

DevKit 1 Pre-Launch Prototype

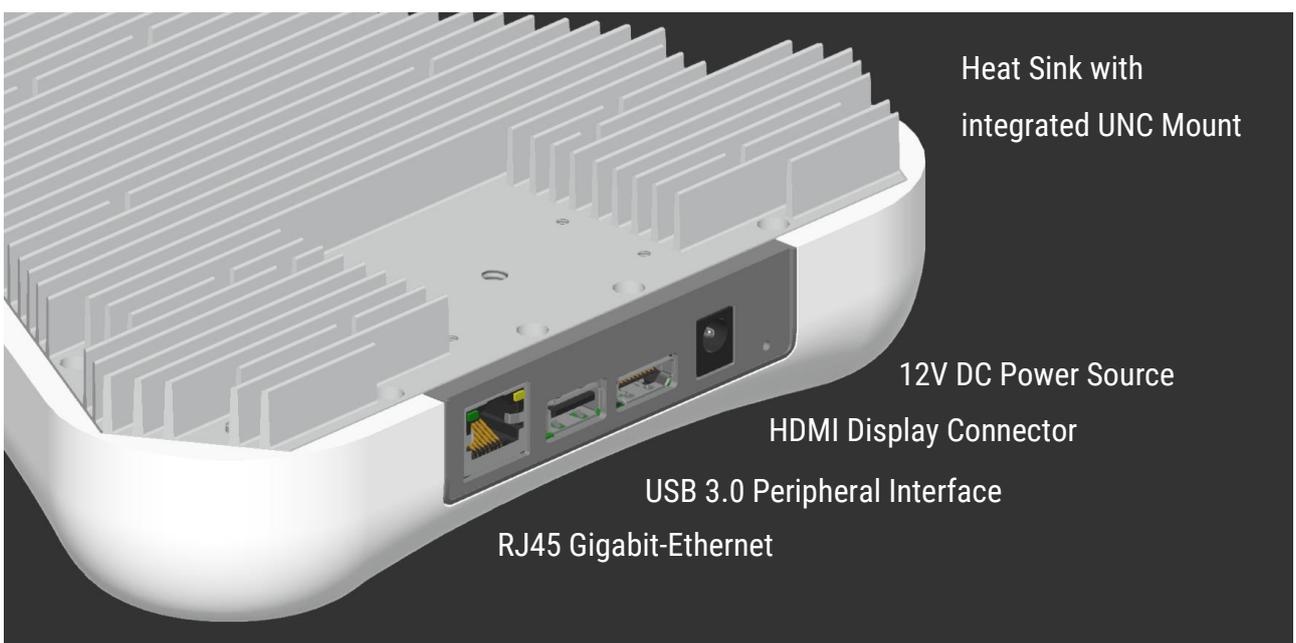
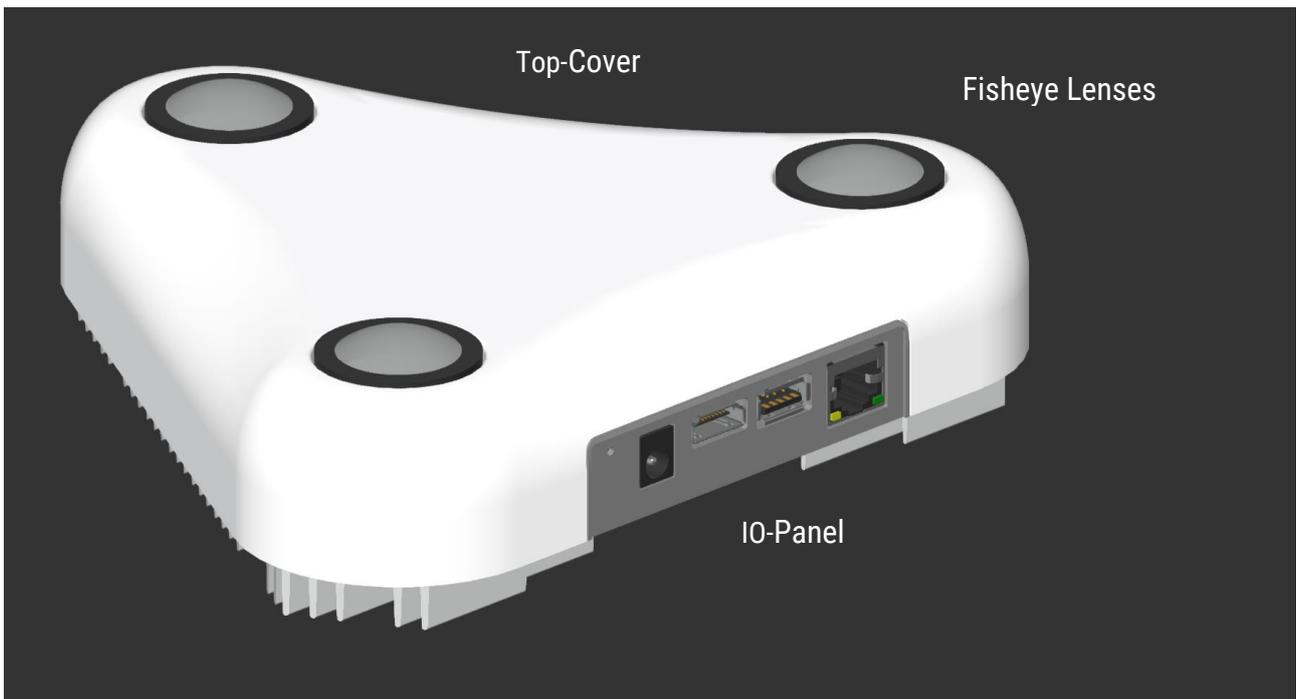
HS-DK1PL Rev 1.0



Quick Start Guide

Overview

HemiStereo is the world's first 3D vision sensor for capturing omnidirectional RGB-D data (color imagery and depth information) in real-time with many applications in different markets. Based on a special trinocular camera setup, it allows to measure depth for an extremely large volume ($180^{\circ} \times 180^{\circ}$ FOV HxV) with both large lateral resolution (> 1 Mio points) and high axial accuracy. The unique algorithm allows the real-time depth processing on integrated embedded hardware and therefore allows to embed the technology into a compact encapsulated sensor device.



Warnings and Restrictions

HS-DK1PL is still a prototype of the HemiStereo technology and is hence subject to certain restrictions. Please carefully consider the warnings below in order to prevent damage to your health or the device.

Operational Environment

HS-DK1PL is intended for experimental and laboratory use only. Ambient temperatures should not exceed room temperature (25°C). Avoid humid or dusty environments!

Use only under continuous observation!

Thermal Performance

HS-DK1PL incorporates the NVIDIA Tegra X2 (or X1) processor in order to allow integrated depth map processing and to enable the user to run customer-specific software within the sensor device. Despite the thermal efficiency of the NVIDIA Tegra platform, the combined thermal load under synthetic load (100% CPU@2GHz, 100% GPU@1.3GHz) can be measured at around **21.5 W**. Therefore, HS-DK1PL uses a back-side heat sink in order to dissipate heat. However, the surface temperature of the heatsink can reach around **70 °C** under prolonged use and limited airflow.



Avoid touching the device under these conditions if it exposes a hot surface!

Avoid operating the device under these conditions for long times since this may cause damage to the plastic top-cover and IO shield.

Specifications

Hardware

- NVIDIA Jetson TX2 (4+2-core CPU @ 2 GHz, 256-core Pascal GPU @ 1300 MHz, 8GB RAM)
- Sony IMX 2MP low-light image sensor
- High resolution (9 MP) fisheye lens
- Back-Side Heatsink with integrated 1/4-20 UNC tripod mount
- Plastic Top-Cover with integrated WLAN, Bluetooth Antennas

Interfaces

- Gigabit Ethernet, RJ-45
- 802.11ac WLAN, Bluetooth
- HDMI Display Connector
- USB 3.0

Sensing Performance

- RGB-D Resolution: 1200 x 1200 (HxV)
- FOV: 180° x 180° (HxV)
- Framerate: up to 12 FPS (in high quality mode, depending on resolution)

Environmental requirements:

- External illumination required
- Not suitable for wet or dusty environments

Software (as download)

- Basic viewing and recording software
- C++ programming interface

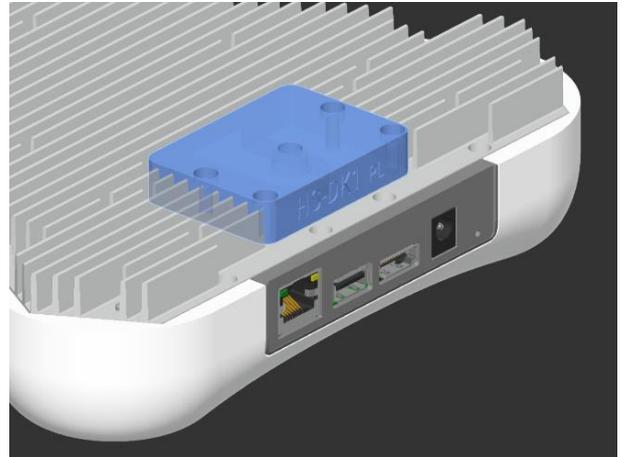
In the Box

- HS-DK1PL Rev 1.0 Sensor-Prototype
- Universal UNC Mounting Adapter
- 12V 3A External DC Power Supply, EU-Plug
- Waterproof, Shock-Resistant Case
- This Quick Start Guide
- Factory Calibration Report

Getting started

1 Prepare

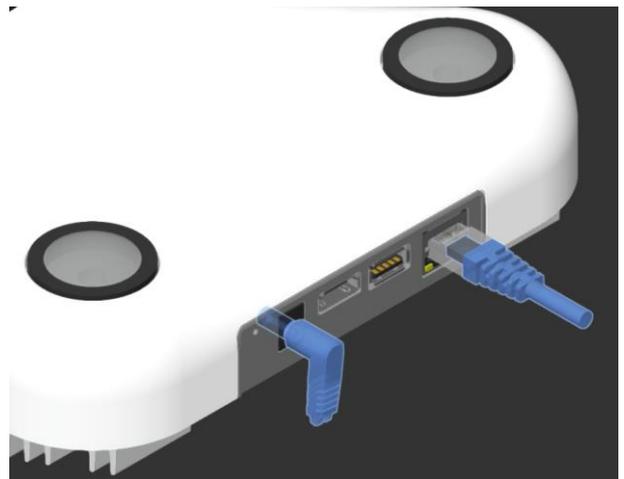
- Remove HS-DK1PL and the included accessories from the box.
- Mount the sensor to a tripod using either the 1/4-20 UNC thread on the heatsink or on the included Universal UNC Mounting Adapter.



2 Connect

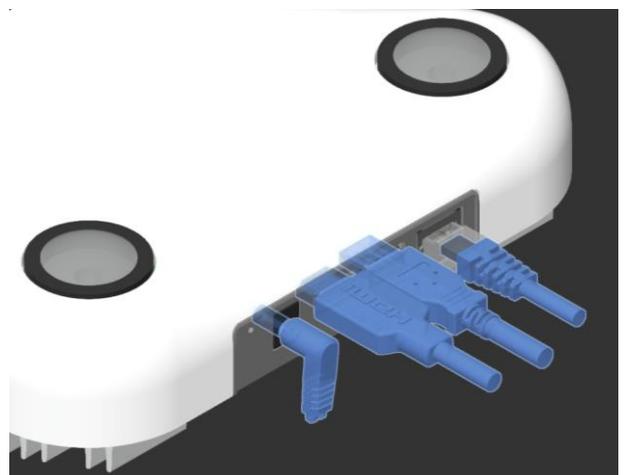
Remote Access (Default)

- Connect an Ethernet cable to the RJ45 jack. Connect the Ethernet cable to your router (DHCP required).
- Connect the DC plug of the included Power Supply to the DC jack on HS-DK1PL. The Sensor will now boot automatically.



Host Access (Advanced)

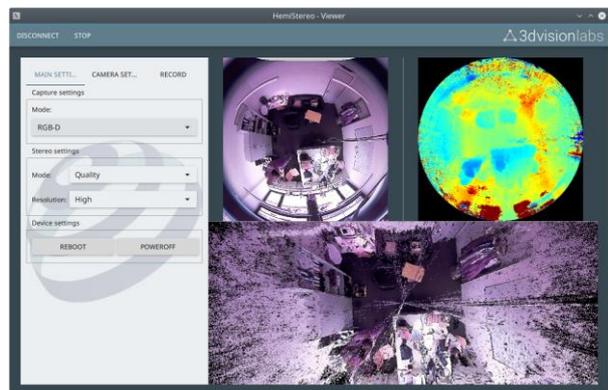
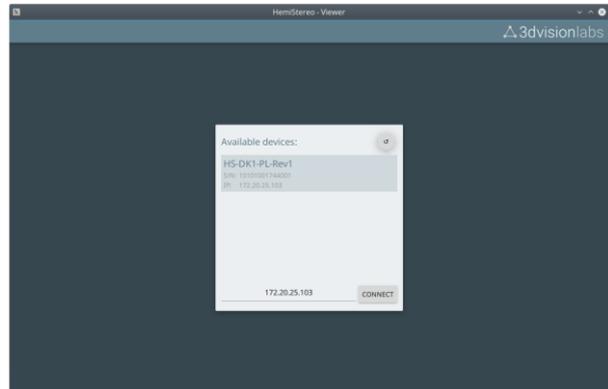
- In case you want to access the sensor operating system directly, connect the Sensor via HDMI to an external display.
- Use the integrated USB 3.0 Type-A port to connect keyboard and mouse.
- Use the following login data:
Username: *nvidia*
Password: *nvidia*



3 Start Developing

Viewer Software

- Check our website and download the latest sensor software:
<https://3dvisionlabs.com/downloads/>
- Make sure the following requirements are fulfilled:
 1. DHCP has to be enabled in your router. Otherwise you can configure different IP retrieval setting on the sensor side.
 2. Your router need to allow UDP broadcast for automatic detection of the sensor.
- Follow the onscreen instructions to access and configure the sensor.



SSH-Access

- Use the IP shown by the Viewer software. Connect using your SSH client.
- Use the following login data:
Username: *nvidia*
Password: *nvidia*

