VIVE Ultimate Tracker with Xsens: Q&A

Xsens software 2026.4+

1 Overview

1.1 What does the Ultimate Tracker add to an Xsens setup?

It adds an absolute position reference. The Xsens software combines it with the suit data to reduce drift and improve global positioning.

1.2 How does the tracker work?

It uses two onboard cameras to track its position inside-out, so you don't need base stations or a headset.

1.3 What does it help with?

It keeps hands aligned with props, feet grounded, and performers lined up with each other, and it keeps positioning consistent across takes and elevation changes.

1.4 Does it work live and in post?

Yes. Position aiding is applied in real time and again when you reprocess a recording.

1.5 Is this the same as the older VIVE Lighthouse integration?

No. The older integration relied on base stations and has been available since MVN 2020. This one uses the inside-out Ultimate Tracker instead.

1.6 Do I always need it?

Not always. It's most useful when the performer moves through the space or interacts with props or other actors; for in-place motion, the suit on its own is usually enough.

2 Requirements

2.1 Which licenses support it?

Position aiding and object tracking with the Ultimate Tracker are available in Xsens Animate Pro, Analyze Pro and Humanoid Pro.

2.2 Which software version do I need?

Xsens software 2026.4 or newer.

2.3 Which suits are supported?

Xsens Link and Xsens Awinda can both be used for position aiding.

2.4 What other software is required?

You'll need HTC VIVE Hub, along with Steam (with an account) and SteamVR.

2.5 What hardware do I need?

One tracker for each segment or object you want to aid, plus the VIVE Wireless Dongle connected to the capture PC. Straps and mounts are optional.

2.6 How many trackers can I use?

Up to five per PC. Using more than five requires an Enterprise license from HTC.

2.7 What are the PC requirements?

For one or two suits: a quad-core 2.7 GHz+ CPU with AVX2, 8 GB RAM, a DirectX 11 GPU with 512 MB+, an SSD and Windows 11. For three or four suits: a 6-core 3.2 GHz+ CPU, 16 GB RAM and a 2 GB+ GPU. ARM processors are not supported.

2.8 Is there anything specific to Xsens Link?

Yes. When using several trackers, configure the Xsens Link to **5 or 6 GHz**. The trackers run on 2.4 GHz, and sharing that band can cause data bursts.

3 Setup

3.1 What order should I set things up in?

Set up VIVE Hub first and the Xsens software second. The trackers should be paired and mapped before you enable position aiding in Xsens.

1. Install Steam, SteamVR and VIVE Hub, then close SteamVR.
2. In the Xsens software, go to **Options > Position Aiding**, select **HTC Vive**, and tick **SteamVR Always on Top** and **Use without Head Mounted Display**. Save and close the software.
3. Connect the dongle and pair the trackers in VIVE Hub under **Settings > VIVE Ultimate Tracker > Pair new**.
4. Build the tracking map with **Start Setup**.
5. Reopen the Xsens software, assign each tracker to a segment or object, and calibrate.

3.2 How do I pair a tracker?

Hold the power button for two seconds until the LED flashes. Pairing is complete when the tracker icon appears and the LED turns green.

3.3 How do I build the tracking map?

Hold the tracker about 120 cm high facing the PC, step back about 150 cm and press the power button to set the center. Then scan in all four directions, first kneeling and then standing. If VIVE Hub suggests it, use **Refine** to improve the map.

3.4 When should I rebuild the map?

Any time the capture space or set layout changes.

3.5 SteamVR is asking for a headset calibration. What should I do?

If you aren't using a headset, you can skip it. Close SteamVR and VIVE Hub, apply the settings from step 2 in the Xsens software, then return to VIVE Hub.

3.6 Where should trackers go on the body?

The pelvis is the usual starting point for root motion. Add hands or feet when contact with props or the floor is important.

3.7 How do I mount a tracker on a prop?

Use the screw-in mount on a flat, rigid part of the prop, and assign that tracker to Object Tracking rather than a body segment.

3.8 Do I need Object Tracking enabled for Position Aiding?

No, the two features work independently.

3.9 How do I handle multiple performers?

Assign each performer's trackers to their own system so the data stays separate.

4 Calibration and recording

4.1 Which calibration should I use?

N-pose + walk is recommended for the best position-aided results.

4.2 Is there anything to do after calibrating?
It helps to have the performer walk around the space and bring their hands together a few times.

4.3 What if a tracker moves or comes off during a session?
Recalibrate before you continue recording, since a shifted tracker will pull the body out of position.

4.4 Can I move a tracker to a different body part?
You can, but doing so discards the current calibration. Saving your calibration lets you reload it after a reconnect.

4.5 Do I need to recalibrate after every take?
No. Recalibrate only if a tracker moves, the suit is adjusted, or you notice drift.

4.6 Where can I find the tracker data?
It's stored under the segment the tracker is assigned to. Trackers are hidden in the viewport by default.

4.7 Can I change a tracker's segment after recording?
Yes. Remap it, or use **Reset to default**, and then reprocess the file.

5 Troubleshooting

5.1 What does "Unexpected error: 1009" mean?
Position aiding is enabled but no VIVE data is being received. Make sure the trackers are set up in VIVE Hub first.

5.2 Why won't SteamVR open?
SteamVR won't start while an Xsens session has aiding or object tracking active. Disable those features or close the session first.

5.3 Why can't I change the position aiding settings?
SteamVR needs to be closed. VIVE Hub can stay open.

5.4 I'm seeing data bursts or dropouts with Xsens Link.
Configuring the Xsens Link to 5 or 6 GHz usually resolves this.

5.5 The body looks offset or pulled out of position.
A tracker may have shifted or been assigned to the wrong segment. Re-seat it, check the mapping and recalibrate.

5.6 Why is the tracking jittery?
This is usually wireless interference. Try turning off nearby wireless devices.

5.7 Why is the tracking unstable or inaccurate?
Check that the lenses are clean, the room is well lit, there are no large reflective or blank surfaces, and the tracker is about 1.5 m from obstacles.

6 Limitations and best practices

6.1 Can the tracker be blocked like an optical marker?
It doesn't need line of sight to anything external, but its cameras do need to see the room, so avoid covering it with costume pieces or props.

6.2 Are there environments it struggles in?
Very dark, plain or highly reflective rooms can make tracking less reliable.

6.3 Any tips for shoot day?
Charge and update the trackers in VIVE Hub, build the map under shoot lighting with the set in place, strap trackers securely, label them per performer and prop, and record a short test take before the main performance.

Links: Xsens KB: Ultimate Tracker Setup · System requirements · Link Access Point (bandwidth) · Position Aiding · VIVE Hub