

Tobii Pro Glasses 3

Product Description

Head Unit

Recording Unit

Corrective Lenses

Controller Application

Product Description Tobii Pro Glasses 3

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1 Introduction



1.1 Intended use

Tobii Pro Glasses 3 is a wearable eye tracker for academic, commercial, and industrial use for the capture of truly objective and deep insights into human behavior in a real-world environment. Pro Glasses 3 is designed to capture what the wearer is viewing while providing robust and accurate eye-tracking data. The complete Pro Glasses 3 product package consists of a head unit, a recording unit, and the Tobii Pro Glasses 3 controller application installed on an external device.

The product should only be used as described in the Pro Glasses 3 User Manual. Please read the Pro Glasses 3 User Manual and other supplied documentation thoroughly before using the product.

This product is continuously being developed and refined. Please visit www.tobii.com for the most recent specifications for the application and for the latest version of this document.

2 System Overview

2.1 Pro Glasses 3 packages

Pro Glasses 3 is sold in four different packages. All packages contain the following components:

Head unit	Safety and compliance information
Recording unit	Carry case for Pro Glasses 3
SD card to USB Type-A adapter	Ethernet cable (3 meters)
Removable nose pads (4 pcs in different sizes)	USB Type-A to micro USB adapter cable
Head strap	Cleaning cloth
Rechargeable Li-ion batteries, type 18650 (3 pcs)	Calibration cards (3 pcs)
Battery charger for Li-ion batteries with standard and 12v power cords (EU, US, UK, AUS)	Calibration stickers (10 pcs)
USB charger for recording unit + power adapter plugs (EU, US, UK, AUS)	Ethernet to USB Type-C adapter
SD memory cards with cases (3 pcs)	

The table below details the specific features available in each package.

Components	Live View Package 50	Live View Package 100	Live View Wireless Package 50	Live View Wireless Package 100
Pro Glasses 3 controller application	•	•	•	•
50 Hz	•		•	
100 Hz		•		•
WLAN functionality			•	•
Basic support	•	•	•	•

2.2 Optional accessories

The following optional accessories can be added to the Pro Glasses 3 system

Component	Description
Corrective Lenses	Snap-on corrective lenses for Tobii Pro Glasses 3 to cater for people who wear prescription lenses. The Corrective Lenses accessory for Pro Glasses 3 is a set of attachable lenses to correct both nearsightedness and farsightedness. This accessory allows you to include a larger cross-section of the population in your research. See the Pro Glasses 3 <i>User's Manual</i> for more information
IR Blocking Safety Lenses	This accessory package contains two lenses (clear and tinted) that are compliant with safety glass standards to support research in bright environments and locations requiring eye protection.

2.3 System components

The Pro Glasses 3 system comprises the head unit, recording unit, and the Pro Glasses 3 controller application software installed on either a computer running Windows 10 or later, or on an Android device running version 9 or later. Each component is briefly described below. In addition, Tobii Pro Lab can be used for further analysis of eye-tracking data.

The system includes:

1. The head unit. Wearable eye-tracking glasses.
2. A recording unit, connected to the head unit via a head unit cable. The recording unit holds the battery and stores the recorded data on a SD memory card. The recording unit is controlled from a device running Pro Glasses 3 controller application.
3. Pro Glasses 3 controller application is used to manage the participants, start and stop recordings, and to view real time and recorded eye-tracking data.
4. Either computer running Windows 10 or later, or an Android device running version 9 or later with Pro Glasses 3 controller application installed. Pro Glasses 3 controller application connects to the eye tracker through an Ethernet connection (either wireless or wired).
5. Tobii Pro Lab¹ (optional) installed on a Windows computer. Any eye-tracking analysis beyond qualitative analysis of eye-tracking session replay, is carried out using Tobii Pro Lab.



Pro Glasses 3 controller application is designed to be used only with Pro Glasses 3. No other types of eye trackers can or should be used together with the Pro Glasses 3 controller application.

Pro Glasses 3 controller application is designed to be installed and used on a computer running Windows 10 or later or an Android device running version 9 or later. The software should not be installed on any other types of devices.

2.4 Head unit

The head unit is a highly sophisticated measuring device. It consists of several very sensitive sensors and must be cared for correctly. See Pro Glasses 3 User's Manual for more information on product care.

The head unit consists of the following parts:

1. Must be purchased separately.



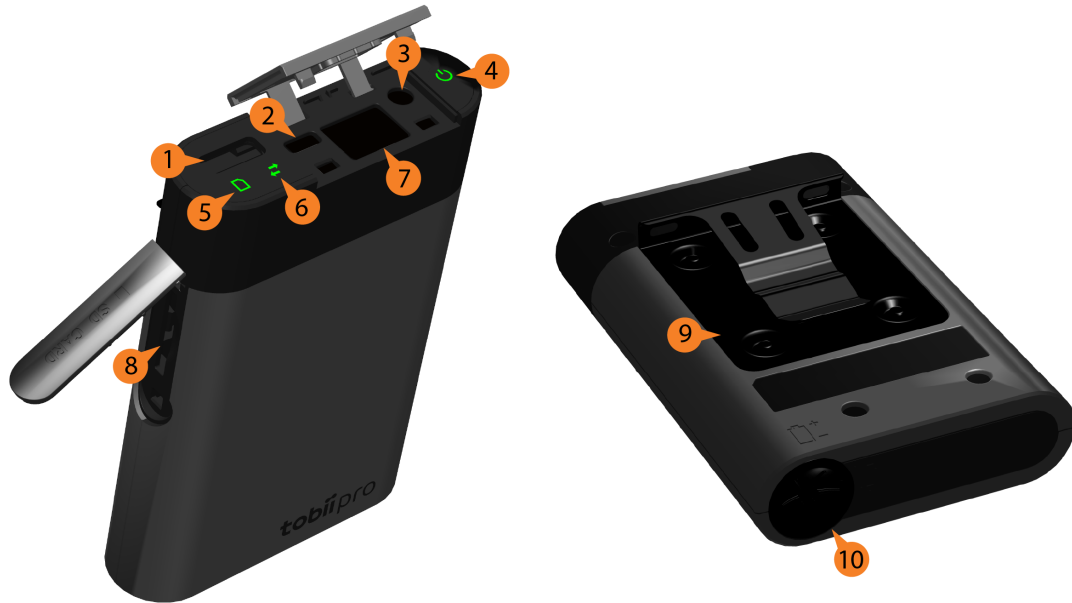
Part	Description
1. Infrared illuminators (x 8 per eye)	Illuminates the eyes to assist the eye-tracking sensors
2. Head unit cable	Connects to the recording unit to save collected data
3. High-definition scene camera	Captures a Full HD video of what is in front of the participant
4. Microphone	Picks up sounds from the participant and their immediate surroundings
5. Eye-tracking cameras (x 2 per eye)	Records eye orientation and movements
6. Accessory mounting holes	Used to attach some of the optional accessories, for example the IR Blocking Safety Lens
7. Nose pad	Can affix additional nose pad to change sizing

2.5 Recording unit

The recording unit is a small computer that controls the head unit. It records and stores eye-tracking data, sounds, and scene camera video on a removable SD memory card. The recording unit carries a replaceable and rechargeable Li-ion

battery that supplies power to both the recording unit and the head unit. The recording unit has several connectors and a power button and is controlled from Pro Glasses 3 controller application.

The recording unit consists of the following parts:



Part	Description
1. HDMI connector	Connects to the head unit cable
2. Micro USB connector	Connects to USB charger for powering the unit and charging the battery
3. 3.5 mm connector for data synchronization	TTL pulse for synchronization with external data sources
4. Power button and LED power indicator	Touch button that turns the recording unit on and off. LED power indicator indicates power state and remaining battery power
5. SD card Activity LED	Indicates if SD memory card is present and if the recording unit is currently saving data to the SD card
6. Connection status LED	Indicates connection to the Pro Glasses 3 controller application.
7. LAN port	Connects to a device running the Pro Glasses 3 controller application, via the supplied Ethernet cable. The recording unit can also be connected to a device via WLAN ² .
8. SD memory card slot	Slot for SD memory card
9. Belt clip	Attaches the recording unit to participant's belt
10. Battery compartment	Holds the Li-ion battery

i The Pro Glasses 3 package contains an external SD card reader for use with computers that are not equipped with an internal SD card reader. For installation instructions, see the documentation in the SD card reader's package or the manufacturer's website.

2. Not available in the Tobii Pro Glasses 3 Live View Package

2.6 Pro Glasses 3 controller application

The Pro Glasses 3 controller application software is used to manage participants and recordings made using the recording unit. It can perform the following functions:

- Add participants
- Manage recordings
- Live view of ongoing recordings
- Instant replay of recordings
- One point calibration
- Configure WLAN settings and connect to existing networks

3 Technical Specifications

3.1 Eye tracking

Eye tracking technique	Corneal reflection, dark pupil, stereo geometry
Binocular eye tracking	Yes
Sampling rate	50 Hz or 100 Hz
Calibration procedure	One point
Parallax compensation tool	Automatic
Slippage compensation	Yes, 3D eye tracking model
Pupil measurement	Yes, absolute measure

3.2 Head unit

Material	Grilamid plastic, stainless steel, optical grade plastic
Nose pad	Grilamid plastic, with clip on attachments
Scene camera, video resolution	1920 × 1080 at 25 fps
Scene camera, video format	H.264
Scene camera, field of view (diagonal)	106 deg. 16:9 format
Scene camera, field of view (horizontal and vertical)	95 deg. horizontal / 63 deg. vertical
Weight	76.5 grams including cable
Frame dimensions (width ×depth ×height)	153 ×168 ×51 mm
Cable length	1200 mm
Audio	16 bit mono, integrated microphone
Design characteristics	Light weight and discreet
Number of eye tracking sensors	4 sensors (2 per eye)
Fixed geometry	Yes
Sensors	Gyroscope, Accelerometer, Magnetometer: ST™ LSM9DS1 (sampled at 100 Hz)

3.3 Recording unit

Battery recording time	105 min.
Battery type	Rechargeable 18650 Li-ion, Capacity: 3 400 mAh
Storage media	SD (SDXC, SDHC) card
Connectors	Micro USB, RJ45 (Ethernet), 3.5 mm jack (sync port), head unit connector
Dimensions (height x width x depth)	130 x 85 x 27 mm
Weight	312 grams
Sync Port	3.5 mm jack (TTL signal)

3.4 Corrective Lenses (optional)

Correction lenses	32 pieces., ranging from -5.0 dpt. to +3.0 dpt. in increments of 0.5 dpt. Made of optical-grade plastic with hard coating.
Dimensions (height x width x depth)	80 x 270 x 370 mm (complete kit)
Weight	1150 grams (complete kit)

3.5 Pro Glasses 3 controller application — minimum system requirements

Operating System	Windows 10 (32 bit and 64 bit)	Android 9 or later
CPU	Intel® Core™ i5	n/a
Memory	8 GB RAM	6 GB RAM

3.5.1 Compatible Android devices

There is a very wide range of Android devices available on the market, each with their own unique combination of hardware specifications. While most devices that fulfill the minimum system requirements should be able to run the Glasses 3 controller application, Tobii Pro cannot guarantee they will do so. The following list shows the devices which have been tested and are confirmed to work with the Glasses 3 controller application.

Device	Operating system
Galaxy Tab S5e	Android 9
Galaxy S10	Android 9
Pixel 4 XL	Android 10

Appendix A Safety

A1 General precautions



The Pro Glasses 3 system is described in the Pro Glasses 3 User's Manual and must be used according to the manufacturer's instructions. Connecting any other component to the system, or using the components improperly can cause injury to the user or damage to the equipment and is done so entirely at the user's own risk.



The Pro Glasses 3 system must be fitted on the test participant according to instructions in the Pro Glasses 3 User's Manual. Tobii Pro or its agents are not liable for damage or injuries to a person or their property due to a Pro Glasses 3 eye tracker system in any configuration being dropped. Fitting the Pro Glasses 3 onto a test participant is done entirely at the user's own risk.



The Pro Glasses 3 system is to be used for research purposes only. Be aware that due to the low, but possible risk of failure or distraction, the Pro Glasses 3 should not be relied upon or used in dangerous or otherwise critical situations.



Tobii Pro Glasses 3 head unit is equipped with a head strap to enable tighter mounting of the eye tracker onto the wearer's head. Neither Tobii Pro nor its agents are liable for damages or injuries to a person or their property caused by the Pro Glasses 3 head unit head strap.

A2 Usage warning



The Pro Glasses 3 system is composed of several components as described in the User's Manual and should be used according to manufacturer instructions. Connecting, or by other means using any other component than advised in the User's Manual may damage or injure a person, their property or recorded data, and is done entirely at the user's own risk.



Pro Glasses 3 eye tracker should be fitted on the test participant according to manufacturer instructions. Tobii Pro or its agents are not liable for damage or injuries to a person or their property due to a Pro Glasses 3 eye tracker being dropped in any configuration. Fitting the Pro Glasses 3 onto a test participant is done entirely at the user's own risk.



Pro Glasses 3 head unit is equipped with a head strap to enable tighter mounting of the eye tracker onto the wearer's head. Neither Tobii Pro nor its agents are liable for damages or injuries to a person or their property caused by the Pro Glasses 3 head unit head strap.

A3 Emergency



The Pro Glasses 3 system is to be used for research purposes only. Be aware that due to the low, but possible risk of failure or distraction, the Pro Glasses 3 should not be relied upon or used in dangerous or otherwise critical situations.

A4 Child warning



The Pro Glasses 3 is an advanced computer system and electronic device that is composed of numerous separate, assembled parts. These parts have the possibility of becoming separated from the device, constituting a potential choking hazard or other danger to a child. Young children should not have access to, or use, the device without parental or guardian supervision.

A5 Infrared warning



Do not use the Pro Glasses 3 system when in the vicinity of devices that are susceptible to Infrared (IR) light. When activated, the Pro Glasses 3 head unit emits IR light, which can affect certain medical devices and other devices that are susceptible to disturbance by IR light and/or radiation.

A6 Photosensitivity/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 the participant starts to feel odd during use, have them remove the Pro Glasses 3 head unit immediately.

A7 Mechanical shock



The Pro Glasses 3 system is a delicate measuring instrument used for research purposes and should be treated with care at all times. To avoid breaking or damaging the internal electronic circuits, do not drop, knock, or shake the device. Eye-tracking quality or accuracy can be seriously affected if the Pro Glasses 3 head unit or recording unit are dropped. If the eye tracker is exposed to mechanical shock, for example, when dropped, do not try to start it or connect it to a power source. Contact Tobii Pro Support for instructions.

A8 Bending



To avoid breaking or damaging the internal electronic circuits, do not bend any part of the eye-tracking system. Eye-tracking quality or accuracy can be seriously affected if the Pro Glasses 3 head unit or recording unit has been bent.

A9 Do not open or disassemble



Do not open or disassemble the Pro Glasses 3 head unit or the recording unit. Non-compliance will result in loss of warranty! There are no user serviceable components inside. Contact Tobii Pro Technical Support if your Pro Glasses 3 system is not working properly.

A10 Connectors



The Pro Glasses 3 head unit and recording unit have numerous external interfaces (connectors). Connecting any other device or connector than those intended may cause personal injuries and/or damage the Pro Glasses 3. Tobii Pro or its agents are not liable for any damages or injuries to a person or their property due to connecting unintended connectors.

A11 Head unit cable



The head unit cable connected to the head unit must only be used to connect to the recording unit. Do not use the head unit cable for any other purpose or for connecting to any other devices. Tobii Pro or its agents are not liable for any damages or injuries to a person or property due to incorrect use of the head unit cable.

A12 Environment



Avoid any exposure to direct sunlight as this will affect eye tracking quality and longer exposure can overheat the equipment. Avoid prolonged exposure to any liquids, gels, moist, rain, or sweat. Do not use the eye tracker underwater.



Do not place or use the equipment in places subject to extreme temperatures and humidity, such as on top of and or near a heating element, in a hot or damp room, or in a hot automobile in the sun. Usage temperature: 5°C to +45°C / 23°F to 113°F

A13 Safety and usage



The Tobii Pro Glasses 3 head unit is designed to connect only to the Tobii Pro Glasses 3 recording unit and should not be connected to any other device.



The recording unit is designed to connect only to the head unit and a device running Windows 10 or later operating system, or an Android device with version 9 or later, and with the Glasses 3 controller application installed. The recording unit should not be connected to any other devices.

A14 Wireless warning



The recording unit contains radio transmitters and receivers (WLAN). Make sure that it is placed as far as possible from any equipment, objects or body parts sensitive to such signals.



電波法により5GHz帯は屋内使用に限ります。

A15 Transportation



Always use the supplied carry case and packaging material to transport the eye-tracking equipment and provide added protection.

A16 Accessories



Only use accessories provided by or approved by Tobii Pro.

A17 Cleaning



Before cleaning any part of the Pro Glasses 3 system, disconnect all cables and make sure the device is turned off. Both the Pro Glasses 3 head unit, recording unit, and Corrective Lenses have surface coatings that require special care. Only use the supplied microfiber cleaning cloth or similar products specially intended for cleaning screens or glass with a special coating. Avoid touching, scratching, or smudging the lenses on the Pro Glasses 3 head unit or the Corrective Lenses and keep all the surfaces clean. Eye-tracking quality may be degraded if surfaces are dusty or damaged. Some plastic parts, such as the sidepieces and the nose pads, can be cleaned with water or disinfectant applied on a piece of soft cloth. Take special care to ensure that there are not smudges or scratches covering either the illuminators or sensors in the lenses.

Appendix B Compliance Information

B1 EU Compliance

B1.1 Conformity with EU directives

Tobii Pro AB declares that this device is in compliance with the essential requirements of the following EU directives:

- 2014/35/EU Low Voltage Directive (LVD)
- 2014/30/EU Electromagnetic Compatibility (EMC) Directive
- 2014/53/EU Radio Equipment (RED) Directive
- 2011/65/EU Restriction of Hazardous Substances (RoHS) Directive

B1.2 CE marking



All Tobii Pro Glasses 3 are CE-marked, indicating compliance with the essential health and safety requirements set out in European Directives.

B1.3 WEEE marking



Pro Glasses 3 is compliant with the Waste Electrical and Electronic Equipment (WEEE) Directive 2012/19/EU

B2 US and Canada compliance

B2.1 FCC interference and Industry Canada statement



Pro Glasses 3 recording unit 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. Tobii Pro Glasses 3 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 Tobii Pro Glasses 3 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 increasing the separation between Tobii Pro Glasses 3 and the receiver. Modifications not expressly approved by Tobii Pro AB could void the user's authority to operate the equipment under FCC rules.

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.

B2.2 ETL compliance



The Pro Glasses 3 head unit ETL 5001591 complies with ETL regulations based on safety standard UL 62368-1:2014 2nd, CAN/CSA C22.2 No. 62368-1:2014 2nd, control number 5001591.

The Pro Glasses 3 recording unit complies with UL 60950-1 and CAN/CSA C22.2 No. 60950-1-07, certification number E180881.

B2.3 UL compliance



The Pro Glasses 3 recording unit E180881 is compliant with UL 508A.

B2.4 California proposition 65



This Pro Glasses 3 recording unit and battery can expose you to chemicals including carbon-black extracts and Nickel, which are known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov.

B3 Electromagnetic compatibility compliance

Pro Glasses 3 recording unit complies with the following emission standards:

- EN 61000-6-3:2007/A1:2011
- EN 55032:2012/AC:2013 Class B
- EN 61000-3-3:2013
- 47 CFR FCC Rules and Regulations Part 15 subpart B and ICES-003 Issue 5
- VCCI V-3/2014.04, Class B ITE
- KN 32

Pro Glasses 3 recording unit complies with the following immunity standards:

- EN 55024:2010/A1:2015
- EN 61000-6-1:2007
- KN 35

Pro Glasses 3 head unit complies with the following emission standards:

- EN 55032:2015
- FCC 47 CFR Part 15: Radio frequency device, Subpart B and ICES-003 Issue 6
- VCCI CISPR 32:2016 (Class B)

Pro Glasses 3 head unit complies with the following immunity standards:

- EN 55035:2017

B4 Safety compliance

Pro Glasses 3 complies with the following standards:

- IEC/EN 62471:2008, Photobiological safety of lamps and lamp systems
- EN62311:2008, Specific Absorption Rate

Pro Glasses 3 head unit complies with the following standards:

- IEC 62368-1:2014 2nd Ed, Audio/video, information and communication technology equipment - Part 1: Safety requirements

Pro Glasses 3 recording unit complies with the following standards:

- IEC 60950-1:2005 2nd + Am 1:2009 + Am 2:2013, Information Technology Equipment - Safety - Part 1: General requirements

B5 China regulatory information

The Tobii Pro Glasses 3 recording unit and its operation comply with the following standards:

GB 4943.1-2011 (Chinese Standard)

B6 Japan regulatory information

The Tobii Pro Glasses 3 recording unit and its operation comply with the following standards:



- J60950-1(H22) (Japanese Standard)

The Pro Glasses 3 head unit complies with:

- J62368-1(H30) and IEC 62368:2014 2nd Edition

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取扱説明書に従って正しい取り扱いをして下さい。VCCI — B



R 201-150060

The Pro Glasses 3 recording unit complies with:

- Telefication, certification number 201-150060

B7 Korea regulatory information



The KC (Korea Certification) mark signifies compliance with Korea's product safety requirements for electrical and electronic equipment and is issued by Korea-based certification bodies that have been approved by the Korea Standards Association.



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For questions or problems with your product, contact your Tobii Pro 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.

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