



Technical Details

**Documentation:  
Development Kit for  
NVIDIA® Jetson Nano™**



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# Documentation: Development Kit for NVIDIA® Jetson Nano™

## Introduction

Thank you for choosing The Imaging Source's Development Kit for NVIDIA Jetson Nano. This preassembled development kit for embedded vision and AI projects is designed to reduce time spent on configuring hardware and software so that developers can begin working on their embedded vision applications immediately.

The development kit is available in multiple versions, differing mainly in camera number and interface (i.e. MIPI CSI-2 or FPD-Link III).

## Scope of Delivery

The Imaging Source Development Kit for NVIDIA Jetson Nano includes the following (fig. 1):

- 1x or 2x camera modules with respective lensholder and lens (cables and accessories may differ based on interface selected)
- FAKRA cable (*only included in FPD-Link versions of kit*)
- micro-USB cable
- 1 or 2 tripods with tripod adapter
- Deserializer board (*only included in FPD-Link versions of kit*)
- NVIDIA Jetson Nano developer board with barrel jack power supply
- Micro-SD card (32GB) with flashed image for NVIDIA Jetson Nano
- cooling fan



Fig. 1 Scope of delivery\*  
Development Kit for NVIDIA Jetson Nano.  
\*Image for illustration purposes only.

## Items Not Included

- Laptop or desktop PC
- Keyboard, mouse and monitor (e.g. for stand alone workstation)



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Fig. 2 The Imaging Source Development Kit for NVIDIA Jetson Nano

## Parts of the Kit (fig. 2, above)

1. camera module, 2. tripod adapter, 3. tripod, 4. flatband cable (connects to deserializer board), 5. Jetson Nano development board, 6. deserializer board, 7. passive cooling (heatsink), 8. active cooling (integrated fan), 9. FAKRA cable

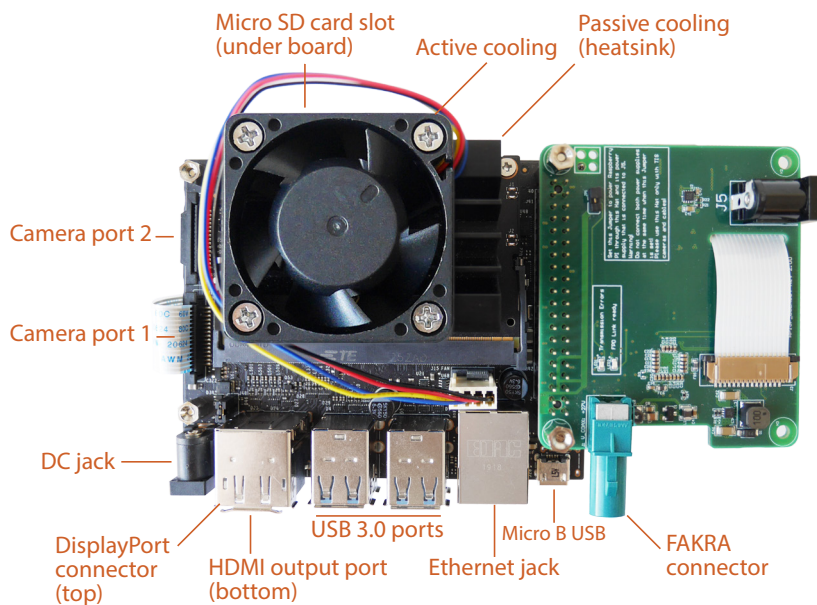


Fig. 3 NVIDIA Jetson Nano platform layout



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## Setup Preparation: Items for Getting Started

**Micro-SD Card:** The Imaging Source Development Kit for NVIDIA Jetson Nano uses a micro-SD card as a boot device and for main storage. **Please note:** The included micro-SD card (32GB) has been flashed with the necessary software and inserted into the micro-SD slot (board bottom, below the heat sink).

**Power supply:** This development kit includes a high quality power supply that delivers 5V=2A to the system via a DC barrel jack (5V power input).

**Tripod:** A tripod has been included in order to ensure safe and stable positioning of the camera. The camera module in this kit has a tripod adapter mounted to it and so can be screwed directly to the tripod.

**FAKRA cable** (*with FPD-Link III kits only*): The 1 meter FAKRA cable comes disconnected from the development kit system. Please note that the FAKRA connectors are not designed to be repeatedly connected and disconnected and can withstand approximately 30 connection cycles. Therefore, please avoid repeated connection and disconnection of the FAKRA cable.



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To perform first-time system set up, please follow the steps below.

## Getting Started

1. Remove the hardware items from the packaging.
2. Make sure the cameras are connected to the Jetson Nano board:
  - a. FPD-Link III version: Remove the FAKRA cable(s) from packaging. Connect the camera(s) to the FPD-Link III deserializer board using the FAKRA cable (*Figure 1, below*)
  - b. MIPI CSI-2 version: Proceed to step 3 (camera[s] already connected with a flatband cable).
3. Set up the power supply: Select the correct adapter plug for your outlet. Then connect the power supply to the Jetson Nano's DC jack.
4. Connect the Jetson Nano to a monitor or computer:
  - a. For headless operation: Connect the Micro USB cable to the Jetson Nano's Micro B USB jack and then to a laptop or desktop computer. The Jetson Nano hosts a USB mass storage device (similar to a USB flash drive). Open the file "Welcome.html" and follow the instructions.
  - b. For standalone operation: Connect a monitor to the HDMI output port. Continue by connecting a keyboard and mouse to the Jetson Nano's USB 3.0 ports. On the desktop, open the link "Welcome.html" and follow the instructions.



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## What can be found on the OpenEmbedded System Image which has been flashed on the SD card?

**JupyterLab:** JupyterLab is a next-generation web-based user interface for Project Jupyter. It enables users to work with Jupyter notebooks, text editors and terminals in a flexible, integrated, and extensible manner. It provides transient scratchpads for running code interactively, with full support for rich output.

JupyterLab can be accessed by entering the URL of the notebook's server into the browser. The URL for The Imaging Source's preassembled Jupyter Notebooks can be accessed through the Welcome.html file which resides on the desktop or on the mass storage (if the development kit is used in headless mode). The JupyterLab interface consists of a main work area containing tabs of documents and activities, a left sidebar, and a menu bar. The left sidebar contains a file browser, the list of running kernels and terminals, the command palette, the notebook cell tools inspector, and the tabs list.

Jupyter has been selected for on-board documentation as an easy way to get started with application development and to provide some general information about working with the camera and the image data.

To learn more about Jupyterlab please visit

[https://jupyterlab.readthedocs.io/en/stable/getting\\_started/overview.html](https://jupyterlab.readthedocs.io/en/stable/getting_started/overview.html)

**Setup Assistant Service:** this service runs when first booting up the system and can be used to set basic configuration settings like sensor configuration, time zone and user password.



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Last update: October 2020

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All weights and dimensions are approximate. Unless otherwise specified the lenses shown in the context of cameras are not shipped with these cameras.