IS-1500 NATURAL FEATURE TRACKER WINDOWS QUICK START GUIDE

1. DOWNLOAD AND RUN THE WINDOWS INSTALLER FROM HTTP://INTERSENSE.COM/IS1500/

- Select the components for installation when prompted by the installer. For a first time installation, it is recommended that all checkboxes be checked.
- The next page shows an option to install with **Embedded Settings**, which optimizes the tracking settings for devices with lower processing power. It is recommended that this option be checked when using the IS-1500 with a tablet or mobile device.
- Finally, select the preferred installation directory.

2. SOFTWARE PACKAGE DESCRIPTION

The installer will create an InterSense IS-1500 folder in the Start Menu under All Programs with the following items:

- **Documentation:** Links to the folder containing various IS-1500 user guides and a printable PDF of the default 8.5x11 fiducial constellation
- **InterSense Unity Plugin:** Links to the InterSense Unity package, which enables the user to interface Unity applications with tracking data from the IS-1500
- **isUnitySample:** Runs the precompiled Unity demo program
- **SDK:** Links to the folder containing DLL files and sample code for integrating tracking data into the user software application
- **sfHub:** Runs the program used by sfStudio and isUnitySample to interface with the InertiaCam and generate tracking data
- **sfStudio:** Runs the main GUI application used to configure and test the tracker as well as view and record both raw and fused data
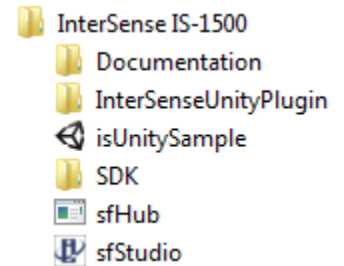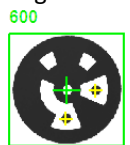

3. CONNECT THE SENSOR TO HOST APPLICATION SOFTWARE

- Connect the USB C cable provided to the InertiaCam and host computer. A blue light on the InertiaCam will appear for about one second before turning off again to indicate that the InertiaCam is successfully powered. If the USB driver has been successfully installed, the Windows Device Manager will show a **Thales IS-1500** device in the Ports section.
- Run **sfStudio** and click the **Connect** button at the top left (🔌) and wait a bit as sfStudio launches and begins communication with the **sfHub** application to connect to the InertiaCam. If the connection is successful, the IS-1500 State displayed in sfStudio should change from **No Communication** to **Tracking, Relative**.

4. BEGIN TRACKING

- In order to quickly test tracking, place the 8.5x11" fiducial poster included with the hardware kit on a reasonably level surface with the fiducials facing up.
- Under the Displays drop down menu at the top of the sfStudio window select Optical Data Display to open that as a new tab
- Click the Image Transfer toggle to begin viewing live camera footage from the InertiaCam. You may toggle the VINS Image button to show or hide the natural features detected by the VINS tracking algorithm.
- Point the camera of the InertiaCam at the fiducial constellation in a manner such that at least four of the fiducials can be detected by the InertiaCam. In the Optical Data Display, with the VINS Image toggle turned off, identified fiducials should be marked up with color as seen to the right.

- Observe that the IS-1500 tracking status changes to **Tracking, Referenced** once the system has achieved optical lock on the constellation. The recorded position and orientation should have relocalized to be relative to the fiducial map instead of relative to the tracker's starting point.

IS-1500 NATURAL FEATURE TRACKER LINUX QUICK START GUIDE

1. DOWNLOAD THE LINUX SOFTWARE PACKAGE FROM HTTP://INTERSENSE.COM/IS1500/

The full software package will have the following folder architecture:

- **Configuration Files:** Contains backups of the default constellation and configuration files
  Documentation: Contains various IS-1500 user guides and a printable PDF of the default 8.5x11 fiducial constellation
- **SDKs:** Contains the required DLL files and sample code for integrating tracking data into the user software application
- **sfHub:** Contains the sfHub software and required files, which receives sensory data from the InertiaCam and processes it to produce raw tracking data
- **sfStudio:** Contains the main GUI application used to map, test and re-configure the tracker as well as view and record both raw and fused data
- **UnitySampleProgram:** Contains the precompiled Unity Sample Program
- **UnityPlugin:** Contains the InterSense Unity package, which enables the user to interface Unity applications with tracking data from the IS-1500

IS-1500 Software Package
- ConfigurationFiles
- Documentation
- Linux
  - SDKs
  - sfHub
  - sfStudio
  - UnitySampleProgram
  - UnityPlugin

2. INSTALL PREREQUISITE LIBRARIES AND MODIFY REQUIRED SETTINGS

- The following libraries should be installed or updated to the latest version using apt-get commands: *libudev1, v4l-utils, libtbb2*
- The following two lines need to be added to **/etc/security/limits.conf** to enable setting of thread priorities:
  * hard rtprio 99
  * soft rtprio 99
- For the software to access the serial port immediately after the InertiaCam is hot-plugged, **modemmanager** must be removed using the command *sudo apt-get remove modemmanager*
- To allow serial port access, add the user to the **dialout** group using the command *sudo usermod –a –G dialout <username>*

3. CONNECT THE SENSOR TO HOST APPLICATION SOFTWARE

- Connect the USB C cable provided to the InertiaCam and host computer. A blue light on the InertiaCam will appear for about one second before turning off again to indicate that the InertiaCam is successfully powered.
- Run **sfHub** from the sfHub subfolder.
- Run **sfStudio** from the sfStudio subfolder and click the **Connect** button at the top left ( ). Wait as sfStudio begins

  State: Tracking, Relative ⬤

  communication with **sfHub** to connect to the InertiaCam. If the connection is successful, the IS-1500 State displayed in sfStudio should change from **No Communication** to **Tracking, Relative**.

4. BEGIN TRACKING

- In order to quickly test tracking, place the 8.5x11" fiducial poster included with the hardware kit on a reasonably level surface with the fiducials facing up.
- Under the Displays drop down menu at the top of the sfStudio window select Optical Data Display to open that as a new tab
- Click the Image Transfer toggle to begin viewing live camera footage from the InertiaCam. You may toggle the VINS Image button to show or hide the natural features detected by the VINS tracking algorithm.
- Point the camera of the InertiaCam at the fiducial constellation in a manner such that at least four of the fiducials can be detected by the InertiaCam. In the Optical Data Display, with the VINS Image toggle turned off, identified fiducials should be marked up with color as seen to the right.
- Observe that the IS-1500 tracking status changes to **Tracking, Referenced** once the system has achieved optical lock on the constellation. The recorded position and orientation should have relocalized to be relative to the fiducial map instead of relative to the tracker's starting point.
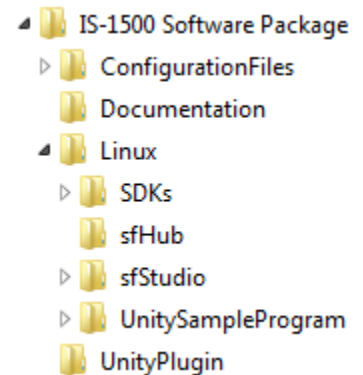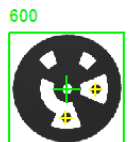
If any problems are encountered while following this guide, please contact Intersense Technical Support by e-mail at techsupport@thalesvisionix.com or by phone at 781-541-7624.