Tobii Pro Glasses 2
Best Practices Guide

A collection of tips and shortcuts

tobii pro

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Table of Contents

1 Tobii Pro Glasses 2: best practices

1.1 What is this document?

This document is a guide with the essential checklists for setting up and making recordings with your Tobii Pro Glasses 2 wearable eye tracker and its Tobii Pro Controller software. More in-depth information is available via links to explanatory documents on Tobii Pro's website.

> **i** You get the most out of this guide by opening it on a device with internet access. That way you will be able to access the additional information provided by the links.

1.1.1 Five basic steps for making a recording

- Preparing your equipment
- Connecting your devices
- Creating/Selecting a participant
- Calibrating and verifying your devices
- Making recordings – starting, pausing, and stopping

1.2 Preparing your equipment for your study

1. Preparing your SD card
   - If you have used your SD card for previous recordings, back up all your data before making a new recording.
   - After backing up your data, format your SD card. You must do this to avoid data corruption.
   - Do not insert your SD card into a Mac computer, because as Mac computers can write hidden files on your SD card, and that might corrupt your data.
   - Make sure that your SD card has sufficient free space and remember to regularly back up your data between recordings.

2. Smudges on the infrared lights or the cameras can affect eye-tracking. Wipe them clean with the provided microfiber cloth.
3. The Pro Glasses 2 are designed for dry indoor environments. Therefore, never expose the equipment to direct sunlight as that might affect its eye-tracking quality and cause it to overheat.
4. Run Windows updates and fixes on your laptop or tablet.
5. Check whether your network adapter drivers are up to date; update them if necessary.
6. Battery checks:
   - Check that your tablet is fully charged.
   - Check that your recording unit's batteries are fully charged (4.2V).
   - Check battery levels between recordings to make sure you can finish the whole recording.
   - Don't confuse the battery levels of your Pro Glasses 2 and your computer.
   - Don't let the battery run flat during a recording, because that will corrupt your data.
   - The FAQs contain more information on how to preserve your batteries and their memory effect.

7. Software and settings checks
   - Check whether your Controller software is up to date. New updates are indicated in the status bar in Controller (when connected to the internet),. and you can get them for free in the download section of the Tobii Pro website.
   - Always check for compatibility with your Tobii Pro Lab version before updating your Pro Glasses 2 firmware! Use the table here.
   - Make sure that your computer or tablet running Controller fulfills the minimum system requirements.
   - If you use the Pro Glasses 2 100 Hz edition, select the correct setting (50 Hz or 100Hz) for your study. You can do this on the Controller Dashboard.

8. Check whether all essential accessories are in place:
   - calibration target
   - nose pads
   - cables
   - power supplies
   - head strap
   - SD card (see details here and here).

1.3 Connecting Pro Glasses 2 to your computer

Pro Glasses 2 can be connected to the computer running Controller via WLAN or an Ethernet cable, depending on what version you use. Both options are described below. There is a guide on how to connect your Pro Glasses 2 to your Controller software with tips for connectivity issues here.

1.3.1   Connecting Pro Glasses 2 to Controller via WLAN

1. Connect the Pro Glasses 2 recording unit to the head unit with the provided HDMI cable.
2. Switch on the Pro Glasses 2 recording unit.
3. Switch on the computer with Controller.
4. Click on the WLAN network icon at the bottom right of your screen.
    a. If you see the network icon, the computer is already connected to a network via a cable. You can still connect to the Pro Glasses 2 via WLAN by clicking on the Network icon.
    b. A list of available WLAN networks appears. It may take up to two minutes for a newly started recording unit to appear in the list of available networks.
5. If no WLAN network appears, check whether your wireless adapter is activated in the Windows Device Manager.
    a. Open the Windows Start menu, search for Device Manager and press Enter.
    b. Go to Network adapters, locate your wireless network adapter in the list, right-click on it and select Enable. Make sure Airplane mode is not activated.
    c. Click on the WLAN network with the same name as the serial number of your recording unit (TG02B-XXX...). The serial number is printed on the sticker at the back of the recording unit.
    d. Secure a proper connection by setting the WLAN adapter settings on the computer to obtain an IP address automatically.
    e. Make sure that you always connect automatically to the recording unit by selecting the *Connect automatically* check box.
    f. Click Connect.
    g. Enter the WLAN password *TobiiGlasses* into the network security key field and click Next. It may take up to two minutes for Controller to establish a connection to the recording unit.
6. When there is a connection between the software and the recording unit, the Controller Dashboard displays "Ready".

1.3.2   Connecting Pro Glasses 2 to Controller with an Ethernet cable

1. Connect the Pro Glasses 2 recording unit to the head unit.
2. Switch on the Pro Glasses 2 recording unit.
3. Switch on your computer with Controller.
4. Locate the Ethernet port on your computer.
5. If there is no Ethernet port, use an Ethernet-to-USB adapter.
6. Connect the Ethernet cable to the Ethernet ports on the computer and the recording unit.
7. Secure a proper connection by setting the Ethernet adapter settings on the computer to obtain an IP address automatically.
8. When there is a connection between the software and the recording unit, the Controller Dashboard displays "Ready".

1.3.3   Basic trouble-shooting

▪ If you experience problems connecting your Pro Glasses 2 to the Controller, check this FAQ.
▪ The FAQs also provide details on the Glasses 2 wireless password, WLAN signal range, LAN and WLAN specifications, and what it means when the connection of the Pro Glasses 2 is displayed as "limited" in Window.

1.4 Creating/selecting a participant

Before you start a recording, you create or select the participant as outlined below. You find more details in the Tobii Pro Glasses 2 user manual, section 7.2.2.

1. Make sure the correct study is open in Controller.
2. Open the Dashboard via the Menu bar.
3. Check that the Control Panel of the recording unit displays "Ready".
4. Tap Start New Recording on the Control Panel.
   - If you use multiple pairs of Glasses 2, check that the correct recording unit is selected.

5. Create a new participant or select an existing participant.
   a. Create a new participant by entering the participant's name in the participant field and the participant details in the participant info field. Tap Create.
   b. Select an existing participant by tapping Existing Participant. Select the appropriate participant from the list.

1.5 Calibrating the participant

The calibration is also outlined in the Tobii Pro Glasses 2 user manual, sections 7.5.1.2 and 7.1.5.3.

You ensure that you collect accurate eye tracking data by calibrating your Pro Glasses 2 individually for each participant. During calibration, the participant must wear the head unit while focusing on the center of the calibration target. The calibration target is printed on the supplied calibration cards and calibration stickers, and in Appendix D of the Tobii Pro Glasses 2 user manual.

⚠️ You cannot reuse the calibration for a participant.

1. Find the right spot for calibration (avoid light interference and sun exposure).
2. Adjust the position of the Pro Glasses 2 and determine the right nose pad for the participant.
3. Position the calibration target about one meter from the participant, for example in front of a white wall. Don't position the target in front of a screen or the Live View.
4. Check that the participant looks at the center of the calibration target and that the calibration target appears in the scene camera live view video in Controller.
5. When the participant looks at the calibration target, tap the Calibrate icon in the bottom right hand corner of the live view window. Animated graphics illustrate the progress of the calibration.
6. After successfully calibrating your participant, always verify the calibration.
   a. Instruct the participant to look at a few objects suggested by you, for example the calibration target or the numbers on a clock.
   b. Use the live view video to verify that eye tracking data is sufficiently accurate for your study.

7. If eye tracking accuracy is acceptable, proceed to the next step. If not, tap Recalibrate and repeat the calibration process.

You can use the eye images to position the Pro Glasses 2 correctly on your participant. Details on how to interpret the eye images can be found here.

1.6 Making a recording

When calibration is done, tap Record. The Live Viewer continues to display real-time eye tracking.

1.6.1 Pausing a recording in progress

You can only pause an ongoing recording when the recording unit is connected to the computer running Controller.

- Pausing a recording from the Dashboard:
    1. Check that the Pro Glasses 2 are connected to Controller.
    2. Tap Pause on the Control Panel for the relevant recording unit. The recording is paused, and the Pause button changes to a Resume button.
    3. Resume the recording by tapping Resume.

- Pausing a recording from Live Viewer:
    1. Check that the Live Viewer video is playing; this indicates a valid connection between the Pro Glasses 2 and Controller.
    2. Tap Pause. The recording is paused, and the Pause button changes to a Resume button.
    3. Resume the recording by tapping Resume.

1.6.2 Ending a recording

You stop a recording with the Stop button in the Controller. Recordings in progress can only be stopped when the recording unit is connected to the computer running Controller.

- Stopping a Recording from the Dashboard:
    1. Check that the Pro Glasses 2 are connected to Controller.
    2. Tap stop on the control panel for the relevant recording unit. A confirmation dialog box appears.
    3. Confirm by tapping Yes.

- Stopping a Recording from the Live Viewer:
    1. Check that the Live View video is playing; this indicates a valid connection between Pro Glasses 2 and Controller.
    2. Tap the Stop button. A confirmation dialog appears.
    3. Confirm by tapping Yes.
    4. The recording stops and the Dashboard appears.

- Do's and don't's
    – Don't remove the SD card before the recording has ended.
    – Don't remove the SD card before the unit is powered off.
    – Don't remove the battery in order to end the recording or to switch off the unit.
    – If you cannot end the recording because of buffering, keep a LAN cable (and if necessary, USB to LAN adapter) available to connect the recording unit via cable. That way you can always end the recording, even when all WLAN channels are busy.

1.6.3 Replaying recordings in Glasses Controller

When you want to replay and export recorded videos in Controller, check that the recording unit is connected to the computer and use the same SD card as for the recording.

If you don't have the recording unit available to replay or export recordings, insert the SD card in the card reader of your computer and copy the entire content of the SD card to the computer's local hard drive.

1. Open Controller,
2. go to the Recordings tab, and at the bottom right click on "Add location".
3. Browse to the location where the content of the SD card is stored, select your recordings, and click OK.

Try doing the replay and export directly after you completed the recording.

1.7 When your work is done

When you switch off the recording unit, don't press the power button for more than four seconds. A longer press initiates a hard reboot during which files can get lost or corrupted.

1.8 A few bumps on the road…

If you experience problems while recording with your Pro Glasses 2, check the FAQ section on the Tobii Pro customer portal.

1.8.1   Some troubleshooting tips

- Change your battery
- Reboot your computer
- Reboot your Pro Glasses 2
- Change your SD card and make sure it is properly formatted
- Use a LAN cable whenever WLAN channels are too busy
- If you need to adjust the exposure time of your scene camera, there is a detailed guide here.

1.8.2   Still… I can't get back on track

If you contact Tobii Pro Support Services via the Tobii Pro customer portal, provide your Pro Glasses 2 serial number, system summary, and controller log files for faster and more efficient help.

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