Pro Nano
Product Description

tobii pro

Pro Nano Product Description

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1 Introduction

Tobii Pro Nano welcomes you to the world of eye-tracking studies. Pro Nano is a small and port-able eye tracker that you can use for studies on laptops, monitors up to 24″ (16:9), mobile devices (using the mobile device stand), real-world interfaces, projections, simulators, and TV screens. It is designed for portability, versatility and ease of use.

Tobii Pro Nano is our smallest, most light-weight research grade eye tracker, featuring the latest technology advancements from Tobii Pro. The Pro Nano device measures 170 mm (6.69″) long and weights 59 grams (2.1 oz.), and uses a sampling rate of 60 Hz. The design also serves as an introduction to extensive studies into human behavior for educational and research purposes.

Use Pro Nano on:

- Windows and Mac computers with an optimal screen size of 19″ or less (16:9)
- Mobile devices, with our Mobile Device Stand
- Real-world setups like physical objects and social interactions, with the Tripod Stand
- Projections, simulators, and larger screens, with the Tripod Stand

1.1 Symbols used in this document

Three different symbols are used in this document:

The Information symbol means something is important or needs special attention.

The Tip symbol denotes additional information that can make a process or function easier.

The Warning symbol means there is a possible risk of harm if the warning is ignored.

1.2 Intended use

Pro Nano is primarily intended for fixation-based eye tracking studies on Windows and Mac laptops and Windows tablets. The Pro Nano system has been tested and proven capable of track-ing a large proportion of the population, regardless of gender and ethnicity, with very high accur-acy and precision on portable screens. Its discrete appearance, with fully embedded processing of eye-tracking data, enables flexible and unobtrusive data collection methods. The eye tracker's mounting plates enable easy attachment to various screens and the device is connected via a USB 2.0 port to your Windows or Mac computer.

Pro Nano is perfect for any researcher who wants to get started with or explore quality eye track-ing as a research method for fixation-based eye tracking studies in:

- Psychology and cognition
- Package design in marketing research

- User interface design and development

Pro Nano is our smallest research-graded eye tracker designed for portable labs doing data collection in the field:

- Make your own portable research lab that fits in a backpack
- Collect data wherever your participants are, for instance at universities, hospitals, and public spaces

Pro Nano is well-suited for equipping universities with portable eye tracking solutions that enable students to test eye tracking and build knowledge how the technology can be used in different fields, answer research questions and enhance commercial endeavors.

1.3 Tobii Pro Eye Tracker Manager

Tobii Pro Eye Tracker Manager is free software available on Tobii Pro Connect.

Pro Eye Tracker Manager helps you manage your Tobii Pro eye tracker. It lets you see which eye tracker firmware and software versions you are running and also facilitates updates (where applicable). It provides:

- Drivers and Firmware installation or updates
- Display setup
- Positioning guide
- User calibration
- Gaze visualization*

*Gaze visualization in Pro Eye Tracker Manager lets you quickly evaluate the quality of the eye tracking data. The Gaze visualization overlaps data only on the Pro Eye Tracker Manager screen while Pro Eye Tracker Manager is open.

References in product documentation to Tobii Pro Eye Tracker Manager refer to the latest version available on Tobii Pro's website.

2 Safety

2.1 Mounting warning

Tobii Pro eye trackers should be mounted according to Tobii Pro´s instructions for approved mounts.

The mounting bracket is designed for adhesion to a wide variety of surfaces, such as monitors or laptop screens. It is also designed for clean removability. Failure to follow the recommended removal instructions can result in damage to both the monitor/laptop and the mounting bracket. Do not mount the eye tracker on monitors positioned above the head or face of a user, as it might fall.

2.2 Emergency warning

Tobii Pro eye trackers are designed to be used only for research purposes. Be aware that due to the low, but possible risk of failure or distraction, the eye tracker should not be relied upon or used in dangerous or critical situations.

2.3 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.

2.4 Infrared warning

When activated, the Tobii Pro eye tracker emits pulsed infrared (IR) light. Certain medical devices are susceptible to disturbance by IR light and/or radiation. Do not use the eye tracker in the vicinity of these kinds of susceptible medical devices, as their accuracy or proper functionality could be inhibited. Do not stare into the LED lights at a close distance (<15cm).

2.5 Magnetic field warning

This Tobii Pro eye tracker 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.

2.6 Child safety

A Tobii Pro eye tracker is an advanced computer system and electronic device. As such, it is composed of numerous separate, assembled parts. In the hands of a child, some of these parts have the possibility of being separated from the device, possibly resulting in a choking hazard or other danger to the child.

Young children should not have access to, nor use of the device or its accessories without parental or guardian supervision.

2.7 Electricity

Do not open the casing of the Tobii Pro eye tracker, this could expose you to potentially hazardous electrical voltage. The device contains no user-serviceable parts. Non-compliance will result in loss of warranty! Contact Tobii Pro Support if your eye tracker is not working properly.

2.8 Accessories

Only use accessories provided by or approved by Tobii Pro AB.

2.9 Third party

Any use of a Tobii Pro eye tracker outside the intended use and together with any third-party software or hardware that changes the intended use is a risk, and Tobii Pro AB can not take any responsibility in these situations.

3 Software and System Requirements

Pro Nano is connected to a computer via a standard USB 2.0 interface. All eye tracking processing is done in the internal Eye Chip.

3.1 System requirements

Operating system	Windows 10 Professional or Enterprise editions macOS High Sierra and Mojave
CPU	1 GHz, 2 cores
RAM	2 GB RAM memory **Note:** Software for eye-tracking research might require higher RAM
Connectors	USB 2.0 Type A

3.2 Pro Nano compatibility – Windows

Platform support	Windows 10, Professional or Enterprise editions
Tobii Pro Software support	Tobii Pro Lab version 1.101 or newer Tobii Pro Eye Tracker Manager version 2.0 or newer
SDK support	Tobii Pro SDK version 1.7 or newer

3.3 Pro Nano compatibility – macOS

Platform support	macOS 10.13 High Sierra; macOS 10.14 Mojave
Tobii Pro Software support	Tobii Pro Eye Tracker Manager version 2.0 or newer
SDK support	Tobii Pro SDK version 1.7 or newer

3.4 Tobii Pro Eye Tracker Manager

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3.5 Additional software options

Pro Lab tobiipro.com/product-listing/tobii-pro-lab/	Pro Lab is a comprehensive research software platform for eye tracking designed to meet the highest demands on different research scenarios with exact timing accuracy. This software offers an efficient workflow, making it easy to design experiments, record data, analyze and visualize eye tracking data, and to sync this data with other biometric data streams.
Pro SDK tobiipro.com/product-listing/tobii-pro-sdk/	Pro SDK offers a broad set of tools that makes it simple to develop a variety of niche applications or scripts across multiple platforms, using a wide range of programming languages. This SDK gives the researcher access to the full set of relevant gaze data streams, such as 3D eye coordinates, raw data, pupil data, etc.
Third-party software	This term refers to any application built on Pro SDK.

4 Pro Nano Hardware and Accessories

4.1 What's in the box

- Pro Nano Eye Tracker
- USB 2 extension cable (1 m)
- Travel case
- Safety and Compliance and Installation Guide
- 2 cleaning wipes for cleaning the screen bezel before affixing the mounting plate
- 4 mounting plates with non-permanent adhesive for attaching the eye tracker to a screen bezel

4.2 Compatible accessories

- Mobile Device Stand
- Additional Mounting Brackets
- Tobii Pro Tripod Stand

Learn more about Tobii Pro Nano accessories available for purchase on tobiipro.com.

5 Product Care

5.1 Transportation and storage

Use the provided case when traveling with the eye tracker. For shipping and storage, use the original packing.

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

- **Temperature**: -40°C to 70°C (-40°F to 158°F)
- **Humidity**: 20% to 95% (no condensation on the device)

Tobii Pro eye trackers are not waterproof or water resistant. The eye tracker should not be kept in excessively humid, damp or wet conditions. Do not submerge the eye tracker in water or in any other liquid. Be careful not to spill liquids on the device.

5.2 Cleaning

- Before cleaning the Pro Nano eye tracker, unplug its USB cable.
- Use a soft, slightly damp, lint-free cloth and clean the eye tracker's front gently.
- Avoid getting moisture in openings on the device.
- Don't use window cleaners, household cleaners, aerosol sprays, solvents, alcohol, ammonia, or abrasives.

Scratches on the front surface of the eye tracker may impair its performance.

5.3 Disposal of the eye tracker

Do not dispose of your Tobii Pro eye tracker in general household or office garbage receptacles. Follow your local regulations for the proper disposal of electrical and electronic equipment.

5.4 Limitation of liability

Except where prohibited by law, Tobii Pro AB is not liable for any loss or damage arising from the use or misuse of a Tobii Pro eye tracker or the mounting plate, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence, or strict liability.

6 Technical Specifications

6.1 Eye tracking specifications

The characteristics of the gaze data from an eye tracker can be described in terms of accuracy and precision. Accuracy describes the angular average distance from the actual gaze point to the one measured by the eye tracker. Gaze precision describes the spatial variation between successive samples collected when the subject fixates at a specific point on a stimuli.

Eye tracking technique	Video-based pupil- and corneal reflection eye tracking with dark and bright pupil illumination modes. One camera capture images of both eyes for accurate measurement of eye gaze and eye position in 3D space, as well as pupil diameter.
Sampling frequency	60 Hz
Precision*	0.10° RMS in optimal conditions**
Accuracy*	0.3° in optimal conditions
Binocular eye tracking	Yes
Total system latency	1 frame (17 ms)
Blink recovery time	1 frame (immediate)
Gaze recovery time	250 ms
Data sample output***	Timestamp Gaze origin Gaze point Pupil diameter
Eye image data stream	Not available
TTL input stream	Not available
Tracker and client time synchronization	Integrated between the eye tracker time domain and the client computer time domain.

*Tobii Pro uses an extensive test method to measure and report performance and quality of data. Please download the Tobii Pro Nano Eye Tracker Data Quality Test Report for more detailed information.

** Using built-in filtering

*** For more information about output data and the supplementary data stream, read the Tobii Pro SDK documentation.

6.2 Setup

Delete this text and replace it with your own content.

Head movement tolerance	Good. One-camera system gives an accurate calculation of the data and a good level of precision. More sensitive to head movement than dual camera systems.

Freedom of head movement (at 65cm distance)*	Width × height: 35 cm × 30 cm (13.78" × 11.81") at 65 cm (25.59") (at least one eye tracked)
Freedom of head movement* (at 80 cm distance)	Width x height: 45 cm x 45 cm (17.7" x 17.7") (Circular shape with at least one eye tracked)
Operating distance (mounted on screen)	45–85 cm (18”–33”) from the eye tracker
Tracker setup options	Tracker mounted on tripod allows for even larger screens or physical objects to be tracked
Optimal screen size	Up to 24" **

* Describes the region in space where the participant can move their head and still have at least one eye within the eye tracker’s field of view (trackbox) at the specific distance.

** For larger 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.

6.3 Software compatibility

Software and framework compatibility	Tobii Pro Lab Tobii Pro Eye Tracker Manager Tobii Pro SDK Any application built on the Tobii Pro SDK
Operating system	Microsoft Windows, Apple Mac

6.4 Hardware versions

Single product version	60 Hz

6.5 Pro Nano Eye Tracker specifications

Dimensions (L x H x W) in cm/inches	17 x 1.8 x 1.3 (6.69“ × 0.71“ × 0.51“)
Weight	59 g (2.1 oz)
Connectors	USB 2.0 Type A
Data processing	Tobii EyeChip™ with fully embedded data processing.
Eye tracker cameras	1
Illuminators	Dark pupil Illumination Modules, Bright pupil Illumination Modules
Power consumption	Typical power consumption: <1.5 W Max. rated power consumption: 6 W
Power options	Directly via USB 2.0 Type A

Appendix A Compliance

The certification and compliance statements in this section apply to theTobii Pro Nano eye tracker.

Pro Nano has been tested and found safe for indoor use, and is intended for office and industrial environments, and for laboratories, classrooms and homes. The product complies with regulations related to electromagnetic safety and eye safety. Pro Nano adheres to the regulations related to sustainability, such as restrictions for hazardous substances and waste.

Pro Nano has market compliance in the following countries or regions:

- European Economic Area
- USA
- Canada
- Japan
- China
- Australia
- New Zealand
- South Korea

Safety

Safety standards:	• IEC 60950-1:2005 +A1 +A2, Safety of Information Technology Equipment • IEC/EN 62471:2008, Photo Biological Safety of Lamps and Lamp Systems
Certification and declaration of conformance:	CE, RCM

Sustainability

Directives:	• 2011/65/EU(RoHS)-RestrictionofHazardousSubstancesDirective • 2012/19/EU(WEEE)-WasteElectricalandElectronicEquipmentDirective

EMC

EMC standards:	• EN 55032:2015, Electromagnetic compatibility of multimedia equipment. Emission requirements • EN 55024:2010+A1:2015, Information technology equipment, Immunity characteristics, Limits and methods of measurement • EMC Emission: EN 61000-6-3:2007, Generic Emission standard for residential, commercial and light industry environments • EMC Immunity: EN 61000-6-1:2007, Generic Emission standard for residential, commercial and light industry environments • FCC part 15, Class B • ICES-003, Class B • AS/NZS CISPR32:2015, Electromagnetic compatibility of multimedia equipment - Emission requirements • KC standard (KC-KN-32/35)
Certification and declaration of conformance:	CE, FCC part 15, Class B, ICES-003 Issue 5, KC standard (KC-KN-32/35), RCM
Directives:	2014/30/EU (EMC) - Electromagnetic Compatibility Directive

Appendix B Support, Learning Center, and Warranty

B1 CustomerSupport

If you need help, please contact Customer Support at Tobii Pro. In order to receive assistance as quickly as possible, make sure you have access to your Tobii Pro device and, if possible, an Internet connection. You should also be able to supply the serial number of the device, which you will find on a sticker on the back or bottom of the device.

B1.1 Get help online

Many questions can be answered by visiting Tobii Pro Connect. It contains the latest information about contacting Support, links to our Learning Center, and much more. Log in or register to see information about your account and to reach Customer Support onTobii Pro Connect.

B2 Learning Center

If you are new to eye tracking, or want to extend your knowledge about eye tracking research, sign up for one of our learning programs and events, or browse through our extensive article library in our Learning Center.

For further product information and other support resources, please visit tobiipro.com.

B3 Warranty information

Read more about Tobii Pro Care and Tobii Pro's eye tracker warranty in the Tobii Pro Service Description.

Appendix C Limitations and considerations

C1 Intended use

Tobii Pro eye trackers are intended to be used in research activities about human behavior including eye movements, in a dry and dust free indoor environment. The product should only be used as described in this User's Manual. Please read the User Manual and other supplied documentation thoroughly before using the product.

C2 Light conditions

Tobii Pro recommends that eye tracking studies be performed in a controlled environment. Sunlight should be avoided since it contains high levels of infrared light which will interfere with the eye tracker system. Sunlight affects eye tracking performance severely and longer exposure can overheat the eye tracker. This eye tracker is not designed for exposure to (direct) sunlight. Eye tracking generally does not work in strong direct sunlight.

Shielding the eye tracker adequately from the sun may prevent sunlight from interfering with eye tracking.

C3 Eyelashes

Long eyelashes can be obstructive when the participant's eyes are less open, especially if the participant is wearing mascara. In rare cases, eyelashes may completely block the view of the participant's pupils, making eye tracking impossible.

C4 Droopy eyelids

Droopy eyelids or otherwise obstructive eyelids can block the view of the participant's pupils. In rare cases, such eyelids may completely block the view of the participant's pupils, making eye tracking impossible.

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Support for Your Tobii Pro Device

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Visit connect.tobiipro.com

Contact Your Solution Consultant or Reseller

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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