Getting started

iPad configuration and Skyle App

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Technical Specifications

Skyle (Remote Eyetracker Device)

Supply voltage	5V DC
Current consumption	0.9 A
Sampling rate	18 Hz (max. 30Hz)
Accuracy	1° - 2°
Eye tracking mode	Binocular
Operating distance	45 – 65cm
Tracking Range (Width x Height)	30 x 12cm
Illuminators	NIR 850nm
Dimensions	200 x 42,5 x 44mm (l*w*h)

System

Device Compatibility	iPad Pro 12.9 3rd and 4rd Generation (2018 and 2020)
OS Compatibility	iPadOS 13 (13.3) to iPadOS 13.5

Please note:

Skyle for iPad uses the Assistive Touch function of the iPad. Before you update your iPad, make sure that the new version is compatible with eyetracker. For more information, please visit eyev.de or contact us at support@eyev.de

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First Steps

Preparation

Install the "Skyle" app on your iPad. This app is required for the user-specific calibration of the eye control.

The app also offers the possibility to display the camera feed of the eye control in order to carry out an optimal positioning.

Connect the eyetracker

The eye tracker has to be connected to the iPad with the supplied cable. The USB-C end leads to the iPad - the Micro-USB end is connected to the Eyetracker. An additional connection is not required.

Please note that we cannot guarantee the functionality of the Eyetracker when using a HUB.

The start of eye control can take up to 30 seconds. If the infrared diodes are permanently on, the device is ready for use.

**Follow the settings in the following chapter to activate iPad control.**

Assistive Touch and other assistive features

The Skyle Eyetracker uses the "Assistive Touch" functionality of the iOS 13. This functionality offers a pointer that can be controlled with the eyes. Actions are executed by focusing on a specific point of view.

Please follow the following steps carefully.

Activate Assistive Touch

If Assistive Touch is switched on, a symbol appears on the screen whose menu makes various functions accessible.
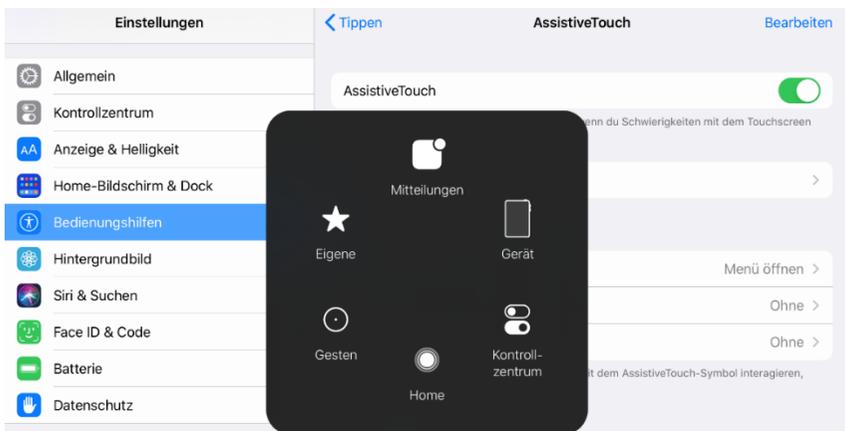
enable *Settings -> Accessibility -> Touch -> AssistiveTouch -> AssistiveTouch*

This menu can then be adapted to user-specific requirements:

Settings -> Accessibility -> Touch -> AssistiveTouch -> Customise Top-Level Menu

Set mouse speed

The mouse speed **must** be set to the **minimum** value.

ZEIGERBEWEGUNG

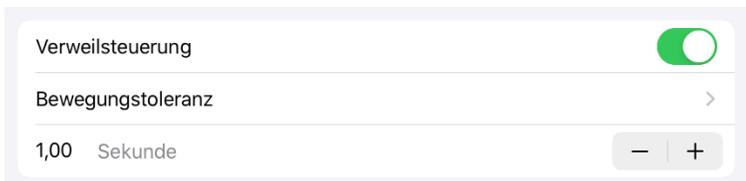*Settings -> Accessibility -> Touch -> AssistiveTouch -> Trackingspeed*

Note (iOS 13.4)

Since iOS 13.4 the menu can be found under the following path:
*General -> Trackpad & Mouse -> Tracking Speed*

Switch on and configure Dwell Control

Dwell Control **(1)** is used to perform actions. If a point is fixed on the screen for a fixed time **(3)**, a selected action is executed. By default, this is equated with a single click or tap. Fixing is aborted when the cursor or viewpoint moves. Since this can happen during eye tracking due to various influences, the movement tolerance **(2)** can be adjusted to prevent unwanted fixations from being aborted.

1. *Settings -> Accessibility -> Touch -> AssistiveTouch -> Dwell Control*

Verweilsteuerung	⬤
Bewegungstoleranz	>
1,00 Sekunde	− +

2. *Settings -> Accessibility -> Touch -> AssistiveTouch -> Movement Tolerance*
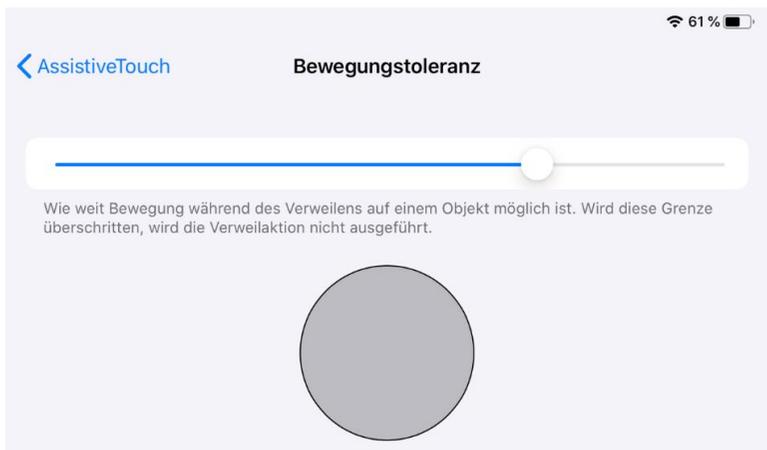

3. *Settings -> Accessibility -> Touch -> AssistiveTouch -> Seconds*

Set dwell time as you prefer

Create custom gestures

The AssistiveTouch menu lets you select custom gestures. These can be used to perform common tablet gestures such as scrolling, swiping, or pinching. A new gesture is created by recording a desired movement of the finger on the tablet. These saved gestures can then be found in the AssistiveTouch menu under Custom.
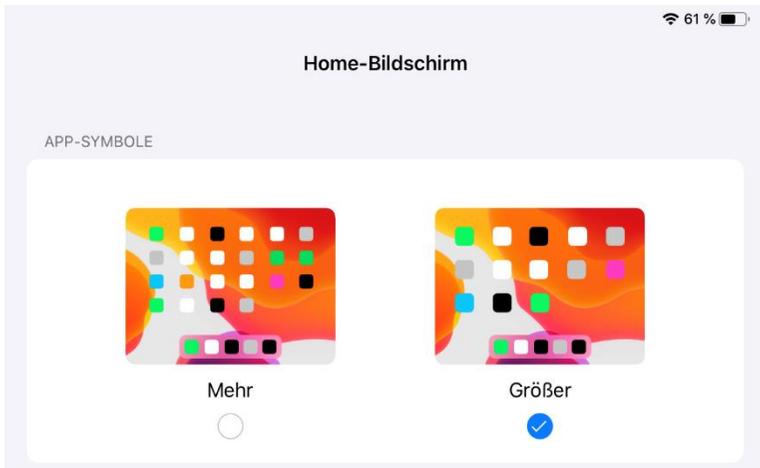
Settings -> Accessibility -> Touch -> AssistiveTouch -> Custom Gestures -> Create New Gesture...
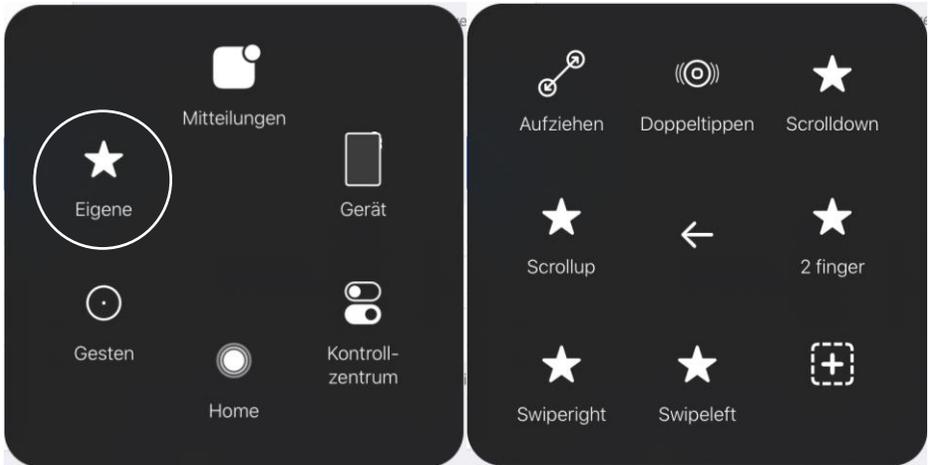
Adjust display size

The screen size can be adjusted to better hit the desktop icons. **This step is optional.**

Settings -> Home Screen & Dock -> App Icons

Settings -> Display & Brightness -> Display Zoom -> View -> Zoomed

Feature overview

External pushbutton

The Skyle eye control offers the possibility to connect a 3.5mm push button. This button can then be used to trigger a click, scroll through text, open the AssistiveTouch menu, or perform a calibration.

Buddy Button from AbleNet, Inc.

The following actions are predefined:

- Single click = Single click
- Double-click = open the AssistiveTouch menu
- Press and hold = scroll (look at the lower/upper edge of the screen)

Depending on the button the above assignment can be configured via the app. If the button is compatible, a configurable overview appears in the app under "Settings -> General".

Pause mode

If the Assistive-Toch-Cursor is temporarily not needed, for example during a movie, the eye tracking can be temporarily switched off.

To temporarily deactivate the cursor, the user looks into the camera of the eye control for a few seconds (between the two red LEDs).

If the cursor is needed again to control the tablet, you also have to look into the camera of the eye control for a few seconds.
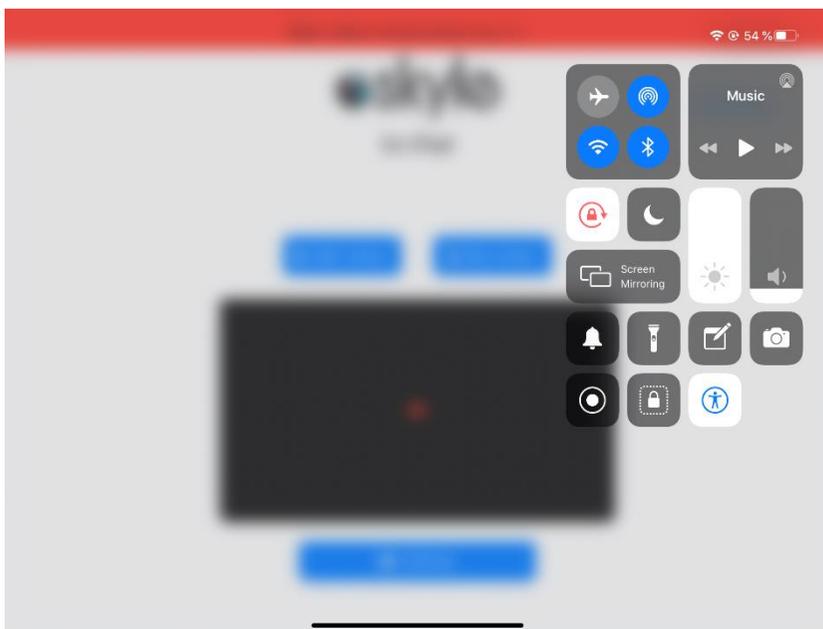
Alternatively, the iPad's control center can be expanded with the action "Accessibility Shortcut". In this case the cursor cannot be reactivated without contact.
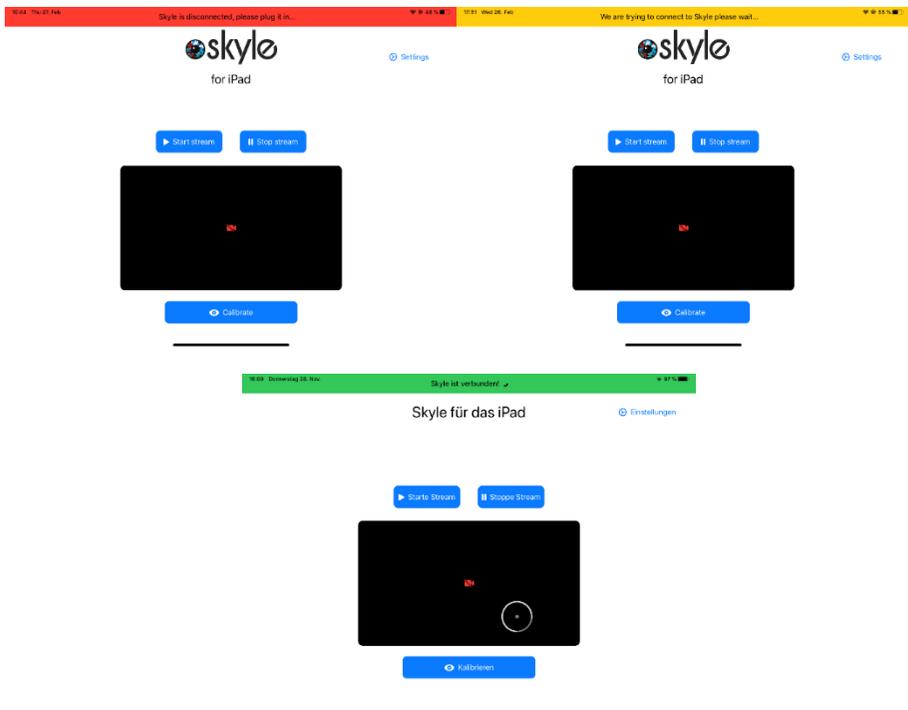
iOS app

The iOS app is mainly used to calibrate the eye control, but offers other useful features as well.

The app automatically detects if an eyetracker is connected:

Red: Not detected

Yellow: Detected

Green: Connected

Positioning

If the eye tracker is ready for use, eye movements are converted into mouse positions. If not, make sure that the user is positioned correctly. This means that the built-in camera has to recognize your eyes completely. The video stream, which can be switched on via the app's start page, can be used for this purpose.
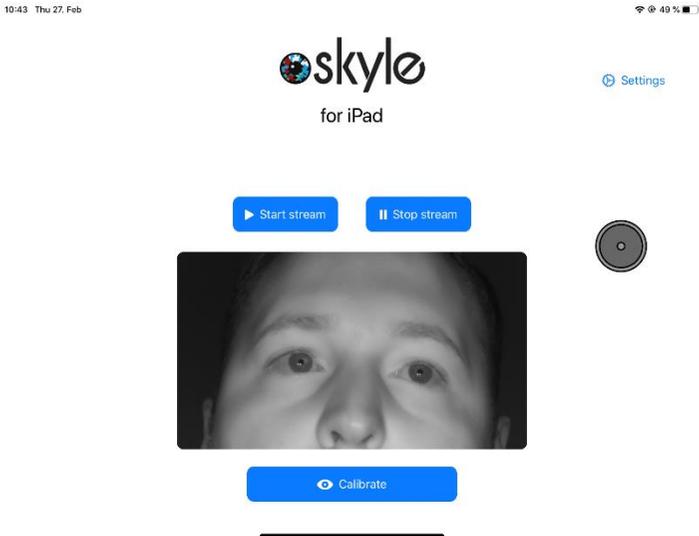
Alternatively, the eye control can be positioned so that you can see the reflection of your eyes in the eye tracker's pane. The optimal distance is 60 cm.
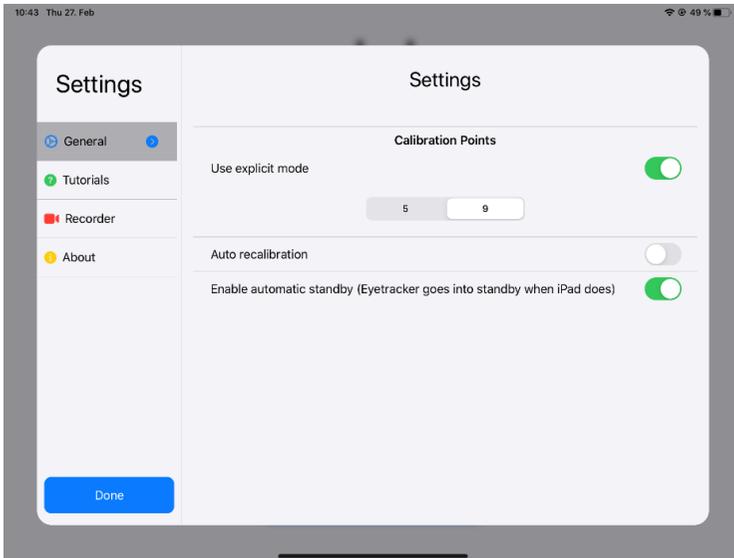
Calibration

Each eye is unique and must therefore be calibrated to control the tablet.

The calibration can be started directly on the start page of the app. Once this is done, the cursor jumps to 5-9 different positions which the user has to focus on. **Please focus the center of the circle.**

When the calibration is finished, these points are displayed on the screen. Please check in this step if the accuracy is satisfactory or repeat the calibration.

The calibration will end after a timeout of 100 seconds and uses the previous calibration profile.

In the app settings (Settings -> General) you can switch between a 5 and 9 point calibration. Depending on the calibration, this may result in a loss of quality.

Update

Updates for the eye control can be installed via the app. If a new update is available, a popup will appear when the app is started, allowing you to install the update directly. If you want to install the update later, you can do so at any time via the settings (Settings -> Information -> Update).
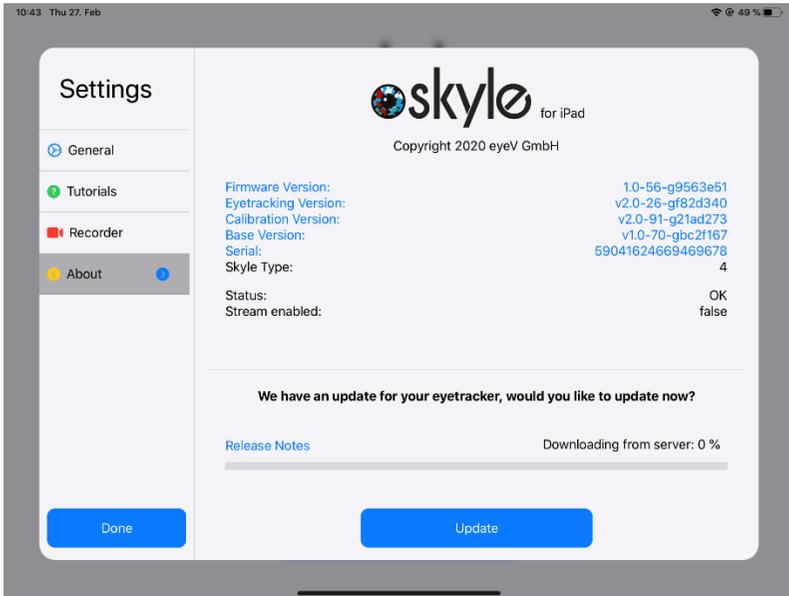
If an update has been installed, the eye control will restart itself.

Improvement of the eye control

There is no such thing as perfect eye control. Each eye is unique and has unique characteristics. To support the largest possible number of users, the largest possible amount of test data is required.

If an eye control does not work well, test data can be collected to improve the quality of the eye control. A 9-point calibration is performed during the collection ("Settings -> Recorder -> Improve"). The test data recorded during this process can then be checked and sent off. If you want your data to be deleted, please send an email with the corresponding character string, which you can find in the app under "Settings -> Recorder".

Instructions can also be found on YouTube: