

Calibrate IMUs

In all capture modes, if you plan to capture global angles, to ensure that the IMU sensor data is stable and to minimize drift, you must calibrate each of the IMU sensors.

⚠ With Firmware 10 and later, sensor calibration is retained between trials when you capture global angles. Calibration is continuous when global angles are either being streamed or captured onboard the sensor. You must re-calibrate for the next global angles trial if:

- The subsequent trial does not capture global angles, for example, if you capture global angles and then capture a raw data trial.
- The sensors are inactive for longer than two hours.

To calibrate the sensors:

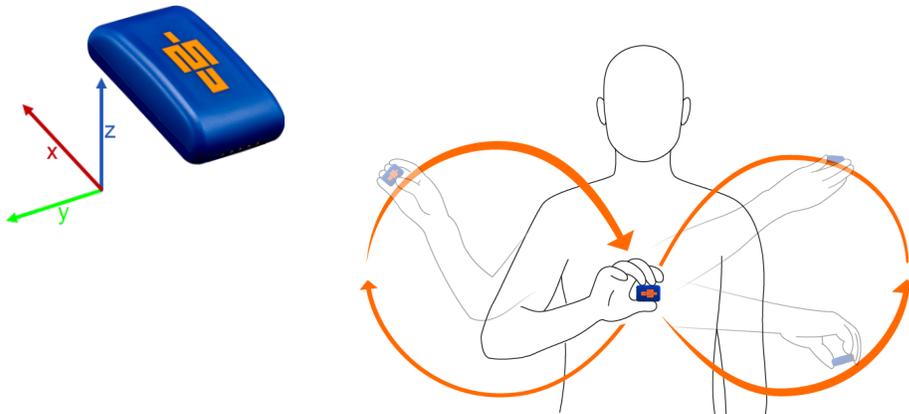
1. Start streaming global angles. (If you're not sure how to do this, see [Start Capture.U and choose a capture mode.](#))

✅ If you want to use real-time feedback to verify the calibration, you can calibrate in Real-Time Insight capture mode and then after calibration, capture global angles in To Sensor mode.

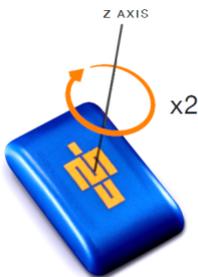
In all capture modes, when you start a capture, if the sensors need calibrating, a warning message informs you that sensor calibration is required. In To Sensor and To Device modes, when you're selecting sensors, or streaming or capturing global angles, IMU sensors that require calibration

are displayed with a 'Require calibration' icon at the top right of the sensor . (In Real-Time Insight and AR Visualization modes, the sensor calibration indicator is only displayed when you select the sensors.)

2. Wave the sensor in a figure-of-eight for at least 10 seconds, ensuring that it rotates through all three axes during the motion.



3. Put the sensor on a flat surface and spin it through two full rotations around the z axis.



✅ To avoid any unwanted influence on the sensor, avoid placing it in proximity to anything metallic.

4. Wait at least five seconds until the data has stabilized.

In Real-Time Insight and AR Visualization modes, you can observe that x angle is 0 and the y angle is 0 (the figure-of-eight provides enough information for the sensor to self-calibrate). However, the z angle may have a non-zero value, depending on how it is rotated to the magnetic north.

5. Rotate the sensor on the flat surface for at least five seconds until **z** is also 0.

In To Device and To Sensor modes, to let you know that a sensor is calibrated, after 60 seconds, a **C** (Calibrated) icon  is displayed at the top right of the sensor.

In Real-Time Insight and AR Visualization modes, check that the graphs for all three axes are now at zero.

6. After you have calibrated each sensor, you can [attach the sensors to your subject](#) and capture data in the required [capture mode](#).



If you plan to capture global angles, after the sensors are attached to a subject, allow a few seconds for onboard calibration to initiate before starting the movement that is to be captured.