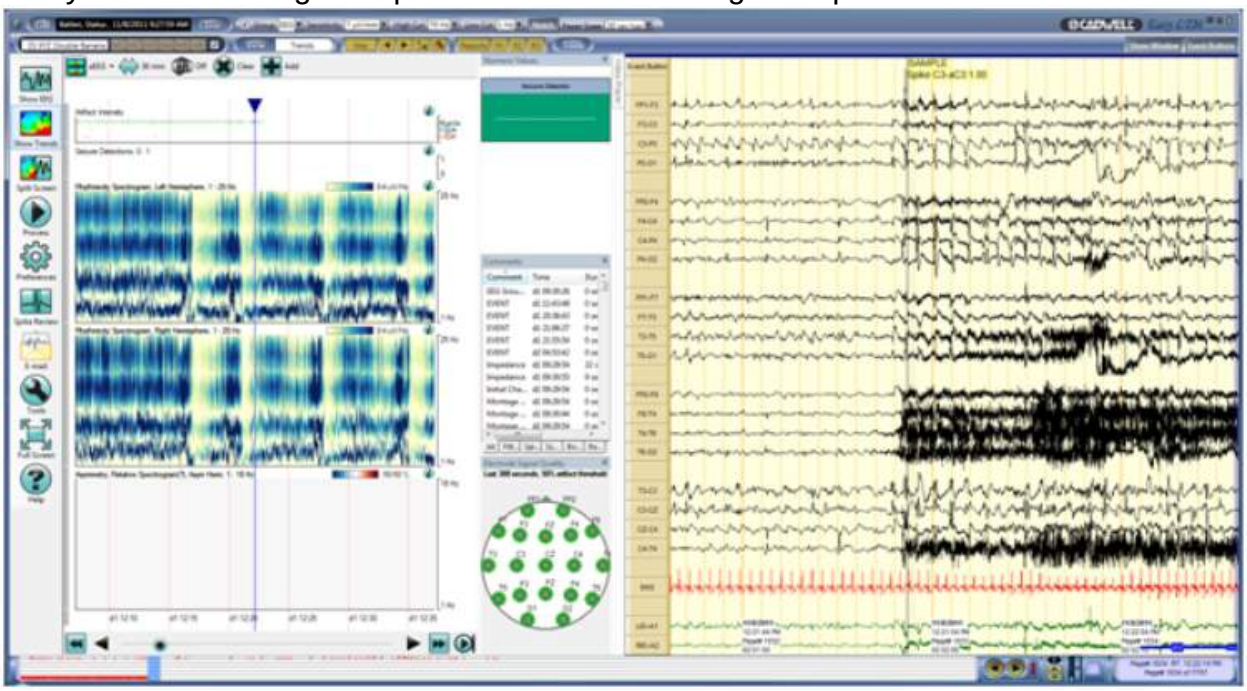


Set live video playback to Mute by default

User can now default the sound to mute as part of the protocols for live recordings. This option is in the settings window for QVideo when in the workspace editor.

Persyst 12 compatibility

Easy III is now compatible with Persyst 12. Easy III is still very well integrated with Persyst and offers a great option for seizure trending and spike detection.

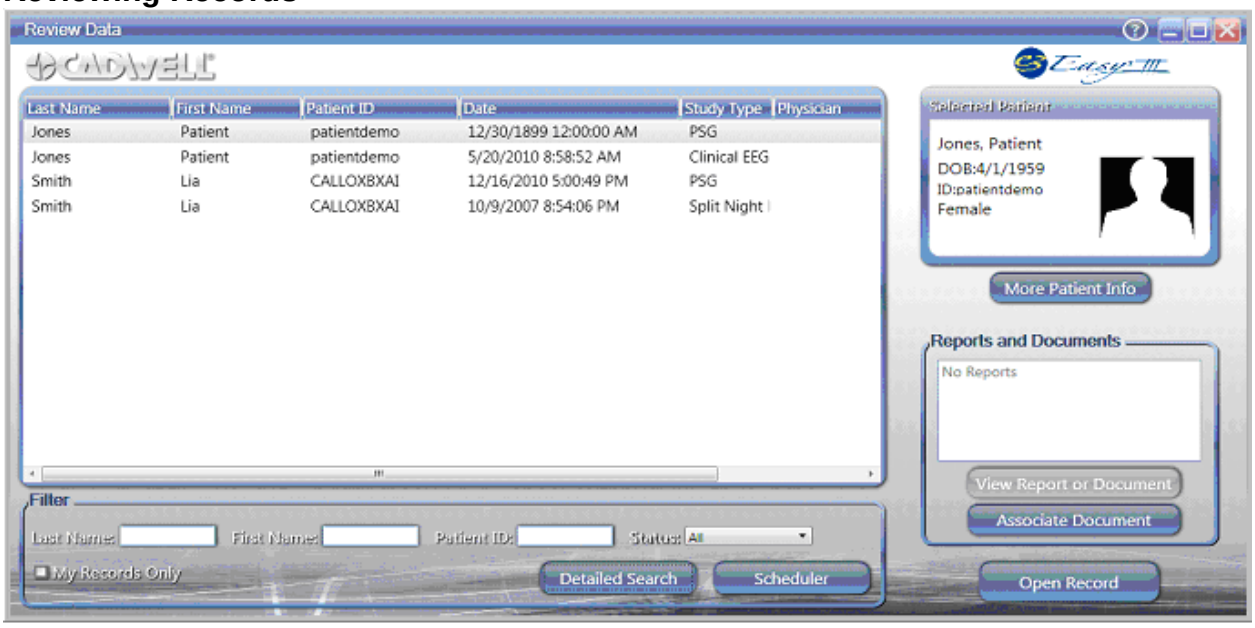


Reviewing Records

Getting Started - Opening the Easy III Software
Click on the Easy III Review Data shortcut displayed on the desktop.

Logging in to Easy III
1. Double click on one of the Easy III Review Data shortcut on the desktop to review a record.
2. Select your login name from the login ID drop down list. If your name is not displayed, you will need to create a login. The default login ID for Easy III is Admin. The password is admin.

Reviewing Records



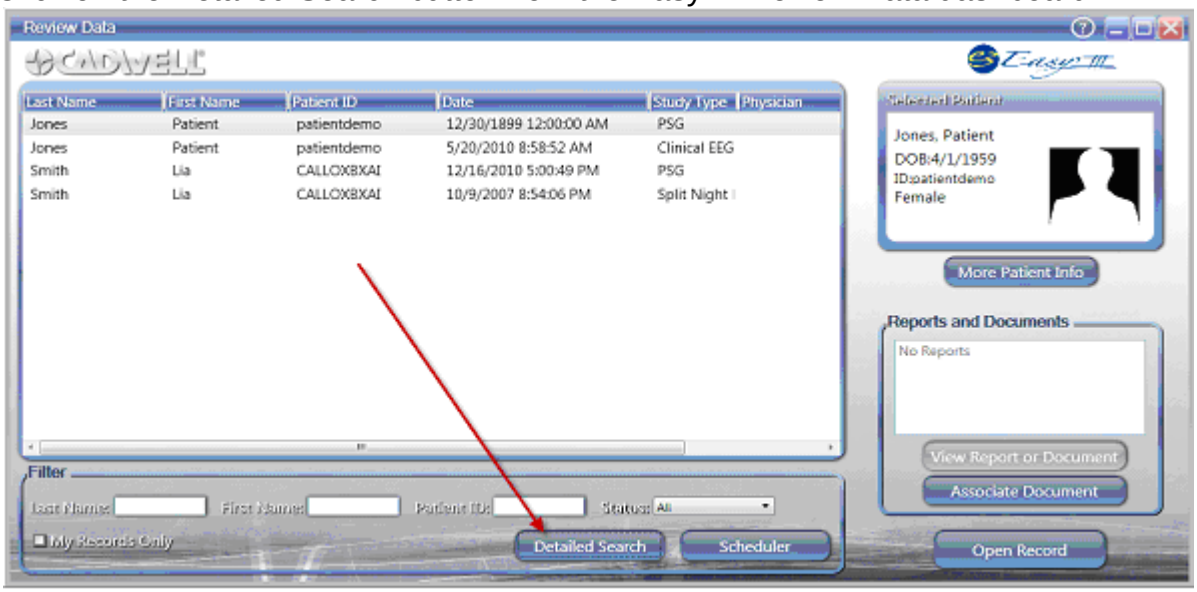
1. Find the name of your patient by sorting the patient list.
    a. To filter by name, start typing the last name into the name field. The list will quickly filter the list of patient names based on the letters entered into the name field.
    b. To sort the list by date click on the date column header to sort the list in a descending or ascending order.
    c. To sort the list by record status (ready to read, ready to archive, etc.), click on the status drop down in the lower right hand corner of the select patient dashboard.
2. To view the recorded waveform data, open the record by double clicking on the patient name or clicking on Open Record after highlighting the patient name.
3. Additional Step for Sleep Studies – You will be prompted with a list of all previous users that have added sleep staging and event data to the record. Highlight the name

of the scoring set you would like to review. Click on Edit Scoring Session and select OK.

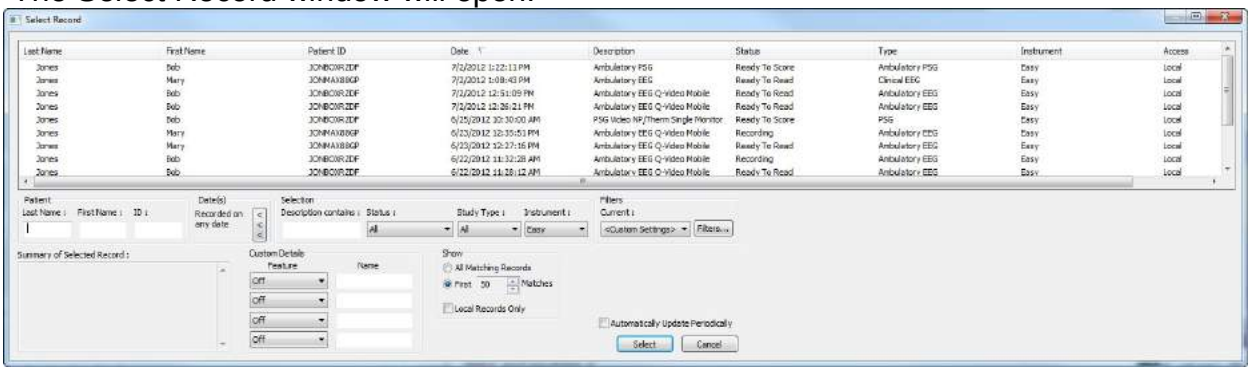
Reviewing Records with the Detailed Search Dashboard

Select Record

Click on the Detailed Search button from the Easy III Review Data dashboard.



The Select Record window will open.



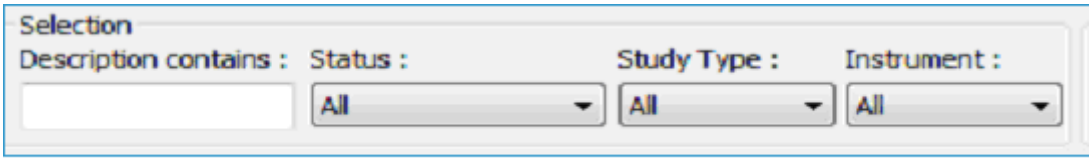
Select a Patient by Name

Organize the lists by Last Name, First Name, Patient ID, Date, Description, Status, Type or Instrument by clicking on the column header.

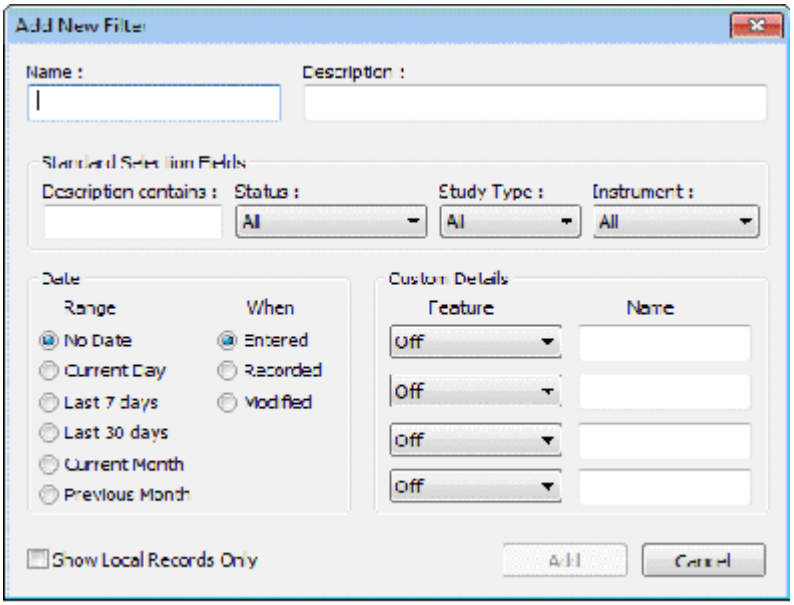
Narrow down the search results by entering in Patient name or ID.

By Date
Narrow down the search options by entering Patient information in the Last Name, First Name or ID fields, by narrowing the Select Date Range, or by entering descriptive information in the Selection fields.

By Filter Selection
Type in descriptors and select Status, Study Type, Instrument and Details to narrow down the search results.

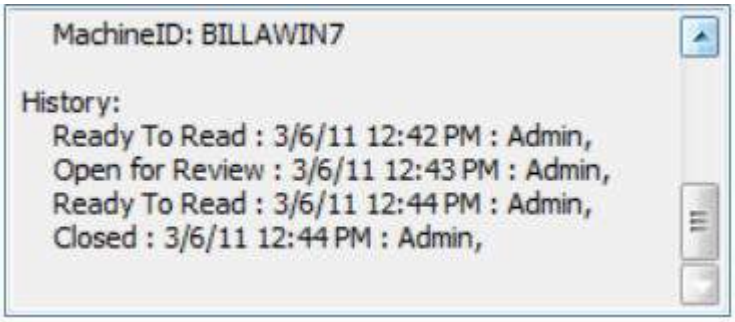


Filter Details: Edit Details
To set the Details, click the Edit Details button. Add a filter by typing in a Name, setting the Date range and details, and then clicking the Add button. Repeat for additional filters.



Click the Update button to return to the Select Record window. In the Selection section, select the filter from the Details drop-down menu, and then checkmark the Details On box to turn the filter on.

Summary of Selected Record
The summary for each patient file records the patient ID, description of procedure, status and computer on which the procedure took place. The History will show when the file was created, when recording began and ended, when the file was closed, and which user performed each event.



Maneuvering Through a Record

1. After opening a record, the Easy III software will display the first recorded page of the record.
2. To review additional pages, you can:
    a. Press the space bar to move one page forward
    b. Press the right arrow key to move one page forward, left arrow to move on page backward.
    c. Press the page up key to move one page forward, page down key to move one page backward.
    d. To maneuver with the mouse cursor, move the cursor to the right side of the page. Note the cursor will change to a double arrow. Click on the left button on the mouse to move forward one page at a time. Move the mouse toward the center-right side of the page. Note the cursor will display one arrow. Click on the left button on the mouse to move one second forward. You can also move the mouse to the left side of the page to move backward.
    e. Scroll the mouse wheel towards you to advance one page forward. Scroll the mouse wheel away from you to go back one page. When scrolling the mouse wheel, if the CTRL key is held down, the trace window will move by the second.
3. To Auto-Page forward, hold down the Control (CTRL) key on the keyboard while pressing the + key on the keyboard. To increase the paging speed, press the CTRL + key again. Keep pressing the combination of keys to increase the paging speed. You can reduce the paging speed by pressing the CTRL – keys. To stop auto paging press the space bar or click in the trace window.

Scroll through Records from the position bar

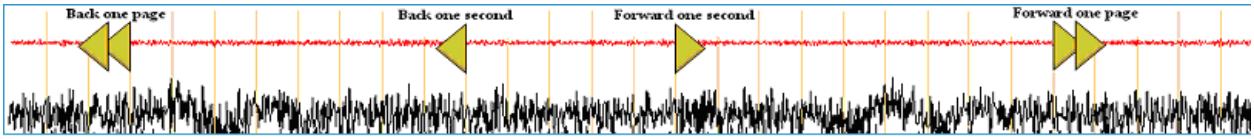
The position bar can be configured in differently as needed by the user. Right click on the position bar and enter the setup dialog menu to change the configuration of the position bar. The position bar can be configured with and without the auto paging controls.

The position bar displayed above shows the auto paging tools. Click on the red auto paging button to enable auto paging. The gold up and down arrows determines if the paging tool will skip pages during the paging process. The green LED bar shows the current paging speed. Increase the number of bright green LEDs to increase the paging speed. Click on one of the left or right arrow buttons to automatically page through the recording. Press the space bar to stop the auto paging process.

The position bar displayed above is configured without the auto paging tools. Click the yellow arrow buttons to move back or forward one page at a time, or click and drag along the position bar to manually move through pages. During recordings, click the View live data button to return to live recording.

Scroll through Records from the waveform display

To scroll through the pages using only the mouse, position your cursor between channels. The horizontal placement of the cursor determines the scroll commands:

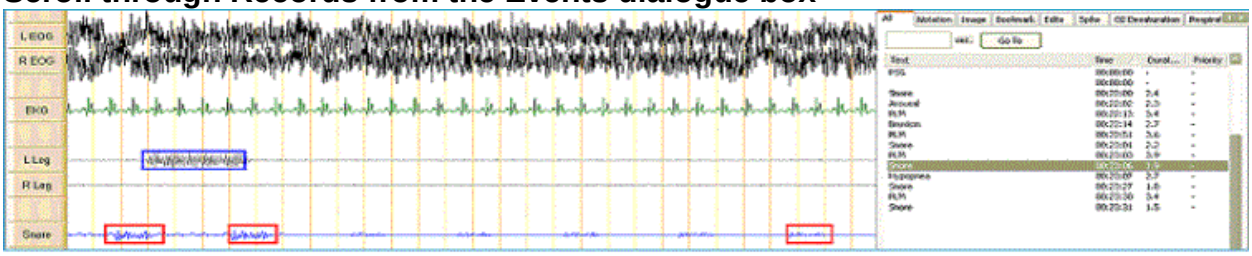


Scroll through Records from the keyboard

Forward one page	Page Down, , or space bar	To last event in Event list	End
Back one page	Page Up or	To first event in Event list	Home

Forward one page , , or space bar To last event in Event list
Back one page or To first event in Event list

Scroll through Records from the Events dialogue box



Click on an event in the Events List to jump to that event in the trace.

Click the View Live Data button to return to live data (during data collection).

Options for Viewing data

1.Check the box labeled "As Recorded" to view the data with the settings that it was collected with.
2. For sleep studies, an option for "As Scored" is available. Choose this to view the study with the settings that the tech had selected at the time of scoring.

Open Event List
1. Press the F2 button.
2. Select the appropriate tab.
3. Scroll up and down the event list to examine events.
4. Click on the selected event to reposition to the page in the record with the event.

Open Q-Video (digital video playback)
1. Press the F3 button.
2. Resize the video as appropriate.
3. Move the video by left clicking on the player to reposition it.
4. Page through the record to a location you would like to review. Note the video will be updated each time you advance to a new page.
5. Click on the Play button on the video player. A blue line will be displayed showing the video time synchronization.

Changing a Montage
1. Click on the M1, M2, M3, M4, M5, and M6 buttons at the top of the page to select alternate montages.
2. Press the CTRL key and the number 1 key to display the M1 montage. Press the CTRL key and the 1, 2, 3, 4, 5, or 6 key to change the montage to one of the 6 alternate montages.
3. Press the right button on the mouse while the cursor is on the displayed page, select Setup. Click on a montage in the displayed list and click on OK to display the selected montage.

Adjust Channel Settings
1. Place the mouse over the channel name displayed on the left side of the page. Click on the left button on the mouse. Move the mouse over the green pop up menu to modify a specific setting displayed.
2. Place mouse over the channel label and scroll the mouse wheel up or down to increase or decrease the sensitivity.

Changing a Paper Speed
1. Click on the paper speed drop down menu in the upper right hand corner of the trace window.
2. Press the CTRL key and the up arrow key or CTRL key and down arrow key to increase or decrease the displayed paper speed.

Advancing to a Saved Bookmark
1. Press the CTRL key and the B key to advance to the next saved bookmark.

Advance to Start of Hyperventilation in EEG Review
1. Place the mouse cursor over the trace window.
2. Press CTRL key and the H key to advance to the start of hyperventilation.

Advance to Start of Photic Stimulation in EEG Review

1. Place the mouse cursor over the trace window.
2. Press CTRL key and the P key to advance to the start of photic stimulation.

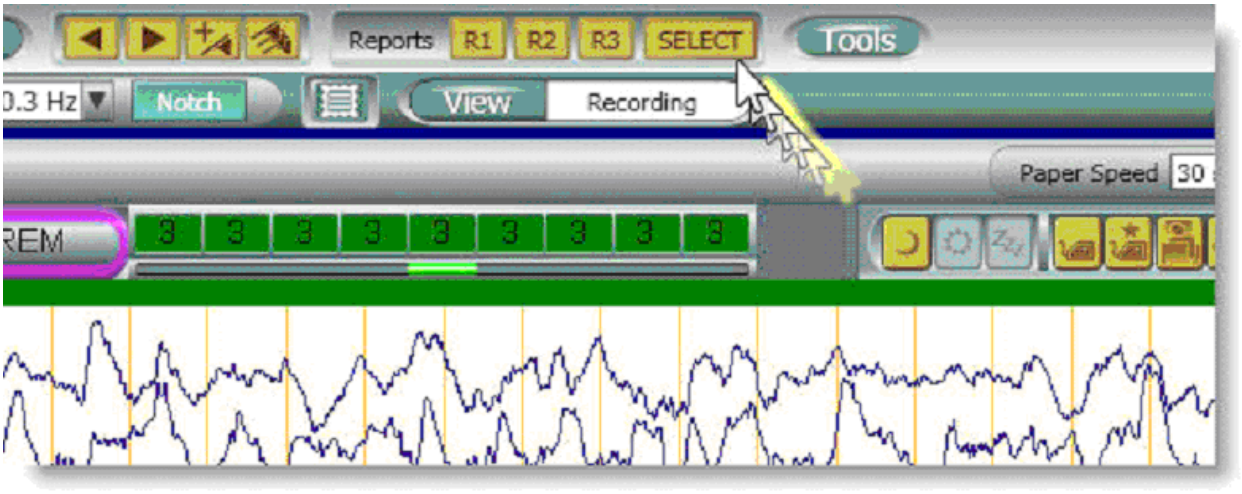
Advancing to Sleep Onset in PSG Review
1. Press the CTRL key and the S key.

Advance to first REM period in PSG Review
1. Press the CTRL key and the R key.

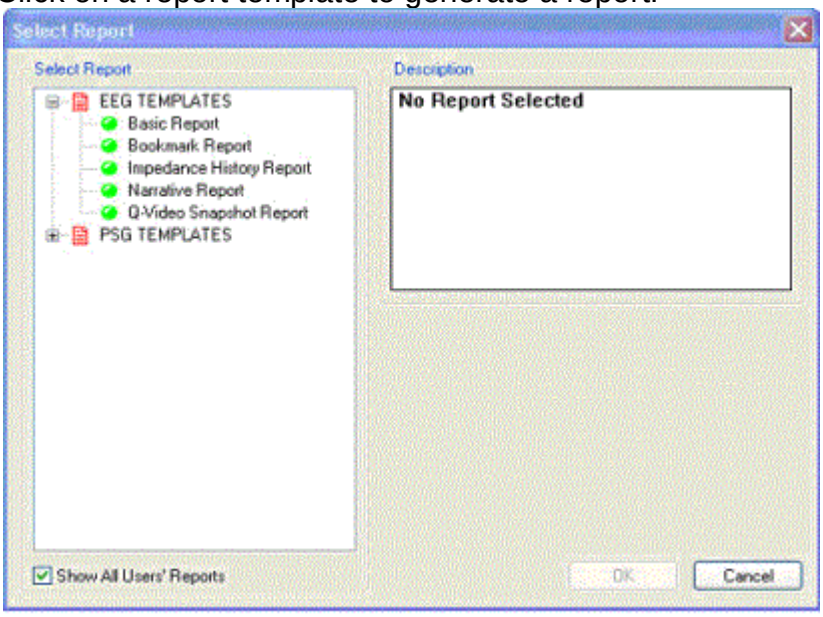
Advance to each incremental CPAP pressure
1. Press the CTRL key and the C key.

Generating Reports

Reports Overview
Easy III reports allow you to print patient information, record information, and pages of EEG specified by bookmarks. Reports can also include technician comments, impedance history, file access history, and Q-Video snapshots. The Report Generator can be launched during data collection and review.
Click on the Report Toolbar to access reports.

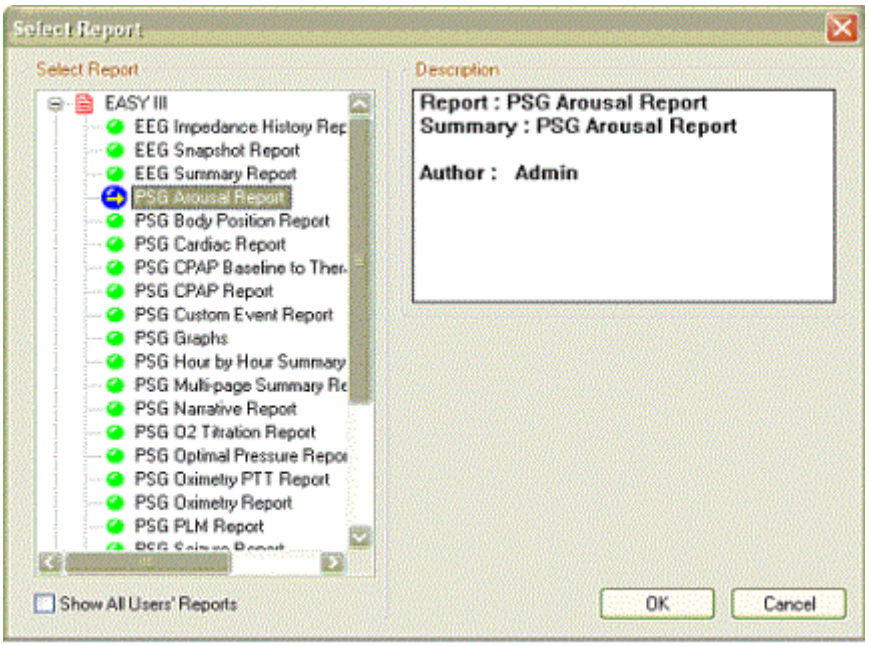


Click on a report template to generate a report.



Select Report
1. Click on the plus sign to access the list of available report templates.

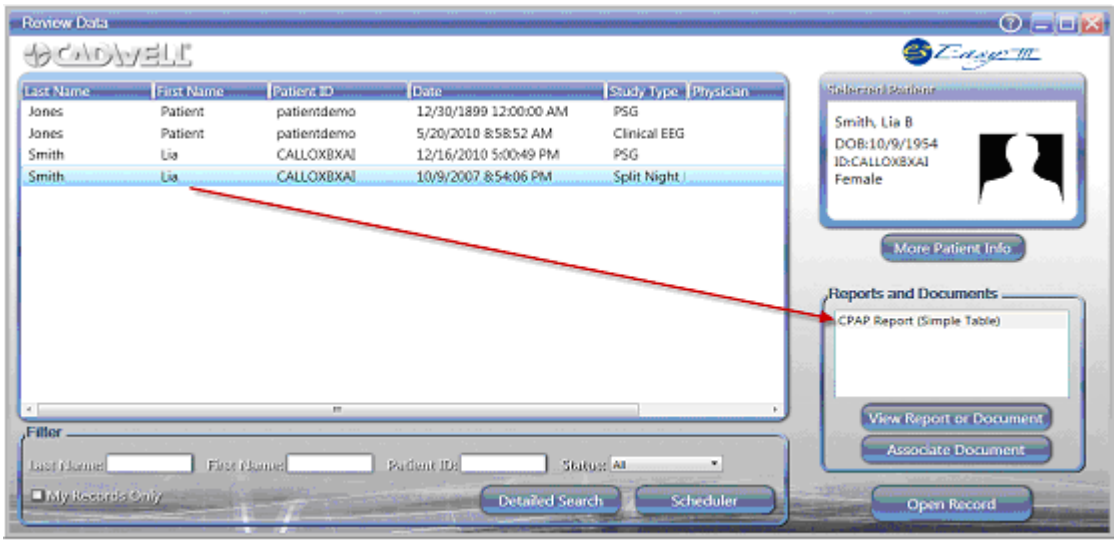
2. Click on a template to view the Description. A blue ball with a yellow arrow will designate which template is selected.
3. Click the Show All Users' Reports box to access the list of all report templates available.



4. Click the OK button.
5. Wait while the Report loads and collects its tokens.

QuickReport Word Document
The QuickReport document will open in a Word formatted file. From here, you may edit data, change headers and footers, view automatic spell check, run grammar check, change font colors, etc.
• Save or Print report using the Word tools.
• Click the Finish button to save or close before exiting.

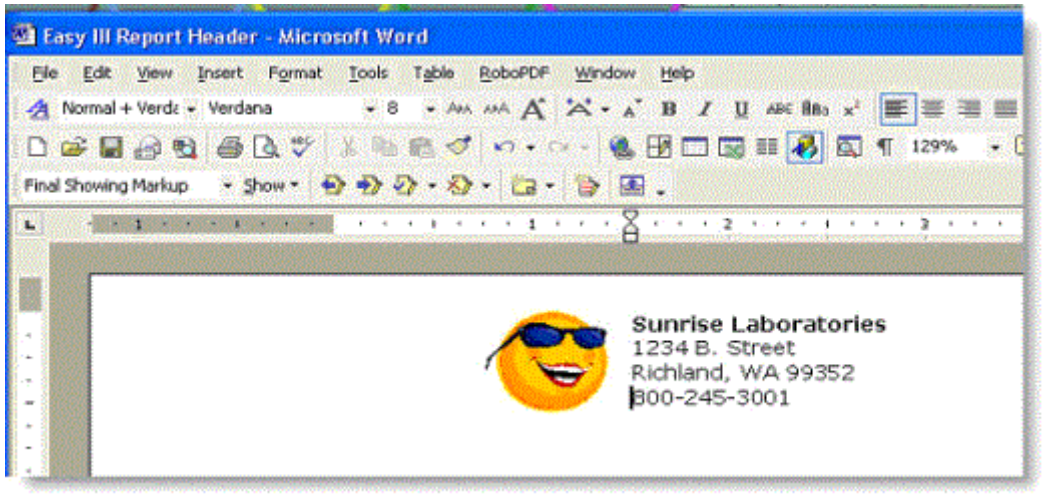
Save the Report
From the Document view, perform one of the following.
• Click the diskette icon to save to the default location.
• Select Save from the File menu to save to the default location.
• Reports will be automatically saved with the recorded patient data. Reports can be retrieved by selecting the Easy III Review Data shortcut. Locate the patient name via the Review Data dashboard. The associated reports will be displayed in the Reports and Documents selection box.



Report Header

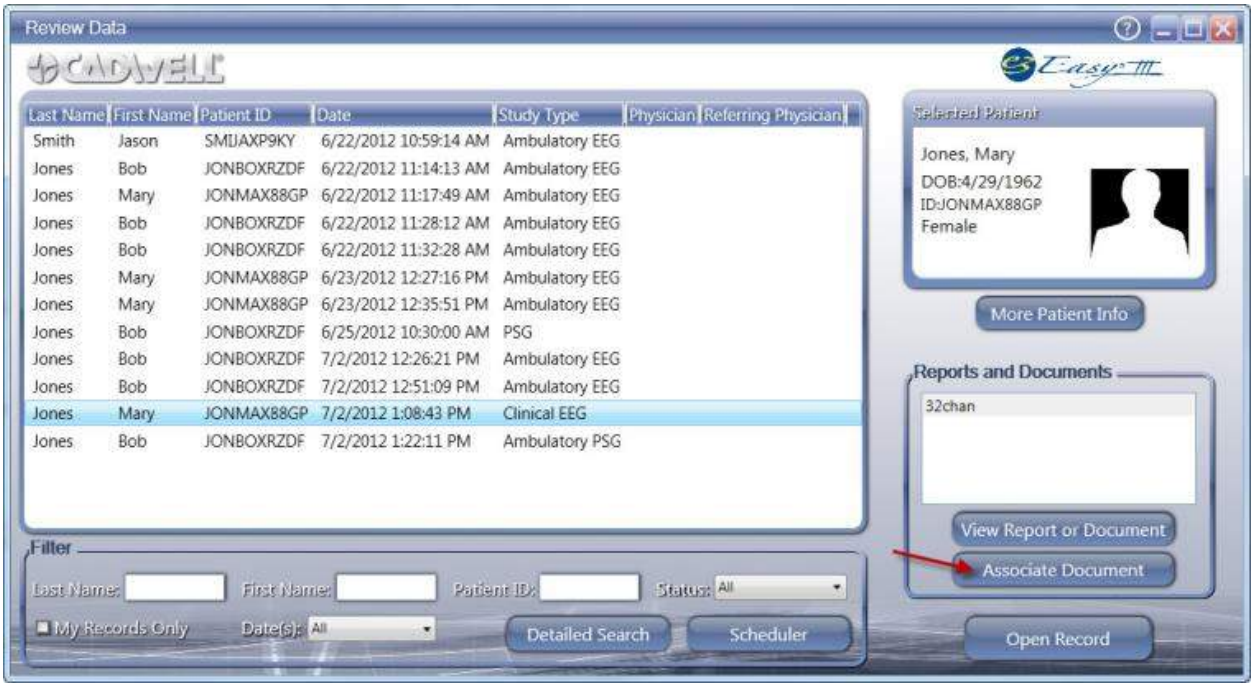
The Report Header is the information that appears at the top of the first page of the report document. The report header is named Easy III Report Header.doc. The report can be found in the C:\Cadwell\Easy III folder.

To modify the report header, open and edit the report. You must modify the report header on each Easy III system. Browse to the C:\Cadwell\Easy III folder. Look for the Easy III Report Header.doc. Modify the header and generate a test report to determine if the report header is correctly configured. Make sure that the file is not opened Read Only, in order to save changes made.

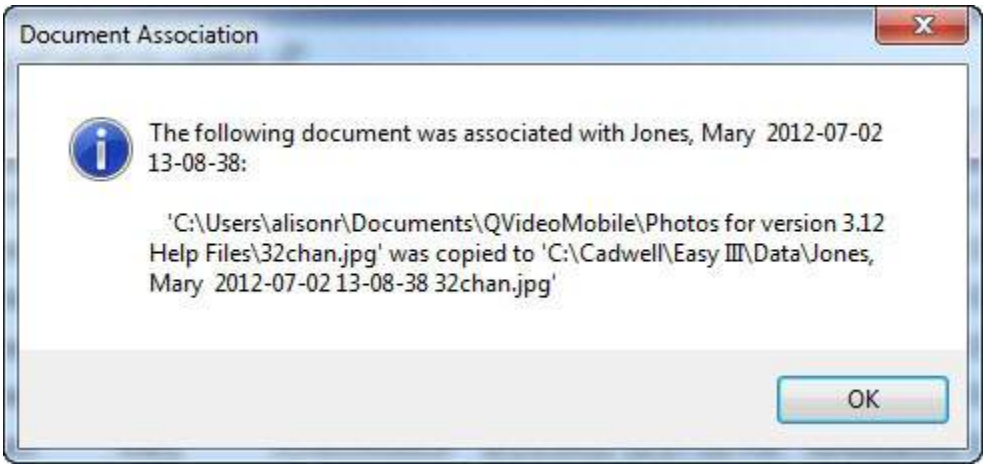


Associating Documents with a Patient Record

To associate an electronic document to a particular patient record, launch the Easy III Review Data dashboard by double clicking on the icon on the desktop. Highlight the patient record that the document needs to be associated with and click on the Associate Document button.



A window will appear, browse out to the location of the electronic document that needs to be associated and select Open. Immediately the software will associate the document and present with the following prompt. The above image was taken after the document was associated to the file. You can see that the associated document shows up in the Reports and Documents list when that patient is highlighted in the list.



The Associate Document option allows the user to associate .pdf files, documents, and other electronic files with an Easy III record. After files have been associated with a patient record, they are managed by the Easy III record management system (archiving, moving records, deleting, etc.).

After a patient name is highlighted in the patient list, all documents, questionnaires, and photographs associated with the patient will be accessible through the Review Data dashboard. The user can double click on any item in the Reports and Documents list to quickly view the file (without opening the waveform data).

Most file types can be associated with a patient record. When a file is selected, it is copied to the default data folder and associated with the selected patient. The original file is kept in its original location. For example, if you are importing document that is located in the My Documents folder, the file will remain in the My Documents folder, however a copy will be placed in the data folder for Easy III.

When the Record Manager or Centralized Data Manager is used, the associated files will be moved, exported, archived, and deleted along with the recorded data.

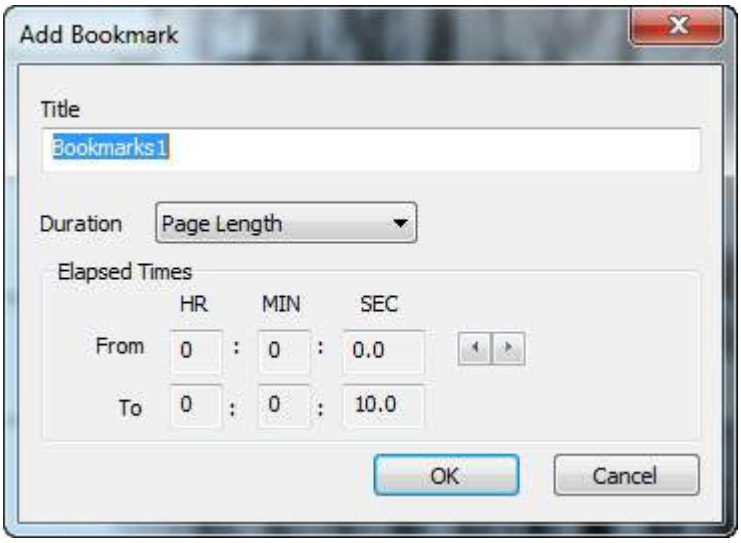
To delete a report associated with a record, locate the patient via the Easy III Review Data dashboard. Click on the Associate Document button, find the report, right click and delete.

Bookmarks

A bookmark marks a segment of the recording, noting its current montage, filter, sensitivity and paper speed settings. Bookmarks allow users to quickly review notable sections of the EEG/PSG record, and are also used for including segments of the EEG/PSG in reports.

Below are the buttons in the top toolbar of the trace window that represent bookmark functionality.

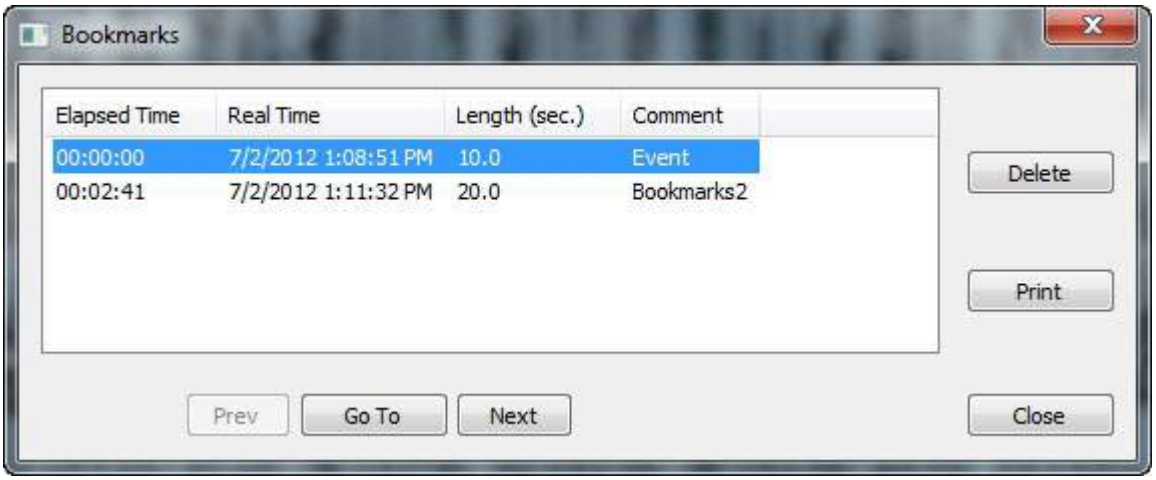
Add a Bookmark (Flag with +)
This option allows for the user to add a bookmark to a particular section of the EEG/PSG data. This button is grayed out in recording, however, if the user pages back to switch to review, the button will become active and the bookmarks can be added. To add a bookmark, reposition to the area of the trace data that needs to be marked and click on the add a bookmark icon in the toolbar. The following window will display.



The bookmark can be renamed to a more specific title if desired. Also the duration pulldown menu offers default settings that the user may select to determine how long the bookmark will mark. The length of the bookmark can also be specified by entering the Elapsed Times to mark from/to the bookmark. Once these settings are complete, select OK. The grid lines will change color and a colored bar will appear on the bottom of the trace window with the Bookmark title. The Event list also has a Bookmarks tab which will display the bookmark as well. The current montage, filter, sensitivity and

paper speed will be saved with the bookmark. More than one bookmark may be created at the same location if they have different settings.

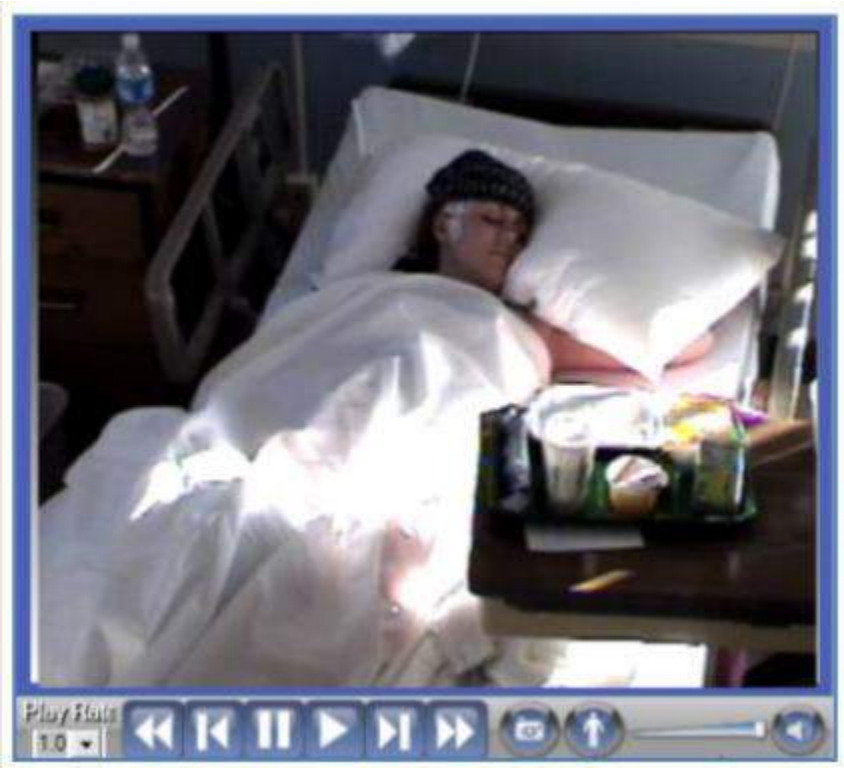
Review a Bookmark (left and right arrow or multiple flags icon in toolbar)
Use the right/left arrows in the toolbar to scroll through bookmarks within a trace window. Click the flagged button to view a list of bookmarks. Below is an image of the display window that pops up when the multiple flags icon is selected from the toolbar.



All of the bookmarks that have been created will be displayed in the window.

Delete: To delete a particular bookmark, highlight the bookmark in the list and select Delete.
Print: To Print a bookmark, highlight the bookmark and select Print.
Go To: To navigate to a particular bookmark, highlight the bookmark and select Go To.
Prev/Next: The Prev and Next buttons can be used to sequentially page through the bookmarks.

Q-Video Playback and Review



Q-Video is a digital video recorder and player designed by the Cadwell development team in Kennewick, Washington. The software has a motion detection algorithm that detects movement from a video signal. Movement can be accentuated with color and displayed in the video picture to assist clinicians in detecting subtle movements. All video is time synchronized with recorded waveform data.

Q-Video Playback Controls used During Record Review

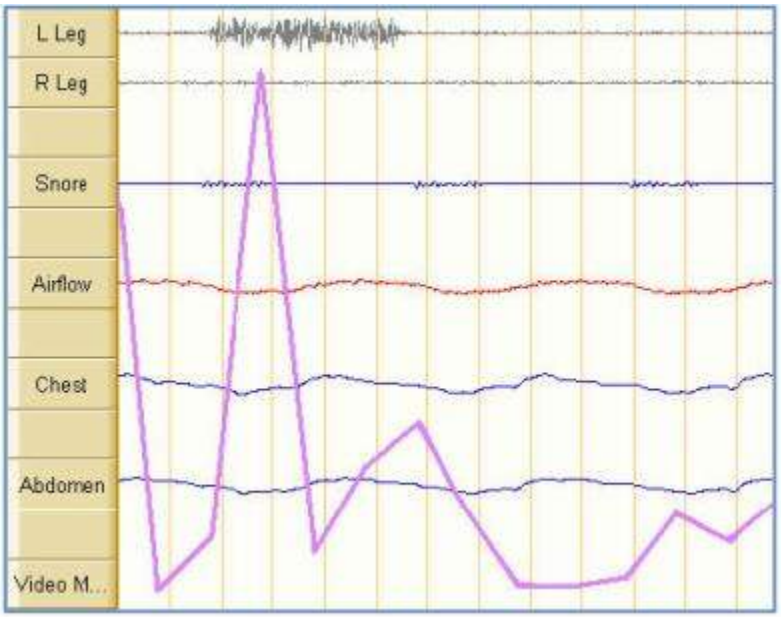
Starting or stopping video playback is easy. Click on the video picture to start/stop video play back!

A. Playback Rate – Adjust the playback rate during review. (1.0 is real time)
B. Double arrows - advances video and trace data several pages.
C. Single arrow with line - advance video frame by frame.
D. Play button - plays back video at selected Playback Rate.
E. Snapshot Button (camera icon) – Click on this option to take a snapshot of the patient. The snapshot is saved with the record. If the video is deleted the snapshot will still be available for future review. Snapshots can be printed in the Snapshot Report.
F. Q-Video motion (person icon) - Select this option to turn on the Q-Video motion highlight feature. Movements will be accentuated with color. Snapshots with motion highlighting can be saved and displayed in the Snapshot report.
G. Volume control slider bar with a ‘mute’ button displayed to the right of the slider bar

Zooming Q-Video
Click and drag the mouse over the Q-Video image data subset that you wish to enlarge. When you release the click, a floating Zoom window will appear. Move and resize the Zoom window as necessary during a procedure or review. Virtual panning is available by holding down the left button on the mouse on the Zoom window. You can pan the video by moving the mouse while holding the left button down. Scrolling the mouse wheel will also zoom the window.

Q-Video motion data can be added to a montage. When Video Motion is selected as a channel, patient movement caught on camera is turned into a trace. As shown to the right, the Left Leg motion is quantified by both the anterior tibialis EMG signal and the Video Motion trace. Both Video Motion and Video Noise may be set up as channels and recorded as traces within the recording montage. This feature allows users to review epochs of data without video, when video movement is detected, the Q-Video player can be viewed for patient observation.

Set Movement or Q-Video Audio as a Trace
Open the trace settings of a blank channel. Open the drop-down Channel Type menu and select Video Motion. Select a trace color to set it apart from the other traces. To set up the Q-Video audio channel as a trace select the Video Noise option from the Channel Type drop down menu (see picture below). You can add either channel to a montage by opening the montage editor and clicking on the Data Type tab. Verify your default data map contains the video channel. Add the channel to you montage from the list of channels displayed in the Data Map list.

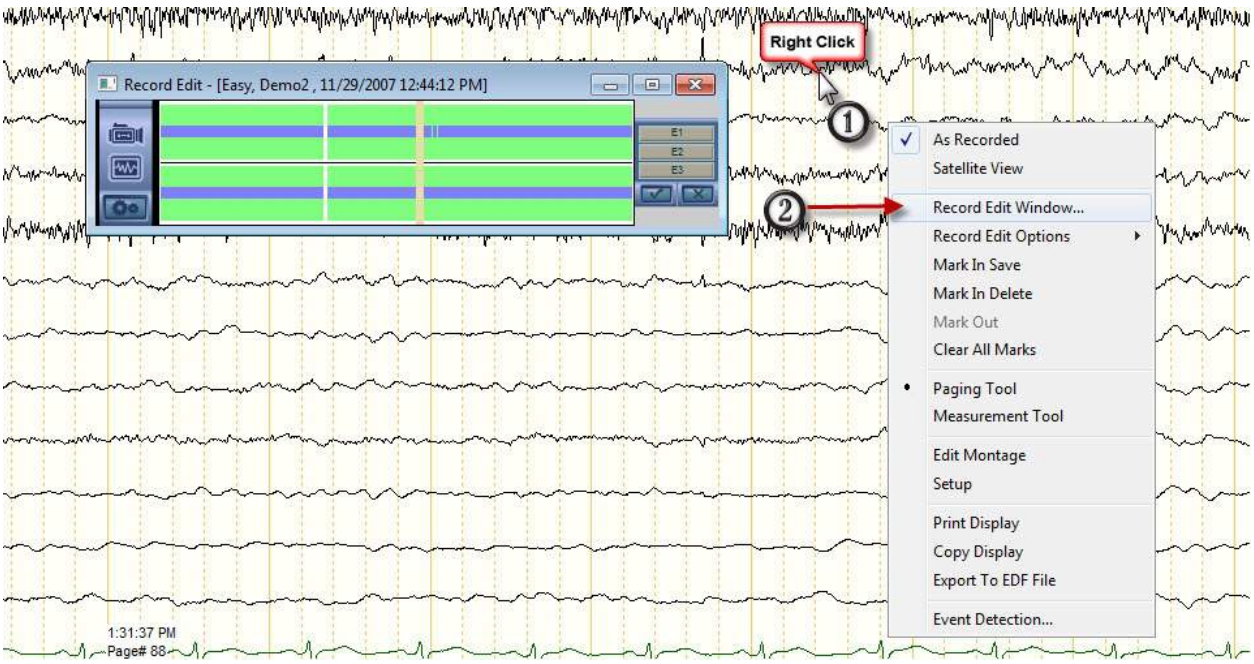


Record Edit Window

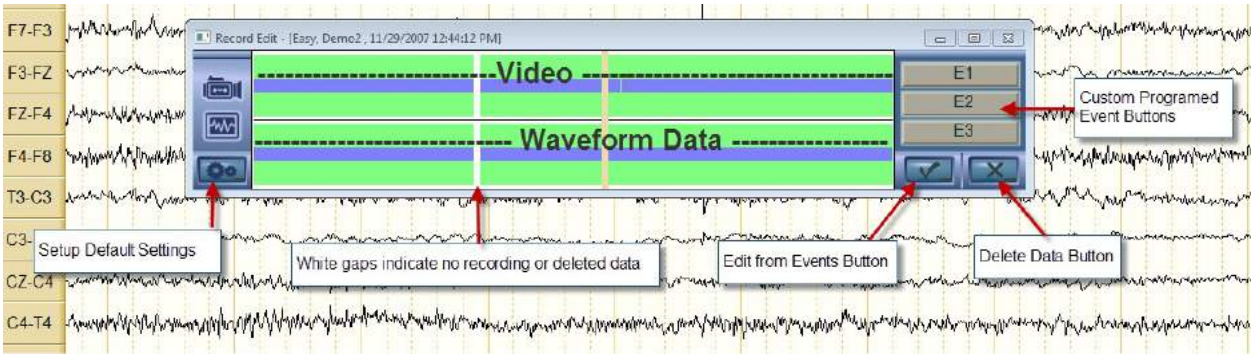
Following is a description of how to use the Record Edit window to edit sections of previously recorded video and waveform data. For details on how to set the Record Edit default settings per protocol, see the Record Edit Setup instructions.

Open a Patient Recording for Editing
Open a record on a local computer system, or another remote system (a server or another Easy III system). Editing efficiency will be improved if the record is on the local computer you are using.

Display the Record Edit Toolbar
1. Right click the mouse cursor in the trace window.
2. Select Record Edit Window. Note the Record Edit Toolbar will now be displayed over the trace data window.



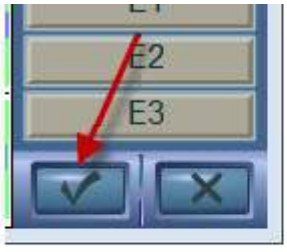
About the Record Edit Toolbar
Note the toolbar descriptions in the illustration below. The record edit toolbar is designed to allow the user to efficiently navigate through the recording. Clicking on the toolbar with the mouse will reposition to a different location in the record.

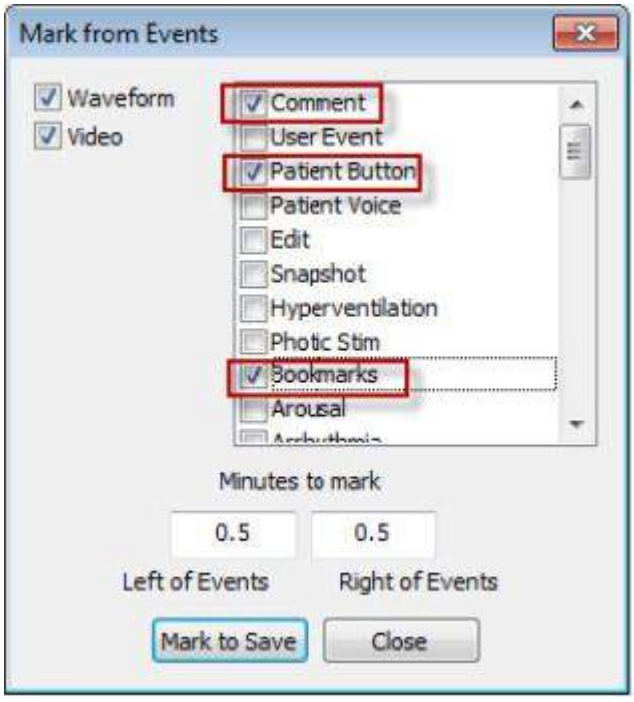


Record Edit Toolbar Options (note illustration in previous section)

Edit from Events Button

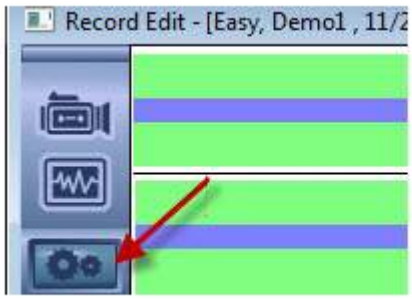
Select this option to automatically mark segments for saving from events. Note the Mark from Events illustration displayed below. The Waveform and Video options are selected for saving. The Comment, Patient Event Button, and Bookmarks events are selected in the illustration. The Minutes to Mark option is set for 0.5 minutes (30 seconds) before and after the event. When the Mark to Save button is selected, each of the events selected from the list above will be marked for saving (30 seconds of waveform and video data before and after the events will also be saved). Examine the Record Edit Toolbar. It will be instantaneously updated after clicking on the Mark to Save button. The Mark from Events window will remain open. If needed, additional check marks can be added to additional event types and the Mark to Save button can be selected again. Click on the Close button when you have completed editing by events.

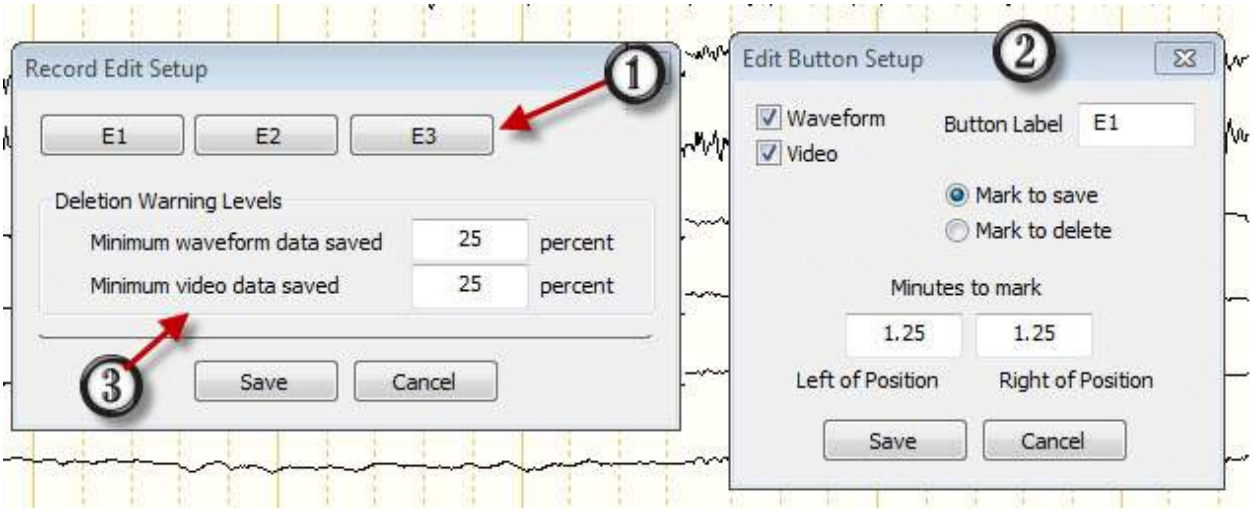




Custom Programmed Event Buttons (E1, E2, E3)
These buttons can be preprogrammed with customized editing settings. For example E1 could be used to mark 5 minutes of the record for saving. Each button can be configured with unique editing settings.

Default Settings Button
Click on the Setup button in the Record Edit Toolbar (Note illustration below).
1. Click on the E1, E2, or E3 button in the Record Edit Setup Window.
2. Enter a custom name for the Button Label. Select the Waveform or Video for editing. Select a default editing setting to either Mark for Deleting or Mark for Saving. Enter the amount of time (minutes) would like to have saved before and after the time associated with the even button. Click on Save to use the Custom Event button.





3. Click on the Deletion Warning Level settings to modify the minimum waveform or video saved. When you click on the Delete button, the Easy software will warn you if you have less than the percentage setting marked for saving.

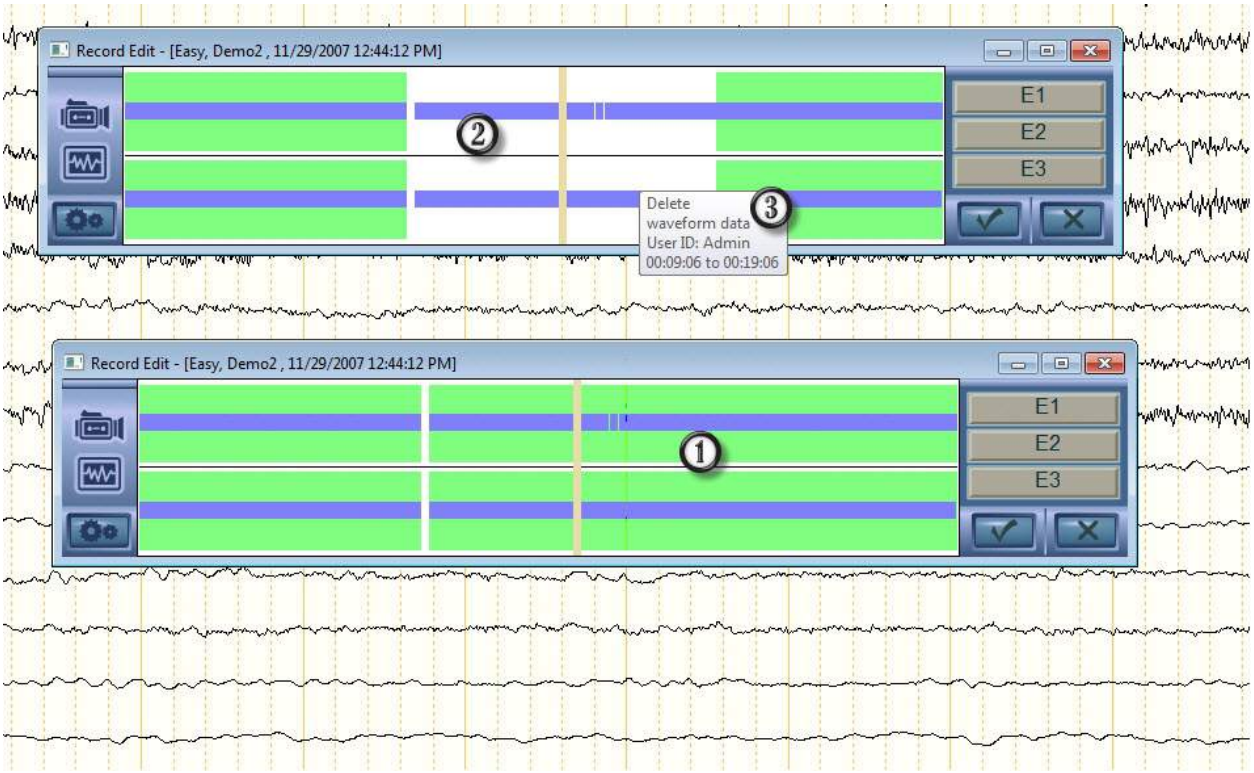
Important Note
Any changes made to the Record Edit Setup window will not be saved after closing the record. Settings will only be retained for the current record open for review. To

permanently save settings in the Record Edit Setup window make the changes to the Recording Protocol editor.

Using the Custom Event Buttons

To begin using the Custom Event button reposition to a location in the record by left clicking in the toolbar. See illustration below.

1. Note the Record Edit toolbar. This is what the toolbar looks like before using the custom event button.
2. This is what the toolbar looks like after clicking on one of the custom event buttons.
3. Note the popup window that appears when you place the mouse cursor over an area that has been marked for deletion. The background has been changed to white. Note the blue bars displayed in the white area with the number 2. The blue bars indicate the segment has been marked for deletion; however it has not been deleted yet.

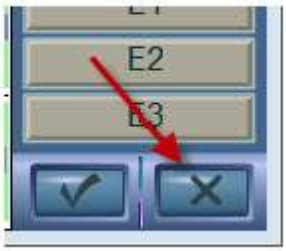


Using the Mouse Cursor with the Record Edit Toolbar

1. Place the mouse cursor over the Record Edit Toolbar.
2. Click and drag the mouse cursor over an area you would like to mark.
3. Note the white box in on the Waveform toolbar. This indicates the waveform data has been marked for deletion. The blue bar displayed across the white section indicates that the data has been marked for deletion, but has not been deleted yet.

Preparing to Delete Data

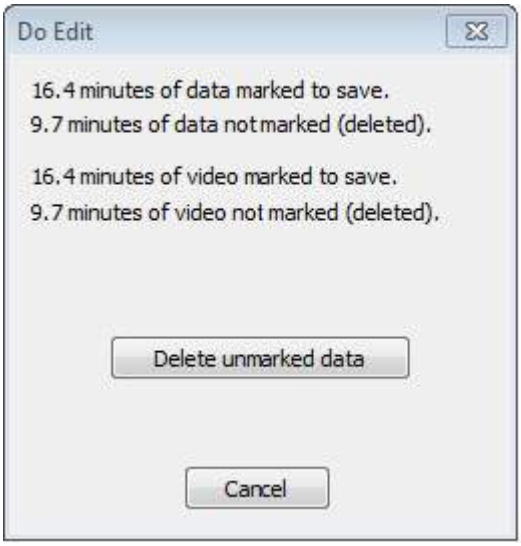
After all segments have been marked, click on the Delete "X" button in the lower right hand corner of the Record Edit window.



Deleting Data

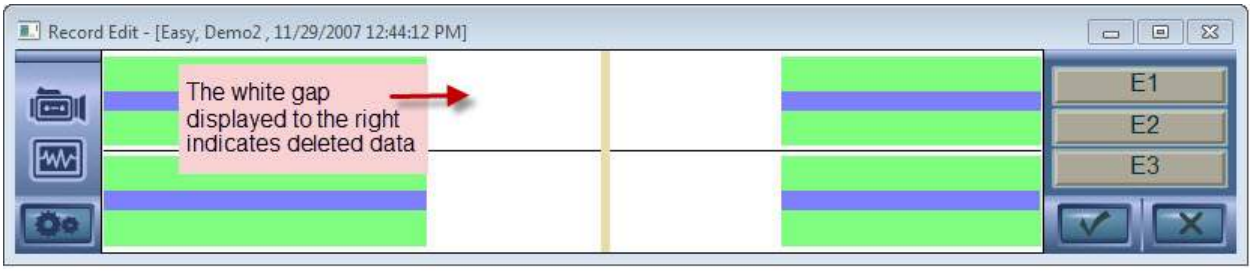
Note the illustration displayed below. The Edit window will display the total amount of data that will be permanently deleted from the record. When you are ready to delete segments of data, click on the Delete Unmarked Data button. All segments marked for

deletion will be deleted from the record. The deletion process may take several minutes depending on the amount of data you have marked. After all editing is complete; the Record Edit toolbar will be updated.

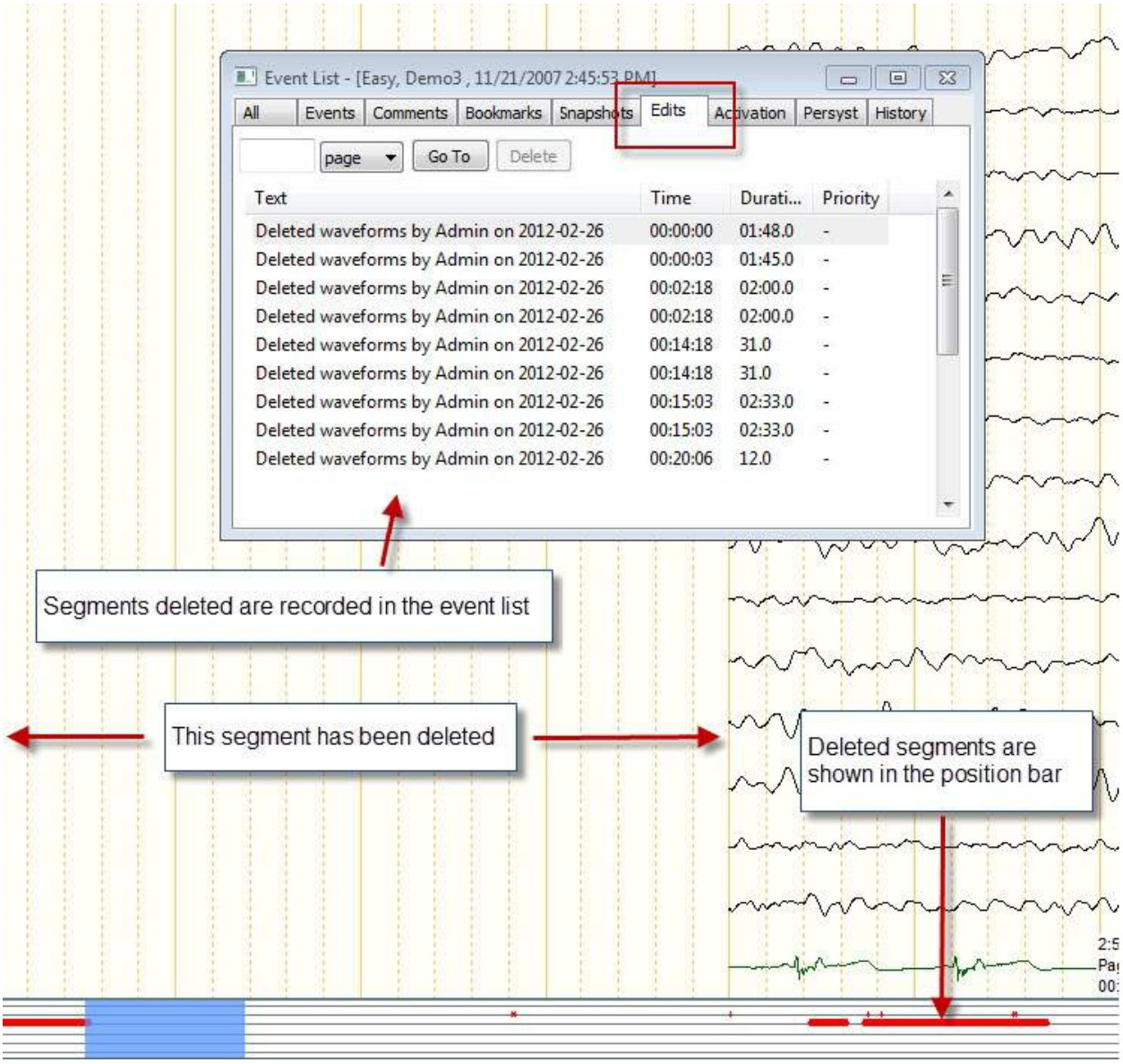


Reviewing Edited Data

After data has been deleted, the overall size of the files associated with the record will be smaller. Segments of the recording that have been deleted will be displayed as white gaps (as displayed in the Record Edit toolbar below).



Note the illustration below summarizing the appearance of the record, position bar, and event list after a recording has been edited. When using the paging tools to page through an edited record, the Easy software will automatically skip over segments of the record that have been deleted.


Event List - [Easy, Demo3 , 11/21/2007 2:45:53 PM]
All
Events
Comments
Bookmarks
Snapshots
Edits
Activation
Persyst
History
page
Go To
Delete
Text
Time
Durati...
Priority
Deleted waveforms by Admin on 2012-02-26 00:00:00 01:48.0 -
Deleted waveforms by Admin on 2012-02-26 00:00:03 01:45.0 -
Deleted waveforms by Admin on 2012-02-26 00:02:18 02:00.0 -
Deleted waveforms by Admin on 2012-02-26 00:02:18 02:00.0 -
Deleted waveforms by Admin on 2012-02-26 00:14:18 31.0 -
Deleted waveforms by Admin on 2012-02-26 00:14:18 31.0 -
Deleted waveforms by Admin on 2012-02-26 00:15:03 02:33.0 -
Deleted waveforms by Admin on 2012-02-26 00:15:03 02:33.0 -
Deleted waveforms by Admin on 2012-02-26 00:20:06 12.0 -
Segments deleted are recorded in the event list
This segment has been deleted
Deleted segments are shown in the position bar

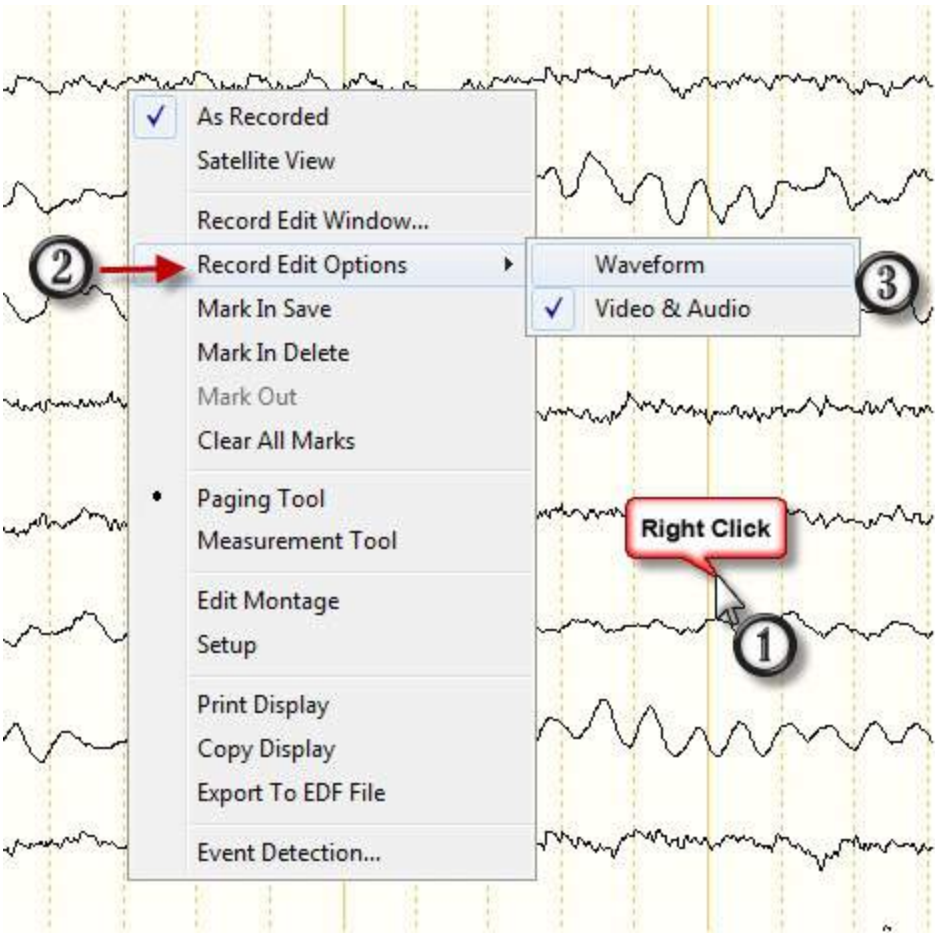
Mark In\ Mark Out Record Editing

Editing Video and Waveform Data – Mark In, Mark Out Method

Overview
The below instructions show how to edit sections of previously recorded video and waveform data.

Open a Record for Review
Open a record on a local computer system, or a remote system (a server or another Easy III system). Editing efficiency will be improved if the record is on the local computer you are using.

Setting the Editing Defaults
1. Right click the mouse cursor in the trace window.
2. Select Record Edit Options.
3. Place a check mark next to Video & Audio. See sample illustration displayed below. Placing a check mark for this setting will allow the user to place editing marks in the record identifying sections for editing. Note: Only video segments will be marked for saving. Waveform data will not be marked for deletion or Saving (dependant upon whether Mark In Save or Mark In Delete option is used). If you would like to also mark sections of waveform data and video for saving place a check mark next to Waveform.



Marking Segments for Saving

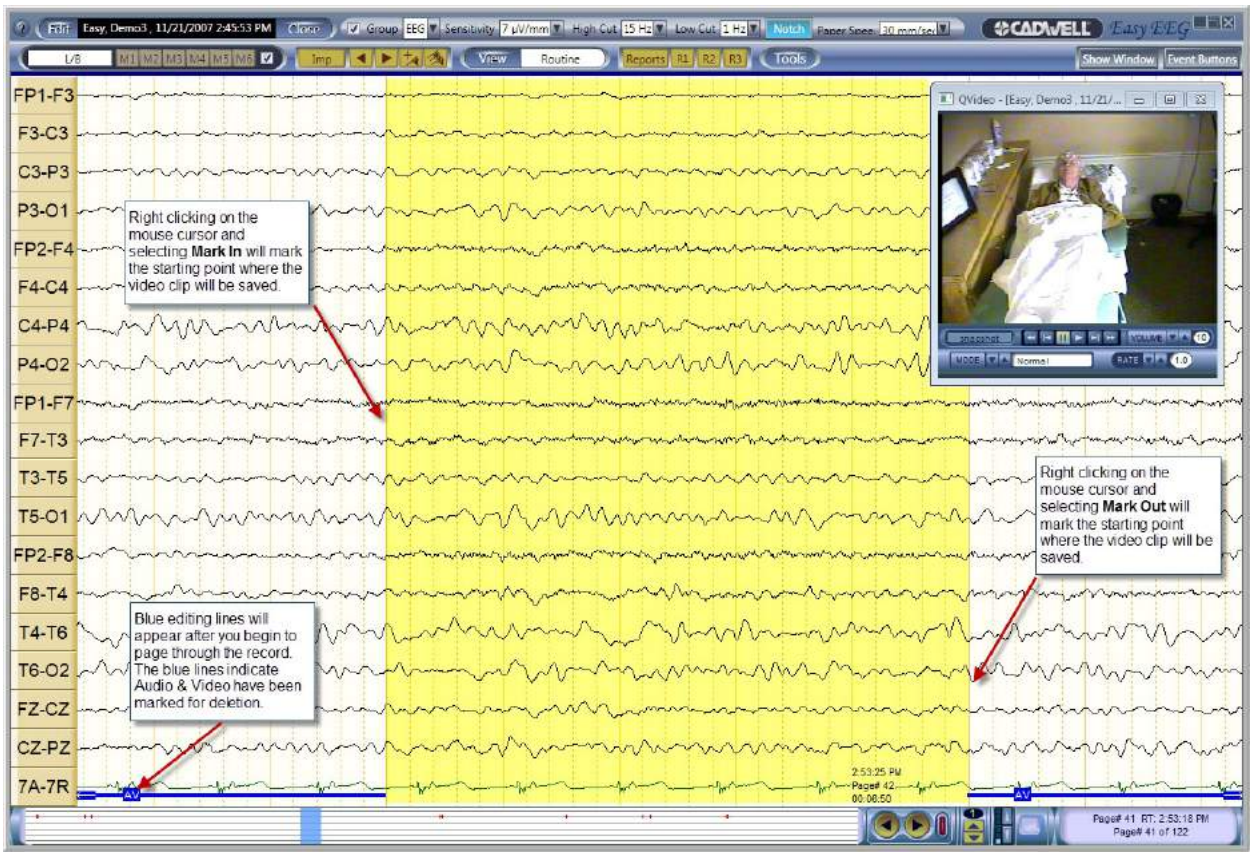
Page through the record to find a segment you would like to mark for saving.

1. When you have located a segment for editing, right click the mouse cursor in the trace window.
2. Select Mark in Save. This action will place a mark in the recording at the exact location in the record where you right clicked the mouse cursor (note the illustration below showing this step). Page through the record until you have repositioned to another page where you would like to mark the end of the video clip. Right click the mouse cursor in the trace window, select Mark Out. This will place a mark in the exact location where you right clicked the mouse cursor to mark the end of the video clip.

Marking additional segments for saving

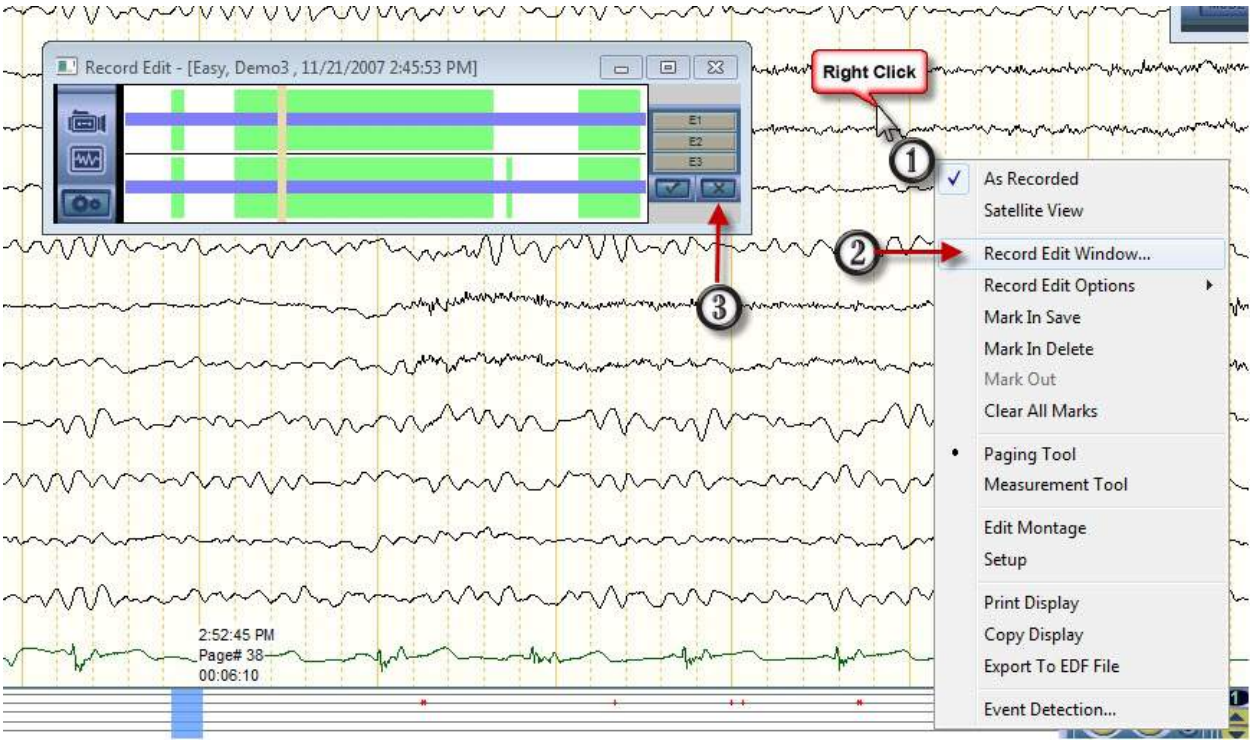
Repeat the editing steps from the previous section to mark additional segments of the recording for saving. Blue editing lines will appear at the bottom of the trace data window after you reposition to a different location in the recording. The blue lines with the AV text indicate Audio & Video data have been marked for deletion.

Note the illustration below showing the editing marks. The highlighted area marked for saving in the waveform data has been added to these instructions for display purposes. If you have set the editing settings to include waveform data for deletion, a W will be displayed adjacent to the AV in the blue line at the bottom of the trace data window.



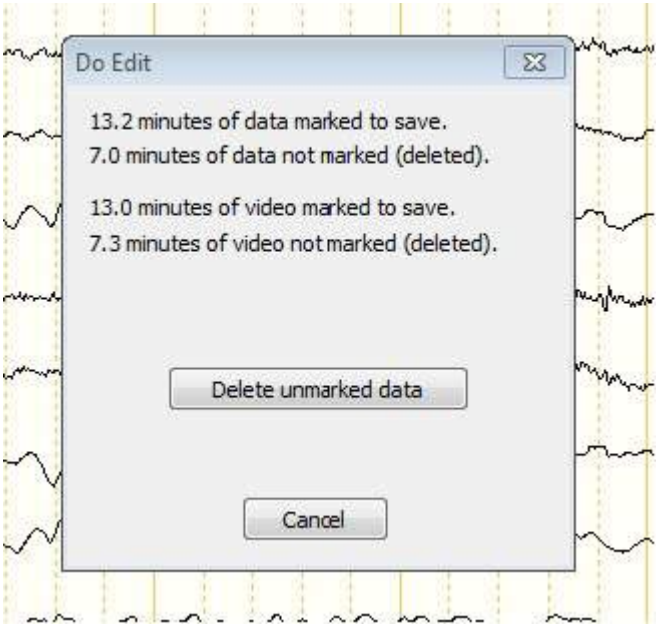
Preparing to Delete Data

1. After all segments have been marked, right click in the trace window.
2. Select Record Edit Window.
3. Click on the Delete button ("X") in the lower right hand corner of the Record Edit window.



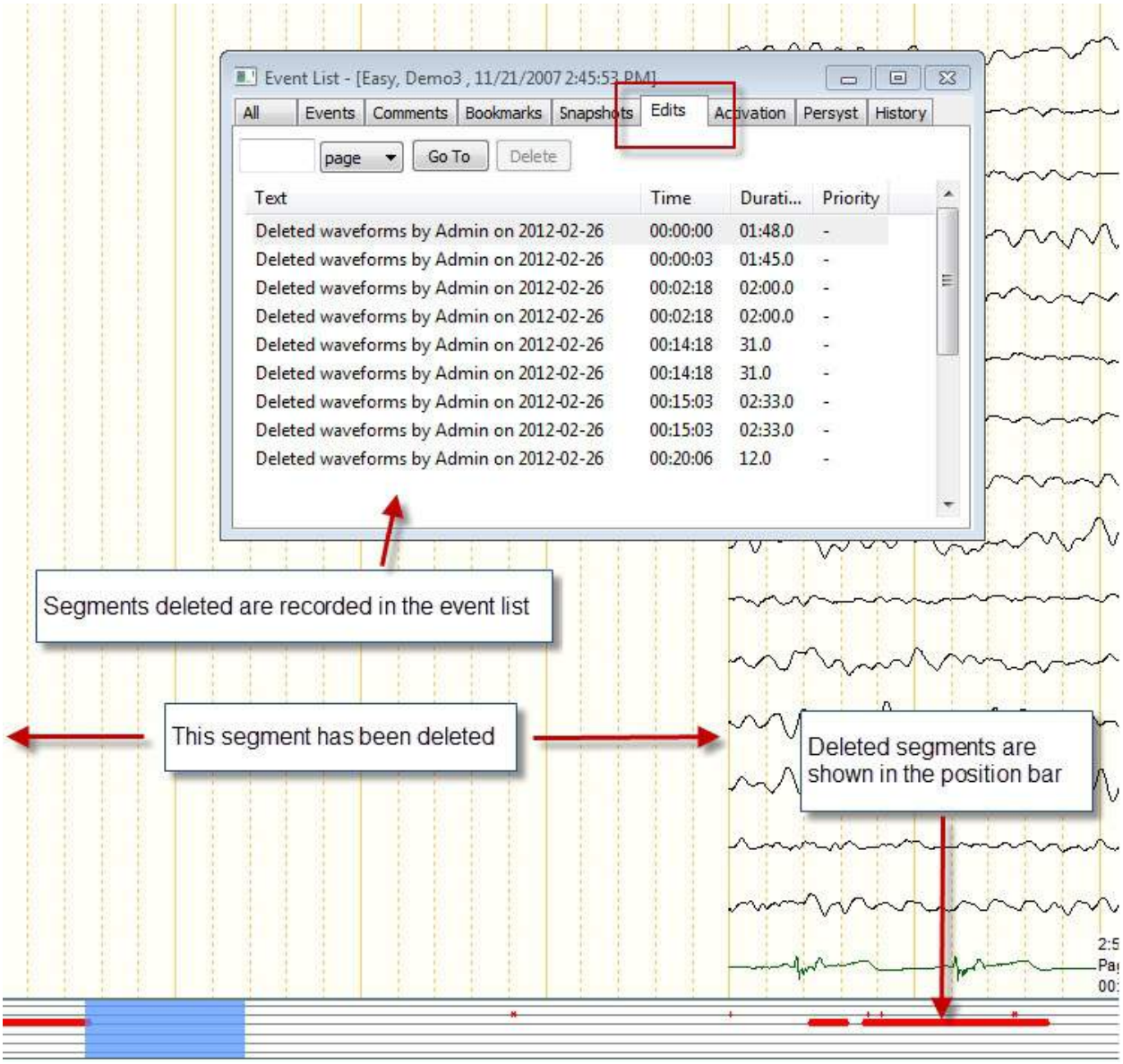
Deleting Data

Note the illustration displayed below. The Do Edit window will display the total amount of data that will be permanently deleted from the record. When you are ready to delete the data, click on the Delete Unmarked Data button. All segments marked for deletion will be deleted from the record.



Reviewing Edited Data

After data has been deleted, the overall size of the files associated with the record will be smaller. Note the illustration below summarizing the appearance of the record, position bar, and event list after a recording has been edited. When using the paging tools to review an edited record, the Easy software will automatically skip over segments of the record that have been deleted.



Q-Video Editing

Q-Video Record Edit Settings

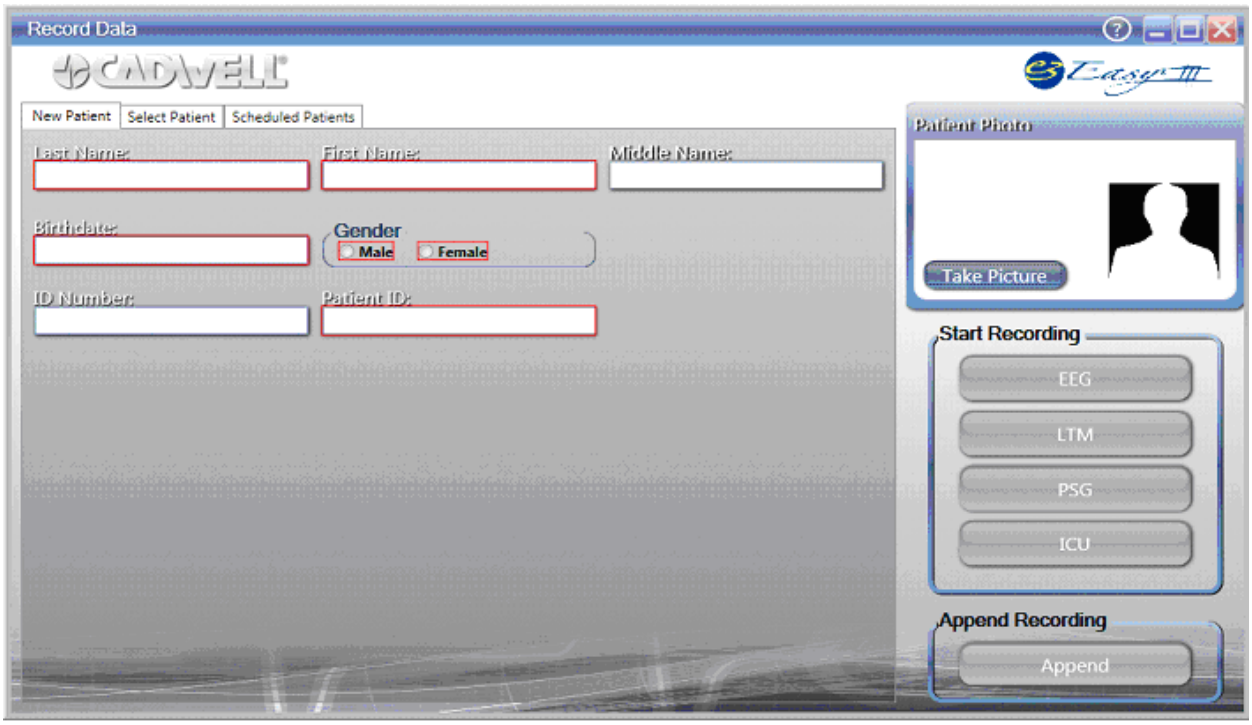
1. To add the Record Edit window to the workspace of a given protocol, see the Record Edit section for details.
2. For instructions on how to utilize the Record Edit window to perform the edits, see Record Edit Window for details.
3. For instructions on how to utilize the Mark In\ Mark Out method for editing, see Mark In\Mark Out Editing for details.

*NOTE: When reviewing the Record Edit Window details, keep in mind that the programmable E1-E3 buttons for Record editing can be configured to keep only "x" amount of video, to allow for a quick mark to delete out a good portion of the video.

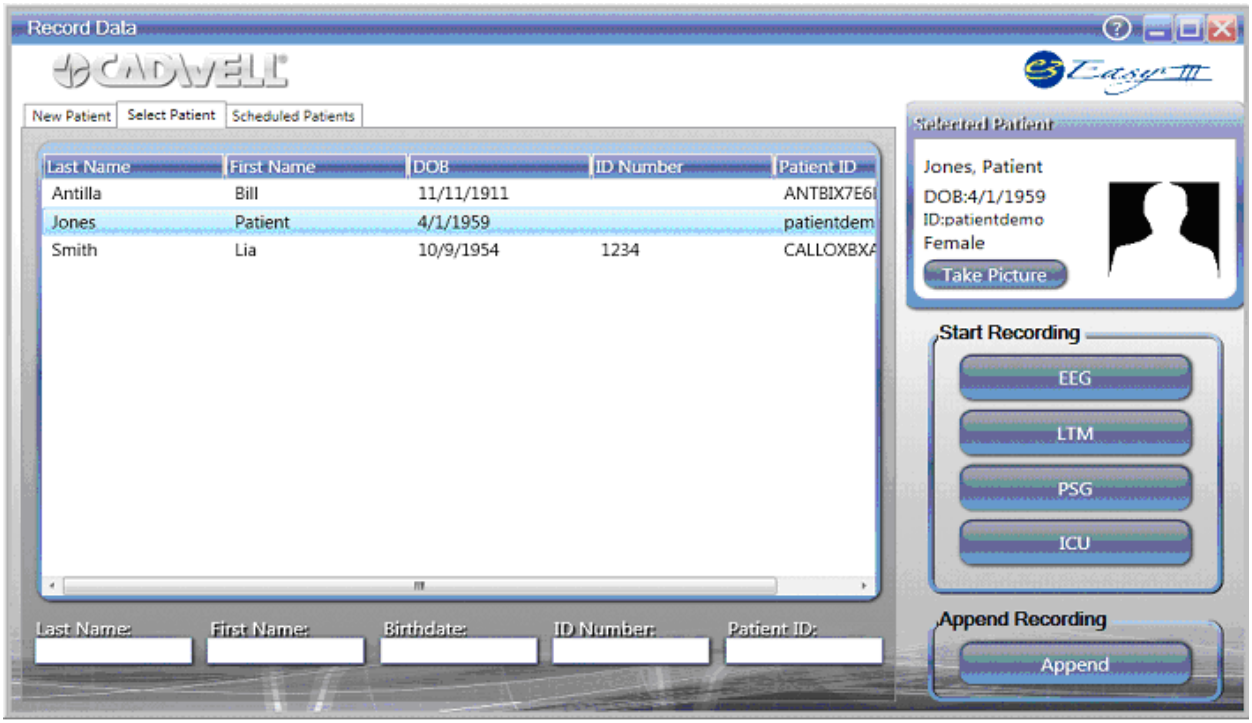
Starting an Easy III Recording

1. Prepare your patient according to laboratory protocol.
2. Verify electrodes and sensors are plugged into the correct connectors.
3. Verify the amplifier is connected and ready for use.
4. Start a record by selecting the Easy III Record Data shortcut on the desktop.

Entering Patient Information into the New Patient Tab
Select this tab to enter new patient information. The patient data fields with the red rectangle box are required fields. Complete each field.
Take Picture – If you have a camera attached to your Easy III system, you can take a picture of the patient.
Start Recording – After you have entered the required patient information, you can click on the recording modality (EEG, LTM, PSG, or ICU) to begin recording.



Importing Patient Data from the Select Patient Tab
Select this tab to select the name of a patient that has had a previous Easy III recording.
Take Picture – If you have a camera attached to your Easy III system, you can take a picture of the patient. Note: If the picture of the patient is an older photo, you can take a new picture to update the patients photograph.
Start Recording – After you have entered the required patient information, you can click on the recording modality (EEG, LTM, PSG, or ICU) to begin recording.



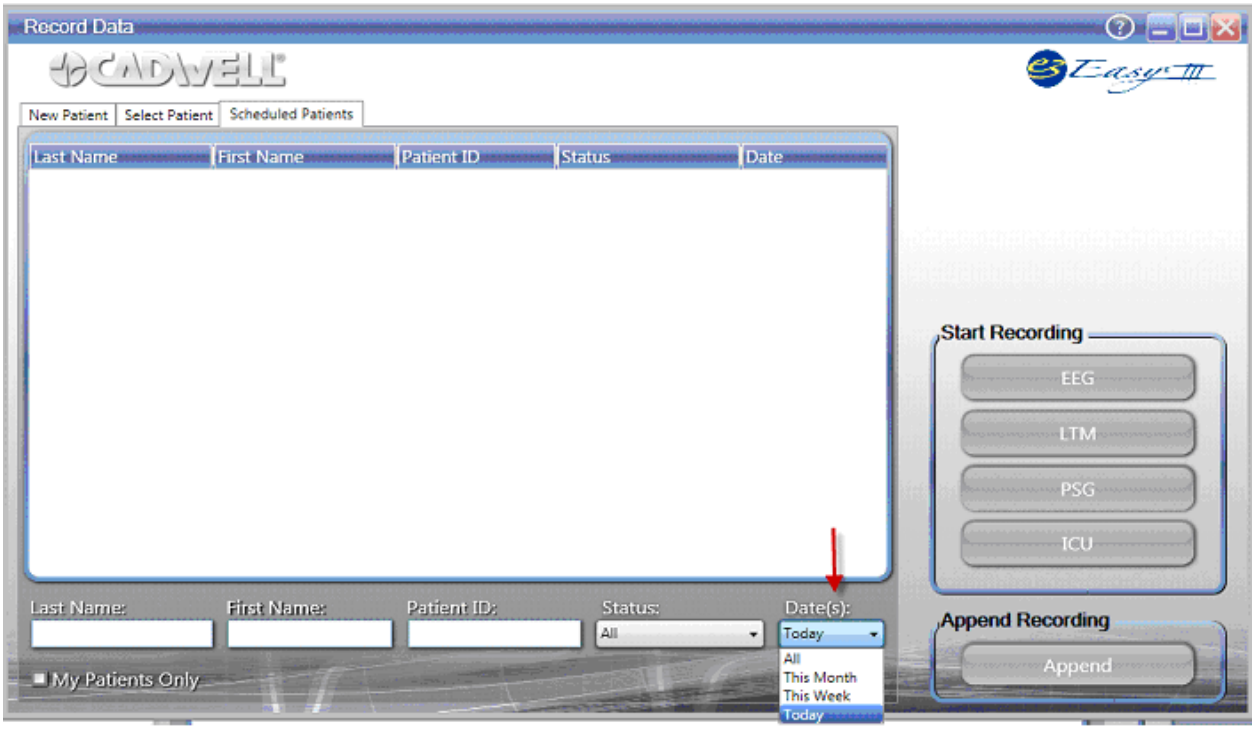
Selecting a Patient from the Scheduled Patients Tab

Select this tab to select the name of a patient that is scheduled to have a recording at your facility. The list of patients displayed on this tab are comprised of patients added to the Cadwell Scheduler or received from the Cadwell HL7 Link application.

Note the list of scheduled patients can be sorted by all patients, this month's patients, this week's patients, or today's patients.

Take Picture – If you have a camera attached to your Easy III system, you can take a picture of the patient.

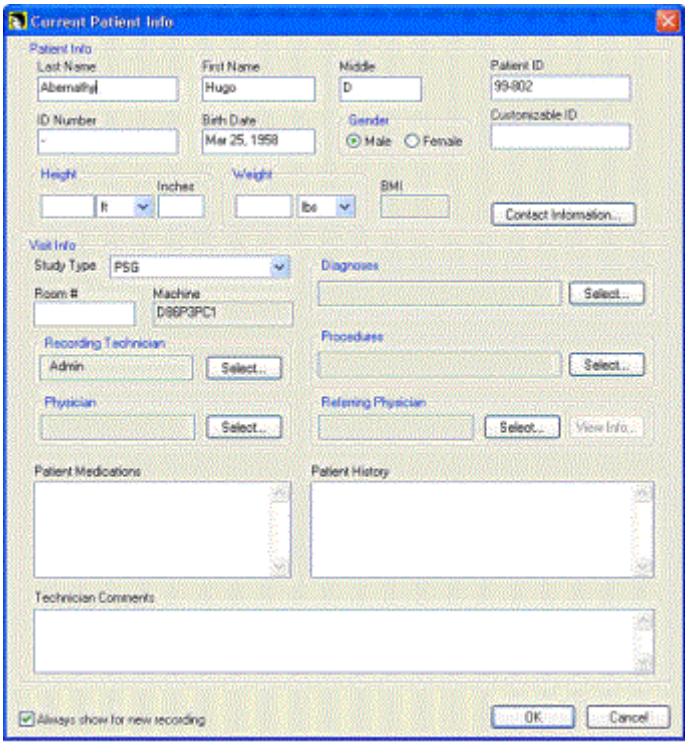
Start Recording – After you have entered the required patient information, you can click on the recording modality (EEG, LTM, PSG, or ICU) to begin recording.



Displaying Patient Information after Starting a Recording

The information displayed in the Current Patient Info dialog below will be displayed after starting a recording. By default, you can configure Easy III to show (or not show) the patient information when starting a recording.

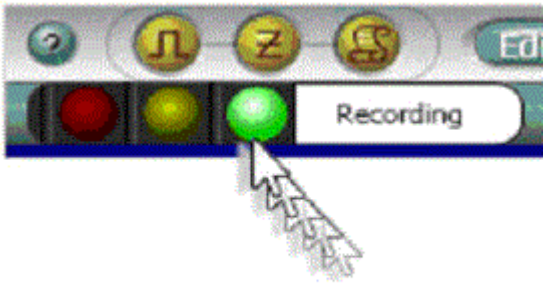
You can edit the information below any time during or after data collection.



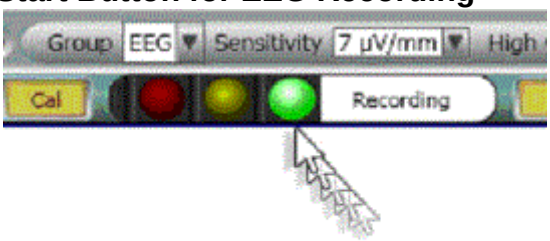
Click on OK to close the patient information dialog.

To start a recording, click on the start button.

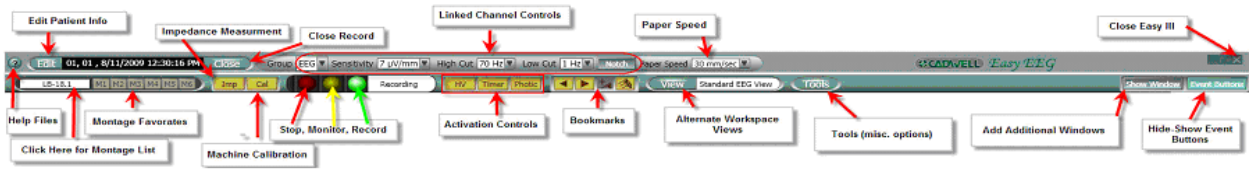
Start Button for PSG Recording



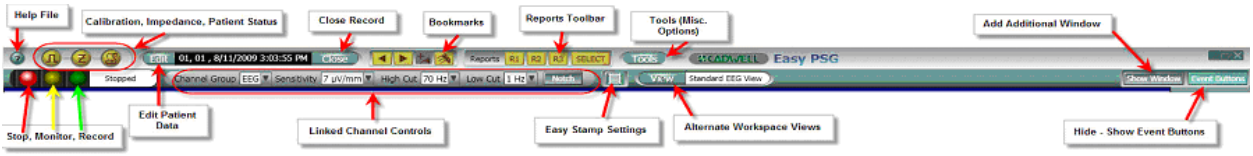
Start Button for EEG Recording



Easy III Toolbar Options
Record EEG



Record PSG



Checking Impedance during Data Collection

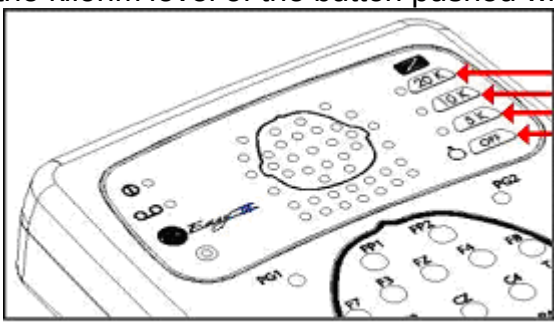
The Easy III software will evaluate all inputs displayed in the impedance dialog during impedance measurement. When the impedance dialog is opened, Easy III will test the EEG inputs, then the reference inputs, ground electrodes, and active reference pairs.

NOTE: It is important that the user wait at least 10 seconds when the impedance menu is opened. This will allow the program to adequately check all inputs.

NOTE: Waveform data is not recorded during impedance measurement. Check impedance and promptly return to data collection after evaluating impedance levels.

Checking Impedance from the Easy III Amplifier

• On the amplifier, press the 20K button while recording to check impedances greater than 20 kilohms. Press the 10K button to check impedances between 5 and 20 kilohms. Press the 5K button to check impedances below 5 kilohms. Each time an impedance button is pressed, all the impedance LEDS on the amplifier that are less than or equal to the kilohm level of the button pushed will light up.



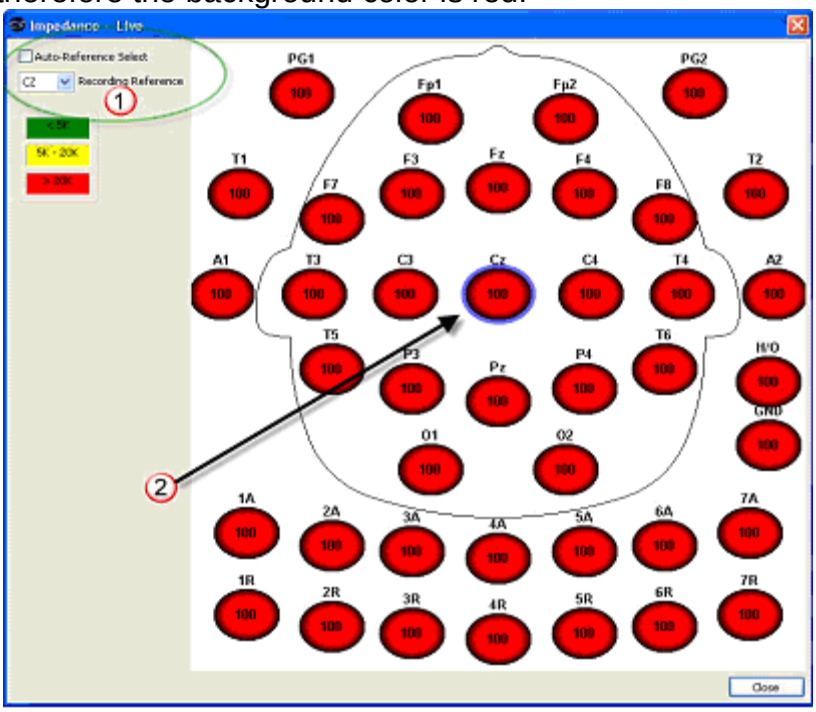
• The Impedance-Live window will open in the Easy III software when the impedance button is pressed during recording.

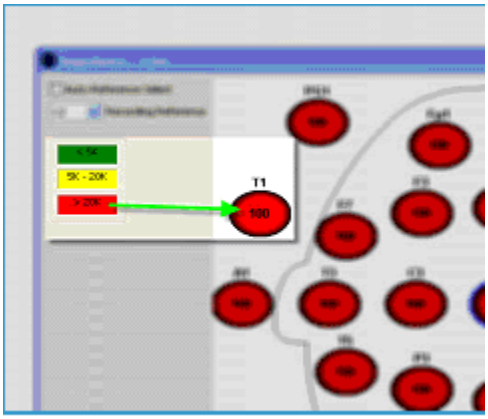
• Press the OFF button on the amplifier to stop impedance measurement. If the OFF button is not pressed, the Easy III software will stop measuring impedance when the maximum impedance measurement duration is obtained. The maximum impedance measurement duration is set in the recording protocol.

Checking Impedance from the Easy III Software

Click the Impedance button from the Easy III EEG/LTM toolbar.

Note the illustration below. Impedance levels that are good will be displayed with green background color in the input. In the sample below, the impedance is greater than 20K, therefore the background color is red.



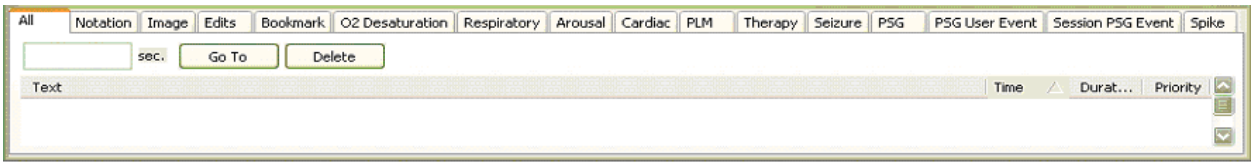


1. Auto-Reference Select - Place a check mark in this box if you would like the Easy software to find the lowest impedance reference electrode for use as a reference electrode. Note: The evaluation and selection of the lowest impedance electrode is only done during impedance measurement. After the reference electrode has been selected and the impedance measurement option is closed, the reference electrode will not be changed unless the impedance measurement option is opened again. The reference electrode can be manually selected by clicking on the drop down Recording

Reference option. If a new recording reference is automatically selected, an event will be added to the event list.
2. Note the reference electrode is marked with a blue oval ring around the input.
Available Reference Inputs: A1, T3, C3, Cz, C4, T4, or A2.

The Event List

The Event List window summarizes all events associated with a recording. Select a view that includes the event list. If the event list is not included in the current view, press the F2 button to display the event list. Click on a tab to select a specific category. Click on a specific event to reposition to the selected event.



Click on an event and click the Delete button to remove it from the Event List.
See Event List Window Setup in Modify Window Settings for setup information.

Recording Data

Required Equipment

To prepare for data collection, verify the following equipment is available:

- Easy III PC
- Easy Amplifier & Cables
- Power/Com Module & Cables if Easy III or Easy II hardware is used
- Photic Stimulator & Cable (if required)
- Setup Supplies: Skin Prep, Electrode Paste, Gauze

Verify System Hardware Setup

See the Setup System Hardware section of this manual for more information.

Place Electrodes and Sensors

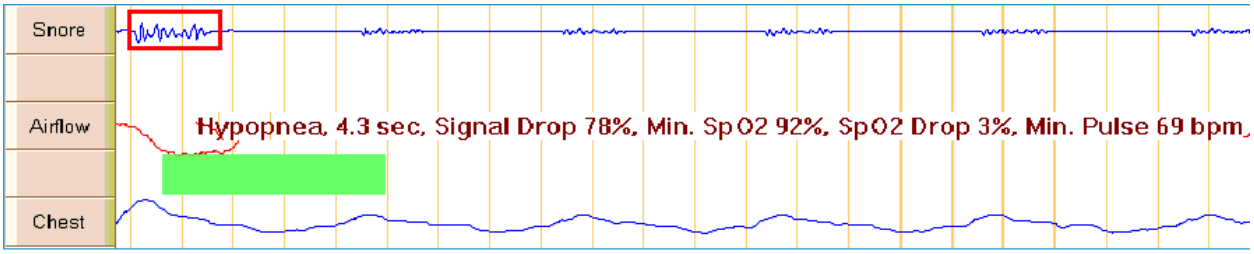
Follow your laboratory protocols for applying electrodes to the patient.

Cadwell recommends adherence to the International 10-20 standards for EEG electrode placement:

1. Attach electrodes to the patient.
2. Verify that the patient will be comfortable and not become entangled in wires.
3. Route the electrode cables to the Remote Input Box.
4. Plug the electrodes into the Remote Input Box or amplifier.
5. Place respiratory, body position, snoring and SpO2 sensors if required. See EasyNet Modules section of this manual for more information.

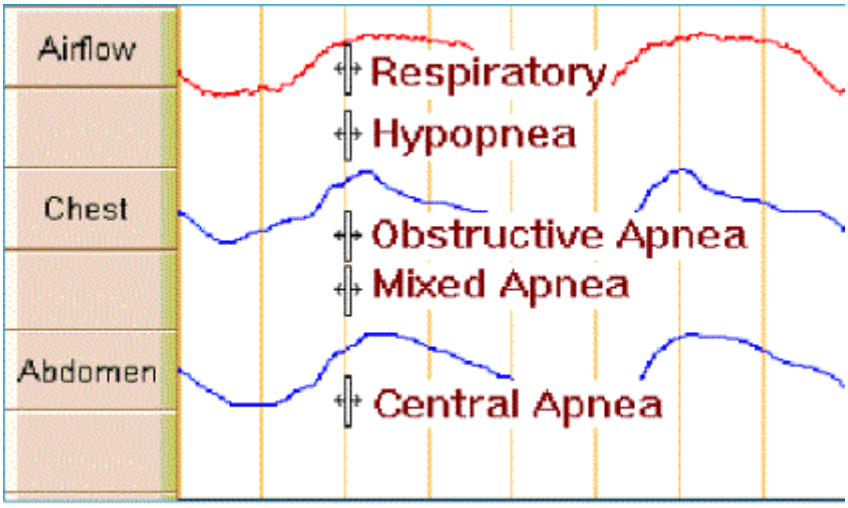
Marking Events for PSG Recording

Marking Events
Hold the mouse cursor over any trace in a PSG record to show the options displayed below.
Respiratory Events
Place the mouse over a respiratory channel, then click and drag across to mark a respiratory event. As shown below, the Easy III software will instantaneously provide the event criteria:
• Duration of the event
• Estimated Percentage Drop in Airflow Signal Amplitude
• Minimum Sp02%
• Percentage Drop in Sp02%
• Minimum Pulse Rate



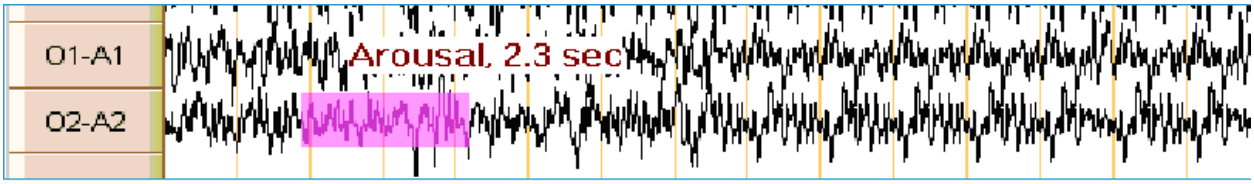
Marking Artifact
Follow the steps above for marking events, but hold down the Ctrl key while marking. Artifact can be scored for EKG, SpO2, BPM, ETCO2 and CPAP leak events. Artifact scoring will be scored with dashed lines and will not be considered in reporting.

Marking Events by Event Type
When you mark a respiratory event on the flow channel, a pop-up window will appear asking you to select a respiratory event type. Moving the mouse below the airflow channel will allow the user to select an event type before marking a respiratory event. This simulated image demonstrates the different events that can be marked on a channel by moving your mouse up or down:

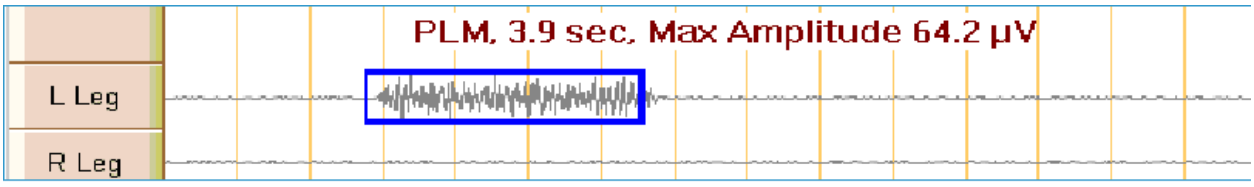


Note: RERA events marking can be associated with any channel type. Edit a PSG montage and add a RERA event any channel.
Note: You can stamp events by placing the mouse over a respiratory channel and clicking on the right mouse button. This will automatically stamp a respiratory event. Right clicking on the event again will extend the duration of the event.

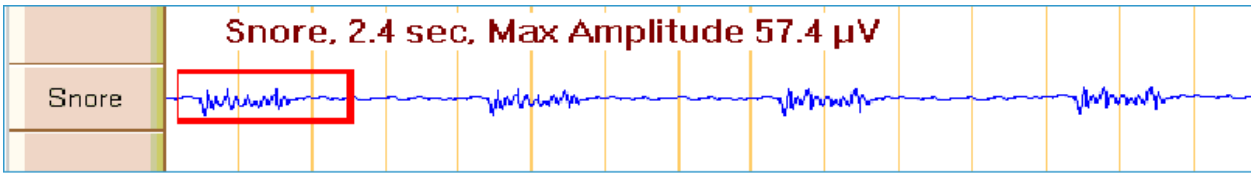
Real-Time Feedback Marking Events
Easy III will display duration and amplitude or range while marking events.
Arousal: Arousals are color coded automatically to match the associated event that caused the arousal.



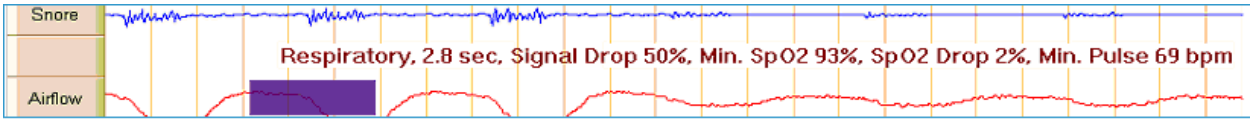
PLM



Snore



Respiratory



EKG

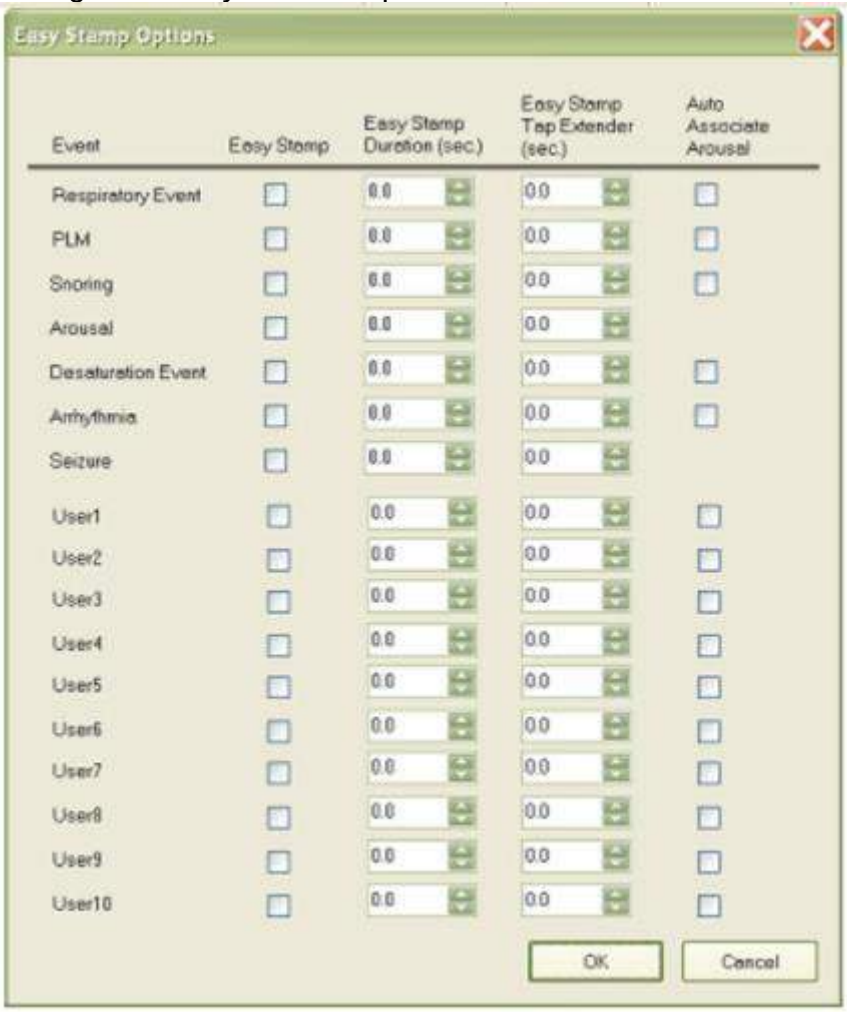
Event Details
Clicking on any previously marked event will display the Edit Channel Event window, which displays event type, event details, and the User's name. The event may be erased by clicking on the Delete button.

Easy Stamp
Easy III allows users to mark any event, at any time, in any window. Quickly stamp a sleep event on a particular channel in a trace window. Place the mouse over a sleep channel and right-click to stamp an event start. To extend the duration of the stamped event, right-click on the event bar again. The duration will increase each time you right-click the event.
Some events will automatically pull up an Edit Channel Event window, in which you can select a more specific Event Type, review the event details, and add a comment. The Event will also appear in the Event List window. Click on the Event to review the trace where it occurred.

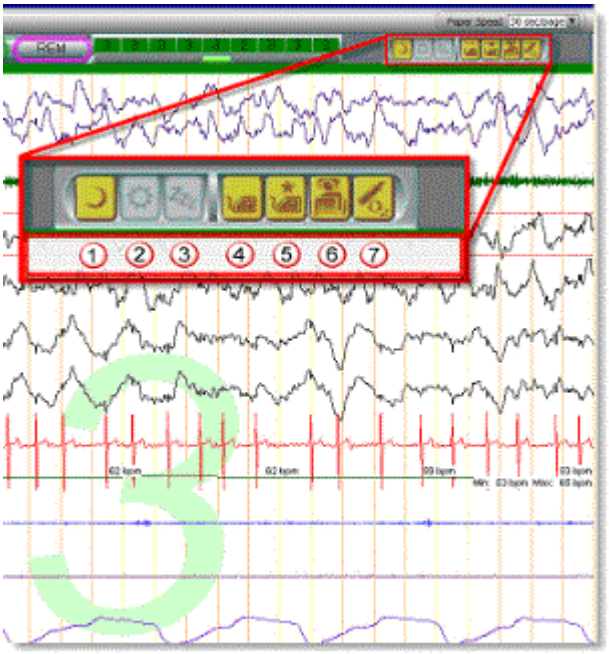
Easy Stamp Options Menu
You can access the Easy Stamp menu by clicking on the Easy Stamp toolbar option displayed to the right. The Easy Stamp Options dialog will be displayed.

• Easy Stamp - Check mark to enable.
• Easy Stamp Duration - Default duration of Easy Stamp event. Use arrows to adjust.
• Easy Stamp Tap Extender - Determines additional duration added to an event when the event bar is right-clicked.
• Auto Associate Arousal - Check mark to automatically associate an EEG arousal with the Easy Stamp Event.

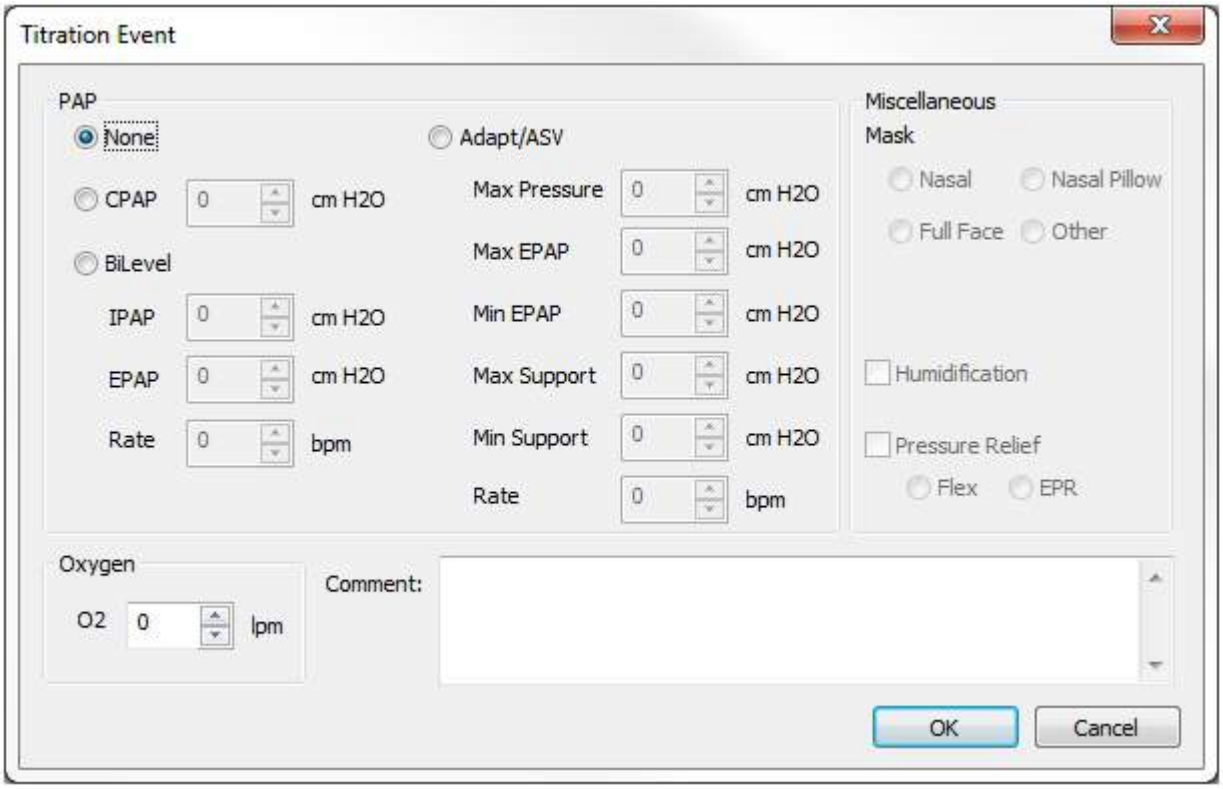
• User Events 1-10 - Configure custom user events assigned to specific channels in a montage in the System Setup/User Defined PSG Events menu.



Adding Lights Out, Lights On, Sleep Onset, CPAP, and O2 Events to a Recording
Click on a button in the PSG events toolbar to add a session event. See Lights, CPAP, O2 for more information.



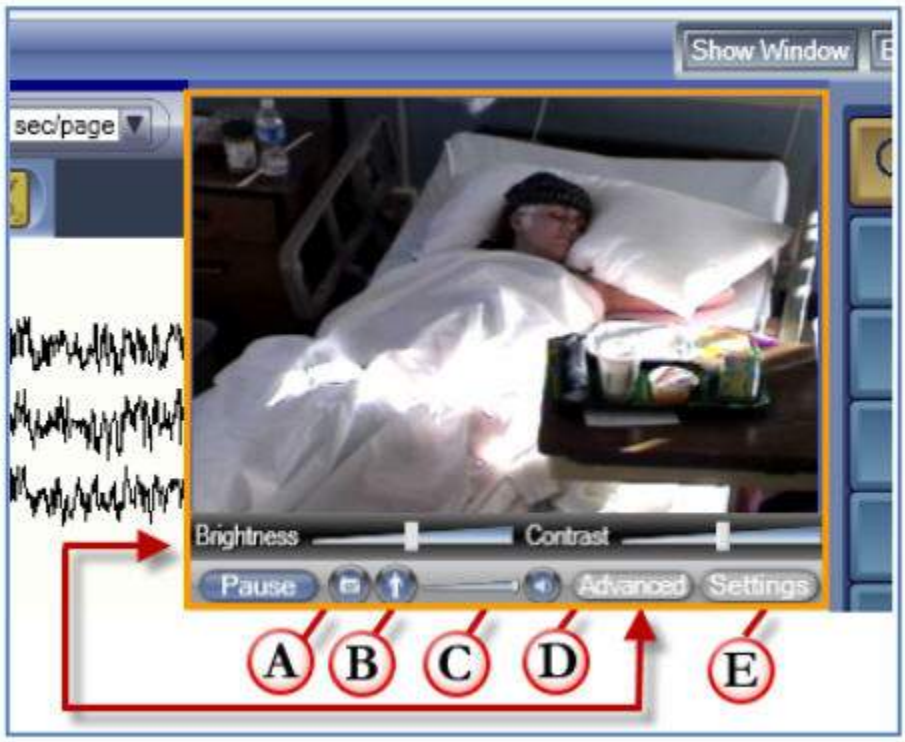
1. Lights Out - Click on this toolbar to enter a Lights Out event. Lights out will be placed at the first second of the present epoch. You can remove the Lights Out event by clicking on the button again, or by finding the event in the Event List and deleting it.
2. Light On - Click on this toolbar to enter Light On. Lights on will be placed at the first second of present epoch. You can remove the Lights On event by clicking on the button again, or by finding the event in the Event List and deleting it.
3. Sleep Onset - Click on this toolbar to mark an epoch as sleep onset. Sleep onset will be placed at the first second of the present epoch. You can remove the Sleep Onset event by clicking on the button again, or by finding the event in the Event List and deleting it.
4. CPAP/BiLevel Pressure - Click on this toolbar to place a CPAP event in the trace window. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. You can remove this event by finding it in the event list and deleting it. See image below for the setting options.



5. Optimal Pressure - Click on this toolbar to place an Optimal Pressure event in the trace window. You can remove this event by finding it in the event list and deleting it.
6. Body Position - Click on this toolbar to enter a Body Position Change. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. If you are using a body position sensor, you can use this option to over-ride or resume using the body position sensor during data collection.
7. Supplemental O2 - Click on this option to enter a supplemental O2 level. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. You can remove this event by finding it in the event list and deleting it.

Q-Video Recording

Q-Video Controls used during Recording



A. Snapshot Button – Click on this option to take a snapshot of the patient. The snapshot is saved with the record. If the video is deleted the snapshot will still be available for future review. Snapshots can be printed in the Snapshot Report.
B. Q-Video motion - Select this option to turn on the Q-Video motion highlight feature. Movements will be accentuated with color. Snapshots with motion highlighting can be saved.
C. Volume control slider bar with a 'mute' button displyed to the right of the slider bar.
D. Advanced Settings allow the user to control brightness and contrast during data collection.
E. The Settings Button allows the user to select video quality settings before a recording is started. After data collection has started, these settings cannot be modified.

Q-Video Playback Controls used During Record Review
Starting or stopping video playback is easy. Click on the video picture to start/stop video play back!
A. Playback Rate – Adjust the playback rate during review. (1.0 is real time)
B. Double arrows-advance video at current paper speed.
C. Single arrow with line - advance video frame by frame.
D. Play button-plays back video at selected Playback Rate.

E. Snapshot Button (camera icon)– Click on this option to take a snapshot of the patient. The snapshot is saved with the record. If the video is deleted the snapshot will still be available for future review. Snapshots can be printed in the Snapshot Report.
F. Q-Video motion (person icon)- Select this option to turn on the Q-Video motion highlight feature. Movements will be accentuated with color. Snapshots with motion highlighting can be saved and displayed in the Snapshot report.
G. Volume control slider bar with a 'mute' button displayed to the right of the slider bar

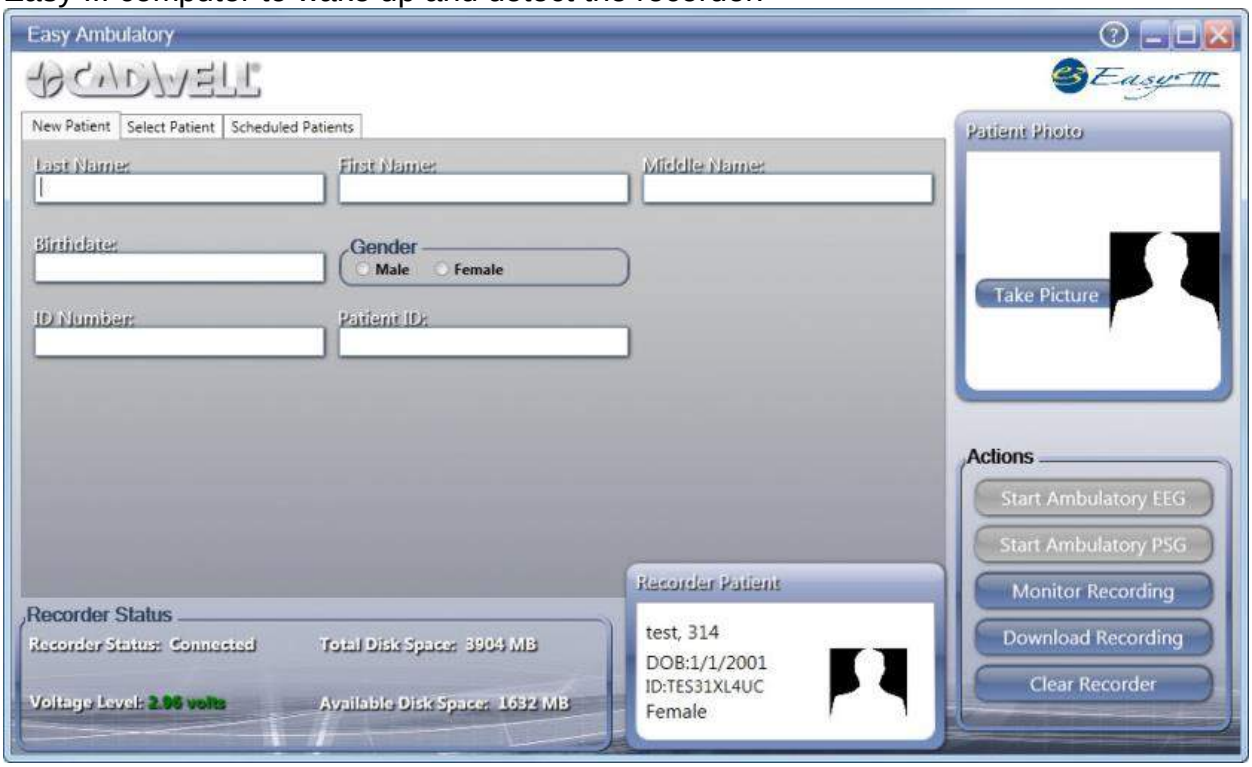
Zooming Q-Video

Click and drag the mouse over the Q-Video image data subset that you wish to enlarge. When you release the click, a floating Zoom window will appear. Move and resize the Zoom window as necessary during a procedure or review. Virtual panning is available by holding down the left button on the mouse on the Zoom window. You can pan the video by moving the mouse while holding the left button down. Scrolling the mouse wheel will also zoom the window.

Starting an Ambulatory EEG/PSG Recording

Connect the Recorder to the Easy III Computer
Locate the ambulatory to computer cable. The cable has a multi pin connector on one end and a RJ45 connector on the other. Plug the ambulatory recorder into the Easy III computer. Note: The Easy Ambulatory Amplifier should be connected to the recorder.

Open the Ambulatory Software
Select the Easy III Ambulatory shortcut from the desktop of the Easy III system. Note the recorder status displayed in the lower left hand corner of the Easy Ambulatory dashboard. Pay attention to the color of the font reporting Battery Level. If the color is green, this indicates the batteries are fresh. If the font is yellow, this indicates that the batteries are not optimal and most likely will need to be changed soon. Red font color indicates batteries that are depleted and fresh batteries should be placed into the device immediately. The ambulatory recorder should be 'connected'. If the recorder is not identified, press and hold the event button on the ambulatory recorder for at least 5 seconds. Pressing the event button will send a signal to the ethernet connection on the Easy III computer to wake up and detect the recorder.

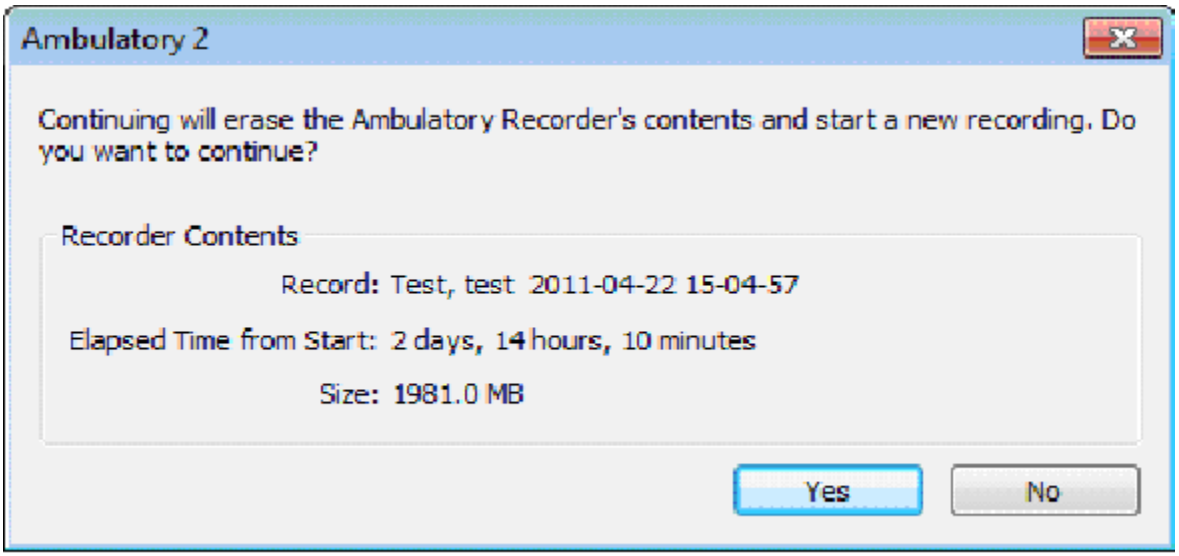


Select Patient Information
You can click on the New Patient, Select Patient, or Scheduled Patients tab. Enter patient information in the New Patient tab or select a patient from the Select Patient or Scheduled Patients tab by clicking on the patient name.

Starting a Recording

Click on the Start Ambulatory EEG or PSG button displayed in the lower right hand corner of the Easy Ambulatory dashboard. A prompt will appear if the battery levels are too low. Place fresh batteries into the unit and click on Retry to start the recording.

If a recording resides on the recorder, you will be prompted with the name of the patient stored on the recorder. You will be asked if you would like to delete the recording. If you have already downloaded the recording, click on the Yes button to erase the recording stored in the recorder.



You will be prompted with the patient information dialog. Click on OK to clear the dialog.

The Easy Ambulatory recording window (displayed below) will be displayed.

1. Click on the green Record button to start the ambulatory recording. Check impedance values and verify the recording quality is acceptable. See images below.

For EEG, see Ambulatory EEG recording and review toolbars section for a detailed description:

For PSG, see Ambulatory PSG recording and review toolbars section for a detailed description:

2. To disconnect the recorder from the computer (without stopping the present recording), click on the **Disconnect Recorder** button.

3. The below prompt will appear, select Yes.

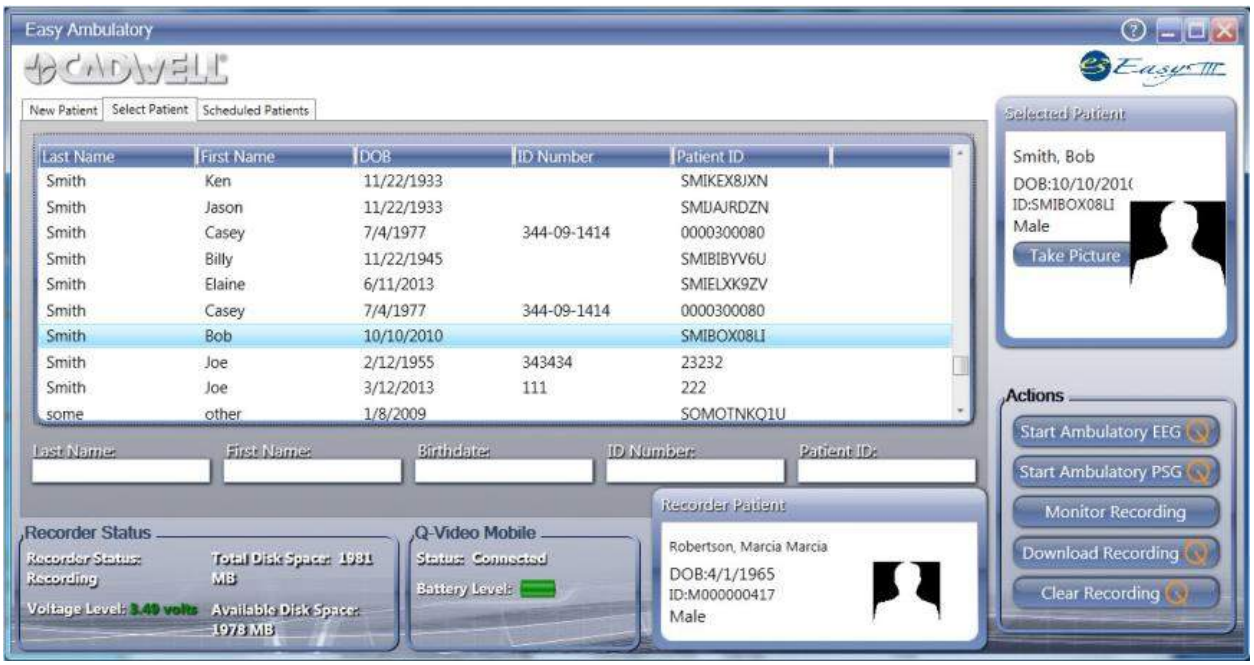
The recorder will continue to collect data after disconnecting the recorder from the computer.

Starting an Ambulatory Recording with Q-Video Mobile 2

Connect the Recorder to the Easy III Computer
Locate the ambulatory to computer cable. The cable has a multi pin connector on one end and a RJ45 connector on the other. Plug the ambulatory recorder into the Easy III computer. Note: The Easy Ambulatory Amplifier should be connected to the recorder. Next, identify the USB B to USB cable and plug the USB B connector to the side of the Q-Video Mobile 2 device, and the other end into a USB port on the computer. Device should be powered on. To power on Q-Video Mobile 2 device simply insert included tool into the side of the Q-Video Mobile 2 device and press and hold for a few seconds, the device will power on at this point.

*note: make sure that the protocol for Q-Video Mobile 2is selected for recording the ambulatory study. See the protocols section for more details.

Open the Ambulatory Software
Select the Easy III Ambulatory shortcut from the desktop of the Easy III system. Note the recorder status and Q-Video Mobile 2 Status displayed in the lower left hand corner of the Easy Ambulatory dashboard. Pay attention to the color of the font reporting Battery Level of the Recorder. If the color is green, this indicates the batteries are fresh. If the font is yellow, this indicates that the batteries are not optimal and most likely will need to be changed soon. Red font color indicates batteries that are depleted and fresh batteries should be placed into the device immediately. Observe the color of the battery symbol reporting the Q-Video Mobile 2 Battery Level, if red, plug into wall charger immediately, if green, this indicates full charge. If yellow, the device is partially charged and should be plugged into the wall charger in a timely manner. Also note the orange Q symbol appearing next to the buttons in the Actions list of the dashboard. The ambulatory recorder and Q-Video Mobile 2 should be 'connected'. If the recorder is not identified, press and hold the event button on the ambulatory recorder for at least 5 seconds. Pressing the event button will send a signal to the ethernet connection on the Easy III computer to wake up and detect the recorder. If the Q-Video Mobile 2 is not identified, confirm that the device is turned on and has adequate charge. Try unplugging the device and plugging it back in.



Select Patient Information

You can click on the New Patient, Select Patient, or Scheduled Patients tab. Enter patient information in the New Patient tab or select a patient from the Select Patient or Scheduled Patients tab by clicking on the patient name.

Starting a Recording

Click on the Start Ambulatory EEG Q or PSG Q button displayed in the lower right hand corner of the Easy Ambulatory dashboard. If the batteries in the recorder or the Q-Video Mobile do not have adequate charge a warning will appear requesting that either the Q-Video Mobile be plugged into the wall charger, or fresh batteries be placed into the ambulatory recorder.

If a recording resides on the recorder and/or Q-Video Mobile 2 device, you will be prompted with the name of the patient stored on the recorder/Q-Video Mobile 2 device. You will be asked if you would like to delete the recording. If you have already downloaded the recording, click on the Yes button and/or OK button to erase the recording stored in the recorder and Q-Video Mobile 2 device.

You will be prompted with the patient information dialog. Click on OK to clear the dialog.

At this time, the Q-Video Mobile 2 device will be started automatically and shortly you will see the application startup on the device. The Easy Ambulatory recording window will be displayed on the computer screen.

1. Click on the green Record button to start the ambulatory EEG recording or the Play button to start the ambulatory PSG recording. Check impedance values and verify the recording quality is acceptable. See images below.

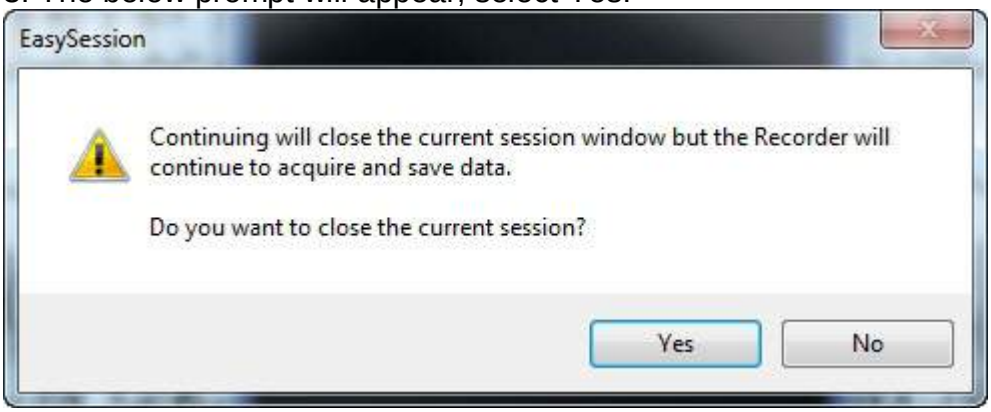
For EEG, see Ambulatory EEG recording and review toolbars section for a detailed description:

For PSG, see Ambulatory PSG recording and review toolbars section for a detailed description:

***NOTE:**If a Q-Video window is in the display on the computer screen, it will not display video. The video being captured at that time can be seen on the Q-Video Mobile device LCD screen. All video will be available for review after the study has been downloaded.

2. To disconnect the recorder from the computer (without stopping the present recording), click on the **Disconnect Recorder** button, Close button, or X in the upper right hand corner of the display.

3. The below prompt will appear, select Yes.



At this time, both the Q-Video Mobile 2 device and ambulatory recorder can be unplugged from the computer. The recorder will continue to collect video and EEG data after disconnecting the recorder from the computer.

Important notes to communicate to patient: The LCD screen will fade with inactivity, although the display is dimmed, it is still recording the video. If the patient would like the video to display on the screen the quality being recorded to ensure that they are in the frame being recorded, they can simply tap the screen with their finger and the display will brighten. The patient needs to be diligent to make sure that they remain in the frame throughout the entire recording to ensure optimal data is collected. At night, the device should be plugged in and charging to ensure that the infrared lights have power to record during night. The device will give an audible alarm every five minutes when the batteries are running low, it is advised that the patient plug the device into a wall outlet via the charge connection on the side of the device to ensure that the devices continues to have power. Refer to the Patient Reference Guide for more information (PN: 320393-000).

Downloading an Ambulatory Recording

*Note: If this recording has Q-Video Mobile associated, please reference Download Ambulatory Recording with Q-Video Mobile for details.

1. Plug the 9-pin connector plug back into the ambulatory recorder.

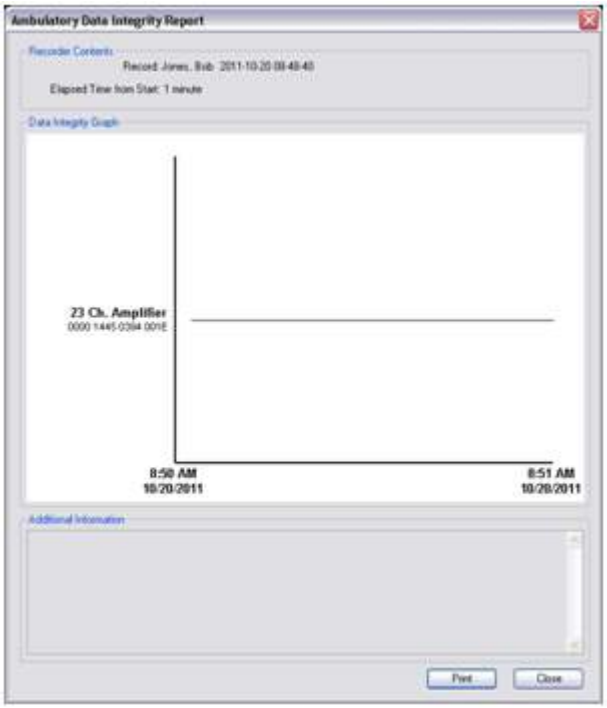
2. Launch the Easy III Ambulatory Dashboard and select Download Recording.

3. If the recorder has low batteries, a prompt will appear requesting that fresh batteries are placed into the device prior to starting the download.

4. A prompt will appear asking 'Download the following record from the recorder?' Select Yes.

5. The download is now occurring, once complete the following prompt will display, select OK.

6. The Ambulatory Data Integrity Report will appear. Stating the patient name and elapsed time of recording. Click on Close.



7. The record will automatically open. Page through the record to ensure that the waveform data was captured as expected.

See Ambulatory EEG or PSG Recording and Review Toolbars section for more details.

Download Ambulatory Recording with Q-Video Mobile 2

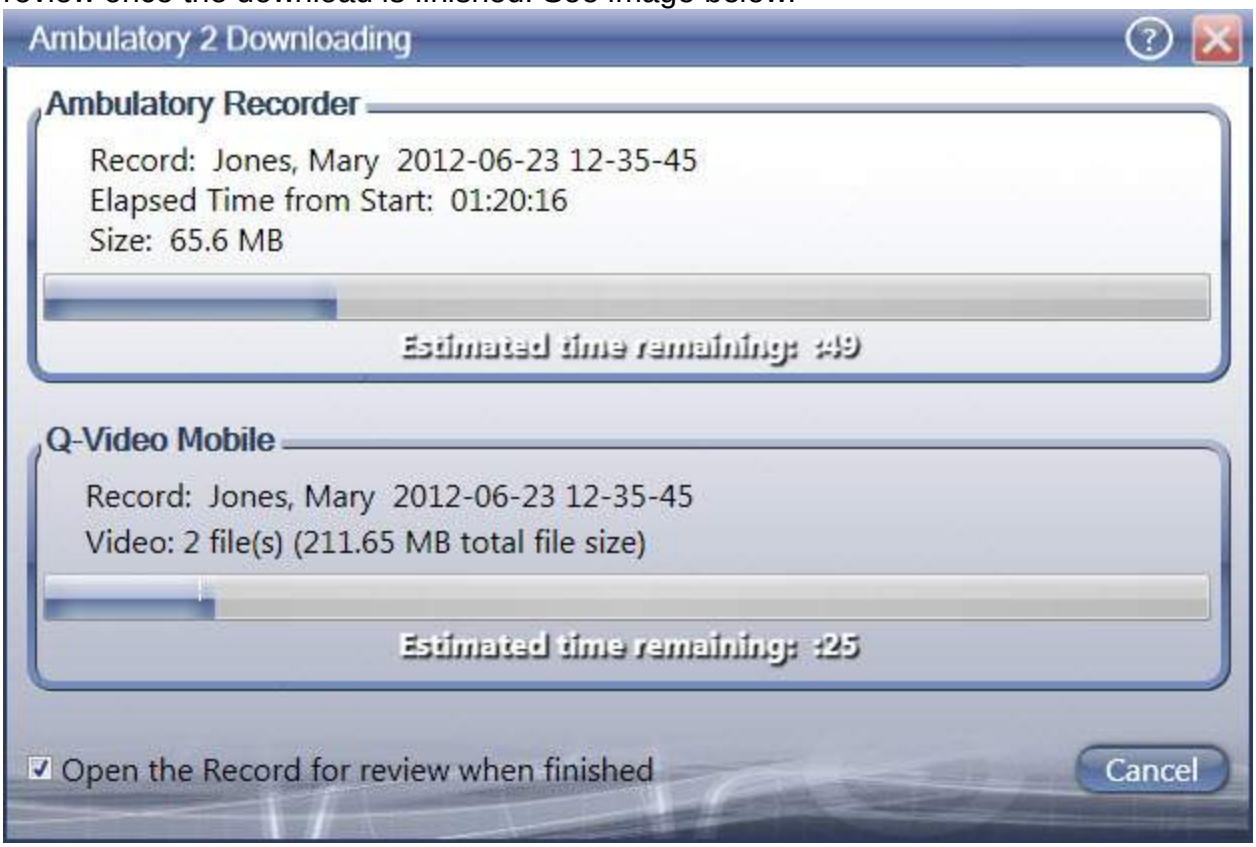
1. Plug in the Q-Video Mobile 2 device, ensure that it is powered on prior to plugging it in to the Easy III PC. If it is not powered on, simply use the tool provided and insert into the hole on the side of the device and press and hold for a few seconds, the device will power on at this point. Make sure that the device is charged and ready, see Q-Video Mobile 2 Hardware section for more info. Plug in the ambulatory recorder and ensure that the lights are flashing green on the device. If the recorder is not being recognized, press and hold the patient event button for 5 seconds, this will wake up the ethernet connection. Also, make sure that the batteries are still good by checking the LEDs on the recorder. If the batteries are low or the Q-Video Mobile 2device is low on charge, a prompt will appear requesting that the Q-Video Mobile 2 should be plugged into the wall charger and/or the ambulatory recorder should have fresh batteries placed into the unit prior to download.

2. Once the Status dialogs for the Recorder and Q-Video Mobile 2 device show both devices as connected. Click on the Download Recording Q button in the Actions list.

3. The following prompt will appear, select Yes.

4. The Q-Video Mobile 2 device will automatically terminate its recording as well as the ambulatory recorder. The following ambulatory downloading status dialog will appear

showing the downloading status, elapsed time of recording, and file sizes. There is also a checkbox in this window which allows gives the option to have the record opened for review once the download is finished. See image below.



5. The status dialog will update with Download Complete for both the ambulatory recorder and Q-Video Mobile 2 devices. Also, once the downloads are complete the Ambulatory Data Integrity Report will be displayed, there is an option to print this report or select Close. If the option to open the record for review when finished is checked, upon close of this Integrity Report, the record will automatically open. If the option was not checked, the report will simply close. To review the record, launch the Easy III Review Data icon, highlight the patient record, and select Open Record.

6. If a view has not been created for the Ambulatory protocol that contains a QVideo window, the user will want to add a QVideo window on the fly to review the synchronized video and audio data with the EEG. To do this click on the Show Window option at the top of the trace window and select QVideo from the list, the click OK.

See Ambulatory EEG or PSG Recording and Review Toolbars section for more details.

Ambulatory EEG Recording and Review Toolbars

Details of Ambulatory EEG Recording data toolbar:

.**Top Row of toolbar (left to right):**

1. **Question Mark:** Select this option to identify what version of software is currently installed on this system or to access the Help Files which include notes and details on how to use this system.
2. **Edit:** Select this option to edit the patient info, this dialog can be accessed and updated.
3. **Close:** This option allows the user to close the record and then disconnect the recorder and continue recording the ambulatory study.
4. **Group:** Select this option to change the channel group that is responding to the following Sensitivity, High Cut, and Low Cut filter changes.
5. **Sensitivity:** Adjusts the sensitivity of the channels associated with the channel group selected.
6. **High Cut:** Adjusts the high cut filter of the channels associated with the channel group selected.
7. **Low Cut:** Adjusts the low cut filter of the channels associated with the channel group selected.
8. **Notch:** Select this option to apply the Notch filter. If the button is highlighted turquoise, that means the filter is already applied.
9. **Paper Speed:** Adjusts the paper speed displayed in the trace window.
10. **The buttons in the upper right hand corner** allow for the trace window to be minimized, maximized or closed. If the “X” is selected the user will have the option to close the display, at this point the recorder can be disconnected and it will continue recording the ambulatory study.

Bottom Row of toolbar (left to right):

1. **Montage Name window:** This window displays the current montage being used.

2. **M1-M6:** These buttons are user configurable. They are quick keys to change to a montage that has been associated with them in the protocol.

3. **Imp:** This button starts Impedance. Select this button and the impedances will be checked and the impedance window will be displayed. Wait until the recording reference and grown are displayed prior to closing to verify all impedances.

4. **Cal:** This button initiates calibration. Select this button to run the calibration.

5. **Red circle:** This button stops the EEG recording, however, the Q-Video Mobile recording will continue. Select this option if the EEG recording needs to be stopped.

6. **Yellow circle:** Not functional in ambulatory mode.

7. **Green circle:** This button starts the EEG recording. The field to the right of this button states what the status of the recording is (stopped or recording for example)

8. **HV:** Select this option to run the hyperventilation script.

9. **Timer:** Select this option to run the timer.

10. **Left arrow and right arrow:** If bookmarks have been made for this recording, this arrow keys allow for the user to navigate to either the previous or next bookmark in the recording.

11. **Flag with + :** This option allows for the user to add a bookmark to a particular section of the EEG data. This button is grayed out in recording, however, if the user pages back to switch to review, the button will become active and the bookmarks can be added.

12. **Multiple Flags:** This options allows for all bookmarks to be shown in one dialog. Select this option to Print the highlighted bookmark, Delete bookmarks no longer needed, or to navigate through the bookmarks.

13. **View:** This option allows the user to select an alternative view. A view is user configurable and represents how the windows are displayed on the screen and manages the default settings for those windows. To add or change a view for future recordings, go to System Utilities and select Protocols. Find the desired protocols and select Edit Protocol, see the protocol section of the help files for more information. The window next to the View button displays the current view that is being used.

14. **Tools:** This option allows for other settings to be accessed during a recording. For a full description of each option, please see the appropriate sections in the help files. (Record Manager, System Setup, Read, Edit Montages, Reports, Protocols , Module Mapping, Flash Programs , Event Detection Settings (not applicable in EEG ambulatory), and Performance Statistics (this is a tool utilized by our support team to get critical performance information on your system if you are encountering a problem))

15. **Disconnect Recorder:** Select this option if ready to disconnect the recorder from the acquisition PC.

16. **Show Window:** This option will show a list of managed windows that can be added to the data on the fly. For instance, if QVideo is not already in the display, when the record is being reviewed, QVideo can be added so that the video can be reviewed along with the EEG data. For details on these Available Windows, see the protocols section.

17. **Event Buttons:** This option allows for the user to hide or display the event buttons in the trace window.

Details of Ambulatory Review Data Toolbar:

Top row of toolbar (left to right):

1. **Question Mark:** Select this option to identify what version of software is currently installed on this system or to access the Help Files which include notes and details on how to use this system.

2. **Edit:** Select this option to edit the patient info, this dialog can be accessed and updated.

3. **Close:** This option allows the user to close the record, a prompt will appear giving an option to change the status of the recording, acknowledge the prompt, then the record will complete closing.

4. **Group:** Select this option to change the channel group that is responding to the following Sensitivity, High Cut, and Low Cut filter changes. If the checkbox next to Group is checked, this will display the sensitivity and filters as recorded.

5. **Sensitivity:** Adjusts the sensitivity of the channels associated with the channel group selected.

6. **High Cut:** Adjusts the high cut filter of the channels associated with the channel group selected.

7. **Low Cut:** Adjusts the low cut filter of the channels associated with the channel group selected.

8. **Notch:** Select this option to apply the Notch filter. If the button is highlighted turquoise, that means the filter is already applied.

9. **Paper Speed:** Adjusts the paper speed displayed in the trace window.

10. **The buttons in the upper right hand corner** allow for the trace window to be minimized, maximized or closed. If the “X” is selected the record will close, a prompt will

appear giving an option to change the status of the recording, acknowledge the prompt, then the record will complete closing.

Bottom row of toolbar (left to right):

1. **Montage Name window:** This window displays the current montage being used.

2. **M1-M6:** These buttons are user configurable. They are quick keys to change to a montage that has been associated with them in the protocol.

3. **Checkbox next to M6:** Check this box to have data displayed As Recorded.

4. **Imp:** Select this option to display the impedance dialog associated with that particular record. If multiple impedances were performed, the impedance ran closest to the section of the recording that is currently being viewed will be displayed. Select Close when review of the dialog is completed.

5. **Left arrow and right arrow**: If bookmarks have been made for this recording, these arrow keys allow for the user to navigate to either the previous or next bookmark in the recording.

6. **Flag with +** : This option allows for the user to add a bookmark to a particular section of the EEG data.

7. **Multiple Flags:** This option allows for all bookmarks to be shown in one dialog. Select this option to Print the highlighted bookmark, Delete bookmarks no longer needed, or to navigate through the bookmarks.

8. **View:** This option allows the user to select an alternative view. Select a view from the list to change the way the way the display looks. A view is user configurable and represents how the windows are displayed on the screen and manages the default settings for those windows. To add or change a view for future recordings, go to System Utilities and select Protocols. Find the desired protocols and select Edit Protocol, see the protocol section of the help files for more information. The window next to the View button displays the current view that is being used.

9. **Reports:** This option allows the user to select a report from the list, once the desired report is selected, click OK and the report will generate.

10. **R1-R3:** These buttons are user configurable. They are quick keys to generate a particular report that has been associated with them in the protocol. See the protocols section for information on how to configure these buttons.

11. **Tools:** This option allows for other settings to be accessed during a recording. For a full description of each option, please see the appropriate sections in the help files. (Record Manager, System Setup, Read, Record (select patient name and desired

protocol to start a recording), Append (select this option to append an existing recording), edit montages, Print (this option will print the trace window currently positioned in the display), Copy (this option copies the current trace window positioned to the clipboard so it can be easily pasted into an email or document) protocols , flash programs , Data Integrity Report (this brings up the data integrity report created when the ambulatory study was downloaded), Event Detection Settings (not applicable in EEG ambulatory), and Performance Statistics (this is a tool utilized by our support team to get critical performance information on your system if you are encountering a problem))

12. **Show Window:** This option will show a list of managed windows that can be added to the data on the fly. For instance, if QVideo is not already in the display, when the record is being reviewed, QVideo can be added so that the video can be reviewed along with the EEG data. For details on these Available Windows, see the protocols section.

13. **Event Buttons:** This option allows for the user to hide or display the event buttons in the trace window.

Ambulatory PSG Recording and Review Toolbars

Details of Ambulatory PSG Recording data toolbar:

.**Top Row of toolbar (left to right):**

1. **Question Mark:** Select this option to identify what version of software is currently installed on this system or to access the Help Files which include notes and details on how to use this system.

2. **Play or Stop button:** When the Play button is showing, this represents that the recording is stopped, click the play icon to start/continue the recording. If the stop button is showing, this represents that the recording is currently running, click on the stop icon to stop recording.

3. **Calibration symbol:** Select this button to run calibration. Select this button once more to stop calibration.

4. **Impedance symbol:** Select this button to run impedance check. Click Close, once impedance is complete (ground and reference have populated)

5. **Script symbol:** This is the patient status script. Select this button to bring up the patient status script.

6. **Edit:** Select this option to edit the patient info, this dialog can be accessed and updated.

7. **Close:** This option allows the user to close the record and then disconnect the recorder and continue recording the ambulatory study.

8. **Left arrow and right arrow:** If bookmarks have been made for this recording, this arrow keys allow for the user to navigate to either the previous or next bookmark in the recording.

9. **Flag with + :** This option allows for the user to add a bookmark to a particular section of the EEG data. This button is grayed out in recording, however, if the user pages back to switch to review, the button will become active and the bookmarks can be added.

10. **Multiple Flags:** This options allows for all bookmarks to be shown in one dialog. Select this option to Print the highlighted bookmark, Delete bookmarks no longer needed, or to navigate through the bookmarks.

11. **Tools:** This option allows for other settings to be accessed during a recording. For a full description of each option, please see the appropriate sections in the help files. (Record Manager, System Setup, Edit Montages, Read, Record (select patient name and desired protocol to start a recording), Append (select this option to append an existing recording), Easy Stamp, Protocols , Module Mapping, Event Detection Settings, Timer (this option brings up a timer which can be utilized to count out pages/time, this information can be recorded into the trace window if the checkmark is checked), and Performance Statistics (this is a tool utilized by our support team to get critical performance information on your system if you are encountering a problem))

12. **Disconnect Recorder:** Select this option if ready to disconnect the recorder from the acquisition PC.

10. **The buttons in the upper right hand corner** allow for the trace window to be minimized, maximized or closed. If the “X” is selected the user will have the option to close the display, at this point the recorder can be disconnected and it will continue recording the ambulatory study.

Second row of Ambulatory PSG toolbar (left to right):

1. **Group:** Select this option to change the channel group that is responding to the following Sensitivity, High Cut, and Low Cut filter changes.

2. **Sensitivity:** Adjusts the sensitivity of the channels associated with the channel group selected.

3. **High Cut:** Adjusts the high cut filter of the channels associated with the channel group selected.

4. **Low Cut:** Adjusts the low cut filter of the channels associated with the channel group selected.

5. **Notch:** Select this option to apply the Notch filter. If the button is highlighted turquoise, that means the filter is already applied.

6. **Easy Stamp Symbol:** This button opens up the Easy Stamp options.

7. **View:** This option allows the user to select an alternative view. A view is user configurable and represents how the windows are displayed on the screen and manages the default settings for those windows. To add or change a view for future recordings, go to System Utilities and select Protocols. Find the desired protocols and

select Edit Protocol, see the protocol section of the help files for more information. The window next to the View button displays the current view that is being used.

8. Battery Level information for plugged in Ambulatory recorder and Free Disk Space for plugged in ambulatory recorder.

9. **Show Window:** This option will show a list of managed windows that can be added to the data on the fly. For instance, if QVideo is not already in the display, when the record is being reviewed, QVideo can be added so that the video can be reviewed along with the PSG data. For details on these Available Windows, see the protocols section.

10. **Event Buttons:** This option allows for the user to hide or display the event buttons in the trace window.

Third row of Ambulatory PSG toolbar (left to right):

1. **Montage Name window:** This window displays the current montage being used.

2. **M1-M6:** These buttons are user configurable. They are quick keys to change to a montage that has been associated with them in the protocol.

3. **Paper Speed:** Adjusts the paper speed displayed in the trace window.

Bottom Row of Ambulatory PSG toolbar (left to right):

1. **Uns, Wake, N1, N2, N3, REM:** Select the appropriate option to score the current epoch.

2. **Staging History Bar:** This is a display window that shows how the current epoch is scored (dashes mean unscored), it also displays the previous four and next four epochs of data. Selecting one of the segments in the display, repositions the record and places that epoch in the center. The current epoch is underlined bright green in the display. There is also an option to use the R&K sleep scoring standard. See PSG Settings for more information.

3. **Sliver of Moon:** Click on this icon to enter a Lights Out event. Lights out will be placed at the first second of the present epoch. You can remove the Lights Out event by clicking on the button again, or by finding the event in the Event List and deleting it.

4. **Sunshine:** Click on this icon to enter Light On. Lights on will be placed at the first second of present epoch. You can remove the Lights On event by clicking on the button again, or by finding the event in the Event List and deleting it.

5. **ZZzzz:** Click on this icon to mark an epoch as sleep onset. Sleep onset will be placed at the first second of the present epoch. You can remove the Sleep Onset event by clicking on the button again, or by finding the event in the Event List and deleting it.

6. **CPAP symbol:** CPAP/BiLevel Pressure - Click on this icon to place a CPAP event in the trace window. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. You can remove this event by finding it in the event list and deleting it.

7. **CPAP symbol with star**: Click on this icon to place an Optimal Pressure event in the trace window. You can remove this event by finding it in the event list and deleting it.

8. **Body Symbol:** Click on this icon to enter a Body Position Change. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. If you are using a body position sensor, you can use this option to over-ride or resume using the body position sensor during data collection.

9. **O_2 Symbol:** Click on this icon to enter a supplemental O2 level. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. You can remove this event by finding it in the event list and deleting it.

Details of Ambulatory PSG Review Data Toolbar:

Top row of toolbar (left to right):

1. **Question Mark:** Select this option to identify what version of software is currently installed on this system or to access the Help Files which include notes and details on how to use this system.

2. **Edit:** Select this option to edit the patient info, this dialog can be accessed and updated.

3. **Close:** This option allows the user to close the record, a prompt will appear giving an option to change the status of the recording, acknowledge the prompt, then the record will complete closing.

4. **Calibration symbol:** Select this button to run calibration. Select this button once more to stop calibration.

5. **Impedance symbol:** Select this button to run impedance check. Click Close, once impedance is complete (ground and reference have populated)

6. **Script symbol:** This is the patient status script. Select this button to bring up the patient status script.

7. **Left arrow and right arrow**: If bookmarks have been made for this recording, these arrow keys allow for the user to navigate to either the previous or next bookmark in the recording.

8. **Flag with +** : This option allows for the user to add a bookmark to a particular section of the EEG data.

9. **Multiple Flags:** This option allows for all bookmarks to be shown in one dialog. Select this option to Print the highlighted bookmark, Delete bookmarks no longer needed, or to navigate through the bookmarks.

10. **Reports:** This option allows the user to select a report from the list after clicking on SELECT, once the desired report is selected, click OK and the report will generate.

11. **R1-R3:** These buttons are user configurable. They are quick keys to generate a particular report that has been associated with them in the protocol. See the protocols section for information on how to configure these buttons.

12. **Tools:** This option allows for other settings to be accessed during a recording. For a full description of each option, please see the appropriate sections in the help files. (Record Manager, System Setup, Edit Montages, Read, Record (select patient name and desired protocol to start a recording), Append (select this option to append an existing recording), Easy Stamp, Protocols , Module Mapping, Data Integrity Report (this brings up the data integrity report created when the ambulatory study was downloaded), Event Detection Settings, and Performance Statistics (this is a tool utilized by our support team to get critical performance information on your system if you are encountering a problem))

13. **The buttons in the upper right hand corner** allow for the trace window to be minimized, maximized or closed. If the “X” is selected the record will close, a prompt will appear giving an option to change the status of the recording, acknowledge the prompt, then the record will complete closing.

Second row of the Ambulatory PSG review toolbar (left to right):

1. **Channel Group:** Select this option to change the channel group that is responding to the following Sensitivity, High Cut, and Low Cut filter changes. If the checkbox next to Group is checked, this will display the sensitivity and filters as recorded.

2. **Sensitivity:** Adjusts the sensitivity of the channels associated with the channel group selected.

3. **High Cut:** Adjusts the high cut filter of the channels associated with the channel group selected.

4. **Low Cut:** Adjusts the low cut filter of the channels associated with the channel group selected.

5. **Notch:** Select this option to apply the Notch filter. If the button is highlighted turquoise, that means the filter is already applied.

6. **Easy Stamp Symbol:** This button opens up the Easy Stamp options.

7. **View:** This option allows the user to select an alternative view. A view is user configurable and represents how the windows are displayed on the screen and manages the default settings for those windows. To add or change a view for future recordings, go to System Utilities and select Protocols. Find the desired protocols and select Edit Protocol, see the protocol section of the help files for more information. The window next to the View button displays the current view that is being used.

8. **Show Window:** This option will show a list of managed windows that can be added to the data on the fly. For instance, if QVideo is not already in the display, when the record is being reviewed, QVideo can be added so that the video can be reviewed along with the PSG data. For details on these Available Windows, see the protocols section.

9. **Event Buttons:** This option allows for the user to hide or display the event buttons in the trace window.

Third row of Ambulatory PSG review toolbar (left to right):

1. **Montage Name window:** This window displays the current montage being used. The checkbox next to the montage name is an option to display the data As Recorded.

2. **M1-M6:** These buttons are user configurable. They are quick keys to change to a montage that has been associated with them in the protocol.

3. **Paper Speed:** Adjusts the paper speed displayed in the trace window.

Bottom row of Ambulatory PSG review toolbar (left to right):

1. **Uns, Wake, N1, N2, N3, REM:** Select the appropriate option to score the current epoch.

2. **Staging History Bar:** This is a display window that shows how the current epoch is scored (dashes mean unscored), it also displays the previous four and next four epochs of data. Selecting one of the segments in the display, repositions the record and places that epoch in the center. The current epoch is underlined bright green in the display.

There is also an option to use the R&K sleep scoring standard. See PSG Settings for more information.

3. **Sliver of Moon:** Click on this icon to enter a Lights Out event. Lights out will be placed at the first second of the present epoch. You can remove the Lights Out event by clicking on the button again, or by finding the event in the Event List and deleting it.

4. **Sunshine:** Click on this icon to enter Light On. Lights on will be placed at the first second of present epoch. You can remove the Lights On event by clicking on the button again, or by finding the event in the Event List and deleting it.

5. **ZZzzz:** Click on this icon to mark an epoch as sleep onset. Sleep onset will be placed at the first second of the present epoch. You can remove the Sleep Onset event by clicking on the button again, or by finding the event in the Event List and deleting it.

6. **CPAP symbol:** CPAP/BiLevel Pressure - Click on this icon to place a CPAP event in the trace window. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. You can remove this event by finding it in the event list and deleting it.

7. **CPAP symbol with star**: Click on this icon to place an Optimal Pressure event in the trace window. You can remove this event by finding it in the event list and deleting it.

8. **Body Symbol:** Click on this icon to enter a Body Position Change. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. If you are using a body position sensor, you can use this option to over-ride or resume using the body position sensor during data collection.

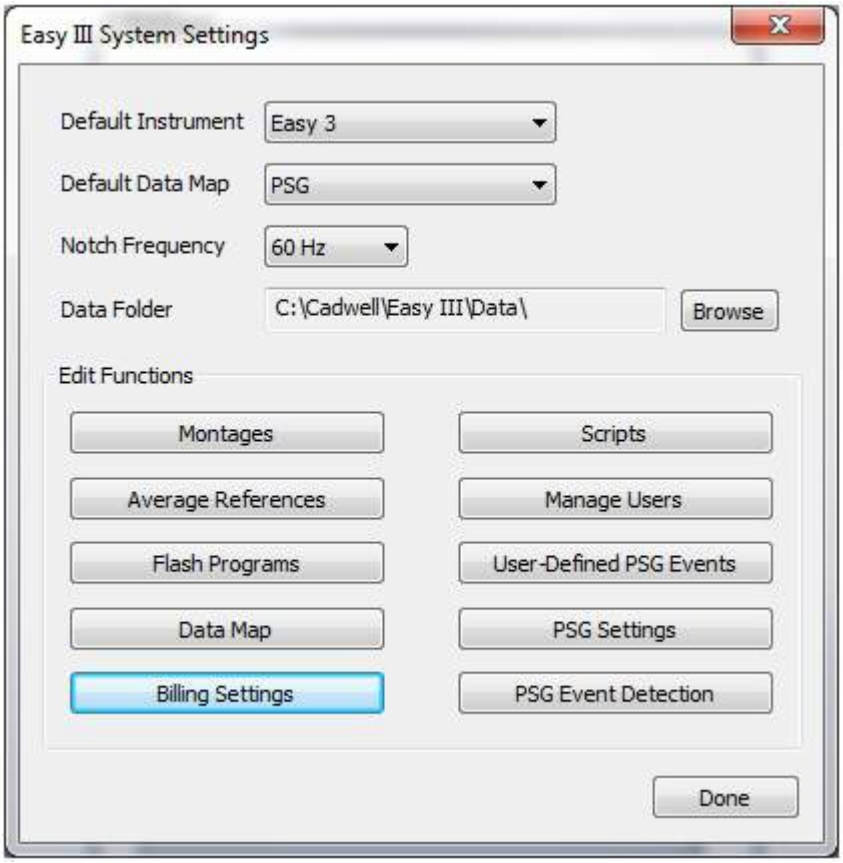
9. **O_2 Symbol:** Click on this icon to enter a supplemental O2 level. Move the mouse to the location where you would like to place the event. Click the left button on the mouse to place the event. You can remove this event by finding it in the event list and deleting it.

Easy III System Utilities Menu

Use System Utilities to perform configuration tasks, move data, copy a record with viewer, manager users, setup auto login, and access the Clinical Database. Simply click on the Easy III System Utilities icon and choose a function from the menu.

- System Setup
  - Montages
  - Average References
  - Flash Programs
  - Data Map
  - Scripts
  - Manage Users
  - User-Defined PSG Events
  - PSG Settings
  - PSG Event Detection
- Protocols
- Record Manager
- Copy Record and Viewer
- Auto Login
- Manage Users
- Clinical Database

Easy III Settings



- **Default Instrument** -The Default Instrument may be set for use with the Easy 3, Easy II, and Easy Ambulatory amplifiers.
- **Default Data Map** - A specific Data Map can be selected for use with an Easy Amplifier. Default data maps exist for EEG, PSG, and ambulatory based recordings.
- **Notch Frequency** - The default notch frequency is 60 Hz, but may be changed to 50 Hz.
- **Data Folder** - The data folder is the location where all data files and video files are written during data collection.

***NOTE: DATA FOLDER IMPORTANT Information**

• Cadwell recommends that this path always be set to a local drive on all Easy Systems configured to collect/record data. If a network data folder is selected, data will be lost if the network path is not accessible during data collection.

• The Easy system can be configured to move data to a network location after data collection with the Centralized Data Manager Utility.

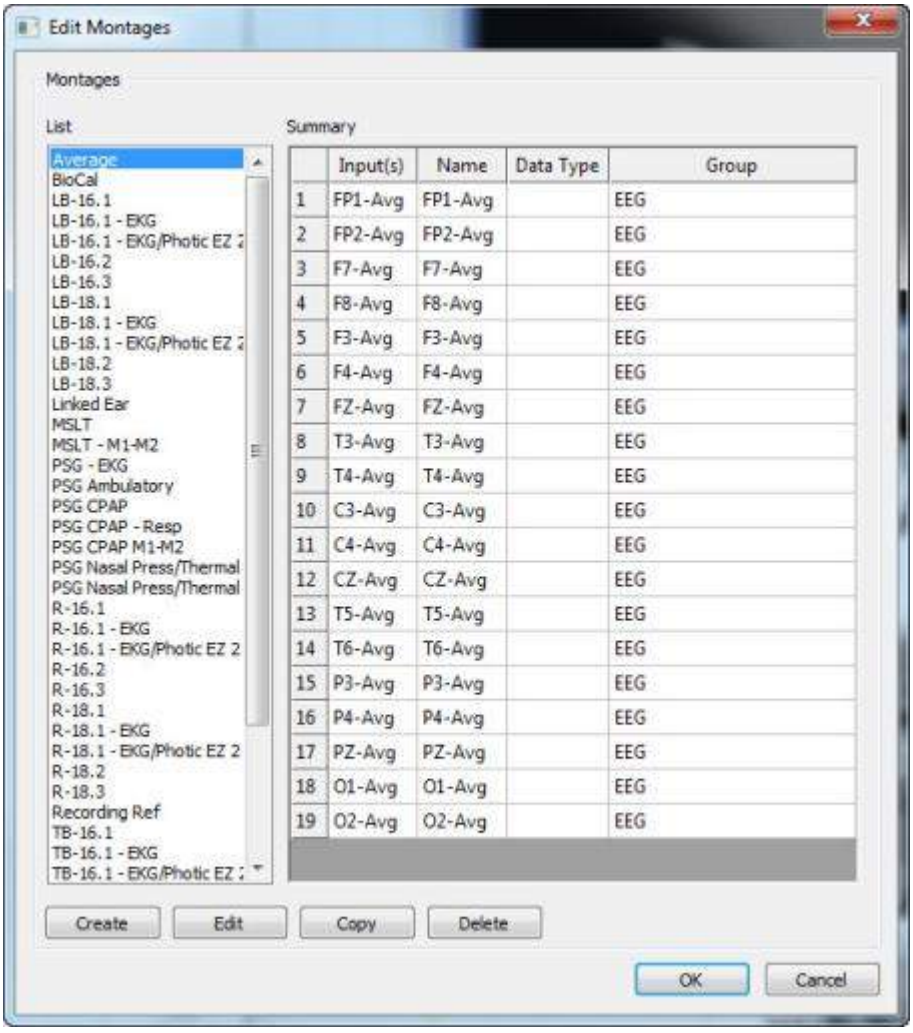
• If you change the default data path, all files in the Easy III data folder will automatically be moved to the new location.

• If you set your data folder location to a network path, deleted files will not be saved in the Windows Recycle Bin.

Montages
Average References
Flash Programs
Data Map
Billing Settings
Scripts
Manage Users
User-Defined PSG Events
PSG Settings
PSG Event Detection

Montages

Montages
Click on the Montages button from the Easy III System Settings menu to access the system montages and the montage editor or select Edit Montages from the Tools menu from the trace window of an opened record. Any change made to a montage is synchronized to all systems. If you delete a montage it will be deleted on all systems. If you create a montage it will be added to all systems.

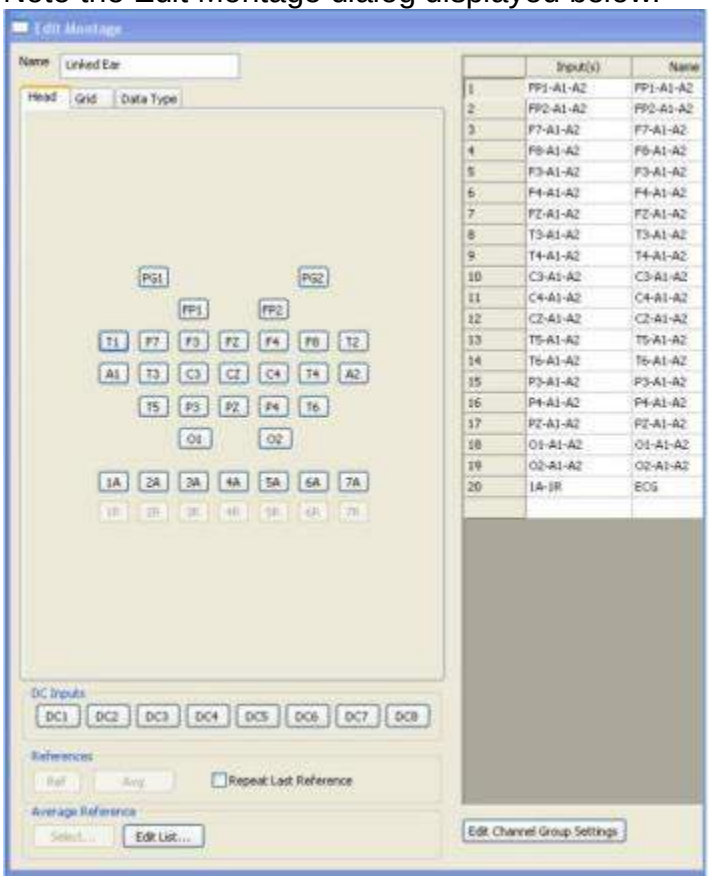


Getting Started, in total, four functions are available from this window:

Create: Select Create to make a brand new montage.
Edit: Highlight the montage that needs changes from the list and select Edit to make changes.

Copy: Highlight a montage similar to a new montage you want to create and select Copy, the copy of the montage will populate at the bottom of the montage list, highlight this new copy and select edit to make changes to the copy and rename.
Delete: Highlight a montage that is no longer needed on any system and select Delete to remove the montage from the list.

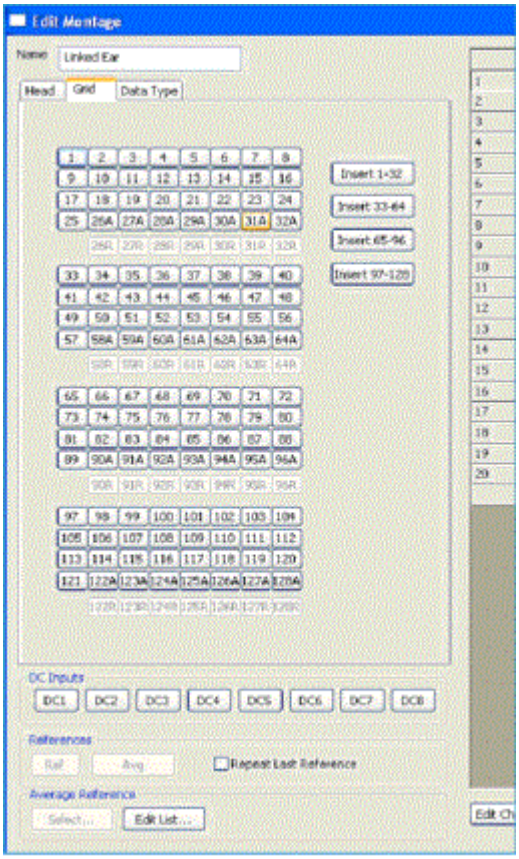
Edit Montage Window
Note the Edit Montage dialog displayed below.



Name Edit or create a name for a new montage by typing in the text box displayed in the upper left hand corner of the Edit Montage dialog.

Head Tab
This tab is used to build a montage channel by channel. To add a channel to a montage, click in the input(s) box in the montage editor, then click on an input button displayed on the left side of the Head Tab.

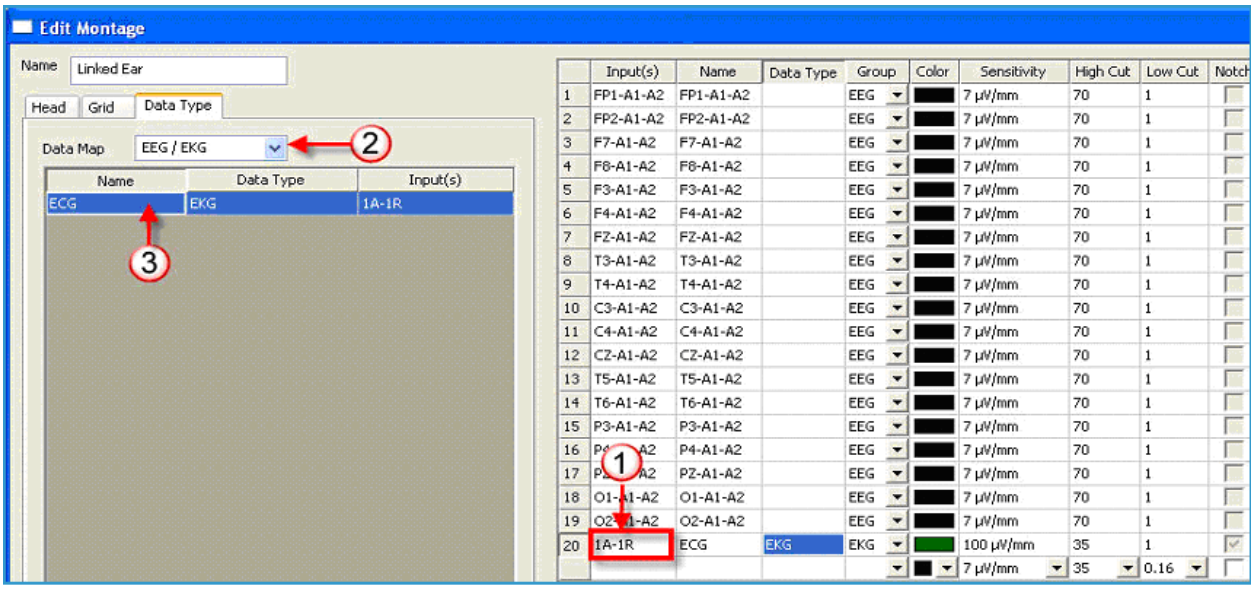
Grid Tab
Create a montage for up to four remote input boxes. This tab shows all grid inputs. You can quickly insert grid montages by clicking on the insert 1-32, 33-64, 65-96, and 97-128 montage grid buttons.



Data Type Tab

The Data Type tab includes channels that have been previously configured in the Easy III Data Map option. All relevant settings are automatically imported when a channel is added to a montage from the Data Type tab.

1. First Click in the Input(s) cell in the row you would like to add a new channel.
2. Verify that you are using the correct Data Map. Select a different Data Map from the drop-down list on the Data Type tab if a different map is required. The selected map will be the default map used with the current montage.
3. Click the name of the channel from the Data Map table to add a channel to the displayed montage. The channel that you have selected will automatically populate the columns with the correct settings. Note in the example below, the EKG channel has been added to channel 20. The data type, group, sensitivity, and filter settings do not have to be selected. These settings are previously defined in the EEG/EKG data map.



DC Inputs

Add a DC Input to a channel by clicking one of the DC1- DC8 buttons displayed at the bottom of the data type tab. In most cases, you will select a pre-defined DC input already included in your data map. If you are attempting to add a DC input that is already defined in a data map select the correct data map from the Data Type tab to find the DC input you would like to add to your montage. If the DC input you would like add is not in the data map, you will need to refer to the adding and modifying DC channels section.

Naming a Channel in a Montage

You can name a channel in a montage by clicking on the cell in the Name column of the montage editor. The name entered in the Name column will be displayed to the left of the channel when the montage is used during data collection or review.

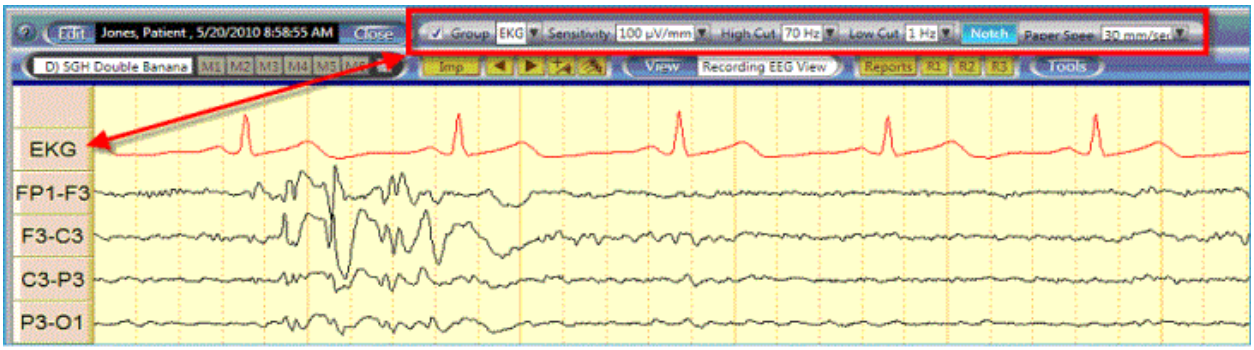
Data Type Name

The Data Type name is automatically entered when channels are added from the data map tab.

Edit Channel Group Settings

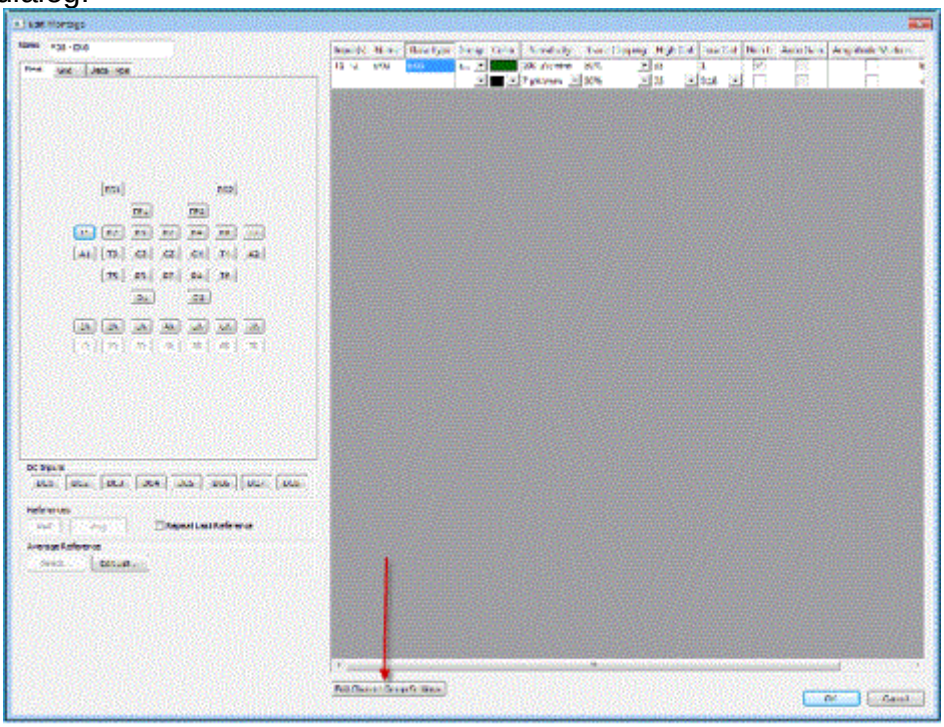
If you manually select a pair of inputs for a channel, you can select a set of pre-defined parameter settings. Note the Edit Montage menu displayed above. The Group selected for the EKG channel is the EKG group. There are two benefits in using the EKG group setting:

1. The sensitivity, filter, and color settings are pre-defined. Selecting the EKG channel group automatically sets the parameters for the channel more quickly than entering each setting individually.
2. The EKG channel settings are accessible from the linked channel settings. All EKG channels in all montages will be changed simultaneously when the linked channel settings are modified.



Changing or Adding Channel Groups

Click on the Edit Channel Group Setting button at the bottom of the Edit Montage dialog.



Note the Channel Group List. You can add or delete any channel group. All changes made to this group will be distributed to all systems. All montages containing channels with the channel groups in this list will be updated if you make any changes to the groups.

For example, if you want to change all the EEG channels in all EEG montages to blue you can do this through by editing the Channel Group list. Select the EEG group and change the color to blue. All montages will be updated. If you want to edit each EEG montage and apply different colors per EEG channel, edit the EEG Channel Group. Change the Color to “Not Specified” as displayed in the illustration above. You can now edit each montage, changing each channel color to any of the available color options.

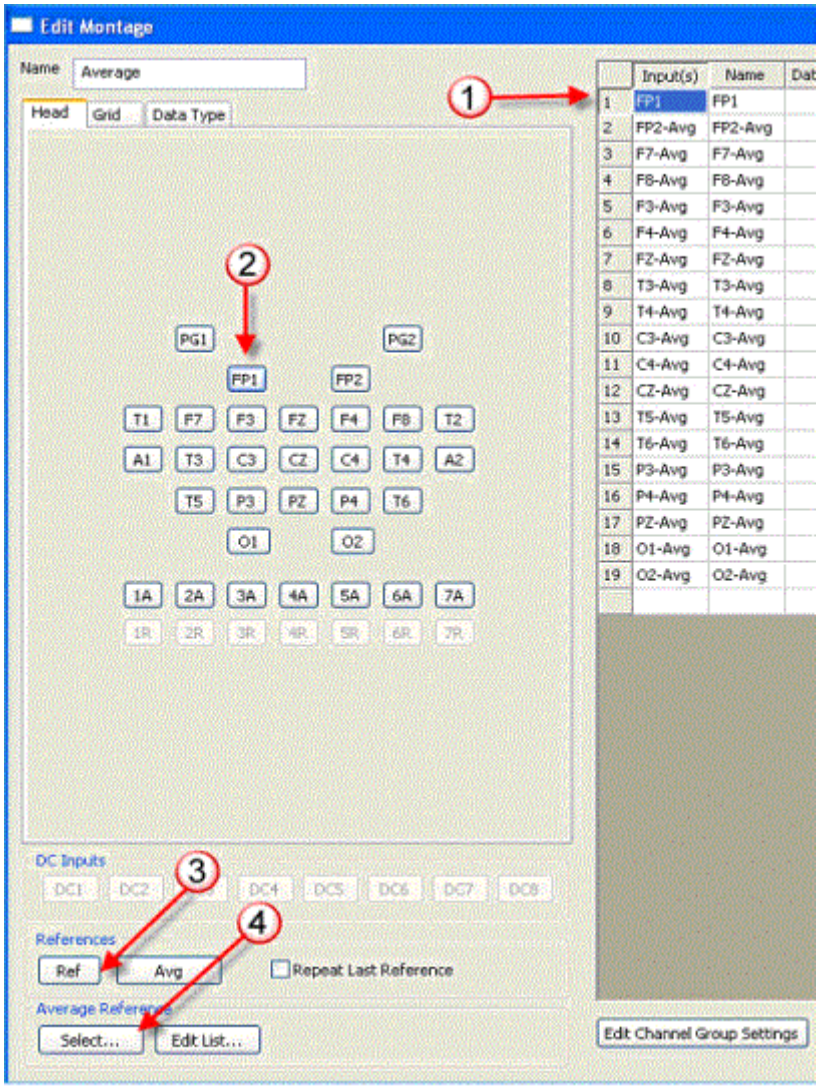
Trace Band Clipping
This option will allow the user to configure how much overlap is allowed between recorded channels. This setting is useful when viewing high amplitude EEG channels in pediatric patients or examining respiratory channels like esophageal pressure to examine large swings in pressure. Trace band settings can be accessed through the montage editor or by left clicking on the trace labels during review or data collection.

Trace Clipping Range
No Clipping = Full amplitude range of recorded data will be displayed
0% = No clipping or overlap allowed over adjacent channels
25% = Recorded data will overlap up to 25% of adjacent channels
50% = Recorded data will overlap up to 50% of adjacent channels
100% = Recorded data will overlap up to 100% of adjacent channels
200% = Recorded data will overlap up to 200% of adjacent channels
500% = Recorded data will overlap up to 500% of adjacent channels

Auto Gain
This setting is specifically designed to assist users collecting polysomnographic data. When the auto gain feature is enabled, the auto gain feature will select one of the available sensitivity control settings to display the channel data. The selection of an 'auto gain' setting is determined by the maximum voltage in each view (page). From page to page, the channel sensitivity setting will be modified to reduce the likelihood of channel clipping.

Amplitude Markers
This setting can be enabled to display a 75 µv range set of markers over the selected EEG channel. Placing a check mark in the Amplitude Marker check box will display the markers on the selected channel.
The amplitude markers can be temporarily added to any displayed montage by clicking on the trace label on the left side of the displayed montage and adding a check mark to the Amplitude Markers check box.

Selecting or Adding Reference and Average Reference Inputs
1. Click on the Input cell for the channel you would like to edit.
2. Click on the active input you would like to use (Fp2 in the example below).
3. Select the Reference (Ref) or Average (Avg) you would like to add to the select channel.
4. To toggle the available reference configurations, click on the Select button. Note the Avg button will change to the next available reference.



Montage Rules

• A notch filter setting may be turned on and off during data acquisition and during review.

• When active/reference pairs 1A-Ref, etc. are used, their references cannot be changed during review. Usually these channels are unlinked and are used to monitor non-EEG signals such as ECG or respiration.

• If an active/reference pair is used, the active electrode cannot be used in any other channel. For example, 4A-Ref and 4a-C3 cannot exist in the same montage.

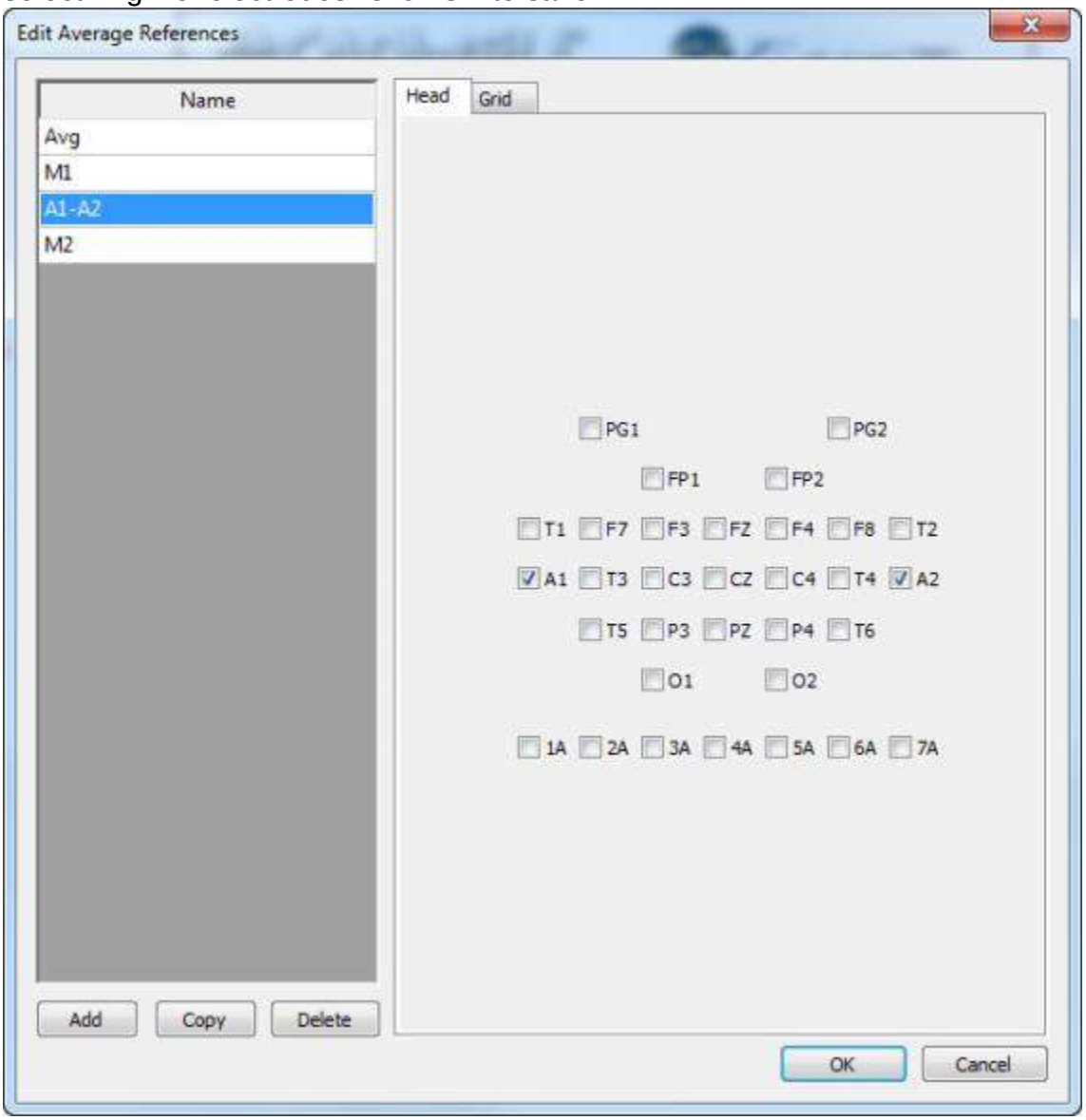
• Montages used during a recording are permanently saved with the record, although you may select another montage for viewing at any time during review.

• Even if you change the montage while reviewing, you can still re-display the EEG as originally recorded.

Average Reference

Average References

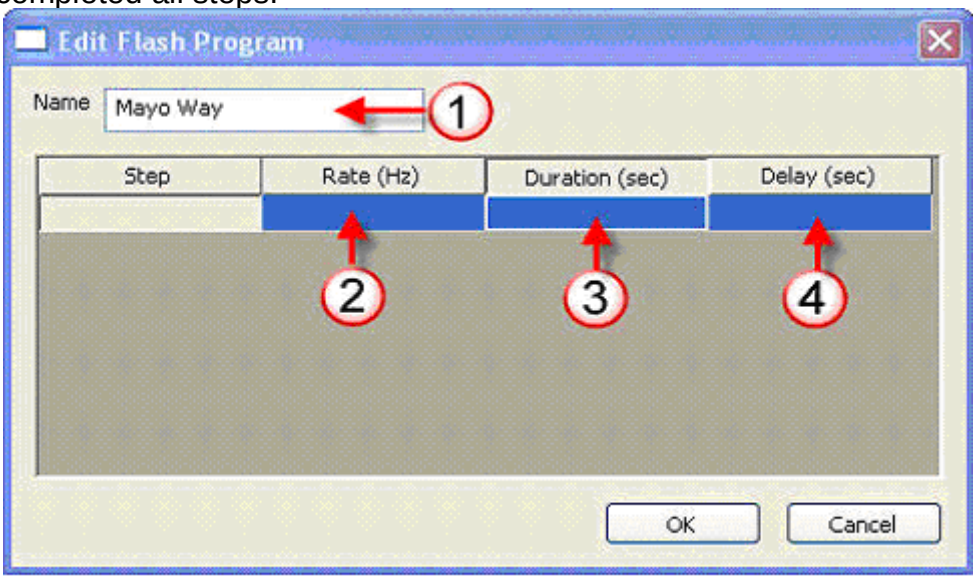
Average References can be used as a channel's reference input, and can be defined from head pattern or grid electrodes. Average references are built by combining several individual reference inputs, such as all of the scalp electrodes, or A1 and A2 (linked ears). Add a new Avg Ref by clicking the Add button, and then use the checkboxes to select Avg Ref electrodes. Click OK to save.



Flash Programs

Follow your laboratory procedures and protocols while running the Cadwell Easy III Photic Stimulator.
An unlimited number of flash programs can be defined, each with an unlimited number of steps. Photic stimulation is limited to a rate of 1-60 Hz.

Creating a Flash (Photic) Program:
Click on Setup Flash Program from the Easy III System Settings menu or from the tools menu. Click on Add.
Note the Edit Flash Program dialog below.
1. Enter the name you would like to use for the photic program
2. Enter the Rate you would like to use for step number 1, press the tab button to advance to the Duration box after you have entered the Rate.
3. Enter the Duration; press the tab button to advance to the Delay box after you have entered the Duration.
4. Enter the Delay; press the tab button to advance to the next step. Enter the Rate for the next step. Continue until all steps have been defined. Click on OK when you have completed all steps.



Editing a Flash Program:
Highlight the flash program in the list on the left and select Edit. Follow the details above for creating a new flash program when making edits.

Deleting a Flash Program:
Highlight the flash program no longer needed and select Delete, this will remove the program on all systems.

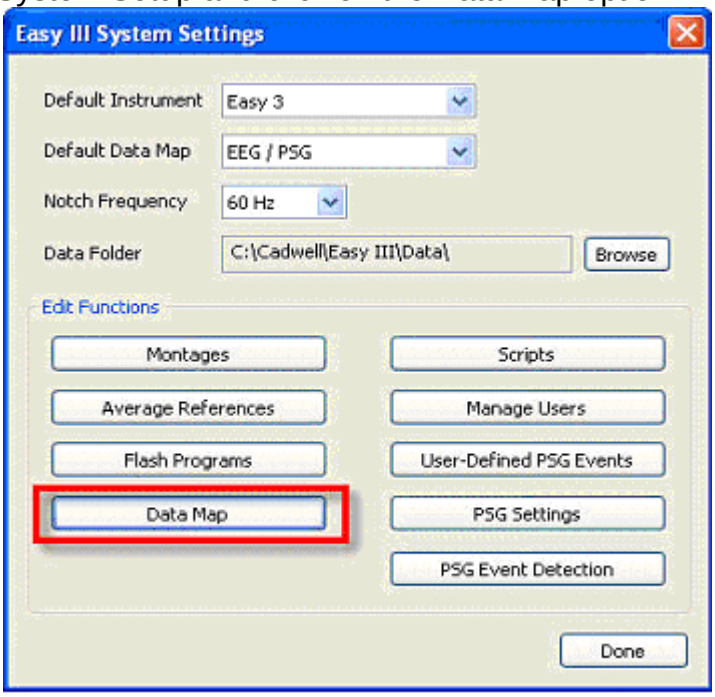
To associate a flash program with the Program 1 or Program 2 button in the Photic Stimulator control box during data collection, you must edit the recording protocol. Refer to the Protocols section for information on how to configure the photic program for use during data collection.

Data Maps

Data maps allow laboratories to standardize how channels will be displayed and defined. Easy III system will refer to a data map to allow the system to collect data from multiple amplifier types available from Cadwell. The Data Map option also is a place to assign certain inputs to particular devices.

Opening the Data Map Option

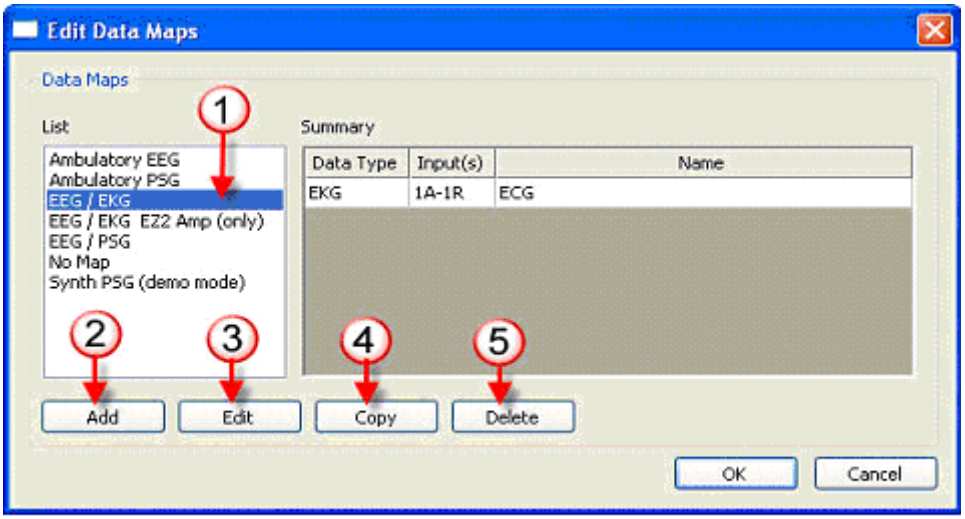
To open or create a Data Map, double click on the Easy III System Utilities Icon, select System Setup and click on the Data Map option.



Editing or Selecting a Data Map (note the menu displayed below)

1. Select the Data Map you would like to review.
2. To add a new Data Map, click on the Add button.
3. To edit the selected Data Map, click on the Edit button.
4. To make a copy of the selected Data Map, click on the Copy button.
5. To delete the selected Data Map, click on the Delete button.

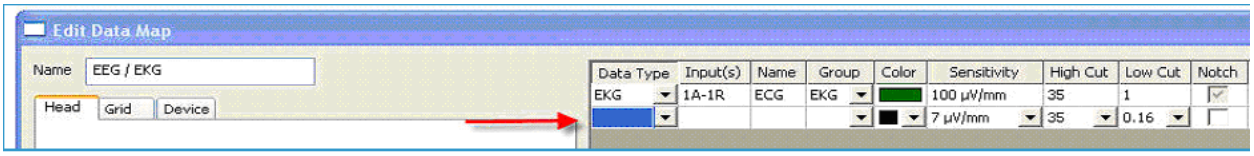
Note: All changes made to data maps will be automatically copied to all systems. Any Data Maps deleted from this list will also be deleted from all systems.



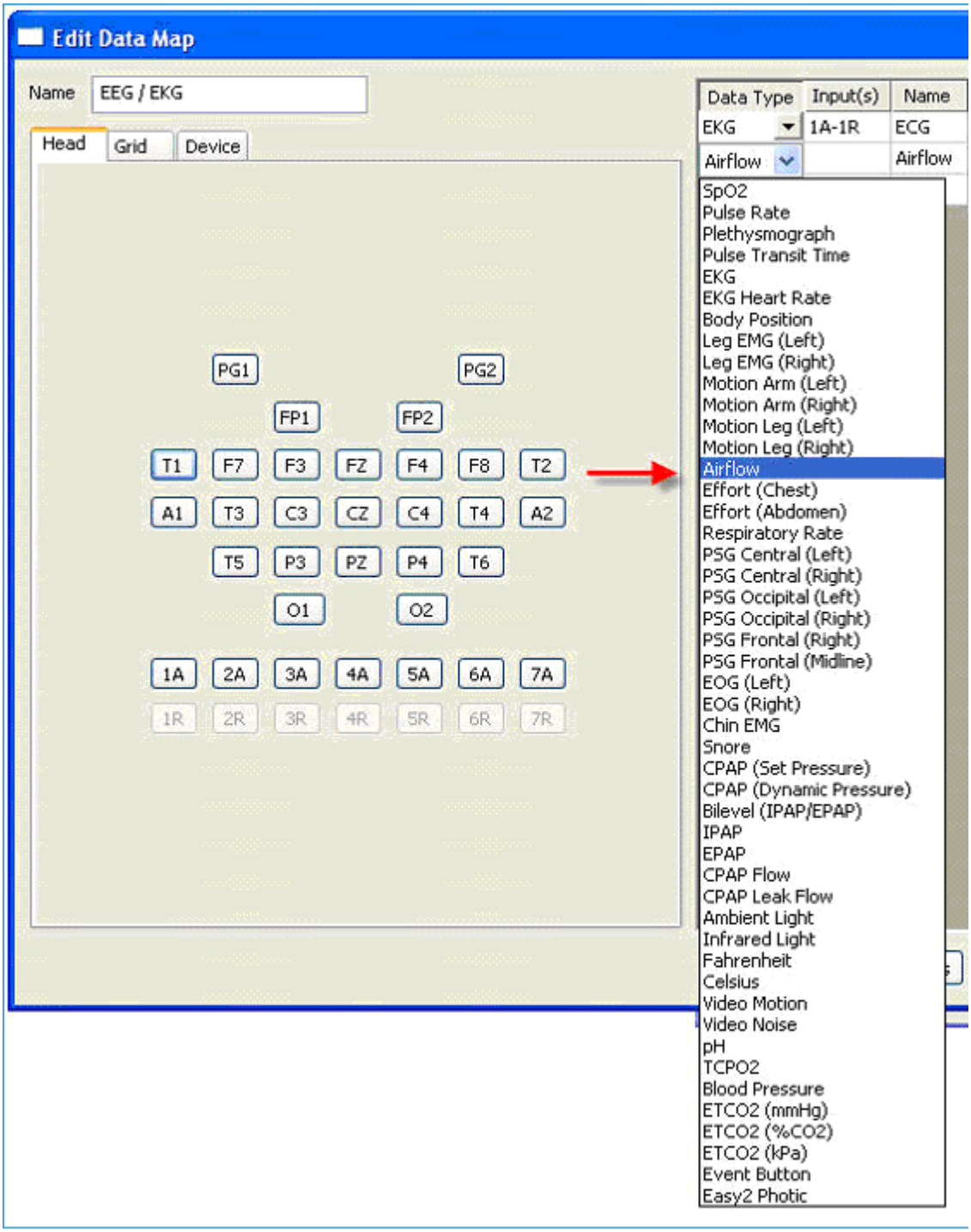
Adding a Channel to a Data Map

Selecting a Data Map from the Data Map list and clicking on Edit will allow the user to edit the selected map.

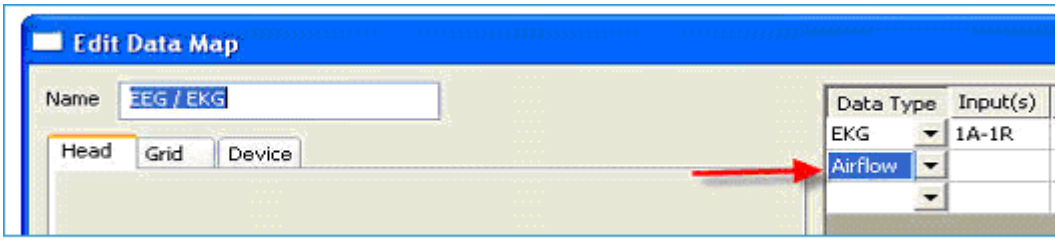
Click on the Data Type drop down, select a channel type.



In the example below, an airflow channel will be added to the EEG/EKG Data Map.



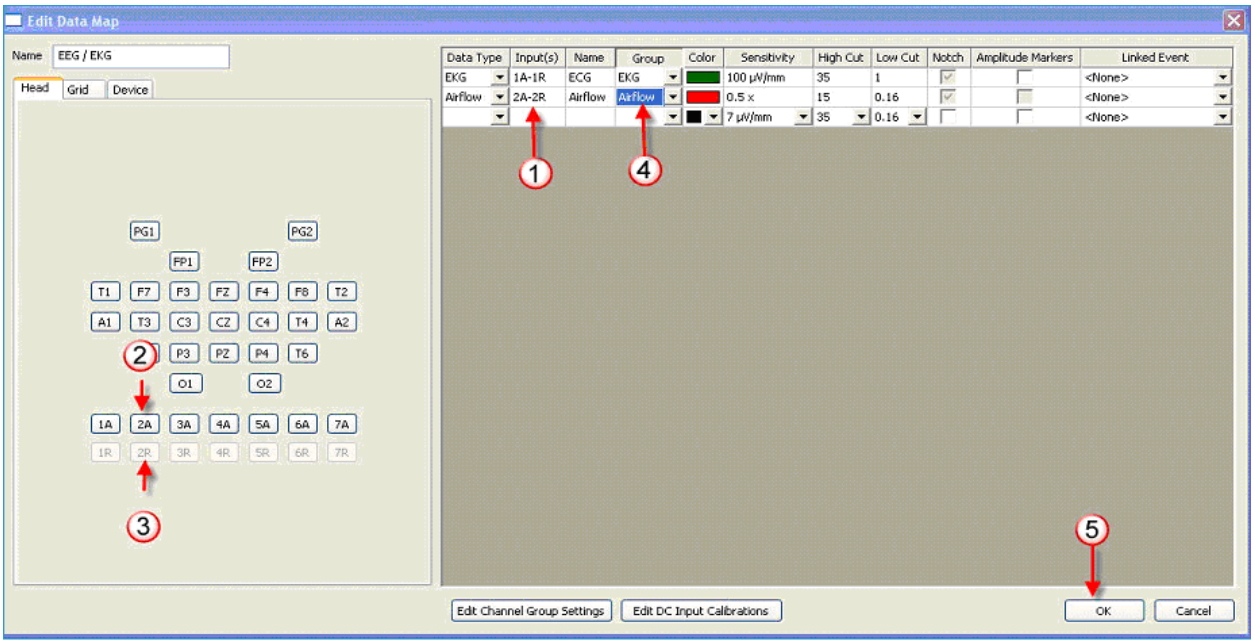
Note the Airflow channel is now automatically placed in the second row of the EEG/EKG Data Map displayed below.

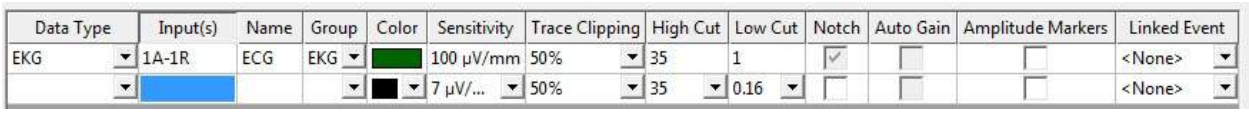


To select the inputs you would like to use:
1. Click in the Input(s) cell
2. Click in the Active input you would like to use (in this example 2A is used)
3. Click on the Reference input you would like to us (in this example 2R is used). The Inputs box will now display 2A-2R.
4. Click on the Channel Group and select Airflow.

*note the second image below showing the complete Edit Data Map options and their meaning.

5. Click on OK to save the changes added to the data map. The 2A - 2R inputs will now be configured for use for the Airflow channel.



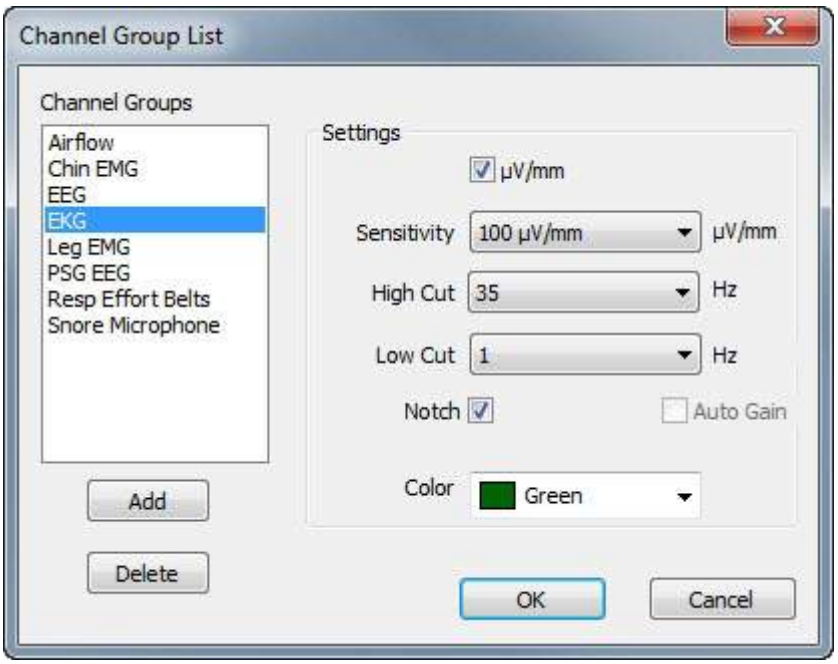


*NOTE: Most of these settings can also be established at the montage level. See montage section for details.

Data Type: Select from this list to assign the data type that refers to the channel being added. The EEG channels do not need to be added here, they are referenced at the montage level.

Input(s):Utilize either the Head, Grid or Device tab to identify what device/input will be used for this channel. For instance, if this is an EasyNet module, select the Device tab and click on the appropriate EasyNet module being used. If this is an ETCO2 external device, select the Device tab, select the appropriate DC input that this channel is plugged into, and then select the calibrated DC device from the list that appears. If this channel is an EKG plugged into 1A and 1R, select the inputs from the Head tab by clicking on 1A first, then 1R.
Name:This is where the laboratory can specify a name for this particular channel that is easier to identify for the lab than just utilizing the Data Type or Input name.
Group: Select from the dropdown if this channel should be associated with a particular linked channel group. See below for more information on editing channel group settings.
Color:Select the default color for the trace for this particular channel. If associated with a group already, the color can be changed via the edit channel group settings option.
Sensitivity:Select the default sensitivity for this particular channel. If associated with a group already, the sensitivity can be changed via the edit channel group settings option.
Trace Clipping:Select the default percent of clipping allowed. For instance, if No Clipping is selected, the traces will display the full morphology and can obscure neighboring channels. This can be adjusted on the fly when reviewing a study as well. The typical default is 50% which means that the trace will only overlap up to 50% of each of it's two neighboring channels.
High Cut:Select the default High Cut filter for this channel. If associated with a group already, the High Cut filter can be changed via the edit channel group settings option.
Low Cut:Select the default Low Cut filter for this channel. If associated with a group already, the Low Cut filter can be changed via the edit channel group settings option.
Notch:Check this option to apply the notch filter by default. If associated with a group already, the notch filter can be changed via the edit channel group settings option.
Auto Gain:Check this option to apply auto gain to this channel. The auto gain feature is specifically designed to assist users collecting polysomnographic data. When enabled, this feature will dynamically adjust sensitivity for a particular channel on the fly.
Amplitude Markers:This setting can be enabled to display a 75 uV range set of markers over the selected EEG channel.
Linked Event:This is primarily used in PSG studies to assign a channel to a particular event being detected.

Edit Channel group Settings
Select this option to change the associated settings for a given channel group or to add a new channel group.

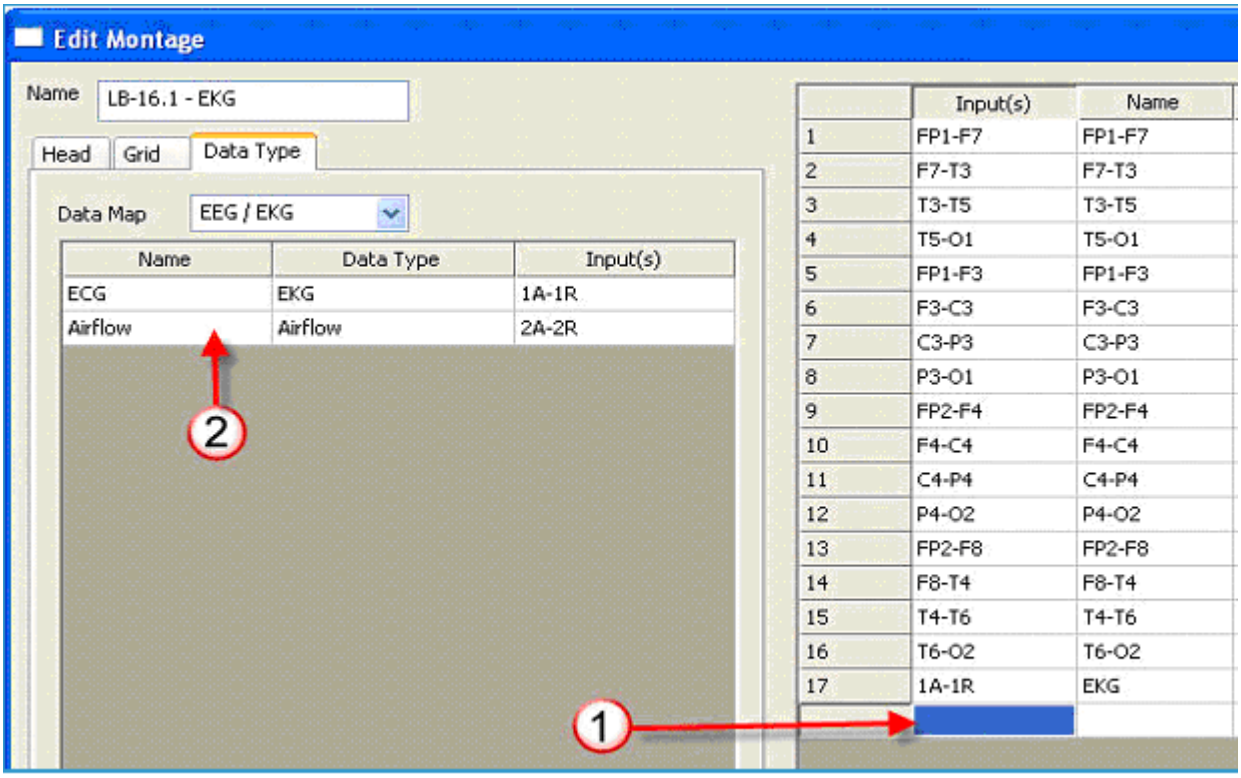


Select the Channel Group from the list on the left, or to add a group select Add and name the new group. Groups can also be permanently deleted from this window. Once the channel group is selected, the default settings for sensitivity, High and Low Cut filters, Notch, Auto Gain (if available), and color can be determined. If desired to have traces be different colors within the same group, select Not Specified. This will allow for the color selector to be available in the main settings window per channel after closing out the Channel Group List window.

Adding a Data Map Channel to a Montage

Open the montage you would like to edit. Click on the Data Type tab. Verify you are using the correct Data Map.

1. Click in the Input(s) box in the row you would like to add the channel.
2. Click on the channel you would like to add to the montage (in the example below, the airflow channel will be added to the displayed montage).
3. Click on OK to save.

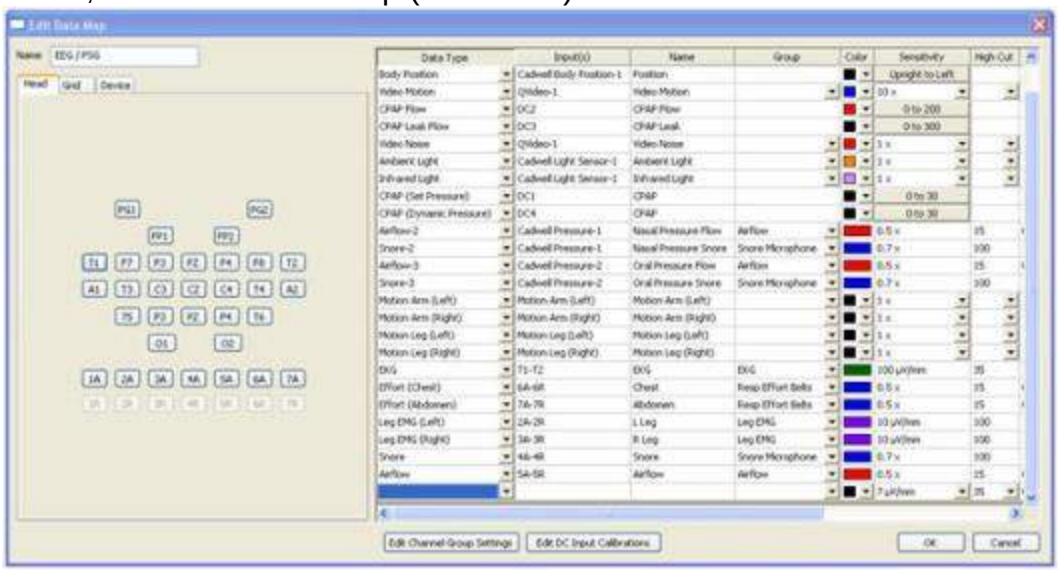


See Adding, Modifying, and Calibrating DC devices for adding DC devices. For example, CPAP, ETCO2, Oximeter, etc...

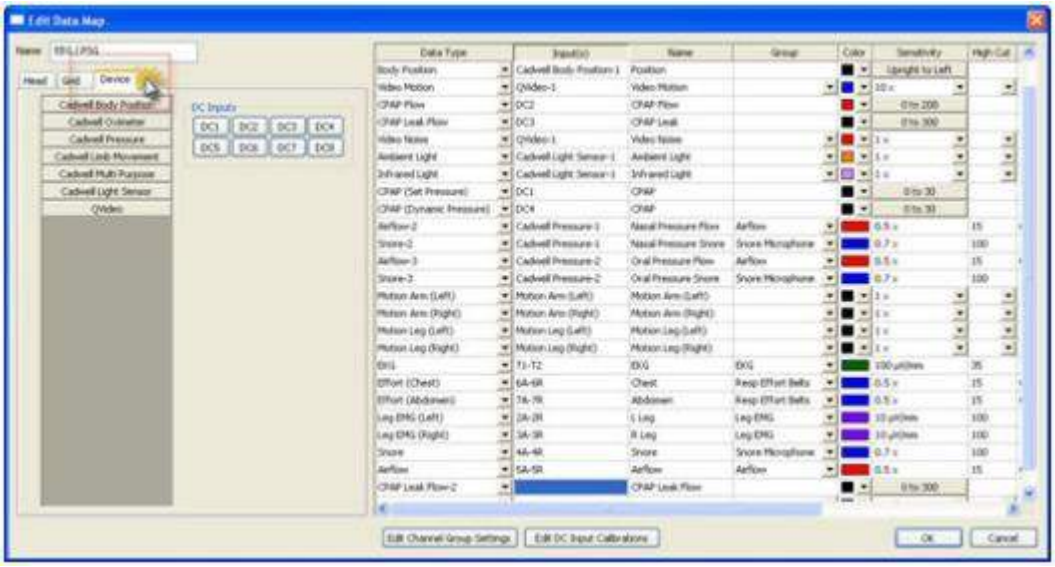
Adding, Modifying and Calibrating DC Devices

Adding and Calibrating DC Devices
Before an external DC device is used for a recording, it must be assigned to an input that will be used in your recording montage. The DC device should be calibrated to the particular amplifier it will be connected to. Each DC device has unique voltage outputs, even two identical devices of the same brand and model. A unique device definition (calibration) is needed for each combination of DC device, amplifier and input you will use.

Calibrating a New DC Device
1. Connect the DC device to the Easy III Amplifier DC input. Note the DC input number.
2. Select System Setup from the Easy III Start menu.
3. Click the Data Map button. Highlight the Data Map used by your facility. In most cases, the default PSG map (EEG/PSG) can be used. Click Edit to view the data map.



4. This drop down is highlighted blue in the illustration above). Select the channel data type you are looking for. For example, if you are adding a CPAP leak channel, select the CPAP leak flow data type.



5. Look for the Input(s) cell. In the displayed menu illustration above, note the CPAP Leak Flow-2 channel has been added. The Input(s) cell is in the second column of the CPAP Leak Flow-2 row. Click in the Input(s) cell. The cell should now be highlighted.

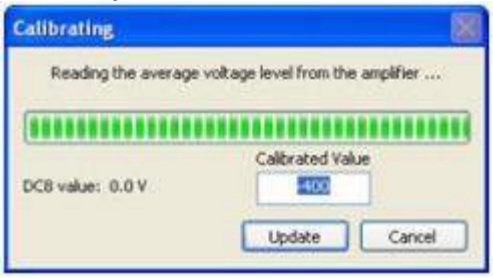
6. Click on the Device tab in the upper left hand corner of the Edit Data Map dialog. Note the illustration above. The eight DC input buttons displayed on this tab correspond to the eight DC inputs on the Easy III amplifier. Select the DC input (DC1 - DC8) your device is currently connected to. The DC input should be the same input connected in step 1 above.

7. Click on 'Add' (note the illustration above) to add your new DC device.

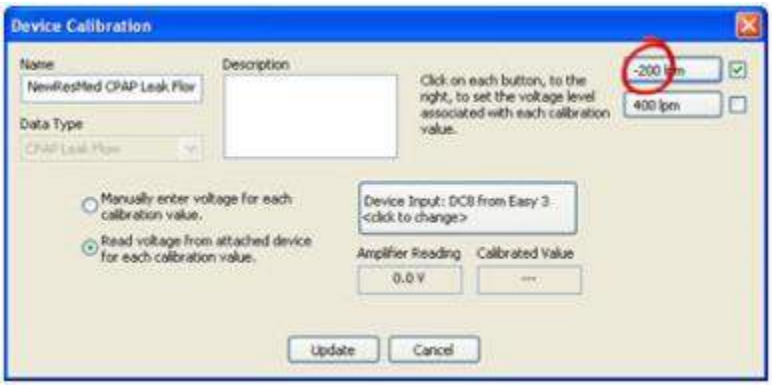
8. Enter the Name of the channel you are calibrating. Select the 'Read voltage from attached device for each calibration value' option. Now select the DC input that the DC device is connected to. In the example below, the DC8 input has been selected by clicking on the Device Input button. Note the cool yellow and red mouse cursor displayed below on this button. Verify you are selecting the correct amplifier and DC input.

9. To Calibrate the Low Value - Set the DC device (in this example the DC device is a ResMed flow channel) to the lowest flow/calibration setting. Click on the -400 lpm button. Proceed forward until the following prompt is displayed. If you would like to

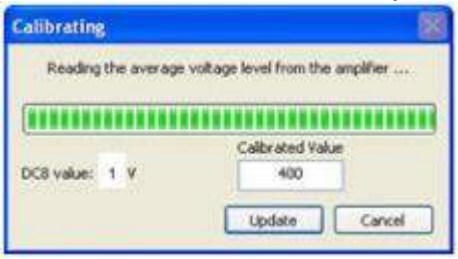
specify a different low calibration value (the default was -400) you can enter it in the calibration value field. In the example below, the calibrated value (-400) will be manually modified to -200. Click on Update to continue.



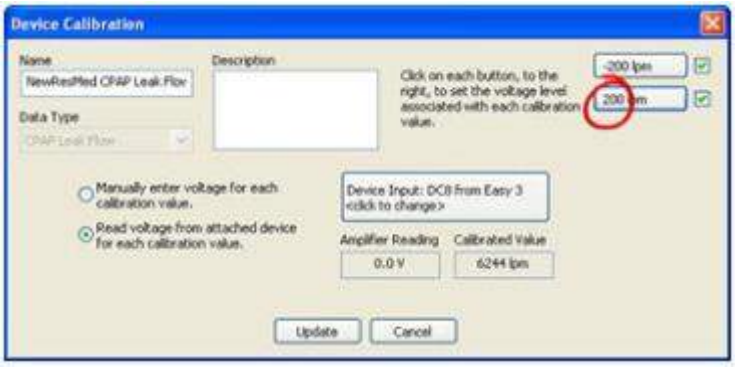
10. Note the illustration below. The low value button is now displayed with the new calibration value. The low calibration value also has a green check mark box displayed adjacent to the low value. This indicates the new low calibration value has been recorded.



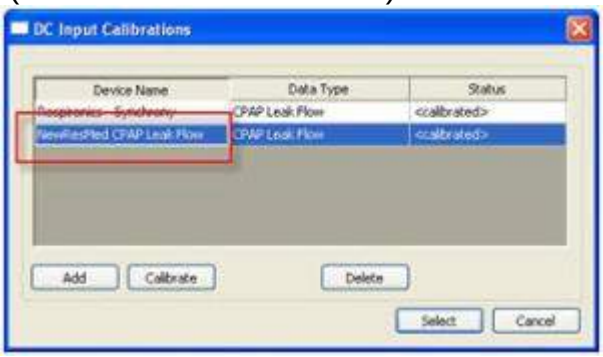
11. To Calibrate the High Value - Set the DC device (in this example the DC device is a ResMed flow channel) to the highest flow/calibration setting. Click on the 400 lpm button. Proceed forward until the following prompt is displayed. If you would like to specify a different low calibration value (the default was 400) you can enter it in the calibration value field. In the example below, the calibrated value (400) will be manually modified to 200. Click on Update to continue.



12. Note the illustration below. The high value button is now displayed with the new calibration value. The high calibration value also has a green check mark box displayed adjacent to the high value. This indicates the new high calibration value has been recorded. Click on Update to save the new calibration.

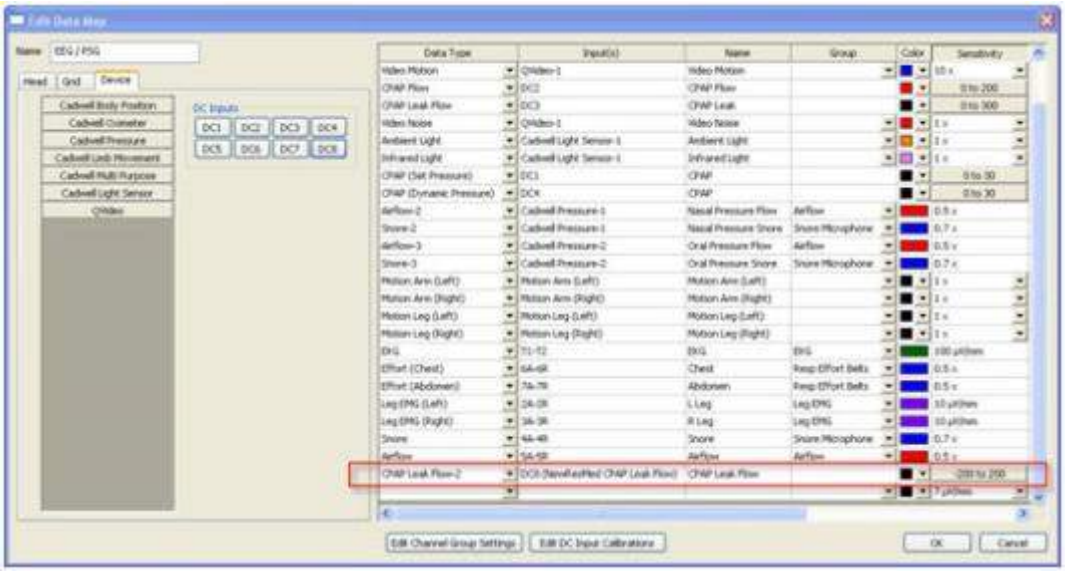


13. The new DC calibration should now be displayed in your list of DC input calibrations. (Note the illustration below)



14. Highlight the new DC calibration and click on Select.

15. Note the illustration below. The calibration has now been added to your default data map. All data maps on all synchronized Easy III systems will now be updated. If you have another Easy III system that will use the same device, or same type of device, you will need to perform another calibration on each specific system. Note: After the calibration has been record for each specific system, the calibration does not need to be repeated unless the DC device, DC device cable, or Easy III amplifier have been replaced.

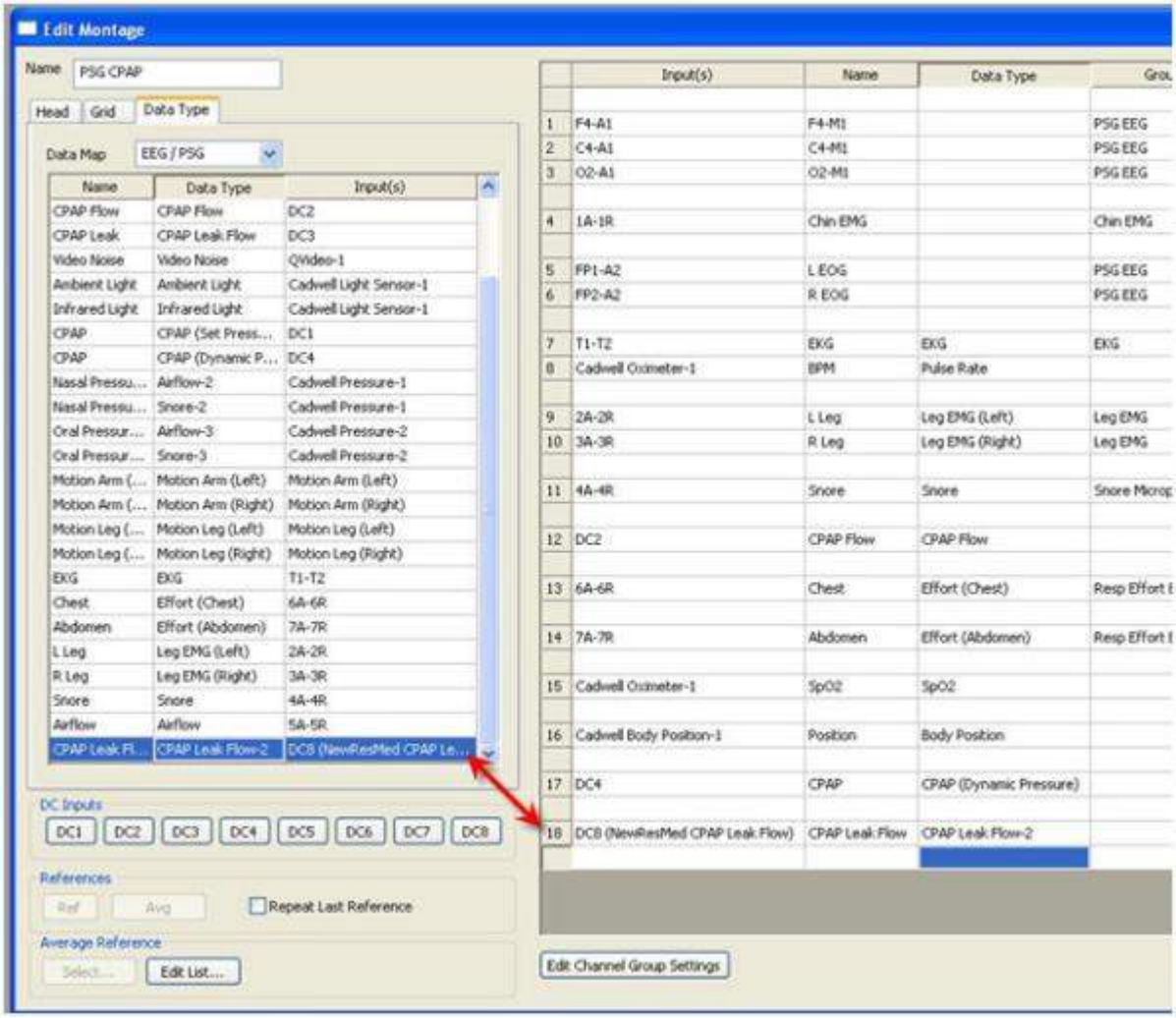


16. Click on OK to save the new calibration in the data map. Verify that your new DC input is correctly configured in your recording montages. Review the information below to verify your configuration is correct.

Verifying the Correct DC Calibration and Input are Used in Recording Montages

1. Click the Montages button in the System Settings window.

2. Select the PSG montage from the montage list. Click the Edit button.



3. To add a new DC input channel to an existing montage, right click in the location where you would like to insert the channel. In the illustration above, the insert option is selected to add another channel to the bottom of the displayed montage.

4. Click in the Input(s) box adjacent to the channel. In the illustration above, the channel is added to row 18.

5. Click on the Data Type tab located on the left side of the Edit Montage dialog.

6. Verify you are using the correct data map. In the example above, the data map with the new DC device channel is EEG/PSG.

7. Look for the new DC device channel you would like to add to the montage. Click on the channel.

8. The new channel will be displayed in your montage.

9. Click on OK to save your changes. The edited montage will be synchronized with other Easy III systems.

Re-calibrating DC Devices

Re-calibration needs to be performed when an existing hardware configuration has been modified. Devices will need to be re-calibrated when the following occur:

- An existing DC device is exchanged for another DC device of the same type.
- An existing DC device is replaced with a different device that provides the same
- data type (CPAP flow, CPAP pressure).
- A new DC input cable from the DC device to the Easy III amplifier is used.
- A new Easy III amplifier is used.

Re-calibration Steps

1. Verify the DC device is connected to the Easy III Amplifier DC input. Note the DC input number.

2. Select System Setup from the Easy III Start menu.

3. Click the Data Map button. Highlight the Data Map used by your facility. In most cases, the default PSG map (EEG/PSG) can be used. Click Edit to view the data map.

4. Look for the channel you would like to re-calibrate. If the channel is not in the data map, you may be in the wrong data map. If the device needs to be added to the data map, proceed to the Adding and Calibrating a New DC Device section of this Help File.

5. If the channel is in the data map, click on the Edit DC Input Calibrations button. Look for the input you would like to re-calibrate in the DC Input Calibrations dialog. Highlight the channel and click on Calibrate.

6. Verify the name of the channel you are calibrating is correct. Select the 'Read voltage from attached device for each calibration value' option. Verify the correct DC input is being used.

7. To Calibrate the Low Value - Set the DC device (for this example the DC device is a Respironics Synchrony pressure channel) via the PC Direct software to the minimum pressure/calibration setting. Click on the O cm H20 button in the Device Calibration dialog. Proceed through the calibration, clicking on Update to complete the minimum calibration.

8. To Calibrate the High Value - Set the DC device (for this example the DC device is a Respironics Synchrony pressure channel) via the PC Direct software to the maximum pressure/calibration setting. Click on the 30 cm H20 button in the Device Calibration dialog. Proceed through the calibration, clicking on Update to complete the maximum calibration.

The calibration has now been updated with the new calibration.

Adding an Event Button to a Data Map

1. Select the Data Map you would like to edit (by default, the Event Button is already added to the EEG/EKG data map). Click on Edit.

2. Click on the Data Type drop down. Select Event Button.

3. Click on the Device Tab. Click on the DC input you would like to use for the Event Button. The DC Input Calibration dialog will be displayed.

4. Look for the Event Button in the list. If the event button is not displayed, click on Add.

5. Type in a name 'Event Button'.

6. Click on the Device Input button. Select the Amplifier and DC input you would like to use. Click on Update.

7. Click on Read Voltages from the Attached Device.

8. Click on the '0' button in the upper right hand corner. Select OK when you are ready. The input voltage should read 15V.

9. Hold the button down on the Event Button. Click on the '1' button in the upper right hand corner. Select OK. The voltage should equal 0V. Click on Update.

10. The '0' button and the '1' button should now have a green check mark next to each button. This indicates that both have been calibrated. Click on Update.

11. Edit the Event Button in the Data Map. Select a trace color. Add trace clipping if you want to restrict the Event Button signal amplitude. Click on OK and close the System Setup dialog.

12. Edit Montages from the System Settings dialog. Add the Event Button channel to selected montages by clicking on the Data Type tab. Verify that the correct Data Map is being used.

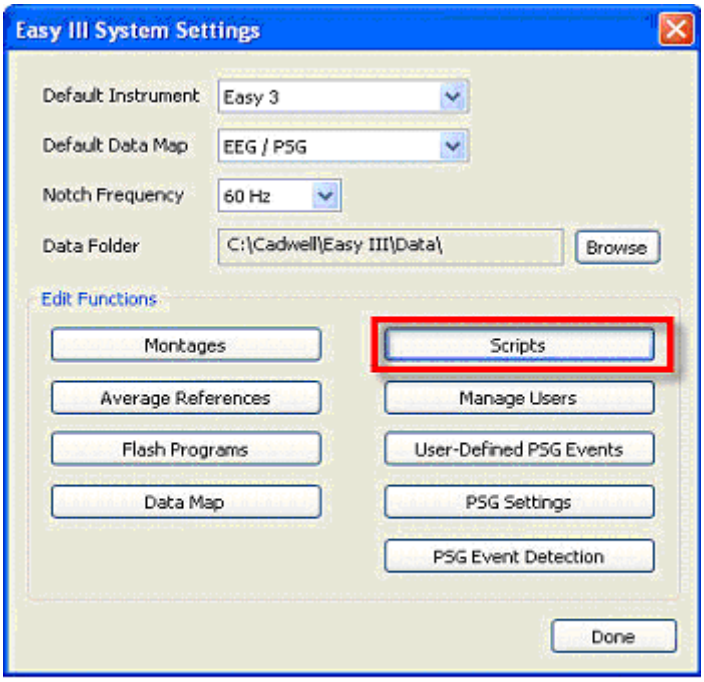
13. Click on the channel row in the montage where you would like to add the Event Button. Click on the Event Button item in the list displayed on the left side. After clicking on the Event Button, the channel should now be displayed in the selected montage displayed in the right hand panel. Click on OK. Close the Montage Editor.

14. The Event Button is now ready for use. When the event button is depressed, the Easy III software will detect the event. The event will be added to the trace window and the Event List.

Scripts

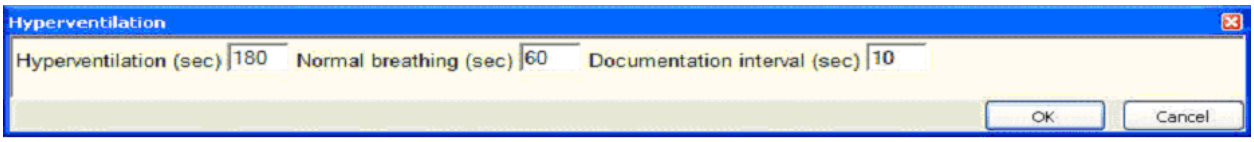
Scripts

From the Easy III Start Page, click the System Setup button, and then click the Scripts button.



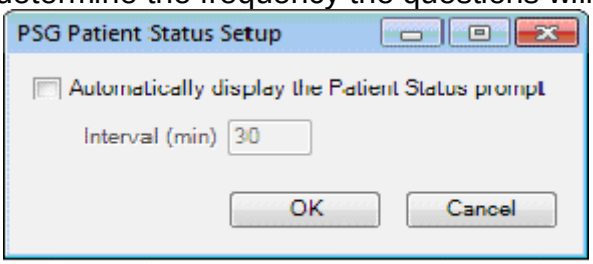
The Select Script window will open. Choose a script and click the OK button.

Hyperventilation
A Hyperventilation window will open.



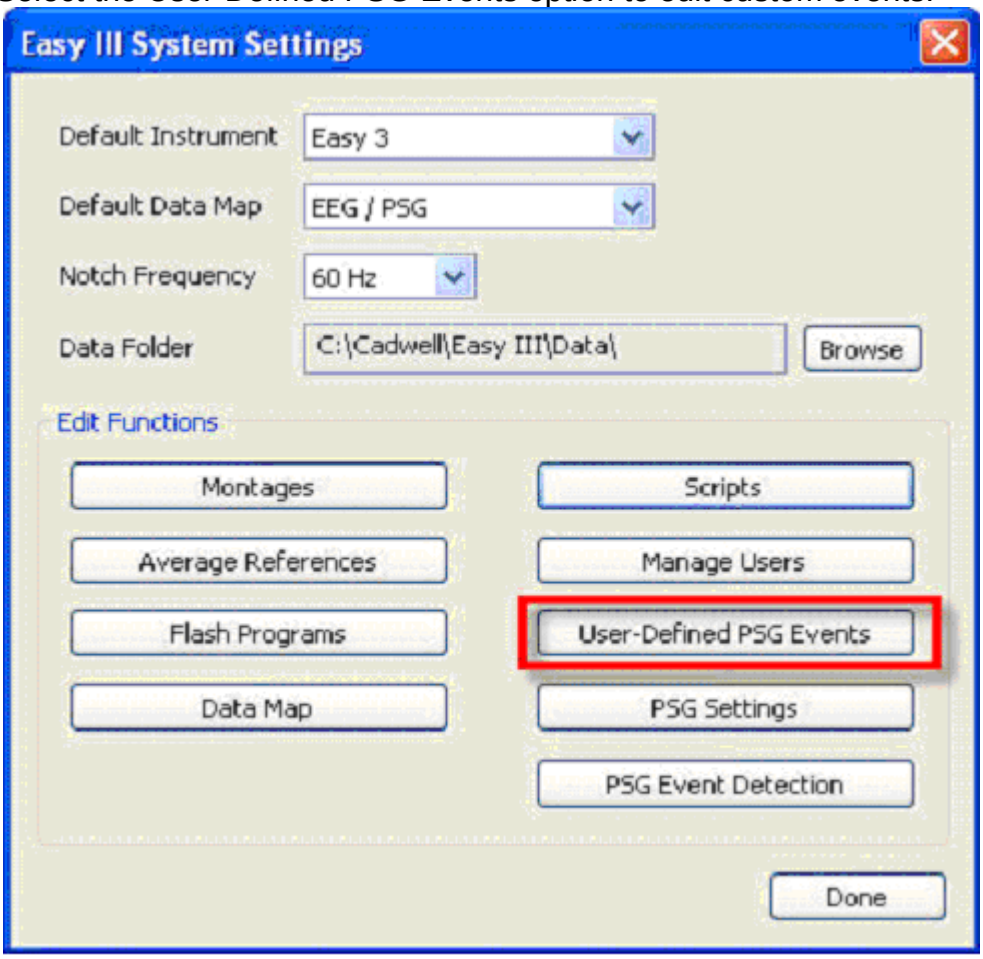
Hyperventilation (seconds)
Enter the total number of seconds you would like the hyperventilation session to last. Easy III will automatically place a text event (indicating that the patient is hyperventilating) every 10 seconds (or as specified in the Documentation Interval).
Normal Breathing (seconds)
Enter the total number of seconds you would like the post-hyperventilation session to last. Easy III will automatically place a text event (indicating that the patient is in post hyperventilation) every 10 seconds (or as specified in the Documentation Interval).
Documentation Interval (seconds)
Enter the interval (seconds) you would like Easy III to automatically place a text in the trace window during activation.

Patient Status
Adding a check mark to the 'Automatically display the Patient Status prompt' will display a set of questions useful during PSG/Sleep recordings. Adjusting the interval will determine the frequency the questions will be displayed during data collection.



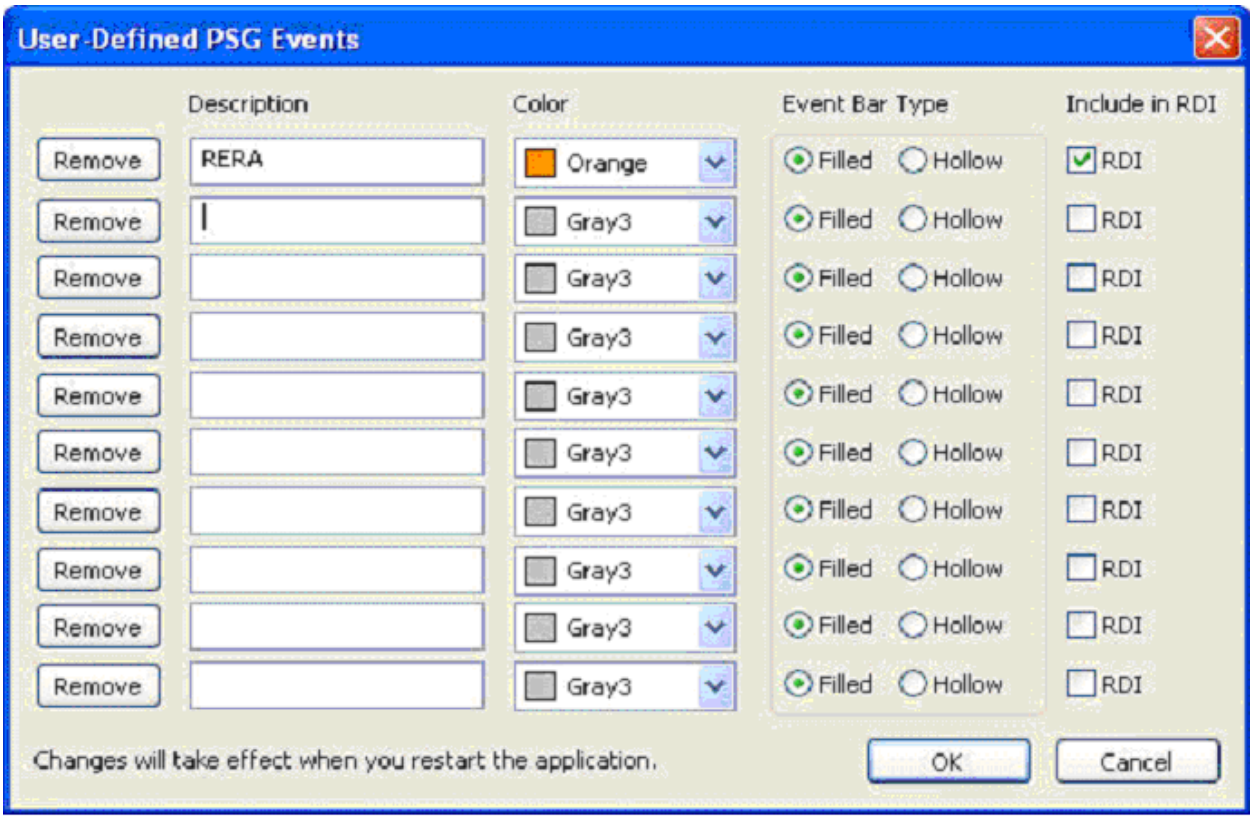
User Defined PSG Events

Select the User-Defined PSG Events option to edit custom events.

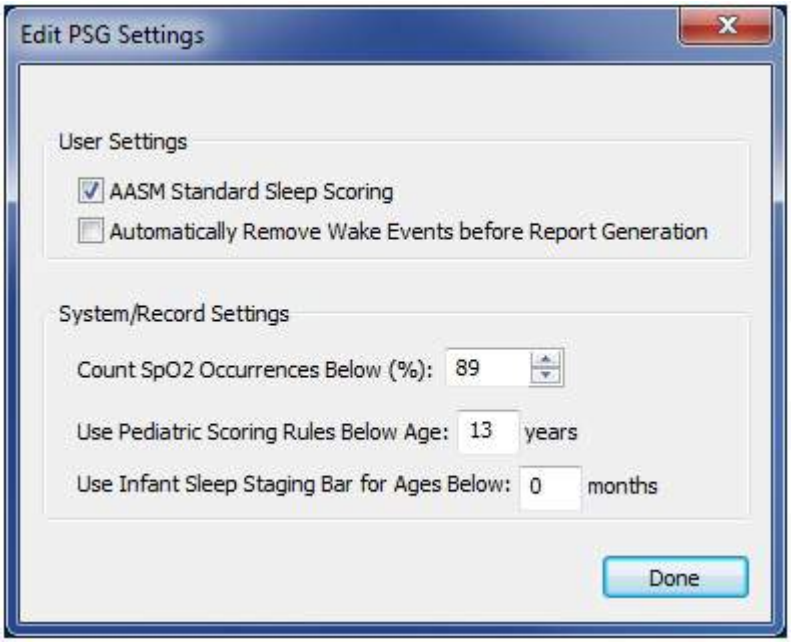


Note the RERA event listed below. The user can define the following for each user defined event.
Description - This is the label that will be used when the event is marked. This label will show up in the event list.
Color - This is the color of the event bar that will be placed on the channel where the event is marked.
Event Bar Type - This is the type of event bar that will be placed on the selected channel. The bar can be filled (solid) or hollow (a rectangle box).

Include in RDI - This option will allow the user defined event to be included in the RDI calculation used by Easy III.

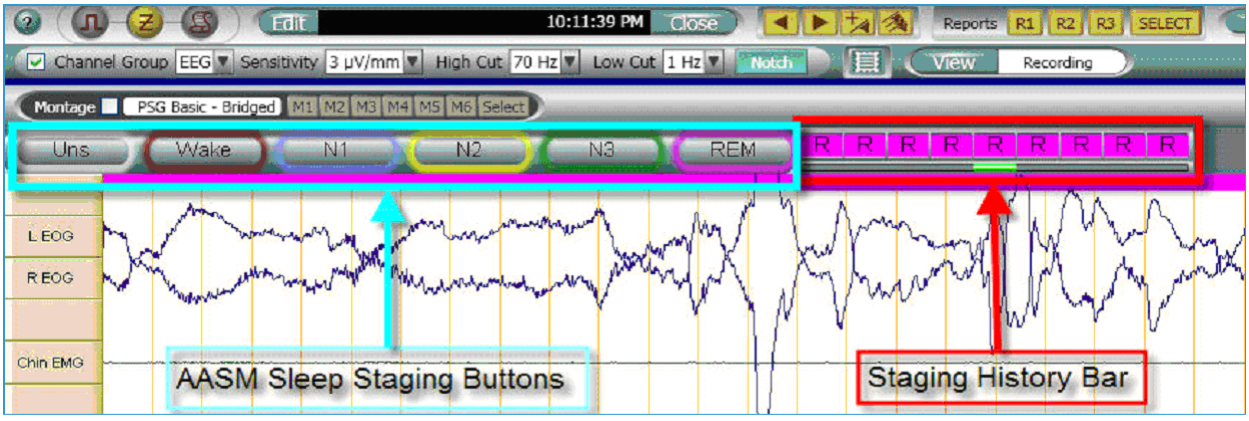

User-Defined PSG Events
Description
Color
Event Bar Type
Include in RDI
Remove
RERA
Orange
Filled
Hollow
RDI
Gray3
Changes will take effect when you restart the application.
OK
Cancel

PSG Settings



AASM Standard Sleep Scoring

Add a check mark to the AASM Standard Sleep Scoring check box to use the nomenclature from the AASM Manual for the Scoring of Sleep and Associated Events, published by the American Academy of Sleep Medicine (AASM) in 2007.
The AASM Standard Sleep Scoring defines sleep stages as Wake (W), N1, N2, N3, and REM based on the AASM guidelines. An epoch can also be marked as Unscored (Uns) if it has no staging. Note the appropriate sleep staging tools displayed below.



Using the Older R&K Sleep Scoring Standard

The older sleep stage categories are Awake (Awk), Movement (Mvt), Stages 1-4 (S1, S2, S3, S4), and REM based on R&K Guidelines (1967). An epoch can also be marked as Unscored (Uns) if it has no staging. Note the older R & K staging tools displayed below.

Automatically Remove Wake Events before Report Generation

Event detection can be configured to occur during data collection. When users sleep stage recordings, epochs scored as Wake may have events that were previously detected during data collection. When reports are generated, Easy III will ignore respiratory events, snore events, etc. if they were marked in epochs identified as Wake. Events that were previously marked will remain displayed in the Wake epochs. To automatically remove the Wake events, place a check mark in the Remove Wake Events check box. When you generate a PSG report, the wake events will be deleted from all epochs marked as Wake. Note: If this setting is not enabled, the user can remove Wake events by right clicking in the Trace Window. An option has been added to remove wake events. Click on this option to immediately remove wake events.

Count SpO2 Occurrences Below % Setting

This setting is used in the oximetry report. The total amount of time below this setting will be used in the oximetry report.

Use Pediatric Scoring Rules Below Age Setting

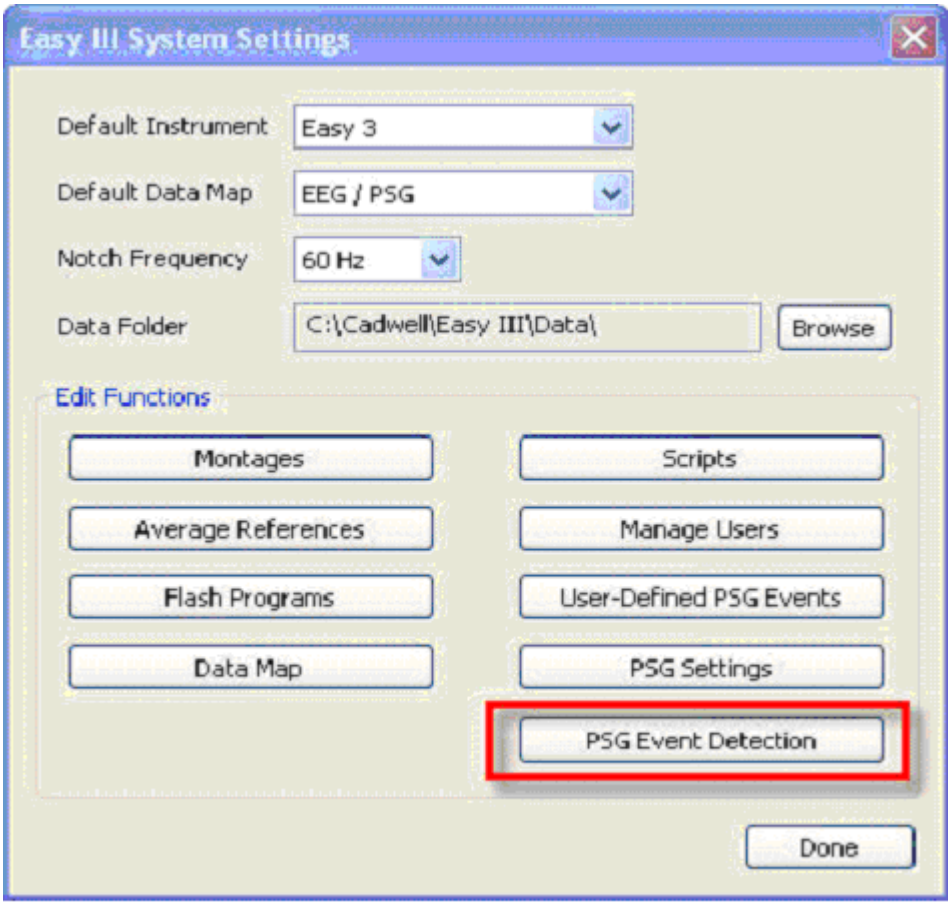
This setting is used to specify the age limit for pediatric (periodic breathing) respiratory event scoring. The patient must be less than or equal to the age in this setting.

Use Infant Sleep Staging Bar for Ages Below Setting

Infant Scoring Labels will automatically appear based on patient's age. User sets the age defaults for this to happen in age in months in settings. If user chooses to never use infant labels they should set default age for less than 0. Corresponding Tokens for generating reports have been added. A default Infant Scoring report was created for both PSG and PAP.

PSG Event Detection

Click on the PSG Event Detection button to access PSG Event Detection settings.

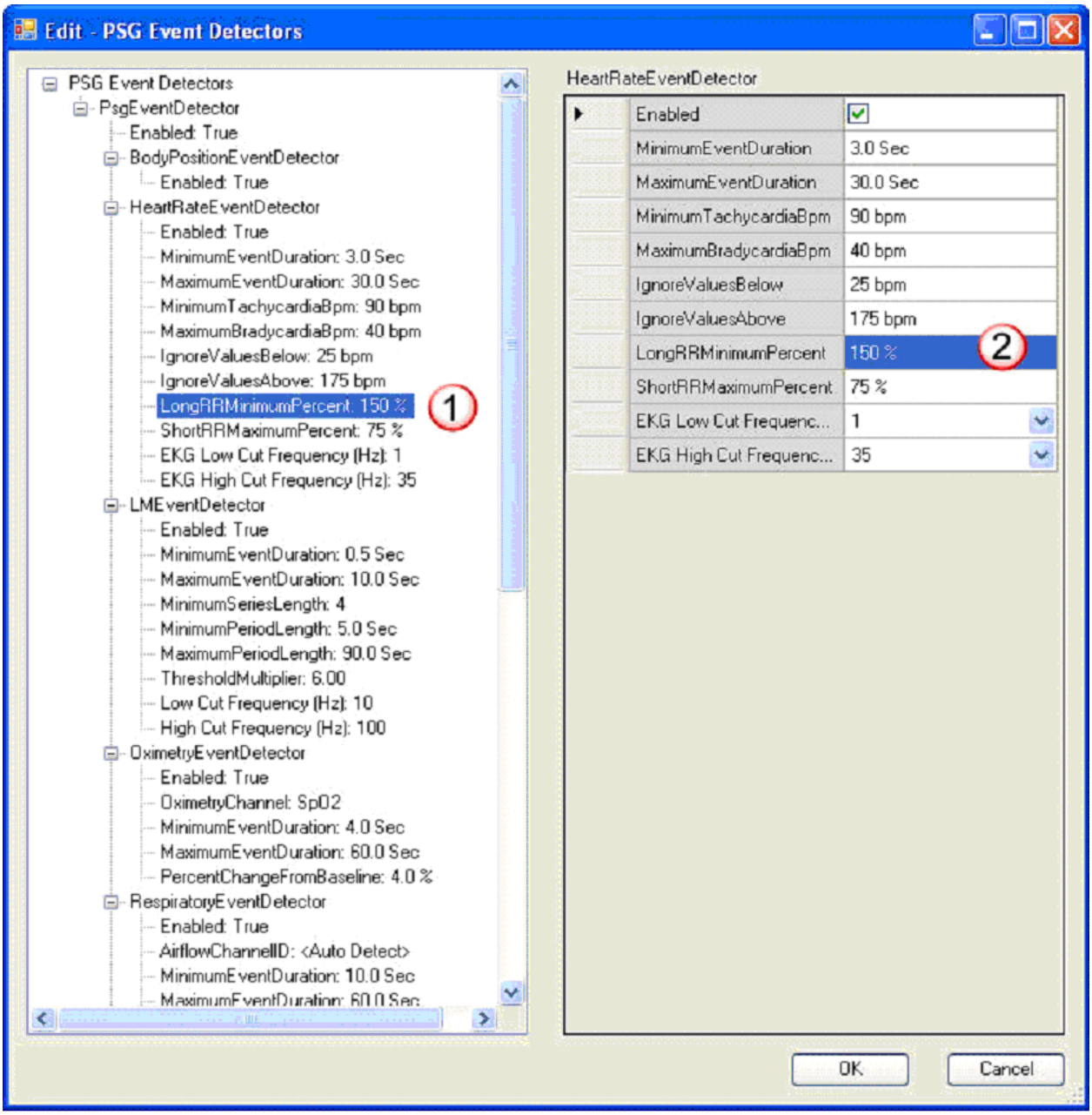


To review settings (note the illustration below) use the scroll bar in the PSG Event Detector column to review detector settings.

1. Left click on a detector category you would like to review.
2. To modify a specific user setting, left on the specific setting and type in a new value.

In the sample below, clicking in the blue area (where the number 2 is displayed) will allow the user to type in a different Long R-R Minimum Percent. The user could type in 100 and then move on to the next category, or simply click on OK to save the new default setting. The new default setting will be synchronized across all Easy III systems. All PSG records will now use the new setting during data collection and review.

NOTE: Systems previously collected with the old RR settings will not be automatically updated to the new settings. Auto-detection for RR to intervals must be re-run to use the new settings.



PSG Event Detector

To enable PSG Event Detection, click on the PSG Event Detector Group. Place a check mark in the PSG Event Detector check box. All event detectors that have been enabled (with a check box setting of True) will be auto detected. Note: If the check mark is removed, no auto-detection of events based on your settings will occur.

Body Position Event Detector

To enable Body Position Event Detection, click on the Body Position Event Detector. Place a check mark in the Body Position Detector check box. Note that the Body Position Detector setting will display 'True' in the column on the left side of the menu.

This will indicate that the event detector has been set to detect body position changes from a body position module.

Heart Rate Event Detector

To enable the Heart Rate Detector, click on the enable heart rate detector check box. Note the heart rate detector will display 'True' on the column on the left side.

• Minimum Event Duration is the minimum number of seconds required for a Tachycardia or Bradycardia event.

• Maximum Event Duration is the maximum number of seconds allowed for a Tachycardia or Bradycardia event.

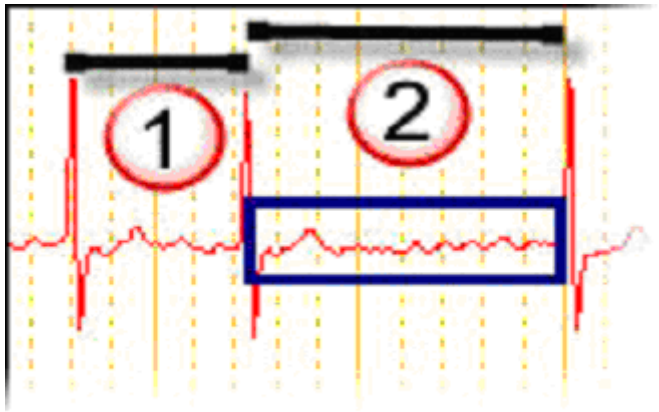
• Minimum Tachycardia bpm is the minimum heart rate required to trigger a tachycardia event. The default setting is set to 90 bpm as recommended by the AASM (July, 2007)

• Maximum Bradycardia bpm must be at this level or lower for at least the minimum event duration for a Bradycardia event to be detected. The default setting is set to 40 bpm as recommended by the AASM (July, 2007).

• Ignore Values Below. Values recorded below this level will be ignored by the event detector.

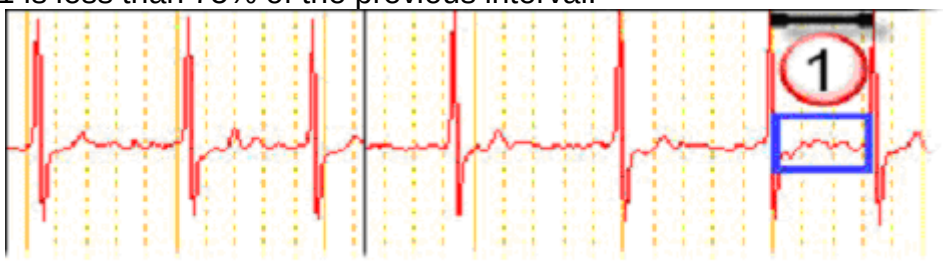
• Ignore Values Above. Values recorded above this level will be ignored the event detector.

• Long R-R Minimum Percent. This setting looks at the percent increase in time between R-R waves required to mark an R-wave-to-R-wave interval as "Long R-R." The long R-R algorithm compares the current R-R interval to the previous R-R interval. If the second interval has increased by the percent specified, the second R-wave-to-R-wave (R-R) interval is marked as a long R-R event. A long R-R interval is then ignored in determining the next interval. To reduce the number of Long R-R events detected, increase the Long R-R % setting. In the sample below, the duration of interval 2 is 150% longer than the previous interval. As the detector examines interval 1 and interval 2, the second interval is marked because 150% of the previous interval has been exceeded.



• Short R-R Maximum Percent. This setting looks at the percent decrease in time between R-waves required to mark an R-wave-to-R-wave interval as "Short R-R." The short R-R algorithm compares the current R-R interval to the previous R-R interval. If the second interval has decreased by the percent specified, the second R-wave-to-R-

wave (R-R) interval is marked as a short R-R event. A short R-R interval is then ignored in determining the next interval. To reduce the number of Short R-R events detected, decrease the Short R-R setting. In the sample below, the duration of interval 1 is less than 75% of the previous interval.



• EKG Low and High Cut Filter Settings. When artifact is encountered, use these settings as necessary to change heart rate detector results.

NOTE: It is important to realize that the computerized process of event detection is only an aid for the physician in the establishment of a diagnosis. It does not replace the physician or diminish the requirement to use sound professional judgment when reviewing and marking events.

Limb Movement Event Detector

To enable the LM (Limb Movement) Event Detector, click on the LM Event Detector. Place a check mark in the LM Event Detector check box. Note that the LM Detector setting will display 'True' in the column on the left side of the menu. This will indicate that the event detector has been set to detect LM events and PLM Series (as defined by the AASM, July 2007).

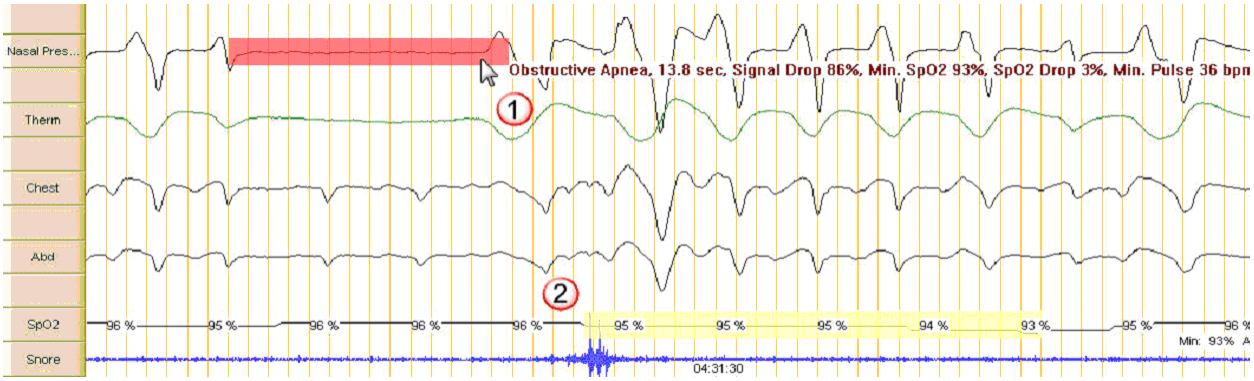
• Minimum Event Duration is the minimum LM duration required for detection.
• Maximum Event Duration is the maximum LM duration allowed for event detection.
• Minimum Series Length is the minimum number of LM events required for a PLM Series.
• Minimum Period Length is the minimum amount of time allowed between any two LM events in a PLM series. If a LM event is too close to the previous event, it will not be included in the PLM series count, however the PLM series may continue if another LM event meets the minimum period length setting.
• Maximum Period Length is the maximum amount of time allowed between any two LM events in a PLM series. A PLM series will be broken if a LM is greater than 90 seconds away from a previous LM event.
• Threshold Multiplier is used to detect more or less LM events. The default threshold is 6. Set the threshold lower to detect more events, set the threshold higher to detect fewer events.
• LM Low and High Cut Filter Settings. When artifact is encountered, use these settings as necessary to change LM detector results.

Oximetry Event Detector

To enable the Oximetry Event Detector, click on the Oximetry Event Detector. Place a check mark in the Oximetry Event Detector check box. Note that the Oximetry Event

Detector setting will display ‘True’ in the column on the left side of the menu. This will indicate that the event detector has been set to detect oximetry events.
• Oximetry Channel selection allows the user to select the Cadwell EasyNet SpO2 oximeter (SpO2) or any other oximeter calibrated and identified within the Easy III system (SpO2-1, SpO2-2, etc.).
• Minimum Event Duration is the minimum time (seconds) required to detect a desaturation event.
• Maximum Event Duration is the maximum time (seconds) allowed for desaturation events. This duration should be increased if the patient is having events greater than 60 seconds.
• Percentage Change from Baseline is the minimum percentage change in SpO2 level from the baseline SpO2 required to detect an oximetry event.

Respiratory Event Detector
Note the Obstructive Apnea event below. The detector has marked the event as a 13.8 second obstructive apnea.
1. Placing the mouse/cursor on the red event bar will display the event details. The details are as follows:
- Duration = 13.8 seconds
- Airflow Signal Drop = 86%
- Minimum SpO2 associated with the event = 93%
- Total SpO2 drop associated with the event = 3% *
- Minimum pulse rate associated with the event = 36 bpm
2. Note the associated oximetry desaturation event. The patients saturation dropped from 96% to 93%.



Respiratory Event Bar Colors
• Obstructive = Red
• Central = Yellow
• Mixed = Black
• Hypopnea = Green
To enable the Respiratory Event Detector, click on the Respiratory Event Detector. Place a check mark in the Respiratory Event Detector check box. Note that the Respiratory Event Detector setting will display ‘True’ in the column on the left side of the menu. This will indicate that the event detector has been set to detect respiratory events.

• Airflow Channel ID. Set this to Auto-Detect to have Easy III automatically detect an airflow sensor. Select a specific channel if you would like Easy III to use a specific channel for respiratory event detection.
• Minimum Event Duration. This is the minimum duration (seconds) for respiratory events (apneas, hypopneas).
• Maximum Event Duration. This is the maximum duration allowed for respiratory events. Extend this duration if the patient is have events greater than one minute in duration.
• Post Event SpO2 Interval. This is the period of time after a respiratory event that Easy III will look for the lowest saturation associated with the respiratory event.
• Respiratory Effort Threshold. This threshold will increase or decrease the types of apneas detected. Lower this threshold to detect more central apneas, increase this threshold to detect more central apneas.
• Apnea Airflow Threshold. This setting will increase or decrease the number of apneas detected. Decrease this setting to decrease the number of apneas events detected.
• Hypopnea Airflow Threshold. This setting determines the airflow amplitude drop required to detect a hypopnea.
• Central, Obstructive, Mixed, and Hypopnea Desaturation Threshold. This setting requires that the specified respiratory event have a corresponding desaturation event.
• Airflow and Respiratory Effort Low and High Cut Filter Settings. When artifact is encountered, use these settings as necessary to change respiratory event detector results.

NOTE: It is important to realize that the computerized process of event detection is only an aid for the physician in the establishment of a diagnosis. It does not replace the physician or diminish the requirement to use sound professional judgment when reviewing and marking events.

Snore Event Detector
To enable the Snore Event Detector, click on the Snore Event Detector. Place a check mark in the Snore Event Detector check box. Note that the Snore Event Detector setting will display 'True' in the column on the left side of the menu. This will indicate that the event detector has been set to detect snore events.
• Snore Channel ID. Use the Auto Detect setting to have Easy III detect the presence of a snore channel. Select a specific snore channel if you want Easy III to detect events on a specific channel.
• Minimum Event Duration. This is the minimum duration required to detect a snore event.
• Maximum Event Duration. This is the maximum duration for a snore event. A snore event will not be marked if it exceeds this duration.
• Threshold Multiplier. The default threshold is 4. Set this threshold lower to detect more events. Set this threshold higher to detect fewer events.
• Snore Low and High Cut Filter Settings. When artifact is encountered, use these settings as necessary to change snore event detector results.
NOTE: It is important to realize that the computerized process of event detection is only an aid for the physician in the establishment of a diagnosis. It does not replace the

physician or diminish the requirement to use sound professional judgment when reviewing and marking events.
Periodic Breathing Detector
If the Periodic Breathing detector status is set to 'True' on the right side of the Event Detector panel, Easy III system will refer to the pediatric event detection age specified in the PSG Settings option. If the age of the patient is equal or less than the specified age, the periodic breathing tool will be enabled.
Minimum Central Apnea Count – This setting determines the minimum number of central apneas required to mark a periodic breathing episode.
Minimum Central Apnea Duration – This setting determines the minimum duration for a central apnea to be included in a periodic breathing episode.
Maximum Central Apnea Duration – This setting determines the maximum allowable central apnea duration that can be included in a periodic breathing episode.

pH Event Detector
To enable the pH Event Detector, click on the pH Event Detector. Place a check mark in the 'True' check box on the right hand panel of the Event Detector panel.
Ignore Values Below – Set this value to disregard any pH data below this value.
Ignore Values Above – Set this value to disregard any pH data above this value.
Minimum Event Duration – Set this duration to define the minimum event duration for a pH event.
Maximum Event Duration – Set this duration to define the maximum event duration for a pH event.
Minimum Event Separation – Set this value to define the minimum duration required between events. Subsequent event detection cannot be started until this duration of time has elapsed.
Event Occurs Above – Set this value to determine the pH event threshold.

ETCO2 Detector Settings
To enable the ETCO2 Event Detector, click on the appropriate ETCO2 Event Detector (mmHg, %CO2, kPa) you would like to use. Place a check mark in the 'True' check box on the right hand panel of the Event Detector panel.
Ignore Values Below – Set this value to disregard values below this level.
Ignore Values Above – Set this value to disregard values above this level.
Minimum Event Duration – Set this duration to define the minimum ETCO2 event duration.
Maximum Event Duration – Set this duration to define the maximum ETCO2 event duration.
Minimum Event Separation – Set this value to define the minimum duration required between events. Subsequent event detection cannot be started until this duration of time has elapsed.
Events Occurs Above – Set this value to determine the ETCO2 event threshold.

EEG Patient Event Button Detector
To enable the Patient Event Detector, place a check mark in the 'True' check box on the right hand panel of the Event Detector panel. This detector is utilized when a Cadwell

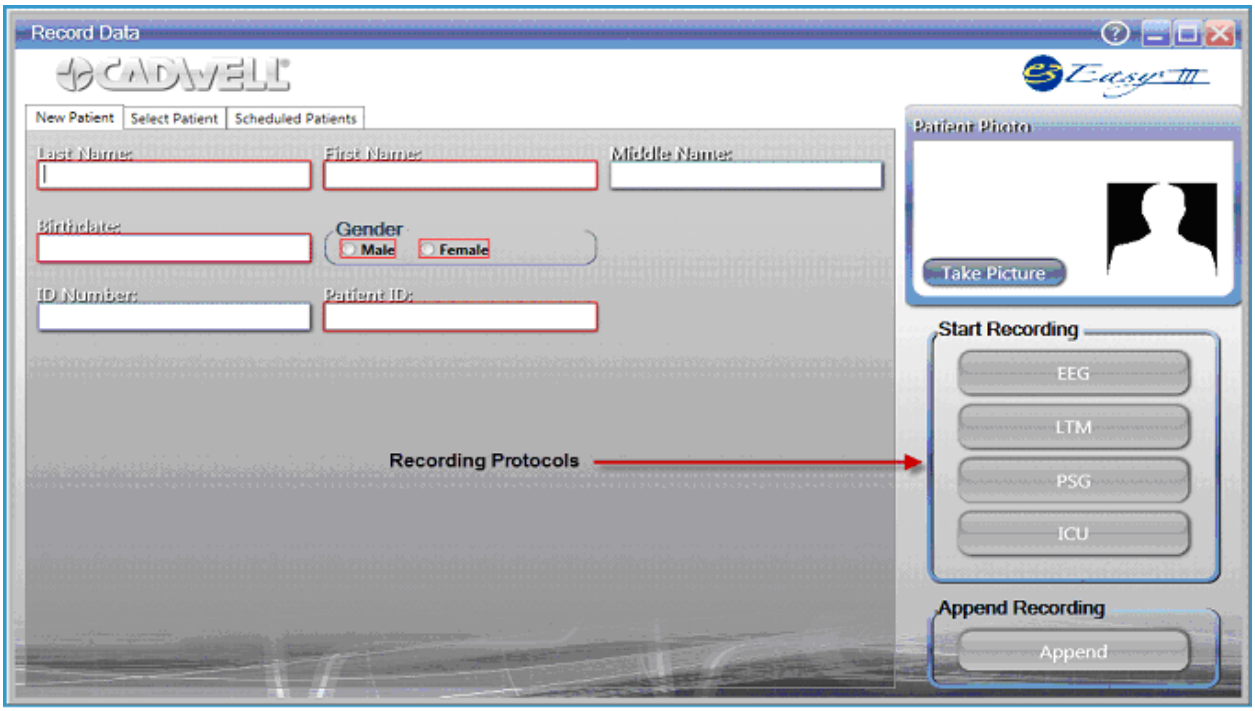
Event Button is utilized during an Easy recording. The detector will mark event button presses and mark each even in the position bar and patient event list. The invert option can be utilized if the event button is calibrated with incorrect polarity.

Protocols

Protocols are used for data collection. A protocol is typically configured for a specific modality (EEG, PSG, ICU). Protocols define the default layout, montages, amplifier configuration that will be used for data collection and review.

Selecting a Protocol for use with the Record Data buttons:

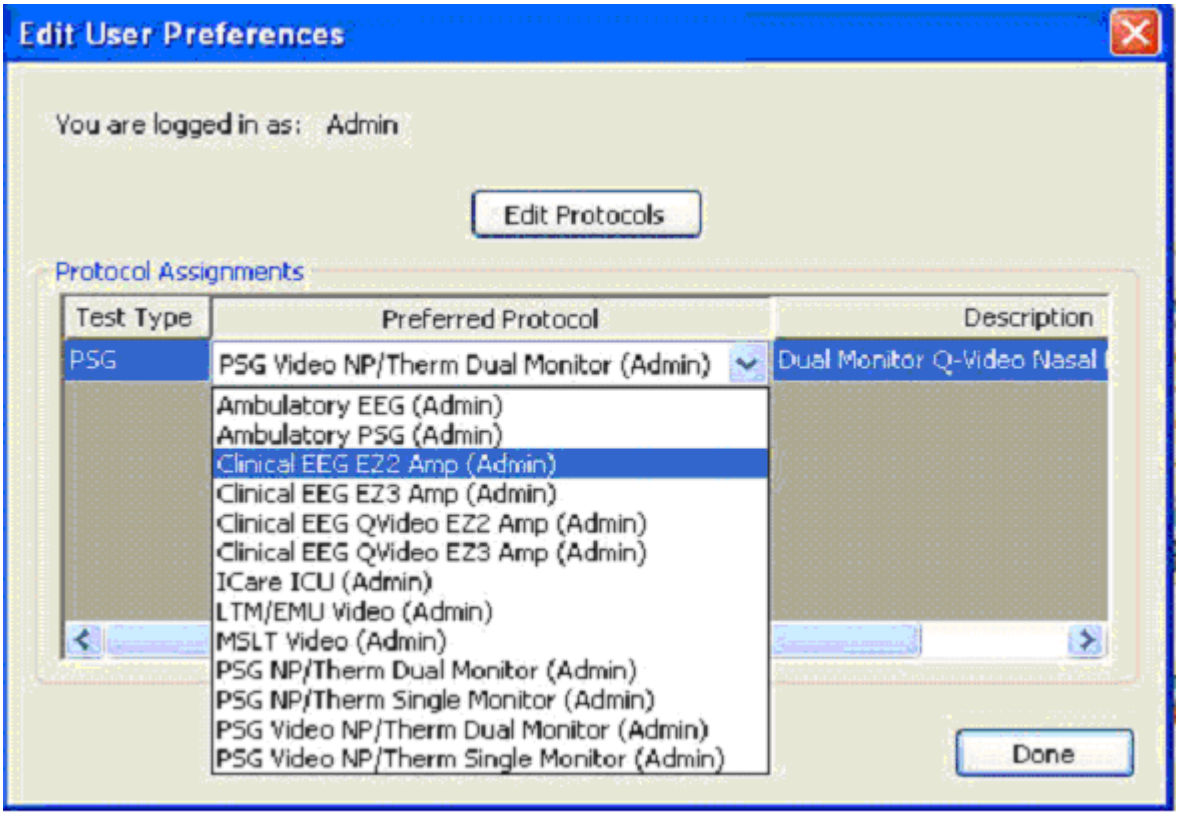
1. When the user clicks on the Easy III Record Data shortcut, a recording protocol can be selected (EEG, LTM, PSG, or ICU) after entering patient information.



2. To select a default protocol for the recording protocol, click on the Easy III System Utilities shortcut. Click on the Protocols button.

3. Click on the drop down arrow in the Preferred Protocol column. Select the protocol you would like to use with each record data button. Click on the “Done” button to save your settings. The selected protocols will be associated with the Start Recording buttons displayed in the Record Data dashboard.

Note: The default protocol setting is specific to the User Name. Each user can select his/her default recording protocol. The picture below shows the name of the logged in user. You must be logged in under your user name to associate your name with your selected protocols.



Editing Protocols

The Easy III software allows the user to define a laboratory specific layouts (workspaces) for data recording and review. The workspace can consist of multiple views. For example, the default view can contain a recording trace window only; however a secondary view can be configured with the same recording trace window, a Q-Video window, and an event list.

A Recording Protocol Contains the following:

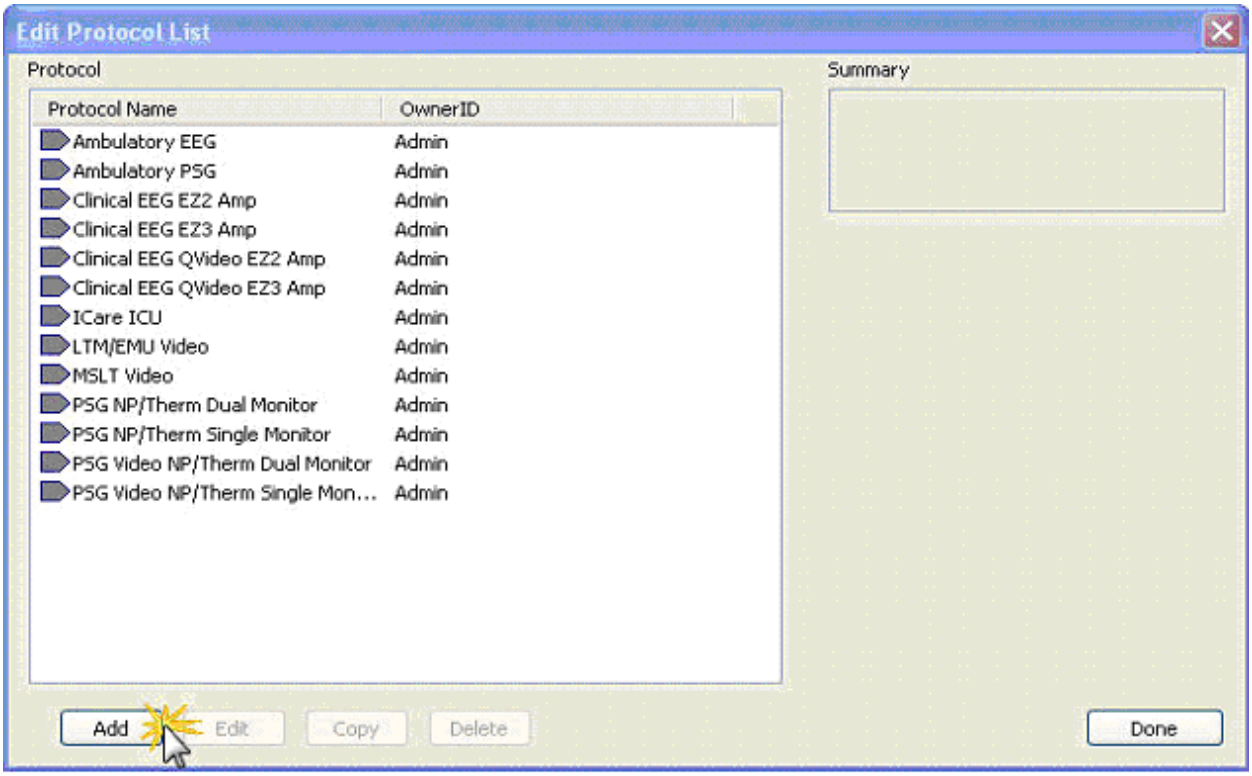
- Default Screen Layout/Workspace (for recording and review)
- Default Event Buttons (specified by the user)
- Default Instrument (Easy III, Easy II, or Ambulatory Amplifier)
- Default Impedance Measurement Time Out duration
- Default Calibration Montage
- Default Page Width
- Default Flash Program

Creating a New Protocol

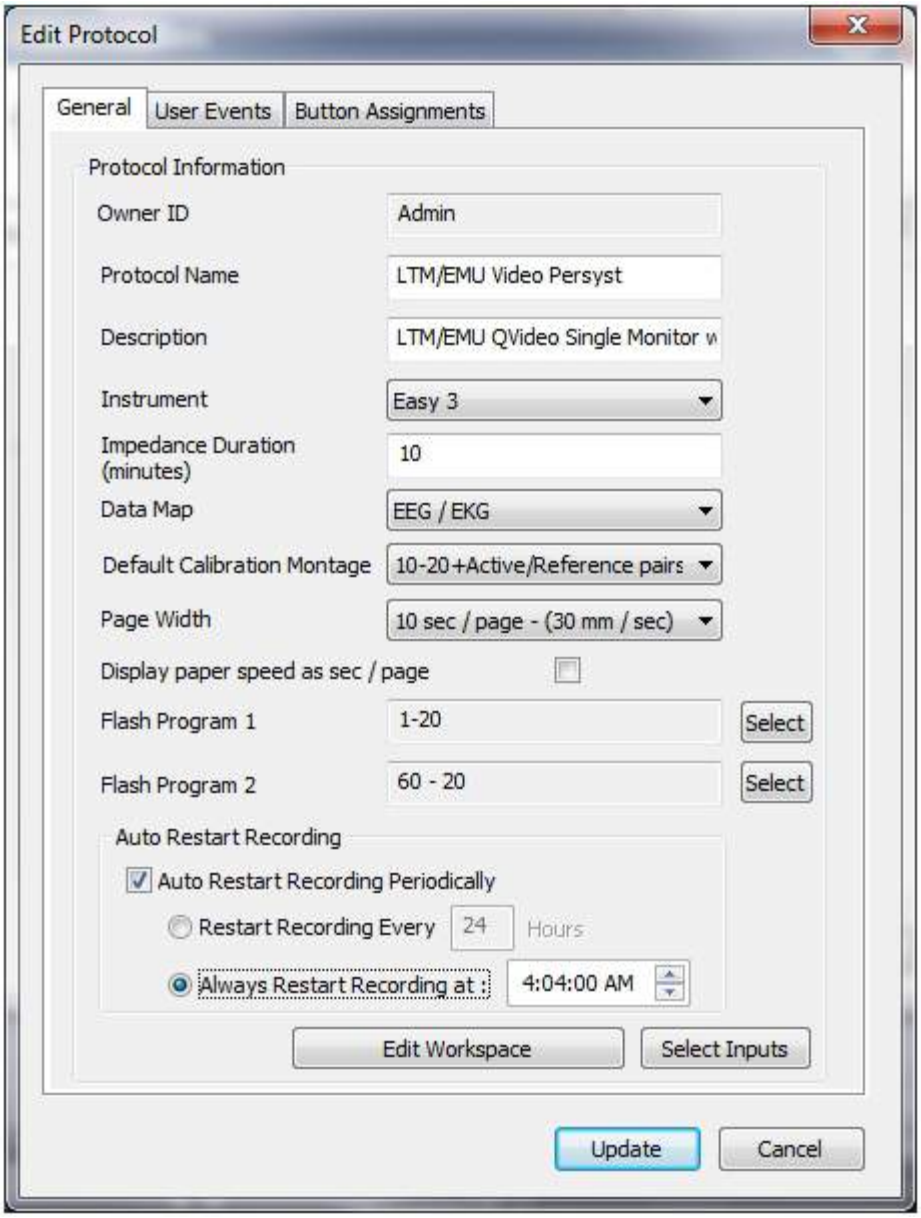
Click on the Easy III System Utilities shortcut on the desktop. Select the Protocols option.

Click on the Edit Protocols Button.

Click on Add protocol



Note the Edit Protocol Dialog below:



General Tab Settings

- Owner ID - This is the name of the user that created the protocol. If you are logged in under your name, your Easy user name should be displayed in this window.
- Protocol Name - This is the name of the protocol that will be displayed in the protocol list.
- Description - The user can create a short description about the protocol. For example, the user could enter 'Dual Monitor w/Q-Video'.
- Default Instrument - Use this option to select the amplifier you would like to use with this particular protocol. Note: Set the ApneaTrak protocol to default. The default instrument options include:
    - Easy 3

• Easy 2
• Ambulatory
• Default - Use this option if you are likely to use different amplifiers on multiple
• Easy III computer systems
• SynthHardware Server - Do not use. This is a configuration setting for system evaluation.
• EEGSynthHardware Server - Do not use. This is a configuration setting for system evaluation.

Impedance Duration (minutes) - This option determines the length of time the impedance measurement will run. After the user specified duration has been met, the impedance measurement process will stop.

- Data Map - A default data map can be selected for the protocol. This allows the user to use specific channel types, colors, and settings for the protocol selected.
- Default Calibration Montage - This setting determines how the calibration montage will be displayed with the protocol.
  - Current Montage - The trace window will show only those inputs used in the current montage.
  - 1 - 32 Channels - The trace window will show inputs 1 - 32.
  - 1 - 64 Channels - The trace window will show inputs 1 - 64.
  - 1 - 128 Channels - The trace window will show inputs 1 - 128.
  - 10-20 + Active/Reference Pairs - The trace window will show all 10-20 inputs and the Active Reference Inputs.
- Default Page Width - The user can select the default page width that will be used when a record is recorded or reviewed.
  - 1 sec/page - 300 mm/sec
  - 2 sec/page - 150 mm/sec
  - 5 sec/page - 60 mm/sec
  - 10 sec/page - 30 mm/sec
  - 15 sec/page - 20 mm/sec
  - 20 sec/page - 15 mm/sec
  - 30 sec/page - 10 mm/sec
  - 60 sec/page - 5 mm/sec
  - 120 sec/page - 2.5 mm/sec
  - 300 sec/page - 1 mm/sec
  - 600 sec/page - 0.5 mm/sec
- Display Paper Speed as sec/page - Place a check mark in this check box if you prefer the paper speed units to be displayed as seconds per page.
- Flash Program 1 & 2 - Click on the Select button to select the default flash program for buttons 1 and 2 in the flash program control (used for EEG activation).
- Auto Restart Recording Periodically: Check this box to either have a new study start every X hours or to schedule a restart time.

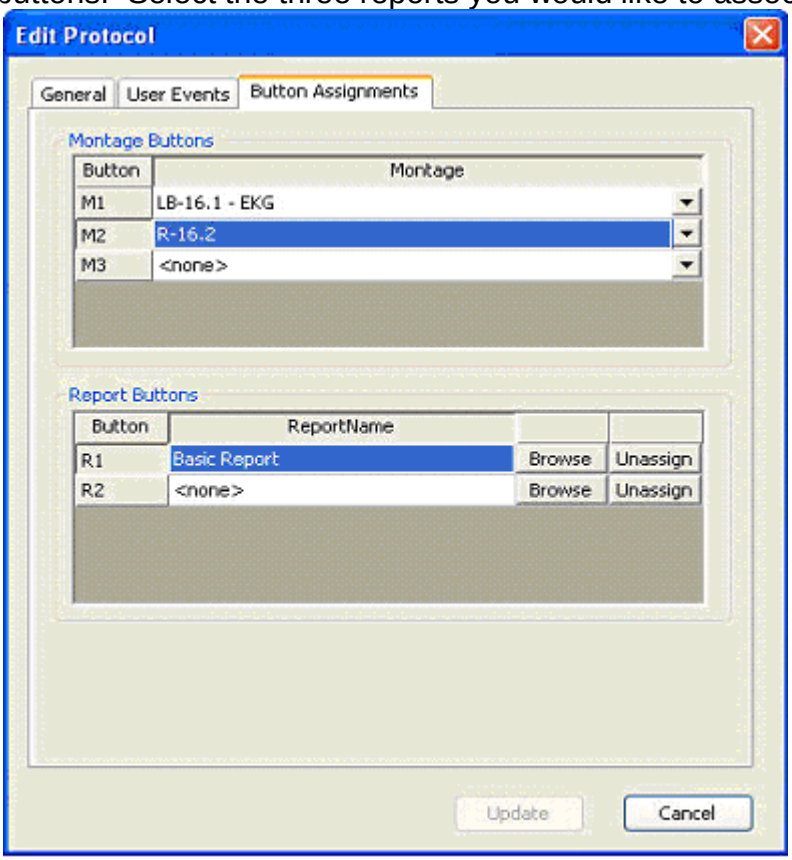
User Events Tab Settings:

Click on the User Events Tab.

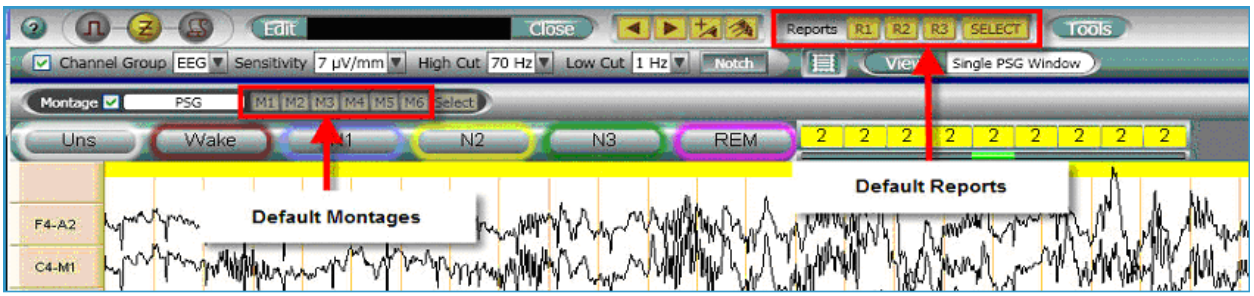
1. Type in an event that you would like displayed in the user event list.
2. Type in an abbreviation that will be placed on the Event Button.

Button Assignments Tab Settings:

Click on the Button Assignments Tab. Click on the Drop down arrow for each button (M1-M6). Select the six montages you would like to associate with the Montage buttons. Select the three reports you would like to associate with the Report Buttons.



Note the Montage and Report Buttons below.



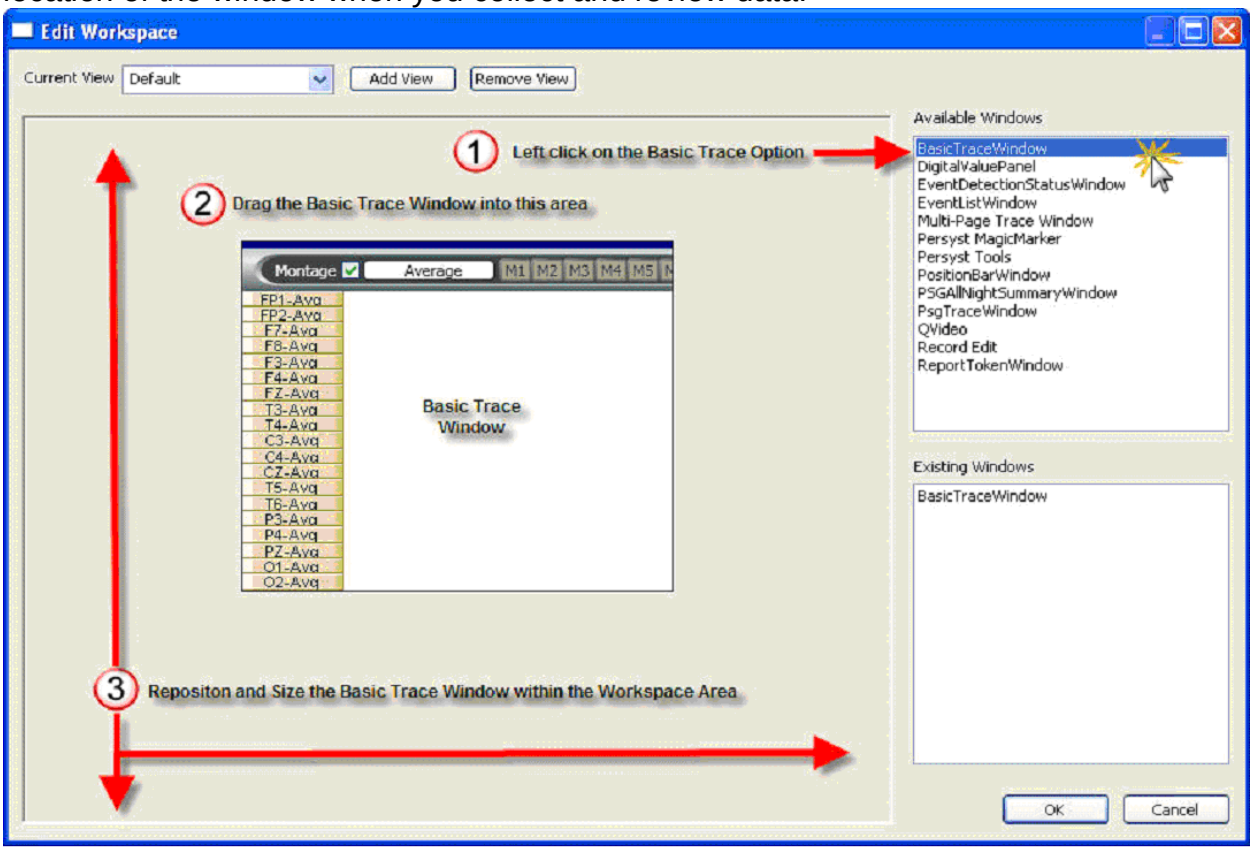
Editing Workspace

Click on the Edit Protocol, General tab.

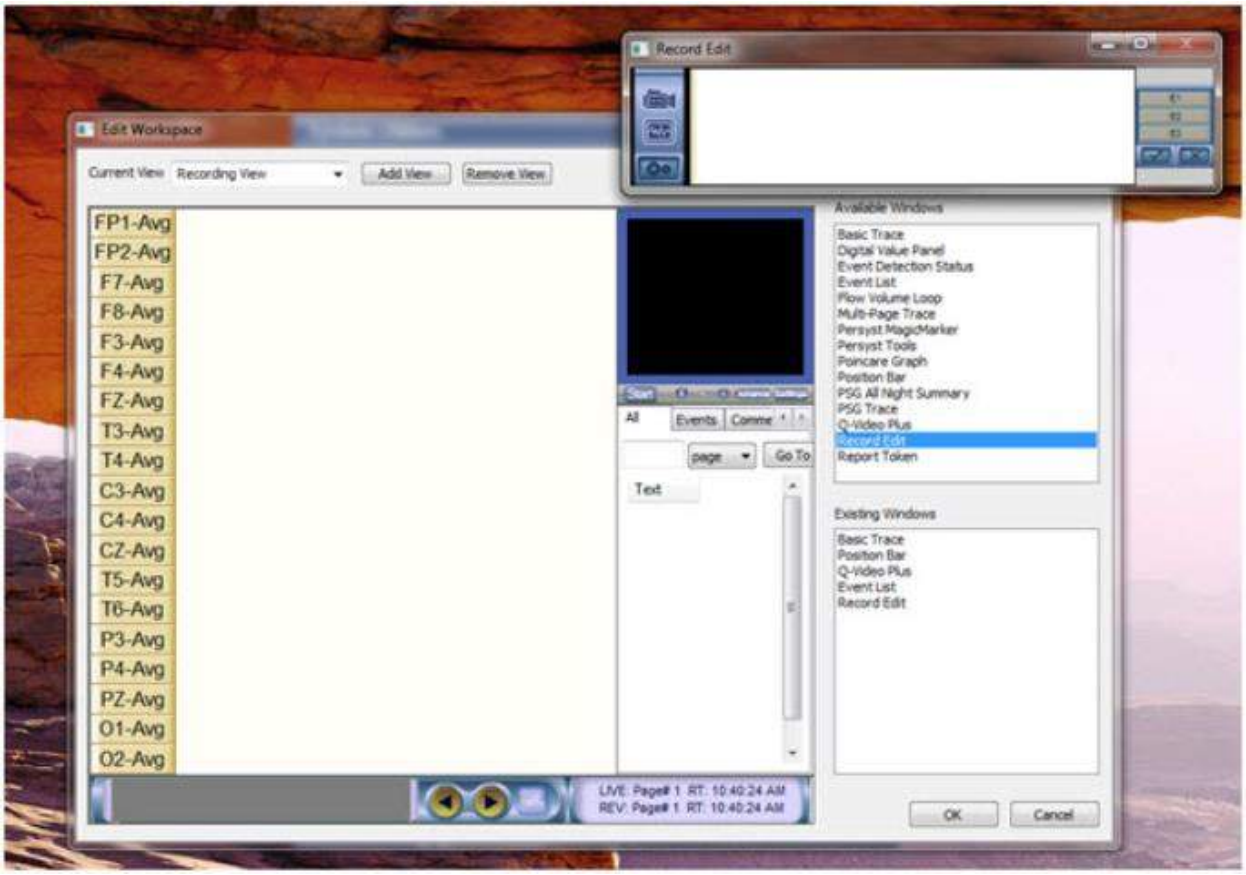
Creating a New View or Editing an existing View:

For a new view, typically first a Basic Trace Window is added. To do this, click on the Basic Trace Window option in the Available Windows Box. The Basic Trace window is typically utilized with EEG, LTM, and ICU recording views. For PSG, the PsgTraceWindow should be selected. Note: if you are editing a current protocol and adding a new view, select from the Existing Windows to add the trace window unless this trace window should not look like the trace window in the other views, i.e.: montage, color, etc.. To add a window to a given workspace, simply left click on the window in either the Available Windows section or Existing Windows section and drag to the position that you would like to have the window placed in that particular view. See the illustration below for details. Below is an example of setting up a standard view.

1. Name the view.
2. Left click and highlight the Basic Trace Window in the Available Windows panel.
3. Drag the Basic Trace Window into the workspace area to the left.
4. Reposition and size the window in workspace area. This will determine the exact location of the window when you collect and review data.



5. Add the Position Bar to the bottom of the Trace Window. This bar allows maneuvering through the record efficiently, displays Live and Review times, and has auto page controls.
6. Add the QVideo window, if video is being recorded, and add the other desired windows for this view. There are two options when adding the windows. First, the window can be docked, that is when it is contained within the workspace window. In the example below, the trace window, position bar, QVideo and Event List are all docked. Docked means that the window is fixed into position and cannot be moved or resized during acquisition and review. The window can also be floating. In the example below, the Record Edit window is a floating window. During acquisition and review, this window can be resized, minimized and moved.

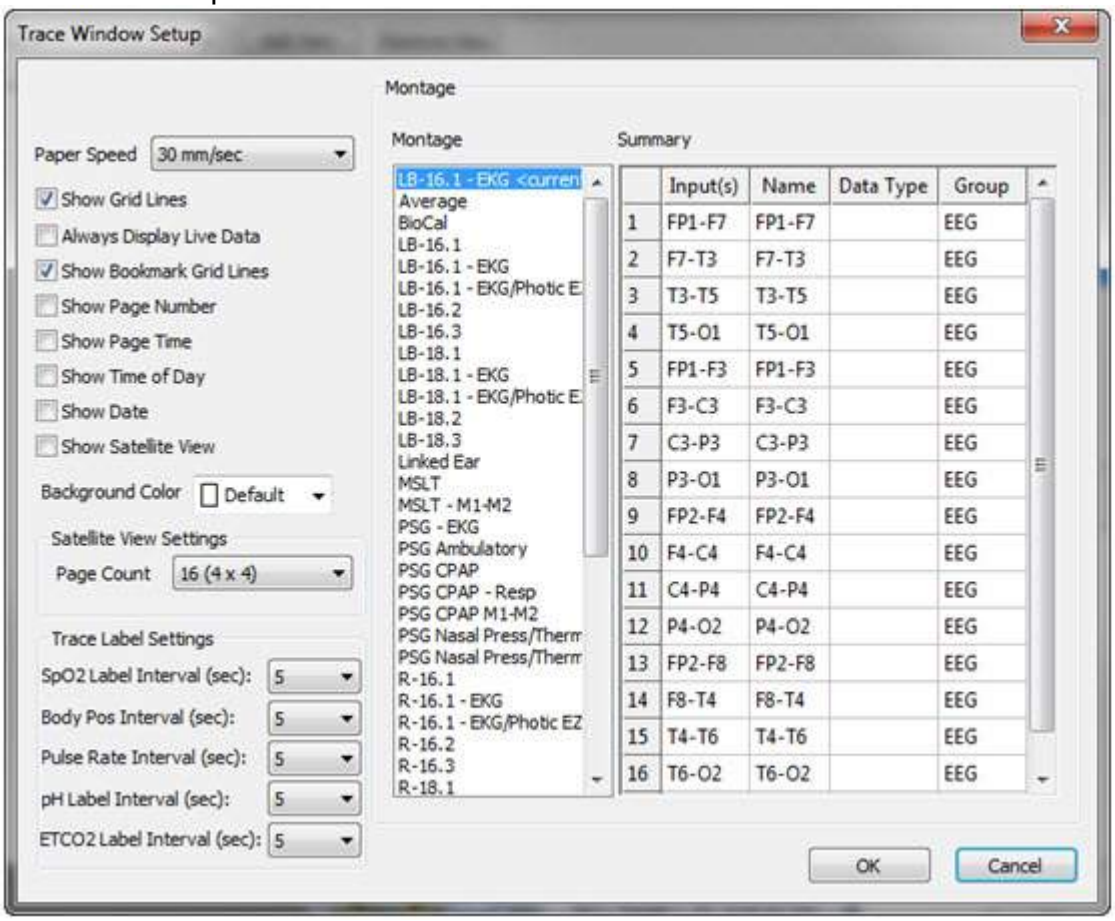


Setting Defaults for Windows Used in a Workspace

Each available window added to the workspace will need to be setup correctly. After a window is added, right click on the window to determine if any default settings are available. Adjust the settings as required. See descriptions below explaining the Setup options for each Available Window in the Workspace Editor.

Basic Trace and PSG Trace:

1. Right Click in the Basic Trace Window or PsgTraceWindow, select Setup. Below is the Trace Setup Window.



2. Select the default settings for this trace window. These settings will be used for every recording collected with this specific protocol. Select the default montage that will be displayed in that view from the list. Below is a description of the other setup options and what they mean.

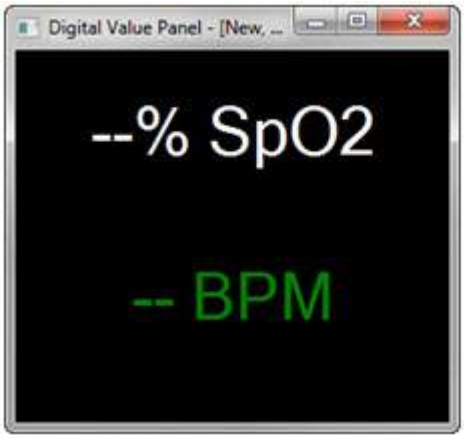
- **Show Grid Line**s - Add a check box to this item to show grid lines in the background of the trace window.
- **Always Display Live Dat**a - Add a check box to this item to force the window to always show live data during data collection. If the user clicks on the position bar at the bottom of the trace window during data collection, the displayed page will not change. However, after data collection the user can click on the position bar and reposition to the location selected.
- **Show Page Number** - Add a check mark to this option to show the page number in the trace window.
- **Show Page Time** – Add a check mark to this option to show the elapsed time that corresponds to the page number.
- **Show Time of Day** - Add a check mark to this option to show time of day in the trace window

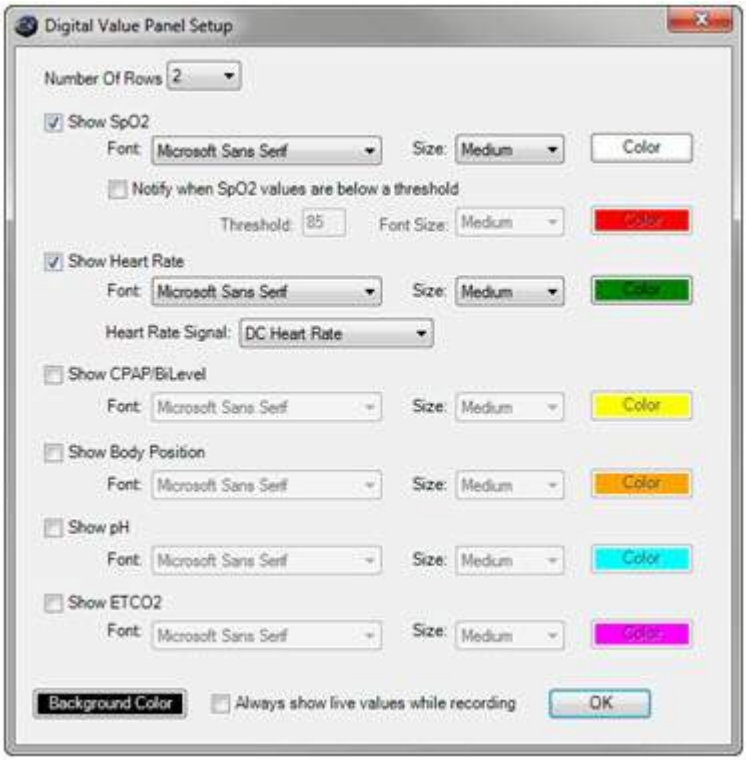
- **Show Date** - Add a check mark to this option to show the date in the trace window
- **Show Satellite View** -Add a check mark to this option to have the trace window display data in a Satellite View. The number of pages displayed will be determined by the Satellite View Settings.
- **Background Color**- Click on the background color option to select a different color for the trace window background.
- **Satellite View Settings** - Click on this option to select the page count used when satellite view is used.
- **Trace Label Settings** – This setting only applies to studies collecting SpO2, Body Position, Pulse Rate, pH or ETCO2 data. Select the interval to display digital values of the recorded data for that data type on the trace data during review. The digital trace values will not be displayed on the live trace data during data collection. If you look back, or review recorded data during data collection, the trace labels will be displayed.

Digital Value Panel Setup

The Digital Value Panel can display SpO2, O2, Heart Rate (EKG or Pulse Rate), Body Position, pH and ETCO2 data.

1. To add the panel to a view, drag the Digital Value Panel option from the Available Trace Windows box.
2. Right click on the Digital Value Panel to adjust the setup configuration. Select the font, font size, and color for each channel type. Set a low SpO2 notification setting that will be utilized during data collection. Place a checkmark next to the channels that the user wants displayed in the window. Select the background color and determine if you want the digital value panel to always show live data during data collection. If you do not add a check box to this option, the digital value panel will not display live data when reviewing previously collected data during data collection. Click on OK to save.





Event Detection Status Window

Display this dialog if you would like to see the status of all detectors during data collection. Note: Most users will not add this dialog to a workspace. The dialog can be viewed by adding it during data collection or review. There are no setup options for this window.

Event List Window

Display this window if you would like to view the event list. There are no setup options for this window.

Flow Volume Loop

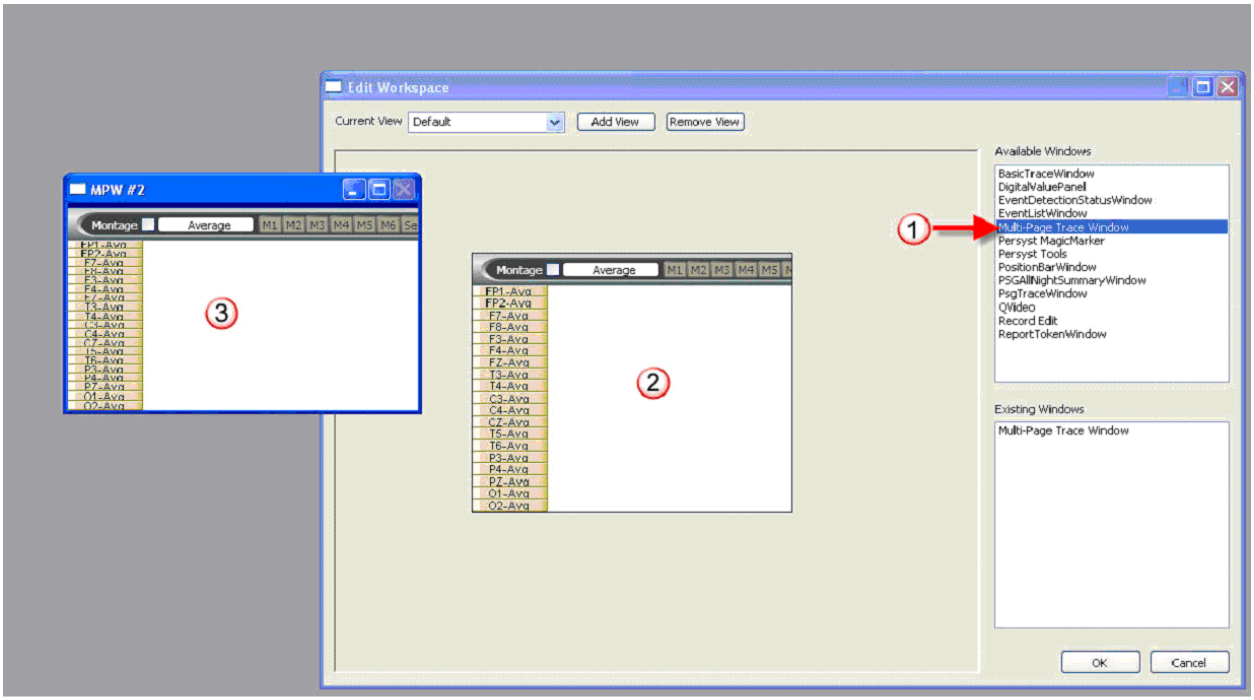
Select this option to display the Flow Volume Loop window. Drag the window into the Easy III workspace. Note: This window will only display flow volume data during the

review mode (during data collection) or after the recording has been ended and the record has been opened for review. There is not a Setup available for the Protocol, the settings are customizable on the fly per study.

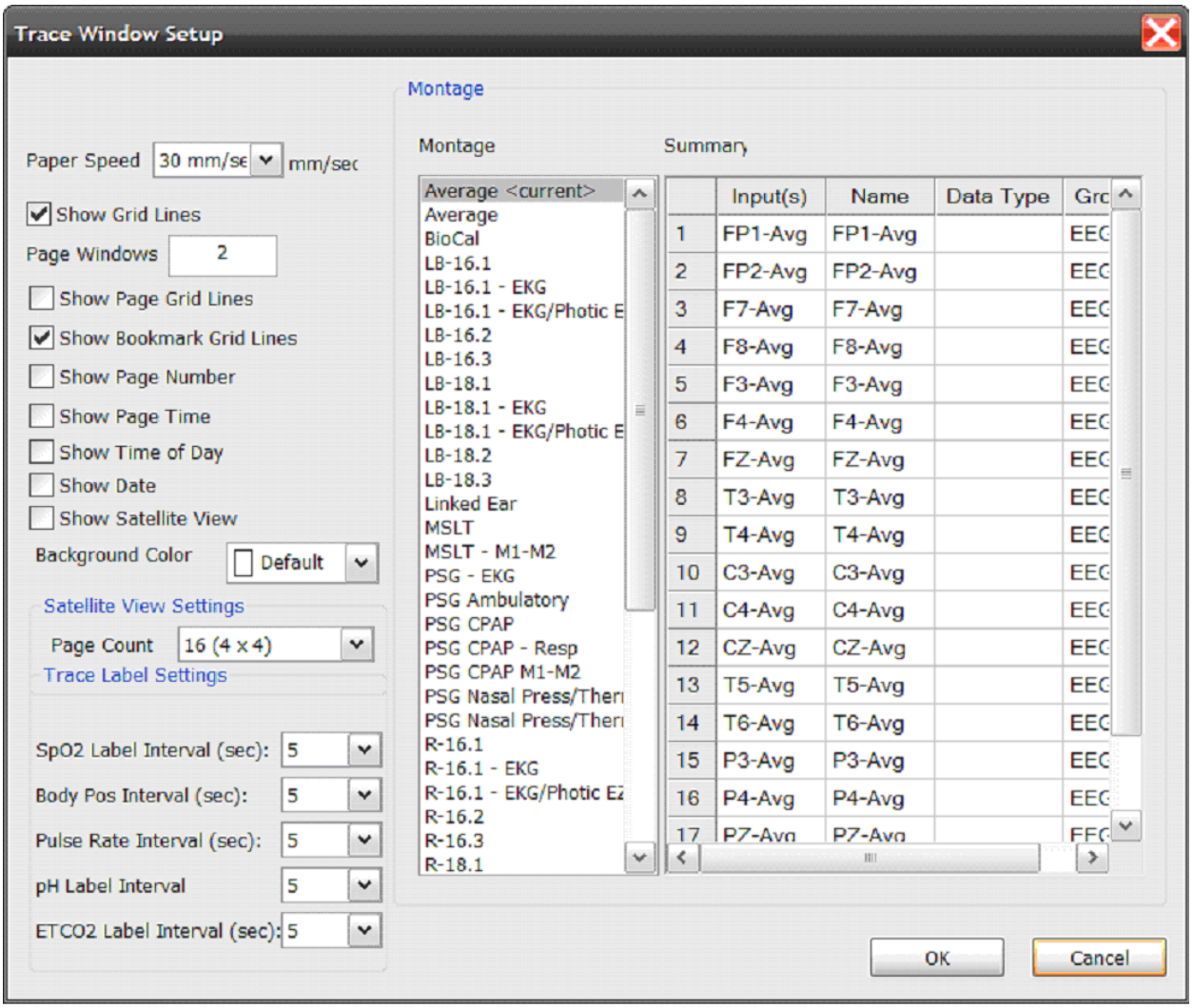
Multi-Page Trace Window

If you are using a dual monitor configuration, you can take advantage of the Multi-Page Trace Window option. Note the illustration below:

1. Click, highlight, and drag the Multi-Page Window option into the workspace area.
2. Note the trace window (number 2) displayed below. Reposition and size this window in the workspace area.
3. Note trace window 3 below. Drag this window over to the second monitor.



4. Right click in the Multi-Page Trace window (number 2 in the illustration above). The dialog below will be displayed. Note the number of Page Windows option displayed in the illustration below. If you would like to add additional trace windows, enter the total number of windows you would like to use. Click on OK to save.

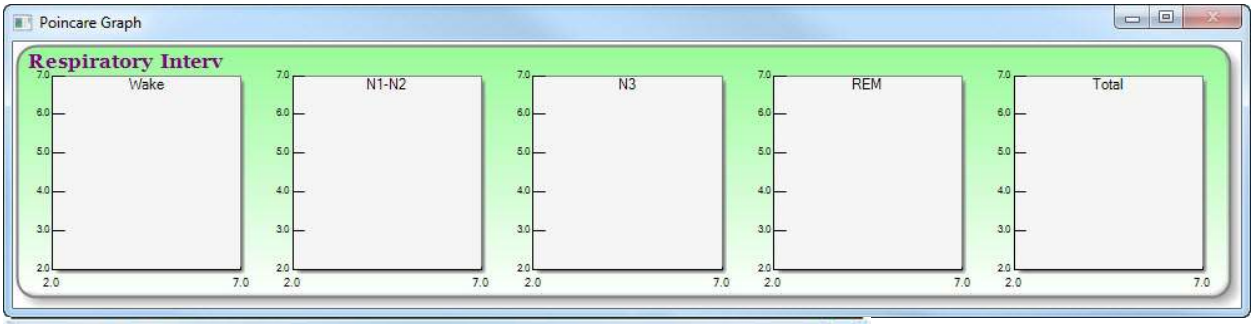


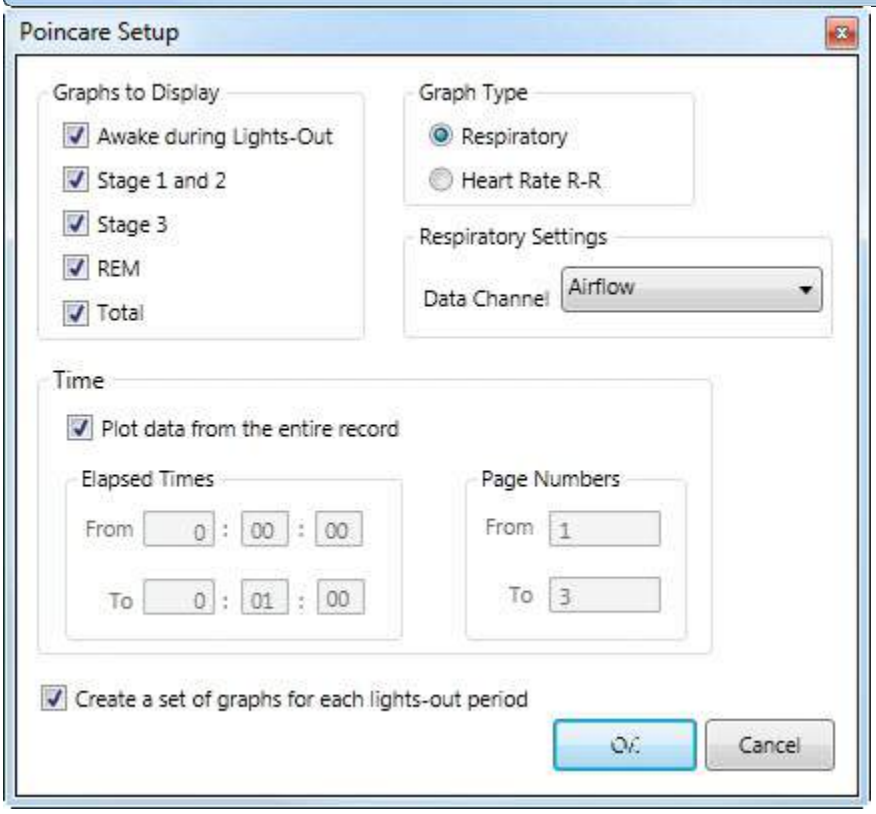
Persyst MagicMarker: If Persyst software is installed on this system, the MagicMarker window can be added to a view. There are no setup options available here.

Persyst Tools: If Persyst software is installed on this system, the Persyst Tools window can be added to a view. There are no setup options available here.

Poincare Graph

Select this option to display the Poincare Graph. The graph can be used during review only. The graph will summarize heart rate or respiratory rate data. A setup menu exists to select which sections of data are included in the graphs, times and page numbers can be specified here.





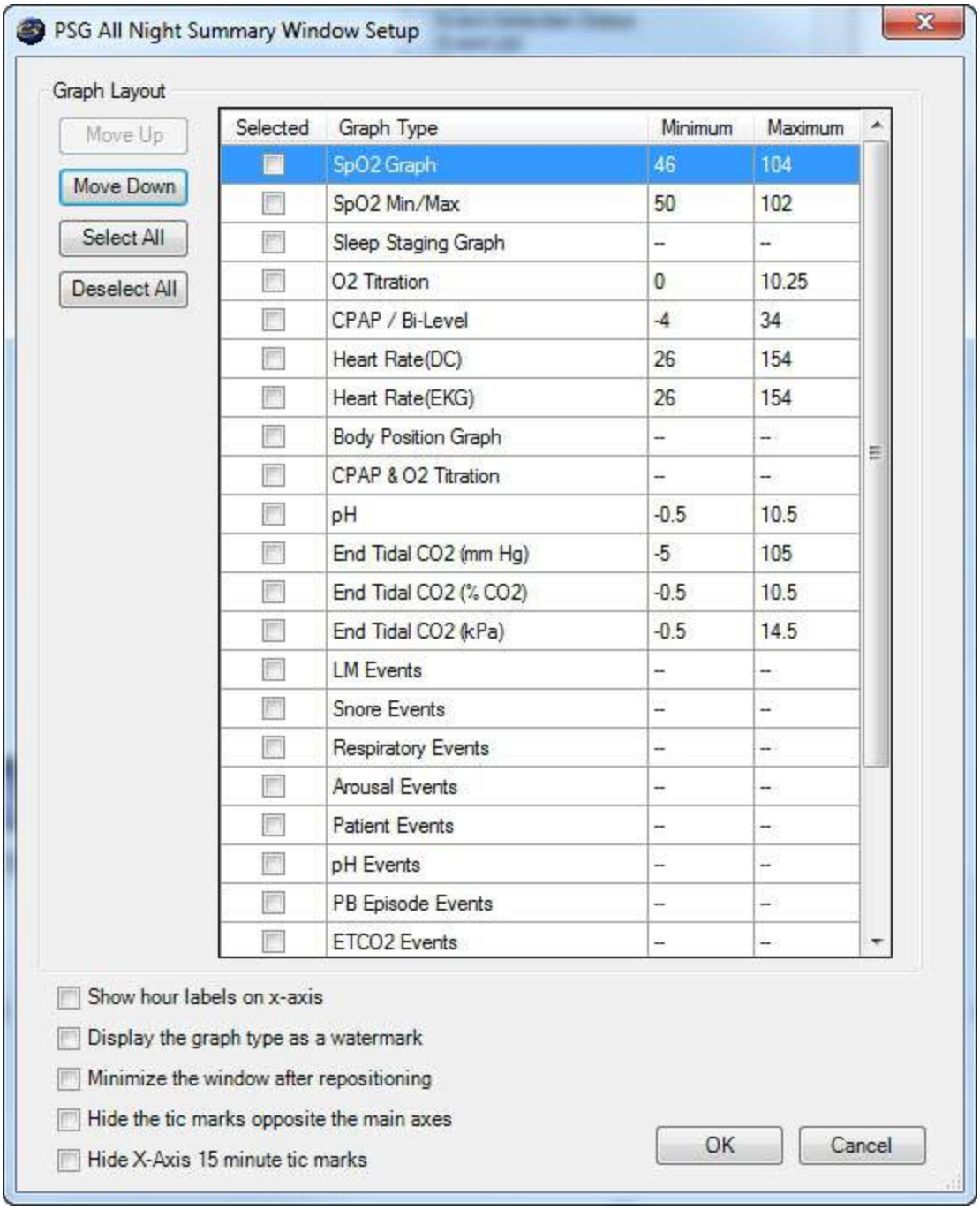
Position Bar Setup:

 Place a checkmark next to the events that the user would like represented by a red tic in the position bar. The user also has the option to check Show Auto Page Controls, this setting will allow the Auto Page Controls to show up by default.

PSG All Night Summary Window (see below):

To add the All Night Summary Window to a workspace:

- Click and drag the PSG All Night Summary Window to the workspace
- Note the outline of the window will be displayed in the workspace. Right click in the box and select Setup.
- Enter a check mark for each graph you would like to include in the All Night Summary Window. Move the graph up and down as required. Modify the display range of channels as desired. Configure the view settings at the bottom of the setup window.



PSG Trace: See Basic Trace and PSG Trace for information.

Q-Video Plus Recorder Setup:

 Select the Camera in the Video Source list that will be used to record.
 Select the Audio Source from the list.
 Check low light file size optimization if the study will primarily be recorded in low light conditions. This typically only applies to sleep and LTM studies.

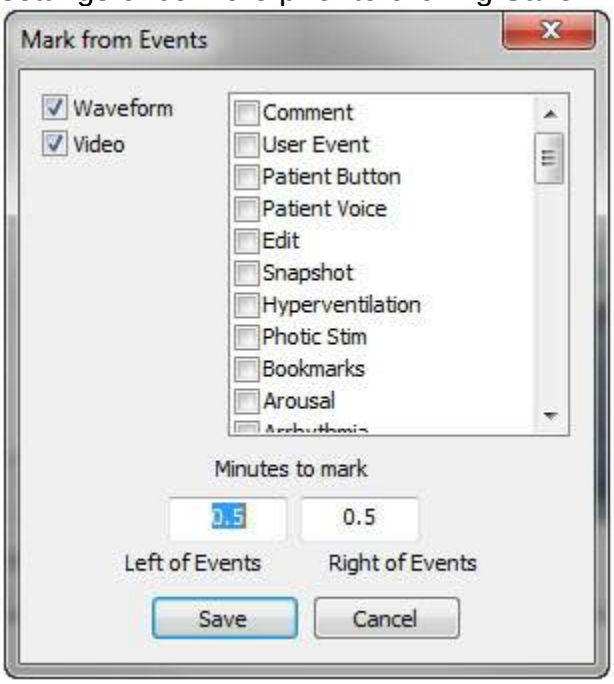
 Select video capture quality\file size. The higher the quality, the higher the file size. Once the camera is selected, as the radio buttons are clicked, the estimated file size will be shown. It is important to remember that in live video the highest quality of video is displayed, to see the quality of video being stored that will show in review, page back on the study and look at the video review window.
 If the box, "Start video recording when EEG recording starts" is checked, then the video will begin recording simultaneously with the start of the EEG/PSG recording as default.

Record Edit Setup:

 The Record Edit window has optional buttons to pre-program as defaults. They are shown in the image below. The Deletion Warning Levels can be set by the user. If the amount of waveform and/or video data about to be deleted falls below the minimum specified, the software will respond with a warning message prior to moving forward with the deletion. See above for details on how to add a window when editing a particular view.

 The E1-E3 buttons allow the user to configure the default settings for these buttons in the Record Edit window. This provides a quick way to mark the file for deletion. By Clicking on one of the buttons, the software will automatically mark the file for deletion based on the settings for that button.
 In the Edit Button Setup, the user can rename the Button Label from E1 to a custom name. Select whether the settings will apply to Waveform, Video, or both. Select whether the Minutes to mark will be mark for deletion or mark for saving. By checking Waveform only, the settings assigned to that button will only be applied to the waveform. Meaning, if E1 is programmed to Mark to save 5 minutes Left of Position and 5 minutes Right of Position and only the waveform was checked, when the user hits E1, the software will mark to save the 10 minutes around the position in the waveform of waveform data, but all of the video, will still be unmarked.

 The Mark from Events settings can be accessed by clicking on the From Events button in Record Edit Setup. This window allows the user to set the default settings for the checkmark icon in the Record Edit Window when in a study. The user can select whether the settings apply to Waveform, Video, or both. The user can also specify how much time before and after each event checked should be marked to save. When the checkmark icon in the Record Edit Window of an open record is clicked, the software will show the window below with the default settings, the user can choose to change the settings once more prior to clicking Save.



*Note: For more information on Record editing, see the Record Edit Window and Mark In\ Mark Out Editing sections.

Report Token: Add this window to a view to get token calculations on the fly. There is no Setup option for this window.

Adding and Removing Views

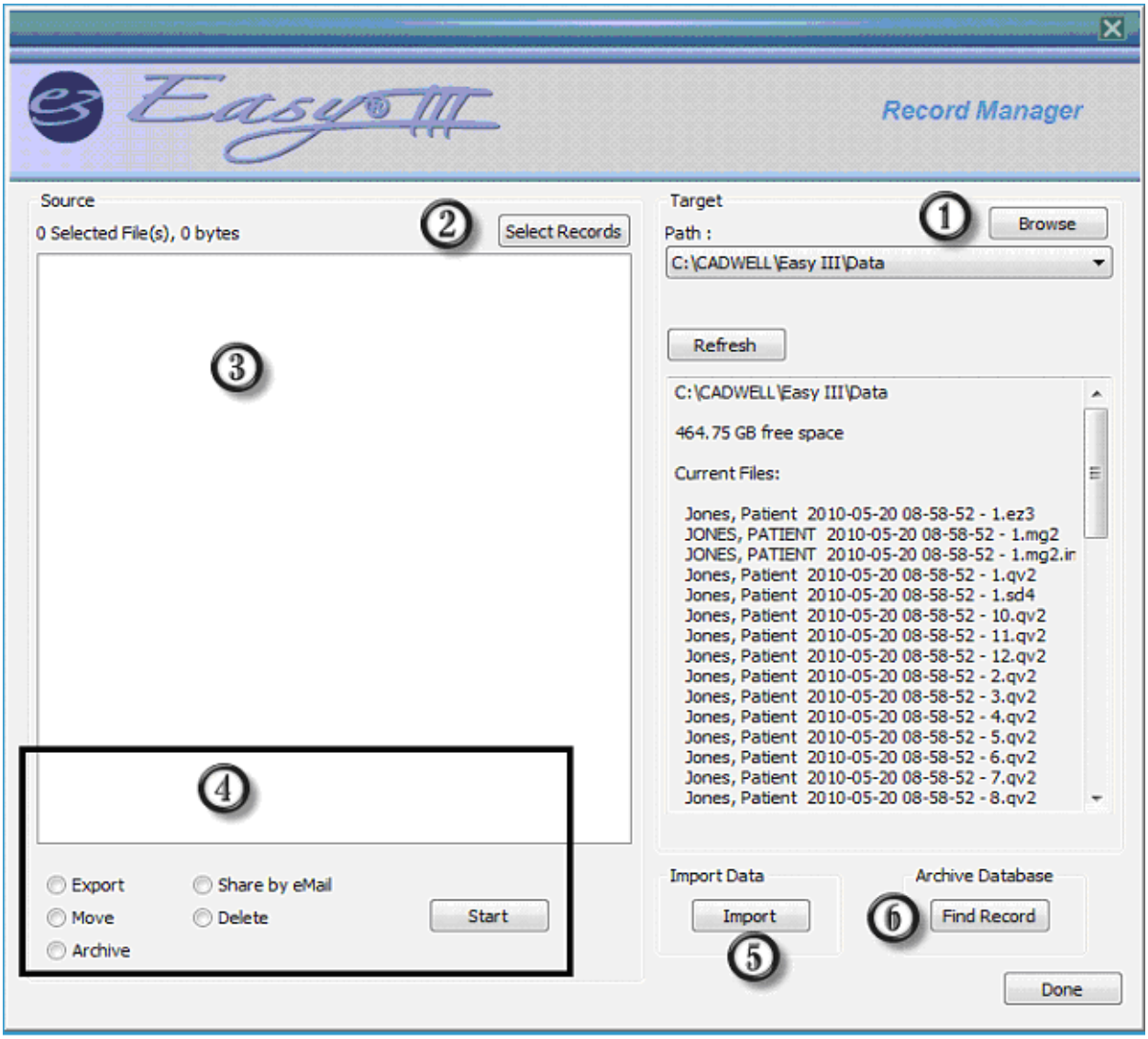
Click on the Add View button and repeat the steps listed above to customize your second view. To remove a view from a protocol, highlight the view and click on the Remove View button.

Important Details When Creating or Editing Views

1. When you are creating additional views, try to reuse windows from the Existing Windows box.
2. If you are creating views for multiple monitors, drag the available window over to the second monitor. The location you placed the window will be used when the protocol is used.
3. Provide useful names when additional views are created. For example, Q-Video View, or Satellite View.
4. When creating workspaces, maximize the edit workspace dialog to a full screen view to more clearly view the workspace.

Record Manager

Record Manager Options



1. Select a location to export or move your selected files. Click on Browse button to select a location. Click on the drop down arrow in the path to select previous paths used.
2. Select Records you would like to move or copy. Note: Several records can be selected at the same time by holding down the CTRL key an selecting multiple records.
3. All records selected will be displayed in this window. File size will be displayed adjacent to each record. Waveform data will be displayed with red checkmark adjacent to the waveform file. If Q-Video data was recorded with patient data, each video file will

be listed in this window. Remove the check box from the video file segment(s) if you do not want to copy or move the video file.

4. Record Manager Controls

Archive - The archive feature will move the selected file(s) to the specified target (number 1 in the illustration above). When the Archive option is selected, the user will be prompted with an option to Delete the record(s) after Archiving. If the option is not selected, the record will not be deleted; however the status will be changed to Archived, Ready to Delete. If the file is deleted after archiving, the file will be placed in the Windows Recycle Bin after it has been archived. Note: The Recycle Bin must configured to save deleted data and have adequate space available. If you are archiving data from a network location to an archive media, data will not be placed in the Recycle Bin. The name of the selected patients will be placed in the Archive Database. Note: The date, time, and user name that archived the file will remain in the record history file.

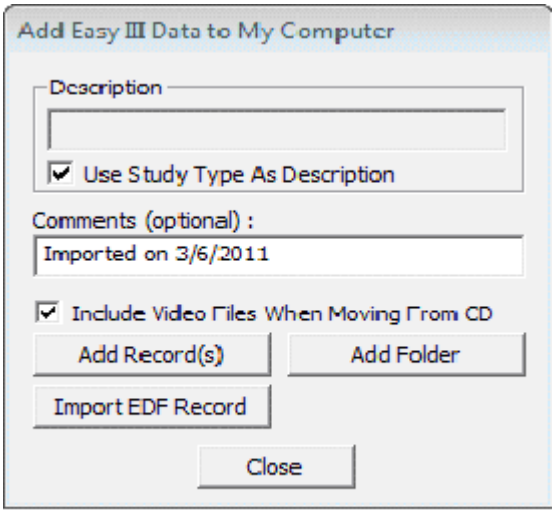
Move - This feature will move the selected files to another Easy III system selected in the Target options (number 1 in the illustration above). Note: The file will be moved to the new target. After the file is removed from the local machine, it will not be placed in the Recycle Bin. Note: The date, time, and user name that moved the file will be placed in the record history file.

Share by eMail - This feature will launch your local email client (if available). The selected patient files will be placed as an attachment to the email. Note: The date, time, and user name that emailed the patient files will be placed in the record history file.

Delete - This feature will delete the selected files. The files will be placed in the Windows Recycle Bin. Note: The Recycle Bin must configured to save deleted data and have adequate space available. If you are deleting data from a network location, data will not be placed in the Recycle Bin. Note: The date, time, and user name that deleted the file will remain in the record history file.

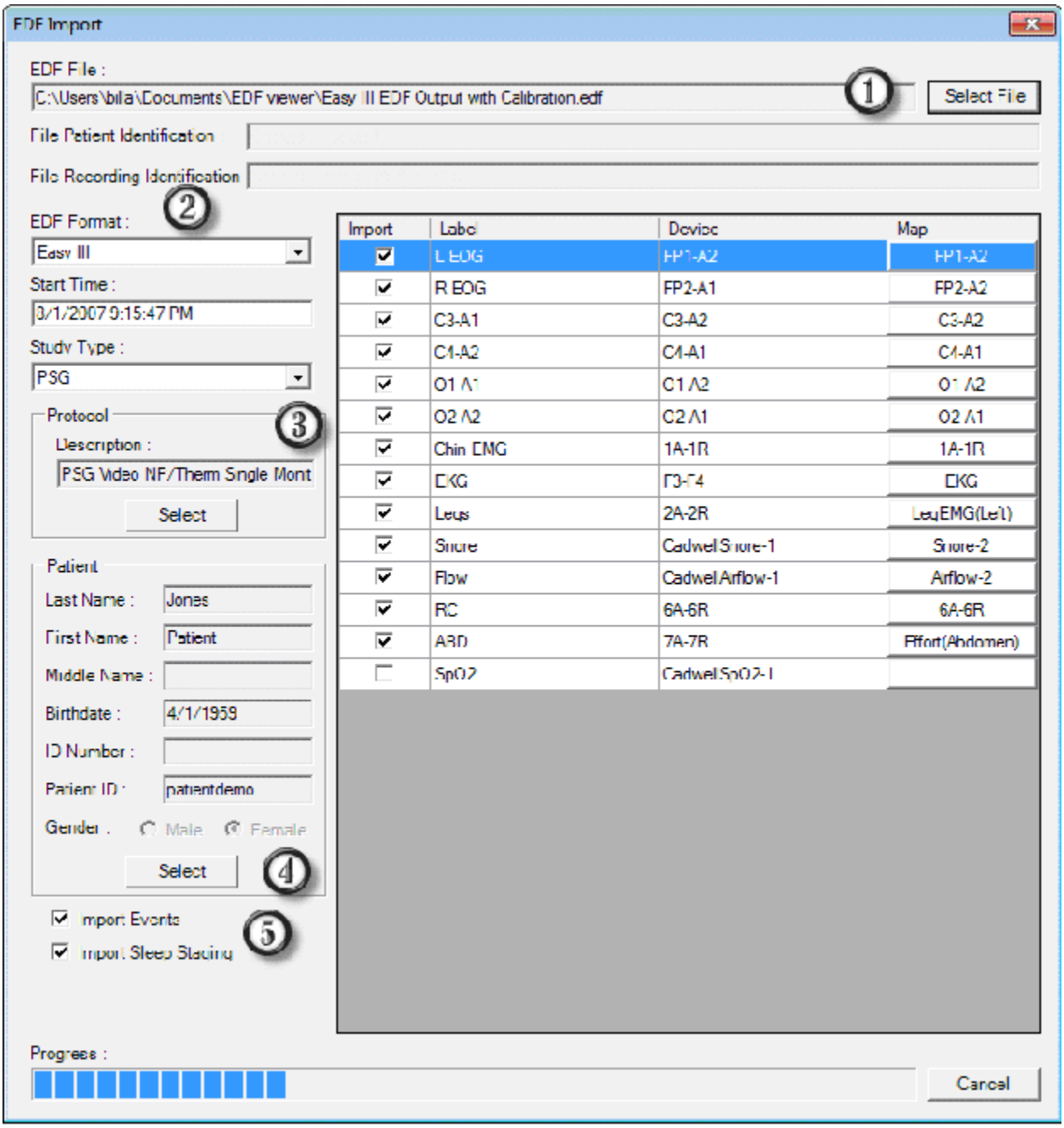
Export - This option will allow the user to copy the file to the selected target. If the target is a DVD or CD, an autorun file (Add Easy III Data to My Computer) will be copied to the media (note image below). When the media is placed in another computer with Easy III software, the utility below will automatically run.

5. **Importing Data**. Click on the Import button to copy a file from another media to the local computer.



• Remove the check mark from the 'Include Video Files When Moving from CD' if you do not want to import video data along with waveform data.
• Click on 'Add One Record' if you want to browse to one record to import.
• Click on 'Add Multiple Records' to copy all records from the selected target.

Import EDF Record – This option will allow the user to import records that are saved in an .EDF file format.
1. To import an EDF record click on the Select File button.
2. Select the EDF Format.
3. Select a protocol utilized by your facility.
4. Enter the patient information, or select the patient information from the Select Patient option.
5. Add check marks to import staging or event information.
6. Click on import to import the EDF record.



6. **Archive Database** - To review a list of archived records, click on the Find Record button for the Archive Database.

Record Manager Notes

• Easy III does not support rewritable CD and DVD media. You must use CD-R and DVD-R media.

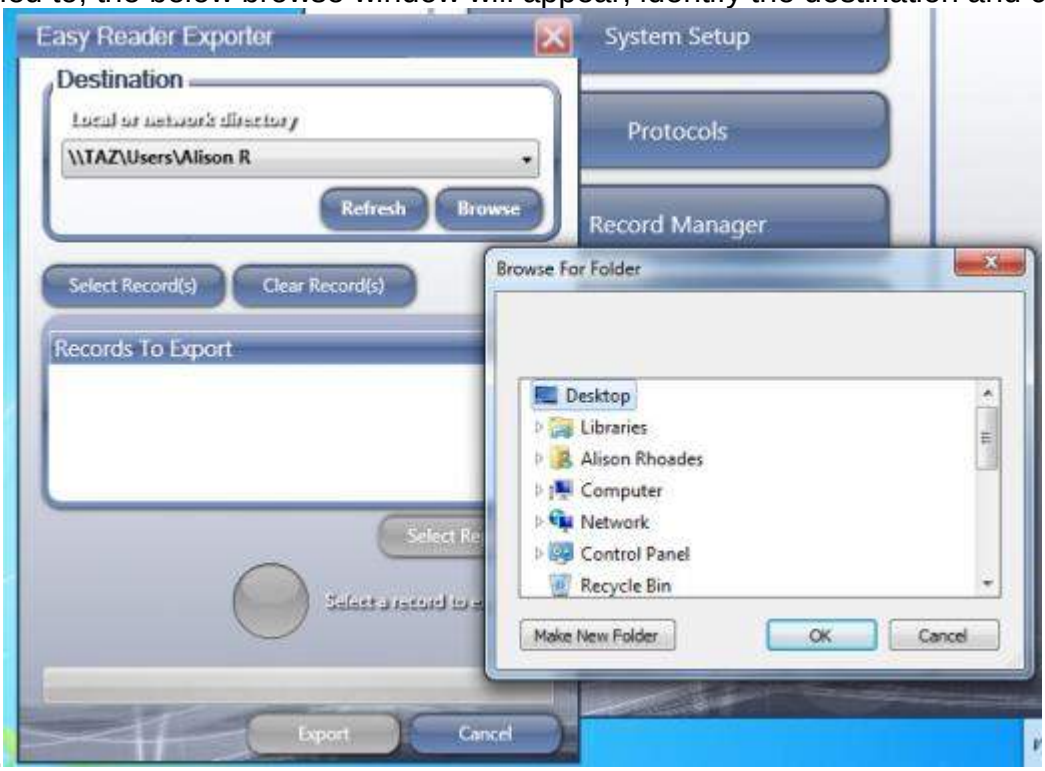
• Write the Media Label on the topside of the DVD/CD using a felt-tip pen.

Easy Record Viewer (Free Viewer)

Records can be copied to any destination that can browsed to via windows with a free record viewer. Hold down the CTRL key and click the records to be copied if more than one record is desired. If copied to external media, when the USB memory stick or disc is inserted into another Windows PC, the record will be automatically opened for review (if auto-launch is enabled). If multiple records were copied, a menu listing the records will display, highlight the record to review and click open. If records were copied to a network location, simple double click on EasyReaderLaunch.exe located in that destination and the menu of records available to view will populate.

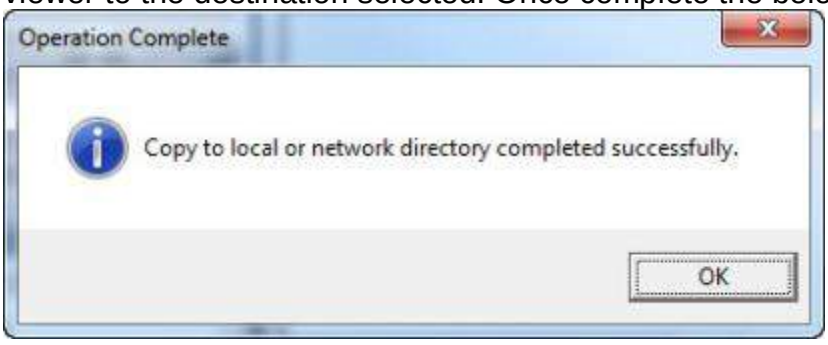
Instructions for Using Copy Record and Viewer

1. Double click on the System Utilities icon
2. Select Copy Record and Viewer
3. Select Browse to select the destination where the record(s) and viewer should be copied to, the below browse window will appear, identify the destination and click OK.

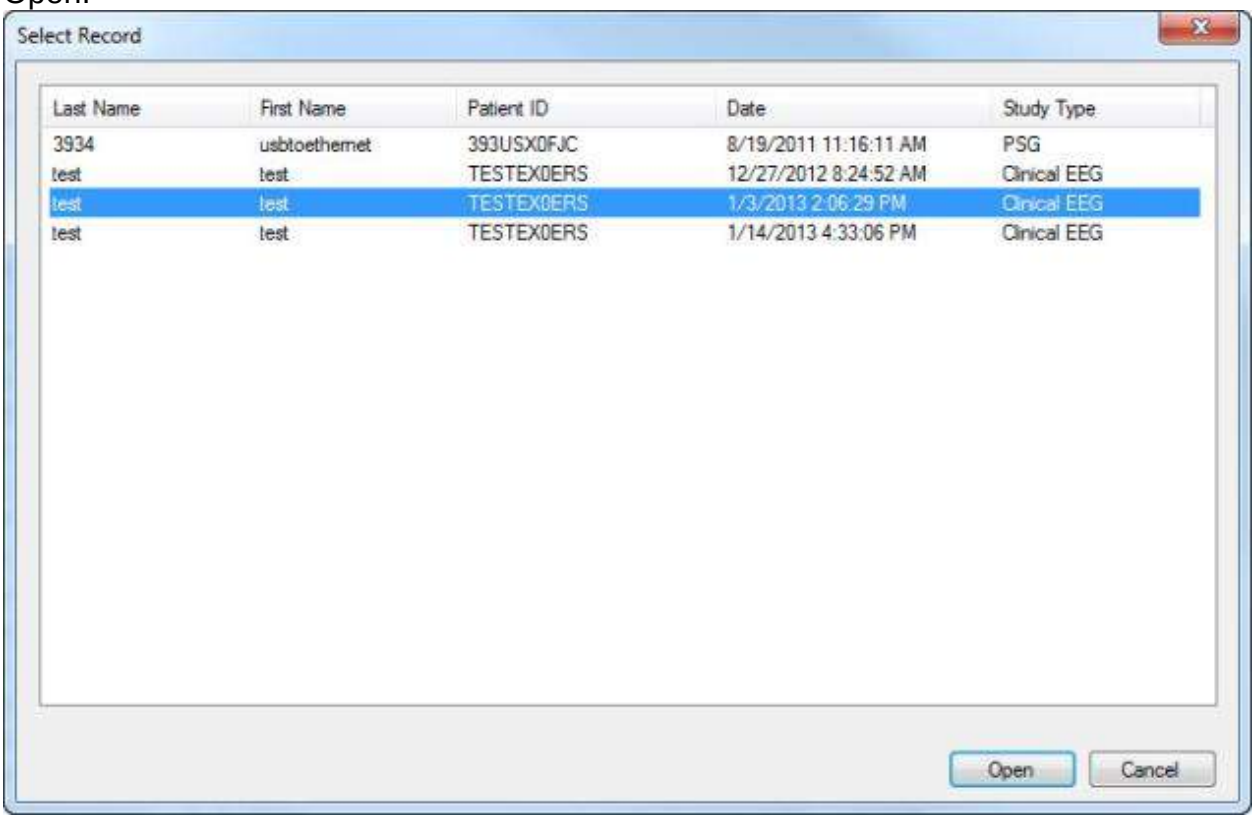


4. Click Select Record(s). To select multiple records to copy with viewer, simply hold down the CTRL key as you click on the records needed and hit Select when complete.
5. If Report(s) need to be copied as well, simple click on the Select Report(s) button, locate the reports and select Open.

6. Click on Export, the software is now copying the patient records and reports with viewer to the destination selected. Once complete the below window will appear.



7. To view the records, either insert the external media or browse out to the destination where the files were copied. Double click on EasyReaderLaunch.exe.
8. Select the record that needs to be viewed and click on Open.



9. The record is now open in the viewer and ready to be reviewed.

*note: To remove records from this list that no longer need to be viewed, simply browse directly to the destination folder via windows and delete the files, this will remove them from the list.

After the record has been opened, take note of the following features.

If Q-Video data was recorded with the patient data, synchronized video playback will be available.

Video files will now be moved to the disc along with the patient data. Place the mouse over waveform data to dynamically playback video with record viewer. Press the play button on the Q-Video player to watch the video playback.

Photic Stimulation Events

Photic event markers have been added to the position bar and the trace data screen. Drag and drop the Photic Event Tool over a specific channel. Click on the expand arrow displayed in the photic channel to display full height photic stimulator event markers.

Record Viewer Features

a. Place the mouse over the trace window. If you have a wheel on your mouse, roll the wheel to move forward or backwards through the recorded data. Left click on the trace (montage) labels to adjust channel settings.

b. Right click in the trace window to select the following options:

1. Satellite Display (select this option to view multiple pages in Satellite View.
2. Print Display
3. Copy Display (to paste the trace data in other applications such as Word or PowerPoint
4. Hide Trace Labels
5. Hide Sleep Staging Watermark
6. Hide Channel Events (to hide sleep events added to specific channels)
7. Hide Events (to hide changes made to recording montage)
8. Enable Measurement Tool (to measure frequency, amplitude, and duration)
9. Performance Measures

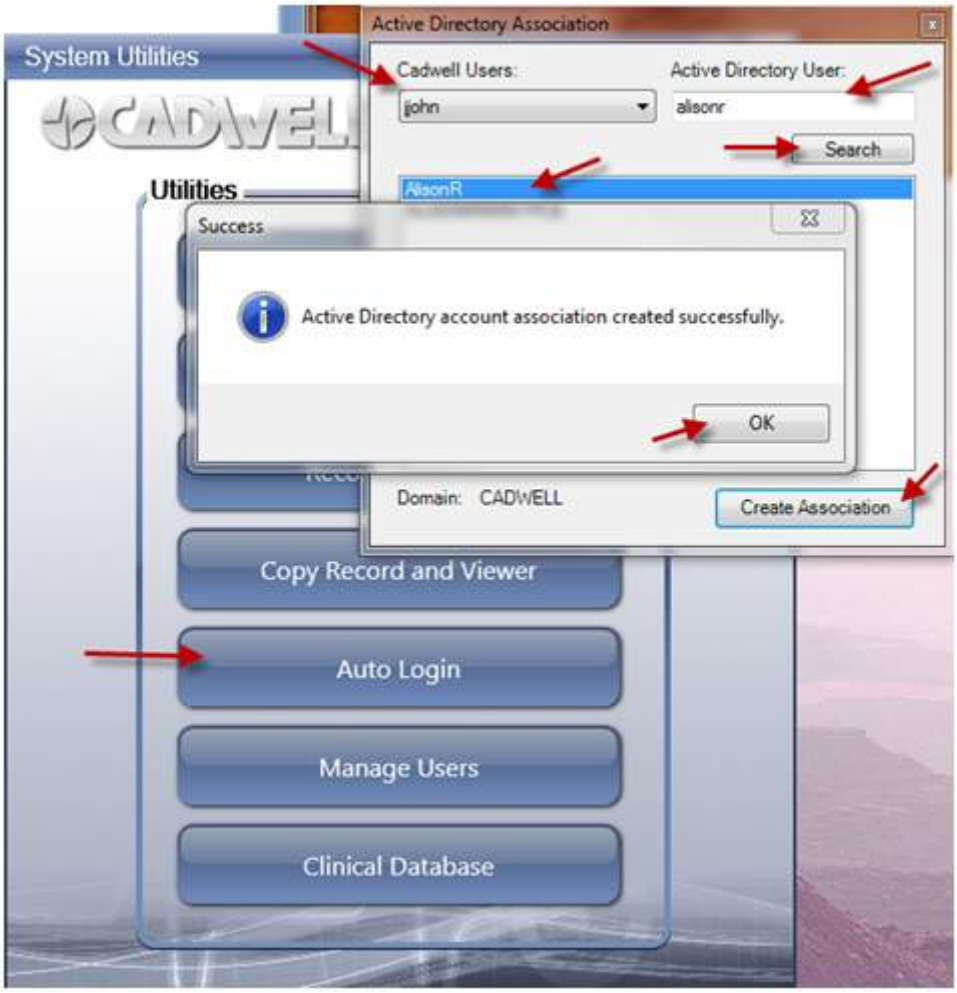
c. Additional trace label options –

1. Click on the place holder to drag the channel up and down.
2. Click to Hide or Delete a channel
3. Click on the up/down arrows to modify linked channel sensitivity. Roll the mouse wheel to adjust linked channel sensitivity.
4. Click on the slide out option to adjust channel settings.

Auto Login

This feature allows for single sign on access to the Cadwell Easy III software. A valid Easy III user on the system can associate their Easy III login to their Active Directory User on the domain. When logging in to the PC with domain credentials, the user will automatically be logged in to Easy III.

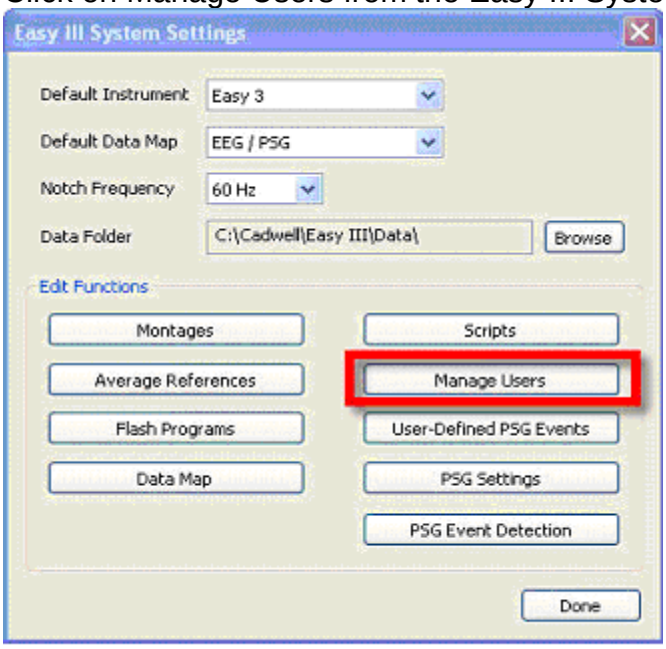
To access this feature, double click on the Easy III System Utilities icon on the desktop and select Auto Login. Select your Cadwell Easy III user name from the dropdown list titled Cadwell Users, then select your domain user name from the drop down list entitled Active Directory User, there is a Search function built in to allow for quickly identifying your user name. Once your user name is highlighted in the list, select Create Association, then click OK. The association has been successfully create and each time the user logs into the PC with they will not be prompted for their Cadwell Easy III login when launching the application. See illustration below.



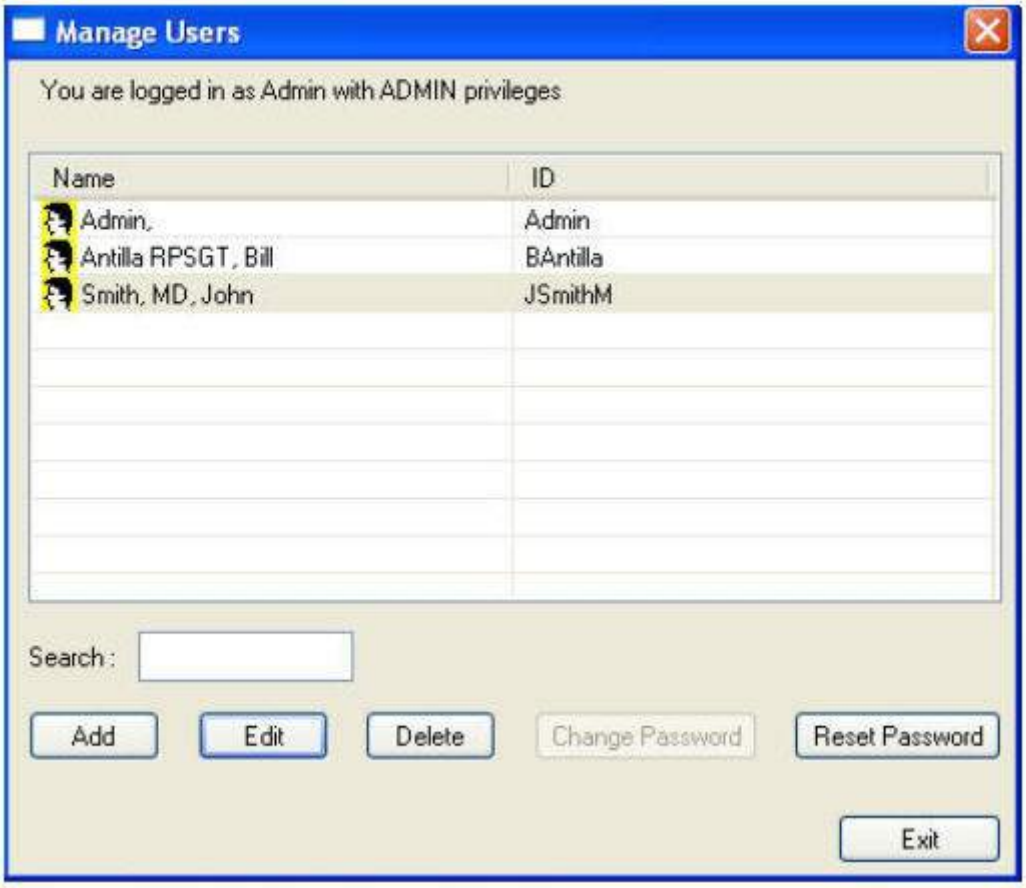
Manage Users

The Easy user can access the Manage Users option to do the following tasks:
1. Add a New User
2. Edit a Current User
a. Modify User Details
b. Change Access Rights
3. Delete a User
4. Change a Password
5. Reset a Password

Adding a New Easy III User
Click on Manage Users from the Easy III System Settings dialog.



Note the illustration below. Click on Add to create a new user.



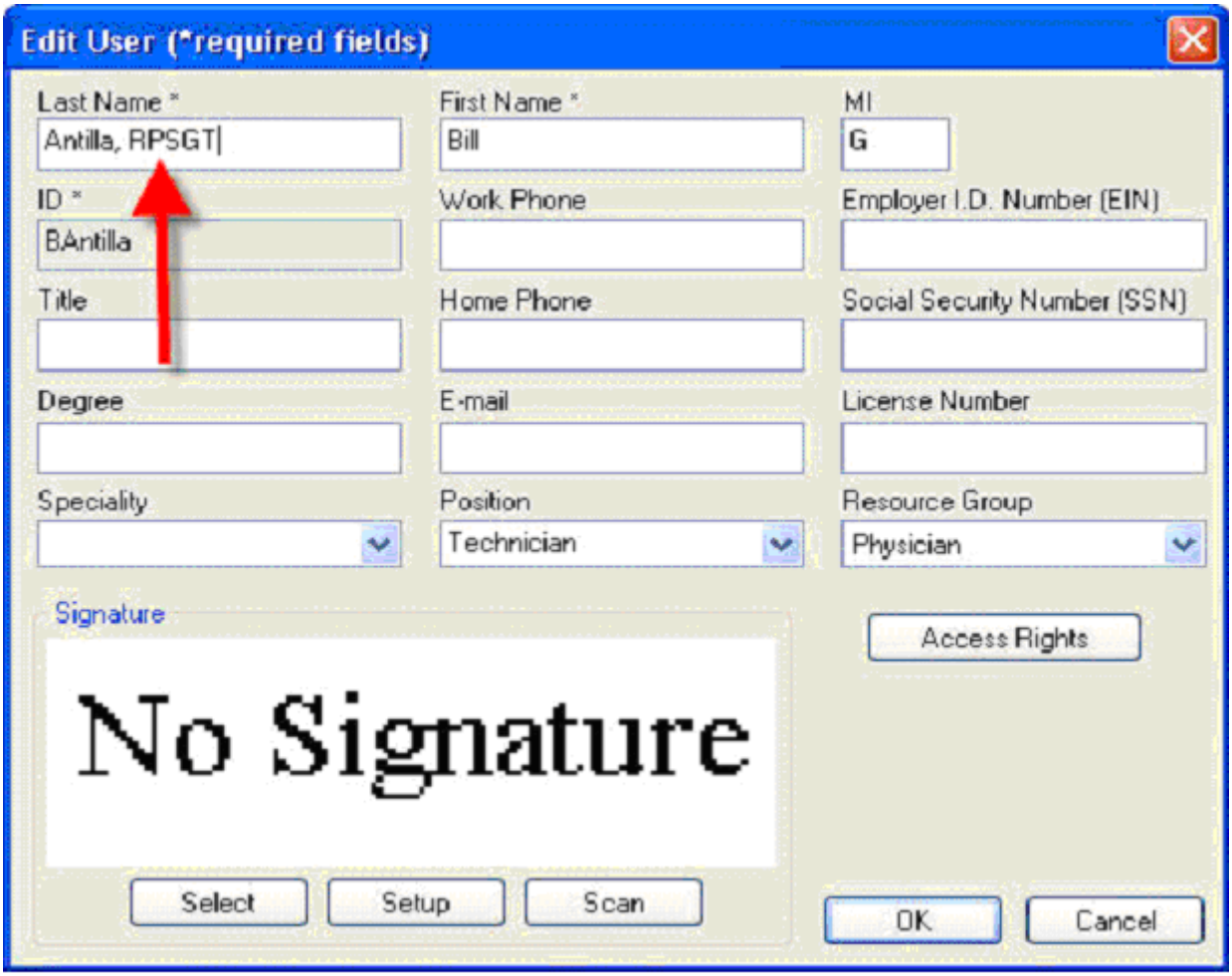
From the Edit User rights dialog, verify the following fields are correctly entered:

• Last Name - Enter the last name of the user. If you would like to include the credentials of the user, include them with the last name. For example, type in 'RPSGT' if you would like to include the RPSGT credential with the users name (see example below)

• First Name

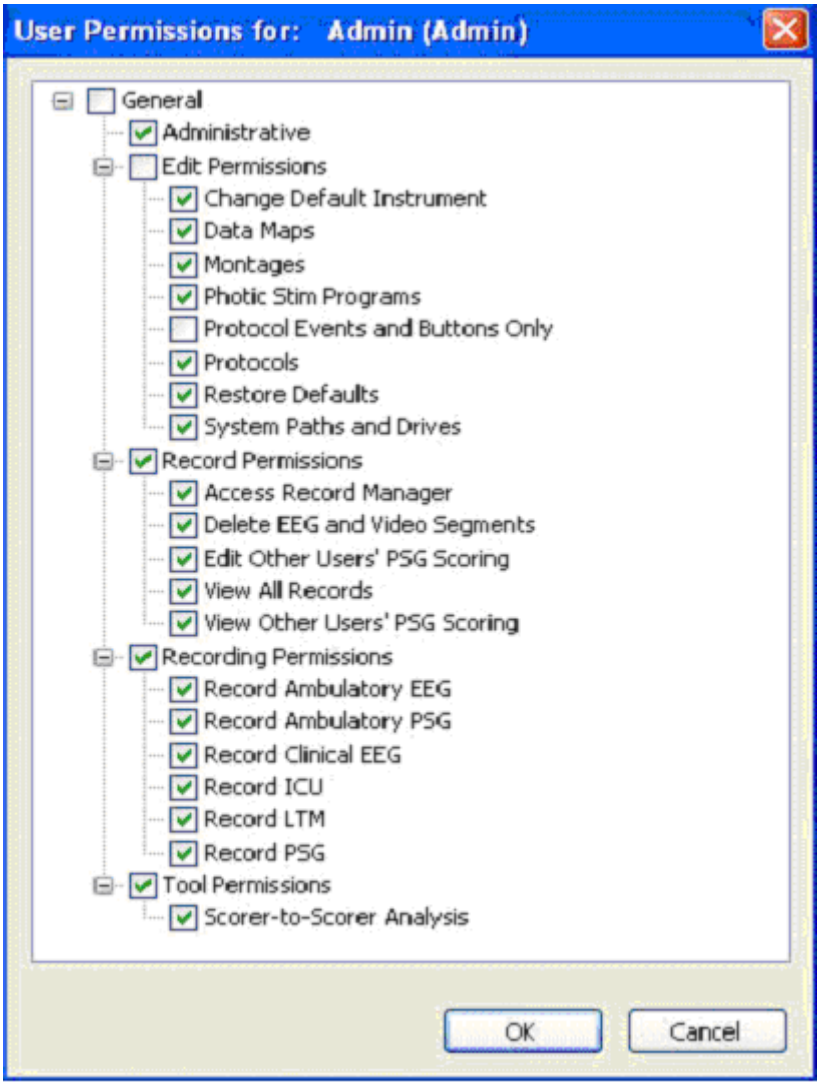
• Middle Initial (MI)

• Position (physician, referring physician, technician)



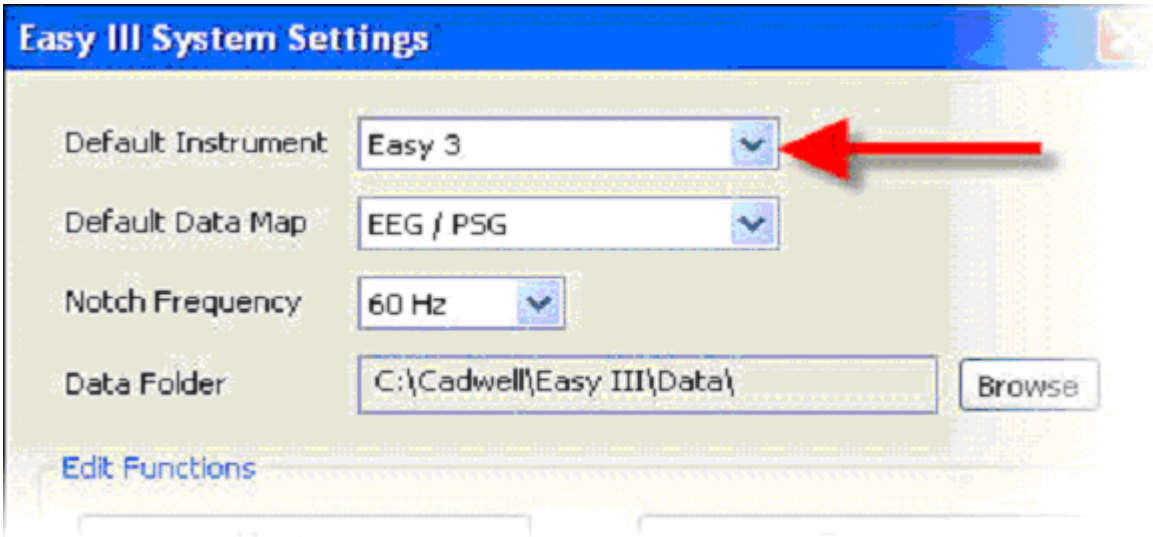
Assigning Access Rights

Easy III provides powerful user rights options that allow laboratories to provide custom access settings per user. The following User Rights Options are available within Easy III.



Easy III User Permissions - Description of Permissions
General

Administrative- Adding a check mark to the administrative check box will allow the user to reset and access other user's login data.
Edit Permissions
Change Default Instrument - Adding a check mark to the check box will allow the user to change the default amplifier displayed in the System Settings dialog (note the illustration below). If your laboratory uses multiple Easy amplifier types, you should add a check mark to this box to allow users to swap hardware as necessary.



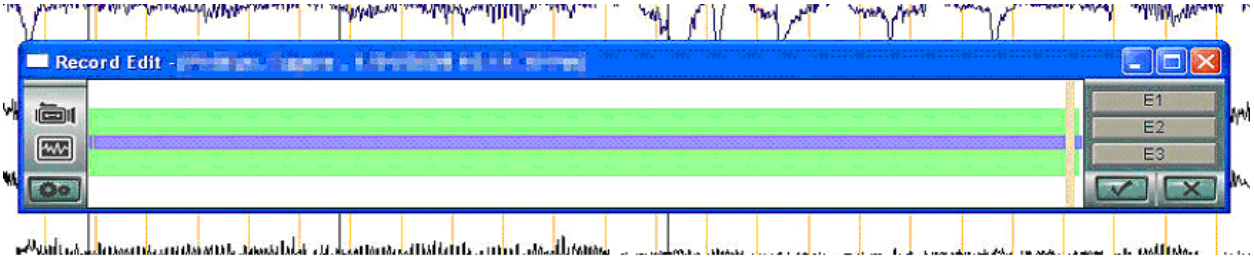
Data Maps - Removing a check mark from the check box will prohibit users from changing your default channel configurations for your laboratory. If you place a check mark in this check box, the user can add and remove default channel configurations. Data maps determine what inputs, channel settings, colors, filters, etc. will be used for each channel type used in recording montages.
Note: If a user deletes all data maps on a specific system, all data maps on all other networked systems will be deleted also. Prohibiting general users from accessing this option is recommended.
Montages - Removing a check mark from this check box will prohibit the user from adding, modifying, or deleting saved montages. Removing this check mark does not prohibit the user from modifying montages during data collection. The user will have the ability to modify existing montages as necessary during data collection and review; however the user will not be able to delete or add system montages.
Photic Stim Programs - Removing a check mark from this check box will prohibit the user from modifying, deleting, or creating new Photic Stimulation Programs.
Protocol Events and Buttons Only- Remove this check mark from the check box if you want to prohibit the user from accessing protocols and buttons. If you want to provide the user limited rights to default protocols, place a check mark in the check box. The user will not be able to modify workspace layout (the layout of trace windows and menus); however they will be able to create a new protocol using the existing workspace. The user can create their own custom events and report buttons used while viewing data.
Protocols- Remove the check mark from this check box to prohibit the user from changing the default configurations and views used for data collection. Cadwell recommends that only key users, trained to alter the system configuration be granted access to this option. Default views and configurations are tied directly to the data file. If a data file is collected with a specific view/protocol, that view will always be used when the file is opened.
Restore Defaults - This feature is currently not supported.

System Paths and Drives - Remove the check mark from this check box to prohibit the user from changing the default Data **Folder location.** Cadwell recommends that you remove the check mark from this check box for most users. A possible loss of data can occur if acquiring data on a machine that has a network data folder. If you allow users to change the default data path, the Easy III will automatically move all data files to any new folder immediately after it is selected by the user.

Record Permissions

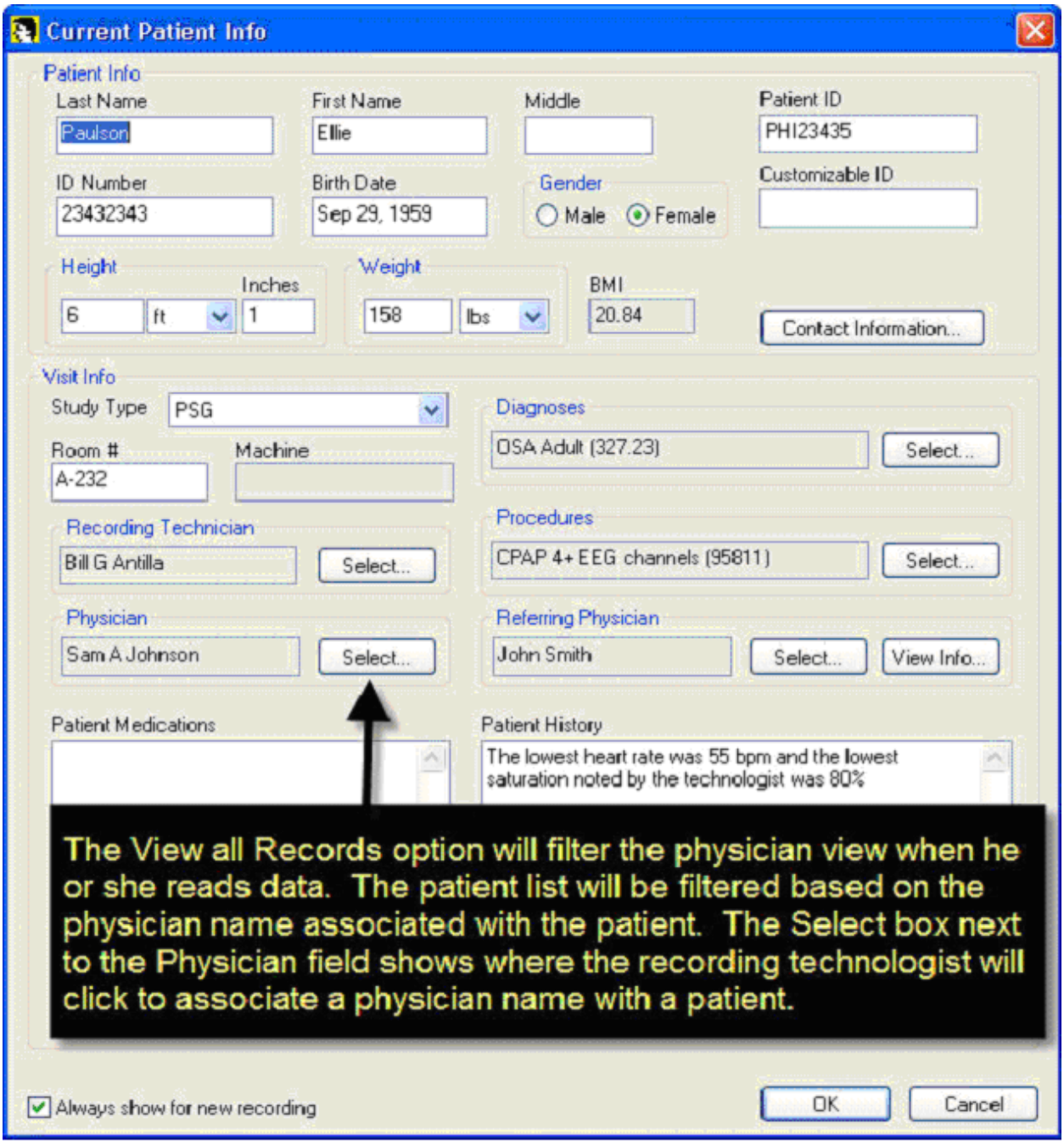
Access Record Manager - Removing the check mark from the check box for this option will prohibit the user from copying, deleting, archiving, moving, exporting, and importing patient data.

Delete EEG and Video Segments - Removing the check mark from the check box will prohibit the user from accessing the record editor. The record editor allows the user to select sections of a recording for deletion. Note the record editor below. The blue bar represents the entire data file. The green bar above and below the blue bar represents that data marked for saving. If you place a check mark in the user rights for the Delete EEG and Video Segments option, the user will be able to remove portions (or all) of the green line displayed in the record editor. Once segments are marked for deletion, the user can proceed with deleting data. Data cannot be recovered after deletion.



Edit Other Users' PSG Scoring- If you are training a new user, you may want to prohibit the user from importing another users scoring. If you place a check mark in the check box for this option, the user will be able to login under their own name, access a record scored by another user, and import their scoring and staging events.

View All Records- This option will filter the Read Data/Select Record view for the physician. This is a powerful option for filtering records. Removing this check mark from the check box will only allow the physician to see his/her own patients. It is critical that the physician have a user name in Easy III. The referring physician must also be selected from the patient information dialog (see below).



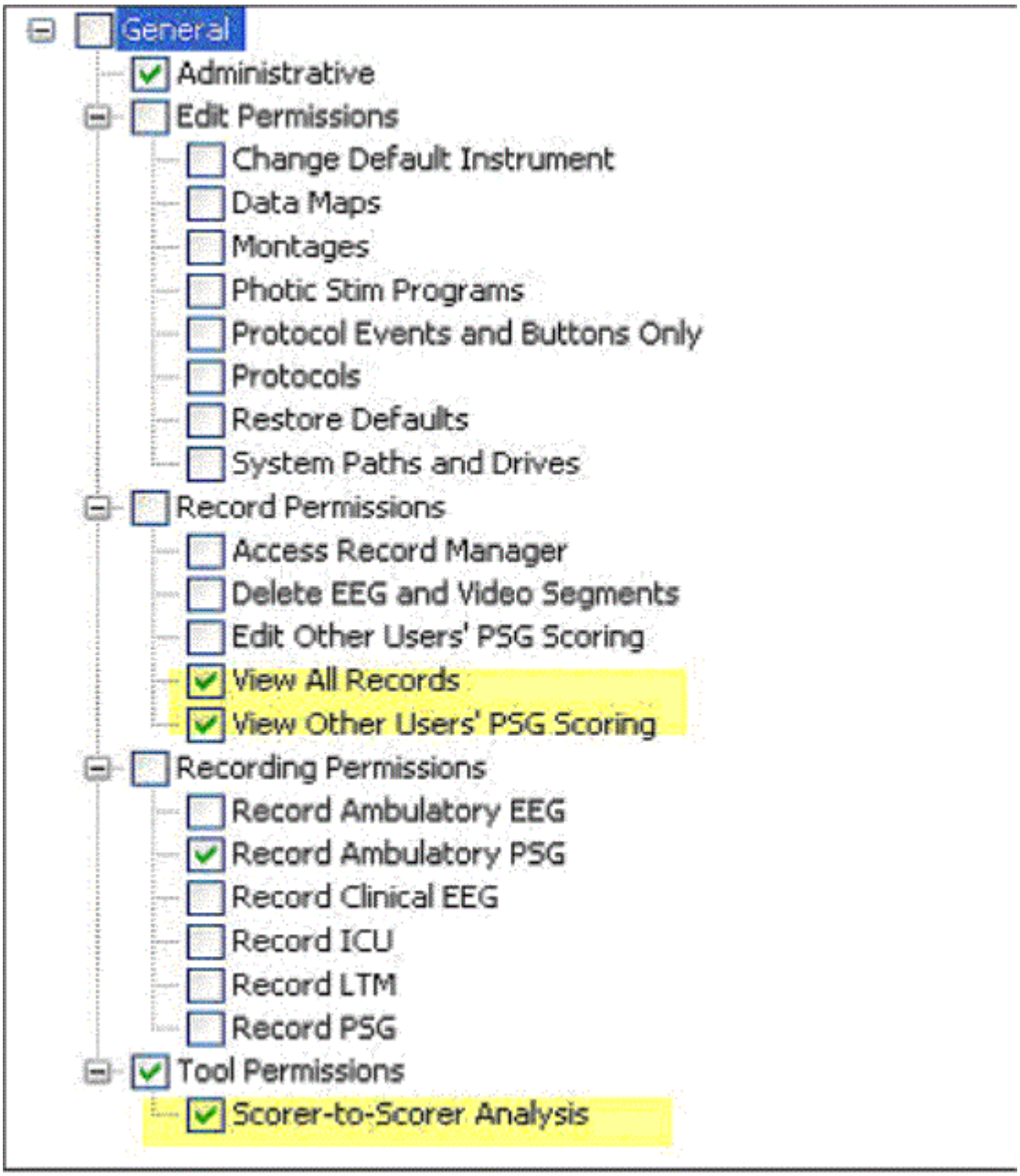
View Other Users' PSG Scoring - If you are training a new user, you may want to allow the user to view another users scoring. If you place a check mark in the check box for this option, the user will be able to login under their own name, access a record scored by another user, and view their scoring and staging events.

Recording Permissions

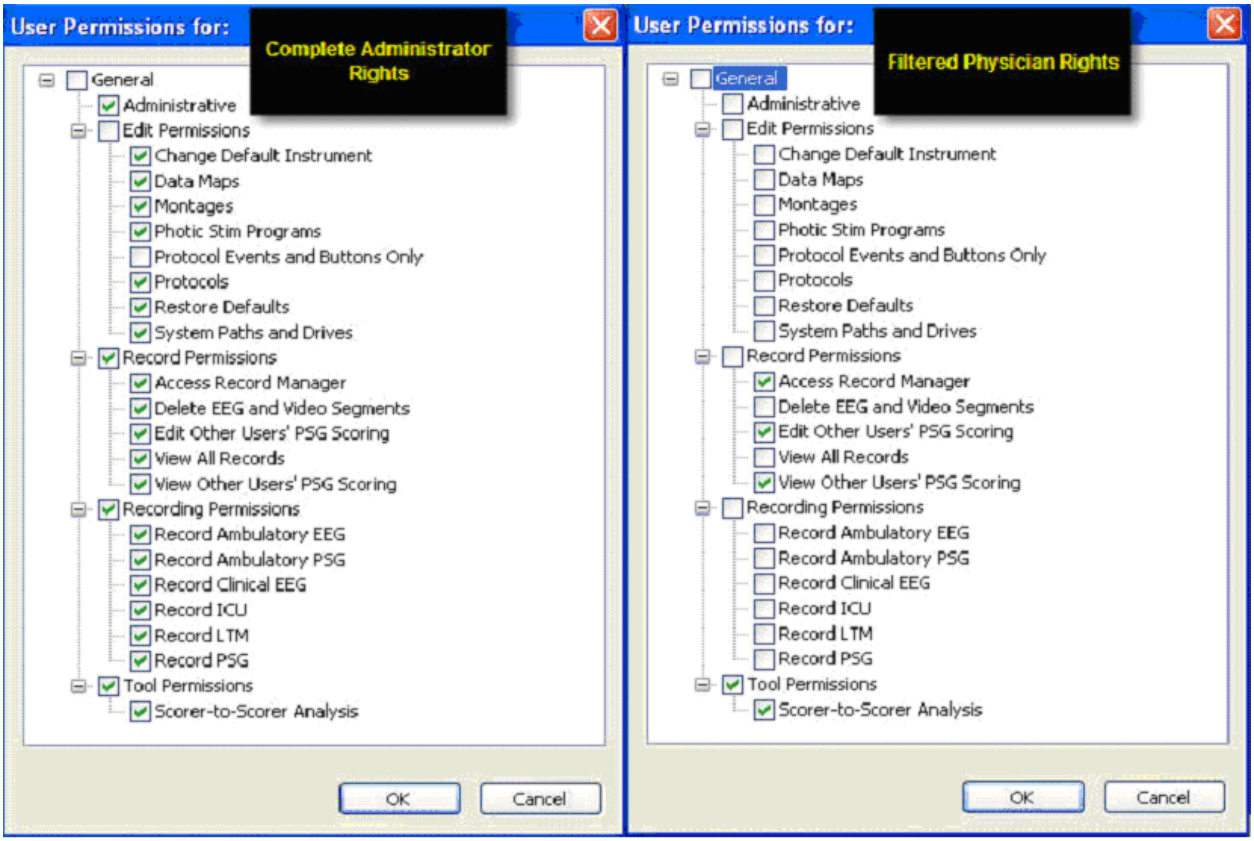
Removing the Recording Permissions check mark from the Check box will prohibit the user from recording data from the selected recording modality.

Tool Permissions

Scorer-to-Scorer Analysis - Add a check mark to this option to allow the user to compare their scoring to another users scoring. Using the Record Permissions, Edit Others Scoring and View Others Scoring, you can further restrict the users access rights. For example, if you wanted to allow a technologist to view another scoring results, but not import them into his/her own scoring results, you could set the permissions as follows:



Sample User Rights



Managing Users - Password Controls

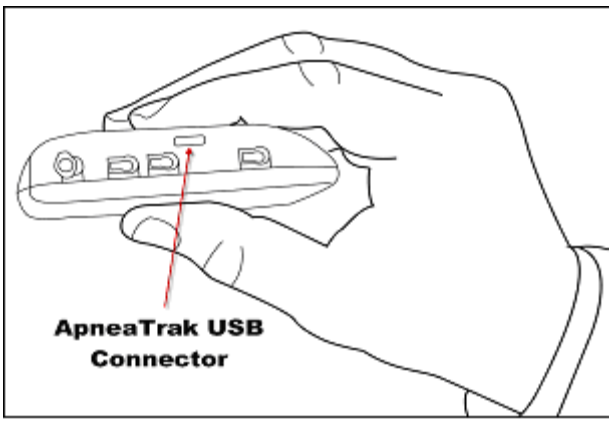
Changing Passwords - Any user can log in under his/her login and modify the default password associated with their user name. Click on Change Password to change your default password. Click on OK to close. Exit the Easy III software and log back in with your new password.

Resetting Passwords - Any user with Administrative rights can reset another users password.

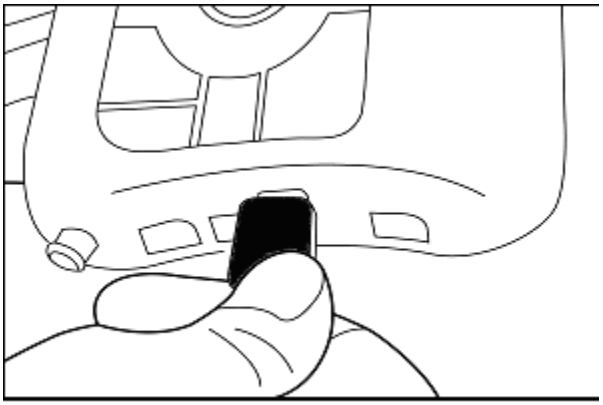
Starting, Downloading, and Reviewing an ApneaTrak Recording

Charging the ApneaTrak recorder before Use
The ApneaTrak recorder contains an internal NiMH (Nickel-Metal Hydride) battery. The battery is not user replaceable. To prepare your ApneaTrak recorder for use, you must insure the battery is fully charged and ready for use. Typical charge time is 3-4 hours until the recorder is fully charged.

1. Plug the ApneaTrak USB cable into a USB connector on the bottom side of the ApneaTrak recorder.



2. Plug the other end of the ApneaTrak USB cable into the USB connector on the ApneaTrak computer.

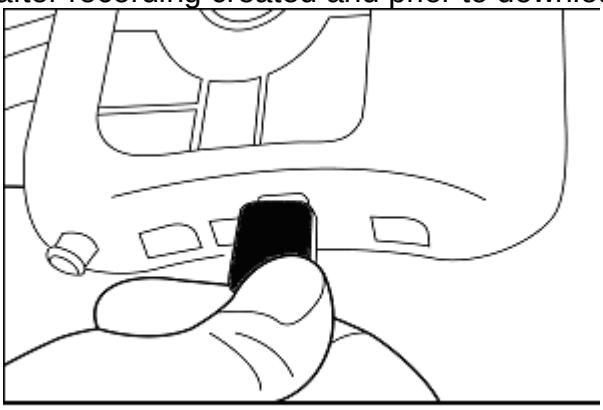


3. Check the LED Status indicator on the front of the ApneaTrak recorder. The following LED indicators will be displayed:

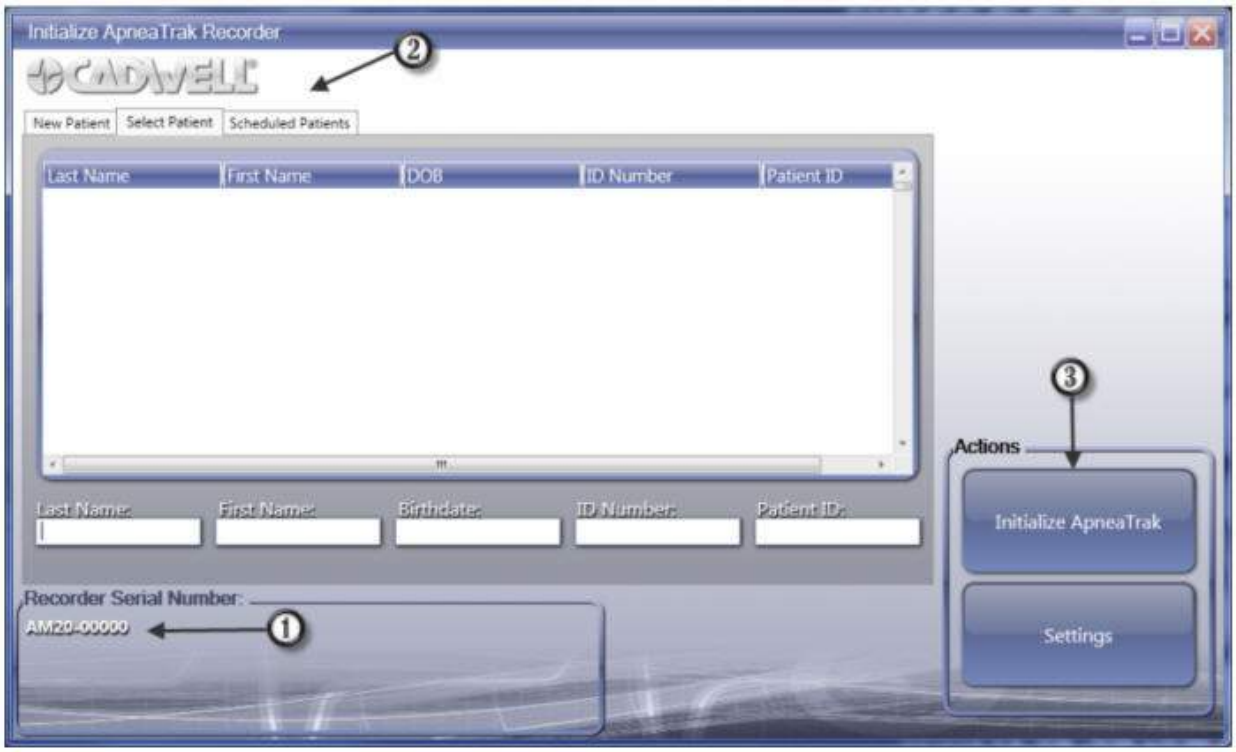
- **If the recorder is charging**, the Status LED color will be green. The LED will blink one time per second while charging. Do not use the recorder until it is fully charged.
- **If the recorder is fully charged** and ready for use, the LED will remain on. The LED color will be green. The recorder is ready for use.

Initialize the ApneaTrak recorder for Use

Initialization is simple and fast. Locate the ApneaTrak USB cable. Connect the cable to a USB input on the ApneaTrak computer and connect the other end of the cable to the mini USB connector on the bottom side of the ApneaTrak recorder.
*note: a recording can be performed without initialization, the patient information can be applied just prior to downloading of the recording. See the See "Initialize the ApneaTrak after recording created and prior to downloading the data" on page 173 for details.

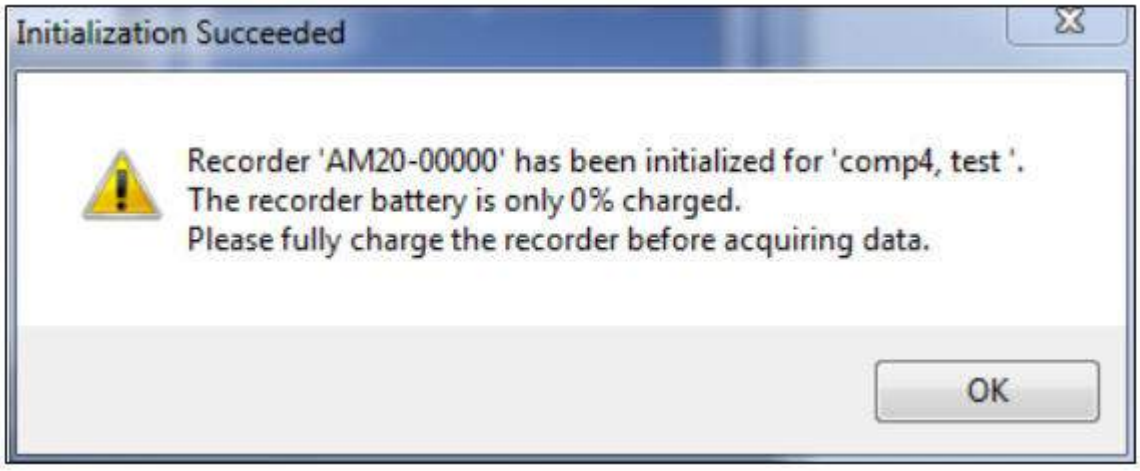


The ‘Initialize ApneaTrak Recorder’ dialog box (displayed below) will be automatically displayed after plugging the USB cable from the computer to the ApneaTrak recorder.
Note the following options:

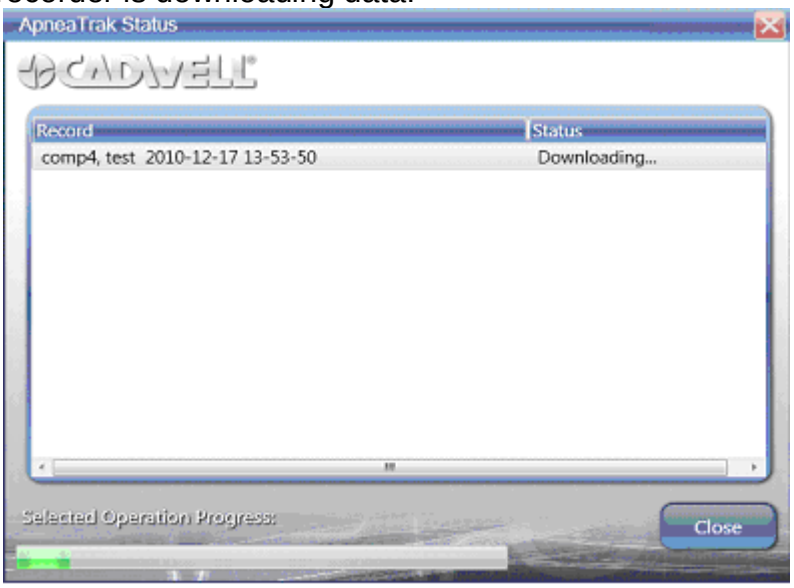


1. The Recorder Serial Number will be displayed in the window on the lower left side of the dialog box.
2. Select one of the three tabs displayed. You can enter a new patient, select a patient name that is already in the patient list, or select a patient from the scheduled patients.
3. Click on the Initialize ApneaTrak button to add the patient name and recording settings to the recorder.

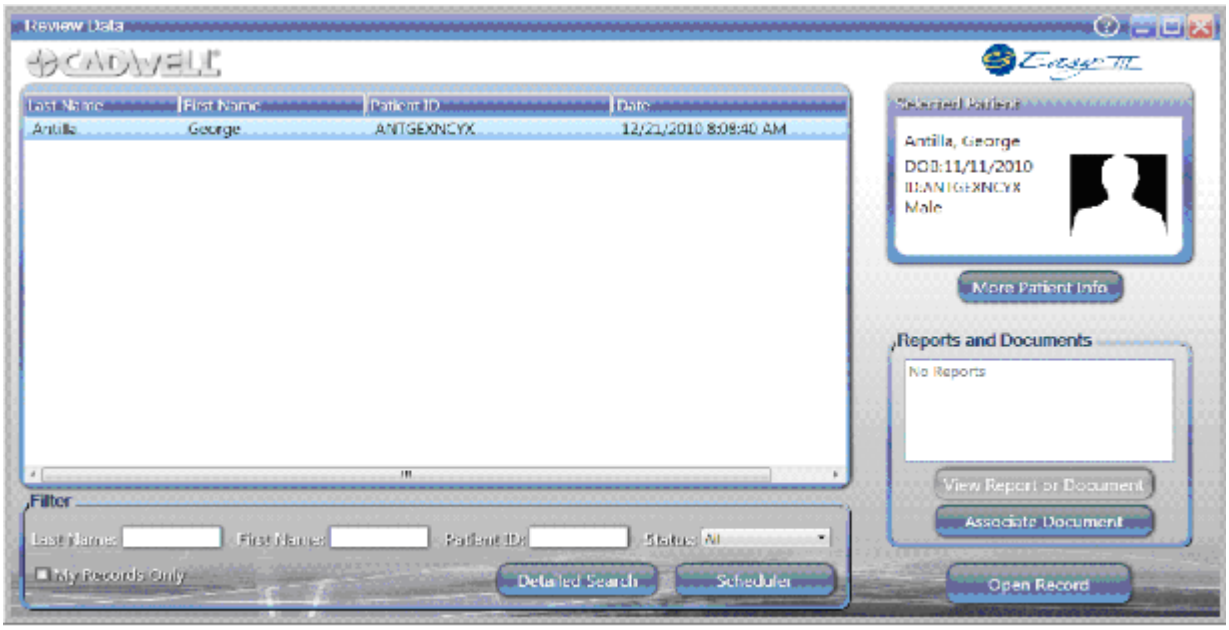
After successfully initializing the ApneaTrak recorder, the dialog displayed below will be displayed. The recorder battery status will also be displayed in this window. If the recorder is not fully charged, use the ApneaTrak USB cable to connect the recorder to the ApneaTrak computer. Completely charge the recorder before use. Note: The green status LED will blink one time per second while charging. When the batteries are fully charged, the green status LED will remain on.



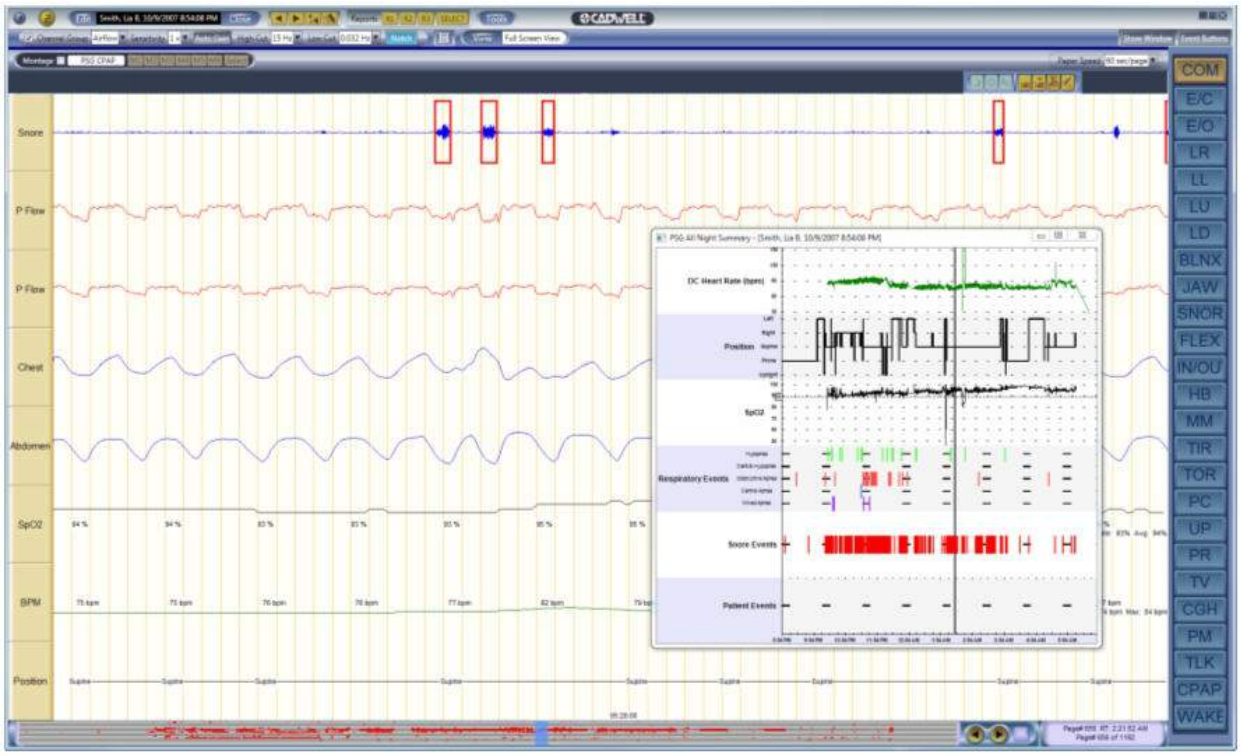
Downloading the ApneaTrak Recorder after the Recording is Complete
Connect the ApneaTrak recorder to the ApneaTrak computer with the USB cable provided with the ApneaTrak recorder. The following dialog will be displayed while the recorder is downloading data.



Opening an ApneaTrak Record for Review and Scoring
Open the Easy III Review Data dashboard. The contents of the Review Data dashboard can be sorted by clicking on one of the column titles (last name, date, etc.). Note the cursor position also defaults to the Last Name field in the lower left hand corner of the window. To begin sorting the list by the patient last name, begin to type in the patient last name. When the correct study is identified, double click on the patient name or highlight the patient name and click on Open Record button.

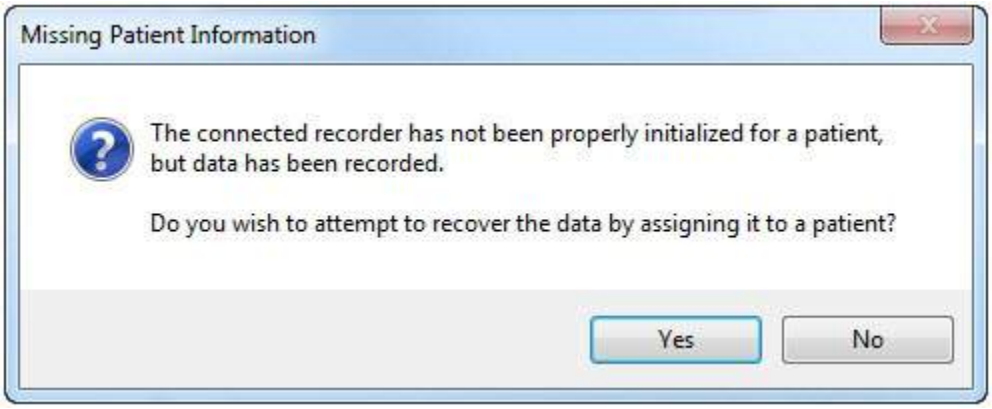


The ApneaTrak waveform data will be displayed.

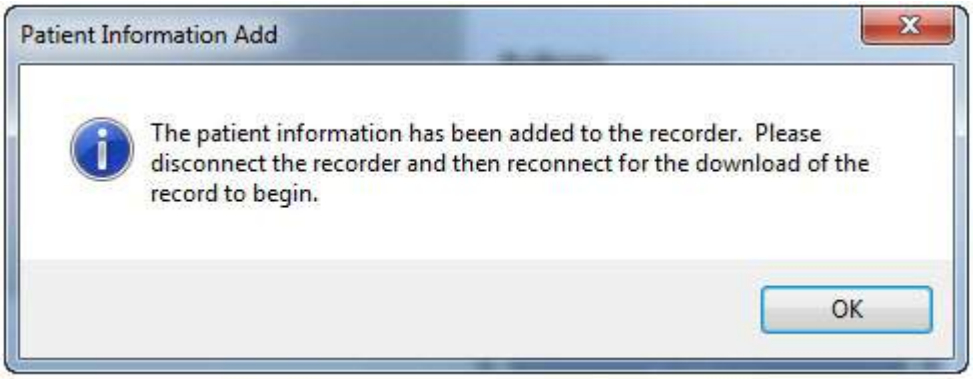


Initialize the ApneaTrak after recording created and prior to downloading the data

Plug ApneaTrak device containing the recorded data into the ApneaTrak PC, the following prompt will display.



Click Yes, the Cadwell Login screen will come up if the application is not logged into at this point. Login with you Cadwell username and password, select either an existing patient from the Select Patient list or enter New Patient information. Once entered, click on Initialize ApneaTrak, the LEDs will light up on the device as they normally do after initialization. The following prompt will appear.



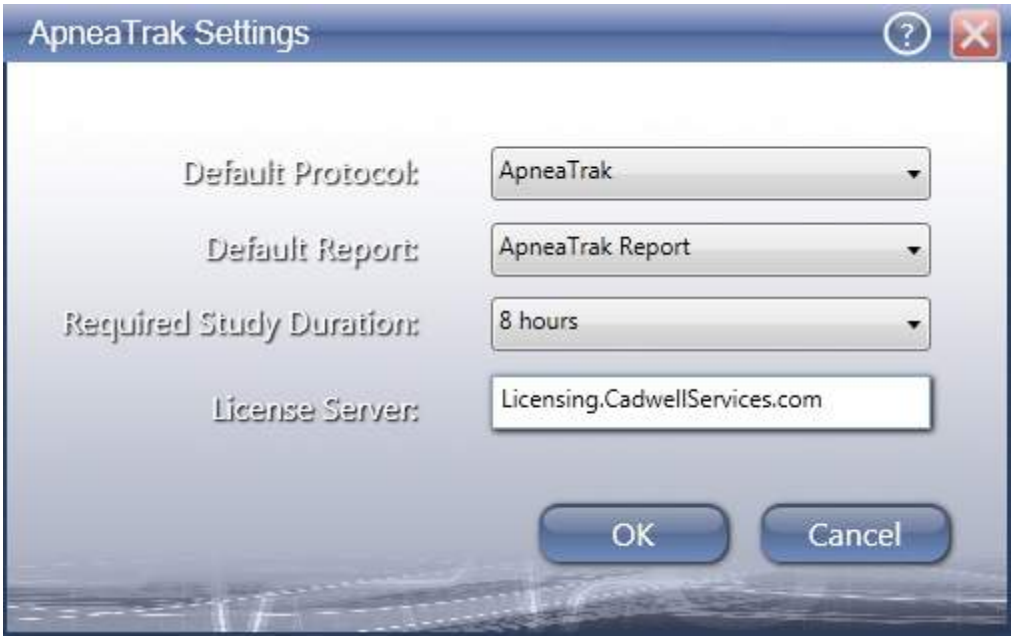
Unplug the ApneaTrak device and then plug back in to the same PC, the download will automatically begin.

ApneaTrak

Initial ApneaTrak Software Setup and Configuration
Before using your ApneaTrak system, you will need to verify that the software is configured correctly. You can open the ApneaTrak software by double clicking on the Easy ApneaTrak icon on the desktop.

Cadwell ApneaTrak Menu

- Initialize ApneaTrak Recorder
  - This option opens the initialization page for ApneaTrak, allowing a device to be configured.
- Review ApneaTrak Recording
  - This option allows for the ApneaTrak study list to be pulled up and to open a file.
- Show ApneaTrak Record Status
  - This option shows the Status window and gives status updates of the more recent ApneaTrak studies that were downloaded or are in process on a particular system.
- ApneaTrak System Settings
  - This option opens a window showing the current default settings for ApneaTrak. Below are the recommended default settings.



- Clear Recorder(s)
  - Use this option if an ApneaTrak was initialized for a patient, however the patient will no longer be using that device and it needs to be initialized for someone else.
- Unlock Recorder(s)
  - If your ApneaTrak was a system purchase and the recorder was not unlocked prior to shipping, call in to application support and they will assist you in unlocking your device.

Sentinel Nurse Monitoring Software

The Easy Sentinel is a viewing tool that will allow staff to remotely monitor the video signal from another Easy III system actively collecting data. Sentinel allows concurrent viewing of up to 6 active Easy III video signals. Additional Sentinel stations can be added if you need to view more than 6 patients. To launch the software you need to have a valid copy of Sentinel installed on your Easy III computer. Sentinel can view up to 6 concurrent video feeds from other Easy III systems.

The processor on the Sentinel computer must be at least a Quad 4 processor. The PC must have at least 4 GB RAM, Windows XP 32 bit OS (only). The graphics card must have at least 512 MB of memory.

Sentinel Event Button Integration – If an Cadwell event button is connected and calibrated to a DC input on the Easy II or Easy III amplifier, Sentinel can notify the user with an audible tone or a custom recorded voice recording (such as “Room 323”) can be played when the event button is pressed.

Persyst Event Button Notifications – If you are using Persyst software (Persyst Development Corporation, Prescott, AZ) to detect EEG events, the Easy Sentinel software can notify you when the Persyst software has added an EEG event to the event list. An audible tone or custom recorded voice recording (such as “Persyst Event Room 323”) can be played when an event is created.

Using Sentinel Nurse Monitoring Software

Sentinel can remotely monitor up to six live recordings on your network. Following are the steps to setup and remotely view those studies.

1. Double click on the Easy Sentinel icon on the desktop.
2. Highlight the recordings that you would like to monitor and select Open Recording(s).

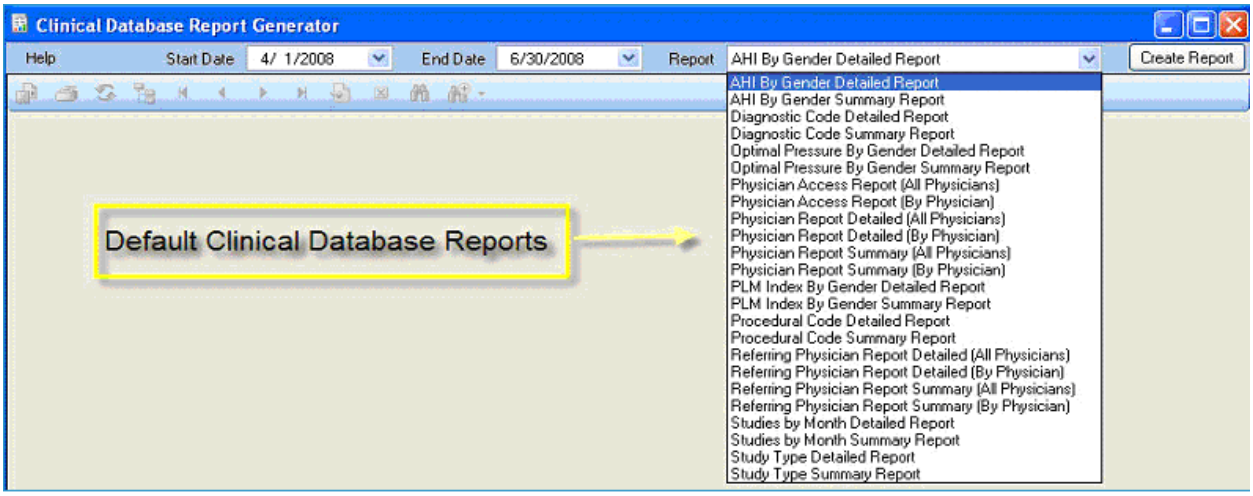
3. The recordings selected to be monitored will appear in a floating Easy Sentinel window. The recordings can be resized. Live video will be seen for each patient being monitored along with any notifications that have been configured for each patient.

4. To configure settings for a patient, simply click on the Settings button of that session. Check Notify for Patient Button Press and select audio sound and sound interval, if a patient event button is connect to the DC amplifier. Check the Spike Notifications that you would like to notify the nurse station, these will only apply if Persyst is installed on the acquisition station.

Clinical Database

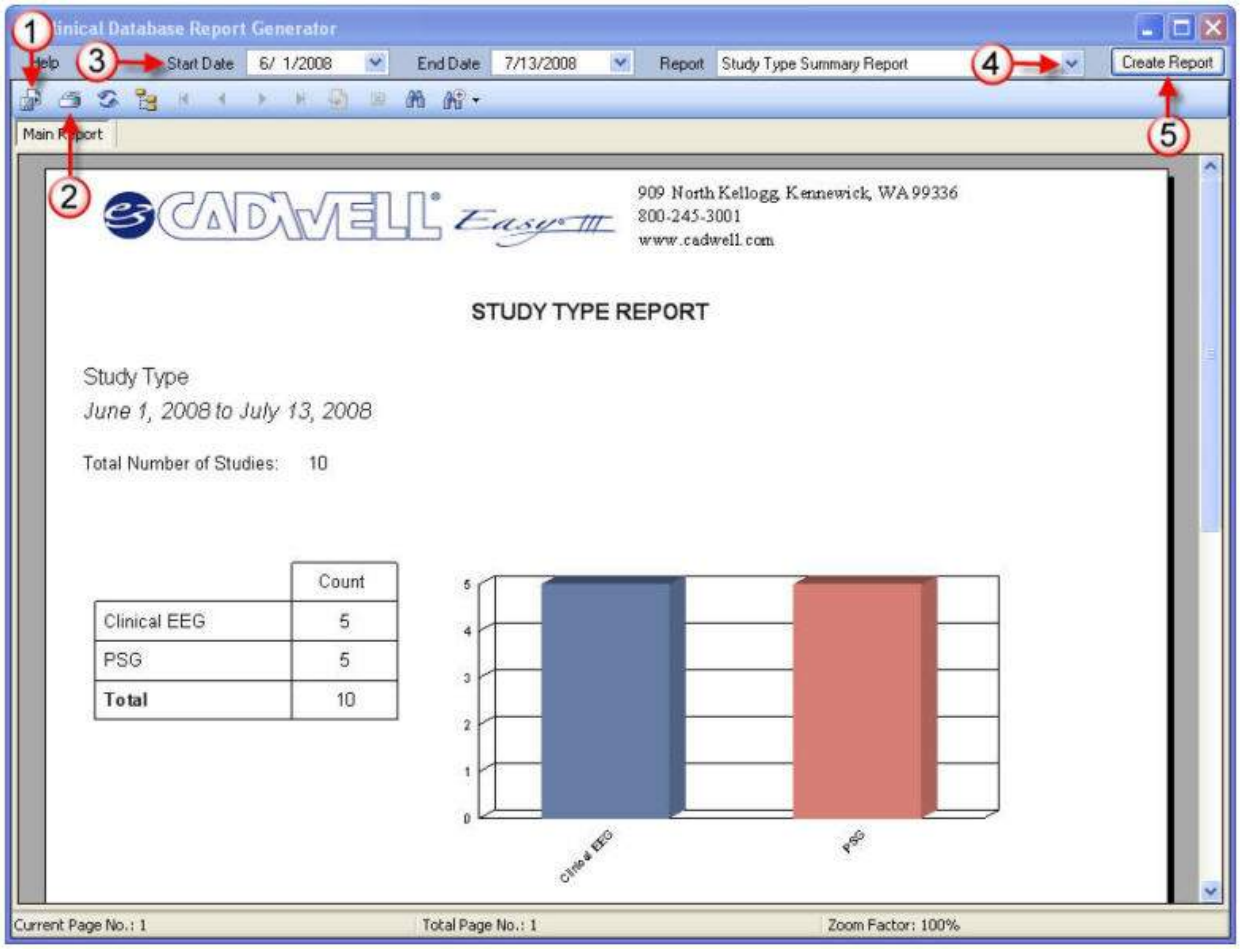
Clinical Database Options

The Easy III system can be configured with a Clinical Database. The database will allow the user to create multiple reports that summarize clinical and administrative information. Users define the date range used with a selected report. The following default reports are generated by Crystal Reports:



Clinical Database Options

Note the illustration.



1. Select this option to export the displayed report. You can export the report in the following formats:
• Crystal Reports (.rpt)
• Adobe Acrobat (.pdf)
• Microsoft Excel (.xls)
• Microsoft Work (.doc)
• Rich Text Format (.rtf)
2. Click on this option to print the displayed report.
3. Click on this option to determine the date range you would like to use for the report.
4. Click on this option to select the specific report you would like to generate.
5. Click on this option after you have selected a report type. The report will be generated and displayed in the Report Generator window.

Scheduler (Calendar)

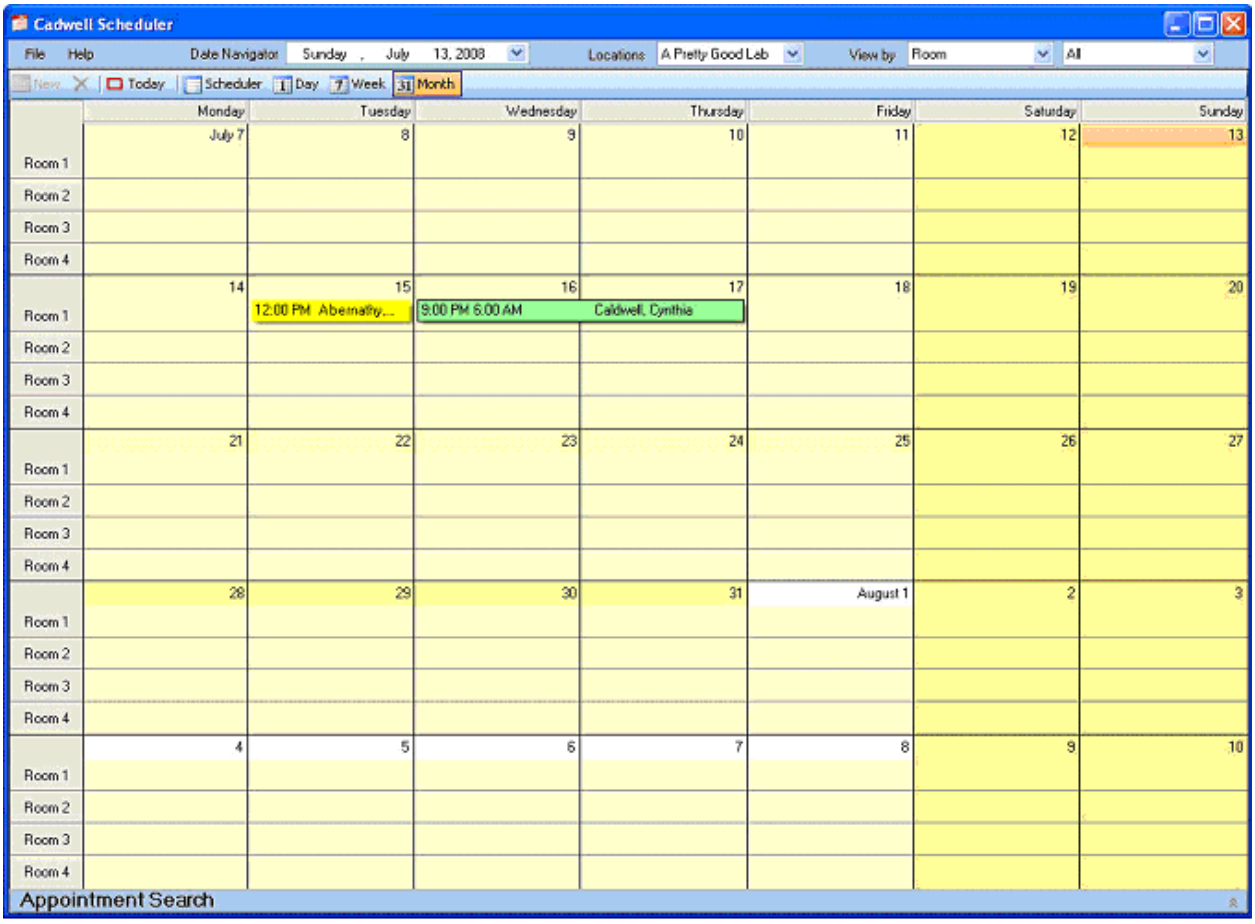
Cadwell Scheduler Options

The Cadwell Scheduler is a powerful tool that will allow Easy III users to schedule and manage appointments. The scheduler allows the user to set up and manage schedules for multiple locations based on the following categories:

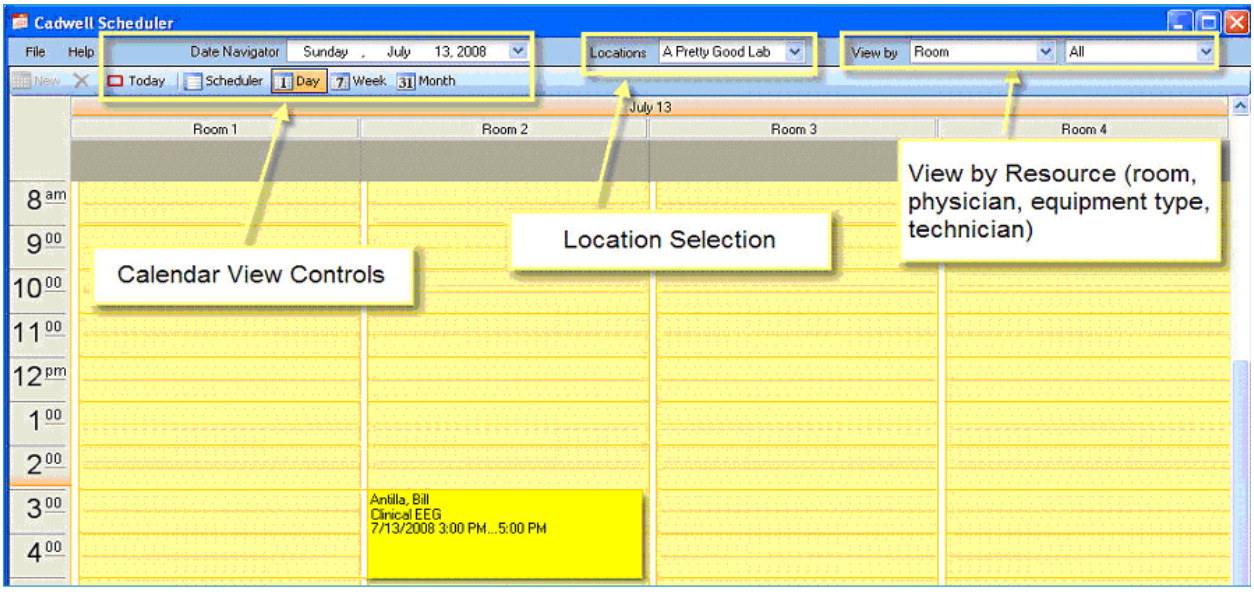
- Room Number
- Physician
- Technician
- Equipment Type (EEG, PSG, Ambulatory recorder)

Scheduler Features

- Multiple calendar views (monthly, weekly, daily)
- All appointments are synchronized between all Easy III based systems.
- A separate installation is supported for systems that require access to the Scheduler only.
- Quick Recording Launch is supported by right-clicking on an appointment in the calendar.

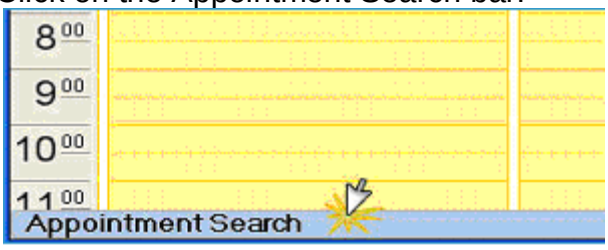


Accessing the Scheduler
From the Easy III desktop, click on the Scheduler option.
The Scheduler can also be accessed by clicking on the Cadwell Scheduler shortcut from the Windows desktop.
Note: A user name and password is required to log into the Cadwell Scheduler.
Calendar Options

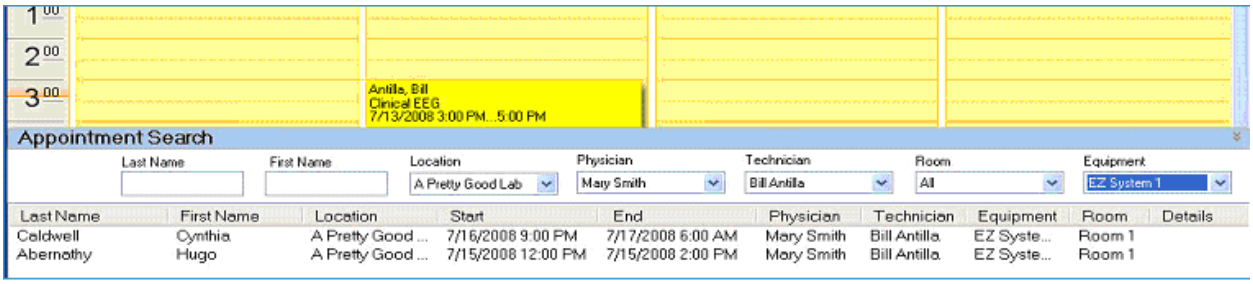


Configuring the Scheduler for Use
1. Add Facility Information. Click on File, Manage, Locations. Enter facility information.
2. Add Resource Information. Click on File, Manage, Resources. Enter room number, and equipment information. Select physician and technician names that will be used in the Cadwell Scheduler.
Note: You must create Easy user names and passwords for all physicians and technicians that will be included as resources in the Cadwell Scheduler.

Searching for an Appointment
Click on the Appointment Search bar.

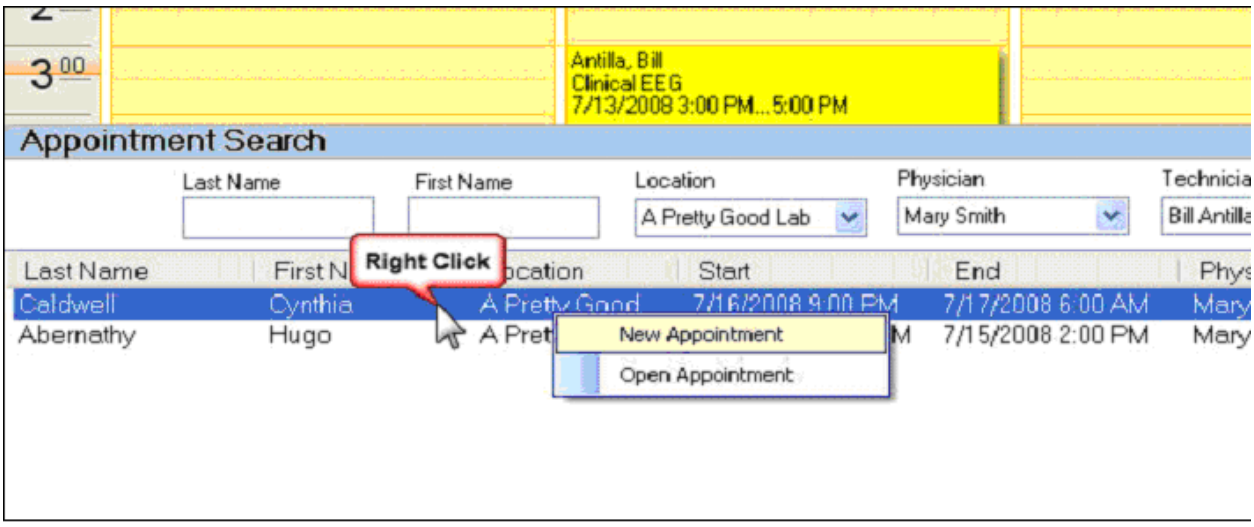


The following options will appear.



Search by Options:

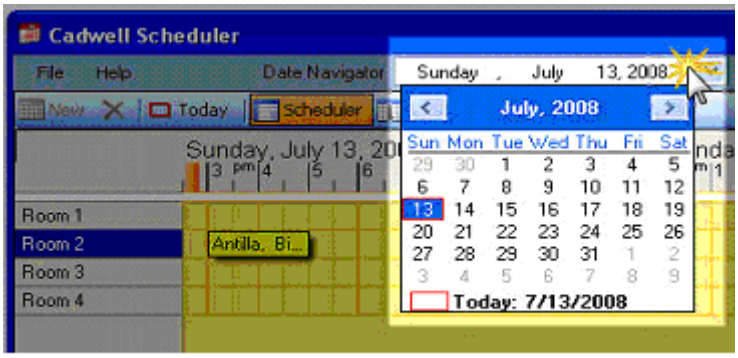
- Last Name
- First Name
- Location
- Physician
- Technician
- Room
- Equipment



Note the illustration above. When the correct patient is found, highlight the patient name, Right Click on the highlighted name and select New Appointment or Open Appointment to proceed.

Picking a Specific Date to View on the Calendar

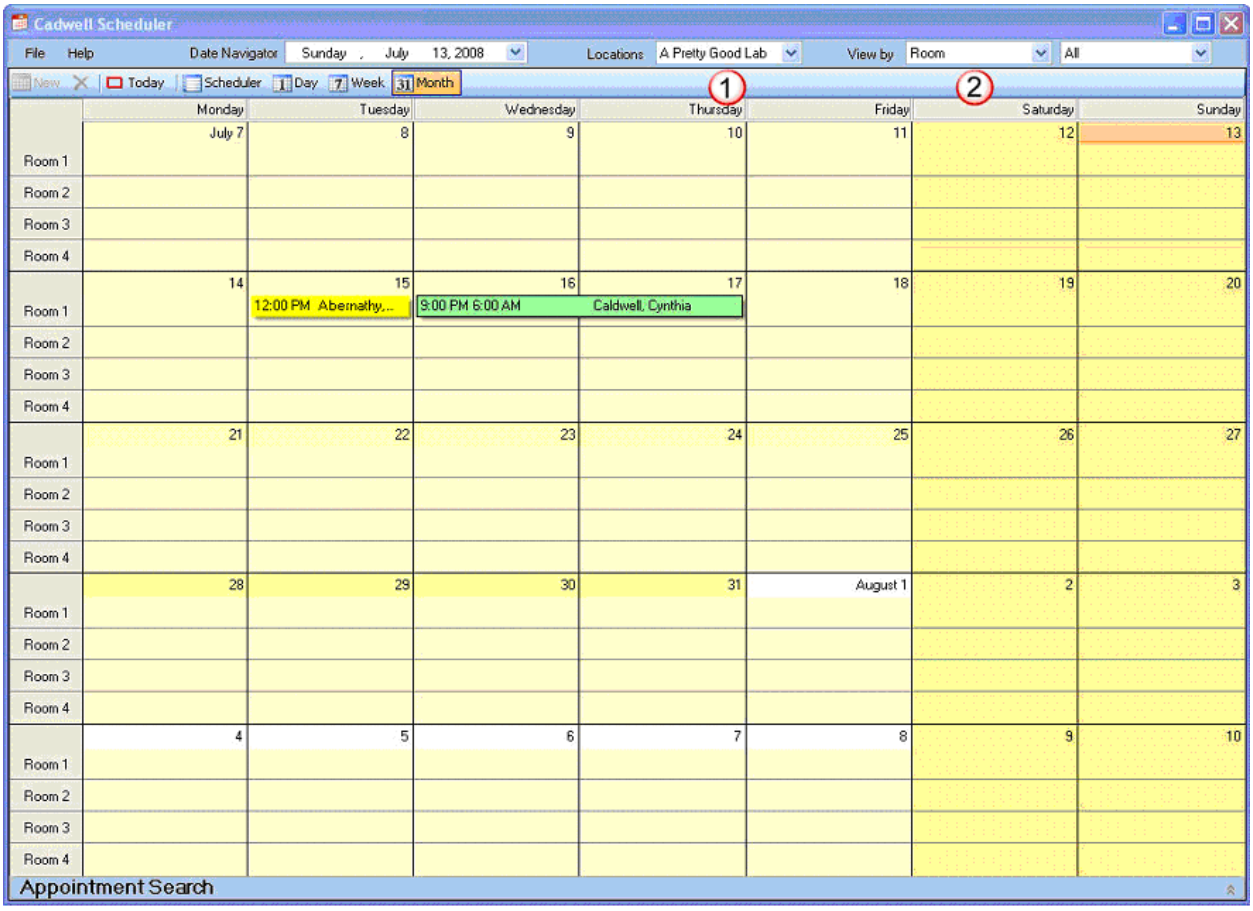
Click on the Date Navigator to find a specific date.



Viewing the Scheduler by Resources

In the window below, note the following steps.

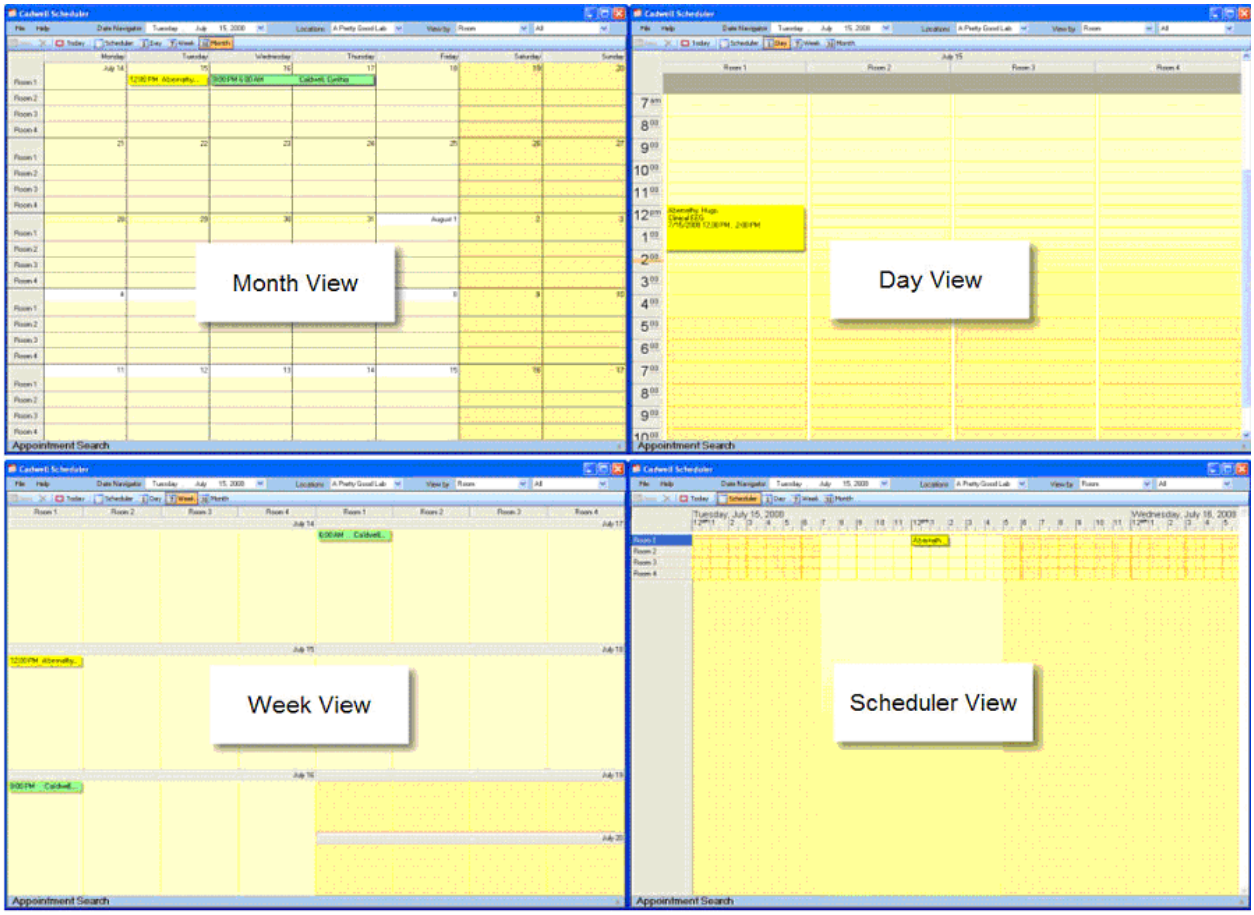
1. Select the Location
2. Select View by Room. The calendar will display the current calendar by room.



3. Multiple views are available for use. Note the illustration below, the views are filtered by Room Number.

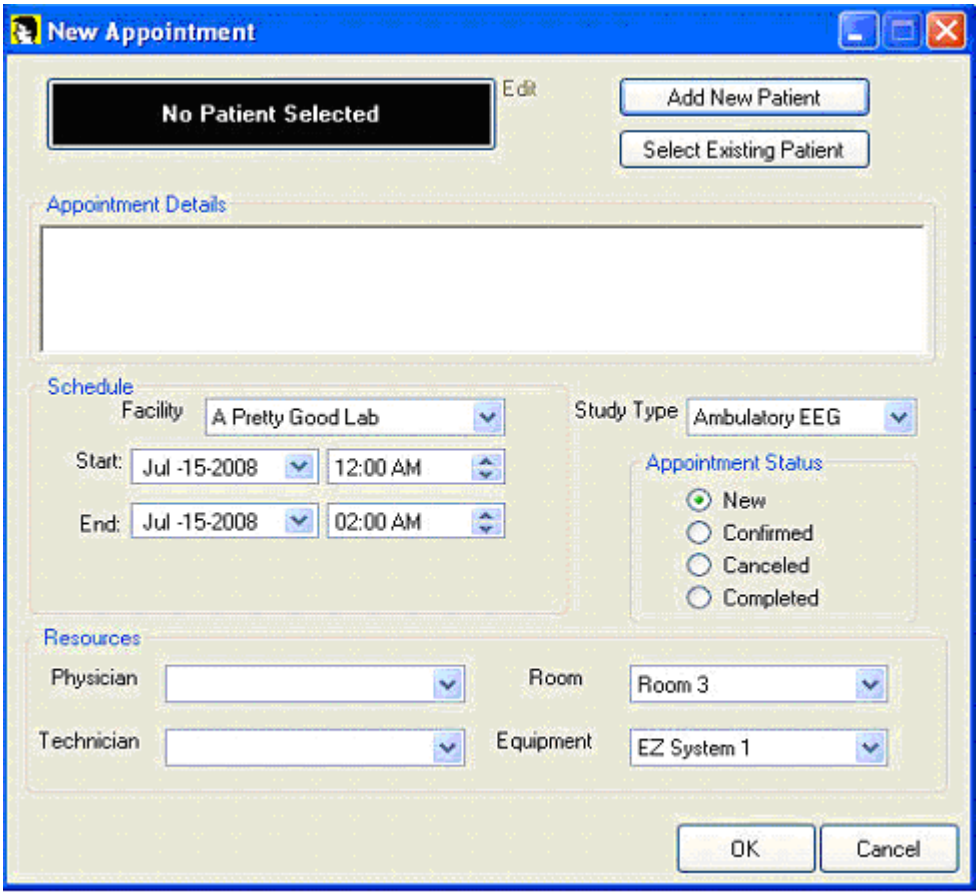
- Month View\
- Day View
- Week View

• Scheduler View



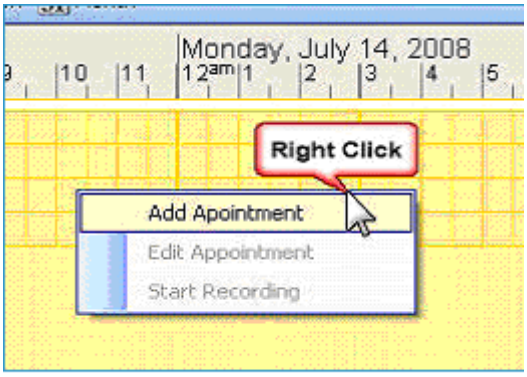
4. Within each view, the user can select to view the calendar by:
• Physician Name
• Technician Name
• Room Number/Name
• Equipment Type

Adding a Patient to the Scheduler



1. Click on 'New' or double click on a selected date in any calendar view (monthly, weekly, daily, scheduler).
2. Click on 'Add New Patient' or 'Select an Existing Patient'. Select or enter patient details.
3. If the Scheduler is used for more than one facility, select the Facility you would like to use.
4. Select the appointment Start and End dates and times.
5. Select the Study Type.
6. Select the Appointment Status.
7. Assign the patient to the correct Resources (Physician, Technician, Room, Equipment).
8. Click on OK. The appointment will be copied to all accessible Easy III systems configured with the Cadwell Scheduler.

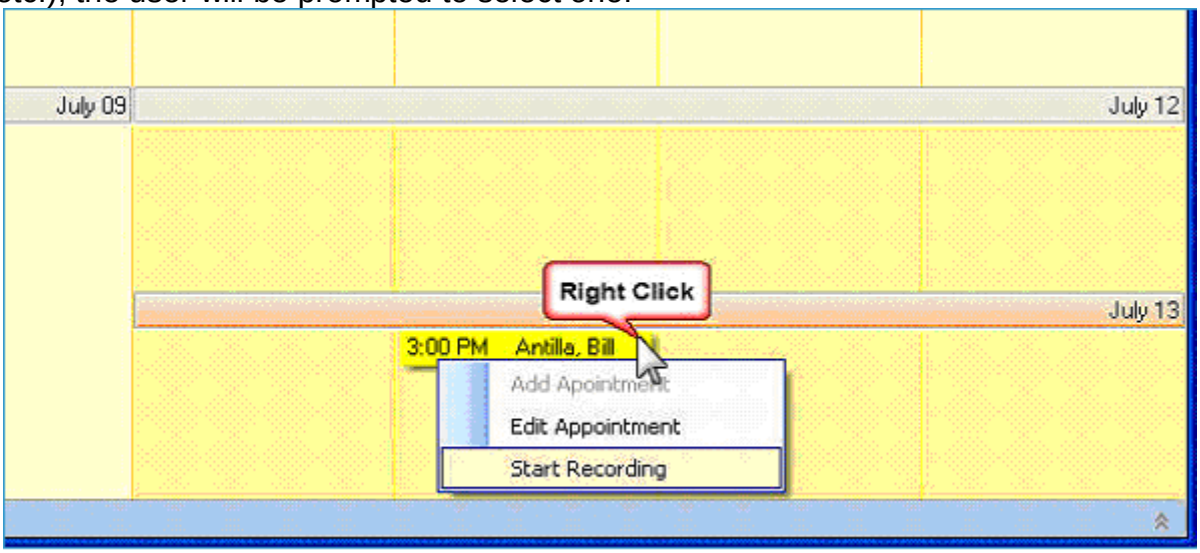
Adding an Appointment from the Scheduler View



The user can add and edit an appointment by dragging across the calendar with a mouse, Right Click on the selected time period and Left Click to Add Appointment.

Starting a Recording from the Scheduler

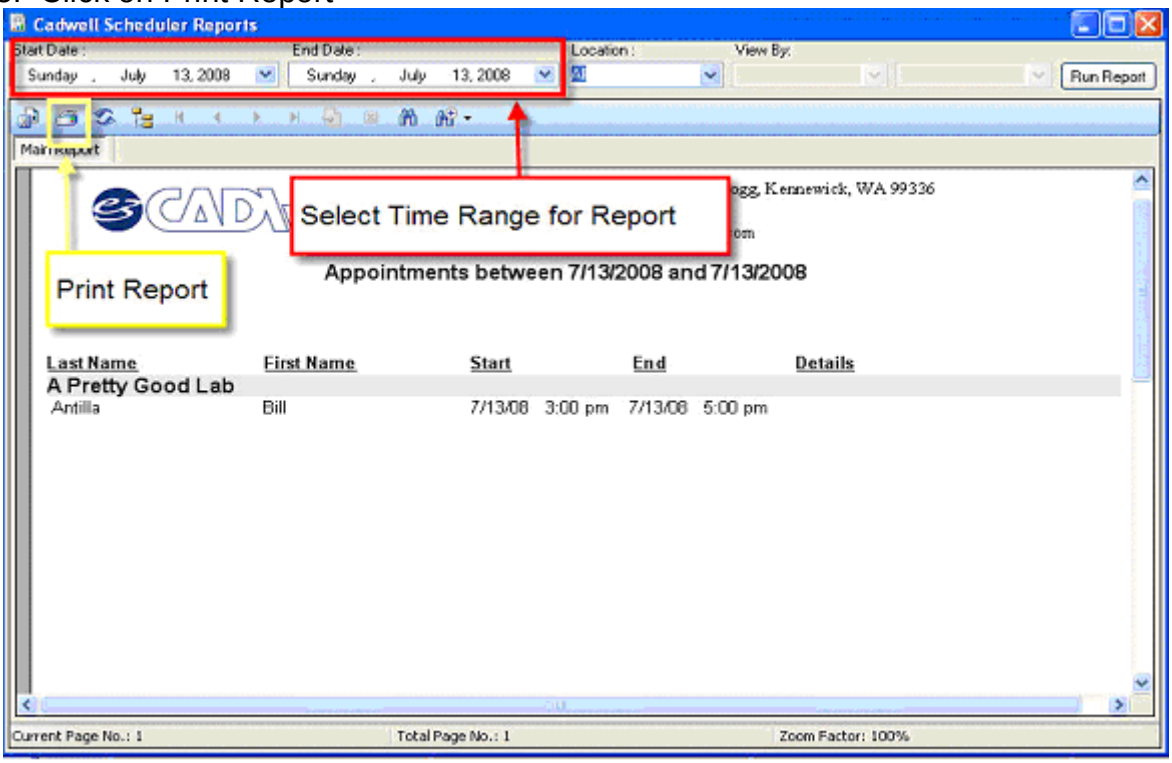
To start a recording, the user right-clicks on an appointment in the calendar in any view – monthly, daily, etc. - and selects Start Recording from the pop up menu. If the Easy program is not already open, the Easy software will start up and a new live recording session will be started. If the study type does not have a default protocol (PSG, EEG, etc.), the user will be prompted to select one.



Printing a Schedule Summary Report

1. Click on File
2. Click on Report
3. Click on Scheduled Appointments

4. The Report Generator will be displayed. Select the time range for the report.
5. Click on Print Report



Installing Easy III Software

Software Installation Sequence

1. **Install Easy III on Application Server with Data Storage Path** – If you are installing Easy III in an enterprise based environment, you should install Easy III on the application server first. The Easy III installer will (must) install the application to the C: drive on the application server. The data files read by the server do not need to be owned by the application server. Data files can be housed on a separate storage device (such as a SAN) that can be accessed by the server and all other clients utilizing Easy III. Record the system name (or IP address) from the application server. As you install Easy III on additional systems you will select and/or enter the name or IP address as you configure remote systems to communicate with the application server.
2. **Install Easy III on Citrix Server** – The same Easy III installation disc utilized to install the application server is utilized to install the Citrix server.
3. **Install Easy III on Workstation Clients** – The same Easy III installation disc utilized to install Easy III on the application server can be used to install the workstations.
4. **Optional Sentinel Nurse Monitoring Software Installation** – If your facility has purchased the Sentinel Nurse Monitoring Software, you must run the Sentinel installer after you have completed the Workstation installation (Item 3 above). Browse the installation disc for the Sentinel installation folder and double click on the SentinelSetup.exe to install the software.
5. **Optional ApneaTrak Software Installation** – If your facility has purchased the ApneaTrak Software, you must run the ApneaTrak installer after you have completed the Workstation installation (Item 3 above). Browse the installation disc for the ApneaTrak installation folder and double click on the ApneaTrakSetup.exe to install the software.

Installing Easy III Software

Important Notes Before You Install Easy III Software

The Easy III system is designed to synchronize the activity of all Easy III systems sharing the same network. One system must be uniquely configured to operate as the Easy III Office Server. Below are the key issues that must be understood regarding the Office Server.

• If you are installing the Easy III Office Server to a new system, a software key will be required after you install the software. Contact Cadwell and ask for Applications Support to obtain a system key to enable your software after you have completed the installation.

• Only one system can be configured with the Office Server Utility.

• The Office Server utility is used to synchronize settings and data file location across all systems.

• The Office Server must be running at all times.

• The Office Server should be configured on a server in a data center, if available. The Office Server can also be configured on an XP or Windows 7 computer if the first option is not available.
• Data does not have to reside on the Office Server system. The utility is designed to synchronize data, not store data.
• A server class machine is not required, but preferred.
• The Easy III systems should be in a workgroup or a part of the same domain.
• Easy III software must be installed on the local C: drive
• This utility can be installed on a virtual machine on the server, following are the minimum specs required for this utility: 4 GB RAM, 80 GB HD, Core2 duo (or equivalent) CPU.
• Note: .NET 4.0 is required for Easy III. If the system you are installing does not have .NET 4.0, the installer will install the software.

Operating System, 3rd Party Software Requirements
Installing the Easy III software requires Windows XP (32 bit) Service Pack 2 or Windows 7 (64 bit) and Microsoft Word 2003 or later.
Easy III software is not compatible with Windows 98. Easy III requires Windows XP Pro, Service Pack 2 (32 bit) or Windows 7 Pro (64 bit). Easy III requires Flash 9.1 and .NET 4.0. Easy III must be installed by a user with administrator rights.
If an earlier version of Flash or .NET is detected during the installation or upgrade of Easy III software, a newer version will be installed.

Computer Hardware Requirements
Verify your computer hardware meets the minimum requirements. Refer to minimum computer hardware requirements section of this Help File for more details.
• 32-Bit Windows XP Pro or 64-bit Windows 7, and Server 2003 (32 Bit) or Server 2008 R2
• Dual Core, 2.13 GHz or faster (XP), 3.2 GHz or faster (Windows 7)
• Disk Drive = 160 GB or larger
• RAM = 4 GB or larger (XP), 8 GB or larger (Windows 7)

Installing Easy III Software

Installing Easy III on a New Application Server or Workstation

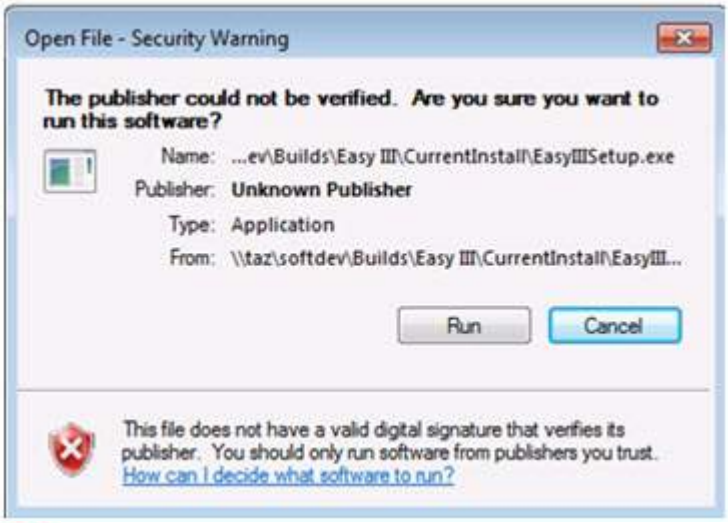
Locate the Easy III installation disc. You can install the software from the Easy III Installation Disc or from a shared folder on your network that contains a copy of the installation disc.
1. Browse to the installation disc loaded in your DVD drive (or shared folder).
2. Double click on the EasyIIISetup.exe. Note the picture below.

3. After clicking on the EasyIIISetup.exe the installation of the Easy software will begin.

If this is a Windows XP PC, an Application Error may appear as follows: “The application failed to initialize properly (0xc0000135). Click on OK to terminate the application.” If this occurs, browse to the Configs folder on the install disc and open the F56DF26B folder, run the Setup.exe.

.NET 4.0 is required for Easy III. If the system you are installing does not have .NET 4.0, the software will prompt requesting to install the program, click Yes. If you are prompted to reboot the computer the installer will complete the installation after the system has been rebooted and the operating system has been started. If No is selected from the restart request window, the install will exit, and will automatically continue after a system restart.

After clicking EasyIIISetup.exe if the following prompt appears, click Run to continue.

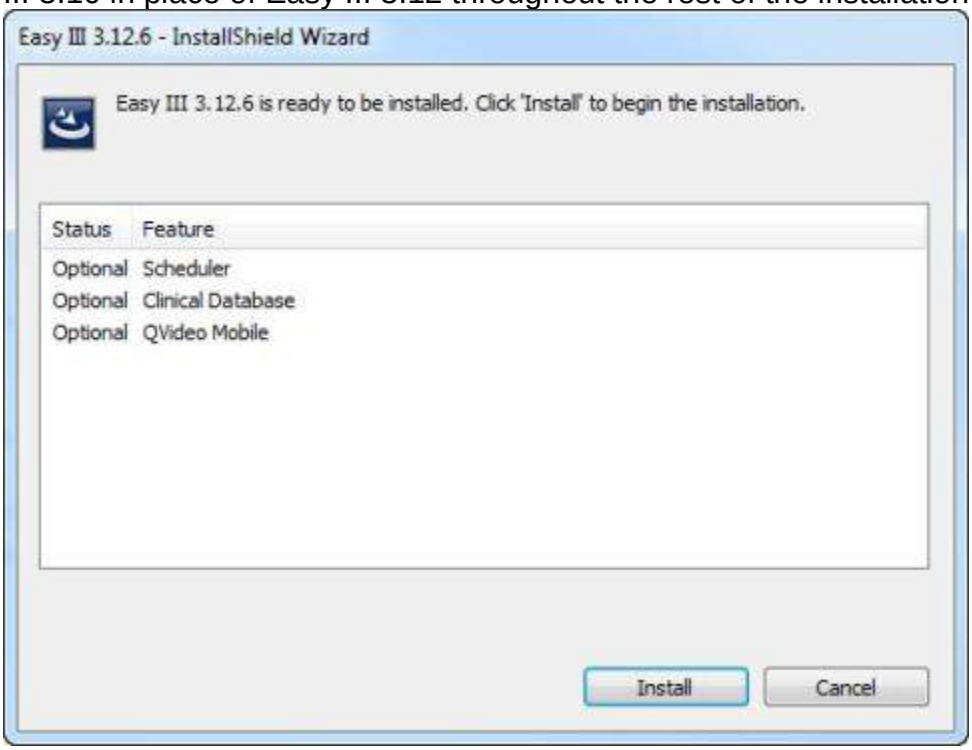


The User Account Control window shown below may appear, click Yes to continue.

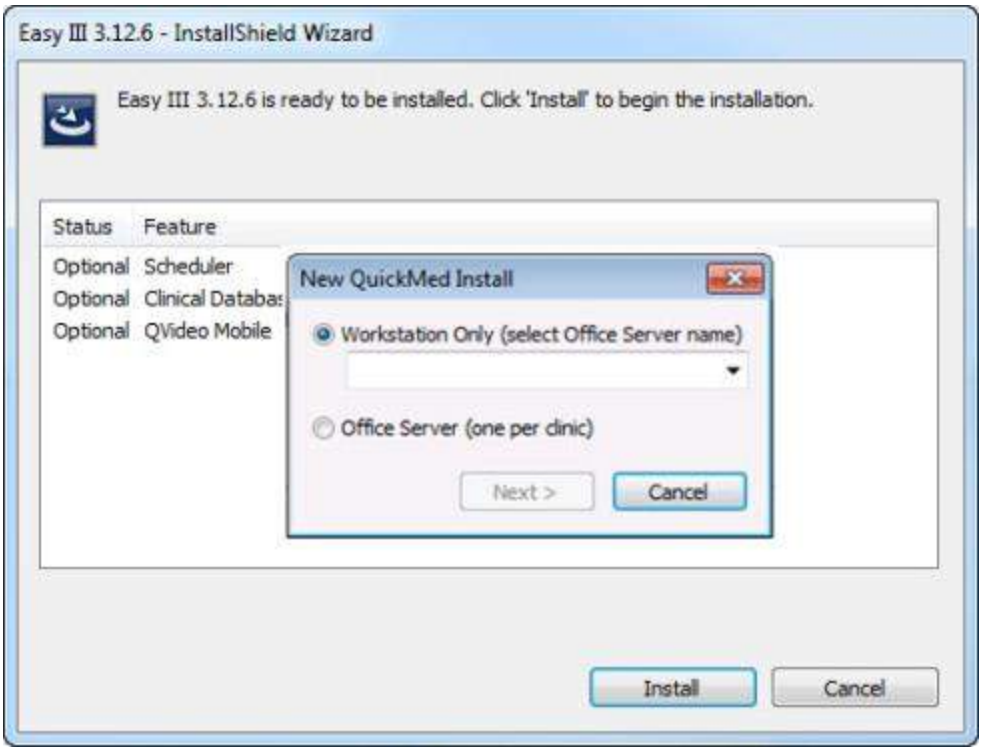
The User Account Control prompt shown below may appear, Click Yes to continue.

4. The Easy III installer will display the dialog displayed below. Click on the Install button.

If this is an XP computer or Server 2003 machine, the below window will read Easy III 3.10 in place of Easy III 3.12 throughout the rest of the installation process.



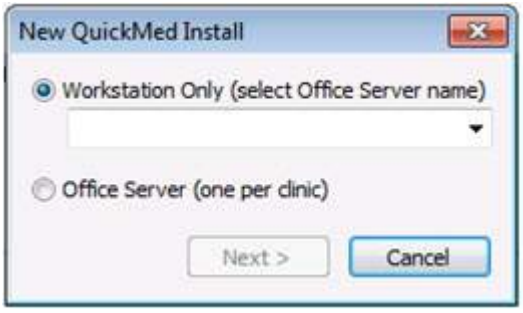
5. If you are installing the Easy III software on an all new system you will be prompted to select one of two options during the installation of the Easy III software:



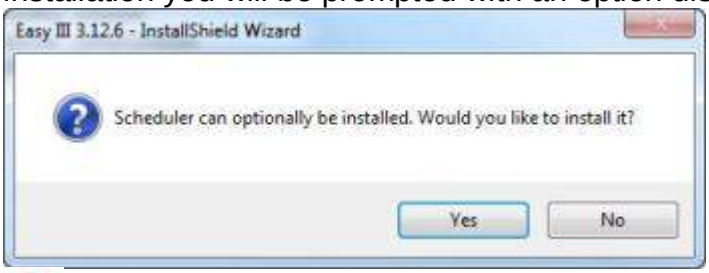
A. Workstation Only – This option is typically selected if the Easy III software is installed on a data collection computer that utilizes an Easy III amplifier, a reader station, or a Citrix Server utilized by the clinical team to review data. If this option is selected, the Office Server name (the name of the system running the Easy III Office Server) must be selected from the drop down list. If the name is not in the list you can type it in. If you do not know what Office Server name to select, call Cadwell Application support for assistance.

B. Office Server – This option is selected if the Easy III software is installed on a Server 2003 or Server2008 R2 system. Note: The Office Server can be installed on a standard Windows XP or Windows 7 computer. If you are unsure about installing the Office Server on your system, call Cadwell Application support for assistance. **Only one Office Server installation is allowed when multiple Easy III systems share the same network**.

6. Select the Workstation Only or Office Server option, and then click on the Next button.

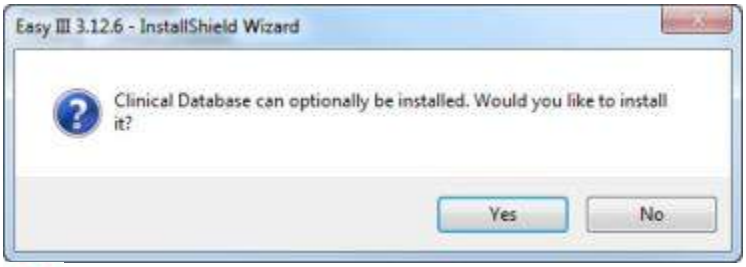


7. All Easy III customers have the option to install the Cadwell Scheduler. During the installation you will be prompted with an option displayed below to install the Scheduler.



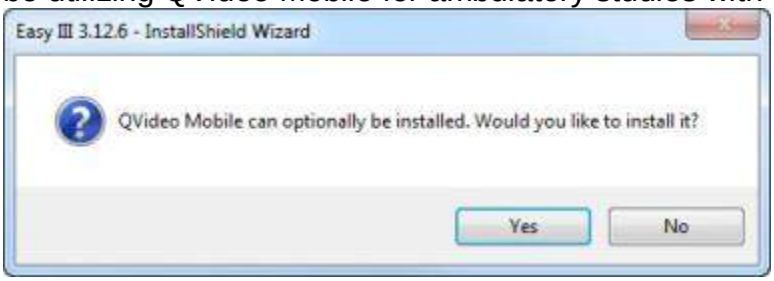
If you select Yes to install the Scheduler an additional Setup dialog for the Scheduler may appear. Click on Accept to allow the setup to proceed.

8. All Easy III customers have the option to install the Cadwell Clinical Database. Click on the Yes button to install the Clinical Database.



If you select Yes to install the Clinical Database an additional Setup dialog for the Clinical Database may appear. Click on Accept to allow the setup to proceed.

9. All Easy III customers have the option to install QVideo Mobile. This software should not be installed on a server, it is for data acquisition only. Select Yes if your facility will be utilizing QVideo Mobile for ambulatory studies with video.



10. The installation of the software will now continue. The remaining components of the Easy III software will be installed. When the installation is complete, the following dialog will be displayed. Click on Finish to complete the installation.

11. After the installation is complete you will be prompted to restart the computer. Click on the Yes button.

Congratulations, the Easy III software is installed. You can repeat the same steps on any additional Easy III computers. Contact the Application Support Team at Cadwell to get a system license key to enable your system.

Installing or Upgrading a Workstation with Easy III

Locate the Easy III installation disc. The installation disc can be used to install Easy III software or upgrade an existing Easy III system. If you are installing the software a software key will be required after you have installed the Easy III software. If you are upgrading your system, a software key is not required.

Starting the Software Installation or Upgrade

1. Place the disc in the disc drive in the computer
2. Click on the EasyIIISetup.exe file located on the installation disc.
3. After you have clicked on the EasyIIISetup.exe file on installation disc, the Easy III installer will determine if the system needs a full installation, or if an upgrade is required.
4. The installer will automatically upgrade Microsoft .Net, video, and audio codecs if needed. If you are prompted to restart the computer, restart the system. The

installation will continue after the system is restarted. (Note: Leave the disc in the disc drive when restarting the computer.)
5. If you are upgrading the Easy III software, the installer will install the appropriate Workstation and Office Server programs for you. If you are installing Easy III software for the first time, the installer will ask if you select the name of the office server. The installer will also ask if you want to install the scheduler and clinical database. Install both if you are unsure. After the installation is complete, you will be prompted to restart the computer. Important Note: Leave the installation disc in the computer during the restart. If additional files are needed after the restart, the Easy III installer will automatically access the disc as needed. Once the installation is complete, you may remove this installation disc.

Congratulations, the software is installed. You can repeat the same steps on any additional Easy III computers.

Important Software Installation Notes:
• All Easy systems must be upgraded with matching software versions for the OS that they are running.
• If your systems are networked, discontinue using all systems until the upgrade is complete. If you are unable to discontinue using systems that are actively collecting data, you will need to upgrade them as soon as the recording is complete. Contact Cadwell Clinical Support for advice and direction on the best method to upgrade your systems before you attempt the upgrade.
• Sharing of the C:\Cadwell\EasyIII\Data folder is required. In order for a remote machine to view a record remotely, the recording system must have the Data Folder shared as "E3VideoData".

File Sharing Settings for Easy III
In order for a remote machine to view a record, the data folder (C:\Cadwell\Easy III\Data) must have the share name “E3VideoData". Follow the instructions below to correctly configure your system.
Disable Simple File Sharing
1. In Windows Explorer, move to the “C:\” directory.
2. Click the “Tools” menu in Windows Explorer and select the “Folder Options…” menu item.
3. Select the “View” tab and scroll to the bottom of the list. Uncheck the “Use simple file sharing”

Sharing the Easy III Data Folder
1. In Windows Explorer, go to the Data Folder. Right-click on the "Data" folder and select "Properties". Select the "Sharing" tab and select the "Share this folder" radio button. Type "**E3VideoData**" for the share name.
2. Click the "Permissions" button. If the desired group or user (for example, "Power Users", "Easy III Users") is not in the list, select the "Add…" button, select (or type) the desired group or user and click "OK". Now, for the desired group, click the "Allow" "Full Control" check box and click "OK".

3. Now, select the "Security" tab. If the desired group or user (for example, "Power Users", "Easy III Users") is not in the list, select the "Add…" button, select (or type) the desired group or user and click "OK". Now, for the desired group, click the "Allow" "Full Control" check box and click "OK".

Setting up Permissions for the Easy III Data Folder

1. Click the “Permissions” button.
2. If the desired group or user (for example, “Power Users”, “Easy III Users”) is not in the list, select the “Add…” button, select (or type) the desired group or user and click “OK”. Now, for the desired group, click the “Allow” “Full Control” check box and click “OK”.

Setting up Security Settings for the Easy III Data Folder

1. Now, select the “Security” tab.
2. If the desired group or user (for example, “Power Users”, “Easy III Users”) is not in the list, select the “Add…” button, select (or type) the desired group or user and click “OK”. Now, for the desired group, click the “Allow” “Full Control” check box and click “OK”

NOTE: This all assumes that the hosting and remote viewing machines are on a network where they are visible to one another.

Setting up Security Settings for Other Easy III Related Folders

Examine the system you are configuring. If any of the following folders are present on your system, configure the security settings as described below.

- C:\Cadwell
- C:\QMWorkstation
- C:\QMOffice

1. Right-click on the appropriate folder. (Note the sample C:\QMWorkstation directory displayed below). Select the “Properties” menu item, then select the “Security” tab.
2. If the desired group (for example, “Everyone”, “Power Users”, “Easy III Users”) is not in the list, select the “Add…” button, select (or type) the desired group and click “OK”. Now, for the desired group, click the “Allow” “Full Control” check box and click “OK”.
3. Repeat steps above for the C:\QMOffice and the C:\Cadwell\Easy III folders on the system. Note: The QMOffice folder will only be found on your Easy III Office Server system.

Installing Sentinel Software

If your facility has purchased the Sentinel Nurse Monitoring Software, you must run the Sentinel installer after you have completed the Workstation installation.

Installing Sentinel Software
Locate the Easy III installation disc. Note: The Easy III application must be installed before installing the Sentinel software. If you have not installed the Easy III software, please follow the 'Installing Easy III' instructions section of this help file..After installing the Easy III software, browse to the Sentinel folder on the installation disc. Double click on the **SentinelSetup.exe.** The Sentinel software will be automatically installed. Click on the Finish button to complete the installation.

Congratulations. The Sentinel nurse monitoring software has been successfully installed.

Installing ApneaTrak Software

If your facility has purchased the ApneaTrak Software, you must run the ApneaTrak installer after you have completed the Workstation installation.

Installing ApneaTrak Software
Locate the Easy III installation disc. Note: The Easy III application must be installed before installing the ApneaTrak software. If you have not installed the Easy III software, please follow the 'Installing Easy III' instructions section of this help file.. After installing the Easy III software, browse to the ApneaTrak folder on the installation disc. Double click on the **ApneaTrakSetup.exe.**
After clicking on the ApneaTrakSetup.exe, click on the Next button and the Install button to proceed. Click on the Finish button to complete the ApneaTrak software installation.

Congratulations! The Easy ApneaTrak software has been successfully installed.

Antivirus and Encryption Software

Cadwell encourages all customers to take necessary precautions to protect computer systems from malicious programs. We also want you to protect the privacy of your patient data. Though Cadwell has configured Easy III software with multiple AV and disk encryption applications, we cannot verify compatibility with all applications available in the marketplace.

Antivirus Settings

1. Scheduled antivirus scans should not happen during a recording/data collection.
2. Exclude Easy III files from scans
    a. .ez3 (Easy III data file)
    b. .qv2 (video file)
    c. .mdh (archive history file)
    d. ezvideo
    e. .ezviddeoindex
3. Exclude the following folders from scans, including their subfolders
    a. C:\QMWorkstation
    b. C:\Cadwell\Easy III
    c. C:\QMOffice (this is only on the application server)
4. Microsoft Word is utilized during report generation. Word creates a .tmp file while generating reports. If this file is scanned by the AV software during report generation the end user will experience delays related to the scanning of the .tmp file.

Encryption Software

1. Verify that encryption software does not adversely delay file access and overall Easy III performance. Verify that Easy III records can be opened promptly and paging speed is adequate after installing encryption or AV software.

Easy III Amplifier Network Card Setup

Easy III communicates with the PC over an Ethernet link. A dedicated Ethernet network card must be installed in the PC, and **the card must be configured to a specific IP address (192.168.113.66)** to communicate correctly. Connecting to a local area network will require a second network card. To configure the IP address in a Windows 7 or Windows XP operating system:

Configure the Network Card for Windows 7:

1. Click the Start Orb .
2. Click on the Control Panel.
3. Change the “View by:” to “Large Icons” or “Small Icons”. Do not use “Category View”.
4. Click on “Network and Sharing Center”.
5. Then click on “Change Adapter Settings” on the left hand task pane. This will show all the network connections available on the computer.
6. Right-click on the LAN or High-Speed Internet connection that will be used to communicate to the base unit and select “Properties.”
7. Uncheck all the protocols in the list except for the Internet Protocol Version 4 (TCP/IPv4).
8. Then double-click on that protocol and change the radial button from “Obtain an IP address automatically” to “Use the following address.”
9. Input the default Cadwell® IP address. It is 192.168.113.66. The default Subnet Mask can be used of 255.255.255.0.
10. Once those addresses are added click on the Advanced button in the bottom right-hand corner of the screen. Click on the WINS tab and uncheck the “Enable LMHOSTS lookup” check box and change the NetBIOS setting from Default to “Disable NetBIOS over TCP/IP”.
11. Click OK three times to get back to the network connections page.
12. Once again, right-click on the LAN or High-Speed Internet connection that will be used to communicate to the base unit and click on “Properties.
13. Click on the Configure button in the upper left corner.
14. Click on the Advanced Tab then select the “Speed and Duplex” listing. It might also be displayed as “Media Type, Connection Type or Link Speed & Duplex”. Some Windows 7 systems will have a Link Speed tab.
15. Click the drop down list on the value right and select 10 Mbps Full Duplex.
16. Click on the Power Management tab. Deselect the “Allow the computer to turn off this device to save power” check box and then click OK. Note not all network cards will have a power management tab.
17. Right-click on the LAN or High-Speed Internet connection that will be used to communicate to the base unit and click on “Rename.”Type in Easy III Amplifier and press Enter.

Configure the Network Card for Windows XP:

1. If necessary, install a network card in the computer. Follow the network card's manufacturer's instructions.
2. Login as a user with administrative rights.
3. From the Windows desktop, open the Start menu.
    a. Open the Control Panel and open Network and Internet Connections.
    b. Click on Network Connections. A separate icon for each network card installed will be displayed. By default, each is named "Local Area Connection."
    c. Rename the network card used to connect to the Easy III hardware. Do so by right-clicking on the icon and select Rename, then typing a new name, such as "Easy III".
4. Right-click over the renamed network connection icon.
    a. Select Properties
    b. Remove checkmarks next to everything except Internet Protocol (TCP/IP).
    c. If desired, checkmark the "Show icon in notification area when connected" to enable a pop-up message in the system tray showing when the connection to the Easy III system has been made.
5. Click the Configure button.
    a. Under the Advanced tab, select your link speed or media type, and change the value to 10 Mbps Full Duplex.
    b. Under the Power Management tab, remove checkmark next to "Allow computer to turn off this device to save power."
    c. Click the OK button.
6. Return to the Properties window.
7. Click on Internet Protocol (TCP/IP) so it is highlighted.
8. Click the Properties button.
    a. Select "Use the following IP address".
    b. Enter IP address: 192.168.113.66 and Subnet mask: 255.255.255.0.
    c. Click the Advanced button and open the WINS tab.
    d. Remove the checkmark next to "Enable LMHosts lookup".
    e. Checkmark "Disable NetBIOS over TCP/IP".
    f. Click the OK button.
    9. Click the OK button and then click the Close button.

Computer Hardware Requirements*

Listed below are the minimum requirements for a computer to operate Cadwell Easy III software.

*Computer requirements are subject to change. Always contact Cadwell prior to purchasing computer hardware for your facility.

Regulatory Requirements
Domestic (U.S. and Canada) computers: third-party certified to UL 1950 or IEC 950.
European Union computers: third-party certified to EN 60950.

Minimum Computer Hardware Requirements for Easy System Recording and Reading Stations

Operating System Windows 7 Pro 64 bit, Windows XP Professional (SP3, 32 bit)

Processor Dual Core, 3.2 GHz or faster (Windows 7), 2.13 GHz or faster (Windows XP)

Hard Disk Drive,160 GB, NTFS file system, (Recommend 750 GB if the system is used for long term epilepsy monitoring or if several weeks of data storage is required.)

Memory (RAM), 8 GB (Windows 7), 4 GB (Windows XP)

Archive Device, Recordable DVD+R/+RW and CD-RW Drive.

USB, USB 2.0 (2 port minimum)

Graphics, 1600 x 1200 (for PSG), 1280 x 1024 (for EEG/LTM/EMU/ICU), 256 MB, optional dual monitor output

Network Card,10 Base-T Ethernet card required for connection to amplifier. A second network card is required for connection to a LAN, or IP based camera.

Minimum Computer Hardware Requirements for Sentinel Nurse Monitoring Stations

Operating System, Windows 7 Pro 64 bit, Windows XP Professional (SP3, 32 bit)

Processor, Quad Core, 2.66 GHz or faster

Hard Disk Drive,160 GB, NTFS file system

Memory (RAM), 4 GB or higher

Archive Device, Not required

USB, USB 2.0 (2 port minimum)

Graphics,1600 x 1200, 512 MB graphics card

Network Card, Network card is required for connection to a LAN

Minimum Computer Hardware Requirements for Easy Office Server System (including virtual servers)

Operating System Windows 7 Pro 64 bit or Windows Server 2008 R2. Windows XP Professional (SP3, 32 bit) or Windows Server 2003 (32 bit)

Processor, Dual Core, 2.66 GHz or faster

Hard Disk Drive, 80 GB, NTFS file system

Memory (RAM), 8 GB (Windows 7/Server 2008), 4 GB (Windows XP/Server 2003)

Network Card, A network connection is required for connection to a LAN.

Additional Software Requirements

Report Generator, Minimum MS Word 2003

Belkin or Dazzle Video to USB Software, Belkin or Dazzle Video to USB adapter software is required if Easy III Q-Video software is used. **Note:** Version 3.9 software is not compatible with older Belkin and KWorld Video to USB adapters. **Note:** Belkin adapter is not compatible with Windows 7, must use the Dazzle adapter.

Sony IPELA Software, Sony IPELA Network Driver is required when the IPELA camera is used.

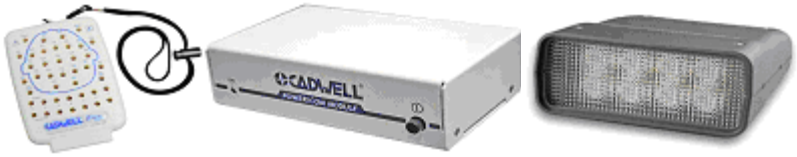
Misc. Support Requirements

- OS Configuration .NET 4.0 required
- Remote Diagnostics Citrix GoToAssist (internet access required)

Easy III Hardware

Easy III Amplifiers

Easy Remote Input Boxes (side mount) and Cadwell Gold Cup Electrodes



Easy Top Panel Remote Input Box, Power Com Module, Photic Stimulator

Easy III Amplifier

The basic Easy III amplifier includes 32 AC channels. Seven of these are bipolar and two additional channels are ambient light detection channels. Eight DC channels may be added internally. For studies requiring more recording channels, the amplifier may be expanded to include 64 or 128 EEG channels.

The EasyNet expansion port allows additional channels to be added to the system, including oximetry, heart rate, body position, accelerometers for limb movement, and multiple patient event channels. In all, the Easy III has the capacity for more than 150 patient event channels.

	See manual or help file		Input Signal
	Power		Output Signal
	Off		Amplifier
	Recording		Patient Input Connector
	Type BF		Headphones Input
	Type CF		WEEE Conformity

Easy III Amplifier Specifications

EEG Amplifier Inputs

- 46 Channel Configuration: 32 EEG channels, capable of 12 EasyNet channels, ambient light, and infrared light.
- 54 Channel Configuration: 32 EEG channels, 8 DC inputs, capable of 12 EasyNet channels, ambient light, and infrared light.
- 86 Channel Configuration: 64 EEG channels, 8 DC inputs, capable of 12 EasyNet channels, ambient light and infrared light.
- 150 Channel Configuration: 128 EEG channels, 8 DC inputs, capable of 12 EasyNet channels, ambient light and infrared light.

Active/Reference Pairs

- 7 (46 or 54 ch), 14 (86 ch), or 28 (150 ch) sets of inputs

Noise

- < 2uV , Mains noise rejection > 110 dB at 50 and 60 Hz

DC Inputs

- 8 inputs (+/-) 10V, 200Hz storage rate

Photic Stimulator
- White LEDs. (1 – 60 Hz flash rate range)

ISO Ground Connectors
- 2 inputs

Low Cut Filter
- Act/Ref pairs: 9 steps (0.032 – 10 Hz)
- EEG channels: 8 steps (0.16-10 Hz)

High Cut Filter
- 5 steps (15 – 100 Hz)

EEG Channel Sampling Rate
- 4000 Hz per channel

EEG Channel Storage Rate
- 250 Hz per channel

EEG Differential Input Impedance
- 20 Mohm

EEG A/D Conversion System
- 18 bit A/D Conversion System

EEG Sensitivity
- 19 steps between 0.5 – 1000 uV/mm

Amplifier/Computer Interface
- Ethernet

LEDs
- Power
- Ethernet Link
- Status
- Ethernet Data Transfer
- EasyNet Connection
- Recording

Transport and Storage Limits: Temperature
- -4°F to 149°F (-20°C to 65°C)

Relative Humidity
- 10-90% non-condensing

Atmospheric Pressure
- 500-1060 hPa

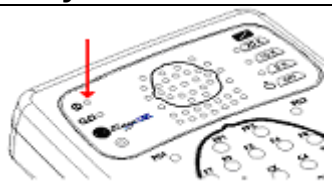
Operational Limits: Temperature
- +10° C (+50° F) to +40° C (104° F)

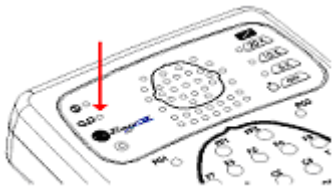
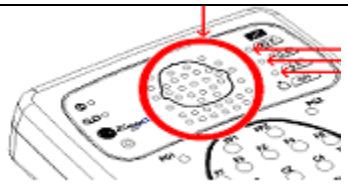
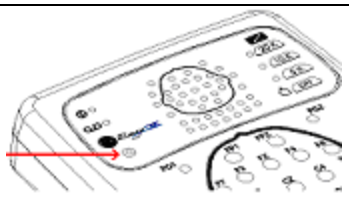
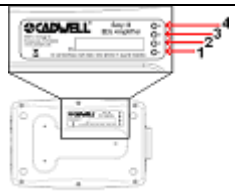
Relative Humidity
- 30% to 75% non-condensing

Regulatory Approvals
- UL60601-1
- CSA 601.1
- EN 60601-1
- EN 60601-1-1 (medical systems)
- EN 60601-2-26 (EEG equipment)
- EN 60601-1-2 (EMC)
- EN 60601-1-4 (programmable electrical medical systems)

Channel Type Storage Rate
- EEG **250 Hz**
- EOG **250 Hz**
- ECG **250 Hz**
- Chin EMG **250 Hz**
- Leg EMG **250 Hz**
- Thermal Airflow **250 Hz**
- Microphone **250 Hz**
- RIP Effort Belt **250 Hz**
- EasyNet SpO2 Module **10 Hz**
- EasyNet Body Position Module **1 Hz**
- EasyNet Nasal Pressure Airflow Module **25 Hz**
- DC Inputs **200 Hz**

Easy III LEDs

Easy III LEDs	Description
	The **Power** LED indicates that the amplifier is receiving power from the Power/Com Module. This LED flashes green at 1 Hz when there is idle power. It is solid green during data collection.

	The **Recording** LED indicates that the amplifier is collecting data.
	The **Impedance** LEDs indicate the impedance level for each EEG input, ground input, and active reference pair input. Pressing the adjacent 5K, 10K, or 20K button is illuminate a LED for any corresponding input that has a lower impedance level than selected. Pressing the OFF button will turn off the impedance measurement feature. Note: The amplifier must be in the record mode to use the impedance LEDs.
	The **Ambient Light Detector** can detect when the ambient light adjacent to the amplifier changes.
	**LED 1, 3, and 4** indicate amplifier status. LED 2 is inactive.

Easy III Amplifier Impedance Buttons

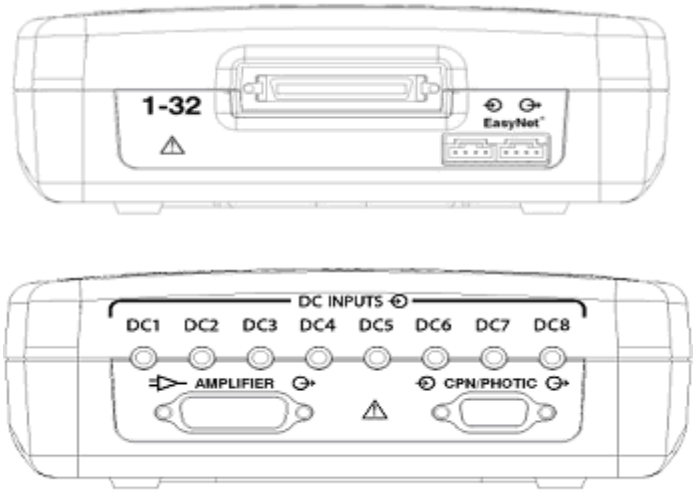
The 20K, 10K, 5K and OFF buttons on the Easy III amplifier perform manual impedance checks. NOTE: The amplifier must be recording data for the impedance buttons to be operational.

The OFF button halts the impedance check. It does not turn off the amplifier.

Easy III DC Amplifier Inputs

The 54, 86 and 150 channel Easy III Amplifier are equipped with eight (8) internal DC inputs configured to collect multiple channels such as oximetry, patient event switch, pulse rate, air flow, pressure, CPAP leak and pH. The Easy III DC input voltage range is - 10V to + 10V.

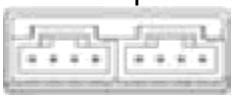
The DC Amplifier connects to a DC device with the DC Amplifier Cable, which is available in a variety of lengths.



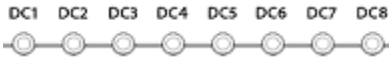
Easy III Amplifier Connectors

Remote Inputs
Connects to Remote Input Boxes through the Remote Input Box Cable.

EasyNet Expansion Ports
Add 12 or more optional channels, including oximetry, oral/nasal airflow, body position, and multiple accelerometers for limb movement.

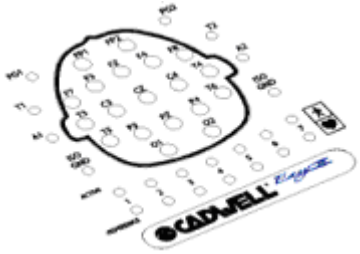


DC Inputs
Add up to 8 internal DC channels.
Amplifier Power/Com Cable Input Connects to the Power/Com Module with a 2- or 4-meter cable.



CPN/Photic Input
Supplies power and information to the Photic Stimulator through the Photic Stimulator cable.

Electrode Ports
EEG electrodes and seven Act/Ref pair electrodes can be plugged into the inputs on the top of the amplifier or into a remote input box. The input connectors are designed for 0.059 inch (1.5mm) diameter molded safety connectors.

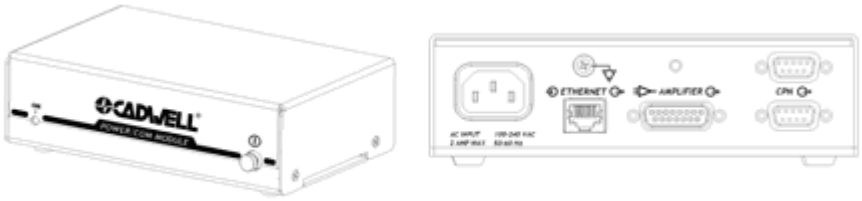


Amplifier Cable
Connects the Easy III Amplifier to the Power/Com Module. 6.5 or 13 feet (2 or 4 meters)

Cat 5 Cable
Connects the Power/Com Module to network card in computer. Straight-through RJ-45, Cat 5 cable. max 325 feet (99 meters)

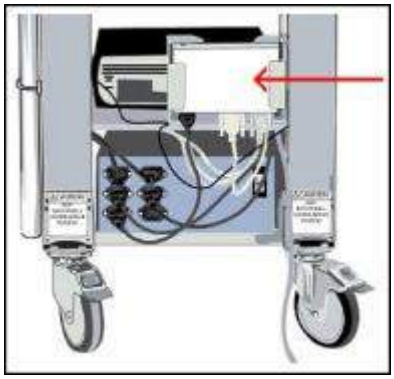
Electrodes
Connects the patient to the Remote Input boxes.
lengths and types vary

Easy III Power Com Module



The Power-Communications (Power/Com) Module is the central connection point for the Easy III and computer hardware for power supply and information exchange. The amplifier and photic stimulator hardware plug into the power/com module, and the PC connects to the Power/Com Module with an Ethernet cable to communicate with the amplifier and photic stimulator.

Easy III Power/Com Placement



The Power/Communications module connects the Easy III amplifier to its host computer.

• In a cart configuration, the Power/Communications Module can be mounted to the cart with a Power/Communications Module Holder Kit, placing it in proximity to the devices it connects to: the PC, the Easy III Amplifier, and the Isolation Transformer. The Power/Communications Module also utilizes a grounding wire, which attaches to the cart.

• The Power/Communications module can also be placed adjacent to the patient on a night stand or on the floor.

Note: Verify the power communication module is placed in a location where the patient will not trip or become entangled in the wires.

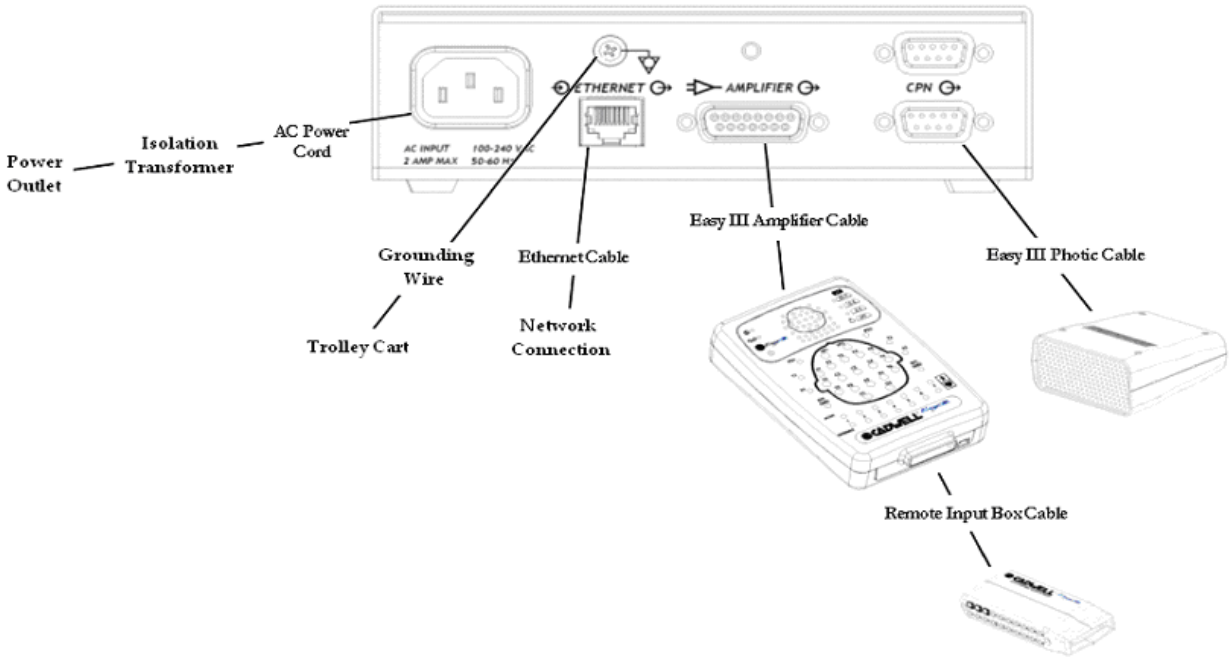
Easy III Power/Com LEDs

Green LED- ON indicates that the Power/Com module is receiving power.

Easy III Power/Com Buttons

The Power button turns the Power/Com Module and the Amplifier on or off.

Easy III Power/Com Connectors and Cables



Easy III Connectors and Cables

AC Power Port

Inputs power from the AC power cord. 100-240VAC, 1 AMP Max, 50-60Hz.

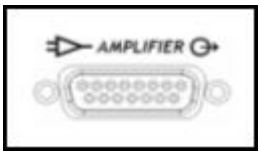
Voltage Equalization Screw

To reduce noise, use a grounding wire from the thumb-screw grounding post to the cart.

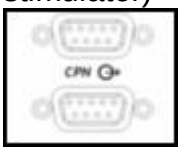
Ethernet Port

Connects Easy III hardware to Easy III software in PC. Isolated 10/100 Base T, Straight-through RJ-45.

Amplifier Cable Port
Connects to the male end of the Amplifier Cable.



CPN Port
Connects to the Photic Stimulator cable (either connector may be used with the photic stimulator)



Easy III Power/Com Cables

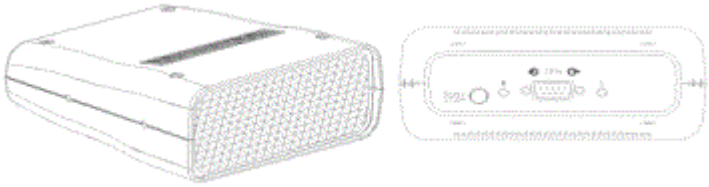
Amplifier Cable
Connects the Easy III Amplifier to the Power/Com Module. 6.5 or 13 feet/ 2 or 4 meters

Photic Cable
Connects the Easy III Photic Stimulator to the Power /Com Module. 6.5 or 13 feet/ 2 or 4 meters

AC Power Cord
Supplies power to the Power /Com Module. Connect to an isolation transformer. 8 feet/ 2.4 meters

Ethernet Cable
Connects the Power /Com Module to the network card in computer. 325 feet/ 99 meters

Easy III Photic Stimulator

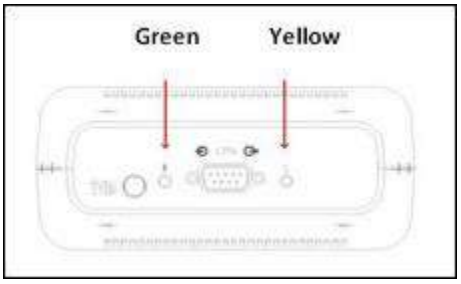


The Easy III Photic Stimulator is an ancillary piece of equipment used during EEG recording to provide visual stimulation to a patient. It can be run manually or through default or custom Flash Programs.
The photic stimulator has a Run/Stop button on the back of the flash stimulator. For manual use, point the photic stimulator at the patient at the appropriate distance from the patient, and push the Run button. The Easy system will use the first default flash program. Push the button again to stop the flash program.

Photic Stimulator Placement
The photic stimulator connects to the CPN/Photic port on the Cadwell Power/Com Module or the Easy III Amplifier.
The Easy III Photic Stimulator is designed to attach to a photic stimulator arm mounted on a trolley cart. The photic stimulator has a 2- or 4-meter cable that connects to the Power/Com Module.

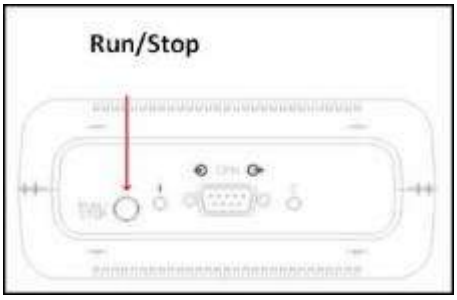
Attach Photic Stimulator to Articulating Arm
1. Mount the articulating arm onto the trolley cart.
2. Line up the screws of the articulating arm with the sockets on the side of the photic stimulator, with the arrow pointing towards the flash.
3. Connect the screws and sockets, and finger-tighten until secure.

Photic Stimulator LEDs



The green LED flashes at 1 Hz during flash stimulation.
The yellow LED flashes at 1 Hz when power is connected, but flash stimulation is idling.

Photic Stimulator Buttons



To run manually, or to turn off quickly, push the Run/Stop button.

Photic Stimulator Connectors and Cables

Photic Stimulator Connector

Attaches the Photic Stimulator to the Amplifier or the Power/Com Module with the Photic Cable.

Easy III Photic Cable

Used to connect the Easy III Photic Stimulator to the Power/ Com Module. 6.5 or 13 feet (2 or 4 meters)

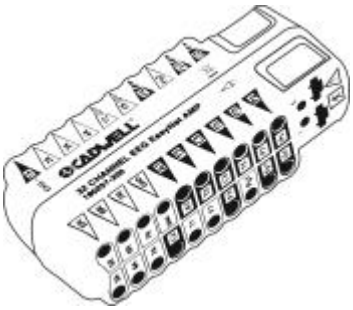
Easy III Amplifier Regulatory Approvals

UL60601-1
CSA 601.1
EN 60601-1
EN 60601-1-1 (medical systems)
EN 60601-2-26 (EEG equipment)
EN 60601-1-2 (EMC)
EN 60601-1-4 (programmable electrical medical systems)

Easy Ambulatory Hardware

Ambulatory Intended Use
The Easy Ambulatory system is intended for use by a physician or trained technician under the supervision of a physician for the acquisition of EEG and other polygraphic channels. The intended recording environment for the Easy Ambulatory is the home, hospital, and other testing environments.

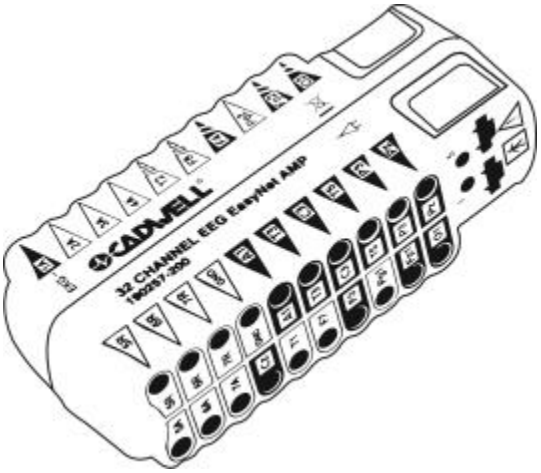
Easy Ambulatory Hardware
The Easy Ambulatory system is comprised of three different modules, the recorder, battery holder, amplifier, and optional Q-Video Mobile 2 device.



Easy Ambulatory Amplifier

The Easy Ambulatory system consists of a 32 channel amplifier are available for EEG or PSG recordings and an optional Q-Video Mobile 2 device to record synchronized video and audio.

The amplifiers are designed to be compact and lightweight. The amplifier module serves as a connector box and amplifier for EEG and other physiological channels. The amplifier uses EasyNet technology to send data to the recorder. The amplifier has multiple EEG inputs and active reference pair inputs. Amplifiers are worn by the patient on a small chest/shoulder strap or on the waist belt provided with the Easy system. The illustration below shows the 32 channel amplifier.



32 Channel Ambulatory Amplifier LEDs, Connectors

Amplifier EasyNet Connectors

An EasyNet cable can be used to connect the Amplifier to the Ambulatory Recorder. Other EasyNet modules can be plugged in to the other EasyNet connector on the Amplifier.

Ambulatory LEDs

- S Yellow Status LED. Lights or flashes to indicate error condition.
- I Green LED. Flashes to indicate power is being received from the recorder.

32 Channel Ambulatory Electrode Input Connectors

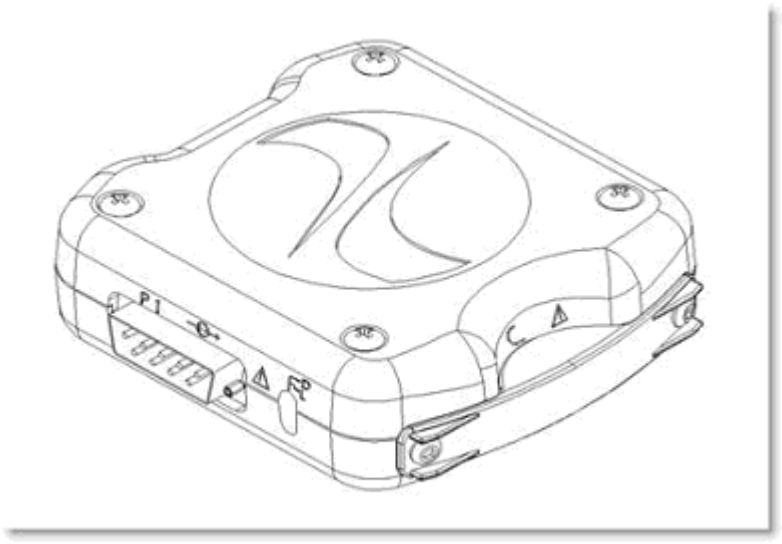
- FP1, FP2, F3, F4, F7,F8, T3,T4, T5, T6, A1, A2, C3, C4, P3, P4, O1, O2, FZ, CZ, PZ

International 10-20 lead placement descriptors used on the Easy Amplifier

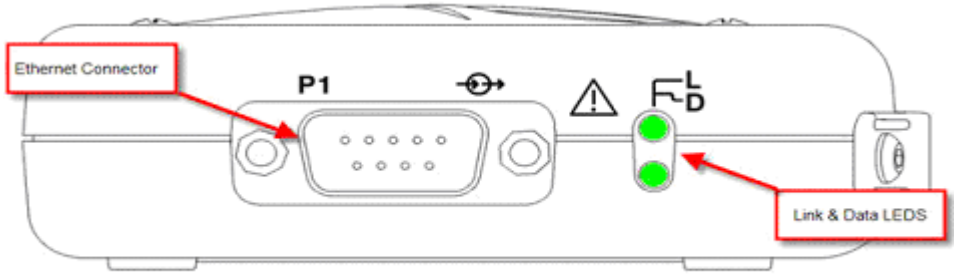
- IG - Isolated Ground (x 2)
- 1A – 1R – Active Reference Pair
- 2A – 2R – Active Reference Pair
- 3A – 3R – Active Reference Pair

• 4A – 4R – Active Reference Pair
• 5A – 5R – Active Reference Pair
• 6A – 6R – Active Reference Pair
• 7A – 7R – Active Reference Pair
• Voice event connector.

Recorder – 3 Dimensional View



Recorder – P1 Ethernet Connector
An ethernet adapter is attached to this connector for data downloading and data review.

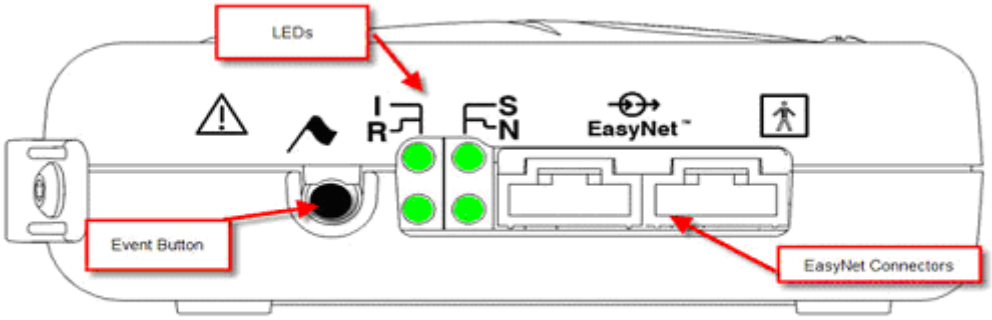


Recorder – 'D' LED
The Data (D) LED indicates data is being transferred between the recorder and the computer.
Recorder – 'L' LED
The Link (L) LED indicates that the recorder has established an ethernet connection to the computer.
Recorder – Event Button
The event button allows the patient to time synchronize an event during data collection. For each button press, the recorder will record a time-synchronized event during data collection. If the button is pressed for 4 seconds while the recorder is attached to a computer, a signal will be sent to the network card identifying the recorder.
Recorder – 'I' LED

The ‘I’ LED indicates that the recorder is receiving power from the batteries.

Recorder – ‘S’ LED

The Status (S) LED flashes when an error condition is detected.



Recorder – ‘R’ LED

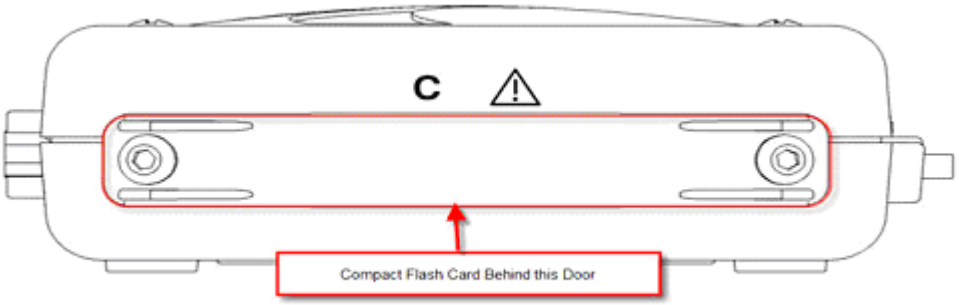
The EasyNet (R) LED flashes one time per second during data collection.

Recorder – ‘N’ LED

The EasyNet (N) LED flashes when an EasyNet error condition is detected.

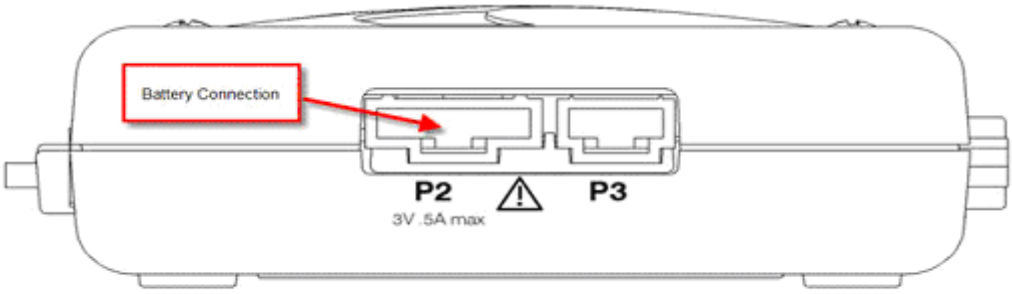
Recorder – EasyNet Connector

The EasyNet connector allows a cable connection from the recorder to other modules such as the Amplifier/Connector module.



Recorder – ‘C’ Door

The Compact (C) Door can be removed to access the compact flash card. Cadwell recommends that the compact flash door remain attached to the recorder during data collection.



Recorder – P2 Connector

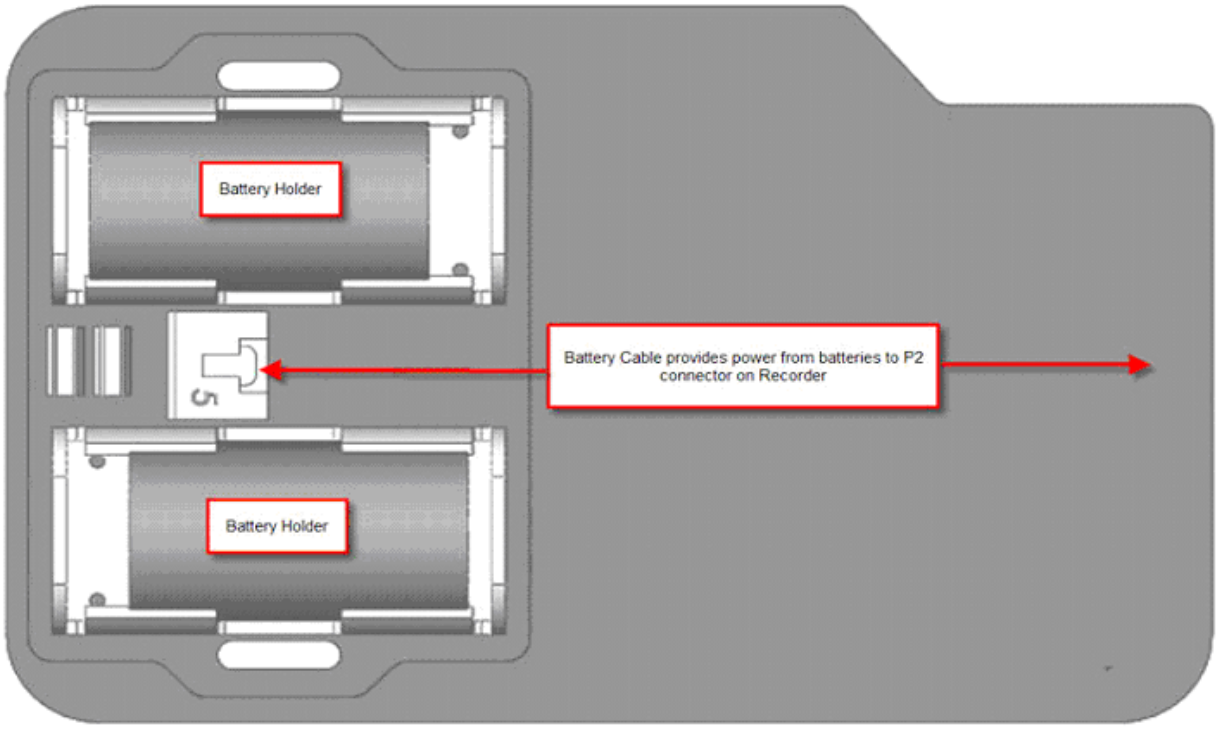
The P2 Connector is for the battery connection. Connect the battery cable from the battery holder to the P2 connector on the recorder.

Recorder – P3 Connector

The P3 connector is reserved for future use.

Ambulatory Battery Holder

The Ambulatory Battery Holder is placed in the Ambulatory Recorder/Battery Holder pouch. A white battery cable connects the battery power to the Ambulatory Recorder.



32 Channel Ambulatory Amplifier Specifications

EEG Amplifier Inputs: 25 inputs

Active/Reference Pairs: 7 sets of inputs

ISO Ground Connectors: 1 input

EEG Channel Sampling Rate: 3200 Hz per channel

EEG Channel Storage Rate: 200 Hz per channel

EEG Differential Input Impedance: 20K M ohm

EEG A/D Conversion System: 16 bit A/D Conversion System

Battery Power 2 ‘D’ alkaline batteries

Data Storage/Memory Capacity 116 hours with 4GB

Amplifier/Computer Interface: Ethernet

Operational Limits:
Temperature: +10º C (+50º F) to +40º C (+104º F)
Relative Humidity: 30% - 95% non-condensing

Regulatory Approvals:
UL601-1 2003
CSA 601.1 1990
IEC 60601-1:1990 + A1:1993 + A2:1995 + A13:1996
IEC 60601-1-1:2001 (medical systems)
IEC 60601-2-26:1994 (EEG equipment)
IEC 60601-1-2:2001 (EMC)
IEC 60601-1-4:1996 (programmable electrical medical systems)
IEC ISO 114971:2000 (risk)

Easy Ambulatory Recorder

The Ambulatory Recorder and Battery Holder

The recorder is a small, lightweight module that uses compact flash memory to record patient data. The recorder utilizes EasyNet technology to connect to multiple amplifier modules used to amplify EEG and other physiological channels. The recorder is worn by the patient in a small waist mounted pouch. The illustration below shows the recorder in the pouch. The EasyNet cable from the amplifier is plugged into the side of the recorder. The battery holder is a lightweight module used to hold the batteries that power the recorder and amplifier. Batteries can be quickly replaced by removing the battery cover from the battery holder. The recorder is mounted on the battery holder, and then placed in the Ambulatory recorder pouch for data collection.

Q-Video Mobile Hardware

The Q-Video Mobile Hardware works with the 32 channel ambulatory amplifier configuration. This device is capable of storing and recording quality synchronous video for ambulatory EEG or PSG studies. The device contains rechargeable batteries which allow for extended times without the need to charge the device.

LCD display screen on front of device shows the video that is being recorded. A patient can judge if lighting conditions and angles are correct by looking at the display and confirming that they can clearly be seen.

LEDs and connectors

1. Power on/off button. Insert tool provided into the slot and press and hold until unit turns on.

2. Green LED light: This indicator light represents a charging or fully charged state. This light will appear only when the device is plugged in to power. The light will be on during charging and after the device is fully charged.

3. Red LED light: This indicator light represents a charging state. This light will only appear when the device is plugged into power and charging. If fully charged, this light will no longer display.

4. Power connector: This connector is used to charge the device. Plug one end of the provided power cord into the AC connector on the Q-Video Mobile 2 device and the other end into a standard outlet. The device should be plugged in and charging when recording in darkness.

5. USB B male connector: This connector is used to connect the device to the PC for starting and downloading an ambulatory video recording. Plug the USB B male connector into the Q-Video Mobile 2 device and plug the USB A Male connector into the Easy III PC.

*note: If the Q-Video Mobile 2 device is plugged in to the wall charger and neither of the LED lights are showing, this is an error condition and you should contact Cadwell for assistance.

*note: If the Q-Video Mobile 2 device is unplugged from the charger, no LED lights will display.

Transport and Storage
Temperature: -20° C (-4° F) to 50° C (122° F)
Humidity: 10% - 95% non-condensing
Atmospheric Pressure: 500 hPa to 1060 hPa

Operational
Temperature: +5° C (+40° F) to +45° C (+113° F)
Relative Humidity: 45% to 85% non-condensing
Atmospheric Pressure: 700 hPa to 1060 hPa

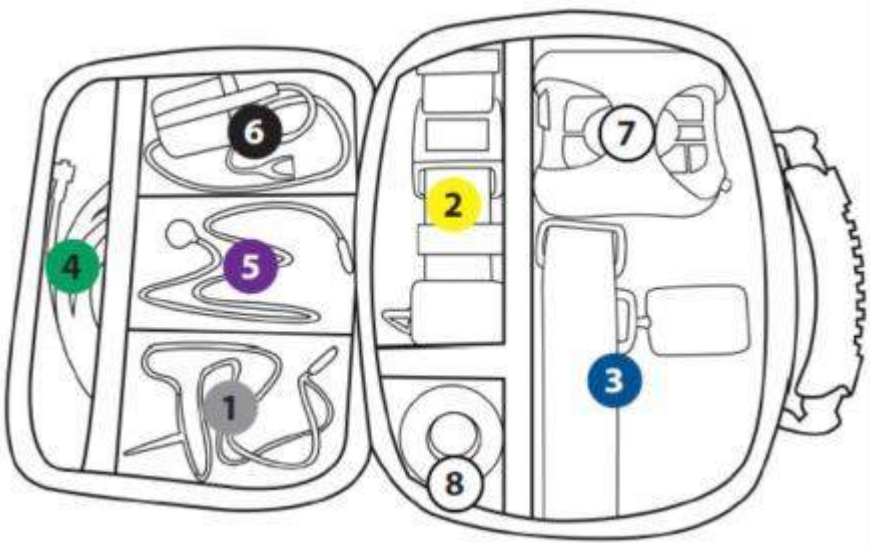
Mechanical:
Dimensions: width 7.2" x depth 3" x height 5.6"
Weight: 2.56 lbs (1162 grams)
Attachment: none, the device is wireless and only requires attachment to a power cable when charging.

Easy ApneaTrak Hardware

The Cadwell ApneaTrak is an advanced data acquisition system for recording physiological signals during sleep.

Intended Use
The ApneaTrak system is intended for the acquisition of polysomnographic channels. The ApneaTrak system is intended for use by a physician or a trained technician under the supervision of a physician. The ApneaTrak intended recording environment is in a home, hospital, clinic, physician's office, or other appropriate testing environments.

The ApneaTrak System Components
1. ApneaTrak Thermal Airflow Sensor
2. ApneaTrak Abdomen Belt with black plastic abdomen belt interface module
3. ApneaTrak Chest Belt with black plastic chest belt interface module
4. ApneaTrak Pressure Airflow Cannula
5. ApneaTrak Snore Sensor
6. ApneaTrak Finger SpO2 Sensor
7. ApneaTrak Recorder
8. Tape



ApneaTrak Specifications

ApneaTrak Channels
1. Thermal Airflow Sensor
2. Abdomen Movement (RIP belt) Sensor
3. Chest Movement (RIP belt) Sensor
4. Pressure Airflow Sensor
5. Snoring Sensor
6. SpO2 Sensor (Nonin PureLight Sensor)

7. Pulse Rate (from SpO2 sensor)
8. Body Position (sensor in ApneaTrak recorder)

Channel Storage Rate
1. Thermal Airflow Sensor = 25 Hz
2. Abdomen Movement (RIP belt) Sensor = 25 Hz
3. Chest Movement (RIP belt) Sensor = 25 Hz
4. Pressure Airflow Sensor = 25 Hz
5. Snoring Sensor = 250 Hz
6. SpO2 Sensor = 3 Hz
7. Pulse Rate (from SpO2 sensor) = 10 Hz
8. Body Position (sensor in ApneaTrak recorder) 1Hz

Dimensions/Weight W=9.6 cm (3.7”), L=8.9 cm (3.5”), H = 2.2 cm (0.8 “), Weight = 4.3 ounces

Button Patient Event Button

ApneaTrak LEDs Status LED for recording status and power status. Sensor status LEDs for Thermal Airflow Connection, Pressure Airflow Connection, Chest and Abdomen Movement Sensor Connection, Snoring Sensor Connection, SpO2 Sensor

Connectors
1. Thermal Airflow Sensor = Keyhole
2. Pressure Airflow Sensor = Luer
3. Chest Movement (RIP belt) Sensor = Keyhole
4. Abdomen Movement (RIP belt) Sensor = Keyhole
5. Snoring Sensor = Keyhole
6. SpO2 Sensor = 9 pin D
7. Recorder to USB = Micro-B USB connector

Battery Power Internal NiMH (Nickel-Metal Hydride) battery. Not user replaceable.

Recording Time Total recording time is 20 hours (two 10 hour recording sessions)

Data Storage 512 MB non-volatile internal memory

Recorder/Computer Interface: USB 2.0 (Micro-B USB connector to Type A USB connector)

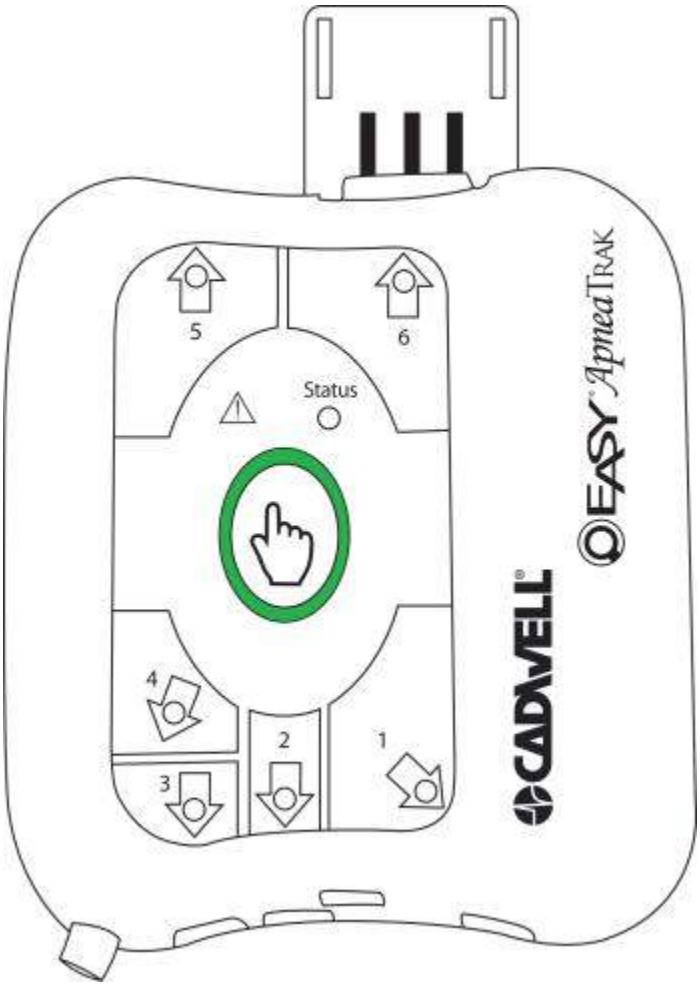
Operational Limits:
- Temperature: +10º C (+50º F) to +40º C (+104º F)
- Relative Humidity: 30% - 95% non-condensing

Regulatory Approvals:
UL601-1 2003

CSA 601.1 1990
EN 60601-1:1990 + A1:1993 + A2:1995 + A13:1996
EN 60601-1-1:2001 (medical systems)
EN 60601-2-26:1994 (EEG equipment)
EN 60601-1-2:2001 (EMC)
EN 60601-1-4:1996 (programmable electrical medical systems)
EN ISO 114971:2000 (risk)

Easy ApneaTrak Recorder

The ApneaTrak Recorder is designed to simplify the setup and start of a recording. The event button located on the front (center) of the recorder is used to start the recording and indicate patient events. The colors on the front of the recorder match the connector color for each sensor. A rechargeable battery is located in the recorder.

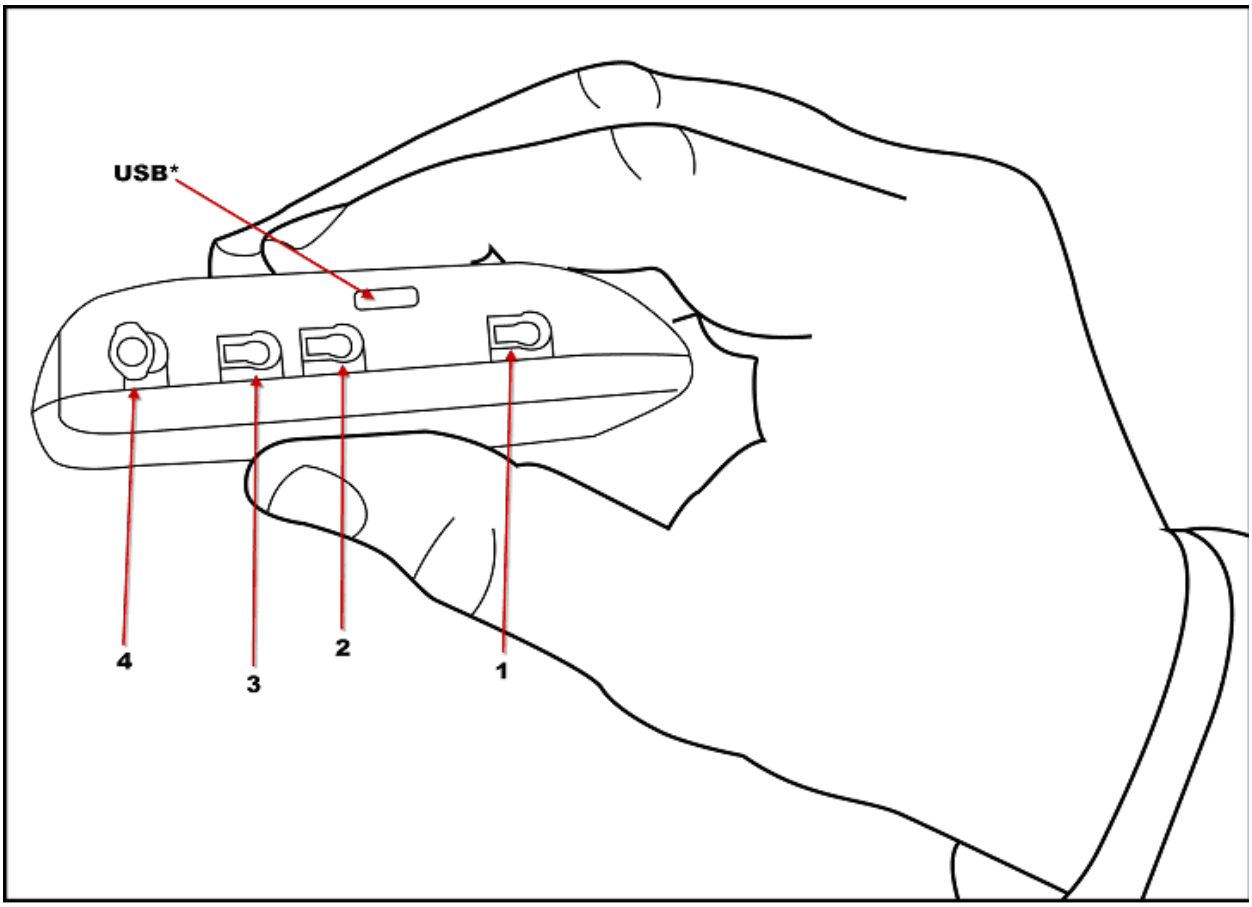


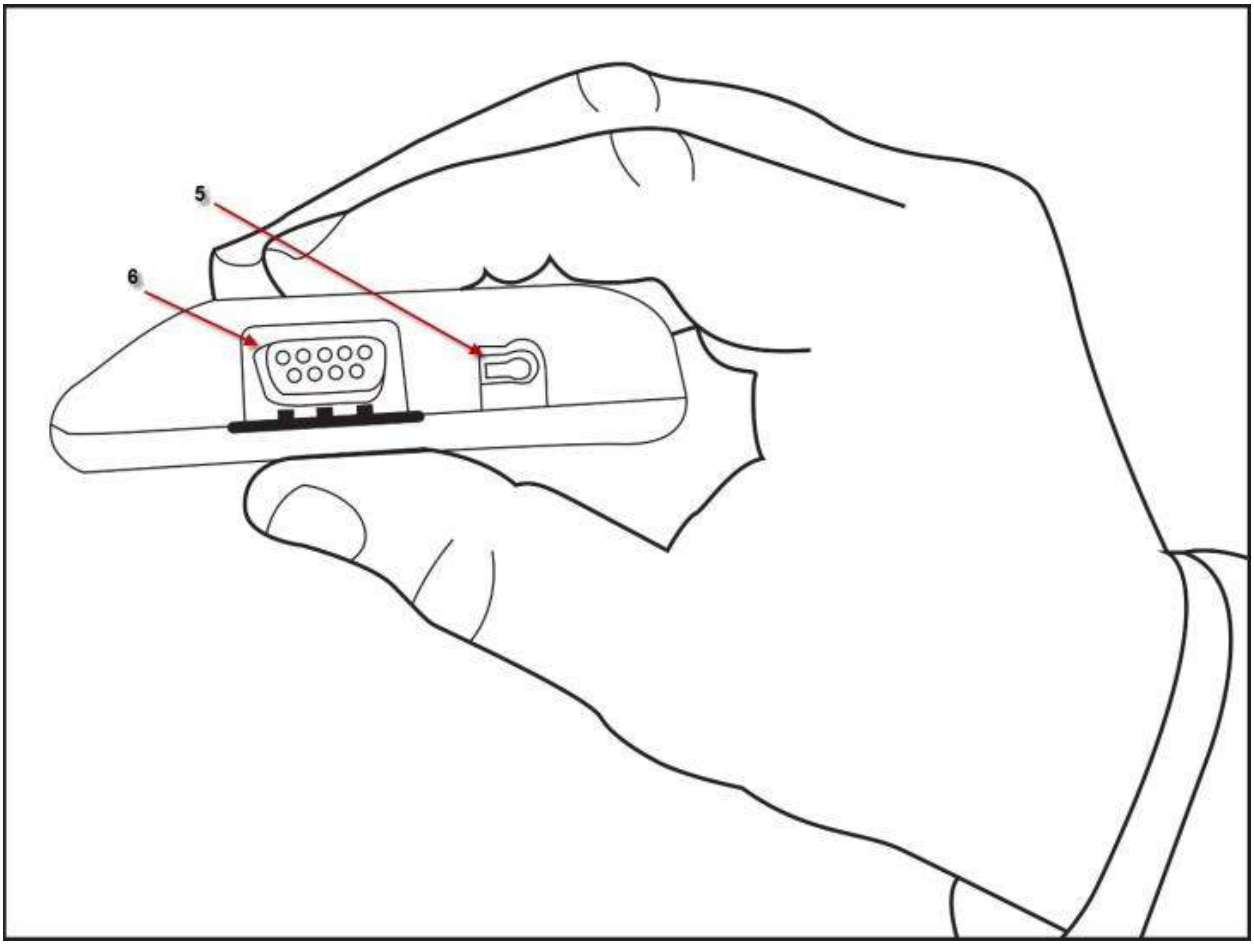
ApneaTrak Recorder Connectors

1. Thermal Airflow Sensor Connector
2. Abdomen RIP Respiratory Effort Belt Connector
3. Chest RIP Respiratory Effort Belt Connector
4. Airflow Pressure Cannula Luer Lock Connector
5. Snoring Sound Sensor Connector
6. SpO2 Sensor Connector
7. USB*Connector

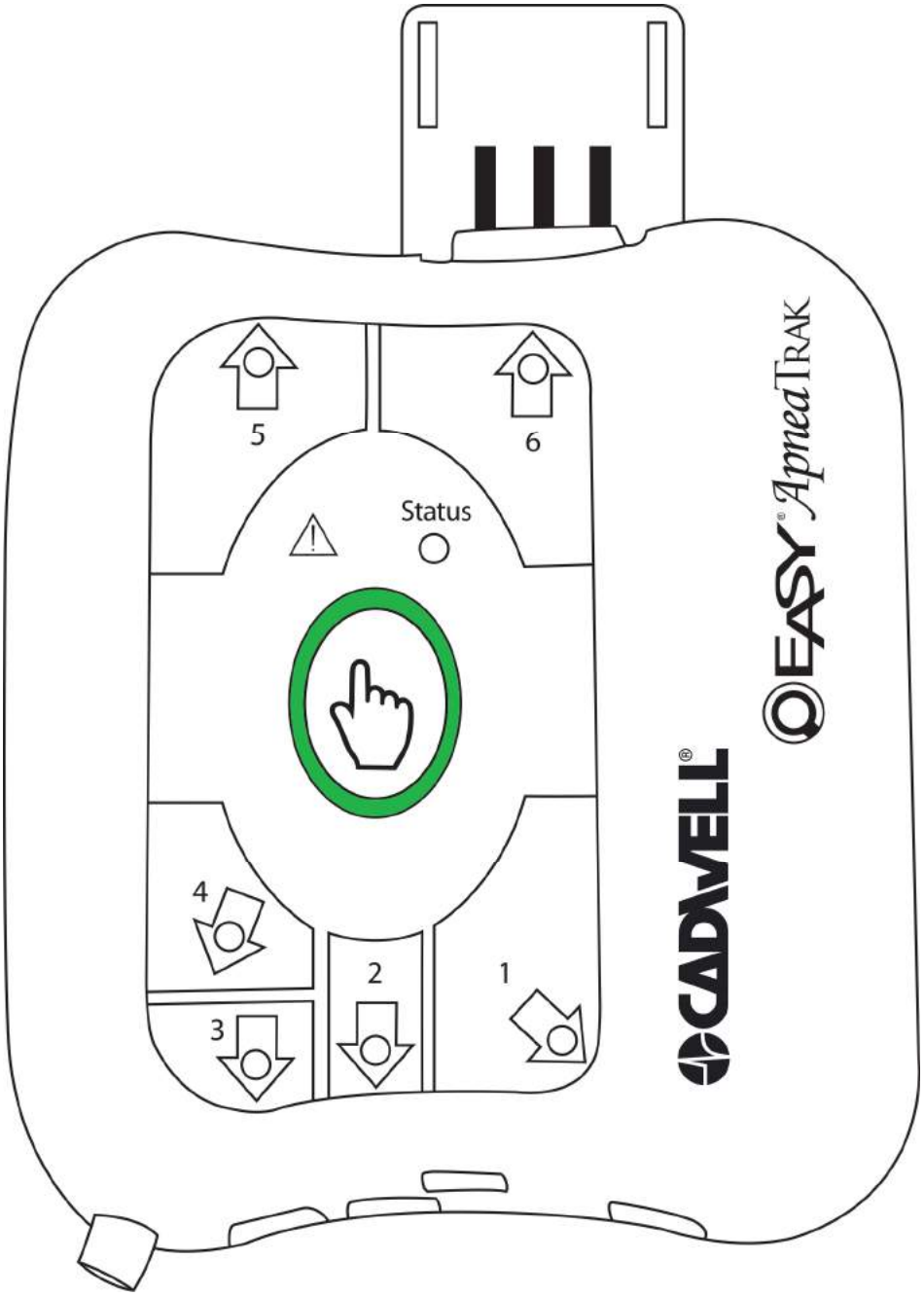
* The USB connection used to initialize or download recorder. Not for use during data collection. This connector is not utilized by the patient and is not numbered on the front of the recorder.

ApneaTrak Recorder Connectors

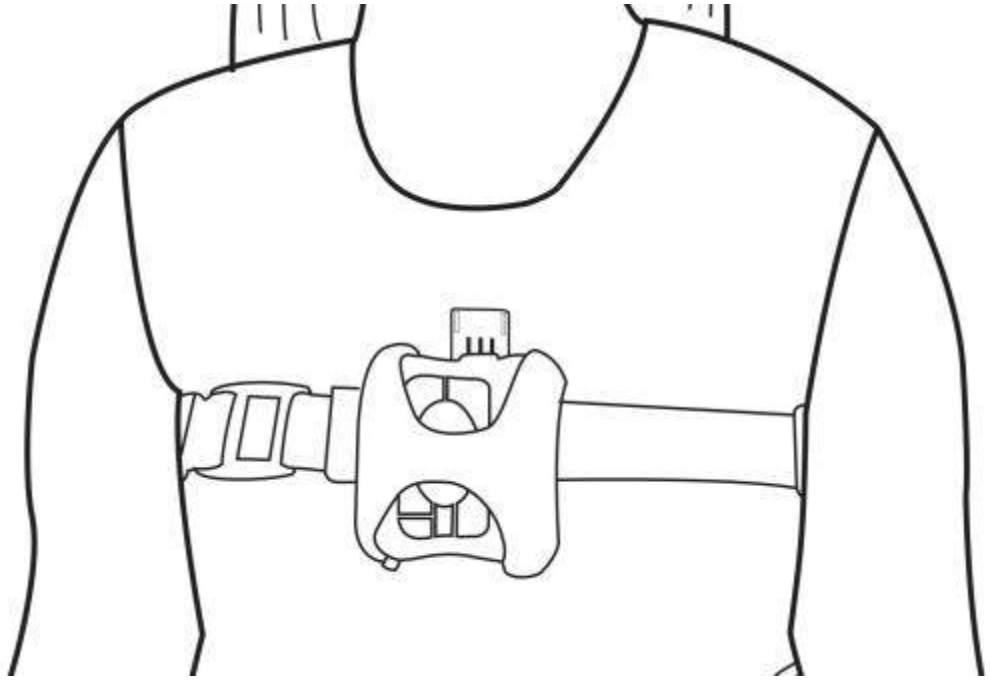




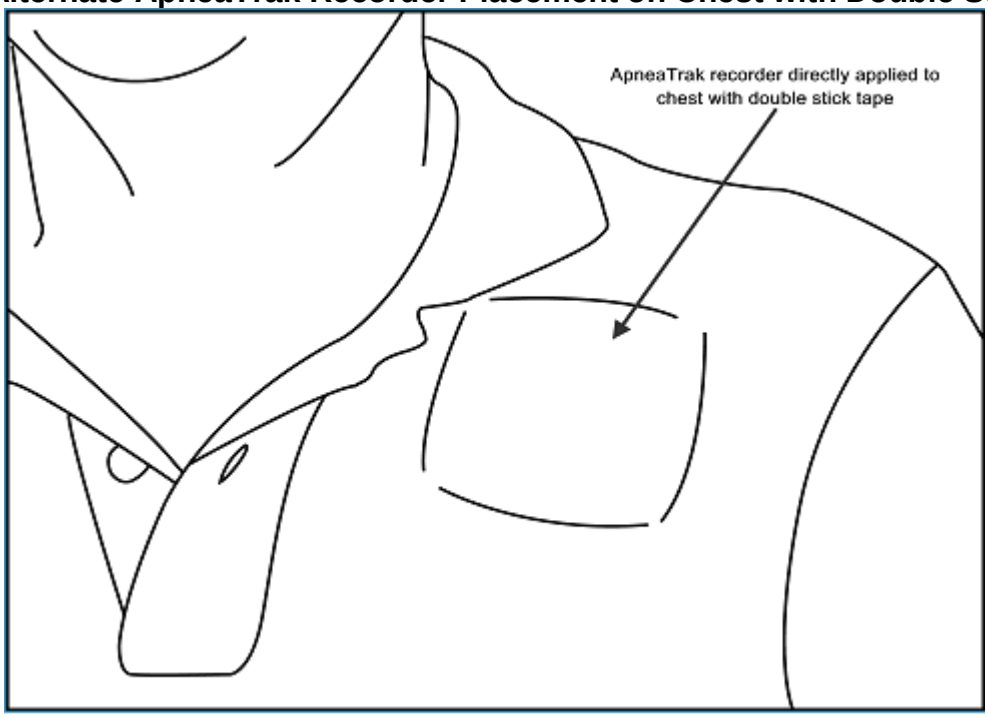
ApneaTrak Recorder Event Button



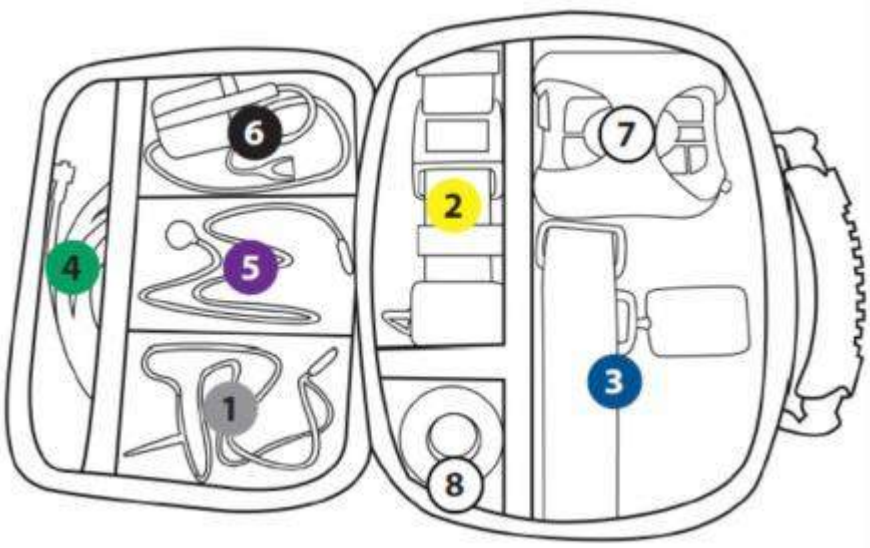
Typical ApneaTrak Recorder Placement on Belt



Alternate ApneaTrak Recorder Placement on Chest with Double Stick Tape



Easy ApneaTrak Carry Case



The ApneaTrak carrying case should have the following items:

1. ApneaTrak Thermal Airflow Sensor
2. ApneaTrak Abdomen Belt with black plastic abdomen belt interface module
3. ApneaTrak Chest Belt with black plastic chest belt interface module
4. ApneaTrak Pressure Airflow Cannula
5. ApneaTrak Snore Sensor
6. ApneaTrak Finger SpO2 Sensor
7. ApneaTrak Recorder
8. Tape

Easy ApneaTrak Sensors

ApneaTrak Respiratory Effort Belts

The ApneaTrak respiratory effort belts are used to measure chest and abdominal expansion related to respiratory effort. The belt utilizes respiratory inductance plethysmography (RIP) to measure changes in a cross-sectional area across the chest and abdomen during a respiratory cycle. The belt consists of two parts: (1) a belt with an integrated connector used to attach the belt around the chest or abdomen, and (2) a small molded plastic box that provides signal conditioning and connection to the ApneaTrak recorder. The small plastic box on each belt has a cable that plugs into a connector on the ApneaTrak recorder. Plug the appropriate sensor cable into connector 2 (abdomen) and connector 3 (chest) on the side of ApneaTrak recorder.

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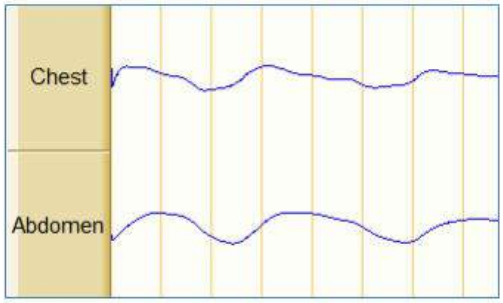
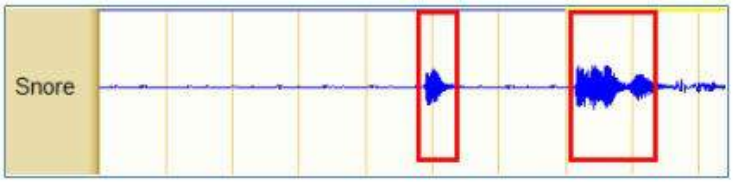
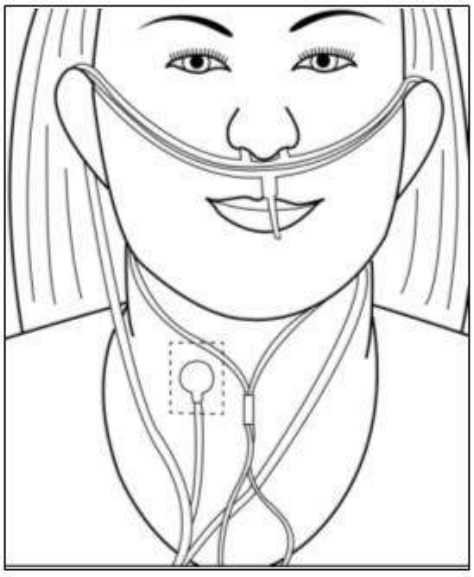


ApneaTrak Snoring Sensor

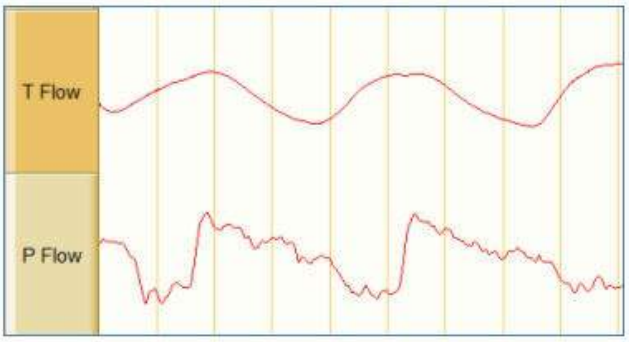
The snoring sensor is an acoustic sensor that is attached to the side of the neck to record sounds associated with snoring. This signal is converted to an electrical voltage that is recorded by the ApneaTrak recorder. The snoring sensor consists of a small disc (taped to the side of the patient's neck) and a connector that plugs into the number 5 connector on the ApneaTrak recorder.

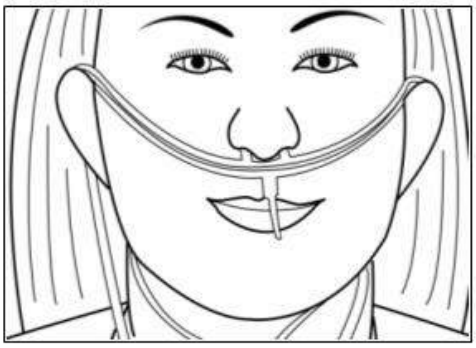




ApneaTrak Airflow Thermal Sensor

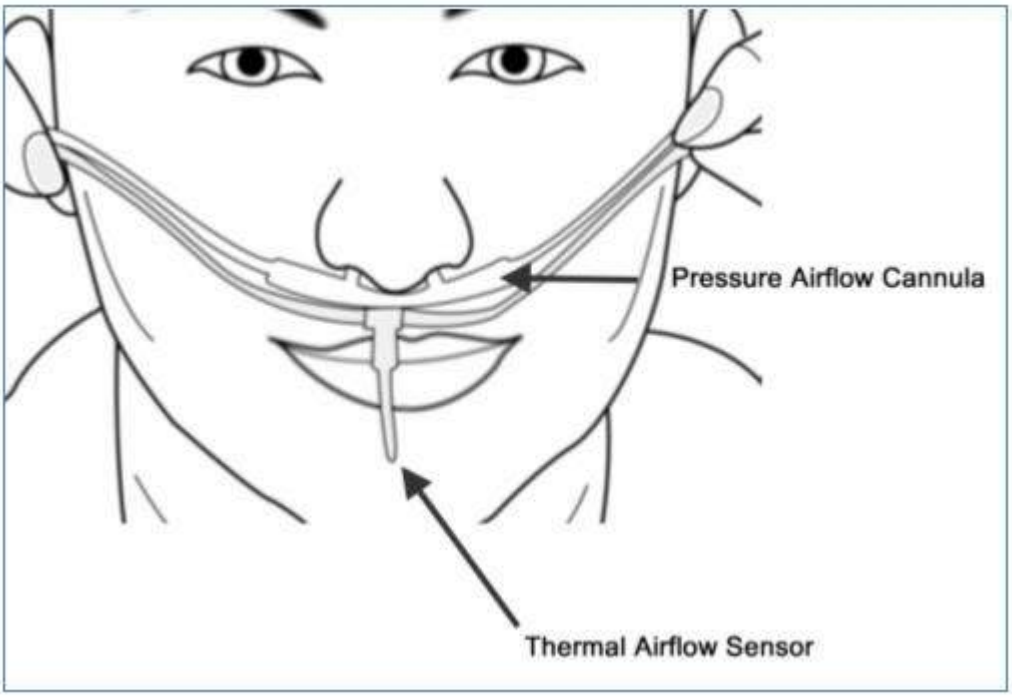
The airflow thermal sensor is designed to detect changes in temperature related to airflow at the nose and mouth. The thermal sensor mounts on a disposable cannula/holder that is used to capture oral nasal airflow. The thermal sensor is connected to the number 1 connector on the bottom of the ApneaTrak recorder.





ApneaTrak Airflow Pressure Cannula

The airflow pressure cannula is designed to transfer airflow/pressure changes through the cannula to a pressure sensor inside the ApneaTrak recorder. The soft nasal prongs of the cannula are placed in the nares. The cannula is placed over the patient's ears and adjusted with a 'Bolo-Style' slide that is cinched up under the patient's chin to secure the cannula. Twist the luer lock connector to the number 4 connector on the ApneaTrak recorder.



SpO2 (Oximeter) Sensor

The SpO2 sensor is designed to be placed on the patient's fingertip. Light is passed from one side to a photo detector on the other side. The sensor will measure the level of oxygen in the blood and the pulse rate of the patient. The ApneaTrak recorder utilizes Nonin PureLight sensor technology from Nonin Medical. The SpO2 sensor plugs into the number 6 connector on the top side of the ApneaTrak recorder. Use the provided Velcro strip to secure the oximeter probe connector to the ApneaTrak recorder.

ApneaTrak Carrying Case

The ApneaTrak carrying case is designed to allow the patient to carry the recorder and sensors home. The zippered case has color coded tags showing the location of each ApneaTrak component.

Q-Video Setup

Q-Video Recorder Setup Window

***note:** For information on Q-Video mobile, please see the Q-Video Mobile hardware section.

Access Q-Video Record Setup
To add or edit Q-Video you will need to access the Easy III Protocols. Select the protocol you would like to modify and click on edit. Click on the Edit Workspace button from the General tab. If you need to add Q-Video to your recording workspace drag-and-drop the Q-Video window into place. If you need additional instructions how to do this, refer to the Protocols section of this manual. If you are editing the settings of a Q-Video window already utilized in a work space, right click in the Q-Video window. Select Setup. The following settings dialog will be displayed.

Video Source - Select the video source. If this camera is set up to send data over IP select Sony IP Camera (IP address here) from the pulldown. If this camera is setup via analog out, select the Belkin or Dazzle Video to USB adapter.

Audio Source - Select an audio source. Select the computer audio source.

Low light file size optimization - Select this option if majority of the video recording will occur under low light conditions for optimal data storage and compression.

Mute live audio playback - Select this option to allow the live audio playback to be muted as a default. This is especially useful if the playback speakers are in close

proximity to the recording device and will prevent unnecessary feedback to be heard in live.

Video Capture Quality\File Size – Select the video capture settings that are most appropriate for the recording collected in your facility. Remember the live video displayed in Easy III will be uncompressed, however the saved video will be stored based on the video capture settings selected in this option. Carefully choose the setting that meets your requirements. Highest Available will store at the highest resolution available from the camera.

Start video recording when EEG recording starts - Check this box to automatically record video when data collection begins.
Click OK Save your changes and close.

Installing Sony IPELA Camera Software

Setting up the Sony IPELA model shown below

***note: This camera sends and stores data over IP. Cadwell requires a direct connection from the camera to either an onboard network card on the acquisition PC or to a USB/ethernet adapter on the acquisition PC.**

1. Mount the camera.
2. Connect the power.
3. Wire the Cat 5 or 6 cable from the LAN port on the bottom of the camera to either an ethernet port on the computer or the port on a USB/ethernet adapter on the computer.
4. Insert the supplied CD-ROM disc into your CD drive. Click on the SncToolbox folder, run the SncToolbox_Setup.exe by double clicking on it.
5. Find SNC Toolbox in the programs list and double click. When program launches, click on the Search button.
6. Select the desired camera for that acquisition system from the list and click on the Network button. *note: this utility will find all Sony IP networked cameras available to that PC, always confirm that you are configuring the correct camera for that acquisition PC.
7. Enter admin for name and password.
8. Choose Use the following IP address and configure the IP address as 192.168.21.11 and subnet mask 255.255.255.0. Leave everything else unchanged. Click OK.
9. Go to Network Adapters on the PC from the Control Panel and choose the network adapter being used for the camera. Double click on the network adapter and click on properties. Select Internet Protocol Version 4 (TCP/IPv4) and choose Use the following IP address and configure the IP address as 192.168.21.1 and subnet mask as 255.255.255.0. Leave everything else unchanged. Click OK.

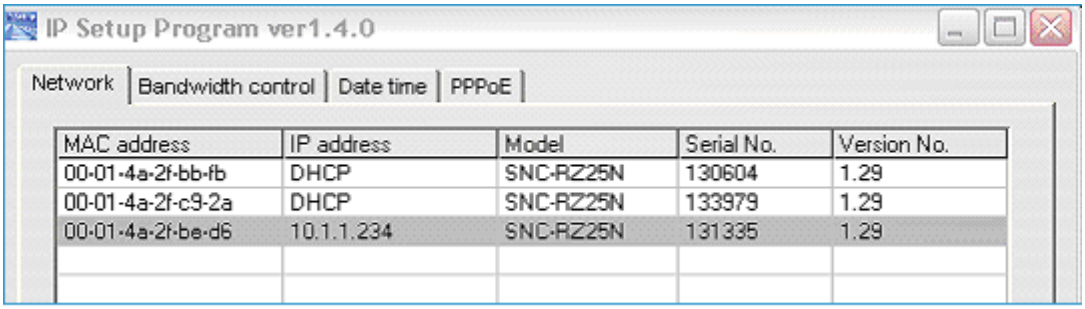
10. Open a browser and type http//192.168.21.11 in the address bar. The video should be visible in the browser. At this point a prompt may appear asking to install an add on, allow this to occur.
11. Launch Easy III and verify that the camera is available as a video source in the Q-Video Settings dialog.

Setting up the Sony IPELA model shown below

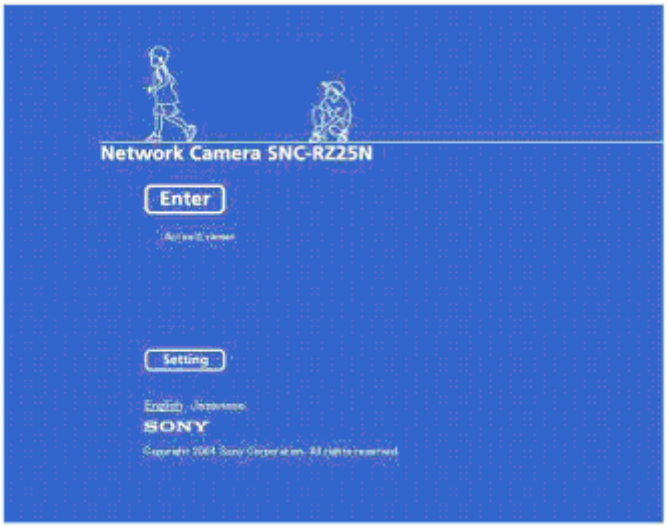
Assigning a IP Address to the Sony IPELA Camera

Note: The Sony factory setting of the camera is as follows: IP address: 192.168.0.100. The subnet mask is 255.0.0.0.

1. Mount the camera to the ceiling, wall, or pole mount.
2. Connect the cables:
3. BNC cable to video to USB adapter for Easy III (be sure the video to USB adapter software is already installed)
4. Connect the 7’ patch cable to the camera, connect the other end to a swapper (cross over) cable and plug the swapper into the computer network card.
5. Connect the camera to power.
6. Insert the supplied CD-ROM disc into your CD drive.
7. Click on the Setup icon of the IP Setup Program. The 'File Download" dialog will open.
8. Click Open NOTE: If you click "Save this program to disk" on the File Download dialog, you cannot install the software correctly. Delete the downloaded file, and click the Setup icon again.
9. Install the IP Setup Program to your computer following the software wizard displayed. If the software license agreement is displayed, read and accept the agreement to proceed.
10. Start the IP Setup Program. The program will detect the Sony camera and list all Sony IP cameras in the Network tab window.



11. Click on the camera you would like to assign an IP address.
12. To obtain the IP address automatically from a DHCP server, select 'Obtain an IP address automatically'. The IP address, Subnet mask and Default gateway are assigned automatically.
13. To specify the IP address manually, select 'Use the following IP address'. Type in the IP address, Subnet mask and Default gateway.
14. To set the DNS server address automatically, select 'Obtain DNS server address automatically.
15. To specify the DNS server address, select 'Use the following DNS server address'. Enter the Primary DNS server address and the Secondary server address. NOTE: The third and fourth DNS address fields do not work with the Sony IPELA camera.
16. Set the HTTP port No. Normally select 80 for the HTTP port No. To use another port number, select the text box and type a number between 1024 and 65535.
17. Type in the Administrator name and Administrator password. The default settings for both items are "admin" NOTE: You cannot change the Administrator name and password in this step.
18. Confirm that all items are set correctly and click OK. If 'Setting OK' is displayed, the IP address is set correctly.
19. To access the camera directly, double click on the camera name in the camera list.
20. The following setup screen should appear.



Accessing the Sony Camera via Internet Explorer

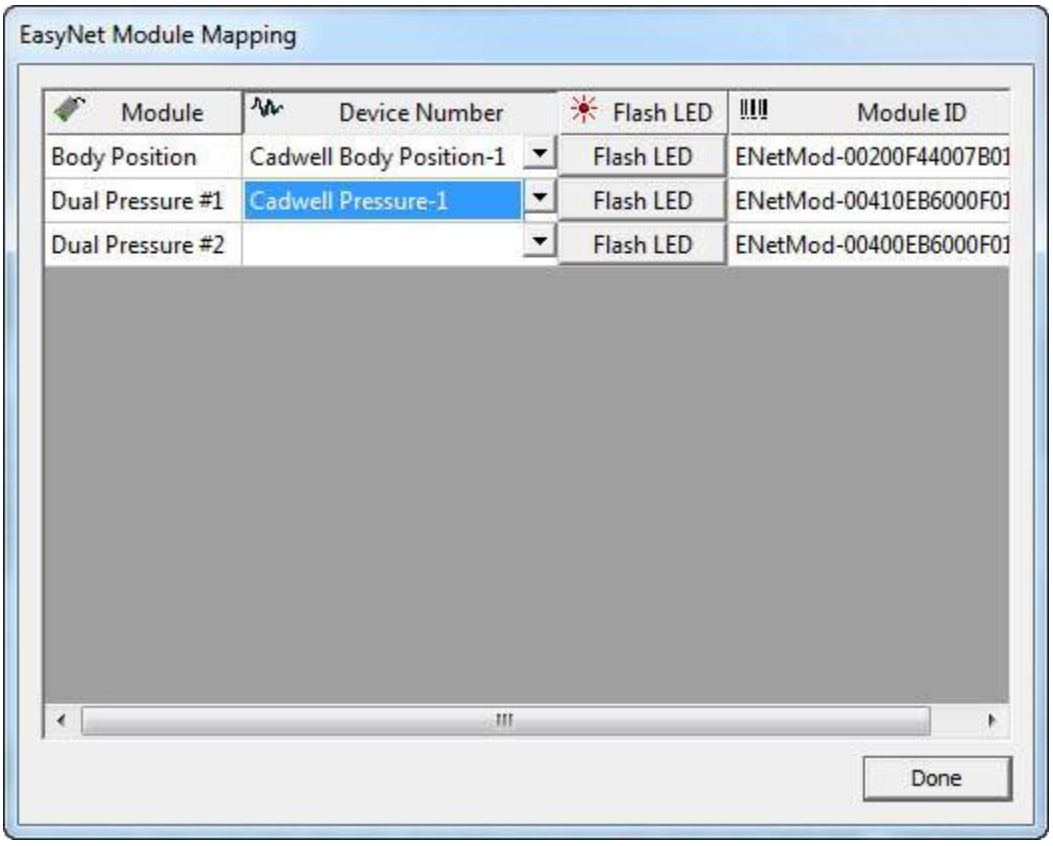
1. Launch Internet Explorer
2. Enter the IP address of the camera in the URL box.
3. Click Enter. The main viewer will be displayed. When the camera picture is displayed correctly, the IP assignment is complete.
4. When the main viewer is displayed for the first time, a security warning will be displayed. Click on OK to install Active X controls.
5. The image will be displayed, you may need to click on settings, enter the user name and password – both admin, and select “eflip on” if the image is upside down.
6. Bookmark the IP address or create a desktop shortcut for easy access to camera controls.
NOTE: If Automatic Configuration is enabled in the LAN settings in Internet Explorer, the camera image may not be displayed. In this case disable Automatic Configuration and set the Proxy server manually. Consult your network administrator to set the Proxy server.

EasyNet Modules

EasyNet Modules *for use with Easy III and Easy Ambulatory amplifiers only.*

EasyNet Modules are plug-and-play devices that can be configured to collect channels such as body position, limb movement, and SpO2 data concurrently with other PSG or EEG channels.

*Note: The first time a study is started on a given system with a new EasyNet module, the EasyNet Module Mapping window will appear. Select the corresponding Device Number from the pulldown that matches your module being used, select Done when completed. This is a one time occurrence per new module used with a given Easy III acquisition system. See image below:



The following EasyNet modules can be centrally connected to the EasyNet hub:
• **SpO2 Module** - This oximetry module will collect SpO2 and Pulse Rate data. The channel data can be included in a montage and summarized in a sleep oximetry summary report. The module can be worn on the body in a chest or limb strap. The module can also be placed adjacent to a sleeping patient on a table.

• **Body Position Module** – The Body Position Module is helpful in determining if the patient is upright or laying in the supine or non-supine body positions. A PSG summary report is available to summarize the body position data. The module attaches to a chest strap with Velcro.
• **Limb Movement Module** – Limb movement modules contain accelerometers that indicate limb movement. Up to 4 modules can be placed on the patient to observe individual limb movements. Wrist and ankle straps can be used to place the modules on the patient limbs.
• **Nasal Pressure Airflow Module** – This module provides a pressure airflow signal that can be utilized oral and nasal airflow. The module is attached to a chest belt with Velcro.
• **Multi-Purpose Amplifier** (for use with Ambulatory recorder) – This module can be used to amplify data from several different inputs to include EKG, thermal airflow, limb movement, respiratory effort, and snoring.

EasyNet Hub

The six-port EasyNet Hub (# 190214-200) may be secured within a chest belt with its Velcro backing, providing a central connection point for EasyNet Modules on the patient.

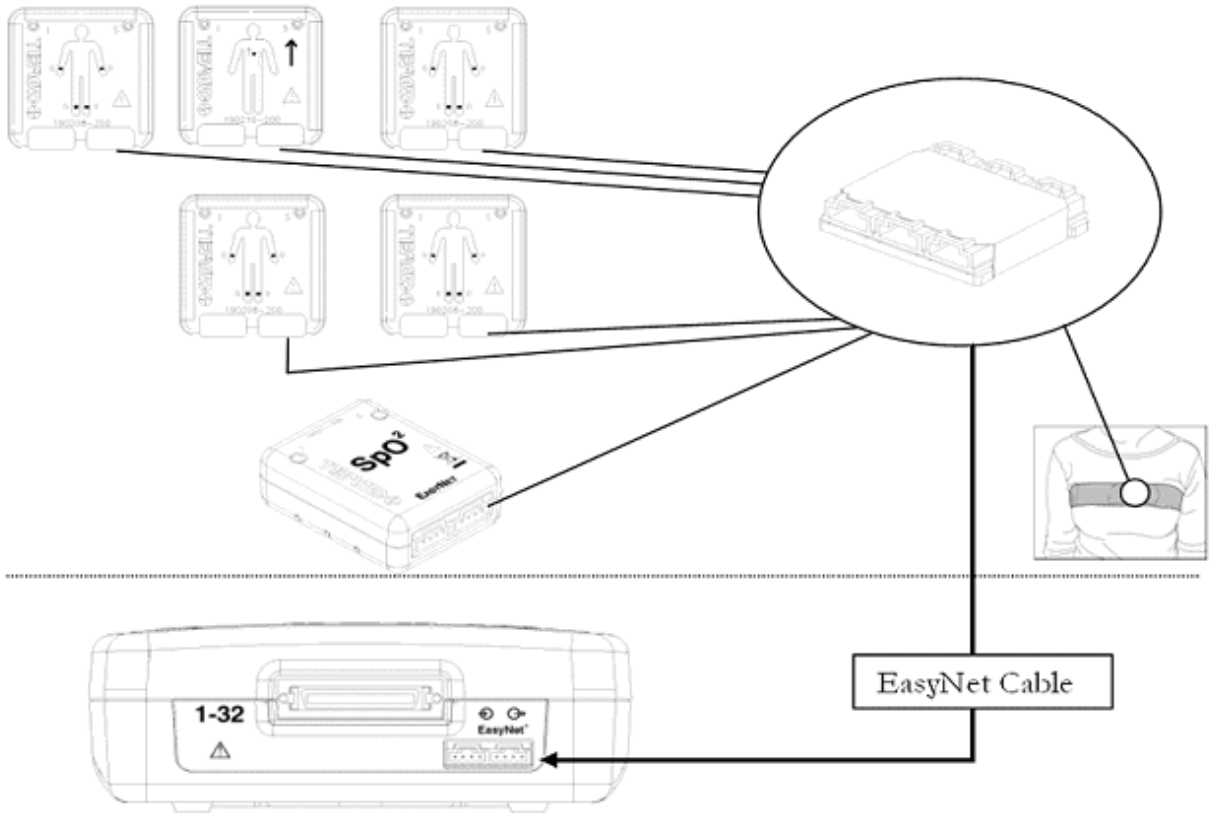
EasyNet Cables and Connections

EasyNet cables can connect either to the hub itself, or daisy-chain to each other. Each module has two cable ports; one for connection, and one for daisy-chaining module to module. EasyNet cables are available in five, 10, 20, 35, 40, 70, 96 and 180-inch lengths. Limb movement modules are placed on the wrists and legs of the patient. The SpO2 module is placed on the wrist or chest belt. All modules plug into the EasyNet Hub. The EasyNet Hub can be connected to the EasyNet input connector on the side of the Easy III amplifier. EasyNet cables are available in multiple lengths from 3 inches to 15 feet in length.

Connecting EasyNet Cables to EasyNet Hub or Module

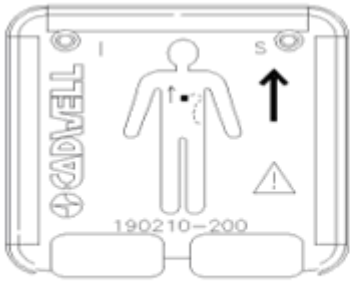
- Insert the cable end into the cable port on the hub or any module. Push gently until the connection ‘clicks’.
- Push down on the cable lever to release the cable lock.

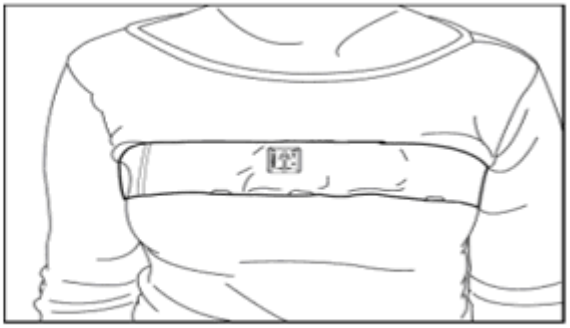
EasyNet Hub to EasyNet Module Connections (shown with Easy III amplifier)



EasyNet Modules

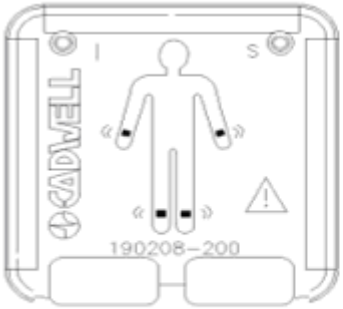
EasyNet Body Position Module

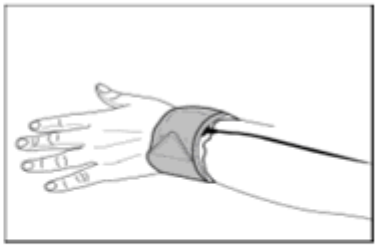




The Body Position Module is designed to detect Left Position, Right Position, Prone Position, Supine Position and the Upright Position.
The Body Position Module has Velcro on the back side of the module. The sensor is placed inside a chest belt worn by the patient. This module can be used to detect body position during an EEG, PSG, or LTM recording.

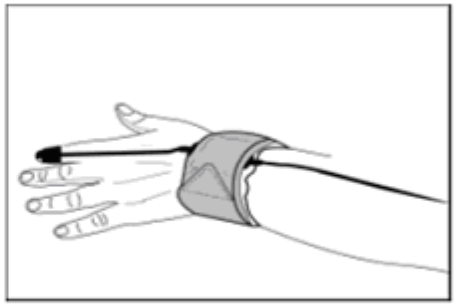
EasyNet Limb Movement Module





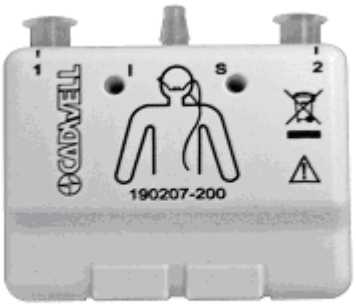
The Limb Movement module is designed to detect limb movements. The Limb Movement modules are placed in Velcro straps worn on the wrists and ankles. These modules can be used for EEG, PSG, and LTM recordings.

EasyNet SpO2 Module

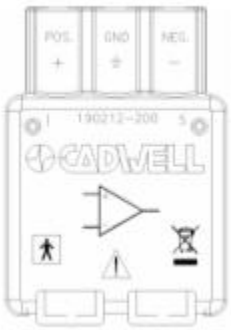


The EasyNet SpO2 Module is an oximeter that is designed to be worn on the wrist or chest belt. This module may be configured to collect two channels: SpO2 signal (pulse) and pulse rate.

EasyNet Nasal Pressure Module
The EasyNet Nasal Pressure Module is designed to record up to four channels: nasal flow, oral flow, nasal snoring and oral snoring. The module uses a 2-channel cannula that captures pressure changes recorded at the nose and mouth.

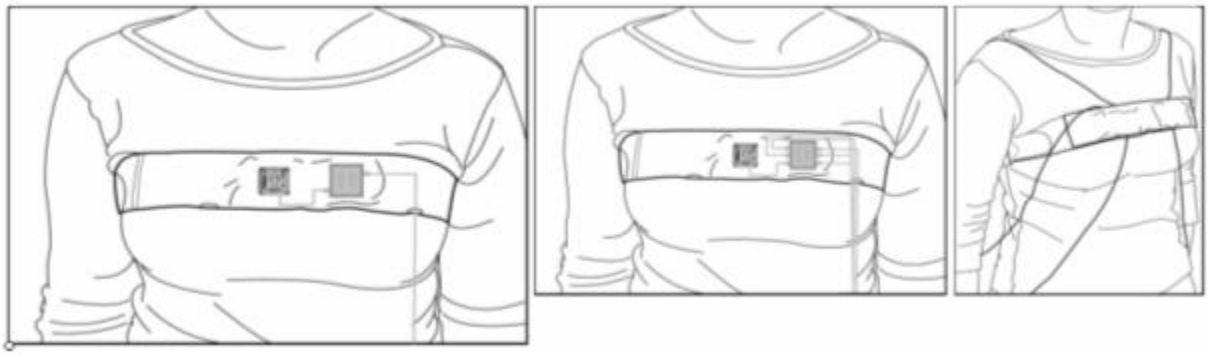


EasyNet Multi-Purpose Module
The EasyNet Multi-Purpose module is designed to amplify several different signal types to include thermal airflow, respiratory effort, Limb EMG, and EKG signals.



EasyNet Chest Belt
The chest belt is designed to hold the Body Position and EasyNet Hub in a small pocket located on the front of the chest belt.

- Place the Chest Belt on the Patient
- Place the chest strap on the patient. Center the small envelope/pocket on the front of the chest.
- Insert the Body Position Module and the EasyNet Hub inside the pocket on the chest strap. The arrow on the front of the Body Position Module should be pointing up. Connect a short EasyNet cable from the Body Position Module to the EasyNet Hub. You can use any connector on the Body Position Module and Hub.
- Place the Limb Straps on the patient. Connect each module to the hub in the Chest Belt. When setting up your patients, route the cables through the chest strap to each limb movement module.



EasyNet Cable Tester
The EasyNet Cable Tester allows you to check the integrity of EasyNet module and Ambulatory battery cables.

Testing EasyNet Cables
Test one cable at a time. Connect both ends of an EasyNet or Ambulatory battery cables into its corresponding ports on the EasyNet Cable Tester.

- Both green and yellow LEDs will illuminate.
- The cable is good if the green LED stays lit, and the yellow LED turns off.
- The cable is not good if the green and yellow LEDs remain lit. Please dispose of the EasyNet Cable and replace it with a good one.
- If the green LED on the EasyNet Cable Tester does not illuminate when a cable is connected for testing, replace the Tester batteries.

Use the thumb grip on the battery panel on the back of the Cable Tester to open the battery compartment. Remove the batteries, and replace them with two (2) AA batteries.

Easy II and Easy III Remote Input Boxes

The Remote Input Boxes allow electrode extension 10 to 20 feet from the amplifier. Top panel Remote Input Boxes are labeled for 10-20 EEG inputs.

Side-input Remote Input Boxes are also available.

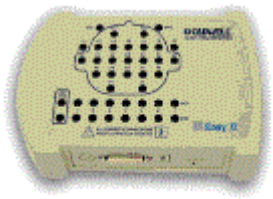
Input Box Details

• 25 EEG only channels and 7 active/reference pair inputs with 0.059-inch (1.5mm) diameter molded safety connectors.
• A recessed 50 pin mini-D connector is used for the remote input box cable.
• Remote Input Box Cable (3 m.)
• Each cable has a 50 pin, locking mini-D connector at each end of the cable.

Easy II Hardware

Easy II Intended Use
The Easy II system is intended for use by a physician or trained technician under the supervision of a physician for the acquisition of EEG and other polygraphic channels. The intended recording environment for the Easy II is the hospital, clinic, physician's office, and other testing environments.

Easy II Amplifier Hardware
The Easy II amplifier can be used to collect up to 32 channels of EEG and/or polysomnographic data. EEG electrodes can be plugged into the connectors on the top of the amplifier, or plugged into a remote input box. The input connectors are designed for 0.059-inch (1.5mm) diameter molded safety connectors. The Easy II Amplifier connects to a Power Communications module with a 3 meter cable.



Easy II EEG Amplifier

Easy II DC Amplifier

Easy II Power Com Unit

Easy II Amplifier

Easy II Amplifier Specifications

EEG Amplifier Inputs: 32 Channel Configuration: 25 EEG only channels and 7 channels which are switchable between individual active/reference pairs and EEG channels

Active/Reference Pairs: 7 inputs on the 32 channel amplifier

Noise: < 2uV

DC Inputs: 4 (+10/- 5V)

Photic Stimulator: 1 – 25 Hz flash rate range

ISO Ground Connectors: 2 inputs

EEG Common Mode Rejection: 100 dB at 50 or 60 Hz

Low Cut Filter: Act/Ref pairs: 9 steps (0.032 – 10 Hz)

EEG channels: 8 steps (0.16-10 Hz)

High Cut Filter: 5 steps (15 – 100 Hz)

EEG Channel Sampling Rate: 2300 Hz per channel

EEG Channel Storage Rate: 200 Hz per channel

EEG Differential Input Impedance: 20K M ohm

EEG A/D Conversion System: 16 bit A/D Conversion System

EEG Sensitivity: 19 steps between 0.5 – 1000 uV/mm

Amplifier/Computer Interface: Ethernet

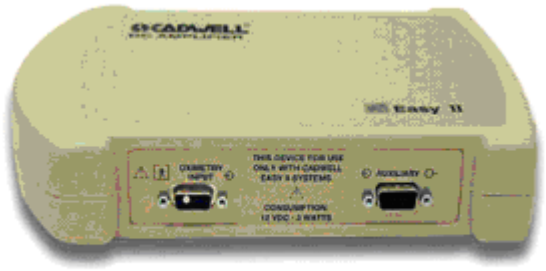
Operational Limits:

- Temperature: +10º C (+50º F) to +40º C (+104º F)
- Relative Humidity: 30% - 75%
- Atmospheric Pressure: 700 hPa to 1060 hPa
- Transport and Storage Limits: Temperature:Do not expose to temperatures below -20º C (-4º F) or above 65º C (149º F)
- Relative Humidity: Do not expose to relative humidity below 10% or above 90% non-condensing
- Atmospheric Pressure: 500 hPa to 1060 hPa

Regulatory Approvals:

UL60601-1
CSA 601.1
EN 60601-1
EN 60601-1-1 (medical systems)
EN 60601-2-26 (EEG equipment)
EN 60601-1-2 (EMC)
EN 60601-1-4 (programmable electrical medical systems)

Easy II DC Amplifier



Easy II DC Amplifier
The Easy II DC amplifier has 4 DC inputs. The amplifier also has an internal Nonin oximeter and body position sensor input. The Easy II DC Amplifier is connected to the Easy II Power Communications Module with a cable that plugs into the Auxiliary connector on the DC Amplifier.

Easy II DC Amplifier Connectors
- One Sub D 9 pin connector for oximetry input.
- One Sub D 15 pin connector for auxiliary input.
- One RJ45 connector for body position sensor input.
- DC Inputs - Four 1/8 inch female stereo connectors.

LEDs
Power - The power on LED indicates that the unit is receiving power from the power-communications module.

DC Inputs
4 Inputs (5V to -10V)

Easy II Photic Stimulator

The Easy II Photic Stimulator is designed to attach to a photic stimulator arm mounted on a trolley/cart. The photic stimulator has a 4 meter cable that connects to the Cadwell Power Com Module.

Photic Stimulator Details

- Flash Rate/Intensity - 1 – 25 Hz/0.72 J/flash
- LEDs - Power
- Connectors - 15 pin mini-D
- Cable - 4 meter cable with 9 pin sub mini-D connector

Easy II Power Com Module

The Power-Communications (power com) Module is the central connection point for the Easy II hardware. The amplifier and photic stimulator hardware plug into the power/com module. The module has a thumb screw on the back panel to allow a ground cable to reduce noise.

Connectors
- AC Input – 100-240 VAC, 1 AMP Max, 50-60 Hz
- Ethernet – Isolated 10/100 Base T, Straight-through RJ-45
- Amplifier – 24 pin, submini-D connector.
- Auxiliary – 15 pin, submini-D connector for photic stimulator.

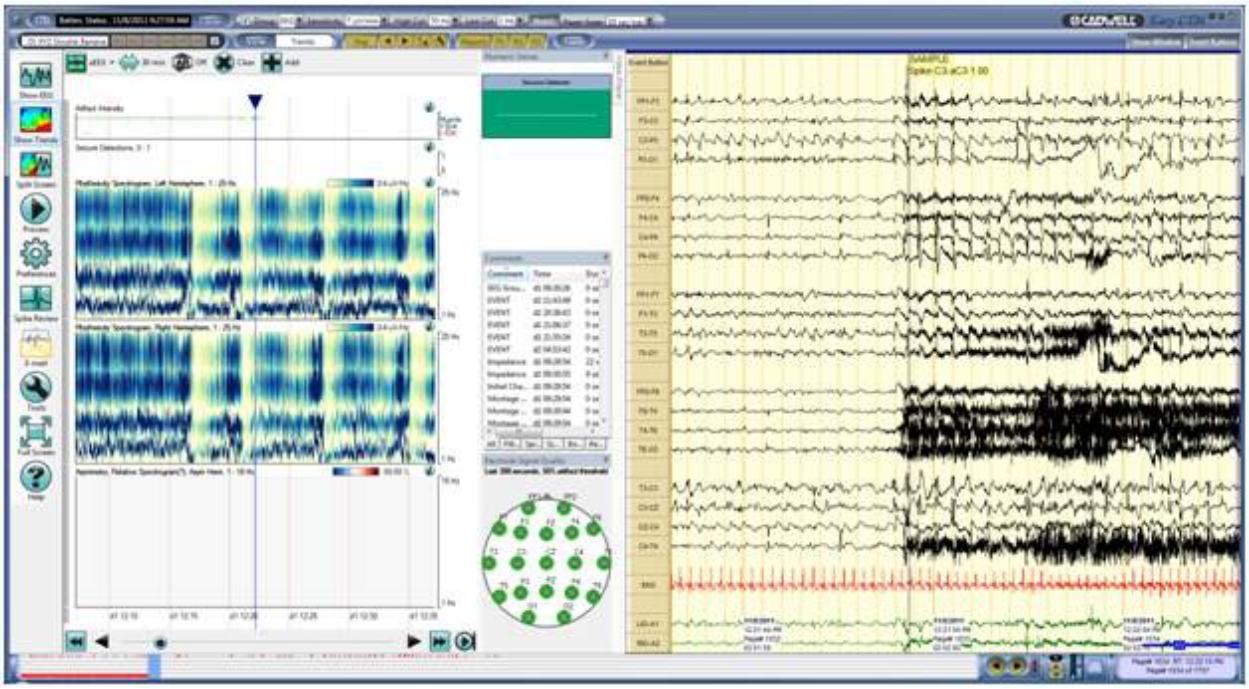
LED 's
- Power On/Off LED

Cable
- 4 meter cable with 15 pin sub mini-D connectors

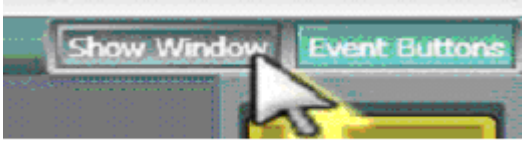
Persyst Software

Below is a brief overview of the Easy III and Persyst integration. As of version 3.15, Easy III is compatible to Persyst 12.

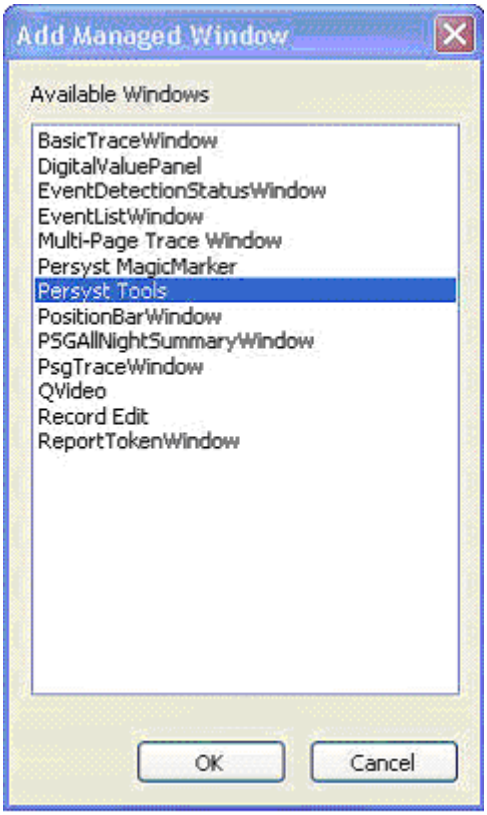
Persyst 12 compatibility
Easy III is still very well integrated with Persyst and offers a great option for seizure trending and spike detection.



Click on Show Window



Click on Persyst Tools (this option is no longer used for Persyst version 12 and higher.



Persyst Magic Marker
Select this window from the Show Window list. Magic Marker can trend physiological monitoring data simultaneously with EEG. A single trend panel can be displayed concurrently with EEG data.
Magic Marker Trends
• Rhythmic Run Detection and Display
• EEG Asymmetry (absolute and relative)
• Relative Alpha Variability
• Alpha/Delta Ratio
• Spectral edge trends
• Power Ratio (any bands)
• Power Difference (any bands)
• Amplitude (amplitude-integrated, DC average, zero-crossing frequency)
• Coherence
• Event Density (e.g., spike density functions from Reveal on-line spike and seizure detection)
• Compressed Spectral Array (CSA), Coherence CSA, Peaks CSA

Magic Marker Menu Options
*note: Please reference the help files provided by Persyst for details.

General Warnings and Cautions

- Federal law restricts sale of this system to, or on the order of, a physician.
- Do not try to service internal parts of the Easy III system. Only service by Cadwell, Inc. or authorized bodies.
- The operator must be trained to recognize the difference between signal artifacts and valid bio-signals caused by movements, interference, or misplacement of sensors or electrodes.
- Inspect all cables before and after each use. Discard cable if insulation is damaged or if the cable or connectors are damaged in any manner.
- This manual provides an operational summary for the Easy III system. It does not provide clinical training. It is assumed that the user has adequate clinical training. The proper use of this device, for its intended use, can only be assured once all instructions have been read and understood. Contact Cadwell with Easy III operational questions.
- The system is not defibrillator proof.
- Do not use the system in an MRI environment.
- The system is not designed to operate in an explosive environment.
- A possible loss of data can occur if acquiring data on a machine that has a network data folder.
- Do not immerse the amplifier, remote input box, power-communications module, flash stimulator, and system cables in liquid.
- Do not use power strips with the system unless they are connected downstream of an isolation transformer.
- The system is designed to be used with one patient at a time. Do not connect multiple patients to one amplifier.
- Do not connect items which are not specified as part of or for use with the Easy III system.
- Never place an isolation transformer on the ground.
- Do not exceed the medical isolation transformer maximum load.
- When attaching the Easy III system to a patient, verify that the subject will not become entangled in the wires.
- Do not allow the electrode wires to wrap around the patient's neck.
- Do not use the isolation transformer to power non-system components; it may overload the transformer or defeat the separation by providing additional leakage sources.
- Do not exceed the medical isolation transformer maximum load.
- Do not plug non-medical electrical equipment in the patient environment directly into a wall outlet. This may cause excessive leakage current in the patient environment.
- Software tools in Easy III allow Easy III records to be moved, managed, and deleted. The end user must manage and archive records safely for retrieval.

Easy II and Easy III Amplifier Warnings and Cautions

- Do not immerse the amplifier in liquid.
- Do not use the system in an MRI environment.
- No user-serviceable parts inside. Service by Cadwell Laboratories, Inc. and other authorized bodies only.
- Strictly adhere to the cleaning instructions in this manual.
- Inspect cables before and after each use. Discard cable if insulation is damaged or if the cable or connectors are damaged in any manner. Test the system regularly.
- The system is not designed to operate in an explosive environment.
- The system is not defibrillator-proof.
- Use only Cadwell-approved mounting hardware to attach the Easy III amplifier to an articulating arm.
- The system is designed to be used with one patient at a time. Do not connect multiple patients to one amplifier.
- Use only Cadwell-approved cables for connecting your Cadwell Easy III hardware components.
- External devices connected to DC inputs must comply with IEC 60601-1 and all relevant collateral standards inputs must comply with IEC 60601-1 and all relevant collateral standards.
- Sensors attached to EEG inputs to monitor other functions must provide at least basic insulation to ground and be passive in nature or provide at least basic insulation to ground and be passive in nature or provide at least double insulation if mains powered.

Easy II and Easy III Power Com Warnings and Cautions

- Do not immerse the Power/Com module or its cables in liquid.
- Cleaning instructions in this manual need to be strictly adhered to.
- No user-serviceable parts inside. Service by Cadwell Laboratories, Inc. and other authorized bodies only.
- The system is not designed to operate in an explosive environment.
- Inspect cables before and after each use.
- Discard cable if insulation is damaged or if the cable or connectors are damaged in any manner. Verify the patient will not trip or become entangled in the Power/Communications cables.
- Use only Cadwell-approved cables for connecting your Cadwell Easy III hardware components.
- The system is not defibrillator proof.
- Only use with one patient at a time.
- Potential Equalization terminal may only be used for noise reduction. Potential equalization does not qualify as a redundant protective earth connection for non-medical electrical equipment.
- A possible shock hazard can be created by the summation of leakage currents when several equipment's are interconnected.
- Do not use the system in an MRI environment.

Easy II and Easy III Photic Stim Warnings and Cautions

- Use of the Cadwell Easy III Photic Stimulator may induce seizures in epileptic or epilepsy-prone patients. Persons who are photosensitive to light may have convulsions, seizures, or a myoclonic reaction to the photic stimulator.
- When using the photic stimulator on a Cadwell photic stimulator arm, do not allow the arm or the stimulator to come in contact with the patient. Use caution when extending, moving or adjusting the photic stimulator arm. Do not pinch your hands and fingers in the connectors, articulating joints, or extending joints on the photic stimulator arm.
- The operator must be trained to recognize EEG waveforms and patient symptoms consistent with reactions to photic stimulation. The operator must follow laboratory medical policies and procedures when using the flash stimulator to care for the patient undergoing photic stimulation.
- The system is not defibrillator proof.
- Do not use in an MRI environment.
- The system is not designed to operate in an explosive environment.
- Do not immerse the photic stimulator in liquid.
- The Photic Stimulator must be at least 12 inches (30 cm) from the patient's eyes. If used on an anesthetized patient, a means should be provided to ensure that the patient's eye lids remain closed. The photic stimulator is not intended for patient connection, but meets IEC 60601-1 leakage requirements in normal and single-fault conditions. The photic stimulator is appropriate for use in the patient environment.
- Cleaning instructions in this manual need to be strictly adhered to.
- Use only Cadwell-approved cables for connecting your Cadwell Easy III hardware components.
- Use only Cadwell-approved mounting hardware to attach the Easy III flash stimulator to an articulating arm.
- The system is designed to be used with one patient at a time.
- Inspect cables before and after each use. Discard cable if insulation is damaged or if the cable or connectors are damaged in any manner. No user-serviceable parts inside. Service by Cadwell Laboratories, Inc. and other authorized bodies only.

Easy Remote Input Boxes Warnings and Cautions

- Do not immerse remote input boxes in liquid.
- Cleaning instructions in this manual need to be strictly adhered to.
- No user-serviceable parts inside. Service by Cadwell Laboratories, Inc. and other authorized bodies only.
- The system is not designed to operate in an explosive environment.
- Inspect cables before and after each use. Discard cable if insulation is damaged or if the cable or connectors are damaged in any manner.
- Use only Cadwell-approved cables for connecting your Cadwell Easy III hardware components.
- The system is not defibrillator proof. The system is designed to be used with one patient at a time.
- Do not use the system in an MRI environment.

EasyNet Modules Warnings and Cautions

- Federal law restricts sale of this system to, or on the order of, a physician.
- The system is not defibrillator proof.
- High levels of static discharge can cause a momentary pause in data collection.
- The operator must be trained to be able to recognize the difference between signal artifact and valid bio-signals caused by movements, interference, or misplacement of sensors or electrodes.
- No user-serviceable parts inside. Service by Cadwell Laboratories, Inc. and other authorized bodies only.
- Cleaning instructions in this manual need to be strictly adhered to.
- Do not immerse the amplifier, recorder, or modules in liquid. Do not attempt to use the system and its modules if it has been immersed in liquid. The system is not water resistant or splash proof.
- Avoid contact of liquids with the internal parts and connectors of the Cadwell Easy system.
- Check the oximeter sensor application site frequently to determine the circulation, positioning, and skin sensitivity of the patient. Each patient's sensitivity to sensors may vary depending on their medical status or condition of their skin.
- If the oximeter sensor comes off the patient finger, the potential for picking up 60 Hz artifact noise can occur resulting in a reading on the output that resembles that of a plausible value.
- The system is not designed to operate in an explosive environment.
- Do not attempt to use the Easy system in an MRI environment.
- Do not use a broken body position module, SpO2, nasal pressure, or limb movement module if the case or connectors are cracked or broken.
- Do not autoclave EasyNet modules.
- Inspect EasyNet cables before and after each use. Discard cable if insulation is damaged or if the cable is damaged in any manner.
- Discontinue using any module or sensor if the patient exhibits any allergic reactions to adhesive or materials.
- When using the body position and limb movement modules, verify that they have been placed in a Cadwell authorized pouch, belt, or holder.
- When applying tape for the oximeter sensor, do not stretch the adhesive tape. This may cause inaccurate readings or skin blisters.

Easy Ambulatory Recorder Warnings and Cautions

- Federal law restricts sale of this system to, or on the order of, a physician. High levels of static discharge can cause a momentary pause in data collection.
- No user serviceable parts inside. Service by Cadwell Laboratories, Inc. and other authorized bodies only. Inspect EasyNet cables before and after each use. Discard cable if insulation is damaged or if the cable or connectors are damaged in any manner.
- Inspect battery cable before and after each use. Discard cable if insulation is damaged or if the cable or connectors are damaged in any manner.
- Do not immerse the recorder, amplifier, battery holder, Q-Video Mobile 2, or EasyNet Modules in liquid.
- Do not attempt to use any Ambulatory system components if they have been immersed in liquid. The system is not water resistant or splash proof. The contact of liquids with the internal parts and connectors of the Cadwell Easy Ambulatory 2 system should be avoided at all times.
- Caution must be taken to ensure that cables do not encircle the patient's neck or entangle the patient in any way.
- The operator must be trained to be able to recognize the difference between signal artifact and valid bio-signals caused by movements, interference, or misplacement of sensors or electrodes.
- The system is not defibrillator proof. Do not use the system in an MRI environment.
- Cleaning instructions in this manual need to be strictly adhered to.
- When applying the stockinet to the patient, verify that the stockinet is not covering the patient’s eyes, nose, mouth, or ears. Verify that the stockinet does not entangle the patient’s neck, restrict airflow, or restrict circulation.
- When attaching the Easy Ambulatory 2 system to a recording subject, verify that the subject will not become entangled in the wires. Do not allow the electrode wires to wrap around the subject’s neck. Instruct the patient in the proper way to wear the Easy Ambulatory system and not become entangled.
- The system is not designed to operate in an explosive environment.
- Do not remove compact flash card if the recorder has power or is actively collecting data.
- Inspect EasyNet cables before and after each use. Discard cable if cable insulation is damaged or if the cable or connectors are damaged in any manner.
- Do not place recorder on a television, radio, or CPAP device.
- Use only Cadwell authorized cables and accessories.
- Always place the recorder and battery holder in the Easy Ambulatory Pouch when collecting patient data.
- Type BF, IC601 Isolation

- The EEG electrode connectors are only designed for 1.5 mm touch proof connectors.
- Do not autoclave.
- Do not connect more than one amplifier/Connector box to the Recorder. When using the amplifier to collect data, verify that the amplifier has been placed in a Cadwell authorized pouch. Verify the amplifier has been securely attached to the amplifier belt or chest/shoulder strap.
- Use only alkaline batteries, or those recommended by Cadwell Labs. Do not mix battery types.
- Only use batteries authorized by Cadwell Laboratories, Inc. Do not re-use old batteries.
- Do not store batteries in battery holder. Remove batteries after use. Inspect battery cable before and after each use. Discard cable if insulation is damaged or if the cable or connectors are damaged in any manner.
- Do not re-use battery holder if battery leakage has occurred. Use only replacement fuses authorized by Cadwell. An extra fuse is located on the battery holder.
- Do not use the battery holder without the battery cover.
- Do not immerse battery holder in liquid.

ApneaTrak Warnings and Cautions

- Do not connect the ApneaTrak recorder and USB cable to a computer while the patient is wearing the recorder.
- Do not remove or replace the battery in the ApneaTrak recorder. The battery should be serviced by qualified personnel only.
- Instruct the patient to carefully place all sensors and wires on as shown in this manual.
- Verify that the patient will not become entangled in the sensor wires.
- This product is intended to record signals for use in assessing sleep disorders.
- This product is for diagnostic use and is not to be used as an apnea monitor or in life sustaining applications.
- Do not immerse the system or any component in water. The ApneaTrak recorder is not water resistant. Do not use the system if it has been exposed to water.
- Instruct the patient to not bathe or take a shower while wearing the ApneaTrak recorder.
- Do not attempt to open or disassemble the recorder. The device contains no user serviceable parts inside.
- Do not attempt to service a damaged ApneaTrak recorder or component. Opening the ApneaTrak recorder will void the warranty.
- Do not use the ApneaTrak system in the presence of flammable compounds such as anesthetics.
- Keep the ApneaTrak recorder and components away from flames.
- Do not connect the ApneaTrak recorder and USB cable to a computer while the patient is wearing the recorder.
- Only use the Cadwell supplied USB cable with the ApneaTrak recorder.
- Only trained users should configure the ApneaTrak device for use.
- Do not expose the recorder or any component to excessive heat, cold, or humidity.
- Do not sterilize or steam autoclave the ApneaTrak recorder.
- Do not remove or replace the battery in the ApneaTrak recorder. The battery should be serviced by qualified personnel only. Use only sensors recommended by Cadwell with the ApneaTrak system.
- Follow the instructions in this manual carefully. Do not attempt to use the ApneaTrak recorder differently than described in this manual.
- Instruct the patient to carefully place the recorder and all sensors back in the carrying case after the recording has been completed.
- The ApneaTrak device and sensors should be cleaned and disinfected between each use.
- Thoroughly read the ApneaTrak instructions for use before using.

Safety

General Discussion
The application of modern electronic technologies in medical practice has led to systems of medical and non-medical electrical equipment being used together for the diagnosis and monitoring of patients.

Medical electrical equipment complying with IEC 6060-1-1 such as Cadwell equipment and accessories are often connected to other non-medical electrical equipment such as computers and printers. Non-medical electrical equipment may fully meet the requirements applicable to their specific field, but may not comply with isolation or leakage requirements for medical electrical equipment and thereby impact the safety of the entire **medical electrical system.**

Medical electrical equipment describes electrical equipment: provided with no more than one connection to a particular supply mains; intended to diagnose, treat or monitor the patient under medical supervision; which makes physical or electrical contact with the patient, transfers energy to or from the patient, and/or detects such energy transfer to or from the patient.

Medical electrical system describes the combination of items of equipment in which at least one must be medical electrical equipment and interconnected by functional connection or an isolation transformer.
The following configurations ensure that combinations of Cadwell devices with non-medical electrical equipment comply with the electrical safety requirements for medical electrical systems.

Allowable Cadwell System Configurations

- All Cadwell equipment and accessories are permissible in the **patient environment** without incorporating an **isolation transformer.**

Patient environment describes any volume of space (area) in which intention or unintentional contact can occur between the patient and parts of the system or between the patient and other persons touching parts of the system. This is a diameter of 1.5 meters, or 5 feet, around the patient.

Isolation transformer describes a medical separating transformer designed to limit transfer of unwanted leakage current and allow non-IEC 60601-1 devices to be located in the patient environment.
A double-insulated laptop computer powered from Cadwell equipment is permissible in the patient environment without incorporating an isolation transformer.

- Other computing devices such as desktop computers, monitors, printers, cameras, and Infrared illuminators are not allowed in the patient environment unless an isolation transformer is used to power such devices.

- Non-medical devices such as those listed above may be used outside the patient environment within the **medically used room** with an isolation transformer, or without incorporating an isolation transformer if and only if each individual device is plugged into a **fixed mains socket outlet.**

Medically used room describes the room in which the patient environment is located.

Fixed mains socket outlet describes a permanently installed (hardwired) grounded outlet in a facility.

- **Power strips** and other multiple portable socket outlets are not permitted in a medically used room unless connected to the output of an isolation transformer.

Power strips describe a combination of two or more socket outlets intended to be connected to, or integral with, flexible cables or extension cords.

- Connection to hospital networks is allowed without incorporating an **isolation device** if and only if the network server and the medical electrical system are connected to circuits powered from and grounded to the same electrical service entrance.

Isolation device describes a component or arrangement of components with input and output parts that, for safety reasons, prevent a transfer of unwanted voltage or current between parts of the medical electrical system.

System Requirements

- Non-medical electrical equipment used in medical electrical systems must meet their respective IEC electrical safety requirements, i.e. IEC 950 for computing devices.
- **Enclosure leakage** must not exceed 500uA in any **single fault** condition within the patient environment.

Enclosure leakage a potential electrical shock hazard from contact with the enclosure of a medical device.

Single fault describes the condition in which a single means for protection against a safety hazard in the system is defective, or a single external abnormal condition is present.

- Enclosure leakage must not exceed 100uA in normal condition.
- **Earth leakage** must not exceed 500uA in any single fault condition within the patient environment.

Earth leakage describes the potential of an electrical shock hazard from the electrical current flowing through the ground wire of a power cord of a medical electrical system.

• The medical electrical system must provide a minimum of 1500 volts isolation between the patient and earth.

• The medical electrical system must provide a minimum of 4000 volts isolation between patient applied parts and mains voltage.

• The medical electrical system must provide a minimum of 1500 volts isolation between non-patient contact parts of the system and mains voltage.

Contact the Cadwell Regulatory department at 1.800.245.3001 or 1.509.735.6481 with any questions regarding these requirements.

Electromagnetic Compatibility

This medical electrical equipment needs special precautions regarding Electromagnetic Compatibility (EMC) and needs to be installed and put into service according to the EMC information provided below.

Portable and Mobile RF communications equipment can affect medical electrical equipment.

List of cables and accessories: Use of accessories and cabling other than those specified in 6.8.3.201 a1 above, with the exception of those sold by Cadwell as replacement parts, may result in increased emissions or decreased immunity of the Easy II system.

4m Amp Cable – 362039-000
2m Amp Cable – 362038-000
Remote Input 10-20 – 190229-200
Remote Input 1-32 – 190230-200
Remote Input 33-64 – 190231-200
Remote Input 65-96 – 190232-200
Remote Input 97-128 – 190233-200
Remote EEG Headbox – 190249-200
Remote PSG Headbox – 190256-200
Remote Input Box Cable – 199216-000
Easy III 2m CPN Cable – 362036-200
Easy III 4m CPN Cable – 362037-200
EasyNet cables - All

Table 201- Electromagnetic Emissions

Guidance and manufacturer's declaration – electromagnetic emissions		
The Cadwell Easy III EEG system is intended for use in the electromagnetic environment specified below. The customer or the user of the Easy III should assure that it is used in such an environment		
Emissions test	*Compliance*	*Electromagnetic environment - guidance*
RF Emissions CISPR 11	Group 1	Easy III uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class B / A (see explanation)	Easy III 32 channel version 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. Easy III 84 – 128 channel versions are for use in hospital and clinical environments only, where Class A emissions are appropriate.
Harmonic Emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Easy III EEG system should not be used adjacent to or stacked with any other equipment. If adjacent or stacked use is necessary, performance of the Easy III should be observed to verify normal operation in the configuration in which it will be used.

Table 202 - Electromagnetic Immunity

Guidance and manufacturer's declaration – electromagnetic immunity			
The Cadwell Easy III EEG system is intended for use in the electromagnetic environment specified below. The customer or the user of the Easy III should assure that it is used in such an environment			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6kV contact* ±8 kV air	Electrostatic discharge at ANY level will produce noise glitches and amplifier saturation on the Easy III inputs causing disruption of waveforms on the display screen. These noise glitches are easily differentiated from biopotential input signals. ESD noise is unavoidable in high static environments due to the high input sensitivity of the equipment. To minimize electrostatic effects, floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2kV for power supply lines ±1kV for input/output lines	EFT's affect the display waveforms. This is an unavoidable phenomenon due to the high input sensitivity of the equipment. These waveform disturbances are easily differentiated from physiological events. To minimize these effects, mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±0.1 kV differential mode ±0.2 kV common mode	Easy III exhibited no change in performance during testing. Some surge events caused noise on the display due to the high input sensitivity of the equipment. Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 sec	Complies at all line input voltages Complies at 240 V 50 Hz. Turns off at 120 V 60 Hz. Complies at all line input voltages Easy III turns off. Restart of software required.	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Easy III requires continued operation during power mains interruptions, it is recommended that it be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field	3A/m		Easy III exhibited no change in performance. Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a.c. mains voltage prior to application of the test level.			

Table 204 –Electromagnetic Immunity

Guidance and manufacturer's declaration – electromagnetic immunity

The Cadwell Easy III EEG system is intended for use in the electromagnetic environment specified below. The customer or the user of the Easy III should assure that it is used in such an environment

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the Easy III, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	V_1 = 3 V	$d = [\frac{3.5}{V_1}]\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	E_1 = 3 V/m	$d = [\frac{3.5}{E_1}]\sqrt{P}$ **80 MHz to 800 MHz** $d = [\frac{7}{E_1}]\sqrt{P}$ **800 MHz to 2.5 GHz** Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with the following symbol 

Note 1 At 80 MHz and 800 MHz, the higher frequency applies.

Note 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which Easy III is used exceeds the applicable RF compliance level above, the Easy III should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Easy III system.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [v1] V/m.

Table 204 –Electromagnetic Immunity

Recommended separation distances between portable and mobile RF communications equipment and the Cadwell Easy III

The Easy III EEG system is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Easy III can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Easy III as recommended below, according to the maximum output power of the communications equipment

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = [\frac{3.5}{V_1}]\sqrt{P}$	80 MHz to 800 MHz $d = [\frac{3.5}{E_1}]\sqrt{P}$	800 MHz to 2.5 GHz $d = [\frac{7}{E_1}]\sqrt{P}$
0.01	d = 0.12 m	d = 0.12 m	d = 0.23 m
0.1	d = 0.38 m	d = 0.38 m	d = 0.73 m
1.0	d = 1.2 m	d = 1.2 m	d = 2.3 m
10	d = 3.8 m	d = 3.8 m	d = 7.3 m
100	d = 12 m	d = 12 m	d = 23 m

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

NOTE 3 Stated separation distances will assure safe operation of the Easy III. However, some noise may present on displayed waveforms.

Easy III Amplifier Regulatory Approvals

UL60601-1
CSA 601.1
EN 60601-1
EN 60601-1-1 (medical systems)
EN 60601-2-26 (EEG equipment)
EN 60601-1-2 (EMC)
EN 60601-1-4 (programmable electrical medical systems)

Cleaning

Always disconnect all components from AC power before cleaning. Do not use acetone to clean the surface of the system components. Clean the amplifier, photic stimulator, power communications module, and remote input box with a damp cloth. Ethanol may also be used for the exterior of the system units. Do not allow direct contact of liquids to the inner parts of the Easy III system.

Part	Cleaning Instructions
Amplifier	Wipe down with a damp cloth with non-conductive distilled water or electronically non-conductive inert surfactants.
Remote Input Box	
Power/Com Module	
Photic Stimulator	
EasyNet Module	
Amplifier Cables	Wipe down with a damp cloth with Isopropyl alcohol, non-conductive distilled water or electornically non-conductive inert surfactants.
Photic Stimulator Cables	
Electrodes and Accessories	Rinse all surface electrodes with warm, soapy water or liquid sterilizing agents; ensure all pastes and gels are cleaned from the electrodes and their cables.
SpO2 Sensor	Wipe down with a damp cloth with Isopropyl alcohol, non-conductive distilled water or electornically non-conductive inert surfactants.
Q-Video Mobile 2	Wipe with a soft cloth slightly dampened in a mild soap and water solution.

While the Easy III system has been carefully designed and manufactured to be reliable and durable, regular cleaning and inspecting of the system will promote long-term trouble-free operation of the system. Avoid extremes of physical stress such as dropping the unit or exposing it to extreme temperatures.

Reusable Items

Clean reusable items after each use. The Easy III cables can be wiped down with a damp cloth or ethanol. Do not allow direct contact of liquids to the connectors on the EasyNet cables.

The Cadwell EEG electrodes can be washed with a hospital grade cleaner such as Envirocide®. Allow the electrodes to air dry prior to reuse.

Technical

Compliances
The Easy III amplifier inputs are type CF rated. CF rating ensures that no current higher than 50uA flows to or from the applied part if mains voltage is inadvertently connected to the patient. All EasyNet modules are BF rated.

HIPPA Compliant access rights and auditing. Each time a patient file is accessed, the user ID is added to the user channel events. Events are auto-detected and stamped with the user ID.

Environment
The Easy III system should be stored in a clean, dry place. Handle the system with care.
Transport and Storage Limits (ambient conditions)

- Temperature: -20º C (-4º F) to 65º C (149º F)
- Relative Humidity: 10% - 90% non-condensing
- Atmospheric Pressure: 500 hPa to 1060 hPa
- Operational Limits (ambient conditions)
- Temperature: +10º C (+50º F) to +40º C (+104º F)
- Relative Humidity: 30% - 75%
- Atmospheric Pressure: 700 hPa to 1060 hPa

Factory Calibration
The Easy III system is calibrated at Cadwell. No additional hardware calibration is needed.

Regular preventative maintenance never involves access to the interior of the Easy III system. It involves regular inspection and cleaning of Easy III components.
Inspect all cables before and after each use.

For service issues that require corrective maintenance and/or internal component service, contact Cadwell Service Department at 1.800.245.3001.

Troubleshooting
If you are unable to solve a technical problem, contact Cadwell Service team. If yours is a clinical or software-related call, contact Cadwell Clinical Support. Call Cadwell at 1.800.245.3001.
Please provide the following when you call:
• Your account name.
• Your account number.

Warranty and Service Information

Excerpted from Cadwell document Warranty & Service Information part number 829001-000 Rev 01.

What is covered
Cadwell Inc. guarantees this unit against defects in materials and workmanship for one year from the date shipped. During the warranty period, we will repair or, at our option, replace any unit that proves to be defective. For complete warranty info, refer to your sales contract.

What is not covered
This warranty does not apply if the product has been damaged, abused, or misused, or if unauthorized attempts have been made to modify or repair the equipment which may impair the performance of the instrument. This warranty is non-transferable and applied to the original purchaser only.

Call for help
If you have a problem with your Cadwell instrument, please follow these instructions:
• Have the unit, serial number and your customer identification number with you.
• Call Cadwell, Inc. at **1.800.245.3001** or **1.509.735.6481. After hours support for Sleep/PSG customers only (United States Only) is 509-521-3001.**
• For applications or operational support, ask for the Clinical Applications Department.
• For equipment repair, ask for the Technical Service Department.

Service or Applications personnel may be able to direct you through basic diagnostic procedures on the unit.

After the problem is diagnosed
If a repair part must be sent or the unit returned for repair, you will be issued a return merchandise authorization (RMA) number. You will need the RMA# when requesting info about the repair. Repair parts are shipped second-day air service. Overnight and weekend services are available for an additional charge.

Exchange the part
Turn the unit off and disconnect it from AC power. Exchange the part with the replacement supplied. Plug the replacement unit into AC power and turn the on to verify operation. Please return the defective part promptly using the original shipping carton. Shipping materials and instructions will be included with the replacement part.

Return the unit for repair
Return the unit in the original or an appropriate, shipping container with the RMA number written on the box. Air-freight is recommended. Second-day return air-freight

cost is included on a warranty-covered repair. Repairs normally require 2-3 business days to complete.

Service Warranty
Equipment not covered under the original warranty or service contract will be charged from a "flat rate" schedule for repair. Billable repairs carry a 90-day service warranty (covering only those items repaired). For continued and complete coverage of your entire system, call Cadwell and ask about service contracts.

Electrodes and Supplies

Cadwell designs and supplies leading edge products in the Electrodes and Accessories field. The company holds several patents that create innovative solutions for your monitoring and testing needs. In addition, Cadwell has strategic distribution relationships with leading suppliers to provide you with best in class products that you use every day. Cadwell provides competitive pricing, incredible customer service, same day shipping, and an online e-store for 24/7 shopping convenience.

We are your one stop for all of your neurodiagnostic needs. Experience the Cadwell difference today.

Customers can utilize the following link to access the Cadwell estore and place your order today. http://www.estore.cadwell.com/PublicStore/

Optionally, customers can call in to 1-800-245-3001 during normal business hours and speak with an electrode sales representative.

Cadwell Laboratories

www.cadwell.com

Domestic US customers:
Phone: 800.245.3001 or 509.735.6481 Fax: 509-783-6503

International customers:
Please contact your distributor (listings available at www.cadwell.com) or email International@cadwell.com

Support hours
Service department support: Monday through Friday from 6:30 am. to 5 pm. PST.
Application support: Monday through Friday from 6:30 am. to 5 pm. PST.
After hours support: Contact Cadwell to obtain an after hours support number for your specific region.

Contact Customer Support If:

- You continue to experience difficulty after troubleshooting a problem. Cadwell Laboratories has a rapid, cost-effective method for troubleshooting and servicing equipment. Most problems can be diagnosed over the telephone, and repairs can be performed by sending in the defective part or if you wish to order optional equipment.

To contact Cadwell for a problem
1. Have your customer identification number and serial number near the phone. Have a person who runs the equipment be prepared to speak to a service technician. This person should be able to provide an accurate description of the problem. It is best if the person calling is in front of the equipment when they call.
2. Call the customer support number, and ask for the service department. The Cadwell service technician will determine if an exchange or repair of parts is necessary and instruct you on appropriate shipping arrangements.

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