



Aurora User Guide

Version 9.0



Aurora User Guide

Version 9.0.0-18-g61d67351d

April 15, 2020

Copyright © 2020 Smart Eye AB. All rights reserved.

Smart Eye AB

Första Långgatan 28B

413 27

Gothenburg

Sweden

www.smarteye.se

Contents

1	Introduction	1
1.1	Intended use	1
2	Software and System Requirements	2
2.1	System requirements	2
2.2	Compatible software	2
3	Aurora Hardware	3
3.1	What's in the box	3
3.2	Product care	3
4	Setup	4
4.1	Software installation	4
4.2	Mounting	5
4.3	Camera calibration	6
5	Software Update	8
5.1	Upgrade firmware	8
6	Support	10
6.1	Troubleshooting	10
6.2	Customer support	10
	Appendix A Safety and Compliance	11
A.1	Compliance	11
A.2	Operating Temperature	11
	Appendix B Technical Specifications	12

1 Introduction

The Smart Eye Aurora is an eye tracker designed to deliver insights wherever you are. The small size of the Aurora makes it easy to switch between different screens and projects, without compromising on the performance. If your needs change in the future, the existing Aurora can be upgraded to deliver higher framerate.

This manual contains useful information about the Aurora eye tracker, ranging from safety and compliance to product care. It also contains information about the mounting procedure and software setup. If any questions or difficulties arises, do not hesitate to contact the support.

1.1 Intended use

The Aurora is primarily designed for fixation-based eye tracking on screens, such as laptop screens and other monitors. The Aurora works well in all indoor illumination conditions, and offers precise and accurate tracking on screens up to 24". In addition to eye tracking, the Aurora also delivers precise head tracking and eyelid tracking.

The Aurora is designed for collaboration, and can be integrated with other sensors and bio-measuring systems.



Smart Eye Aurora eye tracker

2 Software and System Requirements

2.1 System requirements

Operating System	Windows 10 Anniversary Update (version 1607) or newer
RAM	4 GB
CPU	Quad core 6th generation Intel Core or Intel Xeon processor or newer
Camera Interface	USB 3.0 (for 60 Hz), USB-C (for 120 Hz)
Maximum Screen Size	24" (16:9 aspect ratio)

2.2 Compatible software

iMotions	www.imotions.com
----------	--------------------------------------------------------

3 Aurora Hardware

3.1 What's in the box

Aurora eye tracker

Two Chem Pad™ wipes for cleaning the mounting area

Two mounting brackets with tape

Safety and setup info note

Textile travel bag

USB-C cable, 2 m

3.2 Product care

The front glass of the eye tracker needs to be clean in order to ensure optimal tracking. If dirt or dust ends up on the front glass, the eye tracker has to be cleaned in a correct manner.

To clean the front glass use a dry microfiber cloth intended for cleaning cameras, camera lenses, or eyeglasses and carefully wipe the front glass. If unsupported cleaning methods are used the eye tracker might be damaged.

Warning! Do *not* use alcohol to clean the front glass, as it may damage the eye tracker!



4 Setup

This section describes the steps needed to setup your eye tracker. Install required software, mount the eye tracker on the screen and calibrate the eye tracker.

4.1 Software installation

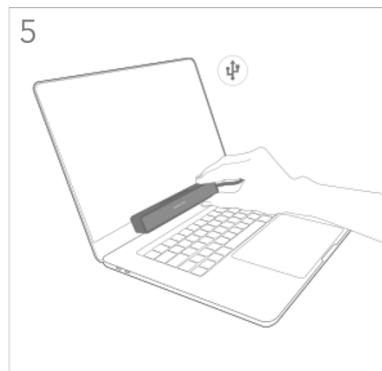
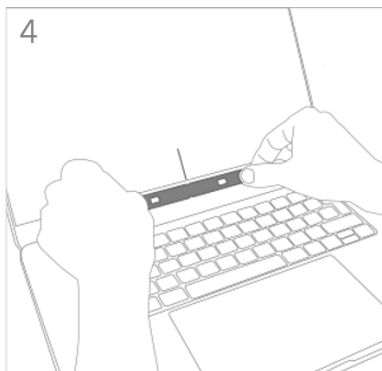
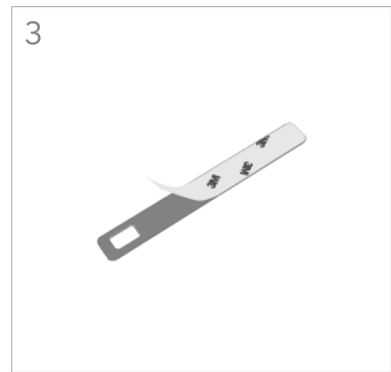
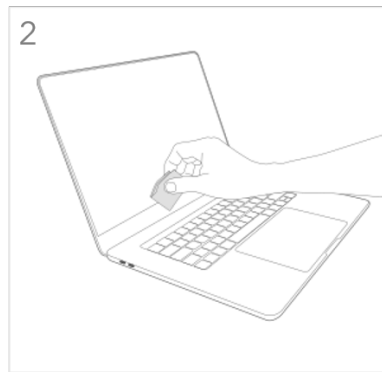
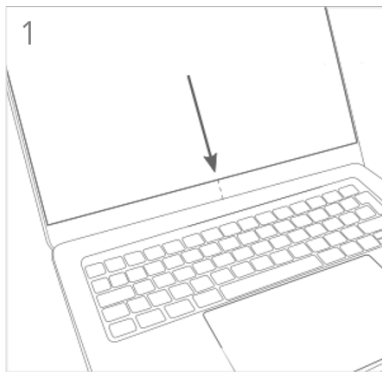
The software Smart Eye Tracker needs to be installed before using your eye tracker. Follow the installation steps below.

1. Launch the Smart Eye Tracker installer by double clicking it.
2. Click the *Install* button to start the installation.
3. A *User Account Control* window will be opened, click *Yes* to continue.
4. A *Windows Security* window will be opened, click *Install* to install eye tracker drivers. The installation may take a while.
5. Click the *Close* button when the installation has finished to exit the installer.

4.2 Mounting

The mounting bracket and Chem Pad™ wipe can be found in the box. To mount the eye tracker follow the steps below:

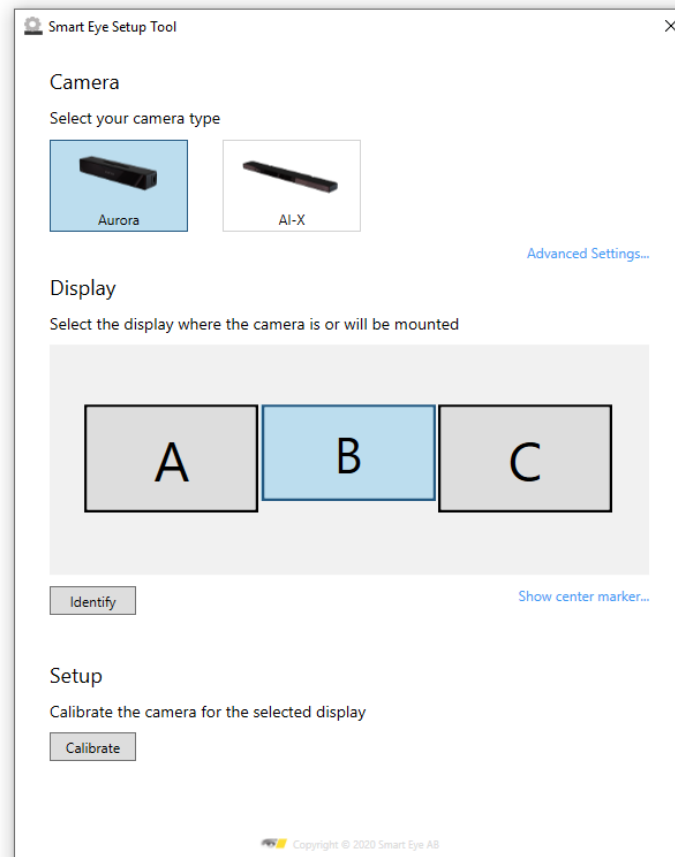
1. Find the center of the lower screen edge by marking manually or by using the center marker in the Smart Eye Setup Tool.
2. Clean the mounting area around the center with the Chem Pad™ wipe.
3. Remove the adhesive tape cover from the bracket.
4. Align the center of the bracket with the center of the lower screen edge. Make sure the bracket is straight. Press and hold for 30 seconds.
5. Attach the eye tracker to the bracket and connect the eye tracker to the computer using the supplied cable. If the cable is of type USB-A, make sure to connect it to a USB 3.0 port on the computer.



4.3 Camera calibration

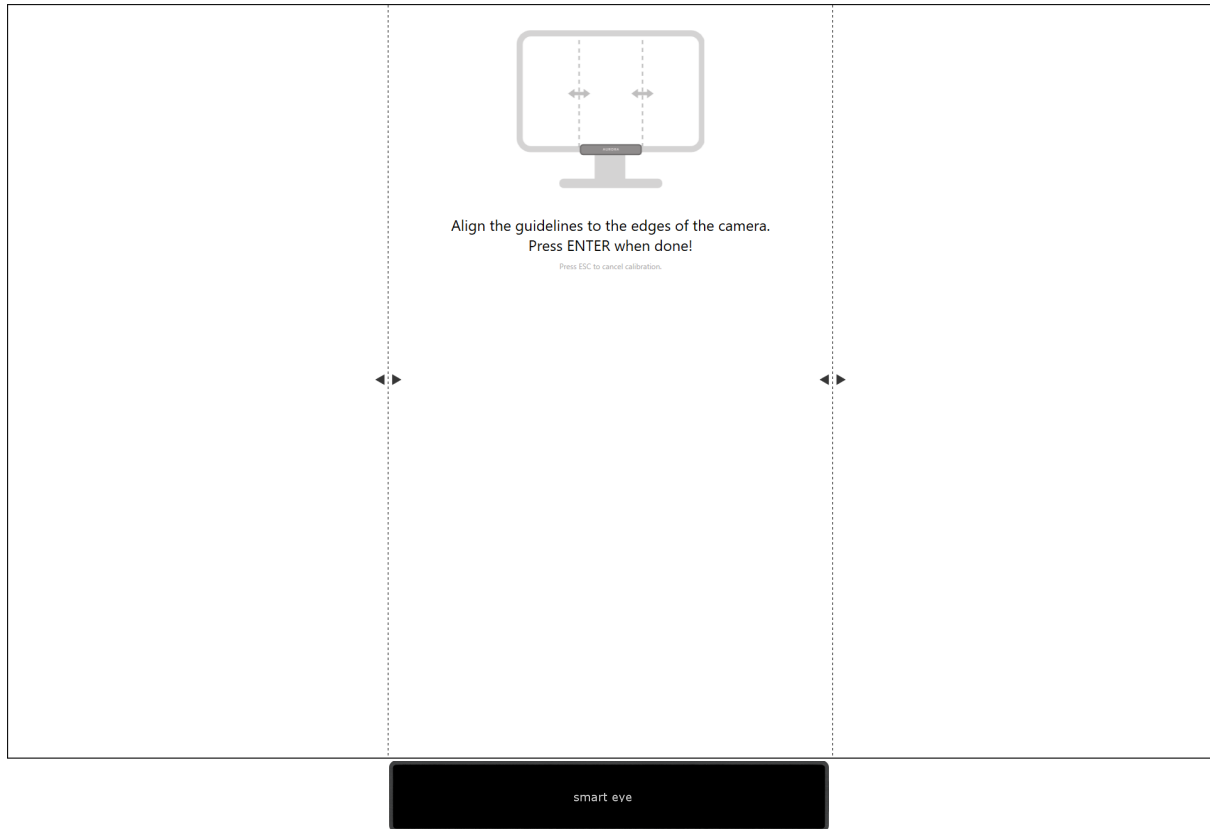
Please note that the Smart Eye Setup Tool sometimes uses the word *camera* instead of *eye tracker*. In this context the words are synonyms.

1. Run the Smart Eye Setup Tool. The Smart Eye Setup Tool is found in the Windows Start Menu.



Smart Eye Setup Tool

2. Select your camera type.
3. Specify on which screen your camera is mounted (if you have a single screen setup, this step is not necessary). Click the *Identify* button if you are not sure which screen your camera is mounted to. To be able to identify your screen a unique letter will be displayed on each screen connected to your computer.
4. Click the *Calibrate* button. The calibration window will be opened in full screen mode on the screen that your camera is mounted to.



Calibration window

5. Calibrate your camera by aligning the dashed lines to the edges of the camera. Confirm the calibration by pressing *Enter*. Once confirmed, the calibration is saved, and the Smart Setup Tool can be closed.

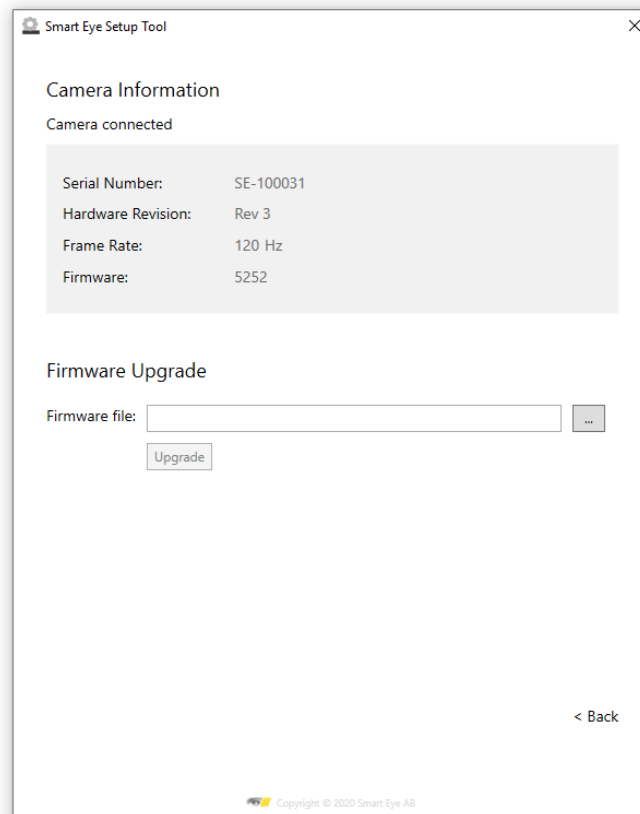
5 Software Update

5.1 Upgrade firmware

The firmware of the Aurora eye tracker may at times require upgrading to improve performance and stability of the Aurora eye tracker. Aurora firmware images are provided as *.auimg* files, and are written to the eye tracker using the Smart Eye Setup Tool. To perform a firmware upgrade, follow the steps below.

Please note that the Smart Eye Setup Tool sometimes uses the word *camera* instead of *eye tracker*. In this context the words are synonyms.

1. Open the Smart Eye Setup Tool (found in the Windows start menu).
2. Select Aurora as camera type and open the *Advanced Settings...*
3. Connect the Aurora eye tracker to a USB port on the computer (if not already done so), if the supplied cable is of type USB-A make sure to connect it to a USB 3.0 port. Verify that camera information is updated with values from the eye tracker.



Advanced Settings: camera information is displayed for the connected eye tracker. The displayed values will likely differ from the ones shown here.

4. Select the firmware file (*.auimg*) containing the new firmware and press the Upgrade button.
5. Wait for the firmware upgrade to complete. Note that this may take several minutes.



Warning! DO NOT unplug the Aurora eye tracker during the firmware upgrade! Doing so may render the eye tracker unusable.

6 Support

In this section you will find information about troubleshooting and support.

6.1 Troubleshooting

This section presents solutions to problems that you may encounter when using the eye tracker. If your problems persist or if you don't find any solution here, please contact support.

I can't install Smart Eye Tracker.

Make sure you have admin rights on the computer where you attempt to install Smart Eye Tracker.

The laptop goes to sleep when I connect the eye tracker to the bracket.

The eye tracker contains a magnet to make sure it attaches to the magnetic holder. Some laptop models also have a magnet in the lid to make sure the computer sleeps when the lid is closed. Change the setting so the computer stays awake even when lid is closed. This setting is found in the *Power Options* menu in the *Control Panel*.

There seems to be problem with the connection to the eye tracker.

Try unplugging the eye tracker and plugging it in again.

The framerate is low or fluctuates.

Make sure that the computer is connected to a power source and that a high performance Windows power plan is used. The power plan can be set in the *Power Options* menu in the *Control Panel*. Create a new power plan and make sure the high performance option is chosen.

6.2 Customer support

If you need any help or support with your eye tracker, please contact your sales representative or retailer.

Appendix A Safety and Compliance

A.1 Compliance

The statements in this section apply to the Aurora eye tracking device.

Safety standards:	IEC 62368
	IEC 62471

Declaration of conformity:	EU Directive 2014/30/EU (EMC)
	EU Directive 2011/65/EU (RoHS)

A.2 Operating Temperature

The Aurora eye tracker has been tested at normal operating conditions during a 24 hours period with an ambient temperature of 25 degrees. After approximately one hour of use the device reaches a stable temperature which is maintained until the tracker is turned off. The maximum temperature on the outside of the device was T degrees during the test. The Aurora eye tracker is designed with a good margin to operate at a temperature of T degrees and neither the function nor the lifespan of the product is adversely affected. The temperature T degrees is not harmful to the user, although the device may be experienced as unexpectedly warm to the touch.

Eye tracker sampling rate	T (<i>maximum temperature</i>)
60 Hz	40 degrees
120 Hz	43 degrees

Appendix B Technical Specifications

Sampling Rate	60 and 120 Hz
Headbox (Freedom of head movement)	50 x 40 cm at 65 cm distance
Operating Distance	50 - 80 cm
Accuracy	0.3 degrees (typ.)
Precision	0.1 degrees (typ.)
Output Data	Gaze origin, gaze point, pupil diameter, eyelid opening, head position and rotation, real-time time stamp All outputs as binocular data with associated quality index
Time Stamp Precision	1 ms
Blink Recovery Time	1 frame (immediate)
Gaze Recovery Time	1 frame (immediate)
Latency	25 ms (60 Hz), 17 ms (120 Hz)
Eye Tracking Principle	Dark pupil and corneal reflection
Maximum Screen Size	24" (16:9 aspect ratio)
Operating Environment	Indoor (all illumination conditions)
Size	146 x 24 x 27 mm (width x height x depth)
Weight	162 g
Cable Length	2 m (*for 60 Hz up to 8 m with additional hardware)
Camera Interface	USB 3.0 (for 60 Hz), USB-C (for 120 Hz)
Mount Type	On screen (with mounting plate)
Operating System	Windows 10
Accessories	External Processing Unit