Tobii Dynavox PCEye 5
User's Manual

tobii dynavox

User's manual Tobii Dynavox PCEye 5

Version 1.0.1
09/2020
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The following products are protected by U.S. Patents 7,572,008, 6,659,611, 8,185,845 and 9,996,159:

- PCEye 5

CE

Table of Contents

1 Introduction

Thank you for purchasing a PCEye 5 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:

The Note symbol is used for notifying the user of something important or of something that needs special attention.

The Caution symbol is used to inform of something that could cause harm to, or malfunction of, the equipment.

The Warning symbol is used to inform of something in which there is a conceivable 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 5, 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	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
FC	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	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.
	Manufacturer.

1.3 Intended Use

The PCEye 5 is intended to be used for Computer Control for Augmentative and Alternative Communication (AAC) and/or for computer access purposes as an alternative input device to the keyboard and mouse for people that have challenges in their ability to speak and/or access a computer due to injury, disability or illness.

1.4   Product Description

The PCEye 5 is a clip-on eye tracker that lets you access and control your computer using only your eyes. Simply look at the computer screen and select commands by dwelling, zooming and/or clicking a switch. Alternatively, fully control the mouse cursor directly with your eye movements. The PCEye 5 fits snuggly on your laptop, docks under retail computer screens and can also be attached to a Tobii Dynavox PCEye bracket and mounted to certain tablets.

The PCEye 5 is delivered with the SwitchIT adapter that is intended to be connected to one or two switches that can assist a user with limited mobility in the control of the software on the device.

The eye tracker can be moved between different computers, as long as the monitor with the attached device is placed on a table. Except for installation, the PCEye 5 is operated mainly by the user only by using their eyes, and it is calibrated against each user's eye movements. The intention with the PCEye 5 is to allow the user to control a computer, but it is not intended for the control of any other medical devices.

The PCEye 5 gives you a fast, accurate and hands free way of accessing the many ways a computer can enrich your life and bring greater personal independence. You can pursue your interests and education, re-enter the workplace, stay in touch with friends and family, express yourself artistically and stay entertained.

For more information about screen sizes, see *Appendix C Technical Specifications*.
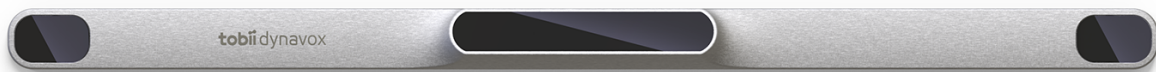
Figure 1.1 PCEye 5

⚠ Do not cover the front of the PCEye 5 in any way (with decorations, Post-Its, etc.) as Computer Control will be compromised.

ℹ Using an antivirus program is strongly recommended.

1.5   Package Contents

- PCEye 5
- Magnetic Mounting Plate for PCEye 5
- USB-C to USB-A adapter
- SwitchIT adapter
- Carrying case
- Tobii Dynavox Computer Control software (installer link)
- Getting Started Guide
- Training Cards for Computer Control
- Mounting Plate prep kit (Cleaning Wipe)

⚠ Only use the items included in the PCEye 5 package, those described in the product documentation and other approved Tobii Dynavox Accessories in conjunction with the PCEye 5.

2 Safety

2.1 Mounting Warning

⚠️ The PCEye 5 should be mounted according to the instructions of the approved mounts used. Tobii Dynavox or its agents are not liable for damage or injuries to a person or its property due to a PCEye 5 falling from a mounted configuration. The mounting of a PCEye 5 is done entirely at the user's own risk.

The double sided tape supplied with the adhesive Magnetic Mounting Plates (if applicable) 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.

Do not mount the PCEye 5 on monitors positioned above the head or face of a user unless using a dedicated "fixed mounting" solution.

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 5 emits pulsed infrared (IR) light. Certain medical devices are susceptible to disturbance by IR light and/or radiation. Do not use the PCEye 5 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 5 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 5 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 use, the device without parental or guardian supervision.

2.6 Do not open PCEye 5

⚠️ Non-compliance will result in loss of Warranty! There are no user serviceable components inside. Contact Tobii Dynavox Support if your PCEye 5 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   Computer Control

⚠ 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 Computer Control. If you are experiencing fatigue or dry eyes start off slowly and limit the length of your Computer Control sessions to your comfort level. Remoisturizing eye drops can be helpful to combat dryness.

2.9   Third Party

⚠ Tobii Dynavox assumes no responsibility for any consequence resulting from use of the PCEye 5 in a manner inconsistent with its intended use, including any use of the PCEye 5 with third-party software and/or hardware that changes the intended use.

3   Getting Started with PCEye 5

3.1   System Requirements

For PCEye 5 we recommend the following minimum system requirements:

Component	Requirements
Computer and processor	2.0 gigahertz (GHz) or faster, 6th generation Intel Core (i3/i5/i7–6xxx) and later, or equivalent AMD 64 bit processor. (recommended minimum).
Memory (RAM)	8 gigabyte (GB) RAM (recommended minimum).
Hard Disk	450 megabyte (MB) available
USB	USB-C (USB-A via adapter)
Operating System	● Windows 10 (64-bit) RS3 or newer

4 Mounting PCEye 5

4.1 Standard Mounting

For mounting the PCEye 5 on a device, follow these steps:

1. Download the Computer Control software bundle from : https://qrco.de/PCEyeCC.
   Install the downloaded Computer Control software bundle.

2. Follow the onscreen instructions to mount the PCEye 5 to the device bezel.
3. Done!

4.2 Using the PCEye Bracket

For mounting the PCEye 5 to the PCEye Bracket, please follow the PCEye Bracket installation guide.

4.3 Permanent Fixation

To permanent fixate the PCEye 5 there are two (2) M3 screws on the back side of the PCEye 5. The C—C distance (marked with an X) in *Figure 4.1 C-C Distance Between the M3 Screws, page 9* is 155 mm/6.10 inches. The PCEye 5 is compatible with the GA EyeGaze-Bracket from Rehadapt GmbH.

Figure 4.1 C-C Distance Between the M3 Screws

5 Using PCEye 5

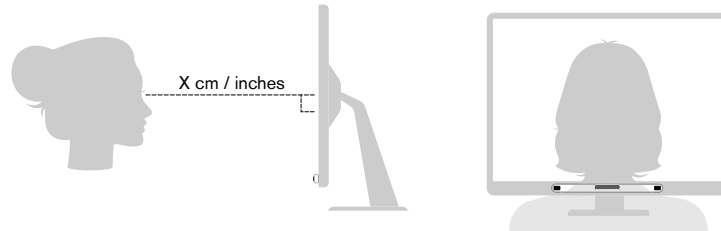## 5.1 Positioning the User

Figure 5.1 Positioning

The mounted PCEye 5 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 50 — 95 cm (20 to 37 inches), see *Figure 5.1 Positioning, page 10* or *Figure 5.2 Positioning for Users Leaning Sideways or Lying Down, page 10*.
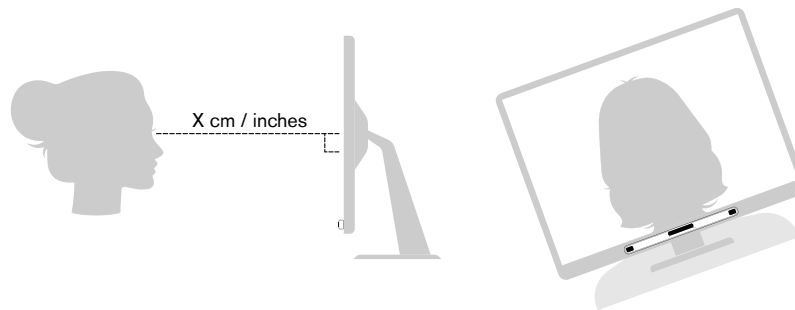

Figure 5.2 Positioning for Users Leaning Sideways or Lying Down

This means that for those users leaning sideways or those lying down the PCEye 5 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 for Users Leaning Sideways or Lying Down, page 10*.

> 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 Computer Control 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 5 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 Computer Control.

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

Monitors larger than up to the maximum screen size limitation should not be used for optimal Computer Control usage, for more information see *Appendix C Technical Specifications, page 16*.

5.2 Tips for Outdoor Usage

Here are some tips for better performance of the eye tracker outside, especially in bright sunlight.

- It could be good to have one calibration stored for indoor usage and another calibration for outdoor usage, especially in bright sunlight.
- Using a baseball cap or similar to throw shade on the eyes will significantly enhance the performance of the eye tracker.
- Avoid getting direct sunlight on the eye tracker for best eye tracking performance..

6 Settings

6.1 Setup Windows Hello

i Only works with Windows 10.

1. Open the **Windows Start** menu.
2. Select your **Account**.
3. Select **Change Account Settings**.
4. Select **Sign-in options**.
5. To proceed, set up a PIN code.
6. Select the **Add** button under **PIN** and follow the next steps.

i Once you've done that the options to set up Windows Hello will unlock.

7. After successfully selecting a PIN, you'll be able to select **Set Up** under **Windows Hello** and **Face Recognition**.
8. If you'd like to get some more detailed background information on **Windows Hello** select **Learn more about Windows Hello**. Or just select **Get Started** to continue.
9. The camera in the eye tracker will now help you position yourself in front of the screen by showing a livestream through the camera. After positioning yourself successfully in front of the camera, the face recognition setup will begin automatically.
10. Once you've successfully completed the set up, an option to **Improve Recognition** will be available.

i This can be quite useful if you wear glasses as it allows you to be recorded with or without them.

7 Applicable Application Software

The PCEye 5 has a number of different uses depending on the user's need and the application software installed.

See www.tobiidynavox.com to find support and documentation for the different compatible software.

8 Product Care

8.1 Temperature & Humidity

8.1.1 General Use

The PCEye 5 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: 20% to 80% (relative humidity, no condensation on the device)

8.1.2 Transportation and Storage

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

- Temperature: -30℃ to 70℃ (-22℉ to 158℉)
- Humidity: 10% to 95% (no condensation on the device)
- Atmospheric Pressure: 70 kPa to 106 kPa (375 mmHg to 795 mmHg)

The PCEye 5 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.

8.2 Cleaning

Before cleaning the PCEye 5 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.

8.3 Transporting the PCEye 5

Disconnect the USB cable and use the carrying case accessory. The PCEye 5 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 5 is attached to a monitor/laptop, do not carry the connected devices by solely gripping the PCEye 5. The PCEye 5 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.

8.4 Disposing of the PCEye 5

Do not dispose of the PCEye 5 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 5 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.

> Tobii Dynavox does not warrant that the Software on the PCEye 5 will meet Your requirements, that the operation of the Software will be uninterrupted or error-free, or that all Software errors will be corrected.

> Tobii Dynavox does not warrant that the PCEye 5 will meet Customer requirements, that the operation of the PCEye 5 will be uninterrupted, or that the PCEye 5 is free from bugs or other defects. Customer acknowledges that the PCEye 5 will not function for all individuals and in all light conditions.

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 5 device will void the warranty.

> It is recommended to keep the original packaging materials for the PCEye 5.
>
> If device needs to be returned to Tobii Dynavox for Warranty-related issues or repair, it is beneficial that the original packaging or equivalent is used for shipping. Most shipping carriers require at least 2 inches of packing material around the device.
>
> **Note:** Due to Joint Commission regulations, any shipping materials including boxes sent to Tobii Dynavox must be discarded.

Appendix B   Compliance Information

CE   The PCEye 5 is 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.

ℹ   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 5 complies with the following Directives:

- 2017/745 (MDR) Medical Device Regulation
- 2011/65/EU (RoHS) - Restriction of Hazardous Substances Directive
- 2014/30/EU (EMC) - Electromagnetic Compatibility Directive

B4   Standards

The PCEye 5 complies with the following standards:

- FCC part 15, Class B
- ICES-003 Issue 6:2016 Class B
- EN 55032: 2012+AC: 2013 Class B
- EN 55024:2010+A1:2015
- EN 61000-3-2: 2014
- EN 61000-3-3: 2013
- AS/NZS CISPR 32:2015

Appendix C   Technical Specifications

Technical Specifications	PCEye 5
Gaze Data Rate	33 Hz
Gaze Sample Rate	132 Hz
Data Streams	Gaze point, user position guide, Presence Primary camera image stream 33 Hz
Power Consumption Full Operation	2.2 W typical average
Processing Unit	Tobii EyeChip™ with fully embedded processing
Interface	USB Type C connector
Head Movement Box [1] **size at distance** @ 50 cm @ 19.7″ @ 65 cm @ 25.6″ @ 95 cm @ 37.4″	 >20 cm × 20 cm >7.9″ × 7.9″ >35 cm × 35 cm >13.8″ × 13.8″ >35 cm × 35 cm >13.8″ × 13.8″
Distance from user to the Eye Tracker	50 cm - 95 cm 20″ - 37″
Screen Size[2] At 65 cm (25.6") user distance	Recommended up to 27"
User Calibration (former tracking robustness)	>99%
Detected Gaze Interaction >30 Hz	98% for 95% of population[3]
Gaze Accuracy on a 27" screen Across the whole box: Across 50% of population[34] Across 95% of population[3]	 < 8 mm < 18 mm
Gaze Precision on a 27" screen Across the whole box: Across 50% of population[34] Across 95% of population[3]	 < 0.7 mm < 3 mm
Max Head Movement Speed Eye Position Gaze Data	 40 cm/s (15.7 in/s) 10 cm/s (3.9 in/s)
Sucessfull Interaction Ratio	Minimum interactor size: 2 x 2 cm
Outdoor	Yes
Head Roll	< 25 degree
Pitch	< 25 degree
Visibility	Low visibility (850 nm)

Technical Specifications	PCEye 5
Flicker	No flicker (sampling @ 132 Hz)
Data Flow and Data Rate	
Gaze Latency	25 ms (worst case image to signal latency)
Gaze Recovery	50 ms
Low Resolution Stream	280×280
Unit Size (Length × Height × Depth)	285 mm × 15 mm × 8.2 mm
	11.22″ × 0.59″ × 0.32″
Unit Weight	93 g
	3.3 oz

1. Head box describes the space in front of the eye tracker where the user must have at least one eye to get gaze data. The eye tracker is at a 20° angle looking upward from below the screen.
2. For larger than recommended screens, the limiting parameter is the quality of the gaze accuracy at the upper corners of the screen when the user sits close to the screen.
3. The degree-of-accuracy and precision over percentage-of-population numbers result from extensive testing across representatives of the whole population. We have made use of hundreds of thousands of diagnostic images and performed tests on approximately 800 individuals with different conditions, vision, ethnicities, everyday dust, smudges or blemishes around their eyes, with eyes out of focus, etc. This has resulted in a much more robust and high performance eye tracking experience and a much more realistic representation of true performance across the whole population, not just in a mathematically "ideal" scenario.

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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/support-training*

Contact Your Solution Consultant or Reseller
For questions or problems with your product, contact your Tobii Dynavox solution consultant 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*