Tobii Dynavox PCEye Explore
User's Manual

with Gaze Point

tobii dynavox

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1 Introduction

Thank you for purchasing a PCEye Explore device from Tobii Dynavox!

To ensure the optimal performance of this product, please take the time to read this manual carefully.

1.1 Explanation of Admonitions

In this manual we use three (3) levels of admonitions as follows:

Is used for notifying the user of something important or of something that needs special attention.

Is used to inform of something that could cause harm to, or malfunction of, the equipment.

Is used to inform of something where there could conceivably be a risk of harm to the user if the Warning is ignored.

1.2 Symbols and Markings

This appendix provides information about the symbols that are used on the PCEye Explore, its parts, accessories or packaging.

Symbol or Markings	Description
	Conforms to relevant Australian EMC requirements
	Dispose of in accordance with your country's requirements.
	CE is the abbreviation of the European Communities and this mark tells customs officials in the European Union that the product complies with one or more of the EC Directives
	This mark is a certification mark employed on electronic products manufactured or sold in the United States which certifies that the electromagnetic interference from the device is under limits approved by the Federal Communications Commission.
	IC is the abbreviation of the Industry Canada and this mark tells customs officials in Canada that the product complies with one or more of the Canadian standards.

1.3 Intended Use

The PCEye Explore is an entry level, peripheral Eye tracker that opens up the wonderful world of Gaze Interaction to everyone. With the PCEye Explore, young or inexperienced users get a simple, fun and no-fail way to learn how to use Eye tracking and Gaze Interaction, while at the same time preparing them for AAC communication.

The PCEye Explore fits snugly on your laptop or docks under retail computer screens

The PCEye Explore is intended to be used in an indoor environment.

For more information about Screen Sizes, see *Appendix D Technical Specifications*.

Figure 1.1 PCEye Explore

Do not cover the front of the PCEye Explore in any way (with decorations, Post-Its, etc.) as Gaze Interaction will be compromised.

Using an antivirus program is strongly recommended.

1.4   Package Contents

- PCEye Explore
- USB 3.0 Cable
- Magnetic Mounting Plate (2 pcs) for PCEye Explore
- Mounting Instruction
- Cleaning Wipe

Only use the items included in the PCEye Explore package, those described in the product documentation and other approved Tobii Dynavox Accessories in conjunction with the PCEye Explore.

2 Safety

2.1 Mounting Warning

⚠️ The PCEye Explore should be mounted according to MANUFACTURER instructions of approved mounts. Tobii Dynavox or its agents are not liable for damage or injuries to a person or its property due to a PCEye Explore falling from a mounted configuration. The mounting of a PCEye Explore is done entirely at the user's own risk.

The double sided tape supplied with the adhesive Magnetic Mounting Plates is designed to permanently attach the bracket to the monitor/laptop. Attempting to remove the bracket after attaching it using the supplied tape can result in damage both to the monitor/laptop and the bracket.

Do not lick the adhesive tape or place any part of the tape or Magnetic Mounting Plate in one's mouth or on one's body.

2.2 Epilepsy Warning

⚠️ Some people with **Photosensitive Epilepsy** are susceptible to epileptic seizures or loss of consciousness when exposed to certain flashing lights or light patterns in everyday life. This may happen even if the person has no medical history of epilepsy or has never had any epileptic seizures.

A person with Photosensitive Epilepsy would also be likely to have problems with TV screens, some arcade games, and flickering fluorescent bulbs. Such people may have a seizure while watching certain images or patterns on a monitor, or even when exposed to the light sources of an eye tracker. It is estimated that about 3-5% of people with epilepsy have this type of Photosensitive Epilepsy. Many people with Photosensitive Epilepsy experience an "aura" or feel odd sensations before the seizure occurs. If you feel odd during use, move your eyes away from the eye tracker.

2.3 Infrared Warning

⚠️ When activated, the PCEye Explore emits pulsed infrared (IR) light. Certain medical devices are susceptible to disturbance by IR light and/or radiation. Do not use the PCEye Explore when in the vicinity of such susceptible medical devices as their accuracy or proper functionality could be inhibited.

2.4 Magnetic Field Warning

⚠️ The PCEye Explore Magnetic Mounting contains magnets. Magnetic fields may interfere with the function of cardiac pacemakers and implantable cardioverter-defibrillators. As a general rule, maintain a minimum distance of 6 inches (15 centimeters) between any item with magnets and your heart device.

2.5 Child Safety

⚠️ The PCEye Explore is an advanced computer system and electronic device. As such it is composed of numerous separate, assembled parts. In the hands of a child certain of these parts have the possibility of being separated from the device, possibly constituting a choking hazard or another danger to the child.

Young children should not have access to, or the use of, the device without parental or guardian supervision.

2.6 Do not Open the PCEye Explore

⚠️ Non-compliance will result in loss of Warranty! There are no user serviceable components inside. Contact Tobii Dynavox Support if your PCEye Explore is not working properly.

2.7 Emergency

⚠️ Do not rely on the device for emergency calls or banking transactions. We recommend having multiple ways to communicate in emergency situations. Banking transactions should only be carried out with a system recommended by, and approved according to the standards of, your bank.

2.8 Gaze Interaction

⚠️ Some people may experience a certain amount of fatigue (due to intentional eye focusing and hard concentration) or even a dryness of the eyes (due to less frequent blinking) when first getting used to Gaze Interaction. If you are experiencing fatigue or dry eyes start off slowly and limit the length of your Gaze Interaction sessions to your comfort level. Remoisturizing eye drops can be helpful to combat dryness.

2.9 Third Party

⚠️ Any use of the PCEye Explore outside the intended use and together with any third party software or hardware that changes the intended use is a risk and nothing that Tobii Dynavox can take any responsibility for.

3 Getting Started with PCEye Explore

3.1 Requirements

For PCEye Explore we recommend the following minimum system requirements:

- USB 3.0 or higher
- Operating System:
  - Windows 7
  - Windows 8
  - Windows 8.1
  - Windows 10

- 2.4 GHz quad core Intel i5 or i7
- 8 GB RAM memory
- Graphics 60 MB VRAM
- Pixel shader 2.0 or higher
- 150 MB free disk space for the installation of the PCEye Explore software
- .NET 4.5 must be installed on the device

3.2 Installing, Running PCEye Explore with Tobii Dynavox Gaze Point

3.2.1 Installing PCEye Explore with Gaze Point

1. Go to http://www.TobiiDynavox.com/explore/dl/ and download the Gaze Point software.
2. Install the Gaze Point.
3. Follow the directions on the screen.

3.2.2 Running the Gaze Point Software

To start the Gaze Point software:

- Double-click on the **Gaze Point** shortcut on the desktop, .

or
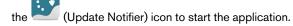
1. Select **Start Menu** > **All programs** > **Tobii Dynavox** > **Gaze Point**

2. Select the **Gaze Point** icon.

3.3 Updating the Gaze Point software and the PCEye Explore Firmware

Tobii Dynavox regularly releases updated versions of the Gaze Point software.

During the installation of the Gaze Point software, the Update Notifier software will be installed on the device. The Update Notifier will, if the device is connected to the Internet, automatically check for updated versions of the Gaze Point software and other Tobii Dynavox software installed on the device.
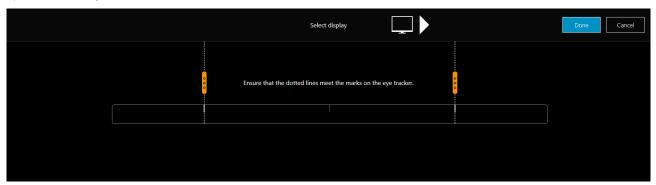
To manually check for new updates of the Gaze Point software, look up the Update Notifierapplication on the device and select the (Update Notifier) icon to start the application.

The PCEye Explore Firmware will automatically be updated when a new version is available as long as the computer is connected to the internet.

4 First Start Up of PCEye Explore

After running the Gaze Point **Installation Guide** and attaching the PCEye Explore to your computer, the Gaze Point **Setup** will open automatically.

Follow the on-screen instructions.

Select the **Calibration Settings** button to check and change the settings for the calibration. For more information regarding **Calibration Settings**, see *8.1.1.3 Calibration Settings, page 17*.

5 Positioning the User
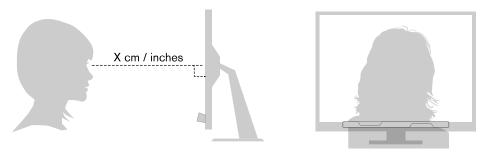
Figure 5.1 Positioning

The mounted PCEye Explore attached to its Magnetic Mounting Plate and to your device is designed to work optimally when it is parallel to the user's eyes at a distance from about 45 — 90 cm (18 to 35 inches), see *Figure 5.1 Positioning, page 11* or *Figure 5.2 Positioning when Users Leaning Sideways or Those Lying Down, page 11*.
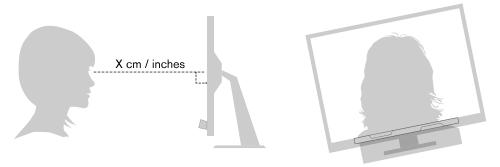
Figure 5.2 Positioning when Users Leaning Sideways or Those Lying Down

This means that for those users leaning sideways or those lying down the PCEye Explore with monitor and computer device also needs to be tilted in order to keep the users eyes parallel to the screen and at the optimal distance, see *Figure 5.2 Positioning when Users Leaning Sideways or Those Lying Down, page 11*.

> ℹ️ Make sure the user is placed comfortably in relation to the optimal positioning of, and distance from, the unit. Be aware also that the user's comfort, as well as the Gaze Interaction performance, will be enhanced if the sun is not shining directly on the screen or into the user's eyes.

The optimal distance that a user should be from the PCEye Explore mounted on a monitor/laptop differs depending on the size of the screen. The user should be positioned at the optimal distance to allow for the best possible Gaze Interaction.

Generally, the larger the size of the screen, the greater the distance the user should be from the Eye Tracker / Screen combination for optimal Gaze Point usage.

Smaller than a 10 inch screen and larger than a 27 inch screen should not be used for optimal Gaze Point usage, for more information see *Appendix D Technical Specifications, page 25*.

5.1   Track Box

The PCEye Explore allows for extensive Freedom of Head Movement. Once the PCEye Explore is properly calibrated and placed in front of the user, no further adjustments are required.

For detailed information about the size of the track box, see *Appendix D Technical Specifications, page 25*.

In order to function properly for Gaze Point usage the user needs at least one eye in the track box at all times.

6 Using PCEye Explore with Gaze Point

6.1 Using Tobii Dynavox Gaze Point

Figure 6.1 Gaze Point Controller

Table 6.1 Icons in Gaze Point Controller

Symbol	Description	Symbol	Description
PAUSE GAZE POINT (F4)	Select this button to **Pause** Gaze Point or Select the Keyboard shortcut, written in brackets after the description. Default is **F4**. ⓘ This can be changed under **SETTINGS**. The chosen Keyboard shortcut will be shown on the button.	**START GAZE POINT (F4)**	Select this button to **Start** Gaze Point or Select the Keyboard shortcut, written in brackets after the description. Default is **F4**. ⓘ This can be changed under **SETTINGS**. The chosen Keyboard shortcut will be shown on the button.
HIDE MOUSE CURSOR (F5)	Select this button to **Hide** the Mouse Cursor or Select the Keyboard shortcut, written in brackets after the description. Default is **F5**. ⓘ This can be changed under **SETTINGS**. The chosen Keyboard shortcut will be shown on the button.	**SHOW MOUSE CURSOR (F5)**	Select this button to **Show** the Mouse Cursor or Select the Keyboard shortcut, written in brackets after the description. Default is **F5**. ⓘ This can be changed under **SETTINGS**. The chosen Keyboard shortcut will be shown on the button.
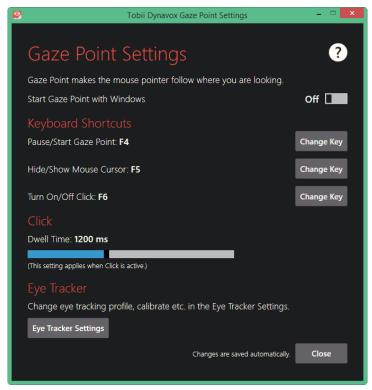
Symbol	Description	Symbol	Description
TURN ON CLICK (F6)	Select this button to Turn **On** left click or Select the Keyboard shortcut, written in brackets after the description. Default is **F6**. ℹ️ This can be changed under **SETTINGS**. The chosen Keyboard shortcut will be shown on the button.	**TURN OFF CLICK (F6)**	Select this button to Turn **Off** left click or Select the Keyboard shortcut, written in brackets after the description. Default is **F6**. ℹ️ This can be changed under **SETTINGS**. The chosen Keyboard shortcut will be shown on the button.
SETTINGS	Select this button to access the Settings for Gaze Point, see 7 *Gaze Point Settings, page 14*.		

ℹ️ Using a physical computer mouse or a touch screen will take precedence over the Gaze Point software.

7 Gaze Point Settings

To access the **Gaze Point Settings**, select the ⚙ (SETTINGS) button on the Gaze Point Controller.

To **Start Gaze Point with Windows**:

- Toggle the **Start Gaze Point with Windows** switch to **On** (default value is **Off**)

Change **Keyboard Shortcuts**

1. Select the **Change Key** button for the command to change:
    - **Pause/Start Gaze Point**
    - **Hide/Show Mouse Cursor**
    - **Turn On/Off Click**

2. Select a new Key

    ℹ Only **one** key can be selected, no keyboard combinations can be selected.

    ℹ **Esc** and **Enter** can **not** be selected.

Change **Click** options:
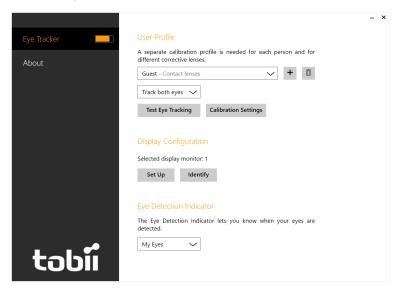
- Drag the handle or Click on the **Dwell Time** time bar to set the Dwell Time between 100 — 3000 ms. Default value is 1200 ms.

Eye Tracker Settings

- Select the **Eye Tracker Settings** button to access the **Eye Tracker Settings**. For more information, see *8 Eye Tracker Settings, page 15*

8 Eye Tracker Settings

8.1 Eye Tracker

8.1.1 User Profile

Creating a user profile for each user on the device will optimize each users Gaze Interaction experience. Each user will then have a setting and calibration matching the their specifications.

8.1.1.1 Add/Delete User Profiles

Add a User Profile:

1. Select the [+] (Add) button.

2. The new Profile dialog will open.
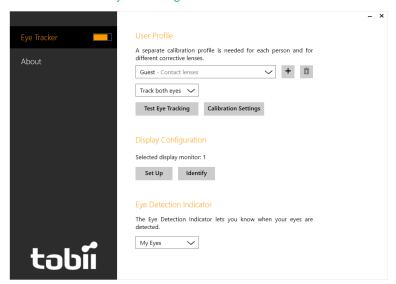
3. Follow the on-screen instructions to setup the user and to calibrate.

Delete a User Profile

1. Select the Profile to delete in the Drop down list

2. Select the [🗑] (Delete) button.

8.1.1.2 Test Eye Tracking

Select the **Test Eye Tracking** button to access the **Test Eye Tracking** page.
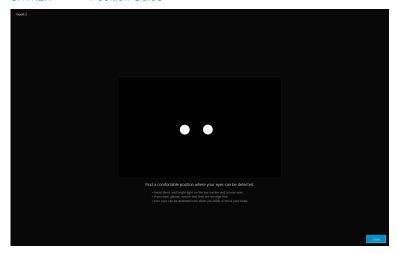
With the Test Eye Tracking page, it is possible to check the accuracy and performance of the Eye tracker. All Calibration points are visualized with a circle with orange dot in the center. This is the center of each calibration point. When entering this page, the Eye tracker will start reading the Gaze data for the user. The Gaze data will be shown on screen in real time. Orange dots will appear where the user has his/her Gaze. By looking at the calibration point it is possible to determinate if the calibration is accurate or if it is good to do a recalibration of the user.

To perform a recalibration, select the **Recalibrate** button.

To show the position guide, select the **Position guide** button.

Use the **Position Guide** to help determine the optimal height, horizontal and distance positioning for Gaze Interaction with the PCEye Explore.

Ideally, the two dots that represent the user's eyes should be in the middle of the **Position Guide**.

8.1.1.3   Calibration Settings

Select the **Calibration Settings** button to access the **Calibration Settings** page.

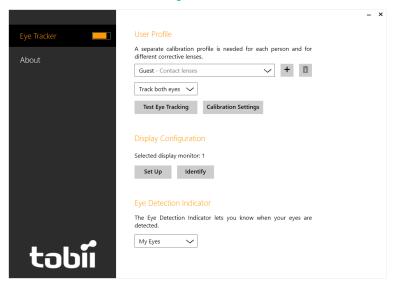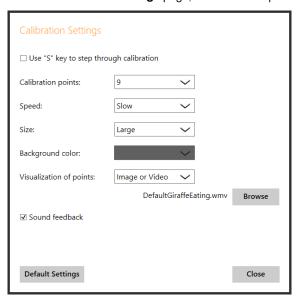On the **Calibration Settings** page, the calibration procedure for calibrating a user can be adjusted.

To activate **Step through calibration**:

1.   Select the **Use** check box to activate the function.

The **Step trough calibration** give the benefit of controlling when the Calibration process should start collecting the Gaze data in each calibration point. To start the data collection, press the 'S' key on the keyboard. When all calibration data is collected in one calibration point, the stimuli will move to the next calibration point, but the data collection will not start at the new calibration point until the 'S' key is pressed on the keyboard.

The following settings can be changed by selecting the drop down list for each settings:

Calibration points:, can be set to:

- ▪   **9** (default)
- ▪   **5**
- ▪   **2**
- ▪   **1**

Speed:, can be set to:

- ▪   **Slow** (default)
- ▪   **Medium**
- ▪   **Fast**

Size:, can be set to:

- ▪   **Small**
- ▪   **Medium**
- ▪   **Large** (default)

Background color:, can be set to:

Just select one of the **Available Colors** or select the Advanced button and choose your color.

Visualization of points:

- ▪   **Image or Video** (default)

Sometimes it is easier to for the user to focus and to follow a picture or video instead of the dot when trying to do a calibration.

Select the **Browse** button to browse for the stimuli of choice.

> By default one video is already selected and ready to be used. Together with the PCEye Explore comes a number of videos to choose from.

- **Dot**
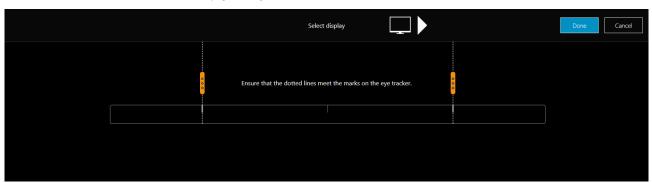 The **Dot** color, can be set to:

  Just select one of the **Available Colors** or select the **Advanced** button and choose your color.

Select the **Sound feedback** check box for a Sound feedback during the calibration process.

8.1.2   Display Configuration

Select the **Setup** button to start the setup guide again.

Select the **Identify** button if help is needed to decide which display the PCEye Explore is connected to if more then one display is used.

> The ▶ or ◀ can be used to change which display the PCEye Explore is connected to if more then one display is used.

8.1.3   Eye Detection Indicator

The **Eye Detection Indicator**, , is a discrete indicator, visual in the bottom middle of the display, showing if the PCEye Explore has detected the user's eyes.

Select the drop down list to change the appearance of the **Eye Detection Indicator**.

- **My Eyes** ( )
  Will also act as a Position guide for the user.
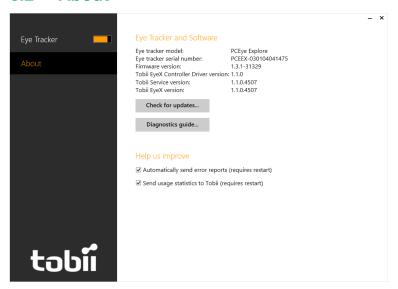
  If No eyes are detected, the Indicator will show

- **Static** ( )

  If No eyes are detected, the Indicator will show

- **Off**

No Indicator will be visible on the display.

8.2   About

Please have this information available if you have problems with the device and need to contact Customer Support.

9 Product Care

9.1 Temperature & Humidity

9.1.1 General Use

The PCEye Explore is best kept in dry conditions at room temperature. The recommended range for temperature and the humidity value for the device is as follows:

- Temperature: 10℃ to 35℃ (50℉ to 95℉)
- Humidity: Max 70% (no condensation on the device)

9.1.2 Transportation and Storage

For transportation and storage the recommended range for temperature and the humidity value for the device is as follows:

- Temperature: -40℃ to 70℃ (-40℉ to 158℉)
- Humidity: 20% to 70% (no condensation on the device)

The PCEye Explore is not waterproof or water resistant. The device should not be kept in excessively humid, damp or otherwise wet conditions. Do not submerge the device in water or in any other liquid. Be careful not to allow liquids to be spilled upon the device.

9.2 Cleaning

Before cleaning the PCEye Explore device shut down the computer to which it is attached and unplug all cables. Use a soft, slightly damp, lint-free cloth. Avoid getting moisture in openings on the device. Don't use window cleaners, household cleaners, aerosol sprays, solvents, alcohol, ammonia, or abrasives to clean the device.

It is recommended that the device be cleaned regularly.

9.3 Transporting the PCEye Explore

Disconnect the USB cable and use the carrying case accessory. The PCEye Explore is relatively fragile and the filter can be scratched if not properly protected; be sure to take precautions to protect the device when it is to be carried and packed

When you transport the device for repair, shipment or traveling, use the original casing and packaging materials.

When the PCEye Explore is attached to a monitor/laptop, do not carry the connected devices by solely gripping the PCEye Explore. The PCEye Explore will not hold the weight of the monitor/laptop, and the devices could break apart and fall, or topple and fall because of misbalanced weight, causing permanent damage to both. Tobii Technology will not be held liable for the resulting damage.

9.4 Disposing of the PCEye Explore

Do not dispose of the PCEye Explore in general household or office waste. Follow your local regulations for the disposal of electrical and electronic equipment.

Appendix A   Support and Warranty

A1   Customer Support

For support, please contact your local representative or Tobii Dynavox Support. In order to receive assistance as quickly as possible, make sure you have access to your PCEye Explore and, if possible, an Internet connection. You should also be able to supply the serial number of the device, which you find on the bottom of the device. Find our Support pages online at: www. tobiidynavox.com or www.myTobiiDynavox.com.

A2   Warranty

Please read the Manufacturer's Warranty paper included in the package.

Please read this User's Manual carefully before using the device. The warranty is only valid if the device is used according to the User's Manual. Disassembling the PCEye Explore device will void the warranty.

> **Keep the original packaging materials for the PCEye Explore.**
>
> In case the device needs to be returned to Tobii Dynavox for Warranty related issues or repair, it is required that the original packaging (or equal equivalent) is used for shipping.

Appendix B   Compliance Information

All PCEye Explore are CE-marked, indicating compliance with the essential health and safety requirements set out in European Directives.

B1   FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following 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.

Modifications not expressly approved by Tobii Dynavox could void the user's authority to operate the equipment under FCC rules.

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. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into a wall outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or experienced radio/TV technician for assistance.

B2   Industry Canada Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

B3   CE Statement

The PCEye Explore complies with the following Directives:

- 2011/65/EU (RoHS 2) - Restriction of Hazardous Substances Directive
- R&TTE 1999/5/EG (R&TTE) - European Radio equipment and Telecommunications Terminal Equipment Directive
- 2004/108/EC (EMC) - Electromagnetic Compatibility Directive
- 2006/95/EC (LVD) - Low Voltage Directive

B4   Standards

The PCEye Explore complies with the following standards:

- FCC part 15, Class B
- ICES-003 Issue 5
- EN 55022:2010
-
  EN 55024:2010+A1:2015, Information technology equipment. Immunity characteristics. Limits and methods of measurement
- EN ISO 14971:2007, Application of risk management to medical devices
- EN 62471:2008, Photo Biological Safety of Lamps and Lamp Systems
- Parts relevant for EMC from IEC 60950-1:2005, Safety of information technology equipment
- Parts relevant for EMC from EN60601-1-2:20007

Appendix C Disposing of the PCEye Explore

Do not dispose of the PCEye Explore in general household or office waste. Follow your local regulations for the disposal of electrical and electronic equipment.

Appendix D   Technical Specifications

Technical Specifications	PCEye Explore
Working Distance	45 — 90 cm 18 — 35 inches
Freedom of Head Movement[1] @ 70 cm / 27.5 inches (Width × Height)	48 × 39 cm 19 × 15 in
Gaze Data Rate	>55 Hz
Screen Size (16:9)[2] <24" screen (28-30° gaze angle) 25-27" screen (31-33° gaze angle)	 Excellent Average
Mounting	Magnetic Mounting Plates
Interface (power and signal)[3]	USB 3.0
Unit Weight	69 g 2.4 oz
Unit Size (Length × Height × Depth)	320 × 15 × 18 mm 12.6 × 0.6 × 0.7 inches
Works with (Operating System)	Windows 7, Windows 8, Windows 8.1 or Windows 10
System Requirements	CPU: 2.4 GHz quad core Intel i5 or i7 RAM: 8GB GPU: 60 MB video RAM, pixel shader version 2.0 or higher USB 3.0

1. Head box describes the volume in front of the tracker in which the user must have at least one of the eyes. The numbers are specified parallel/orthogonal to screen surface, assuming eye tracker is at 20 degree angle to screen.

2. For large screens the limiting parameter is quality of gaze accuracy at the upper two corners. The freedom of movement for larger screens is 24-33 inch / 60-85 cm for 23-25 inch screens and 28-33 inch / 70-85 cm for 26-27 inch screens.

3. USB 3.0 requirements: USB 3.0 provides the PCEye Explore with sufficient power and signal bandwidth.

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Support for Your Tobii Dynavox Device

Get Help Online
See the product-specific Support page for your Tobii Dynavox device. It contains up-to-date information about issues and tips & tricks related to the product. Find our Support pages online at: *www.TobiiDynavox.com* or *www.myTobiiDynavox.com*.

Contact Your Sales Representative or Reseller
For questions or problems with your product, contact your Tobii Dynavox sales representative or authorized reseller for assistance. They are most familiar with your personal setup and can best help you with tips and product training. For contact details, visit *www.TobiiDynavox.com/contact*