The MotionMonitor xGen Hardware Guide: Tobii Pro Glasses 2 or 3 Device Configuration

This document reviews the typical procedures for configuring the Tobii Pro Glasses 2 or 3 device in The MotionMonitor xGen software.

The Tobii Pro Glasses 3 are compatible with version 3.66.6 of The MonitionMonitor xGen or later.

1. The Tobii Glasses device must be configured before use in The MotionMonitor xGen. The glasses can be configured to communicate with the computer using either a wireless LAN connection or wired LAN connection. The Tobii Glasses 3 can be directly connected to the computer's LAN port. The Tobii Glasses 2 would need to be connected through an external router (not directly to the computer's LAN port). The wireless LAN method is the preferred and recommend method of communication. Note: The device listed in the Wifi list will be unique to the glasses and the password to connect should be "TobiiGlasses".

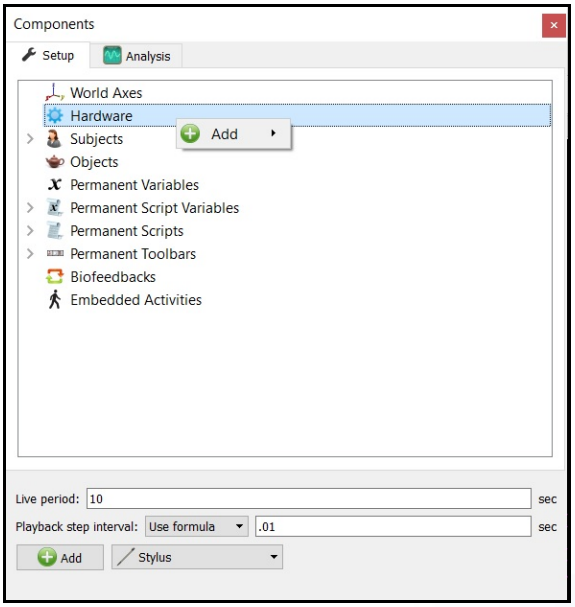
2. After the Tobii Glasses device is recognized by the computer, launch the Tobii Pro Glasses Controller application. Confirm that the device can connect and is communicating properly with this application. If the Tobii Glasses device cannot connect here, The MotionMonitor xGen will not be able to connect either.

3. Close the Tobii Pro Glasses Controller application following successful testing of the device.

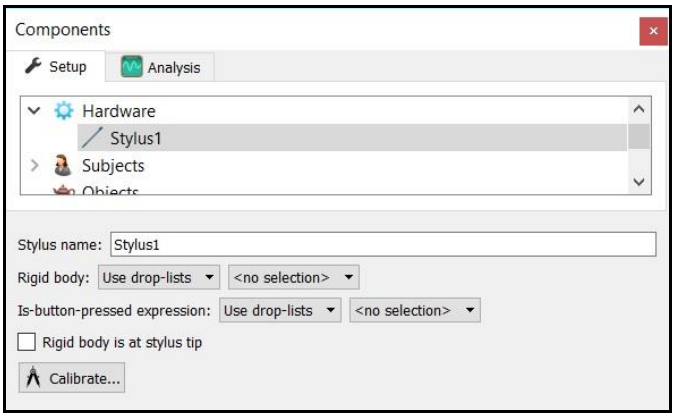
Note: It's important that the Tobii Glasses battery be as fully charged as possible. The Glasses performance can drop when the battery has low voltage, this may result in lost Wi-Fi connections and there is a chance for corrupted reading to occur, which can result in MotionMonitor xGen errors or poor data quality.

4. Start The MotionMonitor xGen and go to the Setup Components Window. To calibrate and align the Tobii Glasses device, a subject and stylus will first need to be defined and calibrated.

5. If a stylus is not already defined in the current Workspace, go to the Hardware node in the Setup Components window add the Stylus device through "Add" button at the bottom of the Components window or right-click on the Hardware node to add the device.

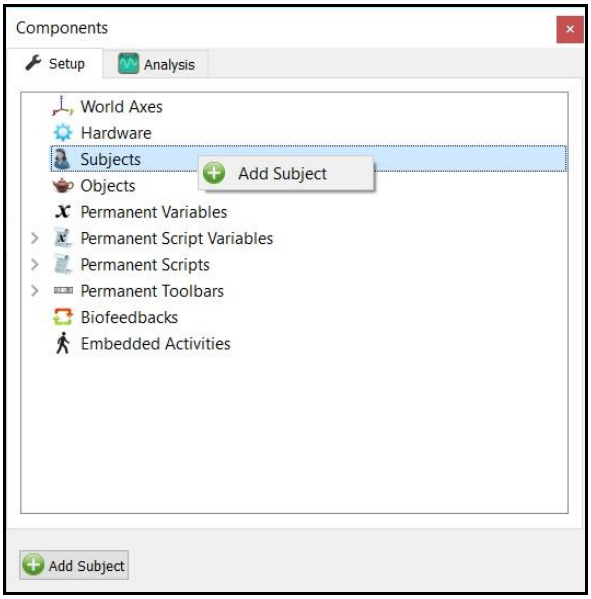


6. Before calibration of the stylus can be performed, the rigid body affixed to the object being used as the stylus needs to be selected through the “Rigid body” drop-list menu. If a remote OK button is to be used during the digitizing process, that Boolean expression would need to be defined through the “Is-button-pressed expression” drop-list menu or formula field. If the origin for the rigid body is at the tip of the stylus, as can be the case for certain kinematic tracking systems, the “Rigid body is at stylus tip” check box should be enabled.

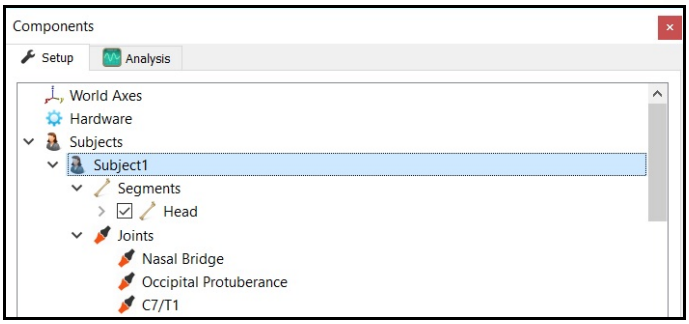


Once all parameter fields are completed, click the “Calibrate” button and follow the prompts to calibrate your stylus. A tutorial video for configuring the stylus can be found at https://themotionmonitor.com/support/.

7. If a subject is not already defined in the current Workspace, go to the Subjects node and click the “Add Subject” button at the bottom of the Components window or right-click on the Subjects node and select Add Subject.

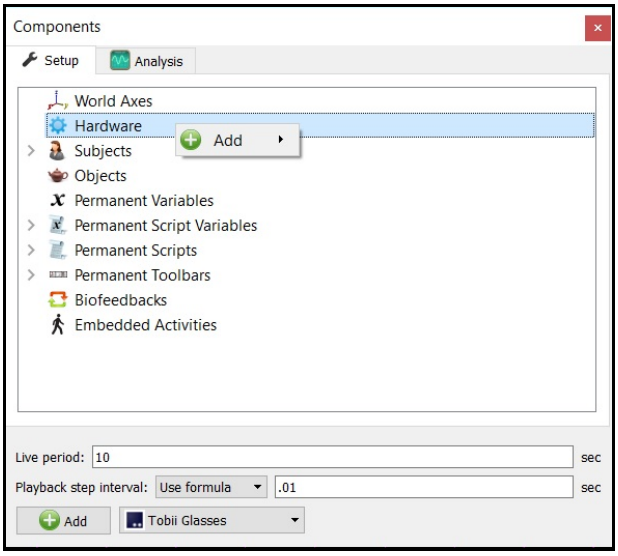


8. At minimum, the Subject's Head Segment and Joints must be defined.



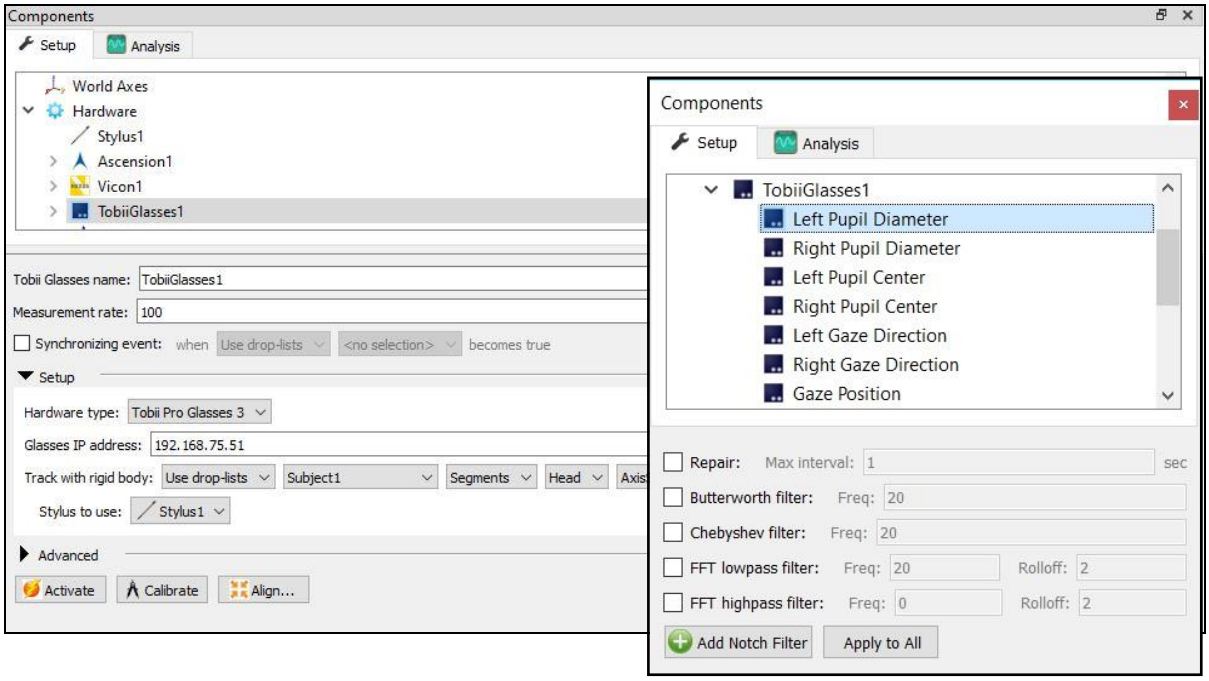
Click the "Calibrate" button and follow the software prompts to calibrate your biomechanical model. A tutorial video for configuring a subject can be found at https://themotionmonitor.com/support/.

9. After the stylus and subject have been calibrated, the Tobii Glasses device can be configured. From the Hardware node in the Setup Components window add the Tobii Glasses device through "Add" button at the bottom of the Components window or right-click on the Hardware node to add the device.



10. From the Tobii Glasses parameters panel the IP address and port, if using the Tobii Glasses 2, need to be specified. The default values displayed below can be left unaltered if using the wireless LAN communication method. Please contact support@TheMotionMonitor.com if attempting to communicate using a wired LAN. The measurement rate field needs to match the measurement rate of the hardware, either 50Hz or 100Hz depending on your Glasses model. Under the Setup dropdown, for the hardware type, select from either Tobii Pro Glasses 2 or Tobii Pro Glasses 3. The parameters panel will change accordingly.

    Select the same rigid body that was assigned to the Head Segment of your Subject for the "Track with rigid body" field and select your stylus from the "Stylus to use" drop-list.



    Click the "Activate" button when all parameters have been specified.

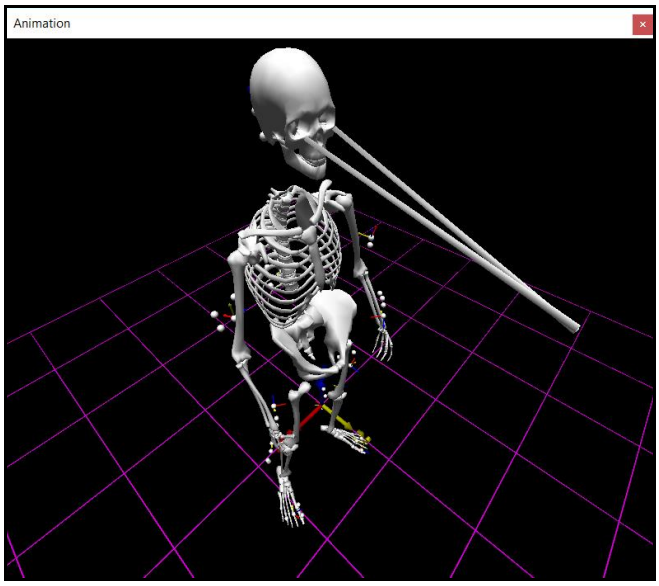
    Clicking on any of the Tobii Glasses data types bring up the properties panel which includes their filtering parameters. Each data type can be filtered independently, and filters can be applied either before data collection or in post processing.

11. Click on the "Calibrate" button and follow the prompts to calibrate your Tobii Glasses device. To perform the Calibration, you will need to have the Tobii target calibration card in front of the subject. It's best to have the card motionless (mounted to something), at eye level and 2-3 feet (0.5 - 1.0 meters) in front of the subject. A default calibration will be used when a successful calibration cannot be performed. Typical reasons for a calibration to fail would be if the card is moving, is too far away from the subject or is not at eye-level height.

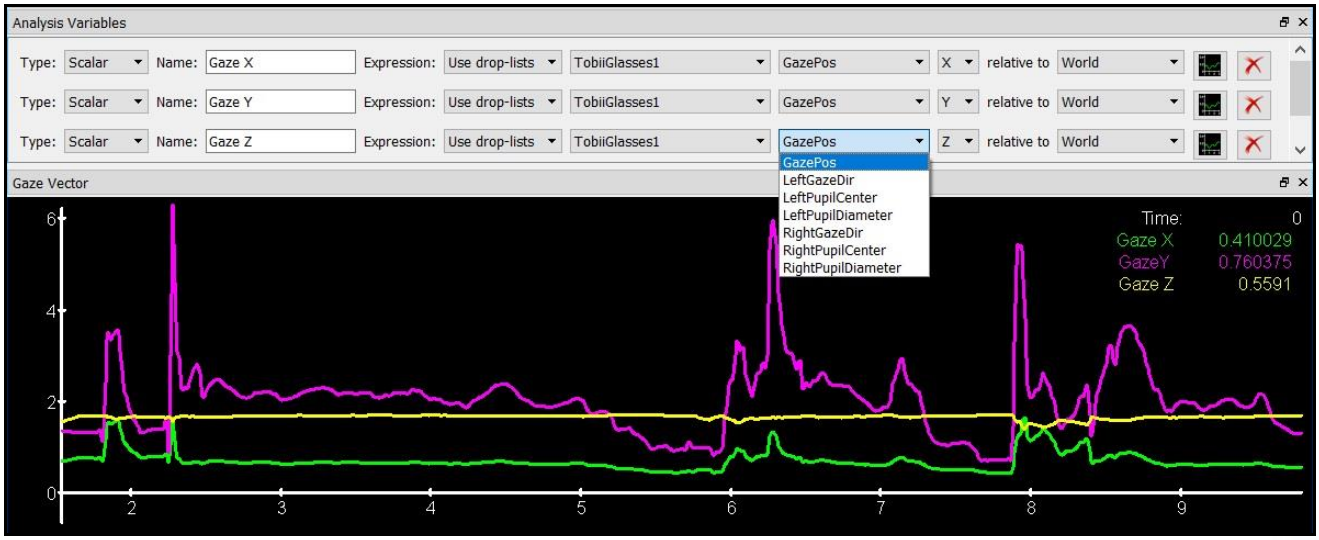
12. Click on the "Align" button and follow the prompts to align your Tobii Glasses device with the subject and kinematic tracking system. The alignment process consists of digitizing the center of the scene camera on the front of the glasses as well as a static point in front of the subject where they fixate on the stylus tip position. The position for the stylus tip during this reading should be similar to where the calibration card was relative to the subject during the calibration process. However, this fixation point does not need to be at the same point as where the calibration card was placed.

    Alignment results will be presented upon completion of this process.

13. Once the Calibration and Alignment procedures have been completed for the Tobii Glasses, the eye vectors should appear in the Animation window.



14. Tobbi Glasses data can be defined as Analysis Variables and plotted in Graphs as seen in the image below. Tutorial videos for adding variables and graphs can be found at https://themotionmonitor.com/support/.



Note: If the gaze data freezes in the animation window or stops updating in graphs, please deactivate the Tobii hardware in the The MotionMonitor xGen and save the workspace. Check the battery pack for battery status and check that the Tobii Wifi is still connected. Replace the battery if needed and reconnect to the Tobii Wifi before re-activating in The Motion Monitor xGen. After successfully activating, the gaze data in the animation should update live.