Tobii Eye Tracker 5L

Engineered for innovation

The Tobii Eye Tracker 5L is a USB peripheral engineered for innovation. Designed to be mounted on any device, screen, or monitor, this eye tracker delivers real-time data streams including gaze point, eye position, pupil diameter, user presence, and head pose. With two run modes and a maximum gaze sample rate of 120Hz, the Tobii Eye Tracker 5L is our fastest peripheral yet — perfect for building professional products and applications.

The Tobii Eye Tracker 5L can deliver eye tracking data for screens up to 27 inches with a 16:9 aspect ratio. It also runs with larger screen sizes, but with reduced coverage and less accuracy in the corners.

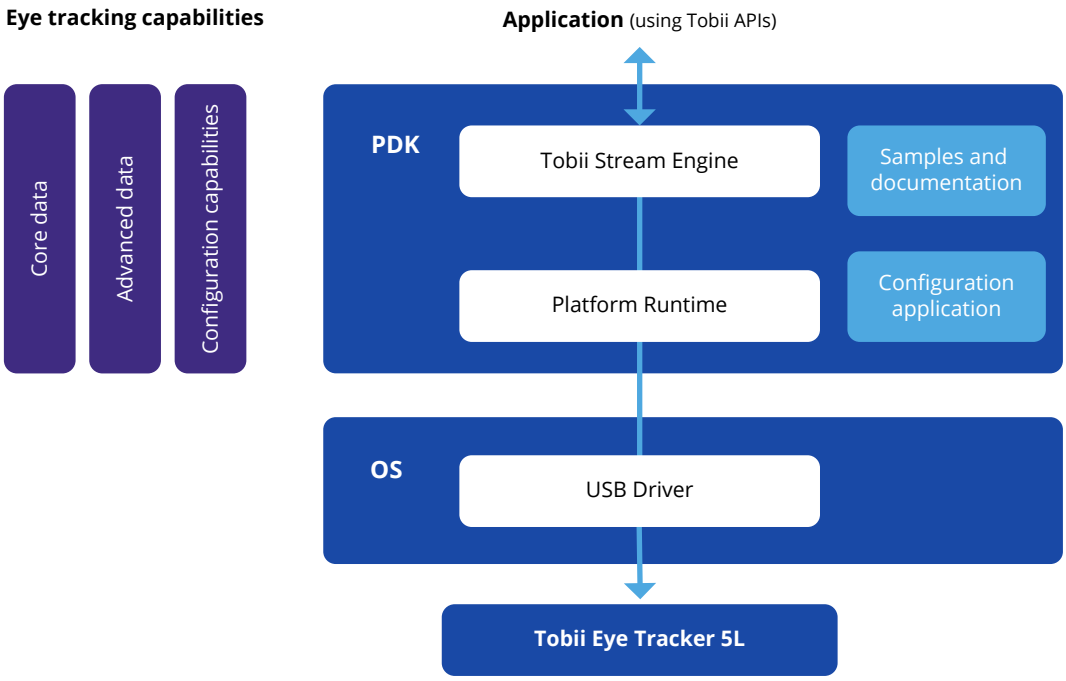
Standard and fast run modes

The Tobii Eye Tracker 5L can be set to operate in one of two run modes: standard or fast. In the default standard mode, the eye tracker operates at a gaze sampling frequency of 33Hz and with zero gaze recovery time (assuming the user is present).

Fast run mode* has been introduced for this eye tracker, allowing it to operate at 120Hz with a gaze recovery time of 50ms (assuming the user is present). Note that head pose data is not generated in fast run mode.

The addition of fast run mode* enables the Tobii Eye Tracker 5L to be optimized for high gaze sampling rate or robust gaze recovery — depending on the needs of the application.

Building applications



The Tobii Eye Tracker 5L is a USB peripheral designed for use in the development and commercialization of professional products and applications. It ships with a Platform Development Kit (PDK) that provides access to the eye tracking software, enabling you to customize processes such as calibration and configuration.

The PDK includes a platform runtime in the form of a service executable and a client library — Tobii Stream Engine. To ensure you remain in control, downloading and deploying updates in your environment is a manual process.

Communication with the eye tracker takes place over the Stream Engine API. The PDK also includes a configuration application and sample code to simplify initial development.

Eye tracking specifications

Gaze sampling frequency	120Hz in fast run mode* 33Hz in standard run mode
Binocular eye tracking	Yes
Gaze recovery time	0ms — standard run mode 50ms — fast run mode*
Track box dimensions	~20 x 20cm (7.9 x 7.9 inches) at 50cm from screen ~35 x 35cm (13.8 x 13.8 inches) between 65-80cm from screen
Operating distance	45-95cm (20-37 inches)
Maximum screen size	27 inches (aspect ratio 16:9)

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Data sample output

Core data streams	Combined gaze point User presence Gaze origin User position guide Head pose (standard run mode only) Responsive gaze
Advanced data streams*	Left and right eye separate unfiltered: — gaze point — gaze origin — pupil diameter
Configuration capabilities*	User-specific eye tracker calibration — for accurate gaze point calculation[i] Display setup — to determine the relative position of the eye tracker with respect to the display, for accurate gaze-point and head-pose calculation

Technical specification

Dimensions	285 x 15 x 12mm (11.2 x 0.59 x 0.47 inches)
Interface	USB 2.0, 80cm (31 inches) cable
Processor	Tobii EyeChip™, fully embedded processing
Illumintion	850nm (near infrared)
Power consumption	Average <2.0W
Operating systems	Windows 10 and Linux (Ubuntu 18)
Other features	Windows Hello

*requires additional licensing

[i]A note on calibration

The anatomy of a person's eye is unique. To compensate for natural variations, accurate calculation of gaze point relies on individual user measurements for eyeball, lenses, and cornea sizes — which is achieved through calibration. If gaze-point accuracy is not relevant to your application, the calibration process can be skipped.