Tobii Dynavox PCEye Mini
User's Manual

tobii dynavox

User's manual Tobii Dynavox PCEye Mini

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- 7.572.008
- 6.659.611

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1 Introduction

Thank you for purchasing a PCEye Mini 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 Mini, 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	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 Mini 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 blinking, dwelling, zooming and/or clicking a switch. Alternatively, fully control the mouse cursor directly with your eye movements. The PCEye Mini fits snuggly on your laptop, docks under retail computer screens and can also be attached to a Tobii Dynavox EyeMobile Mini bracket and mounted to certain tablets.

The PCEye Mini is intended to be used for Gaze Interaction 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.

The eye tracker can be moved between different computers, as long as the monitor with the attached device is placed on a table or suitable stand for stationary use in an indoor environment. Except for installation, the PCEye Mini 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 Mini is to allow the user to control a computer, but it is not intended for the control of any other medical devices.

The PCEye Mini 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 Mini

Do not cover the front of the PCEye Mini 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 Mini
- Magnetic Mounting Plate (2 pcs) for PCEye Mini
- USB extension cable
- Mounting Instruction
- Licence Activation Key
- Cleaning Wipe

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

2 Safety

2.1 Mounting Warning

The PCEye Mini 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 Mini falling from a mounted configuration. The mounting of a PCEye Mini 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 Mini 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 Mini emits pulsed infrared (IR) light. Certain medical devices are susceptible to disturbance by IR light and/or radiation. Do not use the PCEye Mini 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 Mini 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 Mini 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 Mini

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

3.1 System Requirements

For PCEye Mini we recommend the following minimum system requirements:

Component	Requirements
Computer and processor	2.0 gigahertz (GHz) or faster, Dual-Core processor (recommended minimum).
Memory (RAM)	4 gigabyte (GB) RAM (recommended minimum).
Hard Disk	450 megabytes (MB) available
USB	USB 2.0
Operating System	• Windows 7 (64-bit) • Windows 8.1 (32-bit or 64-bit) • Windows 10 (32-bit or 64-bit)
.NET version	4.5
Tobii Eye Tracking Core Software	Version 2.8 or later

4 Using PCEye Mini

4.1 Positioning the User

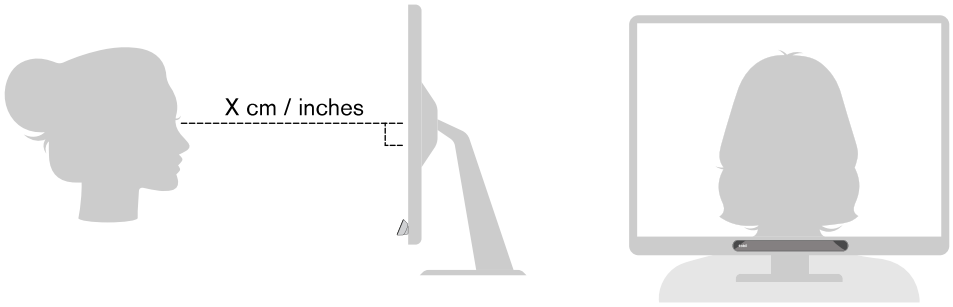

Figure 4.1 Positioning

The mounted PCEye Mini 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 — 85 cm (18 to 33 inches), see *Figure 4.1 Positioning, page 9* or *Figure 4.2 Positioning for Users Leaning Sideways or Lying Down, page 9*.

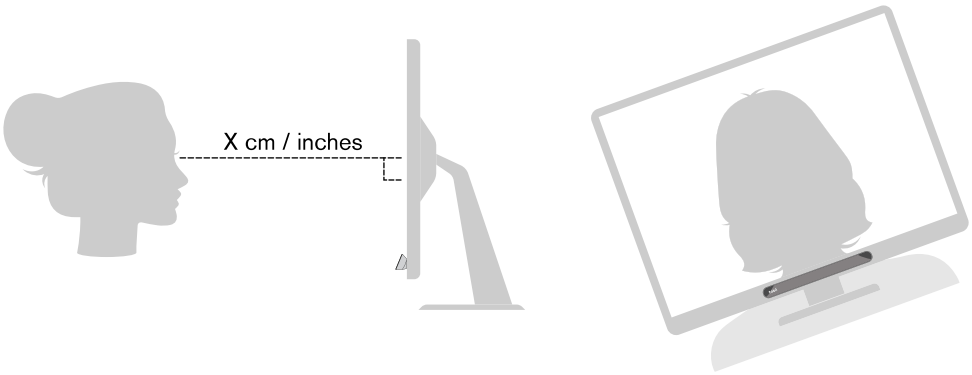

Figure 4.2 Positioning for Users Leaning Sideways or Lying Down

This means that for those users leaning sideways or those lying down the PCEye Mini 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 4.2 Positioning for Users Leaning Sideways or Lying Down, page 9*.

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 Mini 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 Interaction usage.

Monitors larger than up to the maximum screen size limitation should not be used for optimal Gaze Interaction usage, for more information see *Appendix C Technical Specifications, page 15*.

5 Settings

5.1 Setup Windows Hello

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.

   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 **Face**.
8. If you'd like to get some more detailed background information on **Windows Hello** select **Learn more**. 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.

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

6 Applicable Application Software

The PCEye Mini 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.

7 Product Care

7.1 Temperature & Humidity

7.1.1 General Use

The PCEye Mini 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°C to 35°C (50°F to 95°F)
- Humidity: 20% to 80% (relative humidity, no condensation on the device)

7.1.2 Transportation and Storage

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

- Temperature: -20°C to 70°C (-4°F to 158°F)
- Humidity: 20% to 80% (relative humidity, no condensation on the device)

The PCEye Mini 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.

7.2 Cleaning

Before cleaning the PCEye Mini 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.

7.3 Transporting the PCEye Mini

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

7.4 Disposing of the PCEye Mini

Do not dispose of the PCEye Mini 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 Mini 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 Mini device will void the warranty.

It is recommended to keep the original packaging materials for the PCEye Mini.

If device needs to be returned to Tobii Dynavox for Warranty related issues or repair, it is beneficial that the original packaging or equal equivalent is used for shipping. Most shipping carriers require at least 2 inches of packing material around the device.

Please note: Due to Joint Commission regulations, any shipping materials including boxes sent to Tobii Dynavox must be discarded.

Appendix B Compliance Information

The PCEye Mini 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.

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 Mini complies with the following Directives:

- 93/42/EEC (MDD) - Medical Device Directive, as amended by 2007/47/EC
- 2011/65/EU (RoHS) - Restriction of Hazardous Substances Directive
- 2004/108/EC (EMC) - Electromagnetic Compatibility Directive

B4 Standards

The PCEye Mini 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 32:2013

Appendix C Technical Specifications

Technical Specifications	PCEye Mini
Gaze Data Rate	60 Hz
Data Streams	Eye tracking (gaze point, eye position, etc.) IR image stream at 30 fps
Power Consumption Full Operation	1.5 W typical average
Processing Unit	Tobii EyeChip™ with fully embedded processing
Interface	USB 2.0[1] (power and signal)
Head Movement Box [2] **size at distance**	
@ 45 cm (@ 17.1″)	>20 cm × 20 cm ellipse >7.9″ × 7.9″
@ 50 cm (@ 19.7″)	>25 cm × 30 cm ellipse >9.8″ × 7.9″
@ 65 cm (@ 25.6″)	>35 cm × 30 cm ellipse >13.4″ × 11.8″
@ 80 cm (@ 31.5″)	>35 cm × 35 cm circle >13.4″ × 13.4″
Distance from user to the Eye Tracker	45 cm - 85 cm 18″ - 33″
Screen Size[3] At 55 cm (21.7“) user distance	Recommended up to 19”
User Calibration (former tracking robustness)	>99%
Detected Gaze	
Interaction >30 Hz	98% for 95% of population[4]
Raw data max frame rate	90% for 95% of population[4]
Gaze Accuracy	
Across 95% of population[4]	<1.9°
Across 90% of population[4]	<1.7°
Across 80% of population[4]	<1.3°
Across 65% of population[4]	<1.0°
Ideal[5]	<0.3°
Gaze Precision	
Across 95% of population[4]	<0.4°
Across 90% of population[4]	<0.3°
Across 80% of population[4]	<0.25°
Across 65% of population[4]	<0.2°
Ideal[5]	<0.1°
Max Head Movement Speed	
Eye Position	40 cm/s (15.7 in/s)
Gaze Data	10 cm/s (3.9 in/s)

Technical Specifications	PCEye Mini
Max Head Tilt	>20°
Max Yaw, pitch	25°
Visibility	Low visibility (850 nm)
Flicker	no flicker (30 Hz constant)
Data Flow and Data Rate	
Gaze Latency	25 ms
Gaze Recovery	100 ms
Low Resolution Stream	640×480 @30 Hz
Unit Size (Length × Height × Depth)	169,5 mm × 17,8 mm × 12,4 mm 6.67″ × 0.70″ × 0.49″
Unit Weight	59 g 2.1 oz

1. USB2 requirements: USB 2.0 BC1.2 provides Tobii IS4 with sufficient power and signal bandwidth.
2. 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.
3. 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.
4. 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.
5. The “ideal” degree numbers are the previous standard of measuring accuracy and precision, both previously from Tobii and presently from all eye tracking competitors. Though “ideal” numbers are useful to get a general feel about comparative quality and performance, they are not applicable to real world usage in the same way as quantitative degree-of-accuracy and precision over percentage-of-population numbers based on extensive testing across representatives of the whole population.

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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*