lifelines
neuro

User Manual

Rendr® 2.4
Acquisition Software

rendr®
PLATFORM

Imagine EEG Anywhere®

Attention

Customer Support Info

In case of issues, requests, or for technical support, contact:

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Lifelines Neuro Company, LLC
900 E. Main Street, Suite 300
Louisville, KY 40206

Telephone:

866.889.6505

24/7/365
Normal Business hours 7:30AM-5:00PM CT
After hours support available outside normal business hours

E-mail:

support@lifelinesneuro.com

During normal business hours you can expect a response within 2 hours.
Outside normal business hours or holidays, please be advised that it may take up to 48 hours to respond.

For more information, visit www.lifelinesneuro.com

A digital copy of this manual can be accessed through the Rendr Acquisition or Rendr Portal by clicking 'Help' on the main menu.

Software and Virus Protection

Lifelines Neuro takes all reasonable steps to ensure that its software is virus-free. In line with modern computing practice, it is advisable that continual protection against viruses, Trojans, malware, adware etc. is provided on the PC used for installation and the surrounding systems. Please note the following recommendations which should be supported by your internal IT/Computing department procedures and practices:

1. Virus protection via Windows Defender has been enabled in your computer settings by Lifelines Neuro. If further virus protection software is desired, please contact the Lifelines Neuro Customer Experience Team to ensure it has been thoroughly tested and will not interfere with your system's performance.

2. Virus scanning should be set to manual mode or automatic if desired but at a time when the system is not being used.

3. All programs offering auto-update features, including Windows, should be set to manual or automatic if desired but at a time when the system is not being used.

4. Adopt formal departmental or organizational procedures to ensure the integrity and safe operation of the medical equipment and supporting systems.

Disclaimers

Lifelines Neuro manufactures hardware and software to be used on or with standard PC-compatible computers and operating software. Lifelines Neuro, however, assumes no responsibility for the use or reliability of its software or hardware with equipment that is not furnished by third-party manufacturers accepted by Lifelines Neuro at the date of purchase.

All warranties for third-party products used within the system are the responsibility of the relevant manufacturer. Please refer to the relevant documentation on each product for further details.

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Trademarks

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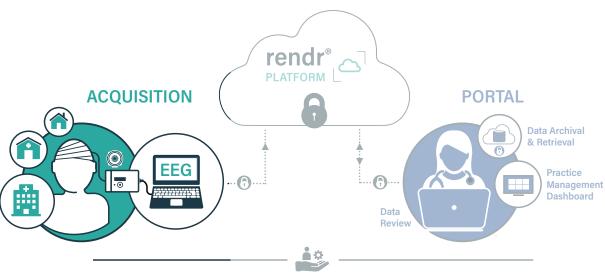# Contents

Rendr
Acquisition

1 Understanding the Rendr Platform

The two main software components of the Rendr Platform are Rendr Acquisition and Rendr Portal. Together these components provide a complete solution for acquiring, sharing, and storing EEG study data with advanced security features to protect your facility's data.

1.1 Understanding Rendr Acquisition

Rendr Acquisition is used on site to record electroencephalogram (EEG) studies and to stream study data to Rendr Portal. Features provided by Rendr Acquisition include:

- A touch-friendly interface for study data acquisition and graphing using customizable montages, color themes, frequency limits, and other settings

- USB and Bluetooth interfaces to compatible amplifiers for recording EEG data on both the amplifier's memory card and directly to the computer for continuous streaming to Rendr Portal

- Realtime monitoring of amplifier status, including battery status

- Integrated video and audio recording of studies using on-screen controls and compatible cameras offering high-definition video in low-light conditions

- Ability to annotate studies in progress or later with events, notes, channel measurements, and other study details

- Guided hyperventilation and photic stimulation sessions using customizable programs

- Support for long-term monitoring studies

- Logging of active study monitoring sessions for optimizing study reimbursement

- Ability to lock the software during a study to prevent interruption while optionally displaying the patient video recording in progress

- Patient data entry and synchronization with the Rendr Portal

- Study sharing with physicians

- Customization of software features
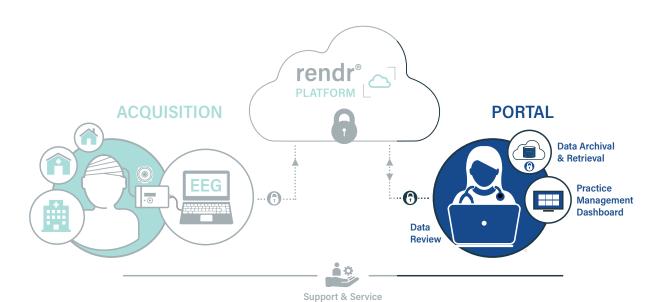
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1.2   Understanding Rendr Portal

Rendr Portal provides advanced capabilities for reviewing EEG studies remotely and for managing access to study data for your facility. Features provided by Rendr Portal include:

- Fast and secure uploading of study and patient data supported by Amazon Web Services (AWS)

- Fast, reliable, and secure internet access to study data supported by the AWS Global Accelerator networking service

- Physician access to study data on the cloud for daily reporting with no need to access Rendr Acquisition or devices

- Study monitoring audit trail for optimizing study reimbursement

- Study management tools for controlling access to study data, archiving / exporting study data, and deleting unneeded studies

- Amplifier records for logging and traceability

- Secure storage of study data

- Centralized access to patient profiles and montages for sharing across your facility

- Advanced reporting diagnostics supporting proactive technical support by Lifelines Neuro

- The ability to communicate through Feedback and Report a bug allows the user to share suggestions, concerns, or issues

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2 Setting Up Rendr Acquisition

Before using the software, a network connection needs to be set up for the computer running Rendr Acquisition. You also need to set up any amplifiers to be used with the software.

For information about configuring hardware for use with Rendr Acquisition, see *Trackit M EEG System Manual* (DM00003, Rev. D or later).

2.1 Setting Up a Network Connection

Rendr Acquisition requires a wireless network connection for wireless synchronization with Rendr Portal.

To configure a network connection

1. Click the ⛶ in the Windows System Tray (located in the Windows Taskbar) and connect to a wireless network. The following network protocols are supported:
   - 802.11 a/b/g/n/ac Wireless Network
   - WPA2 security recommended

Setting Up USB Amplifiers

Before using a USB amplifier with Rendr Acquisition, you must connect the amplifier to a USB port on the computer running Rendr Acquisition and turn on the amplifier. The following USB amplifiers are supported:
- Trackit T4A Amplifier
- Trackit Mk3 Amplifier
- Trackit M EEG System (with integrated amplifier)

Trackit T4A Amplifier   *Trackit Mk3 Amplifier*   *Trackit M EEG System*

Supported Amplifiers

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2.2   Setting Up Bluetooth Amplifiers

Before using a Bluetooth amplifier with Rendr Acquisition, you must pair the amplifier with Microsoft Windows on the computer running Rendr Acquisition. The following Bluetooth amplifiers are supported:

- **Trackit T4A Amplifier**

- **Trackit Mk3 Amplifier**

To pair a Bluetooth amplifier

1. Turn on the amplifier.

2. On the computer, press ⊞ , search for Bluetooth, and click **Bluetooth and other devices settings**.

3. On the Bluetooth & other devices window, click **Add Bluetooth or other device**.

4. On the Add a device window, click **Bluetooth Mice, keyboards, pens, or audio and other kinds of Bluetooth devices**.

    Wait for Windows to scan for available Bluetooth devices.

5. On the Add a device window, click the name of the desired amplifier.

6. Confirm that the PIN displayed on the Add a device window matches the PIN shown on the amplifier's display.

7. On the Add a device window, click **Connect**.

8. On the amplifier, press the button and confirm that a message appears indicating the pairing was successful.

9. On the Add a device window, click **Done**.

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3   Using Rendr Acquisition

3.1   Starting Rendr Acquisition

To use Rendr Acquisition, you must log into your Microsoft Windows account.

To start Rendr Acquisition

1. Log into Windows using your username and password.

2. Double-click the Rendr Acquisition desktop icon [icon] or launch Rendr Acquisition from the Windows Start menu.

3. On the Login screen, enter your email address and your Rendr Platform password. Then click **Submit**

NOTE: The Login screen shows the name of your facility in the bottom left and the version of the Rendr Acquisition software in the bottom right.

Login Screen

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3.2   Understanding the Home Screen

The Home screen provides options to start a **New Study** or to **Open Existing Study**.
It also provides information about the system and access to the settings for your facility.

The following general information is provided:
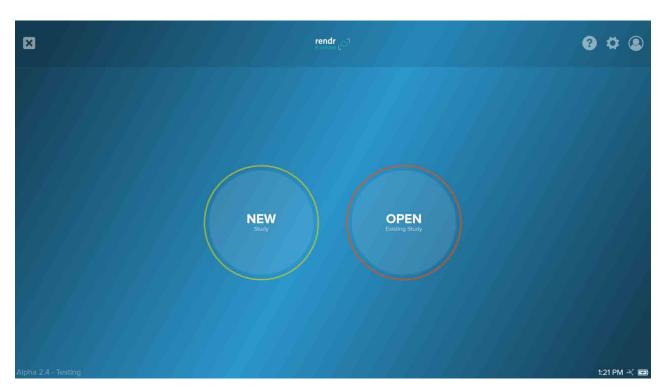
- Facility name (bottom left)
- Rendr Acquisition software version (bottom right)

The following status information is provided:

- Current time and date (based on the computer's time and date)
- Synchronization status (mouse over for details)
- Computer battery status (mouse over for details)

The following features can be accessed (top right):

Provides Help information.

Displays the Settings screen, which lets you customize the Rendr Acquisition software.
For additional information, see *"Configuring Settings"*.

Shows the profile for the current user, including name, email address, facility, and assigned role (for user permissions).

Home Screen

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3.3   Accessing Help

Help can be accessed from almost any Rendr Acquisition screen by clicking [?] .

Information provided includes:

- Documentation information
- Phone support information
- Email support information
- Device information about the computer running the software (for use by technical support)

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3.4   Starting a Study

> **NOTE:** Any changes that are required to montages must be made prior to beginning a study and may not be modified during the acquisition of a study. Montages that are standard include: Average, Referential, Circumferential, Ipsilateral Ear, Linked Ear, Longitudinal Bipolar, and Transverse Bipolar. *Please see "Customizing Montages" for modification instructions*

Rendr Acquisition gives you the option of starting a new study or continuing an existing study that has not yet been submitted for review.

- **Option 1:** Start a new study.
- **Option 2:** Continue an existing study. For instructions, *see "Reviewing and Updating an Existing Study"*.

If you choose to start a new study, Rendr Acquisition guides you through the following series of screens to complete the study setup:

- Select Patient
- Select Study Type
- Select Amplifier

> **NOTE:** You can click ⬅ on any of these screens to move back through this sequence.

To start a new study

1   From the Home screen, click **New** (see below) .

The Select Patient screen appears. Continue to the next section *Selecting the Patient Profile for a Study.*

Home Screen

Selecting the Patient Profile for a Study

A new study must be associated with a patient profile. Rendr Acquisition provides the following options for selecting the patient profile:

- **Option 1:** Select an existing patient profile for the study.
- **Option 2:** Create a new patient profile for the study.
- **Option 3:** Start the study with a placeholder patient profile and select the patient profile after the study has been completed (in an emergency situation).

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To select an existing patient profile for the study

1. On the Select Patient screen, you can use the Search patients field to locate the desired patient. Enter any combination of first name, middle name, last name, patient ID, and last 4 digits of SSN; then click the **Search** button or press Enter.

    You also can sort the list using the column headings and scroll to the desired patient.

2. Click the desired patient and then click the **Next** button [Next] (or double-click the patient).

    > **NOTE:** The patient list includes patients added for your facility using Rendr Acquisition or Rendr Portal.

    The Select Study Type screen appears. Continue to the next section *Selecting the Study Type*.

Select Patient Screen

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To add a new patient profile for the study

1. On the Select Patient screen, click [icon].

2. On the Add Patient screen, enter the patient information including first name, last name, and date of birth. You also can enter middle name, sex, social security number, and patient ID – no dashes are required when using social security number

3. Click (Add Patient).

> **NOTE:** The new patient profile will automatically be synchronized with Rendr Portal.

The Select Study Type screen appears. Continue to the next section *"Selecting the Study Type"*.

Add Patient Screen

To start a new study using a placeholder patient profile

> **NOTE:** This option is helpful in an emergency situation where you need to start the study before creating the patient profile. The patient profile can be created during or after the study. A patient profile must be selected before saving the study.

1. On the Select Patient screen, select [icon].

   A placeholder patient profile is created with the name John Doe and the current date as the date of birth.

   The Select Study Type screen appears. Continue to the next section *Selecting the Study Type*.

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Selecting the Study Type

After selecting the patient profile for the study, you need to select the study type.

• Option 1: Routine study using a USB connection from the computer to the amplifier.

• Option 2: Long Term Monitoring (LTM) study using a Bluetooth connection to the amplifier. LTM studies are recorded in dual mode; data is saved to the amplifier's onboard SD or CF card and is transmitted to the computer for storage by Rendr Acquisition.

To select the study type

1. On the Select Study Type screen, click the **Routine** or **LTM** button (see below).

   The Select Amplifier screen appears. Continue to the next section *"Selecting the Amplifier"*.

Select Study Type Screen

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Selecting the Amplifier

After selecting the study type, you need to select the amplifier to be used. Information about the selected amplifier is logged with the study.

Select Amplifier Screen—Before Connection

To select the amplifier

1. On the Select Amplifier screen, scroll through the list of available amplifiers and click **Connect** below the desired amplifier.

   The icon on the Connect button indicates whether the amplifier is set up with a USB connection   or a Bluetooth connection   to the computer.

   > **NOTE:** To use a wireless connection to an amplifier, the computer's Bluetooth functionality must be enabled and LTM must be selected as the study type.

   > **NOTE:** The Trackit M EEG System is identified as "**Rendr**" in the amplifiers list.

2. If you do not see an expected amplifier, check that the amplifier is connected to the computer (USB) or is paired with the computer (Bluetooth). Click   **Refresh**   to update the list.

   For instructions to set up an amplifier, see *"Setting Up USB Amplifiers"* or *"Setting Up Bluetooth Amplifiers"*.

   > **NOTE:** If the amplifier has not been enabled in Rendr Portal, a message appears instructing you to contact Rendr Platform technical support.
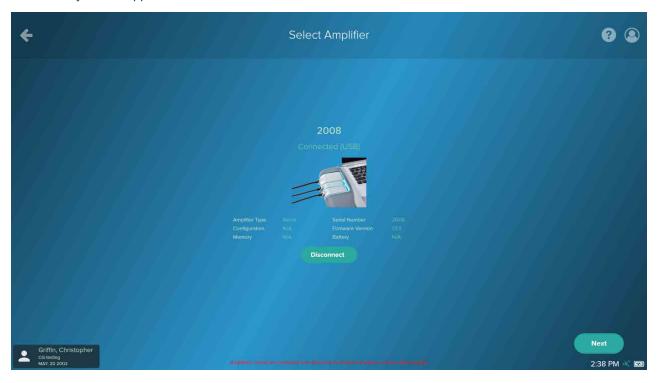
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3. When Rendr Acquisition has successfully connected to the amplifier, it shows the Connected status and information describing the amplifier. Confirm that you selected the correct amplifier and then click [Next] .

> **NOTE:** If you need to change the amplifier, click [Disconnect] to return to the list of available amplifiers.

The Study screen appears.

Select Amplifier Screen—After Connection

Customizing the Electrode Mapping

You can customize the mapping of electrodes to amplifier input ports for the selected amplifier before you start the study. This feature lets you define any special electrodes (such as EKG electrodes, EOG electrodes, a respiratory effort belt, and so forth) to be used for the study.

You also can customize the mapping of standard International 10-20 EEG electrodes. This feature is helpful if you need to replace a faulty electrode or electrode connection and remap the electrode to another input port.

If desired, you can save the updated electrode mapping as the default mapping for future studies which will sync across the facility domain.
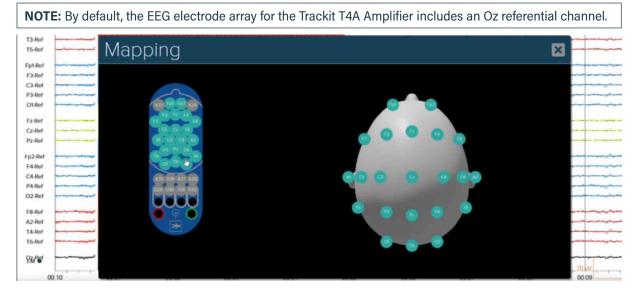
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To customize the electrode mapping

1. Click the **Menu** button ☰ on the top left.

2. On the flyout menu, click the **Mapping** button 🗺 .
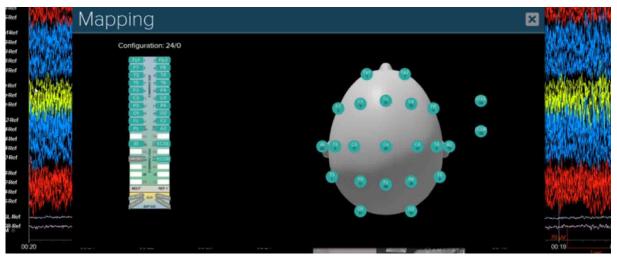
   The Mapping popup window appears. The appearance of the window and the available input ports vary depending on the type of amplifier in use:

   - **Trackit T4A Amplifier:** The amplifier image on the left shows the mapped and unmapped input ports. By default, 4 referential ports and 4 auxiliary (DC) ports are supported in addition to the ports for the standard 10-20 EEG electrodes. The head image on the right shows the mapped electrodes.

   > **NOTE:** By default, the EEG electrode array for the Trackit T4A Amplifier includes an Oz referential channel.

Mapping Window—Trackit T4A Amplifier

   - **Trackit Mk3 Amplifier:** The amplifier image on the left shows the mapped and unmapped input ports. By default, 6 referential ports and 4 differential ports are supported in addition to the ports for the standard 10-20 EEG electrodes. The head image on the right shows the mapped electrodes.
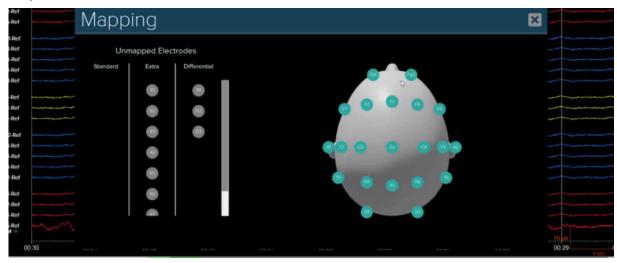

Mapping Window—Trackit Mk3 Amplifier

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- **Trackit M EEG System:** Unmapped input ports appear in a table on the left and mapped electrodes appear on the head image on the right. By default, 3 differential ports and 8 extra ports are supported in addition to the ports for the standard 10-20 EEG electrodes.

Mapping Window—Trackit M EEG System

3. In the popup window, adjust the mapping of electrodes to input ports as desired:

   - To add an electrode mapping, click the icon for the unused port to be assigned to the electrode. In the popup window, type the electrode using standard International 10-20 System nomenclature or click ⌄ and select the electrode.

   - When adding a custom electrode not recognized by the Rendr Acquisition software, the Adding Custom Electrode popup window appears. Click ⌄ and select the channel type. Then click **Ok** .

   - To remove an electrode mapping, click the icon for the electrode mapping. In the popup menu, click ⌄ arrow] and select **Unused**.

   - To update an electrode mapping, remove the current electrode mapping and then add the new electrode mapping.

     > **NOTE:** To remove any custom mappings added for this study and restore the default electrode mapping, click the **Clear Custom Mappings** button **Clear Custom Mappings** .

     As electrode mappings are updated, the head image updates to show the changes.

4. To save the current electrode mapping as the default mapping for the amplifier for use in future studies, click the **Save Mappings as Default** button **Save Mappings as Default** .

5. When you have finished updating the electrode mapping, click the **Close** button ✕ .

   The Study screen updates to reflect the updates.

   > **NOTE:** The channel labels for any standard EEG electrodes mapped to non-standard input ports appear in italics.
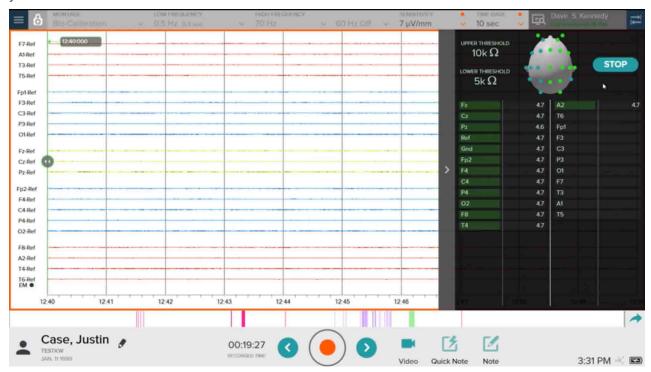
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Checking Electrode Impedance and Balance

You can perform an impedance measurement before starting the study recording to check how well the electrodes are connected to the patient's scalp. You also can perform an impedance measurement after starting a recording if you need to re-check.

Study Screen—Impedance

To check electrode impedance measurements and balance

1. Click the **Menu** button on the top right.

2. On the flyout menu, click the **Impedance** button Ω .
   The Impedance flyout window appears.

3. To perform an impedance measurement, click the **Start** button START . Then click Yes to confirm.

> **NOTE:** If a recording is in progress, the recording is stopped.

Impedance measurements appear on the screen, showing the magnitude of the complex measured impedance. The magnitude is determined to be in range or out of range based on the lower and upper thresholds shown at the top of the window. (To change the thresholds for your facility, see *"Customizing Impedance Thresholds"*.)

The bar chart shows the impedance values (in kΩ). You can quickly scan the bar chart to check the balance of the impedance values and determine any electrode adjustments that should be made to ensure optimal noise performance.

The following colors are used on the bar chart and head image to indicate whether the impedance value is above, below, or in range:

- **Green:** Below or equal to the lower threshold.
- **Yellow:** Between the lower and upper thresholds.
- **Red:** Above or equal to the upper threshold.

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4. For a detailed view of the head image, click the **Open Impedance Window** button.

   The Impedance window appears showing a detailed head image. Impedance values are displayed for each electrode; the color and fill of the circle shows whether the electrode is below, within, or above range.
   To show electrode names instead of impedance values, place a check in the **Show Electrode Names** checkbox.
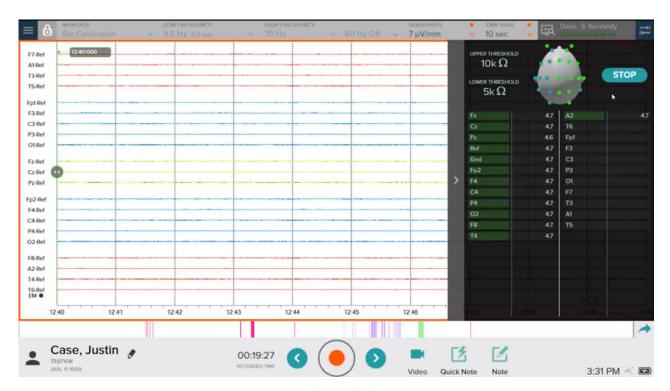
5. When you have finished checking impedance measurements, click the **STOP** button STOP .

   To close the detailed Impedance window, click **Close** button ✕ on the upper right.

   To close the summary Impedance window, click ❯ .

> **NOTE:** If you paused a recording to perform an impedance measurement, click ⬤ to restart the recording.

Impedance Window

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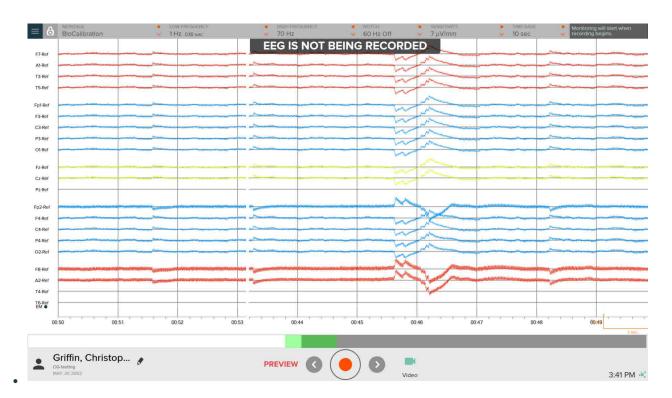
3.5   Recording a Study

Once you have completed the setup for a study, the Study screen appears in preview mode. The Study screen includes the following main sections:

- **Top bar:** Shows filter settings that adjust the graph and provides access to the flyout menus described below.

- **Graph:** Shows the channel data for the recording in progress.

- **Bottom bar:** Lets you start and stop recording, navigate through the recording, and enable video. Elapsed time is displayed for a recording in progress. Also lets you add quick notes and duration notes to annotate the recording. Patient information appears on the left and the current time and date appear on the right.

Study Screen—Preview Mode

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Study Screen—Right Flyout Menu

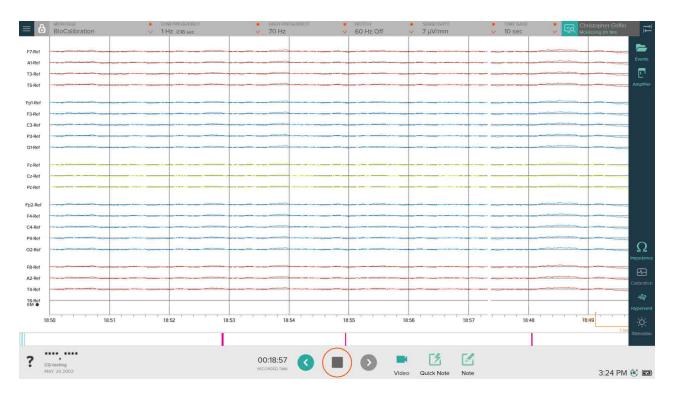From the right flyout menu on the Study screen, you can access the following features:

• **Events:** Shows the Event List. See *"Viewing and Navigating Using the Event List"*.

• **Amplifier:** Shows identification and status information about the amplifier in use. See *Amplifier records for logging and traceability.*

• **Impedance:** Lets you perform an impedance measurement to check how well the electrodes are connected to the patient's scalp. See *Checking Electrode Impedance and Balance*.

• **Calibration:** Lets you run a calibration test to confirm that the Rendr Acquisition software is recording signals correctly. See *Running a Calibration Test*.

• **Hypervent:** Lets you conduct a hyperventilation session. See *Conducting a Hyperventilation Session*.

• **Stimulator:** Provides access to the photic stimulator program. See *Using a Photic Stimulator*.

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Study Screen—Left Flyout Menu (Routine Study)

From the left flyout menu on the Study screen, you can access the following features:

Provides **Help** information.

Displays the **Settings** screen, which lets you customize the Rendr Acquisition software. *See Configuring Settings*.

Shows the **Profile for the current user**, including name, email address, facility, and assigned role (for user permissions). Allows you to lock the software.

Amplifier EEG Data (available for LTM studies only): Lets you download the data from the amplifier's onboard memory card and create a Sync Package for uploading to Rendr Portal. *See Creating a Sync Package.*

Lock Device: Lets you log out of Rendr Acquisition during a study while a recording is in progress. *See Locking and Unlocking the Software.*

Theme: Lets you change the theme for the Study screen. *See Customizing the Study Screen.*

Mapping: Lets you customize the mapping of amplifier ports to electrodes for the selected amplifier. *See Customizing the Electrode Mapping.*

Study Details: Lets you enter the study ID, CPT Codes, and comments describing the study while a study is in progress. *See Entering Study Details.*

Doctor Report: Lets a physician add comments regarding the study. *See Adding a Doctor Report.*

Export/Archive: Lets you export a completed study for archiving or for review and analysis using a third-party software application. *See Exporting / Archiving a Study.*

Share Study: Lets you notify selected physicians via email that study results are available for review. *See Sharing a Study.*

Exit Study: Lets you either exit the study and keep open for adding data later or exit the study and submit for review and analysis. *See Exiting the Study*.

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Customizing the Study Screen

You can customize the Study screen for a study using the following options on the toolbar at the top of the screen:

- **Montage:** The view of the arrangements of channels (showing the relationship between each electrode to a single electrode or grouping of electrodes).

  > **NOTE:** Montages cannot be added, edited, or deleted while a study is in progress.

- **Low Frequency and High Frequency:** Low and high limits for the frequencies that are filtered out on the graph.

  > **NOTE:** The maximum High Frequency filter value supported by each type of amplifier is 115 Hz for Trackit T4A, 90 Hz for Trackit Mk3, and 200 Hz for Trackit M.

- **Notch:** The frequency at which 50 Hz (Europe) or 60 Hz (US) is filtered out of the graph.
- **Sensitivity:** The ratio of input voltage to deflection.
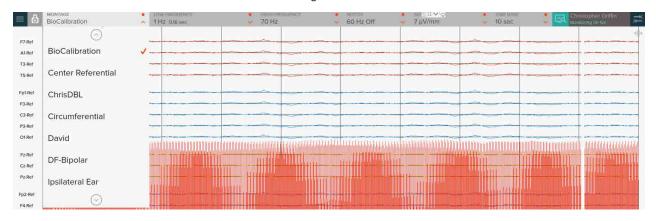- **Time Base:** The number of seconds shown on the Study screen at one time.

  > **NOTE:** To customize your facility's default settings for these options, see *Configuring Settings*.

  You also can hide the patient's name or select a different theme for the Study screen. Themes define the colors used for elements displayed on the graph and for the background of the graph.

To change the montage, low frequency threshold, high frequency threshold, notch, sensitivity, or time base for standard EEG channels

> **NOTE:** The low frequency threshold, high frequency threshold, and sensitivity options on the toolbar at the top of the screen apply only to the channels for the standard International 10-20 System EEG electrodes.

1. Click **Down Arrow** button next to the current setting.

Study Screen—Customizing Settings

2. Select the desired setting from the drop-down list.

   The graph updates to reflect the change. You can use the keyboard up and down arrow keys to adjust the setting for the last option you selected.

   > **NOTE:** If you cannot see the trace lines on the graph for one or more channels after changing the montage, it is because the color selected for the channel type matches the background color in the current theme. You can change the current theme or edit the theme to change its colors.

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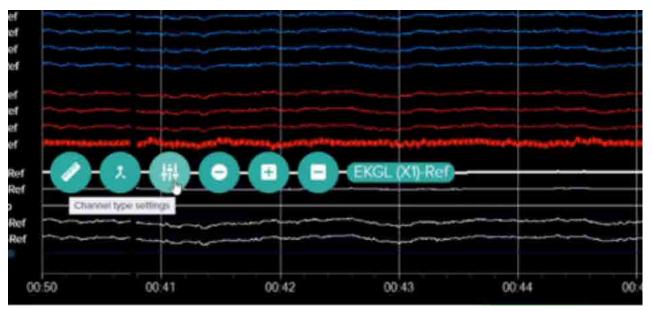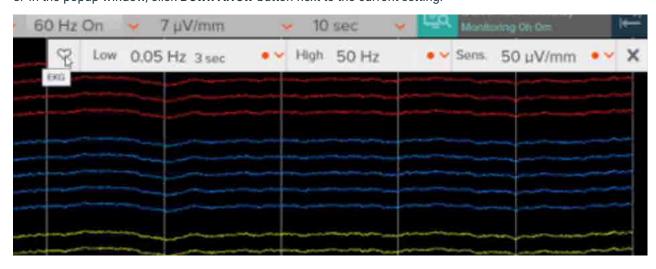
To change the low frequency threshold, high frequency threshold, or sensitivity for electrode channels other than standard EEG channels such as EKG

1. Click the label for one of the channels belonging to the channel type whose settings you want to change. For example, you can click EKGL to change the settings for all EKG channels.

2. Click **Channel type settings** button on the popup toolbar.

Study Screen—Channel Type Toolbar

3. In the popup window, click **Down Arrow** button next to the current setting.

Study Screen—Changing Channel Type Settings

4. Select the desired setting from the drop-down list.
   The graph updates to reflect the change.

5. When you have finished changing settings, click Close button ✕ on the popup window.

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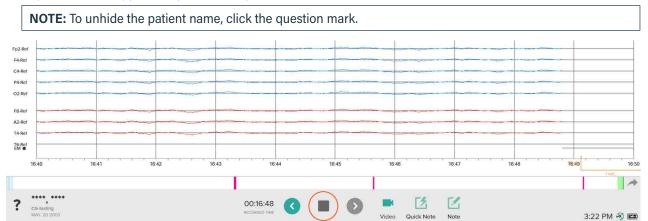
To hide the patient's name

1. Click the patient name in the bottom left of the Study screen to hide it.

   A question mark appears in place of the patient name.

   > **NOTE:** To unhide the patient name, click the question mark.

Study Screen—Patient's Name Hidden
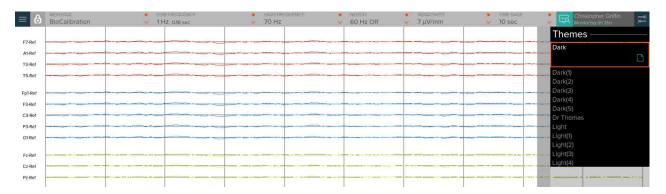
To select a different theme

1. Click **Menu** button ☰ on the top left.

2. On the flyout menu, click the **Themes** button 🎨 .

3. Select the desired theme from the list:

   • **Dark:** The Study screen shows trace lines on a black background.

   • **Light:** The Study screen shows trace lines on a white background.

   • Any custom themes saved for your facility.

> **NOTE:** If you cannot see the trace lines on the graph for one or more channels, it is because the color selected for the channel type matches the background color. To change colors for a theme, see *Customizing Themes*.

Study Screen—Themes

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Customizing themes

You can add, edit, and delete themes for your facility. Then these themes are available when recording or viewing a study using the Study screen. Themes created and edited using Rendr Acquisition are synchronized with Rendr Portal and then in turn with all acquisition devices for your facility.

Rendr Acquisition provides two standard themes—a dark theme and a light theme. These themes can be used as provided or copied and customized.

To add a theme

1. On the Study screen, click **Menu** button ☰ on the top left.

2. Click the **Theme** button 🎨 .

3. Click the theme to be copied as the basis for the new theme and click **Copy** button 📄 .

Now you can edit the new theme as desired.

To edit a theme

You can edit a theme to customize the colors for the following elements displayed on the Study screen graph:
- Background
- Labels shown along the vertical and horizontal axes
- Vertical grid lines

> **NOTE:** If you do not want grid lines displayed, you can select the same color for the grid lines as for the background.

- Horizontal grid lines
- Axes
- Legend
- Event markers
- Channel types

> **NOTE:** The EEG channel type includes all standard International 10-20 channels. You cannot assign colors to individual channels.

> **NOTE:** The standard themes provided with the Rendr Acquisition software cannot be edited. By selecting the paper icon you may copy the standard theme and edit the copy.

1. On the Study screen, click ☰ on the top left.

2. Click 🎨 .

3. Click the theme to be edited and then click **Edit** button ✏️ .

**Rendr
Acquisition**
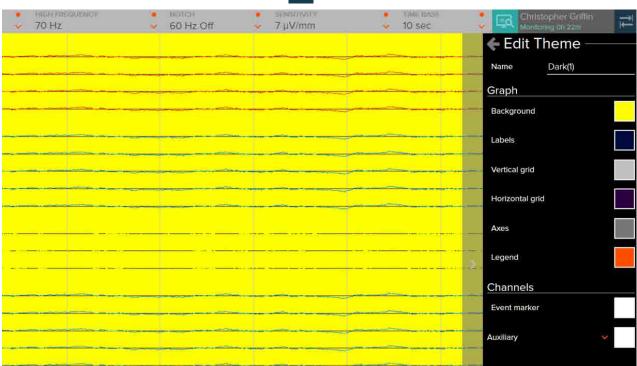
4. Edit the theme as desired:

- To rename the theme, edit the Name field.

- To change the colors for any of the elements listed, click the current color swatch. Then select the desired color from the Standard Colors tab or Custom Colors tab.

> **NOTE:** The Customs Colors tab lets you click a desired color or enter the Pantone hex value or RGB value for a color.

> **NOTE:** To change the colors for a channel type, click ● ∨ next to the listed group of channels, and click the channel type you want to change.

> **NOTE:** If you cannot see the trace lines on the graph for one or more channels, it is because the color selected for the channel type matches the background color.

5. When you have finished editing the theme, click ⬅ .

Study Screen—Edit Theme

To delete a theme

> **NOTE:** The standard themes provided with the Rendr Acquisition software cannot be deleted.

1. On the Study screen, click ☰ on the top left.

2. Click 🎨 .

3. Click the theme to be deleted and then click 🗑 . Then click **Remove** to confirm.

**Rendr
Acquisition**

Enabling Video

When you enable video for a study, the video recording is automatically synchronized with data collected during the study. Once video is enabled for a particular study, video is recorded any time data is being recorded, even if the Video preview window is not visible.

Contact Lifelines Neuro for information about supported cameras and their setup.

> **NOTE:** Video cannot be enabled while a recording is in progress.

To enable video and adjust the camera view

1. On the Study screen, click [camera icon] at the bottom of the screen.

2. On the Enable Video window, click **Yes** to confirm.

3. To change the video and/or audio recording device, click [gear icon] on the Video preview window and select the desired devices.
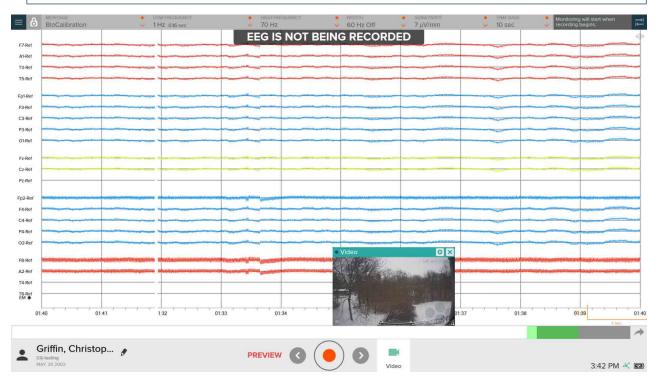
   You can click **Set as Default** to make the selected devices the default selection for future studies.

4. Adjust the camera view as desired.

   > **NOTE:** If the video camera supports Pan/Tilt/Zoom features, you can use the controls in the Video preview window to adjust the view.

5. You can drag the Video preview window to reposition it. You also can grow and shrink the window.

   > **NOTE:** The dot on the top left of the Video preview window is red while a video recording is in progress.

Video Preview Window

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To hide the Video window

1. On the Video preview window, click ✖ .

   Video remains enabled and if a recording is in progress, video continues to be recorded.

   > **NOTE:** To display the window, click 🎥 again.

Starting and Stopping a Recording

Once all electrode impedances are at the desired levels, you can record the study. When you start the recording, data from each channel is recorded until you stop the recording. For Routine studies, you can restart the recording and append as many sessions as desired for one study. Once the study has been completed, you can finalize it and submit it for review.

> **NOTE:** For a Long Term Monitoring (LTM) study, the data for the new study overwrites the data on the amplifier's onboard memory card. See Creating a Sync Package for instructions for retrieving the data from the memory card in order to create a Sync Package for transfer to Rendr Portal.
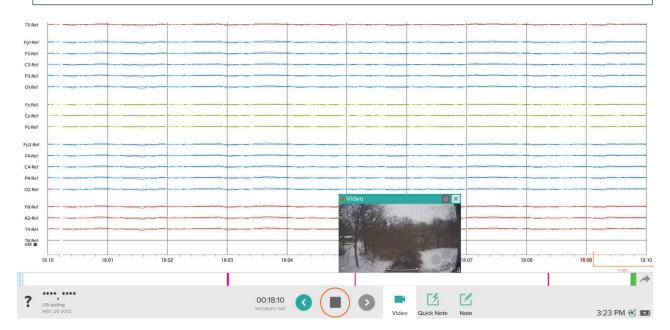
To start or stop a recording

1. To start a recording, click 🔴 . If recording an LTM study, click Continue to confirm deletion of the data on the amplifier's onboard memory card.

   > **NOTE:** While a recording is in progress, the elapsed time appears at the bottom of the Study screen.

2. When the study (or section of the study) has been completed, click ⏹ . Then click **Yes** to confirm.

   > **NOTE:** You can click 🔴 to append another recording session to the study in progress.

Study Screen—Recording in Progress

Rendr Acquisition

Navigating on the Graph and Using Split View

The period of time that can be displayed at one time on the Study screen is determined by the time base and is referred to as an epoch. For example, if the time base is set to 10 seconds, an epoch is 10 seconds long.

During a recording, you can navigate to a previous point in the recording to view it more closely or to add events, notes, or measurements. You also can use Split View to view two different periods of time in the recording.

To navigate on the graph

- To navigate backward and or forward one epoch at a time, use ◄ and ► in the bottom bar.

- To navigate backward and forward in time throughout the study, drag the scrubber left or right. The green bar represents the time period currently displayed on the graph.

  > **NOTE:** The scrubber rescales each time a new epoch is recorded. Events and notes are marked with vertical lines and bars on the scrubber.

- To navigate to an event, drag the scrubber to the line corresponding to the event.

- To jump to the live view (the current epoch) of the recording, click ➔ to the right of the scrubber.

- To use keypress shortcuts for navigating on the graph:
  – To go to the beginning of the recording, press **Home**.
  – To jump to the live view (the current epoch), press **End**.
  – To move backward 1 second at a time, press **Shift + left arrow key**.
  – To move forward 1 second at a time, press **Shift + right arrow key**.

- To navigate using the mouse wheel:
  – To navigate backward and forward one epoch at a time, **scroll up and down**.
  – To move backward 1 second at a time, **press and hold Shift and scroll up**.
  – To move forward 1 second at a time, **press and hold Shift and scroll down**.

To use Split View
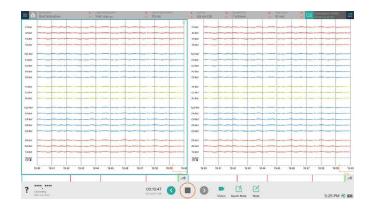
1. Click **Split Screen** button ⟨icon⟩ on the top right of the screen (or press Ctrl + Shift + D).

   The Study screen splits with the left pane showing the point in time when you split the screen and the right pane continuing to update with the current time.

2. Navigate on the graph in either pane using the methods described above. You also can add events and notes to the active pane (see *Adding Quick Notes and Notes*).

   > **NOTE:** A blue box appears around the active pane.

Study Screen—Split View

3. To return to the full screen view of the graph, click the pane you want to close and click ⟨icon⟩ on the top right of the pane (or press Ctrl + Shift + S).

**Rendr
Acquisition**

Adding Quick Notes and Notes

You can annotate the study recording by adding Quick Notes and Notes. Quick Notes let you mark a point in the study with a note selected from a preconfigured list (or added using a keypress shortcut). Notes let you mark a selected time period (a duration) in the recording with descriptive text that you type.

To add a Quick Note

1. Click [icon] and click to select the desired note from the popup list or use the keypress shortcut assigned to the desired note.

   A marker (vertical line) appears on the graph and scrubber showing the timepoint of the event.

   > **NOTE:** You also can click and drag the desired note from the pop-up list to the graph.

2. To move the event, drag the line on the graph to the desired location.

Study Screen—Quick Notes

**Rendr
Acquisition**

To add a Note
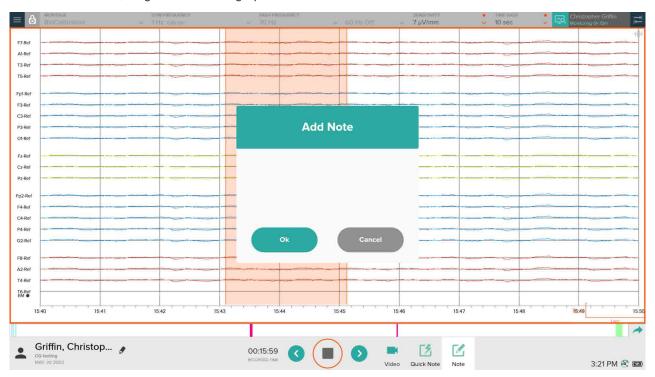
1. Start typing the note or click ✏️ .

> **NOTE:** If you start typing to add a note, a marker (vertical line) appears on the graph and scrubber showing the timepoint of the event.

2. If you clicked ✏️ , click the starting point for the note on the graph and hold the left mouse button; then drag the mouse to the end point and release.

    A marker (an orange bar) appears on the graph and scrubber showing the time period for the note.

3. In the popup window, enter the text for the note. Then click **Ok** .

4. To adjust the start or end for a spanning note, drag the edge of the bar.

5. To move the note, drag the bar on the graph to the desired location.

Study Screen—Note

To view an event or note

1. Hover over the marker for the event or note.

    The text for the note appears in a popup window.

Rendr Acquisition

To mark an important event or note for Focused Review

1. Hover over the marker for the event or note.

2. In the popup window, click ⭐ .
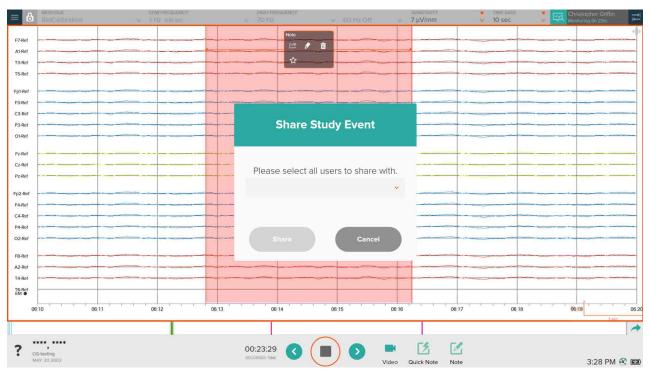
   The marker color changes to gold.

   > **NOTE:** The Event List can be filtered to display only events and notes marked as important as part of Focused Review. *See Viewing and Navigating Using the Event List.*

To share an event or note

1. Hover over the marker for the event or note.

2. In the popup window, click the **Share** icon ⤴ .

3. Click ⌄ . Then select (place a checkmark next to) the desired users.

4. Click ⌄ to close the list. Then click the **Share** button (Share) .

   Email with a link directly to the time in the recording with the event or note is sent to the selected users.

Share Study Event Window

**Rendr
Acquisition**

To edit an event or note

1. Hover over the marker for the event or note.

2. In the popup window, click the **Edit** button 🖊 .

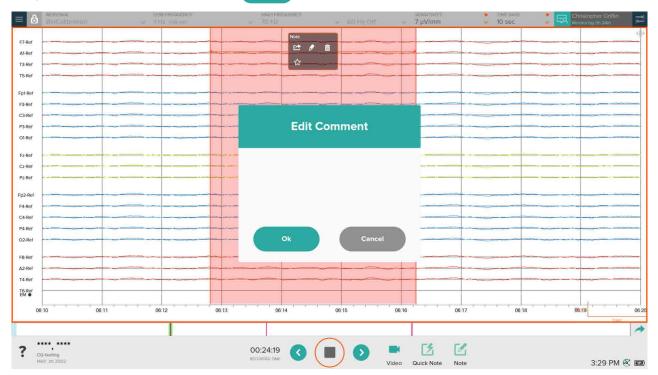3. Update the text as desired. Then click Ok .

Edit Comment Window

To delete an event or note

1. Hover over the marker for the event or note.

2. Click **Delete** button 🗑 .

3. Click **Remove** button Remove to confirm.

**Rendr
Acquisition**

Adding Channel Measurements

If desired, you can measure a specific channel. For example, in the case of a seizure, you can measure the amplitude.

To add a channel measurement

1. Click the channel label.

2. Click the **Measure** button 📏 .

3. Click the starting point for the measurement on the graph and hold the left mouse button; then drag the mouse to the end point and release.

   The measurement appears on the graph.

4. In the popup window, enter the text for the note describing the measurement. Then click **Ok** .

To add a channel measurement (manual method)

> **NOTE:** Alternatively, you can measure a channel using the legend and add a note to record the measurement.

1. Click and drag the legend on the graph to the desired point.

2. Add a note indicating the measurement. See *Adding Quick Notes and Notes*.

To move a measurement
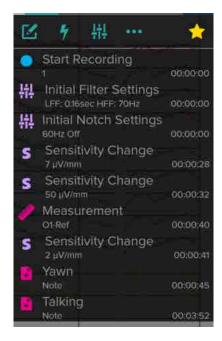
1. Click the measurement bar and drag it to a new position on the graph.

Study Screen—Channel Measurement

Viewing and Navigating Using the Event List

The Event List shows all notes, measurements, and other events for the study. You can navigate through the graph by selecting an item in the Event List. Rendr Acquisition automatically logs events for activities such as:

- Starting and stopping the recording

- Enabling and disabling video

- Study screen settings changes

- Impedance events

- Stimulation events

You also can view, edit, delete, and share events from the Event List.

Study Screen—Event List

**Rendr
Acquisition**

To navigate from the Event List

1. Click the **Menu** button on the top right.

2. On the flyout menu, click the **Events** button .

The Event List appears with all events displayed.

3. To filter the Event List to show only selected types of events, click any of the following toggle buttons at the top of the list:

   Show Note Events button hides and shows note events.

   Show Activation Events button hides and shows stimulation events.

   Show Setting Change Events button hides and shows setting change events.

   Show Other Events button hides and shows other events.

   Important button hides and shows events marked as important for Focused Review.

4. To navigate to the point in the graph corresponding to an item in the Event List, click the item.

5. To close the Event List, click **Right Arrow** button .

To edit a note, event, or measurement from the Event List

1. Click the item in the Event List.

2. On the drop-down menu, click **Edit** button .

3. Update the text as desired. Then click **Ok** .

To delete a note, event, or measurement from the Event List

1. Click the item in the Event List.

2. On the drop-down menu, click **Delete** button .

3. Click **Remove** button **Remove** to confirm.

To share a note, event, or measurement from the Event List

1. Click the item in the Event List.

2. On the drop-down menu, click **Share** button .

3. Click **Down Arrow** button . Then select (place a checkmark next to) the desired users.

4. Click **Up Arrow** button to close the list. Then click **Share** button .

   Email with a link directly to the time in the recording with the event or note is sent to the selected users.

Rendr Acquisition

To view an impedance event in the Event List

> **NOTE:** When you measure impedances, such as before the start of a study, an impedance event is automatically added to the Event List. You can select this event to view the recorded impedance values, which reflect the last reading of impedance values when the measurement ended.

1. Click the event in the Event List.

2. Click **Impedance** button Ω .

    The Impedance window appears showing the recorded impedance values.

Impedance Window

Conducting a Hyperventilation Session

If desired, you can conduct a hyperventilation session during the study. The start, stop, and duration of the hyperventilation and rest periods are marked on the graph and logged as events that can be viewed in the Event List.

> **NOTE:** To customize the duration of the hyperventilation and rest periods, see Customizing Hyperventilation Settings.

Rendr
Acquisition

To start the hyperventilation session

1. Click the **Menu** button [icon] on the top right.
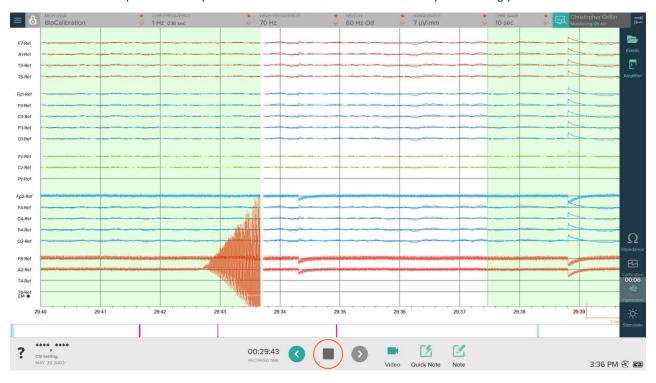
2. On the flyout menu, click **Hypervent** button [icon] .

   The hyperventilation period starts and a timer appears on the Hypervent button, which changes to **Hypervent Period** [icon] button. A green line appears on the graph indicating the start of the period. The hyperventilation period is shown on the graph with an expanding green bar.

3. When the button changes to **Rest Period** button [icon] , it is time to start the rest period. You also can press the spacebar on your computer to end the period.

   A green line appears on the graph indicating the end of the hyperventilation period and the start of the rest period. The timer restarts and the button changes to the Rest Period button. The rest period also is shown on the graph with an expanding green bar.

4. Wait until the rest period is complete or click the Rest Period button to stop the resting period.

Study Screen—Hyperventilation Session

Rendr
Acquisition

Using a Photic Stimulator

If desired, you can use a photic stimulator during the study to record brain activity triggered in response to flashing lights.

You can customize the settings for the photic stimulator program. See *Customizing Photic Stimulator Program Settings*.

To use the photic stimulator

1. Make sure the photic stimulator is connected to the amplifier and ready for use.

   > **NOTE:** If using the Lifelines Photic, make sure the power switch is turned on.

2. Click **Start Recording** button ⏺ to start a recording.

3. Click **Menu** button 🔀 on the top right.

4. On the flyout menu, click **Stimulator** button ☀ .

   > **NOTE:** If the Stimulator button is grayed out, check the connection to the photic stimulator.
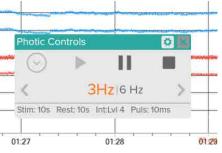
   The Photic Controls popup window appears.

5. In the popup window, you can:

   - Click **Play** button ▶ to start or resume the photic stimulator program.

     > **NOTE:** An event is recorded to mark each light pulse.

   - Click **Pause** button ⏸ to pause the photic stimulator program.

   - Click **Left arrow** button ‹ to move to the next higher stimulation frequency included in the photic stimulator program.

   - Click **Right arrow** button › to move to the next lower stimulation frequency included in the photic stimulator program.

   - Click **Up arrow** ⌃ to run the photic stimulator program in increasing order of stimulation frequency.

   - Click **Down arrow** ⌄ to run the photic stimulator program in decreasing order of stimulation frequency.

Photic Controls Window

   - Click **Settings** button ⚙ to update the photic stimulator program settings and the frequencies included in the program. *See Customizing Photic Stimulator Program Settings.*

     > **NOTE:** The current settings for the program are displayed at the bottom of the Photic Controls popup window.

   - Click **Stop** button ⬛ to stop the photic stimulator program.

6. When you have completed the photic stimulator session, click **Close** button ✖ to close the popup window.

**Rendr
Acquisition**

Turning Monitoring On and Off
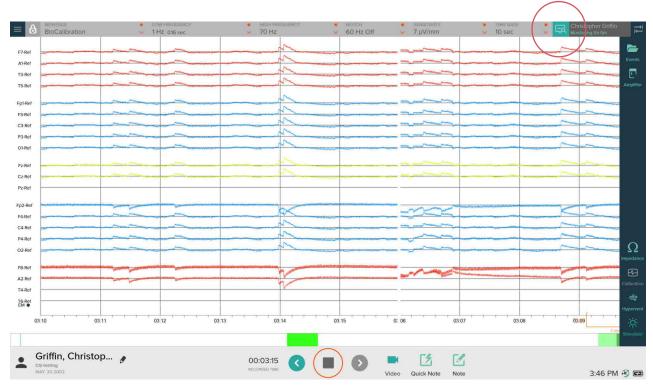
You can turn monitoring on and off during a study to log when you are actively monitoring the patient. While monitoring is on, a timer is displayed showing the duration of the current monitoring period. Monitoring activity is tracked in an audit log that can be viewed using Rendr Portal.

To turn monitoring on and off

1. On the top right of the Study screen, click **Turn On Monitoring** button [icon] .

The monitoring icon turns blue and shows the timer for the current monitoring period.

2. To turn off monitoring, click **Turn Off Monitoring** button [icon] .

Study Screen—Monitoring in Progress

USER
MANUAL

Rendr
Acquisition
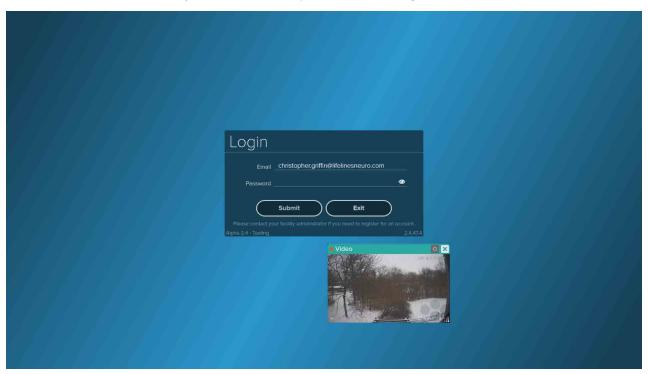
Locking and Unlocking the Software

You can lock and unlock Rendr Acquisition. This feature is helpful if you need to leave the room during a study. If the Video preview window is displayed when you lock the software, it continues to be displayed on the desktop while the software is locked.

To lock and unlock the software during a recording

1. Click **Menu** button ☰ on the top left.

2. On the flyout menu, click **Lock Device** button 🔒 . Then click Yes to confirm.

    The Login screen is displayed. If the Video preview window was open, it continues to be displayed on the desktop.

3. To unlock the software, enter your Rendr Platform password on the Login screen. Then click **Submit** button.

Login Screen and Video Window—Locked Software

Rendr
Acquisition

Editing Patient Information

You can edit information for the patient while a study is in progress. This feature is especially helpful if you started the study without selecting the patient profile.

To edit patient information

1. Click the **Edit** button ✏ next to the patient's name in the bottom left of the Study screen.

2. In the Edit Patient window, add or edit patient information as desired. Then click **Update** button to save the changes.

Edit Patient Window

Rendr Acquisition

Entering Study Details

You can enter study details while a study is in progress. Before submitting the study, be sure to finalize the study details. These details are available when the submitted study is reviewed later and can be copied into the report.

To enter study details

1. Click **Menu** button ☰ on the top left.

2. On the flyout menu, click **Study Details** button 🗋 .

3. In the popup window, enter details for the study as desired:
   - **Study ID:** Enter the ID for the study.
   - **CPT Code(s):** Enter the CPT codes for the study.
   - **Tech Initials:** Enter your initials to indicate that you provided these details.
   - **Notes:** Type comments describing the study.

   > **NOTE:** The text that appears in this field by default can be customized. See Creating a Study Notes Template.

4. When you have finished entering study details, click **Close** button ✖ .

   The information is automatically saved.

Study Details Window

Rendr
Acquisition
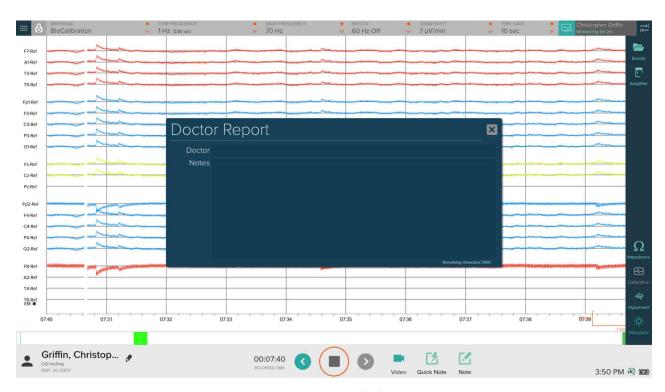
Adding a Doctor Report

A doctor report can be added at any time before the study has been finalized and submitted. A physician can use this feature to add notes regarding the study.

To add a doctor report

1. Click **Menu** button ☰ on the top left.

2. On the flyout menu, click **Doctor Report** button 📄 .

3. In the popup window, enter information as desired:

   • **Doctor:** Enter the physician's name.

   • **Notes:** Enter the comments for the report.

4. When you have finished entering information, click **Close** button ✕ .

   The report is automatically saved.

Doctor Report Window

**Rendr
Acquisition**

Viewing Amplifier Information

You can view identification and status information about the amplifier in use during a study. For example, you can check the remaining battery life and memory space for the bluetooth amplifier.

To view amplifier information

1. Click **Menu** [icon] button on the top right.

2. On the flyout menu, click **Amplifier** button [icon] .

   The Amplifier Details flyout window appears.

3. To close the window, click **Right Arrow** button [icon] .

Study Screen—Amplifier Details
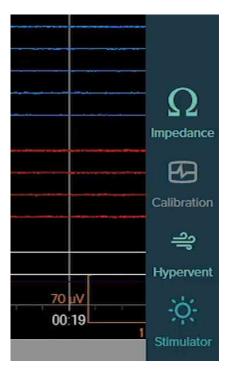
Running a Calibration Test

You can run a calibration test to confirm that the Rendr Acquisition software is recording signals correctly.

> **NOTE:** To customize the amplitude and frequency for the calibration waveform, see Customizing Calibration Settings.

To run a calibration test

1. If using the Tracking M EEG System, make sure that the patient cable is disconnected.

2. Click the **Menu** button [icon] on the top right.

3. On the flyout menu, click the **Calibration** [icon] button.

   Calibration mode starts.

4. In calibration mode, observe the graph and make sure that the signals go to a vertical line and back synchronously, indicating that the graph is calibrated appropriately. If not, contact technical support.

5. When the calibration test is complete, click **Calibration** button [icon] .

6. To close the flyout window, click **Right Arrow** button [icon] .

Study Screen—Calibration

Rendr
Acquisition

Viewing FFT Data

Fast Fourier Transform (FFT) is a way to view the frequencies in a given signal. You can view FFT data to determine the types of waves (beta, alpha, and so forth) present in a signal or whether there is noise in the room. The example shown on the graph below demonstrates noise in the 60 Hz range.

To view FFT data

1. Navigate to and click a channel measurement on the graph or in the Event List.

> **NOTE:** To add a channel measurement, see *Adding Channel Measurements*.

2. On the popup or drop-down menu, click **F** button ⬛F.

   The Fast Fourier Transform window appears showing the FFT data for the selected measurement.

> **NOTE:** You can edit the Min X and Max X fields to change the frequency range displayed on the horizontal axis.
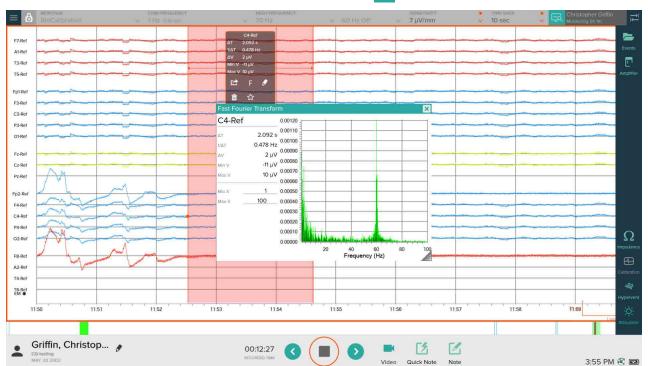
3. To adjust the start or end of the event being measured, drag the edge of the bar representing the event.

   The Fast Fourier Transform window stays open and updates to show the FFT data for the selected measurement.

4. To view the FFT data for another measurement, select the measurement.

   The Fast Fourier Transform window stays open and updates to show the FFT data for the selected measurement.

5. To close the Fast Fourier Transform window, click **Close** button ❎ on the upper right.

Fast Fourier Transform Window

**Rendr
Acquisition**

Creating a Sync Package

If you recorded a Long Term Monitoring (LTM) study, you can create a Sync Package, which combines the data recorded on the amplifier's onboard SD or CF card with the video recorded on the computer and other files needed to complete the study. Then you can upload this package to Rendr Portal for review and storage.

This feature is useful when the patient may have moved in and out of the computer's Bluetooth range during the study, resulting in gaps in the data recorded on the computer (and uploaded to Rendr Portal during the study). In this case, the complete data can be retrieved from the amplifier's onboard SD or CF card.

The process of creating and uploading a Sync Package entails the following tasks:

- **Task 1:** Retrieve the study data from the amplifier's memory card using Rendr Acquisition.
- **Task 2:** Create the Sync Package using Rendr Acquisition.
- **Task 3:** Upload the Sync Package using Rendr Portal.

Instructions for Tasks 1 and 2 provided below. For instructions for Task 3, see *Rendr Portal Software Manual* (v0003).

To retrieve study data from an amplifier

1. After completing an LTM study, click **Menu** button ☰ on the top left.

2. On the flyout menu, click **Amplifier EEG Data** button ▯ .

   > **NOTE:** Icon with yellow exclamation point indicates that the study data has not yet been retrieved from the amplifier.
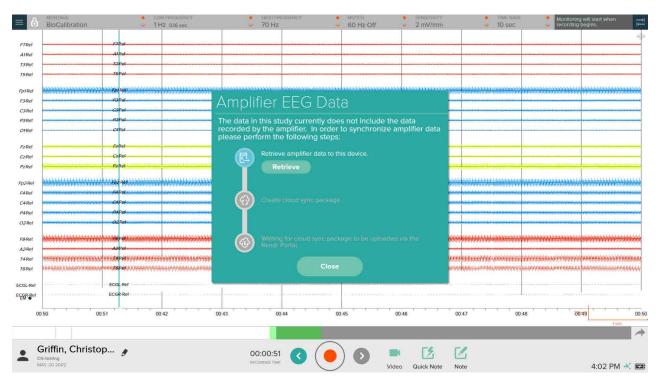
3. Eject the memory card from the amplifier.

4. Insert the memory card into the memory card reader connected to the computer.

5. On the popup Amplifier EEG Data window, click **Retrieve** button ⬭ Retrieve .
   The Retrieve Amplifier EEG Data popup window appears.

6. In the popup window, click **Folder** button 🗁 and browse to the drive/folder where the data is located, such as the drive for the memory card reader. Then click the **Retrieve** button.

   The .BDF file containing the EEG data and the .TEV file containing the Track-It event information are copied to the computer. Now the files are ready for creating the Sync Package.

Rendr
Acquisition
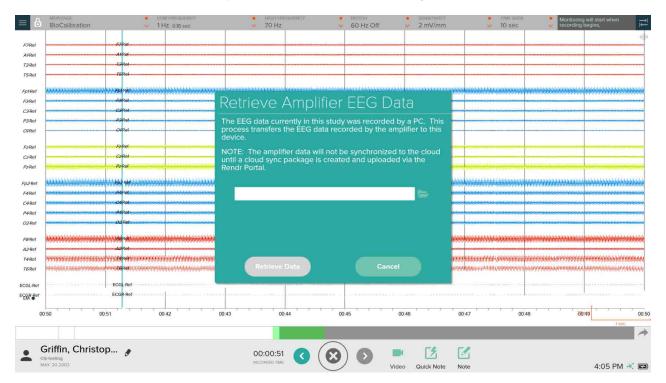
Amplifier EEG Data Window—Retrieving Data

Retrieve Amplifier EEG Data Window

**Rendr
Acquisition**

To create a Sync Package
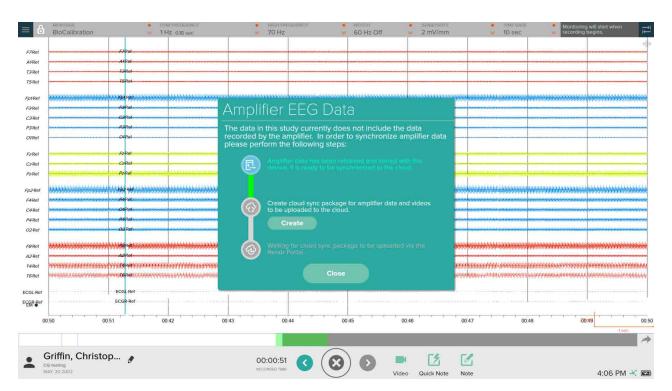
1. On the Amplifier EEG Data window, click **Create** button Create .

    The Create Sync Package popup window appears.

2. In the popup window, click **Folder** 📁 button and browse to the drive/folder on your computer where you want to store the Sync Package. Then click **Create Package** button Create Package .

    The retrieved data files, video file, and validation file are combined into a sync package. The name of the folder containing the sync package includes today's date (YYYYMMDD), your initials (last name, first name), and three random characters to uniquely identify the folder.

3. After the sync package has been successfully created, click **Done** button Done .

    Now the sync package is ready for uploading to Rendr Portal for review and storage. For instructions, see Rendr Portal Software Manual (v0003).

    > **NOTE:** You can use File Explorer to copy the sync package folder to another location, such as another folder on the computer, a USB drive for transport, or a network location.
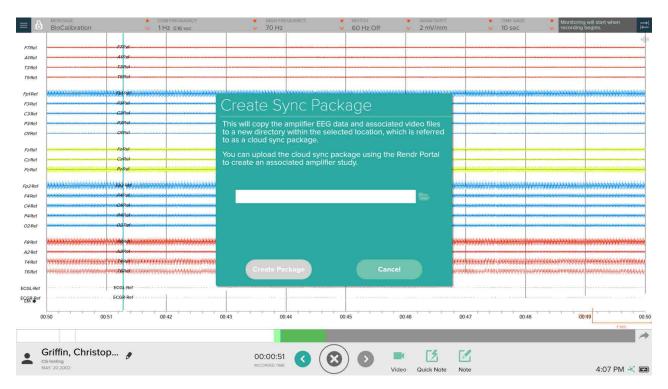
Amplifier EEG Data Window—Creating a Sync Package

**Rendr
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Create Sync Package Window

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Acquisition

Exiting the Study

When you have completed a study session, you have two options for exiting the study:

- Option 1: Select **Leave** button [**Leave**] to exit the study and keep it open for appending additional recordings, adding further annotations, or reviewing before submission.

- Option 2: Select **Submit & Leave** [**Submit & Leave**] to close the study so no further changes can be made and to submit it for review and analysis. If you select this option, you are automatically prompted to share the study; this feature lets you select users at your facility to receive email with a link to the study, if required, but you do not have to share the study to Submit and Leave the study
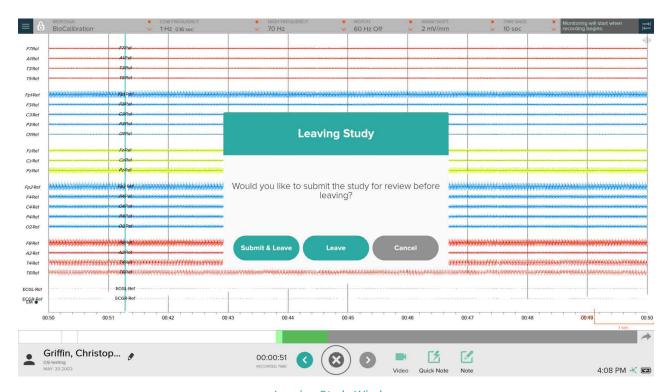
To exit the study

1. Click **Menu** [≡] button on the top left.

2. On the flyout menu, click **Exit Study** button [🏠] .

3. On the popup window, click **Submit & Leave** button [**Submit & Leave**] or **Leave** button [**Leave**] .

If you select Submit & Leave, the Submit for Review window appears.

If you select Leave, the study closes. (Skip steps 4 and 5.)

4. To share the study, click **Down Arrow** button [⌄] and select (place a checkmark next to) the desired users. Then click **Up Arrow** button [⌃] to close the list.

5. Click **Submit** button [**Submit**] to submit the study. Then click [**Ok**] on the Success window, which indicates the study was successfully submitted.

Leaving Study Window

Rendr Acquisition
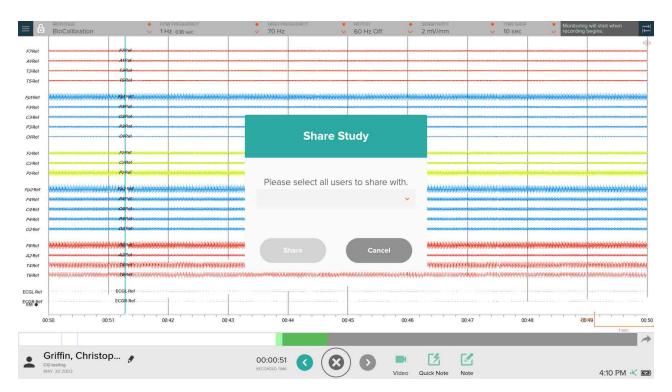
3.6   Sharing a Study

The Share Study feature lets you select users at your facility to receive email with a link to the study. This feature lets you notify physicians immediately that study results are available for review.

To share a study

1. Click **Menu** button ☰ on the top left.

2. On the flyout menu, click **Share Study** button .

3. On the popup window, click **Down Arrow** button ⌄ . Then select (place a checkmark next to) the desired users.

4. Click **Up Arrow** button ⌃ to close the list. Then click **Share** button Share .

    Email with a link to the start of the study recording is sent to the selected users.

Share Study Window

Rendr
Acquisition

3.7   Exporting / Archiving a Study

When a study has been completed, you can export the study for archiving or for review and analysis using another software application. The following file formats can be exported:

• **MMT:** Rendr Platform's proprietary file format
  This option creates a .ZIP file containing a study folder with a .BIN file and .MP4 files (if the study included video).

• **Persyst:** Format for review and analysis using the Persyst software application
  This option creates a .ZIP file containing a .LAY file, a .DAT file, and .MP4 files (if the study included video).

• **BDF:** An industry-standard file format used by various software applications
  This option creates a .ZIP file containing a .BDF file; if the study included video, it is not exported.

• **EDF+:** An industry standard file format used by various software applications.
  This option creates a ZIP file containing an .EDF file; if the study included video, it is not exported.

To export/archive a study

1. Click **Menu** button ☰ on the top left.

2. On the flyout menu, click **Export/Archive** button 🗑 .

3. Complete the fields in the popup window:

   • **Export filename:** Enter the filename and location for the export file or click **Ellipses** button **...** to access a File Explorer window for entering the filename and selecting the file location.
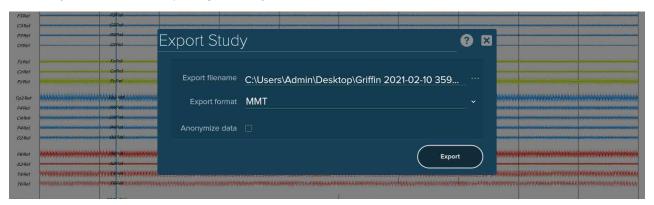
   > **NOTE:** By default, the .ZIP filename includes the patient's last name, the date and time of the recording, and "EEG Study".

   • **Export format:** Click **Down Arrow** button ⌄ and select the desired file format for the export.

   • **Anonymize data:** Place a check in this checkbox to export the data without the patient's identification information.

   In addition to removing the patient name from the default filename for the .ZIP file, this option removes protected health information, such as patient name, patient ID, and date of birth, from the exported study data.

   > **NOTE:** If the export includes .MP4 video files, you must manually delete the .MP4 files from the .ZIP file to fully anonymize the study data.

4. Click **Export** button.

5. When you have finished exporting the study, click **Close** button.

Export Study Window

**Rendr
Acquisition**

3.8   Reviewing and Updating an Existing Study

You can open an existing study to review the study. If the study is In Progress (not Pending Review) you open an existing study to complete the study. For example, you can edit patient information (see *Editing Patient Information*), enter study details (see *Entering Study Details*), or add a doctor report (see *Adding a Doctor Report*).

If you are using the Trackit M EEG System and the study is still in progress, you also can append another recording to the study.
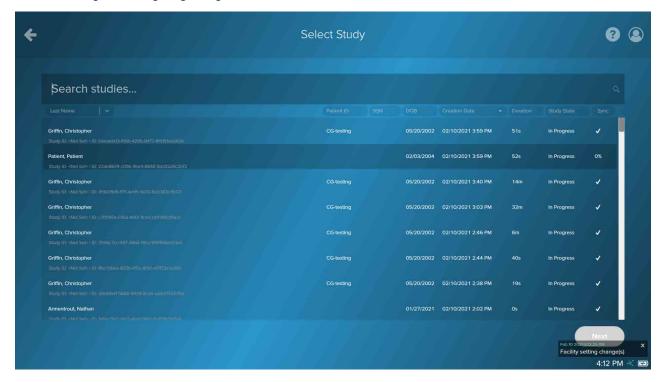
To open an existing study

1. From the Home screen, click **Open Existing Study** button

2. On the Select Study screen, you can use the Search studies field to locate the desired study. You can enter any combination of first name, middle name, last name, and patient ID, and click **Search** button   or press Enter.

    You also can sort the list using the column headings and scroll to the desired study.

3. Click the desired study and then click **Next** button   .

    The study opens showing the Study screen.

    > NOTE: The study must be In Progress (not Pending Review) in order to add data.

4. To play the study recording, click the **Play** button.

    For instructions for navigating through the study recording, see Navigating on the Graph and Using Split View and Viewing and Navigating Using the Event List.

Select Study Screen

Rendr Acquisition

To append a recording to an existing study

> **NOTE:** The study must be In Progress (not Pending Review) and you must be using the Trackit M EEG System as the amplifier to append a recording.

1. On the top right of the Study screen, click the **Menu** button .

2. On the flyout menu, click the **Amplifier** button .

   The Amplifier Details flyout window appears.

3. Confirm that the amplifier is connected.

   > **NOTE:** To reconnect Rendr Acquisition to the amplifier if it is no longer connected, click the **Connect** button
   >
   > **Connect** .

4. To start the recording, click **Start Recording** button .

   > **NOTE:** While a recording is in progress, the elapsed time appears at the bottom of the Study screen.

   When appending a recording to a study, you can use any of the features normally available when recording a study (see Recording a Study).

5. When you have finished recording, click **Stop Recording** button. Then click **Yes** to confirm.

   The new recording is automatically appended to the study. The Event List includes events indicating when study recordings were started and stopped.

   > **NOTE:** When reviewing the study on Rendr Portal, the study timeline shows the date and times for each recording for the study.

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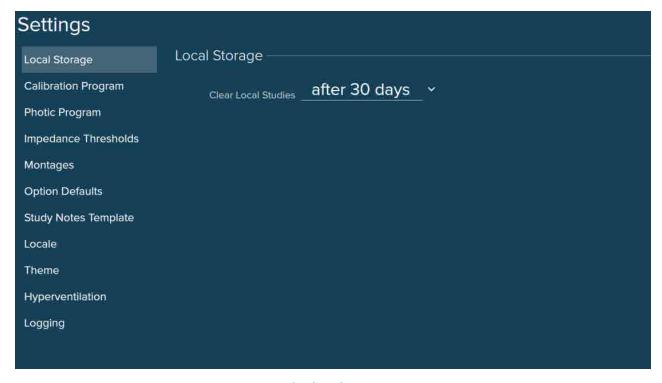
4   Configuring Settings

You can configure settings to customize the Rendr Acquisition software for your facility. You can:

• Change the duration for local storage of studies *(see page 59)*

• Customize calibration settings *(see page 60)*

• Customize photic stimulator program settings *(see page 61)*

• Customize impedance thresholds *(see page 63)*

• Customize montages *(see page 64)*

• Change default settings for Study screen options *(see page 67)*

• Create or update the study notes template *(see page 69)*

• Change the language for the Rendr Acquisition software *(see page 70)*

• Customize themes for the Study screen *(see page 71)*

• Customize settings for hyperventilation sessions *(see page 72)*

• Enable advanced logging *(see page 73)*

Settings Screen

**Rendr
Acquisition**
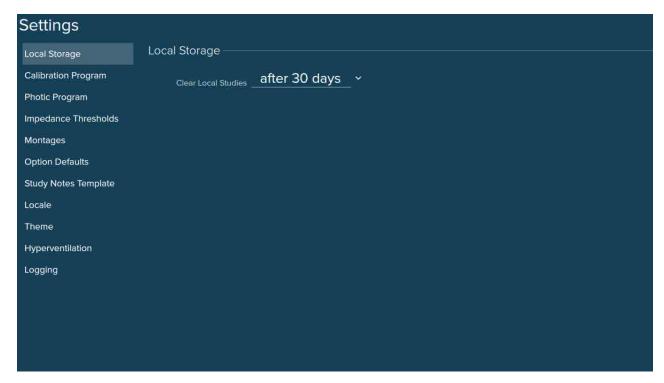
4.1   Changing the Duration for Local Storage of Studies

You can change the number of days that studies are retained on the computer running the Rendr Acquisition software before they are automatically deleted. This setting does not affect storage of studies in Rendr Portal.

To change the local storage setting

1. On most screens, click **Settings** button   on the top right.

    On the Study screen, click **Menu** button   on the top left and then click **Settings** button   .

2. On the Settings screen, click **Local Storage** button (see below).

3. In the **Clear Local Studies** field, select the number of days after which studies should be automatically deleted from the computer.

Settings	
Local Storage	Local Storage
Calibration Program	Clear Local Studies after 30 days ˅
Photic Program	
Impedance Thresholds	
Montages	
Option Defaults	
Study Notes Template	
Locale	
Theme	
Hyperventilation	
Logging	

Settings Screen – Local Storage

Rendr
Acquisition

4.2   Customizing Calibration Settings

You can customize the settings for the calibration program used to ensure that the Rendr Acquisition software is recording signals correctly.

To customize calibration settings

1. On most screens, click **Settings** button [⚙] on the top right.

    On the Study screen, click **Menu** button [≡] on the top left and then click **Settings** button [⚙] .

2. On the Settings screen, click **Calibration Program** button.

3. Adjust the settings as desired:

    *   Amplitude: Select the amplitude for the calibration waveform.

    *   Frequency: Select the frequency for the calibration waveform.

Settings Screen—Calibration Program
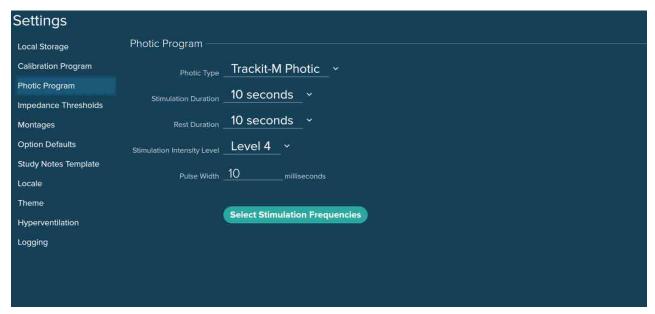
Rendr
Acquisition

4.3 Customizing Photic Stimulator Program Settings

Rendr Acquisition supports the Trackit-M Photic Stimulator and the Lifelines Photic Stimulator. You can customize the settings for the program used to run each type of stimulator.

To customize settings for a photic stimulator program

1. On most screens, click **Settings** button ⚙ on the top right.

   On the Study screen, click **Menu** button ☰ on the top left and then click **Settings** button ⚙ .

2. On the Settings screen, click **Photic Program** button.

Settings Screen—Trackit-M Photic Program

3. In the **Photic Type** field, select the photic stimulator program you want to customize.

4. Adjust the settings as desired:

- **Stimulation Duration:** Select the duration for how long the light pulses during stimulation.

- **Rest Duration:** Select the length for the rest period between pulses.

- **Stimulation Intensity Level:** Select the brightness of the photic stimulator light (where 1 is the dimmest and 10 is the brightest).

- **Pulse Width:** Enter the duration for each photic stimulation pulse in milliseconds.

- **Auto Pulse Width:** Place a check in this checkbox to use the photic stimulator's automatic pulse width feature instead of entering a pulse width.

   > **NOTE:** The Auto Pulse Width option is available only for the Lifelines Photic Stimulator.

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- **Program Frequencies:** Click **Select Stimulation Frequencies** button [Select Stimulation Frequencies].
  On the Photic Program Frequencies screen, click the stimulation frequencies to be used by the photic stimulator
  and then click the **Back arrow** button [←] .

> **NOTE:** To clear all selections, click **Clear Frequencies** button [Clear Frequencies] .

Photic 5 Frequencies Screen

Rendr Acquisition

4.4   Customizing Impedance Thresholds

You can customize the thresholds that determine the color displayed for impedance values on the summary and detailed Impedance screens.

To customize the impedance thresholds

1. On most screens, click **Settings** button on the top right.

    On the Study screen, click **Menu** button on the top left and then click **Settings** button.

2. On the Settings screen, click **Impedance Thresholds** button.

3. Adjust the settings as desired:

    - Lower: Impedances less than or equal to this value will be shown as green.

    - Upper: Impedances between the Lower value and this value will be shown as yellow, and impedances greater than or equal to this value will be shown as red.

Settings Screen—Impedance Thresholds

Rendr Acquisition

4.5   Customizing Montages

Montages are views showing the arrangements of channels (electrode pairs, with waveforms representing the potential difference between two electrodes) that display EEG activity over the scalp. Montages are used to read the EEG, allowing comparison of activity on the two sides of the brain and helping localize activity to a specific region of the brain.

You can add, edit, and delete montages for your facility. Then these montages are available when recording or viewing a study using the Study screen. Montages created and edited using Rendr Acquisition are synchronized with Rendr Portal and then in turn with all acquisition devices for your facility.

Rendr Acquisition provides a standard set of montages, which can be used as provided or copied and customized. The Montage feature currently supports only standard International 10-20 (A1+A2) System nomenclature. Laplacian montages are not currently provided.
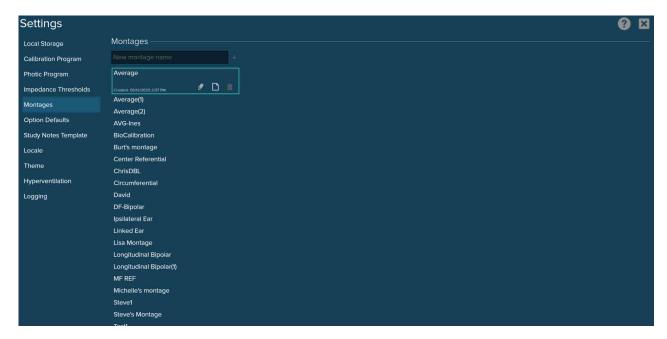
NOTE: Montages cannot be added, edited, or deleted while a study is in progress.

To add a montage

1. On most screens, click **Settings** button ⚙ on the top right.

2. On the Settings screen, click **Montages** button.

3. To create a totally new montage, enter the name of the montage in the New montage name field and click the **Plus** button ✚ or press **Enter**.

    To create a new montage based on an existing montage, click the montage to be copied and click the **Copy** button ▢ .

    Now you can edit the montage to add and update electrode channels.

Settings Screen—Montages

Rendr Acquisition

To edit a montage

> **NOTE:** The standard montages, such as the Average and Circumferential montages, provided with the Rendr Acquisition software cannot be edited.

1. On most screens, click **Settings** button ⚙ on the top right.

2. On the Settings screen, click **Montages** button.

3. Click the montage to be edited and click **Edit** 🖊 button.

Montage Editor Screen

4. Edit the montage as desired:

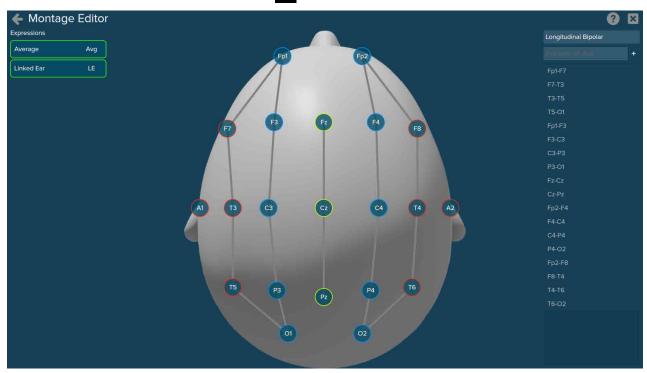> **NOTE:** As electrode channels are added, edited, and deleted, the head image updates to show the changes.

- To rename the montage, edit the name displayed above the electrode configurations list.

> **NOTE:** You can copy and rename a default montage if you or your facility uses one of the default montages with a different name.

- To add an electrode channel, enter the configuration in the **Example: A1-Avg** field and click **Plus** ➕ button.

> **NOTE:** Use "Avg" to reference an electrode to the average for all of the electrodes and "LE" to reference an electrode to the linked ear.

- To move an electrode channel up or down in the list, click the channel and click **Up Arrow** ⌃ or **Down Arrow** ⌄ or click and drag the channel to the desired location.

> **NOTE:** The order of traces on the study graph is determined by the order of electrode channels in the list.

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- To insert a spacer between electrode channels (so space appears between the corresponding traces on the study graph), leave the **Example: A1-Avg** field blank and click **Plus** ➕ button. Then click and drag the spacer to the desired location in the list.

- To delete an electrode channel or spacer, click the channel or spacer and then click **Delete** 🗑 button.

5. When you have finished editing the montage, click **Back Arrow** button ← to return to the Settings screen.

To delete a montage

> **NOTE:** The standard montages, such as the Average and Circumferential montages, provided with the Rendr Acquisition software cannot be deleted.

1. On most screens, click **Settings** button ⚙ on the top right.

2. On the Settings screen, click **Montages** button.

3. Click the montage to be deleted and click **Delete** 🗑 button. Then click **Remove** button ⬭Remove⬭ to confirm.
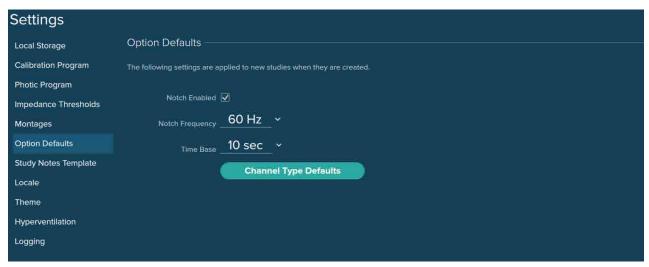
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4.6   Changing Default Settings for Study Screen Options

You can change the default settings for the notch filter and time base for the Study screen. You also can change the default value for the high and low frequencies and sensitivity for standard channel types. These settings are automatically applied to new studies.

To change default settings for the notch filter and time base

1. On most screens, click **Settings** button ⚙ on the top right.

   On the Study screen, click **Menu** button ☰ on the top left and then click **Settings** button ⚙ .

2. On the Settings screen, click **Option Defaults** button.

Settings Screen—Option Defaults

3. Adjust the settings as desired:

   • Notch Enabled: Place a check in the checkbox to automatically enable the notch filter, which eliminates noise at the selected frequency. Remove the check to disable the notch filter.

   • Notch Frequency: Select the default frequency for the notch filter.

   • Time Base: Select the number of seconds shown on the Study screen at one time.

4. To change the default settings for one or more channel types, click **Channel Type Defaults** button. On the Channel Type Default Value screen, adjust the settings as desired:

   • Low Frequency: Select the lower limit for frequencies to be filtered out of the graph for the channel type.

   • High Frequency: Select the upper limit for frequencies to be filtered out of the graph for the channel type.

   • Sensitivity: The ratio of input voltage to deflection.

   > **NOTE:** The selected settings for a channel type serve as the default values for any electrodes assigned to that channel type.

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5. When you have finished editing channel type defaults, click ← to return to the Settings screen.

	Low Frequency	High Frequency	Sensitivity
Chin	1 Hz 0.16 sec	70 Hz	7 µV/mm
EEG	1 Hz 0.16 sec	70 Hz	7 µV/mm
EKG	0.05 Hz 3 sec	50 Hz	50 µV/mm
EMG	5 Hz 0.032 sec	70 Hz	10 µV/mm
EOG	0.5 Hz 0.3 sec	35 Hz	7 µV/mm
Nasal Pressure	0.08 Hz 2 sec	100 Hz	7 µV/mm
Photic	39.8 Hz 0.004 sec	200 Hz	1 µV/mm
Respiratory	0.2 Hz 1 sec	35 Hz	100 µV/mm
Snore	10 Hz 0.016 sec	70 Hz	20 µV/mm
Thermister	0.08 Hz 2 sec	15 Hz	100 µV/mm

Channel Type Default Values Screen
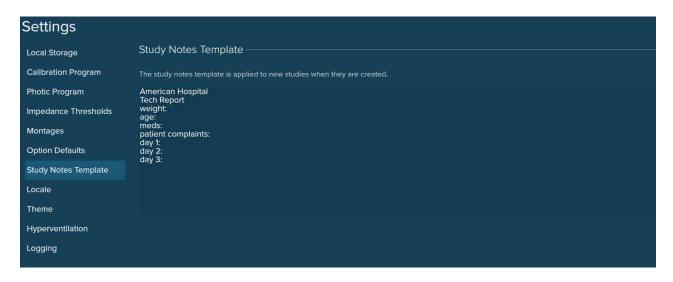
**Rendr
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4.7   Creating a Study Notes Template

You can create or update a template to be used for adding study notes for the studies protocol by your facility. Study notes are comments describing the study that can be viewed by physicians reviewing the study. The text entered in the study notes template appears by default in each set of study notes; you can edit this text if desired when adding study notes for a particular study.

To create or edit the study notes template

1. On most screens, click **Settings** button 🔧 on the top right.

    On the Study screen, click **Menu** button ☰ on the top left and then click **Settings** button 🔧 .

2. On the Settings screen, click **Study Notes Template** button.

3. Update the default text for study notes as desired.

Settings Screen—Study Notes Template

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4.8   Changing the Language

You can change the language for the Rendr Acquisition software.

To change the language setting

1. On most screens, click **Settings** button ⚙ on the top right.

    On the Study screen, click **Menu** button ☰ on the top left and then click **Settings** button ⚙ .

2. On the Settings screen, click **Locale** button.

3. Select the desired Language from the drop-down list.

4. Exit and restart the Rendr Acquisition software.

    The software will restart in the selected language.

Settings

Local Storage
Calibration Program
Photic Program
Impedance Thresholds
Montages
Option Defaults
Study Notes Template
Locale
Theme
Hyperventilation
Logging

Locale

Language   English (en-us)   ⌄

Settings Screen—Locale
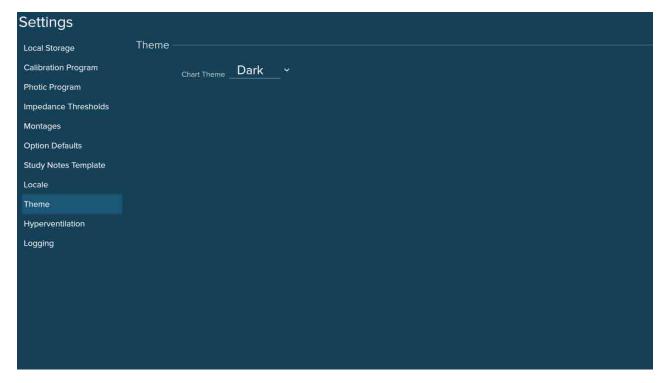
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4.9   Changing the Default Theme for the Study Screen

You can change the default theme used for display of the Study screen.

> **NOTE:** You also can add, edit, and delete themes (other than the default themes) for your facility from the Study screen. See Customizing Themes.

To change the default theme for the Study screen

1. On most screens, click **Settings** button ⚙ on the top right.

    On the Study screen, click **Menu** button ≡ on the top left and then click **Settings** button ⚙ .

3. Select the desired Chart Theme from the drop-down list:

    •   **Dark:** The Study screen shows trace lines on a black background.

    •   **Light:** The Study screen shows trace lines on a white background.

    •   Any custom themes saved for your facility.

Settings Screen—Theme

**Rendr
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4.10 Customizing Hyperventilation Settings

You can adjust the settings for hyperventilation sessions.

To customize hyperventilation settings

1. On most screens, click **Settings** button ⚙ on the top right.

   On the Study screen, click **Menu** button ≡ on the top left and then click **Settings** button ⚙ .

2. On the Settings screen, click **Hyperventilation** button.

3. Adjust the settings as desired:

   • Hypervent Duration: Enter the length for the hyperventilation period in minutes (from 1 to 10 minutes, including up to two decimal places if desired).

   • Rest Duration: Enter the length for the rest period in minutes (from 1 to 10 minutes, including up to two decimal places if desired).

Settings Screen—Hyperventilation

Rendr
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4.11   Enabling Advanced Logging

You can enable advanced logging to collect detailed information in a log file to be used by technical support personnel for troubleshooting purposes.

To enable or disable advanced logging

1. On most screens, click **Settings** button ⚙ on the top right.

   On the Study screen, click **Menu** button ☰ on the top left and then click **Settings** button ⚙ .

2. On the Settings screen, click **Logging** button.

3. To enable Advanced Logging, place a check in the checkbox. Remove the check to disable.

Settings Screen—Logging

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