NuEye®

User's Guide

PRC
Prentke Romich Company

Acknowledgements

16440v2.0 · 01/05/2018

Electronic Interference Information

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

Warning! Changes or modifications to this product which are not expressly approved by Prentke Romich Company could exceed FCC limits and negate your authority to use this product.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. You can determine whether this product is causing interference in your radio or television by turning this product off. If the interference stops, it was probably caused by this product or one of its accessories. You can attempt to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move this product to one side or the other of the television or radio.
- Move this product farther away from the television or radio.
- Plug this product into an outlet that is on a different circuit from the television or radio.
- If necessary, contact a Prentke Romich Company service technician for assistance.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respect toutes les exigences du Règlement sur le matériel brouiller du Canada.

NuEye (RED-oem)

The RED-oem (NuEye) fulfills the following regulatory directives and standards which are relevant for CE.

Directives: 2004/108/EEC; 2006/95/EEC; 93/68/EWG; and Standards: EN 61010-1:2002; EN 61000-3:2007; EN 62471:2009-03; EN 60825-1

⚠ Warnings

This system is not intended to be an emergency call device or sole communication aid.

When operating this system in a medical environment, do not use it with any product that is not medically approved. Follow all rules for appropriate cell phone and wireless device use.

Any mounts used should be fitted by a qualified person. Failure to install the mounting system according to the manufacturer's instructions may result in an injury to the user. Be certain that the user's view is not obstructed by the mounting.

Implantable Medical Devices

A minimum of six (6) inches should be maintained between a handheld wireless mobile device and an implantable medical device, such as a pacemaker, implantable cardioverter defibrillator, vagus nerve stimulator, shunt, or stent, to avoid potential magnetic interference with the device.

Persons who have such devices:

- Should ALWAYS keep the mobile device a minimum of six (6) inches from their implantable medical device;
- Should not carry the mobile device in a breast pocket;
- Should move the mobile device away from themselves immediately if there is any reason to suspect that it is interfering with the implantable medical device;
- Should read and follow the directions from the manufacturer of the implantable medical device. If you have any questions about using your wireless mobile device with an implantable medical device, ***consult your health care provider***.

Infrared (IR) Emissions

Your NuEye system uses infrared technology. Certain medical devices are susceptible to disturbance by IR emissions. Do not use the NuEye system when in the vicinity of such susceptible medical devices. If you have questions about the susceptibility of a medical device, ***consult the manufacturer of the medical device or your health care provider***.

Infrared Sensitivity

Some people may have epileptic seizures triggered by light flashes or patterns. This may occur while presented successive pictures or video material, even if they have never had a seizure before. Observe the individual using the system. Move the person away from the system immediately and consult a physician if the individual shows the following or similar symptoms: involuntary movements, disorientation, convulsions, loss of awareness, or altered vision.

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Contents

For additional information:

Videos that show step-by-step how to get started with NuEye are available from the following link:

https://www.youtube.com/user/PRCaccess

Important Safety Guidelines

Please read the safety information below before installing and using your NuEye® system.

⚠ This device is not intended to be an emergency call device or sole communication aid.

⚠ Keep in mind that while installing the NuEye module, loose screws can be a choking hazard.

⚠ When operating this system in a medical environment, do not use it with any product that is not medically approved. Follow all rules for appropriate cell phone and wireless device use.

⚠ Any mounts used should be fitted by a qualified person. Failure to install the mounting system according to the manufacturer's instructions may result in an injury to the user. Be certain that the user's view is not obstructed by the mounting.

⚠ If you have an implantable medical device such as a pacemaker, implantable cardioverter defibrillator, vagus nerve stimulator, shunt, or stent, do the following to avoid potential magnetic interference with the medical device.

- ***Always*** keep the system a minimum of six (6) inches from your implantable medical device;
- Move the system away from yourself immediately if there is any reason to suspect that it is interfering with the implantable medical device;
- Read and follow the directions from the manufacturer of the implantable medical device. If you have any questions about using your system with an implantable medical device, ***consult your health care provider***.

⚠ Some people may have epileptic seizures triggered by light flashes or patterns. This may occur while presented successive pictures or video material, even if they have never had a seizure before. Observe the individual using the system. Move the person away from the system immediately and consult a physician if the individual shows the following or similar symptoms: involuntary movements, disorientation, convulsions, loss of awareness, or altered vision.

⚠ If you have questions about the susceptibility of a medical device to the infrared technology that is part of your eyegaze system, ***consult the manufacturer of the medical device or your health care provider***.

⚠ Do not use the system in an environment in which explosive or flammable gases could be present.

Introducing Your NuEye System

NuEye is an eyegaze system that provides hands-free, switch-free access to an Accent® device, allowing the user to select keys by gazing for a specified period of time to generate speech. NuEye is compatible with the Accent 1400, Accent 1000 models, and the Accent 1200.

Mounting Your Accent Device and NuEye Module

Mount your Accent device (with the NuEye module attached) to a wheelchair mount or table stand. If the NuEye module did not come already attached to your device, you must attach it before you can start using eyegaze.

- For instructions on attaching a NuEye module to an Accent 1000 device with a serial number 5000AC10 or higher, see Appendix A on page 32.
- For instructions on attaching a NuEye module to an Accent 1000 device with a serial number between 499AC10 and 4999AC10, see Appendix B on page 34.
- For instructions on attaching NuEye to an Accent 1400 device, see Appendix C on page 37.
- For instructions on attaching NuEye to an Accent 1200 device, see Appendix D on page 38.

Additional Considerations

If you are using your Accent for the *first time*, plug in the battery charger.

When your Accent with the NuEye module attached is mounted on a wheelchair or a table stand and the Accent is charged, you are ready to start NuEye, position the user, calibrate NuEye, and configure a selection method.

Recommendation

While the user is getting used to the NuEye system, take frequent breaks to rest the user's eyes and relax his or her concentration.

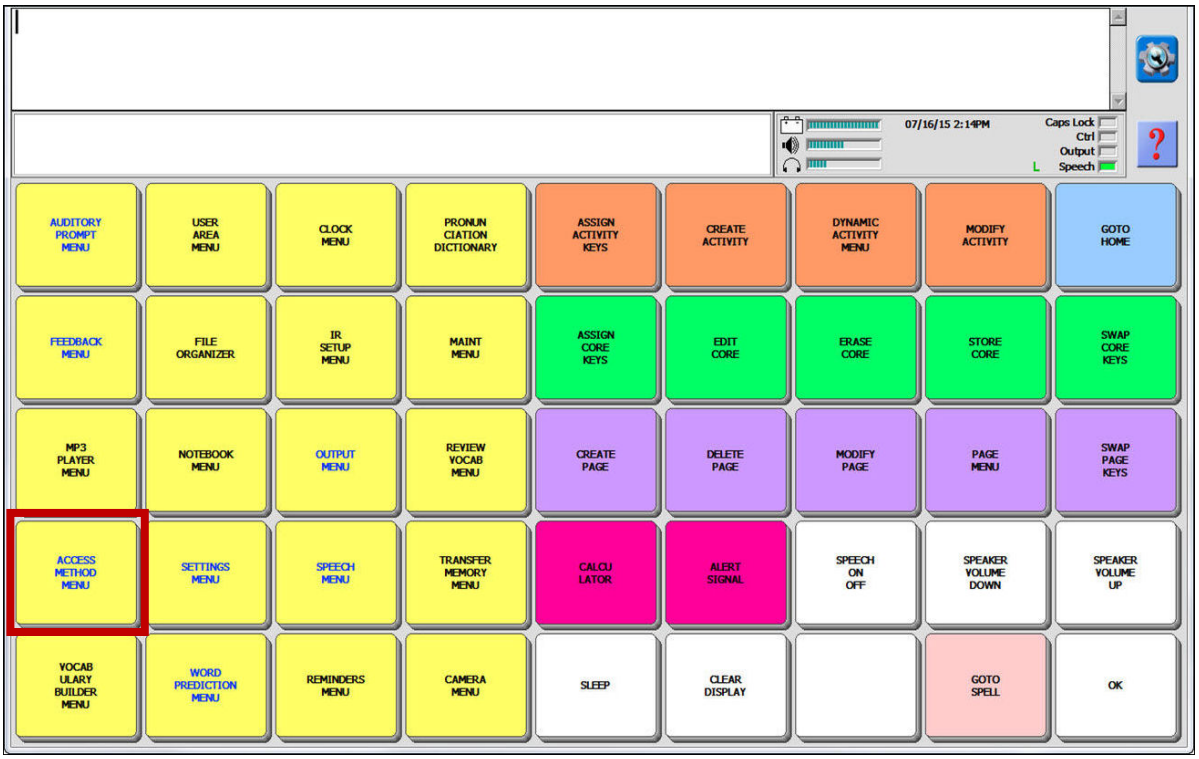
Starting NuEye

Note: Typically, a communication partner helps during the setup process. While selecting menu options the communication partner can touch the keys with a finger.

1. Turn on the Accent device by pressing the power button on the top edge of the device.

2. Select the **Tools** key  to the right of the text display area. The Tools menu will slide out from the left side of the screen.

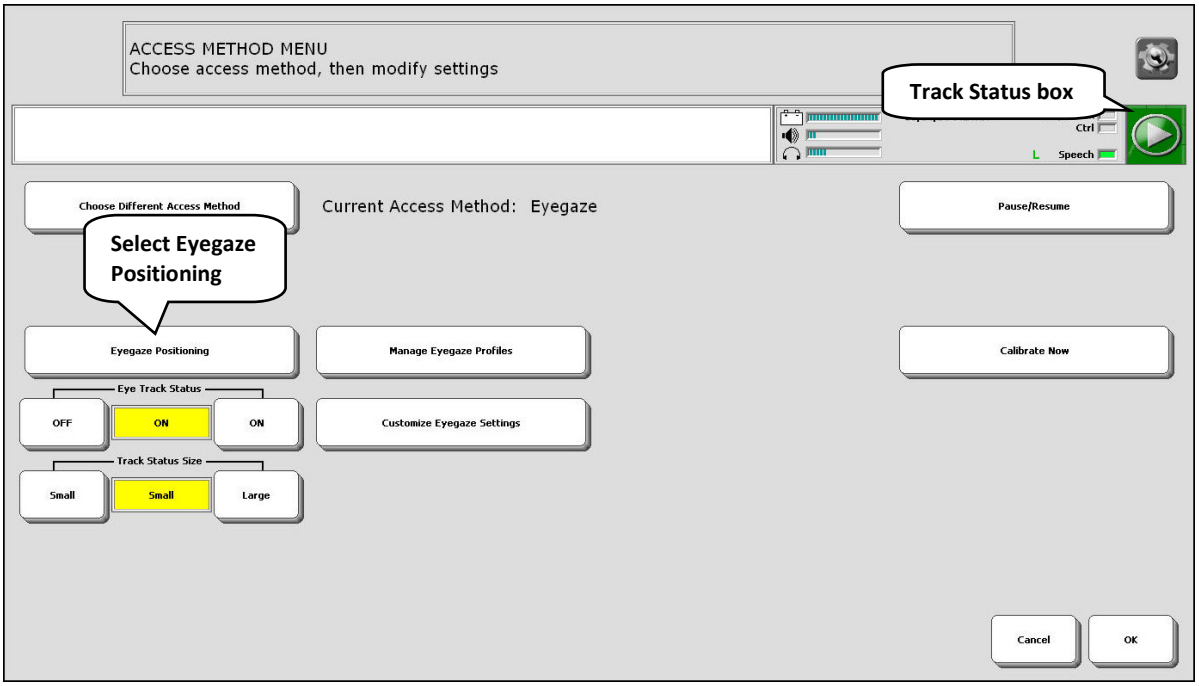
3. Select the **Toolbox** key  from the Tools menu. The Toolbox will open.



4. From the Toolbox select **Access Method Menu**. The Access Method Menu will open.

5. Select **Choose Different Access Method** and then **Eyegaze**.

“Current Access Method: Eyegaze” will be displayed to the right of the Choose Different Access Method key and the Track Status box will be displayed in the Status area.



When the Track Status box is **green**, NuEye is active. When the Track Status box is **red**, NuEye is paused. To change the status, simply select the Track Status box to change the color.

Note: During setup, it is best to pause NuEye until you are ready to calibrate.

Positioning the User and NuEye

With NuEye paused, you are now ready to position the user and the NuEye module.

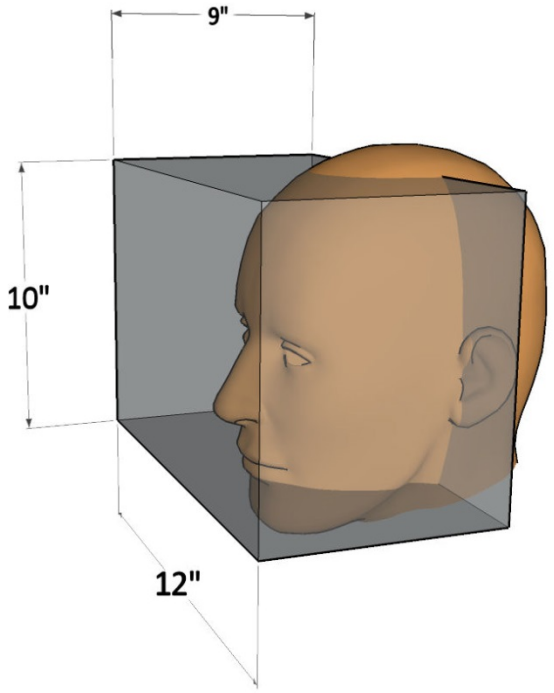
About Positioning Your Device

The positioning of the eyegaze system in relation to the user is extremely important. The goal of positioning is to achieve a stable eye image for NuEye to track. Because of this, you will probably need to try out different positions.

Appendix E on page 41 contains images of correct and incorrect positioning. You may find these images helpful as you set up the NuEye system.

NuEye System Parameters

The NuEye has an imaginary "eye box" that measures approximately **10" x 12" x 9".** As long as the user's eyes are within this area, they are in the view range of the NuEye system. At this time the user should be positioned between **20 and 24** inches from the Accent screen. If the user moves in and out of the view area, the system will "remember" him or her. This means that once you set up the system you should not have to recalibrate it because of the user's body movement.



Imaginary Eye Box (or Gazing Area)

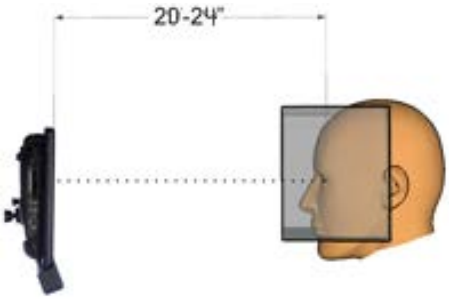
Positioning Guidelines

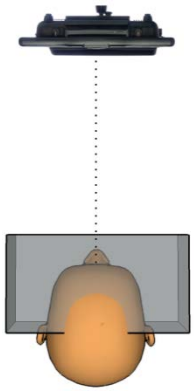
Being able to meet these positioning guidelines will help you achieve success with the NuEye system.

One eye (preferably two) must be within the imaginary eye box.

The user should be approximately 20 to 24 inches from the Accent device's screen.

The user's nose should be aimed at the midpoint or upper two-thirds of the screen.





The user's face should be parallel to the screen. If the user is tilted due to positioning or posture, the Accent device should be tilted at a similar angle.

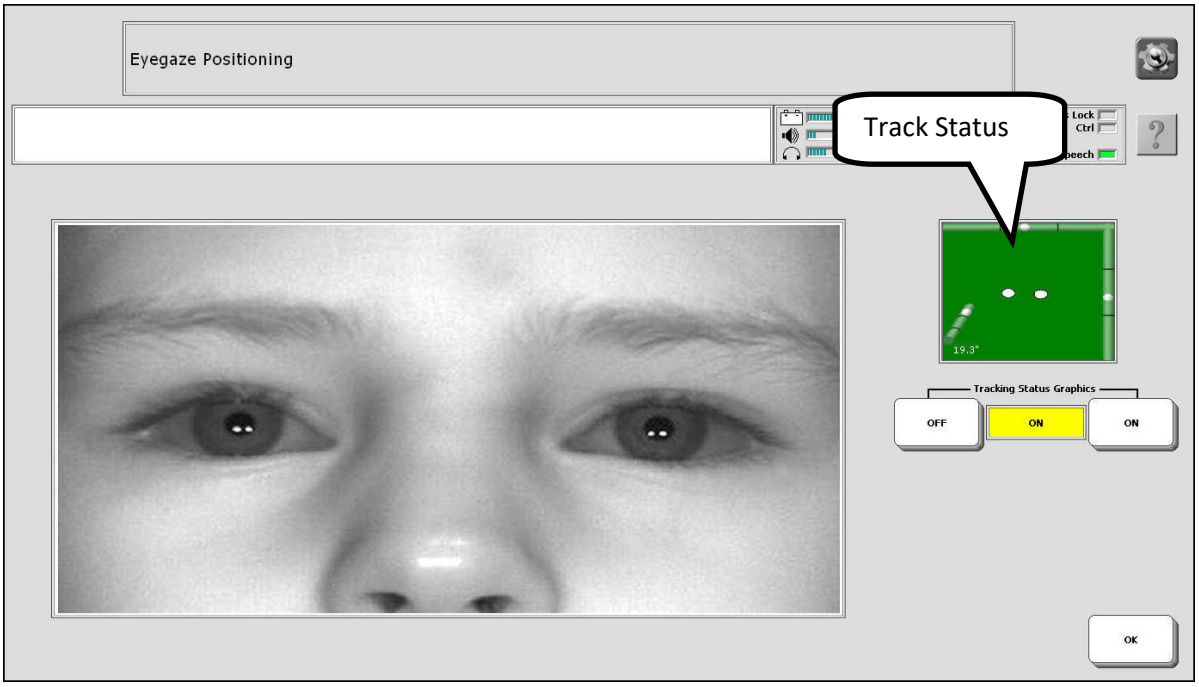
There should be no obstructions between the user's face and the Accent device and NuEye.

Adjusting Positioning

The Eyegaze Positioning screen displays the position of the eyes so that the device can be positioned correctly. Appendix E on page 41 contains images of correct and incorrect positioning. You may find these images helpful as you set up NuEye.

1. From the Access Method Menu, select **Eyegaze Positioning**. The screen will show what NuEye sees.

   When eyegaze is active, the Track Status box to the right of the image is green. To pause eyegaze, touch the Track Status box. The box turns red. To resume using eyegaze, touch the box again.



   The Tracking Status Graphics setting turns the Track Status box graphics on and off. When Tracking Status Graphics is turned on, two small white ovals show the positioning of the user's eyes and positioning dots appear on the outer edges of the Track Status box to indicate correct or incorrect positioning. These dots assist in correcting the positioning. When Tracking Status Graphics is turned off, only the two small ovals appear.

   For details on using the Track Status box, see "Using the Track Status Box" on page 13.

   In addition, three crosses appear over the user's eyes. These three crosses are reflections from the IR sensor of the NuEye module:

   - The white cross is the pupil center
   - The light gray cross is the left glint marker
   - The black cross is the right glint marker

2. When necessary, make adjustments by using either or both of the following methods:

   - Loosen and tighten the screws on the device mount to alter the position of the NuEye module until you see two solid white ovals in the Track Status box.
   - Reposition the user's head slightly until you see two solid white ovals in the Track Status box.

Goal

The goal of making these adjustments is to see both white dots (pupil markers) stable and centered as much as possible in the Track Status box.

3. When the positioning is correct, select the **OK** button in the bottom right of the display to exit the menu.

Hint

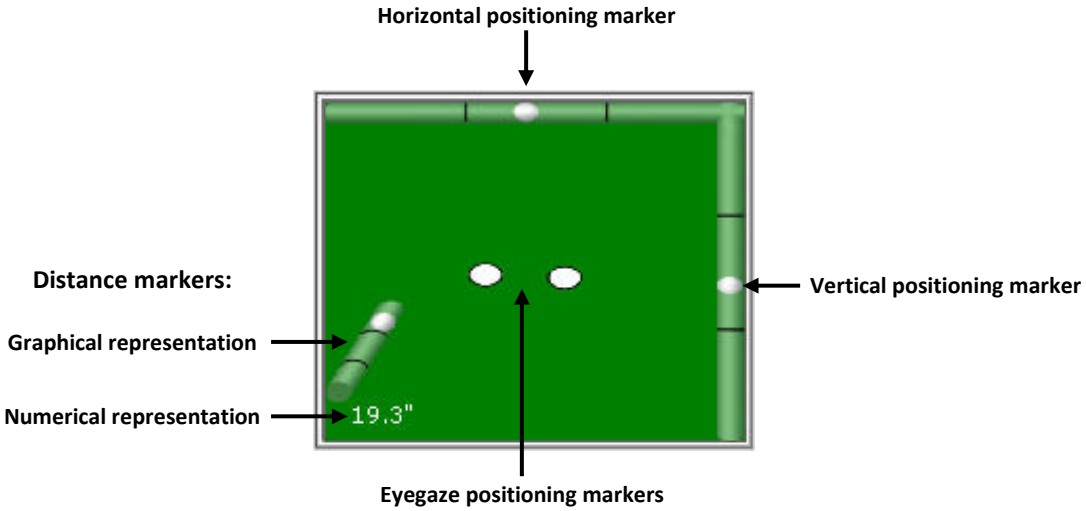
When you want to pause NuEye but still be able to make menu selections with a finger, touch the Track Status box or select the **Pause/Resume** button on the Access Method Menu. Touch the box or select **Pause/Resume** again to resume using NuEye. Touch the display to make selections.

If the User is Wearing Glasses

Initially, when positioning NuEye for a user who wears glasses, you will most likely see dots around the eyes. These indicate that NuEye is seeing only the reflections from the glasses. In this case, you must work at positioning the user and/or device until there is no glare coming from the glasses and the Track Status box shows you some feedback. When you are satisfied with the positioning, select the **OK** key in the bottom right of the display.

Using the Track Status Box

When Eye Track Status is set to **On** in the Eyegaze Access Method Menu, the Track Status box appears to the right of the status area. The Track Status box provides positioning feedback. The options below the box allow you to view more detailed feedback.



Eyegaze Positioning Markers

The two white oval eyegaze markers track the user's basic position relative to the display. When positioning is correct, the eyes are level and both markers are white. The image to the left of the box will show most of the top of the nose to the tip and a normal amount of the nostrils.

When one of the markers is white and the other is faded, the user's head is turned at an angle so that the eyes are not equidistant from the display. Reposition the user or device until both markers are white.

Horizontal and Vertical Positioning Markers

When Tracking Status Graphics is turned on: Horizontal and vertical positioning are correct when the white dots are positioned in the center of the top and right sides of the box. When the positioning is off, reposition the user or device gradually until the markers are centered on their respective sides.

When Tracking Status Graphics is turned off: The horizontal and vertical positioning markers are not visible.

Distance Markers

When Tracking Status Graphics is turned on: The Track Status box shows the distance the user's eyes are from the display. The distance is displayed in small numbers in the bottom left corner of the box and displayed graphically by a segmented bar. The distance must be between 18 and 30 inches. When the dot is positioned toward the top of the bar, the user is near the minimum distance. When the dot is positioned toward the bottom of the bar, the user is near the maximum distance. When the optimal distance is attained, the dot will be at or near the center of the bar.

When Tracking Status Graphics is turned off: The distance markers are not visible.

Calibrating NuEye

Calibration is the process by which NuEye adjusts to the eyes of the person using the system. It helps determine where the user is looking on the screen. The more precise the calibration, the smaller the target the user can look at and select.

Setting Up the Initial Calibration

This section explains how to set up an initial calibration using the default calibration settings. The next section explains how to fine-tune the calibration if the user has a difficult time working with the default calibration settings.

1. With NuEye paused, display the Toolbox and select **Access Method Menu**.
2. From the Access Method Menu, set Track Status Size to **Large** to expand the size of the Track Status box. Verify that the positioning markers are in the center of the box and stable.
3. Set Track Status Size to **Small** again and select **Calibrate Now**. A solid colored screen will appear and the user will be shown a series of five stimulus points.
4. Have the user focus on the center of each stimulus point as it appears until the next point appears automatically.
5. When the calibration of all five points is complete, “Calibration complete” will appear in a yellow box.
6. Select **OK** to close the box and select **OK** to close the Access Method Menu and return to the Toolbox.
7. Select the **Go To Home** key in the Toolbox to go to your Core or Home page and have the user begin practicing with NuEye.
8. If you need to recalibrate, pause NuEye, return to the Access Method Menu, select **Customize Eyegaze Settings**, and then select **Calibration Settings**.

Recommendation

While the user is getting used to the NuEye system, take frequent breaks to rest the user’s eyes and relax his or her concentration.

Adjusting Calibration Settings

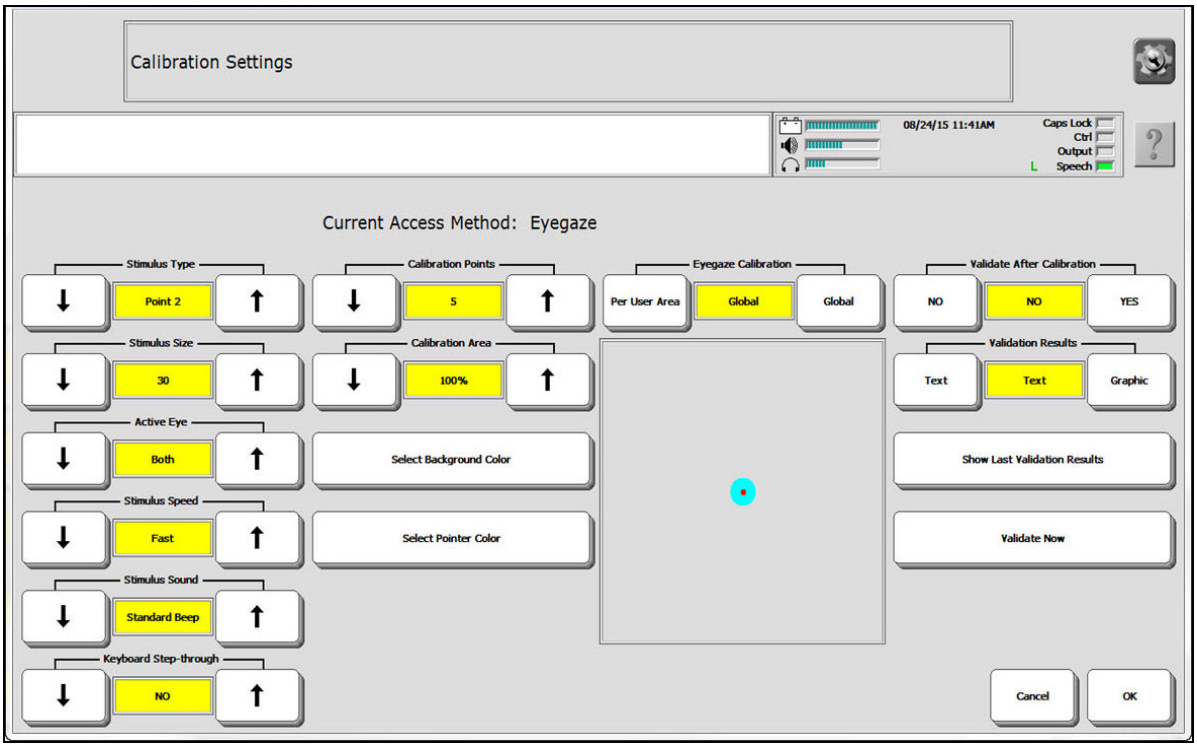
If the user has a difficult time working with the default calibration settings, you can adjust the settings.

Recommendation

When initially setting up NuEye, adjustments are commonly made to the stimulus type and number of calibration points. Children often need a more interesting picture and fewer calibration points. If visual attention is poor, try using a 0- or 1-point calibration. This is a quick and easy way to get children started and get them used to using their eyes for control.

It is best to adjust only one or two settings at a time. It may take several tries to obtain an accurate calibration. Be sure to take breaks to avoid fatiguing the user or losing his or her attention.

1. From the Access Method Menu, select **Customize Eyegaze Settings** and then select **Calibration Settings**. The Calibration Settings Menu will open.



2. Adjust the settings to the user's needs. For an explanation of how to use each setting, see the next section, "Using Calibration Menu Settings".
3. When you finish adjusting settings, select **OK**.
4. Select **Calibrate Now**. When the calibration is complete, select **OK** to exit.

Using Calibration Menu Settings

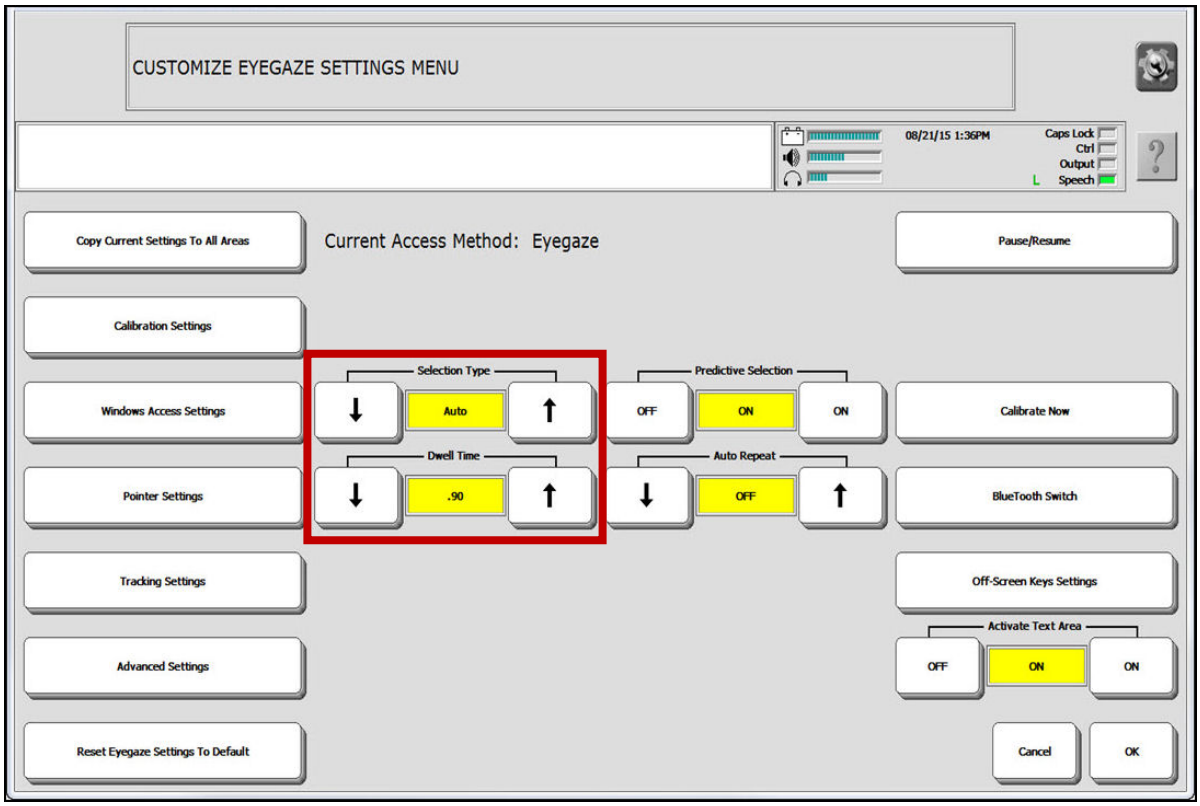
This section briefly explains how to use each Calibration Menu setting.

Setting	How to Use It
Stimulus Type	A stimulus is the item the user's eyes focus on as it moves around the display during calibration. Select the stimulus you want to use: • Point – a solid colored dot ( ) • Point 2 – a solid colored dot with the inverted color in the center ( ) • Cross – a small cross ( ) • Image – a selectable image; use the Change Image key to select an image
Stimulus Size	Increase or decrease the size of the point, cross, or image. The default is 30. Available sizes range from 10 to 400. For the best calibration results you want the stimulus to be as small as the user's eyes can easily follow. The smaller the stimulus, the more accurate the calibration.
Active Eye	Select which of the user's eyes will be recognized during the calibration process. • If both of the user's eyes work normally, select **Both**. • If both of the user's pupils can be seen but one of the user's eyes is more controlled than the other, select **Both, Use Left** or **Both, Use Right**. Choose the side which is more controlled. • If one eye is completely obstructed, select **Right Only** or **Left Only**.
Stimulus Speed	Change the speed at which the stimulus will move around the display during calibration. Fast is the default. Available speeds are Very Fast, Fast, Medium, Slow, and Very Slow.
Stimulus Sound	Select a sound to play when a calibration point is completed. Once a sound plays, the stimulus will move to the next location. Standard Beep is the default. You can also select other sounds that will be previewed when you select them. If you do not want a stimulus sound, select **No**.
Keyboard Step-through	If the user loses attention during the calibration process, Keyboard Step-through allows you to control when the stimulus advances to the next calibration point. • If you select **Yes**, you can manually step through each calibration point. Plug in a USB keyboard and use the keyboard's **spacebar** to step through the calibration. • If you select the default setting of **No**, calibration will proceed automatically through the calibration points.
Calibration Points	Calibration Points determines the number of stimulus points using during calibration. The available settings are 0, 1, 2, 5, and 9; the default is 5. The more points the user has to follow, the more accurate the calibration will be.
Calibration Area	Calibration Area determines the percentage of the screen used during calibration. The higher the percentage, the greater the precision of the calibration. At the default calibration area (100%), some if the calibration points will be at the very edges of the screen and may be difficult for the user to see or focus on. If you find this to be true for the user, decrease the calibration area. This will move the calibration points in from the edges. Select the down arrow key to decrease the area in increments of five (95%, 90%, etc.). Keep in mind that reducing the calibration area decreases precision.
Select Background Color	To change the calibration background color, you can create, preview, and save custom colors. Use a color that best matches the background color of your communication environment. For example, if you selected black as the background color in your vocabulary, you should choose a black background when you calibrate.
Select Pointer Color	Change the calibration stimulus color for point, point2, and cross. Options are available to create, preview, and save custom colors.
Eyegaze Calibration	If you want the calibration to apply to the current user area only, select **Per User Area**. If multiple users will use the same device, Per User Area will allow you to create a separate calibration for each user. If you want your calibration to be used in all six user areas, select **Global**.

Setting	How to Use It
Validate After Calibration	Validation is the process that verifies that the calibration obtained from the user is accurate. The validation process requires the user to look at four additional stimulus points on the screen. The process also assigns a value to the accuracy of validation. The lower the number, the more accurate the calibration. When Validate After Calibration is set to **Yes**, the validation process will occur immediately after calibration.
Validation Results	Select Text or Graphic to determine whether you view validation information in text or graphic format.
Show Last Validation Results	Displays the results of the most recent calibration.
Validate Now	Validate Now allows you to perform a validation at any time.

Configuring a Selection Method

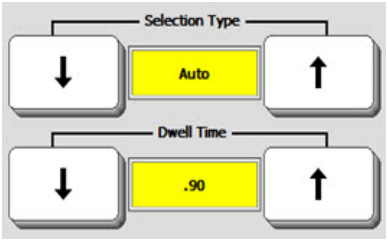
Before the user starts using NuEye to communicate, you need to configure a selection type. To get started, select **Customize Eyegaze Settings** from the Eyegaze Access Method Menu. The Customize Eyegaze Settings Menu will open.



The Selection Type settings allow you to configure the selection method as Auto, Blink, or Switch. Use the Selection Type arrow keys to choose the selection method that will work best for the user.

Selection Type: Auto

When **Auto** is selected, a key is selected automatically when the user looks at it. Auto is the default setting.

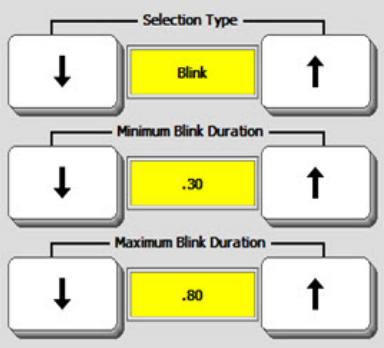


When you select **Auto**, Dwell Time is displayed as a supporting option. Use the Dwell Time arrow keys to adjust the setting to the user's needs.

Dwell Time is the amount of time the eyes must focus on a key for the system to recognize a selection. The default dwell time is .90 seconds. At this setting, when the user focuses on a key for 0.9 seconds, the system selects that key automatically.

Selection Type: Blink

When **Blink** is selected, the user can blink to make a selection.



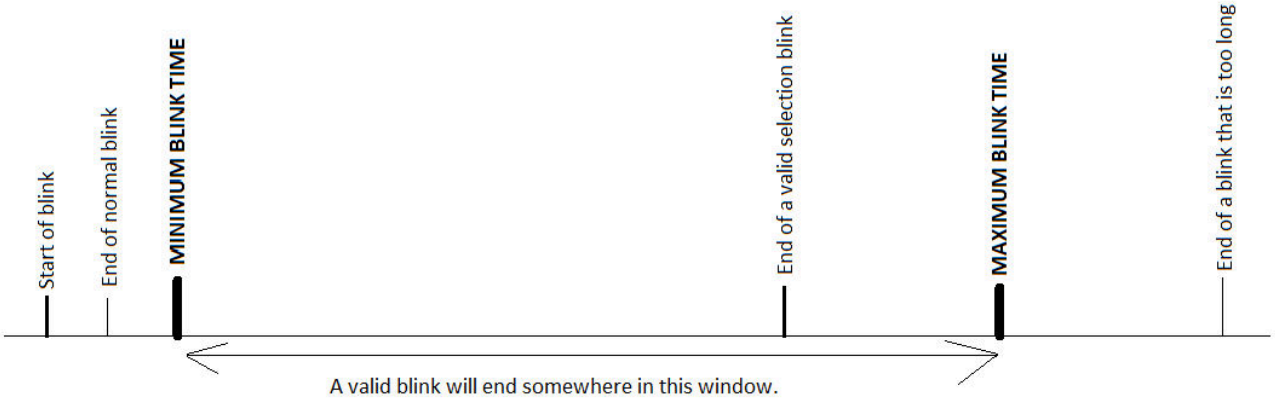
When you select **Blink**, Minimum Blink Duration and Maximum Blink Duration are displayed as supporting options. Use the Duration arrow keys to adjust the settings to the user's needs. The system will ignore blinks that are of shorter or longer duration than your settings.

Minimum Blink Duration is the minimum amount of time the user's eyes must be closed during a blink for the system to recognize a selection. The default minimum setting is .30.

We suggest you try using the default before changing the setting. If you need to change the setting, the minimum duration should be long enough that the user's normal blinks do not activate a key.

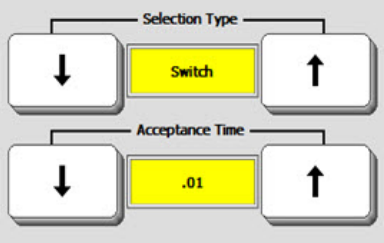
Maximum Blink Duration is the maximum amount of time the eyes must be closed during a blink for the system to recognize a selection. The default maximum setting is .80.

We suggest you try using the default before changing the setting. If you need to change the setting, the maximum duration should be long enough that the user finishes a blink before the maximum time has accumulated. You do not want to make your maximum duration time so long that if the user's head turns away from the screen and then back again, the system sees that as a selection.



Selection Type: Switch

Switch allows you plug in and use a switch to make selections. The user uses his or her eyes to move the cursor and the switch to make selections. To use this method, the user must be able to maintain his or her focus on a target and activate a switch at the same time.



When you select **Switch**, Acceptance Time is displayed as a supporting option. Use the Acceptance Time arrow keys to adjust the setting to the user's needs. Acceptance time is the amount of time the user must hold on the switch before the system recognizes a selection. The default setting is .01.

Because this method has no time requirement for focusing on the target, the user can look at the target for as long as he or she wants and activate the switch when ready to make a selection.

Trying Out Your Settings

Once you choose a selection method and configure the supporting option(s), do the following:

1. Select **OK** to close the Customize Eyegaze Settings Menu.
2. Select **OK** again to return to the Toolbox.
3. Select **Go To Home** to go to your Core or Home page.
4. Have the user try out your settings.
5. If necessary, return to the Access Method Menu and fine-tune your settings.

Pausing NuEye

You can use a variety of methods to stop and re-start eyegaze while you make adjustments to the settings or if you need to look longer at a screen or menu. Touch the screen to activate keys when NuEye is paused. When NuEye is paused, the Track Status box is **red**. When NuEye is active, the Track Status box is **green**.

Use any of the following methods to pause NuEye.

Method 1 – Touch the Track Status Box

When **Eye Track Status** is turned on in the Access Method Menu, the Track Status box is visible. Touch the Track Status box to pause NuEye. Touch it again to resume using NuEye.

Method 2 – Eyegaze Access Method Menu

Use the **Pause/Resume** key in the Eyegaze Access Method Menu. Have the user gaze at (or press) the **Pause/Resume** option to set or release Pause.

Method 3 – Disable Pointer Insertable Tool

Assign the insertable tool **Disable Pointer** to a key. Press the key to set **Pause**. Press it again to set **Resume**. To do this:

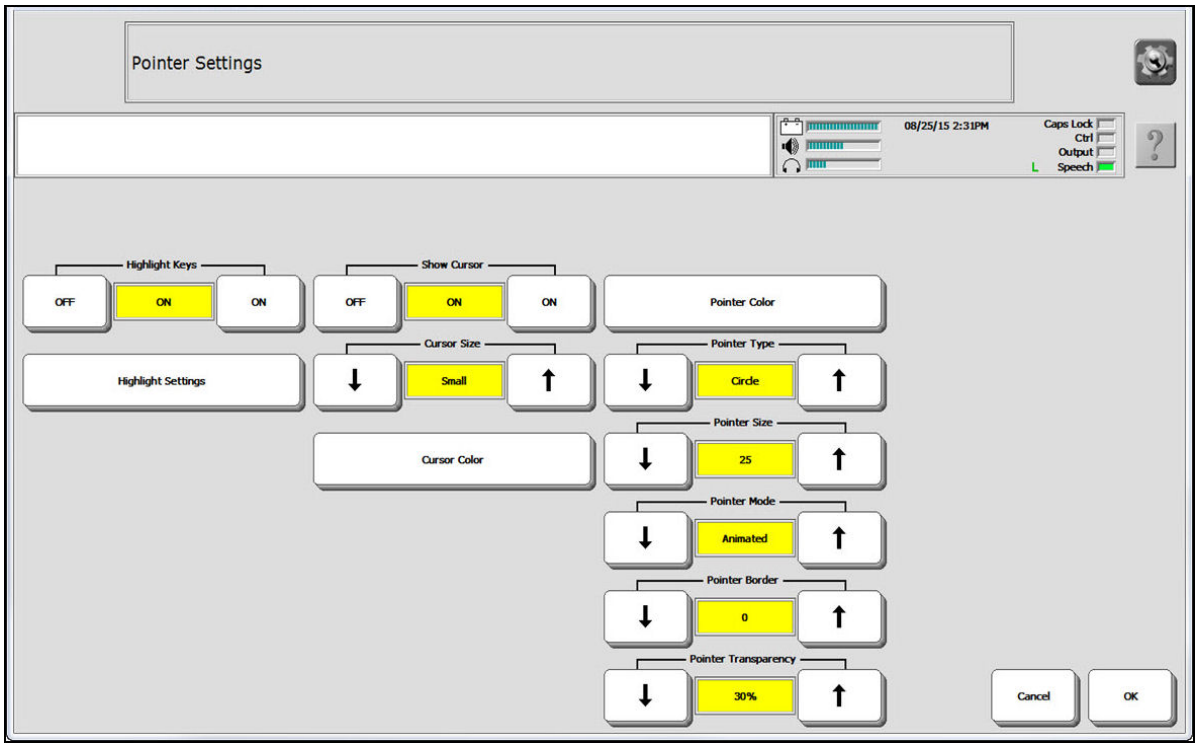
1. Be looking at the key where you want to store the Disable Pointer tool.
2. Select the **Tools** key.
3. Select the **Setup** key.
4. Select the key you want to use.
5. Select **Spell Message or Define Key Function**.
6. Select **Insert Tool**.
7. Select **Disable Pointer**.
8. Select **OK** two times.

Method 4 – Front Panel of Device Case

Have the user gaze directly at the infrared area on the front panel of the device case until **Pause** or **Resume** is selected.

Changing Pointer Settings

To change pointer settings, open the Eyegaze Access Method Menu, select **Customize Eyegaze Settings**, and select **Pointer Settings**. The Pointer Settings Menu is displayed.



Highlight Keys

When Highlight Keys is set to **On**, the Highlight Settings key is active and each key the cursor moves to is highlighted according to those settings.

Highlight Settings

Use the highlight settings to configure a colored outline or colored fill for key highlighting. When you select Highlight Settings, the Highlight Settings Menu displays the options Highlight Style, Outline width, Outline Color, and Fill Color. It also provides a preview of how a key will look with a particular style of highlight applied to it.

Highlight Style

Highlight Style allows you to select the style of visual feedback applied to a key. Use the arrow keys to choose one of the available selections: Outline, Invert, Outline and Invert, Fill, or Outline and Fill.

Option	Description	Key Appearance
Outline	The key is outlined in the selected Outline Color and width of the selected Outline Width. Fill Color is not available when this option is selected.	
Invert	The key's colors are inverted. For example, white appears as black. Outline Color and Fill Color are not available when this option is selected.	
Outline and Invert	The key is outlined in the selected Outline Color and width of the selected Outline Width and is also inverted. Fill Color is not available when this option is selected.	
Fill	The key is filled with the selected Fill Color. Outline Color is not available when this option is selected.	
Outline and Fill	The key is outlined in the selected Outline Color and width of the selected Outline With and is also filled with the selected Fill Color.	

Outline Width

Outline Width allows you to select the thickness of the outline when you select one of the outline options. Use the arrow keys to choose one of the available selections: Very Thin, Thin, Medium, Thick, or Very Thick.

Outline Color

Outline Color allows you to select the color of the outline when you select one of the outline options. Selecting the Outline Color key opens the Highlight Outline Color Menu. From the menu, select a color area in the large box and then use the color bar and arrows to the left of the box to "fine tune" the color. You can also adjust hue, saturation, and luminosity and save the color.

Fill Color

Fill Color allows you to select the color of the key fill when you select one of the fill options. Selecting the fill Color key opens the Highlight Fill Color Menu. From the menu, select a color area in the large box and then use the color bar and arrows to the left of the box to "fine tune" the color. You can also adjust hue, saturation, and luminosity and save the color.

Show Cursor

The cursor on your device is a hand. When the cursor is turned on, it follows your eye movements. The cursor shows you where you are, or where you are going, on your display screen. If you turn the cursor off, you will no longer see the hand.

Cursor Size

The Cursor Size option allows you to set the size of the cursor to Small, Medium, or Large.

Cursor Color

The Cursor Color option allows you to change the color of the cursor.

Pointer Color

The Pointer Color option allows you to change the color of the pointer.

Pointer Type

The pointer shows what particular object the user is focusing on. When **Circle** or **Square** is selected and the user focuses on a key, a circle or a square appears over the key to show that's where the user's focus is. If the user dwells on the key long enough, it will be selected. When **Circle** or **Square** is selected, additional options are available: Pointer Size, Pointer Mode, Pointer Border, and Pointer Transparency. When **None**, is selected, no pointer will be visible, and you will have no feedback to show where the user's eyes are focused or what the user might be selecting on the screen.

Pointer Size

The Pointer Size option allows you to make the circle or square pointer larger or smaller.

Pointer Mode

When **Animated** is selected, the circle or square pointer will shrink in size while the key is being selected. It's an easy way to tell that the user has hit his or her target. If you select **Static**, the pointer maintains the same size while the key is selected.

Pointer Border

Selecting any Pointer Border value greater than 0 puts a darker border around the perimeter of the circle or square. Increase or decrease the value to adjust the thickness of the border.

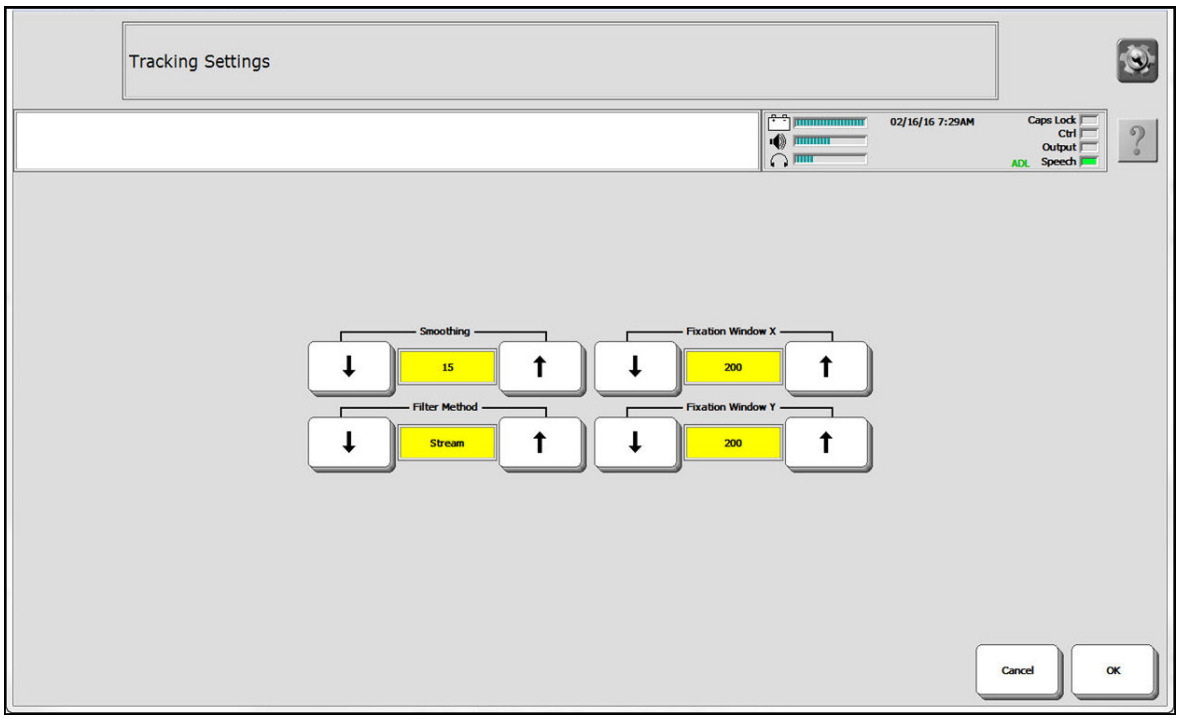
Pointer Transparency

90% transparency means that the circle or square is almost clear. You can barely tell it is on a key. 0% means the pointer is completely opaque. You cannot see through it to read any text that might be on a key.

Changing Tracking Settings

The Tracking Settings help to adjust the speed and smoothness of pointer/cursor movements. If you have set up the eyegaze system and aren't satisfied with the smoothness of the pointer movements, try changing the settings using this option.

To change tracking settings, open the Eyegaze Access Method Menu, select **Customize Eyegaze Settings**, and select **Tracking Settings**. The Tracking Settings Menu is displayed.



The Tracking Settings Menu allows you to adjust Smoothing, Filter Method, and Fixation Window X and Fixation Window Y settings. See the next page for an explanation of each option.

Smoothing

When you select a number in the Smoothing option, the eyegaze system will continually average the last X number of eye movement signals it receives. This helps to refine pointer movements.

The lower the number of samples the closer the cursor follows the actual gaze-point. The higher the number of samples the more the cursor lags behind the actual gaze-point. If the pointer/cursor is very jumpy, increase the number of samples. The higher you increase this number, the smoother (but slower) the pointer movement will be. Selectable numbers range from 2 to 45.

Filter Method

NuEye can determine the difference between saccades and fixations and apply separate methods to each type of eye behavior. Saccades are rapid, jerky movements of the eyes between fixation points over a short duration. Fixations refer to the eye resting on a point over a longer period of time. The available filtering methods are Stream, Snap, Group, Stream + Snap, and Stream + Group.

Stream works well for most users and at all ranges of smoothing. This setting moves with the eye wherever the user looks on the screen. Stream, applied to both saccades and fixation, is the default filtering method.

Snap works well for users who have dramatic shifts in gaze (for example, poor visual attention, frequent and constant head movement, or severe nystagmus). Snap is very robust and makes the cursor feel “sticky”.

Group works well for users who have frequent shifts in gaze (for example, mild to moderate nystagmus) around a central point.

If none of these three filtering methods meets your needs, you can try one of the combination methods, Stream + Snap or Stream + Group.

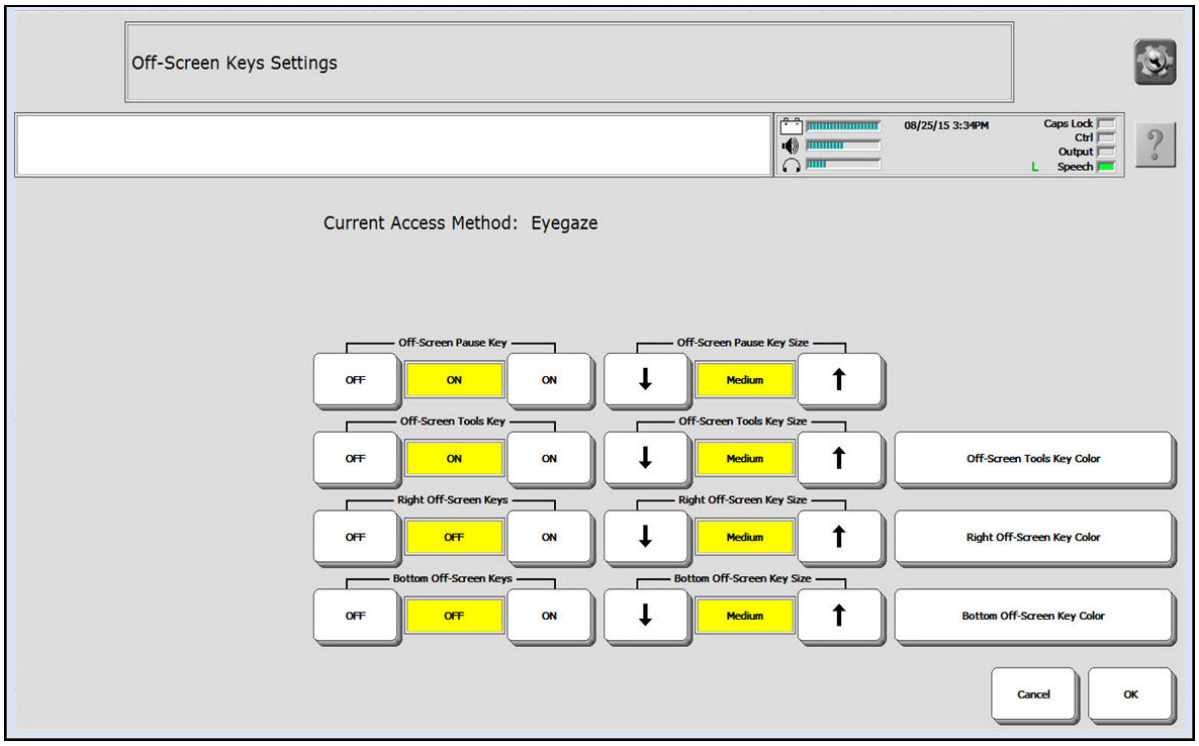
Fixation Window X and Fixation Window Y

These two options refer to the point at which the user stops looking at the screen in general and begins to fixate on the area where he or she wants to make a selection. Think of the fixation area as a window that contains the key the user wants. This window can be either large or small.

Fixation Window X is the horizontal axis and Fixation Window Y is the vertical axis of that window. The defaults give you a very small window. The smaller the fixation area (or window), the more precise the user’s movements can be. However, if the user’s gaze is very jittery, a larger window will be needed. If the defaults are not working, experiment with these two options to see if they help.

Changing Off-Screen Key Settings

Off-Screen Keys Settings allows you to turn the off-screen keys on or off, set key sizes, and set key colors. To change off-screen key settings, open the Eyegaze Access Method Menu, select **Customize Eyegaze Settings**, and select **Off-Screen Keys Settings**. The Off-Screen Keys Settings Menu is displayed.



Off-Screen Pause Key

When Off-Screen Pause Key is turned on, you can pause or resume tracking by gazing just above the top edge (middle) of the screen. “Paused” or “Active” will be displayed on the screen.

Off-Screen Pause Key Size

Sets the size of the off-screen Pause key. Use the arrow keys to select Thick, Medium, or Thin. You can also select Off.

Off-Screen Tools Key

When Off-Screen Tools Key is turned on, you can select the Tools key by gazing just beyond the left edge of the screen.

Off-Screen Tools Key Size

Sets the size of the off-screen Tools key. Use the arrow keys to select Thick, Medium, or Thin. You can also select Off.

Off-Screen Tools Key Color

Allows you to create a custom color for the off-screen Tools key. Select an area in the large color box to select a basic color and then use the other options to refine the color. The color bar and arrows to the left of the box adjust luminosity (brightness). The four arrows to the right of the color box move the cursor in the box in increments of five. Hue, Saturation, and Luminosity can be controlled through these four arrows or adjusted in increments of one with the arrows that come with each option. If you create a color that you want to save, select the **Save New Custom Color** key. Then select one of the **Custom Color** keys to store it under.

Right Off-Screen Keys

When Right Off-Screen Keys is turned on, you can access the off-screen keys by gazing just beyond the right edge of the screen.

Right Off-Screen Key Size

Sets the size of the right off-screen key. Use the arrow keys to select Thick, Medium, or Thin. You can also select Off.

Right Off-Screen Key Color

Allows you to create a custom color for the right off-screen key. Select an area in the large color box to select a basic color and then use the other options to refine the color. The color bar and arrows to the left of the box adjust luminosity (brightness). The four arrows to the right of the color box move the cursor in the box in increments of five. Hue, Saturation, and Luminosity can be controlled through these four arrows or adjusted in increments of one with the arrows that come with each option. If you create a color that you want to save, select the **Save New Custom Color** key. Then select one of the **Custom Color** keys to store it under.

Bottom Off-Screen Keys

When Bottom Off-Screen Keys is turned on, you can access the off-screen keys by gazing just beyond the bottom edge of the screen.

Bottom Off-Screen Key Size

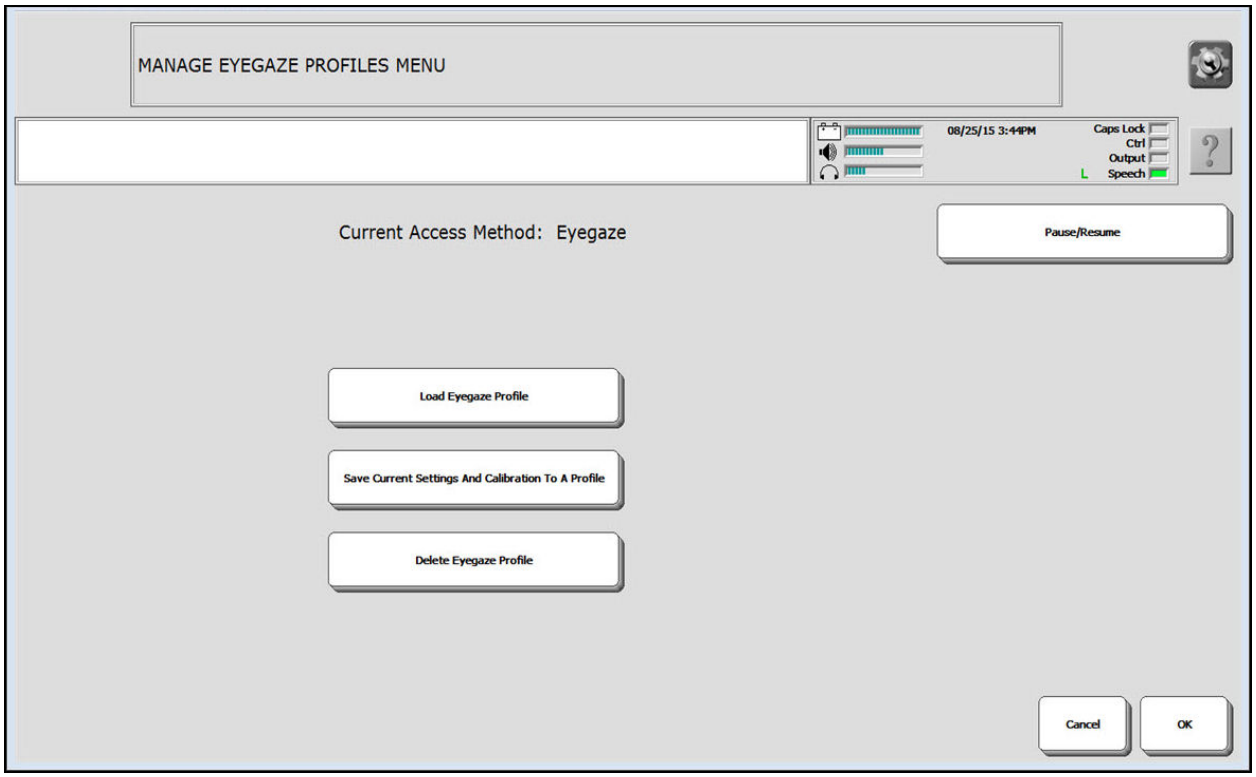
Sets the size of the bottom off-screen key. Use the arrow keys to select Thick, Medium, or Thin. You can also select Off.

Bottom Off-Screen Key Color

Allows you to create a custom color for the bottom off-screen key. Select an area in the large color box to select a basic color and then use the other options to refine the color. The color bar and arrows to the left of the box adjust luminosity (brightness). The four arrows to the right of the color box move the cursor in the box in increments of five. Hue, Saturation, and Luminosity can be controlled through these four arrows or adjusted in increments of one with the arrows that come with each option. If you create a color that you want to save, select the **Save New Custom Color** key. Then select one of the **Custom Color** keys to store it under.

Working with Profiles

The Manage Eyegaze Profiles Menu allows you to save, load, or delete eyegaze profiles. This menu is especially helpful if you use the device with multiple individuals.



Selecting and Loading a Profile

The NuEye system has several pre-defined profiles that you can choose from to help the user get started. These profiles contain eyegaze settings that have been selected to match the profile name. For example, if the user has never used an eyegaze system before, the **Beginner** profile might work the best. If the user has some experience using eyegaze, try **Novice** or **Typical**.

1. From the Eyegaze Access Method Menu, select **Manage Eyegaze Profiles**.
2. Select **Load Eyegaze Profile**.
3. Select the profile that best applies to the user.
4. A yellow box will ask if you want to copy these eyegaze settings to all areas.
    - If you select **No**, the settings will be copied only to the area you are currently using. For now, we suggest you select **No**.
    - If you select **Yes**, the settings will be copied to all user areas. You will also be asked if you want to set all areas to eyegaze access. If you select **Yes**, eyegaze access will be applied to all user areas.
5. Select **OK** to exit the Profiles Menu and return to the Access Method Menu.

Note: You can pause the eyegaze system by selecting the Access Method Menu's **Pause/Resume** key. Select the key again to resume eyegaze. Touch the screen to make selections.

Managing Eyegaze Profiles

An eyegaze profile consists of a combination of the eyegaze settings you have selected from the Customize Eyegaze Settings Menu and the actual data from the calibration you performed. There are also several pre-defined profiles that you can select from when you first set up your eyegaze system. You can also create and save profiles of your own. To manage profiles, select **Manage Eyegaze Profiles** from the Eyegaze Access Method Menu.

Loading an Eyegaze Profile

Several pre-defined profiles are available. These contain eyegaze settings that have the best chance of working well for a beginner or advanced user. When you first set up your system, you may find it easier to select one of these profiles to use while the user is learning the system.

The Load Eyegaze Profile key allows you to load any of these pre-defined profiles or a profile that you created and saved to a USB flash drive. The flash drive must be plugged into your device in order to do this.

1. From the Eyegaze Access Method Menu, select **Manage Eyegaze Profiles**.
2. Select **Load Eyegaze Profile**.
3. Select the profile that best applies to the user. If the user has never used an eyegaze system before, select **Beginner**.
4. You will see a yellow box asking if you want to copy these eyegaze settings to all areas.
    - If you select **No**, the settings will be copied only to the area you are currently using.

      Note: If the user is a beginner or novice, we suggest you select **No**.

    - If you select **Yes**, the settings will be copied to all user areas in the device. You will also be asked if you want to set all areas to eyegaze access. If you select **Yes**, you will be using eyegaze access in each area in the device.
5. Select **OK** to exit the Profiles menu and return to the Eyegaze Access Method Menu.

Saving Current Settings and Calibration to a Profile

This key allows you to save an eyegaze profile to the default Profiles location in your device or to a USB flash drive.

1. From the Eyegaze Access Method Menu, select **Manage Eyegaze Profiles**.
2. Select **Save Current Settings and Calibration to a Profile**.
3. After saving a profile, select **Load Eyegaze Profile** to load the profile into a user area at any time.

If you are working with multiple users using one device, you may want to save the eyegaze profiles of your users. Then you can simply load each user's profile into a user area (or globally if that was selected as the Eyegaze Calibration option).

Important Information about Resetting to Factory Defaults

If you need to reset your device to the factory defaults (by selecting **Reset to Factory Defaults** from the Maintenance Menu) and you want to keep your calibration, you must save your eyegaze profile to a USB flash drive ***before*** you reset the device.

After resetting your device, select **Load Eyegaze Profile** to reload the profile. If you use profiles, it is a good idea to save them to a flash drive as a backup.

Deleting Eyegaze Profiles

Use the Delete Eyegaze Profile key to delete any profiles that you no longer use.

Appendix A: Attaching the NuEye Module to an Accent 1000

Important! This appendix applies to Accent 1000 models with serial numbers 5000AC10 and higher.

If you purchased NuEye with your Accent 1000, the NuEye module is already attached to the device. If you purchased NuEye later, follow these instructions to attach the module to the device. Your device may look different from the device shown in these instructions. The procedure for attaching the NuEye module is the same.

Reviewing the NuEye Kit

You will need a Phillips screwdriver.

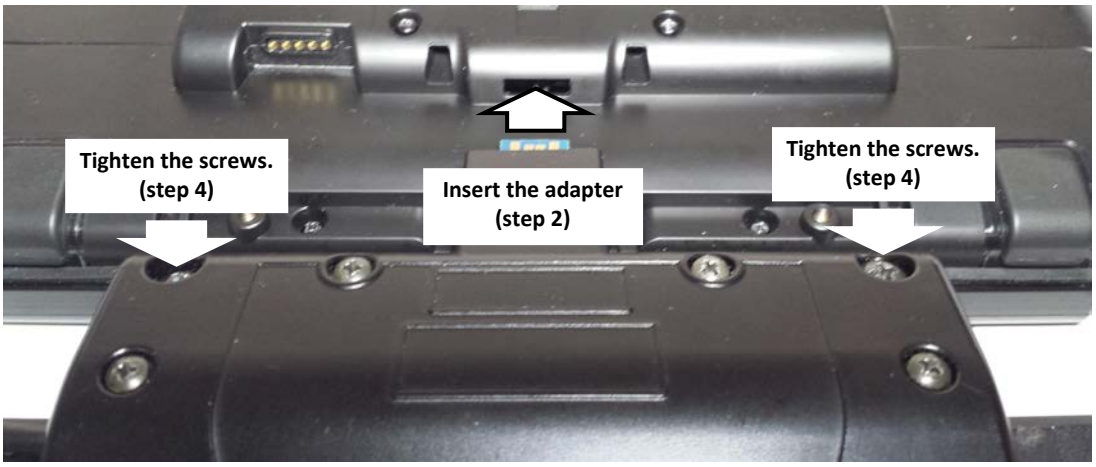
NuEye module with mounting bracket (screws are in the bracket)

⚠ **The mounts used should be fitted by a qualified person. Failure to install the mounting system according to the manufacturer's instructions may result in an injury to the user. Be certain that the user's view is not obstructed by the mounting.**

Attaching the NuEye Module to the Device

1. Insert the adapter's USB connector into the NuEye module mounting bracket's USB port.

2. Mount the NuEye module on your device by inserting the end of adapter into the NuEye USB port on the back of the device.



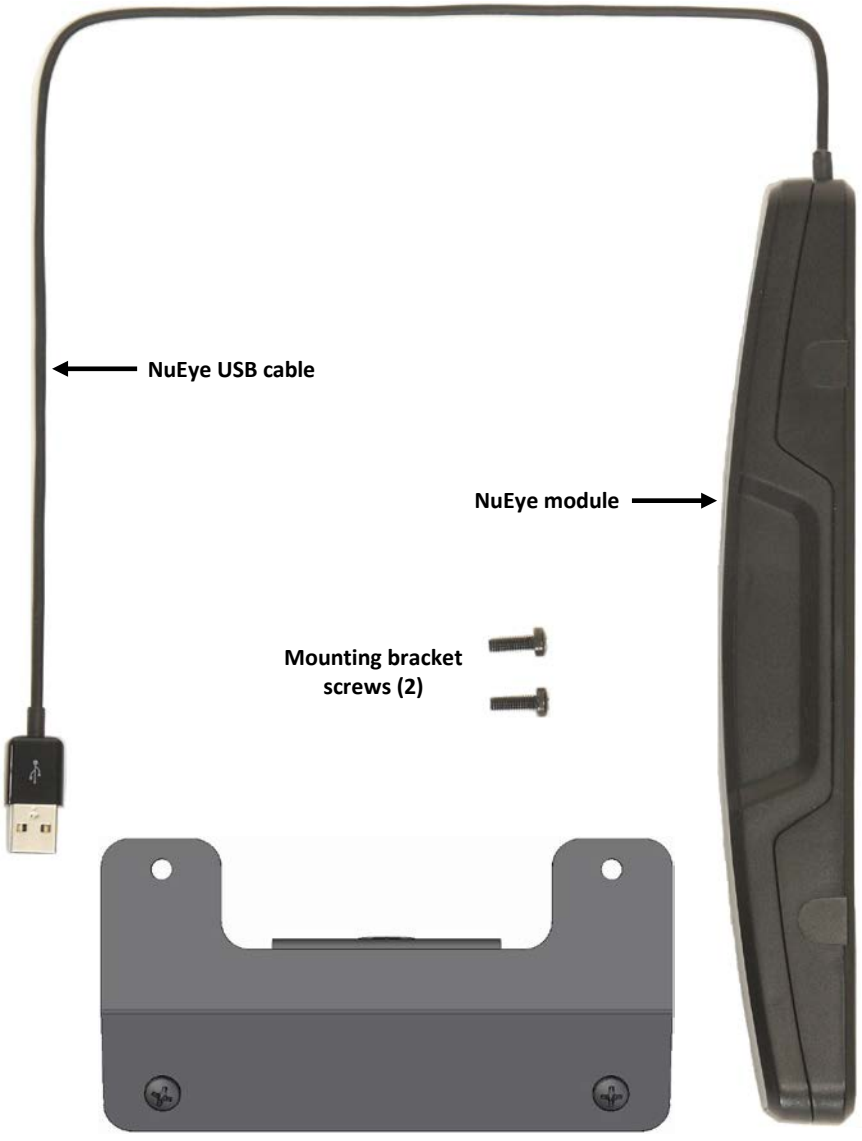
3. Push the module into place and align the screws in the bracket with the empty holes in the device.
4. Tighten the two bracket screws to secure the bracket to the device
5. Now you can place your Accent device on a wheelchair mount or a table stand. Your NuEye module is ready to use.

Appendix B: Attaching a NuEye Module to an older Accent 1000

Important! This appendix only applies to Accent 1000 models with serial numbers between 499AC10 and 4999AC10.

Reviewing the NuEye Kit

You will need a Phillips screwdriver.



Mounting bracket with 2 screws already in place

⚠ **The mounts used should be fitted by a qualified person. Failure to install the mounting system according to the manufacturer's instructions may result in an injury to the user. Be certain that the user's view is not obstructed by the mounting.**

Preparing to Attach the Bracket

1. Gently place the Accent face down on a flat surface.

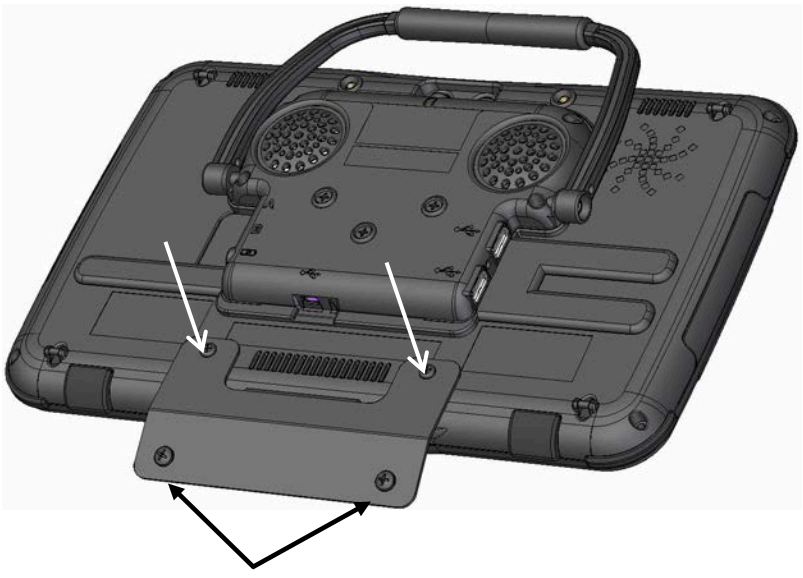
2. Use your screwdriver to remove the two screws on the bottom back of your device on either side of the cooling vent.

   Important! Keep these screws. If you need to remove the NuEye module from your device, you should put these screws back in the mounting holes.

   ⚠ **Loose screws can be a choking hazard.**

Attaching the Bracket to the Device

1. Hold the mounting bracket along the bottom edge of the Accent and align the holes in the bracket with the empty holes in the device.

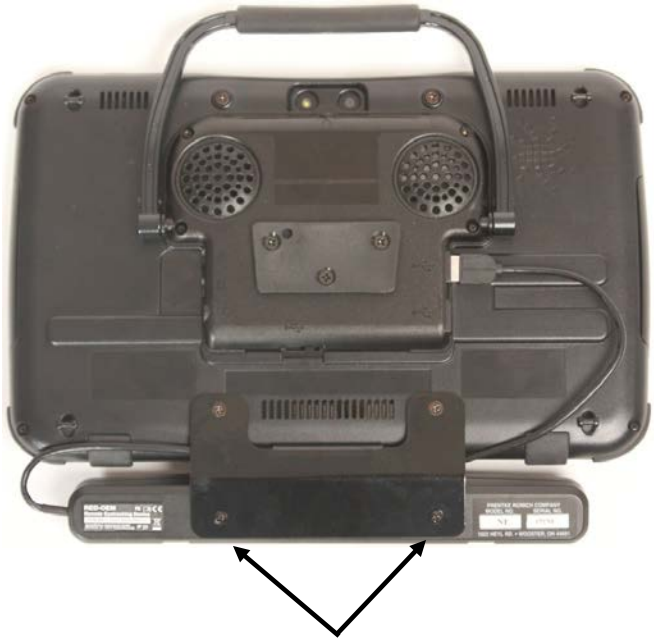


module.You'll use these 2 screws later to attach the

2. Insert the two screws from the kit in the bracket holes and tighten to secure the bracket to the device.

Attaching the NuEye Module to the Bracket

1. Hold the NuEye module so that the back of the module faces you. The label on the back of the module and the USB cable will both be on your left.
2. Align the two screws protruding from the bracket with the holes in the NuEye module.



3. Tighten the screws to secure the NuEye module to the bracket.

   Important! *Do not over-tighten the screws*. Over-tightening could damage the NuEye module's screw mounts.

4. Bring the NuEye USB cable over the top of the NuEye module, between the module and the device case. The USB end will plug easily into a USB port, and the cable will not obstruct the NuEye module.

   Note: You can loosen the NuEye module's screws if necessary to slip the USB cable into place. Tighten the screws when you are finished.

5. Now you can place your Accent on a wheelchair mount or a table stand. Your NuEye is ready to use.

Appendix C: Attaching the NuEye Module to an Accent 1400

If you purchased NuEye with your Accent 1400, the NuEye module is already attached to the device. If you purchased NuEye later, follow these instructions to attach the module to the device. You can attach the module to a device with or without a frame.

Reviewing the NuEye Kit

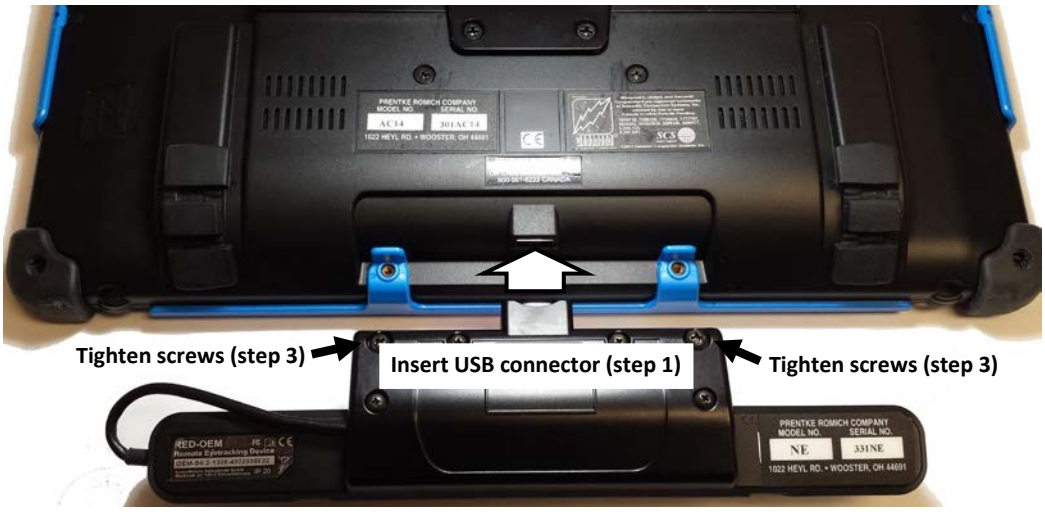
You will need a Phillips screwdriver.

NuEye module with mounting bracket (screws are in the bracket)

⚠ **The mounts used should be fitted by a qualified person. Failure to install the mounting system according to the manufacturer's instructions may result in an injury to the user. Be certain that the user's view is not obstructed by the mounting.**

Attaching the NuEye Module to the Device

1. Mount the NuEye module on your device by inserting the NuEye module's USB connector into the NuEye USB port on the back of the device.



2. Push the module into place and align the screws in the bracket with the empty holes in the device.
3. Tighten the two bracket screws to secure the bracket to the device
4. Now you can place your Accent device on a wheelchair mount or a table stand. Your NuEye module is ready to use.

Appendix D: Attaching the NuEye Module to an Accent 1200

First Steps

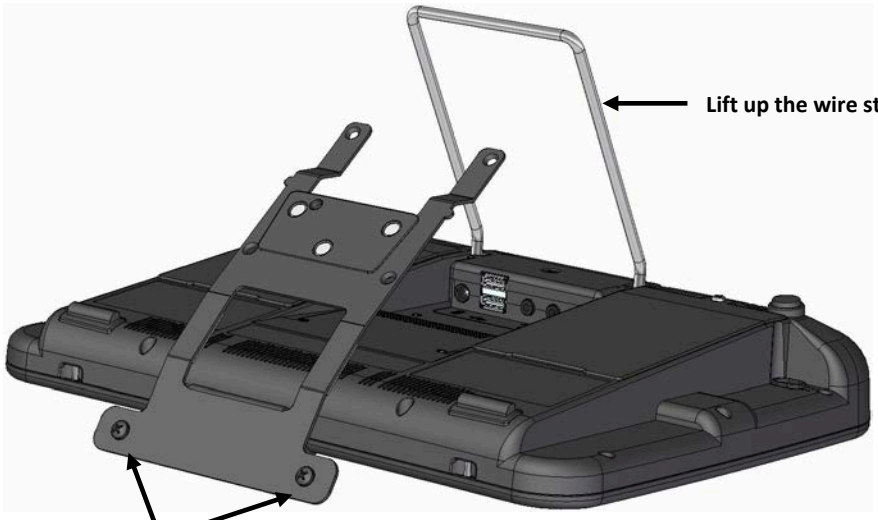
If you have had your Accent mounted on a table stand or wheelchair, you will need to remove the table stand or wheelchair mount, and you will need to remove your mount (such as the QRM2) and the mounting plate from your device. To attach the NuEye module, you will need a Phillips screwdriver.

⚠ **The mounts used should be fitted by a qualified person. Failure to install the mounting system according to the manufacturer's instructions may result in an injury to the user. Be certain that the user's view is not obstructed by the mounting.**

Attaching the Bracket to the Device

1. Gently place the Accent face down on a flat surface.
2. Lift up the wire table stand on the back of your device.

   Note: If you do not plan to use the wire stand, you can remove it from the device.



⚠ **Loose screws can be a choking hazard.**

3. Hold the mounting bracket along the bottom edge of the Accent and press the top of the bracket into place on the back of the device. Align the holes in the bracket with the empty holes in the device.

4. Insert the four screws from the kit in the bracket holes and tighten to secure the bracket to the device.

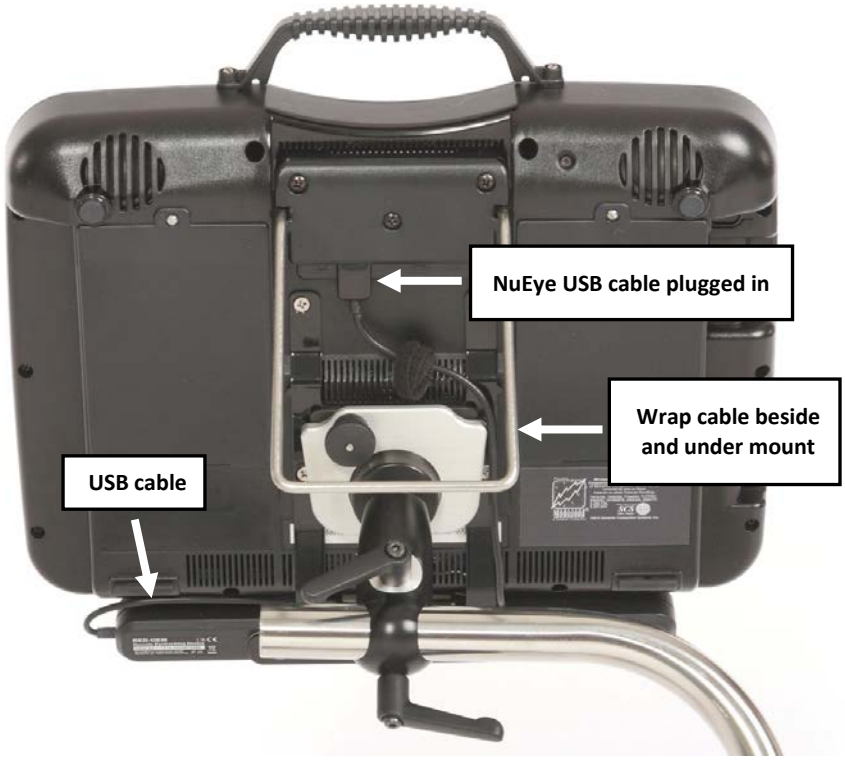
Attaching the NuEye Module to the Bracket

1. Hold the NuEye module so that the back of the module faces you. The label on the back of the module and the USB cable will both be on your left.
2. Align the two screws protruding from the bracket with the holes in the NuEye module.

3. Tighten the screws to secure the NuEye module to the bracket.

   Do not over-tighten the screws. Over-tightening could damage the NuEye module's screw mounts.

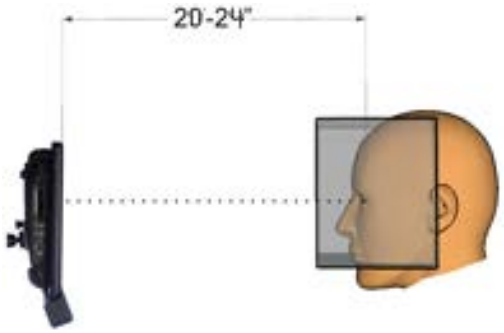
4. Plug the NuEye USB cable into one of the USB ports on your Accent. Wrap the cord along the side and under the mount as shown below.



5. Now you can mount a table stand or wheelchair mount to the bracket. Your NuEye is ready to use.

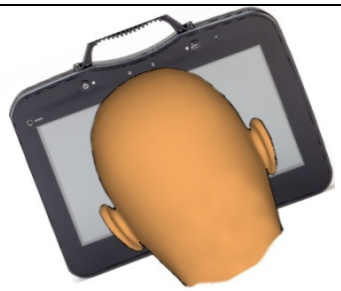
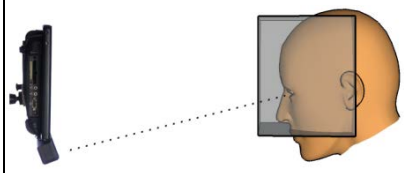
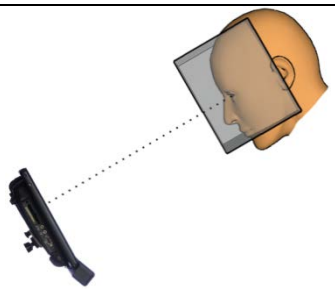
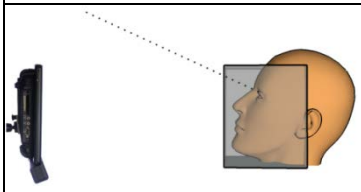
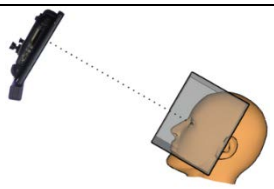
Appendix E: Positioning Examples

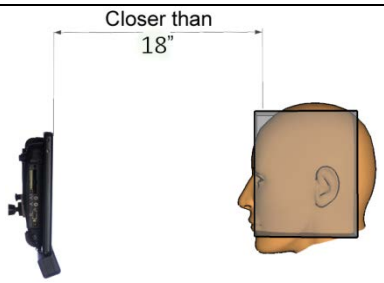
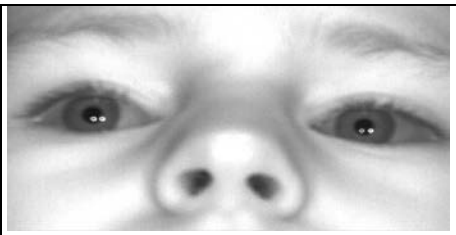
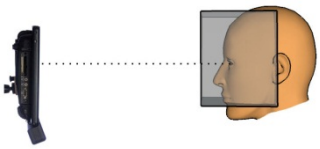
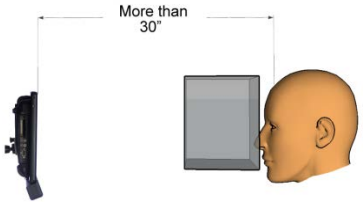
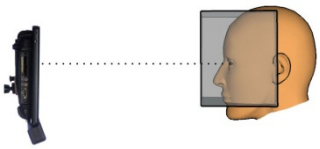
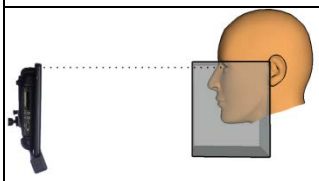
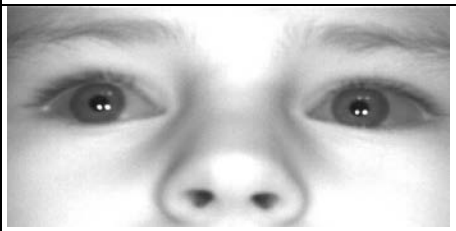
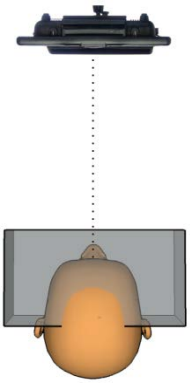
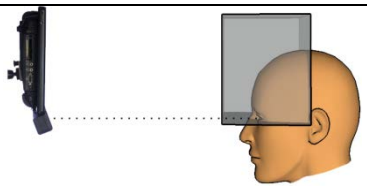
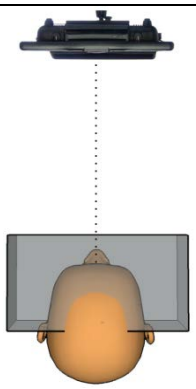
When positioning is correct, the device and the user's face will be on the same plane—basically parallel to each other. The track box will always show two white circles next to each other near the center of the box. The user's eyes will be within 20" to 24" of the screen.

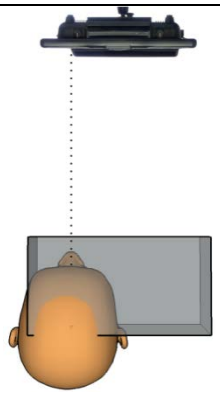
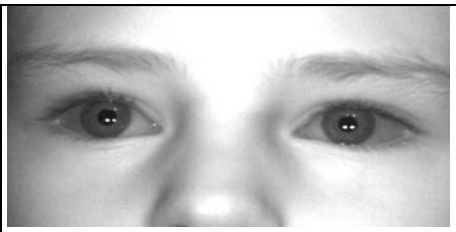
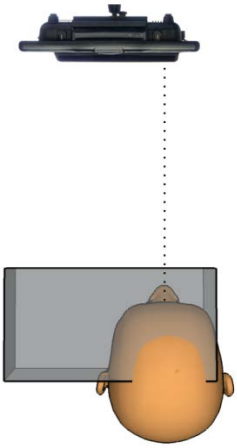
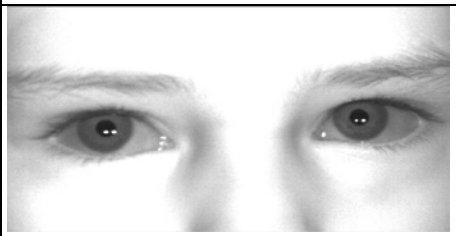


Correct Positioning from the side and as seen straight on.
Eyes are level and gaze is in the middle-to-upper part of the display.

With correct positioning, the nose should be pointed at the vertical middle of the display and the eyes should be looking in the middle to the top two-thirds of the display. To achieve correct positioning, you may need to move your device, the user, or both until the user is comfortable and the white ovals line up in the track box.

Incorrect		Correct
 Tilted Left	 Face tilted, eyes not level and too far left, wrong nose angle	 Angle of device and head are the same
 Tilted Right	 Face tilted right, eyes not level, too much nose, eyes too low in track box	 Angle of device and head are the same
 Eyes too high and angled down	 Eyes looking down, not enough nose, eyes too high in track box	 Device lowered/user raised to match gaze
 Eyes angled up and device too low	 Looking up nose; eyes centered in track box but angle of face visibly wrong	 Device raised/user lowered to match gaze

Incorrect		Correct
 **Too close to device; must be within 18-30 inches of display**	 **Angle of face wrong, one eye not being tracked**	 **User must be within 18-30 inches of display**
 **Too far from device; must be within 18-30 inches of display**	 **Eyes OK**	 **User must be within 18-30 inches of display**
 **User’s eyes too high**	 **Eyes too high**	 **Position user down or device up so eyes are centered in box**
 **User’s eyes too low**	 **Eyes too low**	 **Position user up or move device down so eyes are centered in box**

Incorrect		Correct
 **User too far left**	 **Eyes too far to the left**	 **Head is centered with display**
 **User too far right**	 **Eyes too far to the right**	 **Head is centered with display**

Appendix F: Cleaning the NuEye Module

- Never immerse the NuEye in water.
- Never use abrasives or cleaning cloths that will scratch the transparent area of the module.
- You received a microfiber (lint-free) cleaning cloth with your NuEye. Use this cloth to wipe the enclosure and transparent area.
- If the NuEye needs more than a dry wipe-down, dampen this cloth or another lint-free cloth. Damp means wrung out, never dripping. Dry the unit thoroughly with a dry lint-free cloth.
- If the transparent area gets smeary or visibly dirty, place a small amount of rubbing alcohol on a lint-free cloth and gently wipe it. Polish the area with a dry part of your cloth.
- Keep the microfiber (lint-free) cloth handy and wipe the transparent area daily.
- For information about cleaning and disinfecting your Accent device, refer to the Accent Hardware Manual for your device.