

# PST Base

near field optical tracking

Ideal for table top and simulator solutions as it starts tracking at just 20 cm



The PST Base tracks complex shaped objects, convex or concave.

There is no requirement for all markers to be visible to the tracking system. Occlusion of a significant number of markers is handled without loss of tracking.

In most cases objects have around 30 markers, typically only 8 are simultaneously visible to the tracking system. Even with such a small subset of visible markers the tracking system can calculate a 6 degrees of freedom (6DoF) position and orientation of the object.

Teaching the PST Base about new objects is easy. A simple training procedure allows the user to simply show a new object to the tracking system and within seconds these objects can be used for full 6DoF tracking.

The PST Base comes with an easy to use C SDK with bindings for C# and Python.

PST Base is for tracking in small and compact spaces. Multiple PST Base's can be combined to create even larger workspaces.

Every PST Base is a fully independent tracking unit. Ready to go from the moment it comes out of the box. No calibration and no registration of cameras.

The PST Base can be directly plugged into the system using USB 2.0. PST Base results can also be shared fully transparently over Ethernet. Simply install the client software on a second computer and connect.

PS-Tech

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### Summary PST Base Specifications<sup>1</sup>

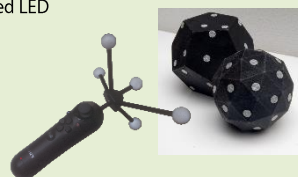
- Minimum tracking distance: 20 cm
- Maximum tracking distance: at least 3 m
- Fanless and noiseless
- Calibration-free bar-tracker
- Adjustable infrared flash
- Synchronize with external systems
- Adjustable frame rate up to 120 Hz

### PST Base: Near field tracking

*Ideal for table top and simulator solutions as it starts tracking at just 20 cm.*

### Measurement Technology

- 6 degrees of freedom (6 DoF) optical tracking system using built-in infrared LED illumination to track passive or active markers
- There is no requirement for all markers to be visible to the tracking system. Occlusion of a significant number of markers is handled without loss of tracking
- A complete tracking system consists of one or more tracking units (Iris and/or Base), marked targets and the PSTracking 4.0 application



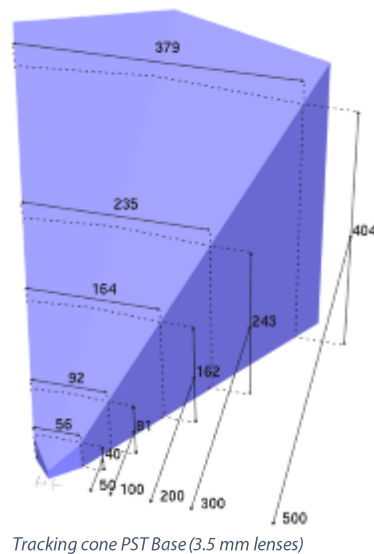
### Performance

Refresh rate: 120 Hz, adjustable to 30, 60, 120 Hz

Working distance: Minimum: starting at 20 cm  
Maximum: at least 3 m

Available lenses: 3.5 mm (standard)  
4.5 mm  
5.5 mm

Accuracy<sup>2</sup>: Position: < 0.5 mm RMSE  
Orientation: < 1 deg RMSE



### Usability

Set up: Plug and play

Calibration: Pre-calibrated unit

Origin definition: One click process – dedicated tool included

Units needed for 6 DOF tracking: One; each PST Base is a full 6DoF motion tracker

Expandable tracking area: Expandable, multiple trackers can be connected to expand the tracking area

Aligning units: Easy routine, within seconds

Ambient conditions: Normal indoor lighting conditions

Illumination: Integrated IR LED illumination (wavelength 850 nm)  
Flash illumination fully adjustable in PSTracking 4.0

Operating temperature: 15 – 35 °C

### Devices and Markers

Number of targets: At least 15 independent 6DoF bodies  
e.g: simultaneous head and object tracking

Markers: Passive (retro-reflective flat and spherical)  
Active (LED)

Device creation: Simple procedure: mark, train and use new device in seconds

### Interfaces

Processing: An additional processing unit is in most cases not needed  
A PST Cortex is recommended for a multi PST setup or networked access

Tracking Application: PSTracking 4.0 (license included with each PST Iris and PST Base)

Client operating system: Windows (Vista, Windows 7, Windows 8), 32 and 64 bit  
Via the PST Cortex also to other OS

Software interface: VRPN, trackd, Dtrack emulation, data export to .CSV and the tracker comes with an easy to use C SDK with bindings for C# and Python

Hardware interface: USB 2.0  
However, PST Base results can also be shared fully transparently over Ethernet. Simply install the PSTracking 4.0 software on a second computer and connect

Output: Positional coordinates (x, y, z), orientation angles, Euclidean transformation matrices

Synchronization: Hardware trigger in and out

### Other

Weight: Approx. 1 kg

Size: 31 x 6 x 14 cm (W x H x D)

Mounting: 1/4"-20 UNC tripod mounting point

Power supply: Output 5 V, 40 W  
Input 100-240 V, 50-60 Hz

Power consumption: Max. 12 W

### PSTracking 4.0 application (License Included with any PST Iris or PST Base tracker)

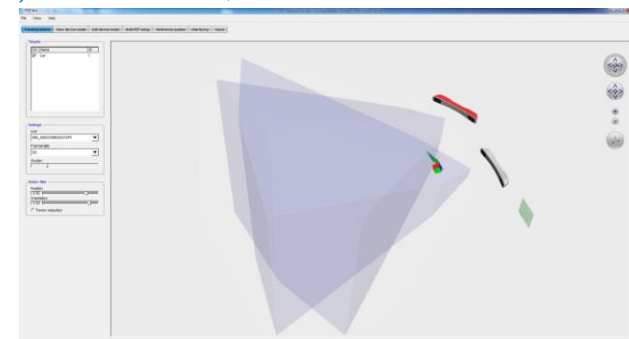
PS-Tech's application PSTracking 4.0 is the control center for your PST Base and PST Iris tracking systems.

The PSTracking 4.0 application is installed on a PC to connect to a tracker. Direct connection is via USB. However, PST Base results can also be shared fully transparently over Ethernet. Simply install the PSTracking 4.0 software on a second computer and connect.

The PSTracking 4.0 application gives users access to one or multiple trackers.

Summary of the functionally available in the PSTracking 4.0 application:

- Easy access to PST trackers by any PC on which PSTracking 4.0 has been installed
- There is no requirement for all markers to be visible by the tracking system
- Optimization parameters of the tracking environment (e.g. filters illumination settings, frame rates)
- Remote control of the tracker connected to a PC or PST Cortex via Ethernet
- Easy create, modify and manage targets
- Import export target configurations
- Fast calibration of multi PST setups (single PST setups do not need calibration)
- One click origin definition



1. Preliminary specifications, subject to change without notice

2. Precision measured using a grid of 7mm markers moved through the workspace up to a distance of 2.5m w.r.t. the tracking system