

tobii

Tobii Pro Fusion

Reach further with your research



Tobii Pro Fusion

Is the generation of compact, high-performance eye trackers from Tobii. It's design enables you to carry out research on subjects that are hard to get into the lab. With sampling frequencies of up to 250 Hz, two eye tracking cameras, and two pupil tracking modes (bright and dark pupil), Tobii Pro Fusion enables you to adapt your data collection setup to different research populations, scenarios, and data requirements.

Key features

- Detailed data with sampling frequencies of up to 250 Hz.
- Tolerance for head movement with two eye tracking cameras and enhanced eye tracking algorithms.
- No external processing unit required, which ensures timing consistency as the data is processed autonomously in three internal processors.
- Support for USB Type-C.
- Pupil size data reported at the selected sampling rate.
- Eye images provided.
- The Eye Openness signal is available for the accurate detection of eyelid movement.

Collect data where your subjects are

Recruiting test subjects is an obstacle all researchers face. Certain test populations are more difficult to recruit and test in the lab, and some individuals might even feel uncomfortable in this environment.

The size and design of Tobii Pro Fusion enable you to create a compact mobile lab for data collection. Bring your lab to your subjects, where they are available and feel comfortable, without compromising data quality or granularity.

Our patented eye tracking algorithms and robust subject calibration ensure that Tobii Pro Fusion produces reliable data in a variety of indoor environments.



Wide range of data collection scenarios

The success of your research lab lies in surrounding yourself with great collaborators and students, and providing good support for existing projects, including the eye tracking equipment you use. If you have a busy lab with students running multiple projects, each project will likely have different demands on the eye tracking setup. Tobii Pro Fusion provides a flexible solution that supports different research scenarios and study designs.

Tobii Pro Fusion has a slim design that integrates well with standalone monitors and laptop screens up to 24 inches. The eye tracker can also be mounted on a tripod and coupled with a scene camera so it can be used in study setups that use real-world stimuli such as physical objects or scenes. The sampling speed of up to 250 Hz allows you to capture data for a wide range of experimental paradigms (fixation, smooth pursuit, and saccade based). The different sampling frequencies and associated bright and dark pupil tracking modes allow you to adapt the performance to your study design and test population.

Our configuration and setup application — Tobii Pro Eye Tracker Manager — is included with all our eye trackers and guides you through the setup procedure and managing different configurations.

High standards of data quality

Tobii Pro Fusion is designed to provide high data quality and tracking robustness.

- Tobii's patented 3D eye model delivers accurate gaze data, including wide gaze angles and all corners of the screen.
- Demonstrates extremely robust tracking capabilities, regardless of ethnicity, age, or corrective lenses.
- Maintains high accuracy, precision, and tracking robustness during subjects' natural head movements and in different lighting environments indoors.

Software options

Tobii Pro Fusion works with Tobii Pro Lab providing a visual user interface and dedicated software features to guide and support the researcher through the different phases of data collection and processing during an tracking eye tracking experiment — from stimulus setup and test recording to preparing the data for further analysis.

Tobii Pro Lab is built on a platform that ensures precise and consistent timing accuracy. You can rely on full transparency — with access to both the gaze data and processed eye movement data (fixation filters), as well as insights into metric calculations. It can be also used to sync eye tracking data with other biometric data streams such as EEG, GSR, and EKG.

Tobii Pro SDK provides access to the full set of advanced gaze data streams that are relevant to your research, and advanced timing support compensates for any time differences in real-time, between the eye tracker and the computer running the SDK application, providing high synchronization accuracy. It also offers multi-platform support (including the latest versions of Windows, Linux, and macOS) and API bindings for several programming languages (.NET, Python, and MATLAB).

Technical specifications

Eye tracking specifications	
Eye tracking technique	Video-based pupil- and corneal reflection eye tracking with dark and bright pupil tracking*
Sampling frequency	60, 120, and 250 Hz or 60 and 120 Hz, depending on the hardware version
Accuracy**	0.3° at optimal conditions (down to 0.13°)
Precision**	0.2° RMS at optimal conditions (down to 0.09°)
Precision Filtered**	-0.04° RMS at optimal conditions
Binocular eye tracking	Yes
Eye tracker latency	3 frames
Blink recovery time	1 frame (immediate)
Gaze recovery time	250 ms
Freedom of head movement	Width × height: 30 cm × 25 cm (11.81" × 9.84") at 65 cm
Operating distance	50–80 cm (19.69"–31.49") from the eye tracker's reference point
Maximum gaze angle	30 degrees
Maximum screen size	24" (16:9 aspect ratio)
Data sample output***	Timestamp Gaze origin Gaze point Pupil diameter Validity code
Eye openness stream	Eye openness stream is available in an eye tracker set to 120 Hz, 60 Hz, or 30 Hz sampling frequencies. Note that the eye openness signal is not available in 250 Hz due to the processing power limitation. Eye openness stream has the same frequency as the gaze stream and will have the same timestamps. Eye openness data is provided in millimeters for each eye individually.
Eye image data stream	Eye image data stream frequency is approximately 2 x 4 Hz
User calibration	Binocular
Tracker and client time synchronization	Integrated between the eye tracker time domain and the client computer time domain.

Eye tracker	
Dimensions	L 374 mm × H 18 mm × W 13.7 mm (14.72" × 0.70" × 0.53")
Weight	168g (5.9 oz.)
Connectors	USB Type-C USB Type-C to USB Type-A adapter
Port	AC adapter jack
Processing	3 Tobii EyeChip ASIC with fully embedded image and gaze processing
Eye tracking cameras	2 Tobii EyeSensor Modules
Illuminators	Dark pupil Illumination Modules Bright pupil Illumination Modules
Power consumption	Typically 15 W
Power options	Directly via USB Type-C connector With provided AC power adapter, when using a computer with USB 2.0 Type-A port

Software compatibility	
	Tobii Pro Lab (v1.130) Tobii Pro SDK Tobii Pro Eye Tracker Manager Any application built on the Tobii Pro SDK

Hardware versions	
	60 Hz 120 Hz 250 Hz

*Dark pupil tracking is supported in all sample frequencies. Bright pupil tracking is supported at 60 and 120 Hz.

**Tobii uses an extensive test method to measure and report performance and quality of data. For more information, download the relevant data quality test report from our customer portal: <https://connect.tobii.com>.

*** For the complete list of available data and the supplementary data stream, Tobii Pro SDK documentation is available on our customer portal: <https://connect.tobii.com>.

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