NEON-2000-JT2-X Series

AI Smart Camera

User's Manual



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Part No: 50-1Z338-1000

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Leading **EDGE COMPUTING**

Revision History

Revision	Release Date	Description of Changes
1.0	2020-10-27	Initial version

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Preface

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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.


NOTE:

Additional information, aids, and tips that help users perform tasks.


CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.
ATTENTION: Informations destinées à prévenir les blessures corporelles mineures, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche.


WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.
AVERTISSEMENT: Informations destinées à prévenir les blessures corporelles graves, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche spécifique.

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1 Introduction

1.1 Overview

The NEON-2000-JT2-X series is an open camera platform equipped with an NVIDIA® Jetson™ TX2 module to support a series of image sensors that provide industrial DI/O and image capture and inference capabilities. The NEON-2000-JT2-X is IP67-certified and is designed for deep learning inference and other vision applications that require a GPU at the edge in harsh environments. Ubuntu Linux, Jetpack, camera drivers, and utilities are pre-installed to save effort on integration and prevent compatibility issues. The following table lists the current NEON-2000-JT2-X models and their respective sensor specifications.

Model Name	Image Sensor Specifications	Image Sensor Module
NEON-201B-JT2-X	1/3”, 1.2M, Global Shutter, 1280x960, 54fps, Color	Basler, DAA1280-54UC-CS
NEON-202B-JT2-X	1/1.8”, 1.9M, Global Shutter, 1600x1200, 60fps, Color	Basler, DAA1600-60UC-CS
NEON-203B-JT2-X	1/3.7”, 2M, Rolling Shutter, 1920x1080, 30fps, Color	Basler, DAA1920-30UC-CS
NEON-204B-JT2-X	1/2.5”, 5M, Rolling Shutter, 2592x1944, 14fps, Color	Basler, DAA2500-14UC-CS

Table 1-1: NEON-2000-JT2-X Model and Sensor Specifications

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1.2 Features

- IP67 (Ingress Protection)-certified, suited for harsh environments
- Pre-installed operating system, drivers, and utilities; deep learning sample code; plug and play
- NVIDIA Jetson TX2 and dual-core NVIDIA Denver 2 + quad-core ARM Cortex-A57, 8GB 128-bit LPDDR4 memory and integrated 256-core Pascal GPU
- USB 3.0 sensor interface compatible with most machine vision software
- IP67 USB Type-C connector supports DC power and DisplayPort to reduce cabling
- IP67 M12 17-pin connector for DC 24V input, DI/O, and RS-232
- IP67 M12 8-pin connector for Gigabit Ethernet
- Highly integrated, compact system for easy deployment

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1.3 General Specifications

- Lens mount: C-mount
- Total weight: 900g (with lens protector, without lens)
- Operating temperature: 45°C (tested when running YOLOv4; airflow 0.6 m/s)
- Power consumption: <35W
- Compute module: NVIDIA Jetson TX2
  - CPU: ARM Cortex-A57 MPCore (quad-core) and NVIDIA Denver 2 (dual-core)
  - GPU: 256-core NVIDIA Pascal GPU
  - Memory: 8 GB LPDDR4
  - Storage: 32 GB eMMC (on Jetson TX2 module)
- Camera connectors and functions
  - 1x IP67 USB Type-C for power, DisplayPort, and USB 3.0
  - 1x IP67 M12 17-pin connector for DC 24V input, RS-232, and DI/O
  - 1x IP67 M12 8-pin connector for Gigabit Ethernet


NOTE:

1. When powering from the DC 24V input, the USB Type-C connector can provide 3W of power to an external device such as a USB Type-C hub. Devices that require more than 3W cannot be used.
2. DC power can be supplied from either the USB Type-C port or the M12 17-pin connector.
3. Use only recommended ADLINK power adapters.

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	NEON-201B-JT2-X	NEON-202B-JT2-X	NEON-203B-JT2-X	NEON-204B-JT2-X
Compute Module	NVIDIA® Jetson™ TX2			
Processor	ARM Cortex-A57 and NVIDIA Denver 2			
Display Output	DisplayPort over USB Type-C, 1920x1080 @ 30fps			
Image Sensor Resolution	1280x960	1600x1200	1920x1080	2592x1944
Image Sensor Size	1/3”	1/1.8”	1/3.7”	1/2.5”
Frame Rate (fps)	54	60	30	14
Shutter	Global		Rolling	
Color/Mono	Color			
Image Sensor Trigger Mode	External trigger (see note below), software trigger, free run			
Digital Input	2x DI, includes 1x sensor trigger			
Digital Output	2x DO, includes 1x strobe out			
RS-232	TXD, RXD, GND			
Dimensions/Weight	123 x 122.85 x 79.55mm; 900g			
Power Supply	DC power over USB Type-C or DC 24V over M12 17-pin connector			


NOTE:

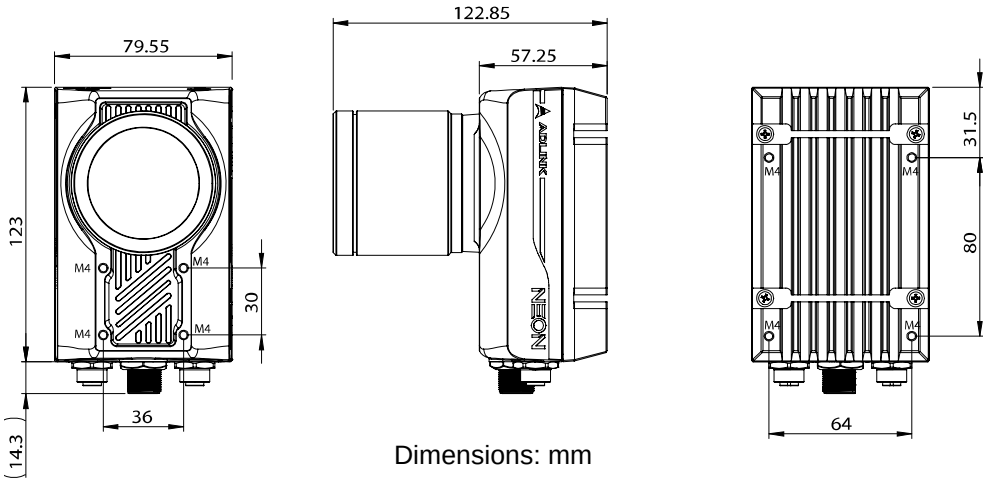
In External Trigger Mode, you can adjust the sensor exposure time in the Basler pylon utility.

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1.4 Mechanical Dimensions

This section provides dimensions and related mechanical information for the NEON-2000-JT2-X.

1.4.1 Camera Dimensions



Dimensions: mm

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1.5 Accessories

ADLINK provides all the necessary parts and accessories for the NEON-2000-JT2-X in the starter kit. You can purchase individual accessories according to your needs. The following table provides details about each item.

Item	Specification/Description	Part Number
IP67 USB Type-C cable	▶ Type-C (M) to Type-C (M) interface; 2m ▶ Supports power, Display-Port, and USB 3.0	30-01335-0000-A0
IP67 Ethernet cable	▶ M12 A-code 8P (M) to RJ45 (M), 3m ▶ Supports Gigabit Ethernet	30-01336-0000-A0
IP67 DI/O cable	▶ M12 A-code 17P (M) to DB37P (M), 3m ▶ Supports DC24V, 2x DI/O, and 1x RS-232 ▶ NEON-side: 17P; other side: 37P to DIN-37-01	30-01337-0000-A0
Flash cable	▶ M12 A-code 17P (M) to USB 2.0 Type-A (M)/SWx2 ▶ For flashing the Jetson TX2	30-01338-0000-A0
DIN-37D-01 terminal board	I/O extension board for use with IP67 DI/O cable	91-14025-1020
Camera lens	8mm f/1.4, 2/3”	92-15731-0010
USB Type-C hub/ adapter	For power and I/O connections	92-99090-1010
Lens cover	Lens protection; length 58mm	34-90110-0000

Table 1-2: NEON-2000-JT2-X Starter Kit Contents

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2 Connectors and I/O

This chapter includes the locations and descriptions of the connectors and I/O on the NEON-2000-JT2-X.

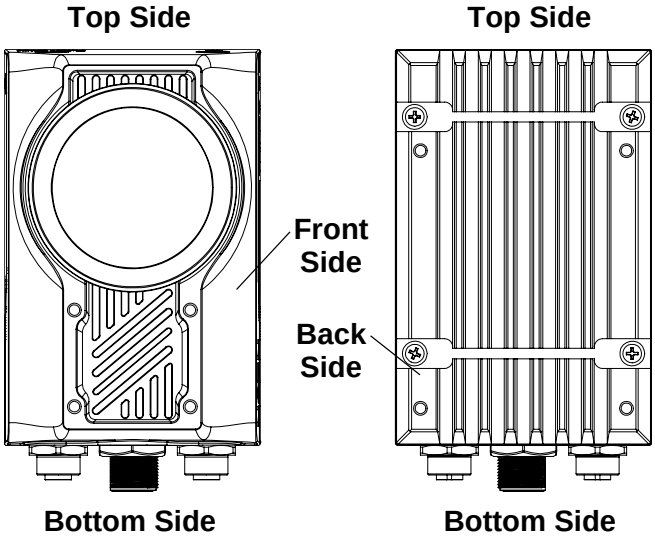


Figure 2-1: NEON-2000-JT2-X Orientation

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2.1 Bottom Side I/O and Connector Description

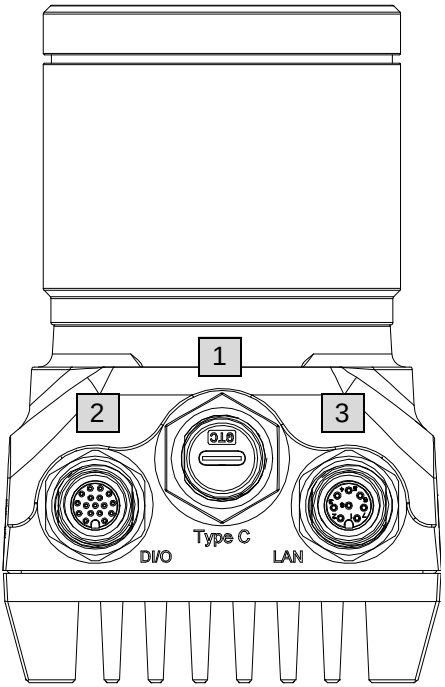


Figure 2-2: Bottom Side I/O and Connectors

Item	Description
1	IP67 USB Type-C connector for power, DisplayPort, and USB 3.0
2	IP67 M12 17-pin connector for DC 24V input, 2x DI/O, and 1x RS-232
3	IP67 M12 8-pin connector for Gigabit Ethernet

Table 2-1: Bottom Side Connectors and Functions

NOTE:

DC power can be supplied from either the USB Type-C port or the M12 17-pin connector.

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2.1.1 DI/O Connector Pin Definitions

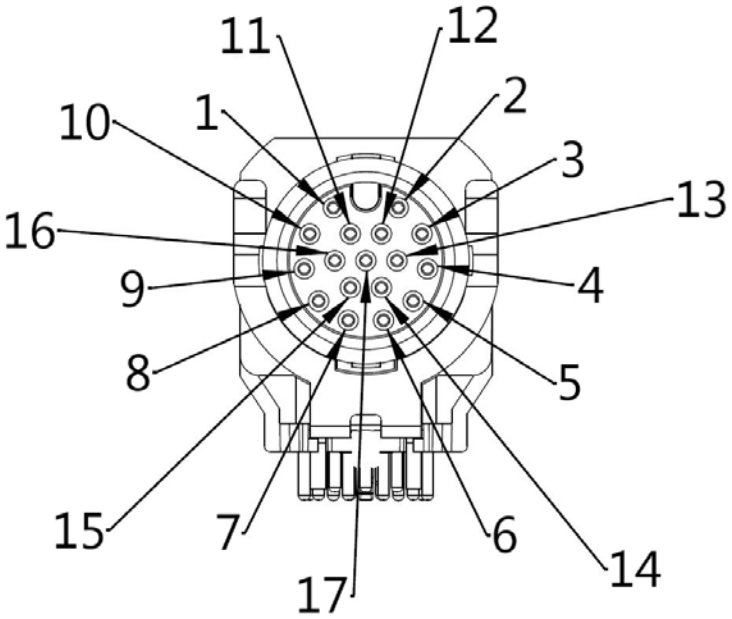


Figure 2-3: DI/O M12 17-Pin Connector

Pin	Type	Description
1	Bi-DIR	USB 2.0 D+ (for flashing the TX2)
2	Input	DC 24V input
3	Input	DC 24V input
4	Input	Digital input 0/Trigger input 0 (see Note 1)
5	Output	Digital output 0/Strobe output 0 (see Note 2)
6	Output	Digital output 1
7	--	Reserved
8	--	Reserved
9	Input	TX2 recovery (for flashing the TX2)
10	Bi-DIR	USB 2.0 D- (for flashing the TX2)
11	Input	USB 2.0 power (for flashing the TX2)

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Pin	Type	Description
12	--	GND
13	Input	Digital input 1
14	Input	RS-232 RXD (PC>NEON)
15	Output	RS-232 TXD (NEON>PC)
16	Input	TX2 reset
17	--	GND

Table 2-2: DI/O M12 17-Pin Connector Pin Definitions


NOTE:

1. Pin 4 (Digital input 0/Trigger input 0) is programmable. When configured for trigger input, pin 4 is used for hardware triggering of the image sensor. Connect an external sensor signal to pin 4 and set the camera to hardware trigger mode to enable real-time or hardware-triggered image capture.

2. Pin 5 (Digital output 0/Strobe output 0) is programmable. When configured for strobe output, pin 5 can be connected to an LED /strobe controller to adjust the timing latency/delay according to the camera connected to pin 5.

I/O Category	Maximum Throughput	Specifications		
RS-232	-	Baud rate: 9600bps @ 8N1		
Digital Input	10 KHz	Common sharing:	1 common for sharing ground	
		Input range:	0-5 VDC	
		High level threshold:	2-5 VDC	
		Low level threshold:	0-0.8 VDC	
Digital Output	10KHz	Open-collector	Input voltage range	3.3-30 VDC
			Maximum sink current	100 mA

Table 2-3: DI/O Connector Specifications

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2.1.2 LAN Connector Pin Definitions

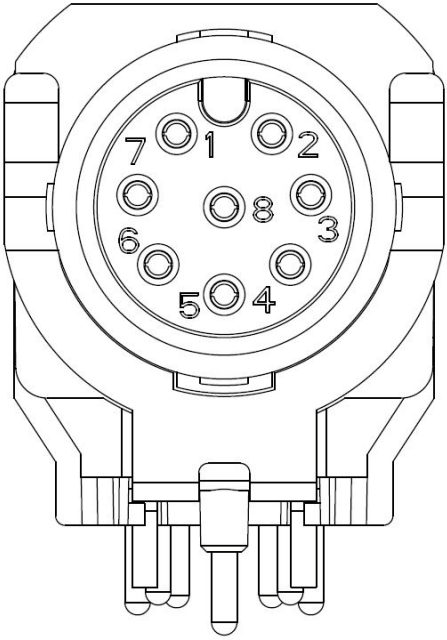


Figure 2-4: LAN Connector

Pin	Description
1	MDI2-
2	MDI3+
3	MDI3-
4	MDI0-
5	MDI1+
6	MDI0+
7	MDI2+
8	MDI1-

Table 2-4: LAN Connector Pin Definitions

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2.2 Top Side LED Indicators

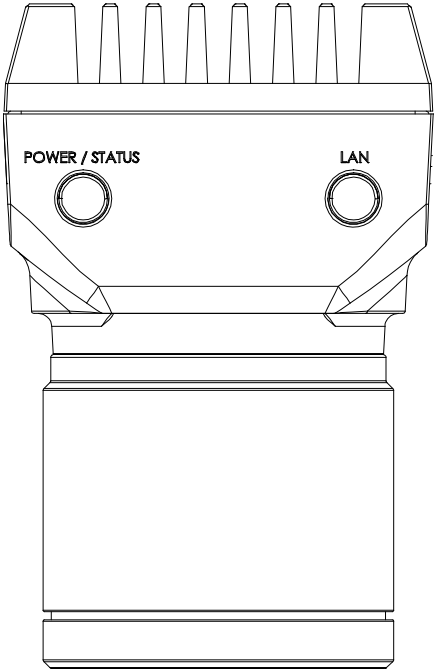


Figure 2-5: Top Side LED Indicators

LED	Function	Description
LAN	Ethernet status indicator	▶ Red: Ethernet is active ▶ Green: 100/1000 Mbps ▶ Orange (Red/Green): Ethernet is working normally
POWER/ STATUS	System and power indicator	▶ Red: System is ready ▶ Green: Power on ▶ Orange (Red/Green): Camera is working normally

Table 2-5: Top Side LED Indicator Behavior

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2.3 Front Side Description

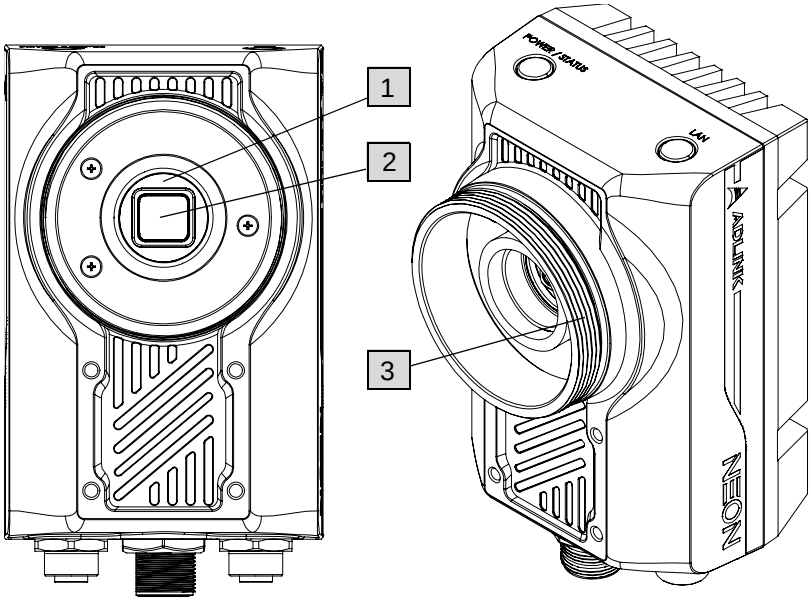


Figure 2-6: Front Side Components

Item	Description
1	C-mount type lens mount
2	Image sensor
3	Lens protector mounting thread (Metric thread: M60x1.5mm)

Table 2-6: Front Side Description

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3 Getting Started

3.1 Mounting the Device

The NEON-2000-JT2-X can be mounted using the mounting screw holes on either the front (A) or back (B) sides.

Le NEON-2000-JT2 peut être monté à l'aide des trous de vis de montage sur les côtés avant (A) ou arrière (B).

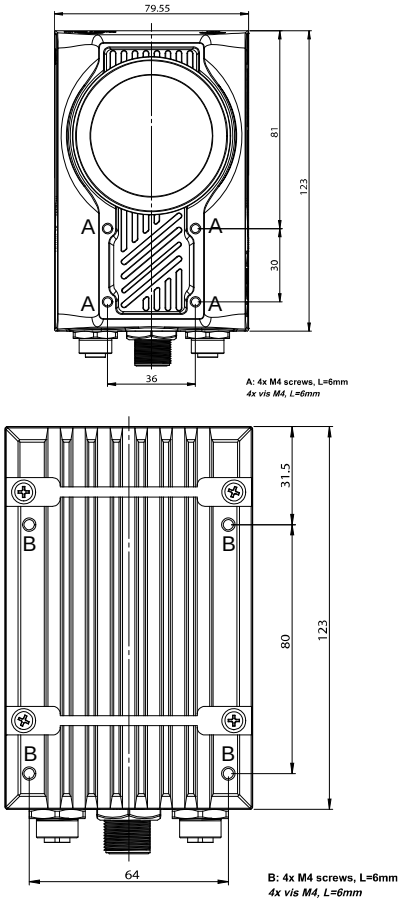


Figure 3-1: NEON-2000-JT2-X Mounting Holes

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3.1.1 DIN Rail Mount

You can purchase a DIN rail kit and related accessories from ADLINK (P/N: 91-95281-000E).

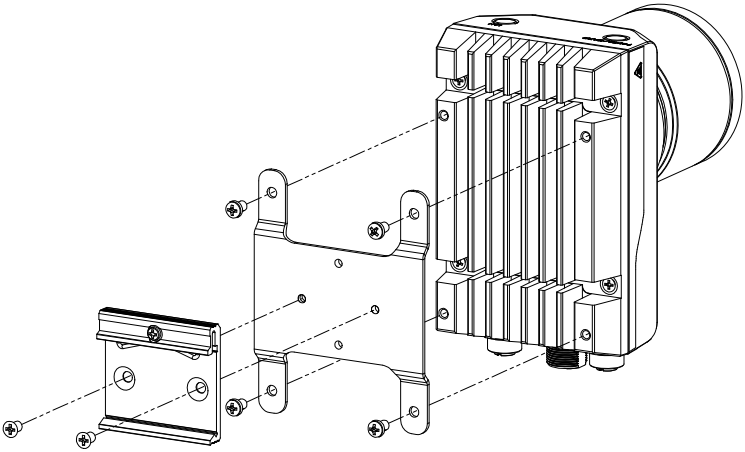


Figure 3-2: DIN Rail Mount (Separated)

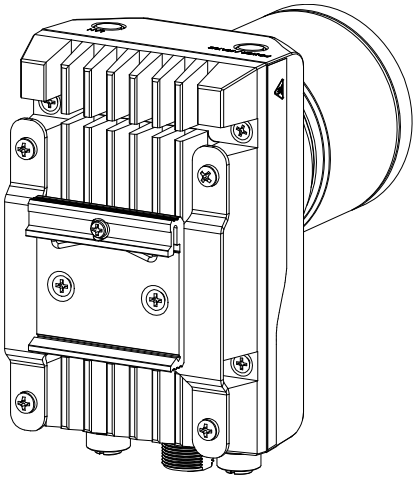


Figure 3-3: DIN Rail Mount (Assembled)

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3.2 Digital I/O Connections

External devices such as trigger sensors, LED light controllers and relays can be connected to the NEON-2000-JT2-X to implement different applications. This section shows how to connect such devices.

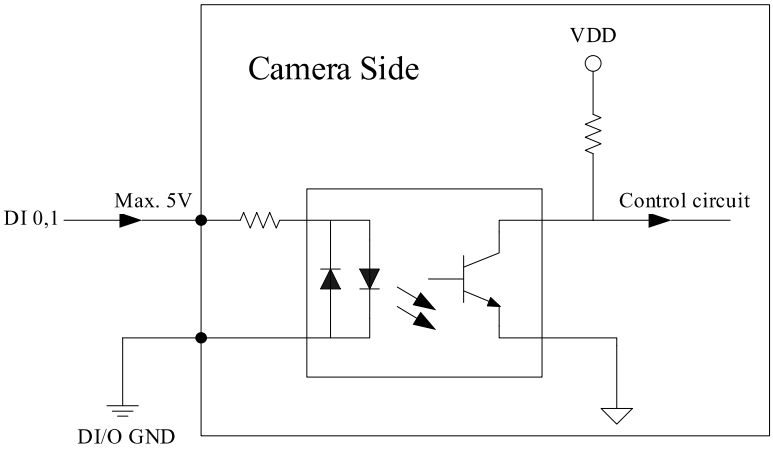


Figure 3-4: Digital Input Schematic Diagram

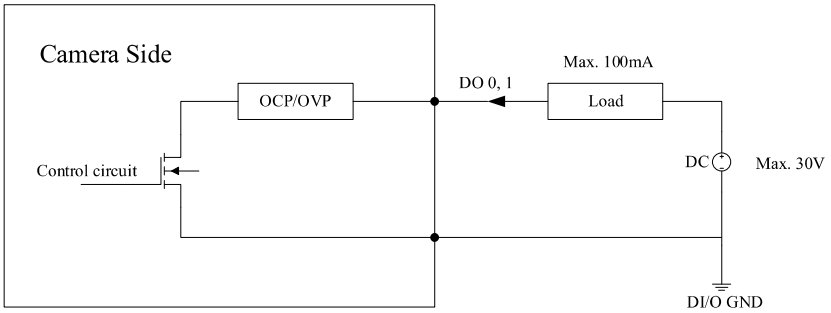


Figure 3-5: Digital Output Schematic Diagram

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3.3 Attaching a Lens

The NEON-2000-JT2-X is compatible with C-mount type lenses.

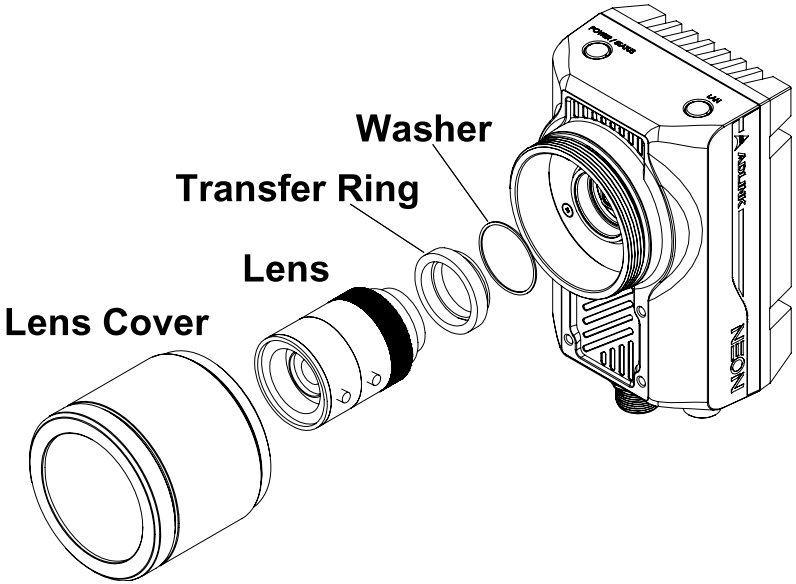
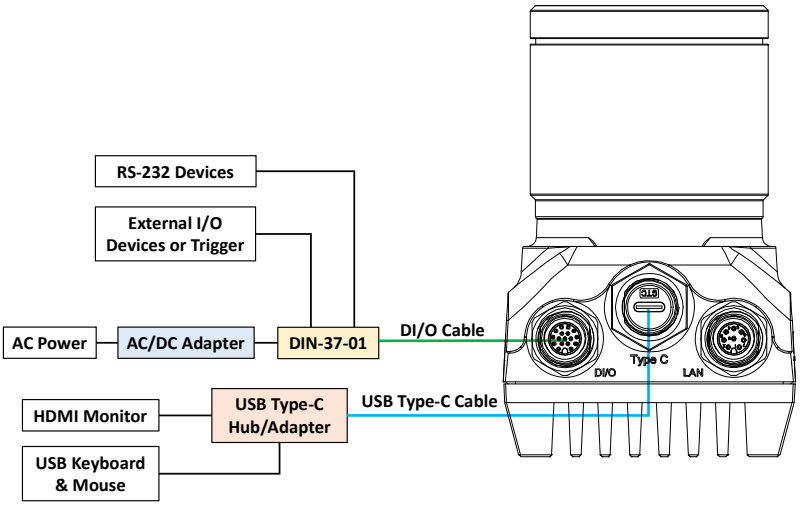


Figure 3-6: Lens Attachment Assembly

NOTE: The transfer ring is preinstalled. The washer is used only with the NEON-202B-JT2-X.

3.4 Power and Peripheral Connections

The NEON-2000-JT2-X can be powered from either a USB Type-C adapter or the DI/O M12 17-pin connector (24V DC input). The USB Type-C connector also supports DisplayPort video signal and USB 3.0, which can be used to connect a keyboard and mouse. The following figures show examples of power and peripheral connection configurations.

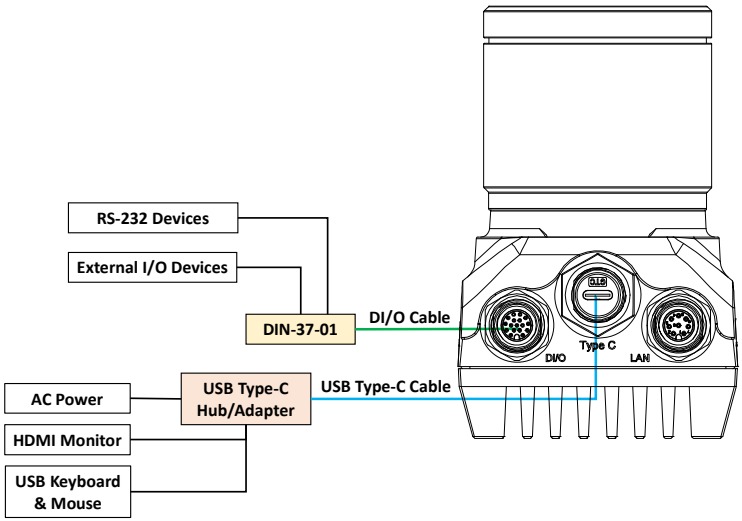


NOTE:

This configuration requires an ADLINK AC/DC power adapter (P/N: 31-62138-0000) and I/O extension board DIN-37-01 (P/N: 91-14025-1020).
Do not supply power to the camera from the AC/DC adapter and the USB Type-C hub/adapter at the same time.

Figure 3-7: Powered by AC/DC Adapter

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NOTE:

This configuration requires an ADLINK USB Type-C hub/ adapter (P/N 92-99090-1010).
Do not supply power to the camera from the AC/DC adapter and the USB Type-C hub/adapter at the same time.

Figure 3-8: Powered by USB Type-C Hub/Adapter

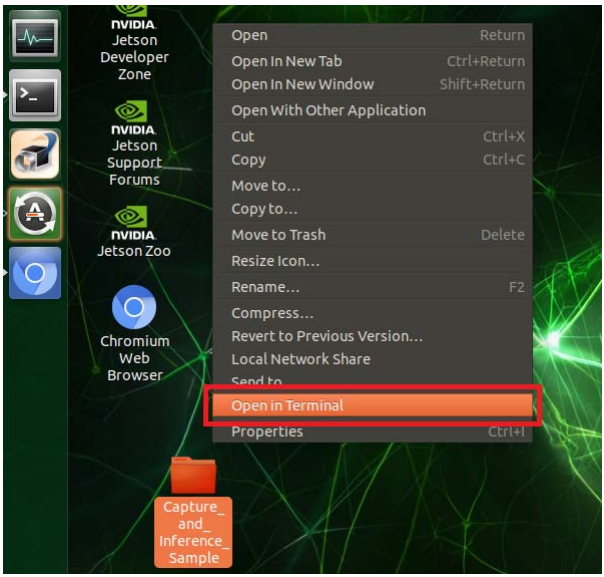
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3.5 Image Capture and Inference

ADLINK provides sample code files for testing the built-in Basler image capturing and inference functions on the NEON-2000-JT2-X. This section describes how to execute the classification sample code with the NEON-2000-JT2-X.

3.5.1 Executing the Sample Code

1. Right-click the **Capture_and_inference_Sample** folder on the desktop and select **Open in Terminal**.



2. Enter and execute the following command:

```
./build/aarch64/bin/imagenet-camera
     [Sensor_width] [Sensor_height]
```

[Sensor_width] and [Sensor_height] are based on the camera model and sensor settings. For example, for the NEON-203B-JT2X, the command would be:

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```
./build/aarch64/bin/imagenet-camera 1920 1080
```

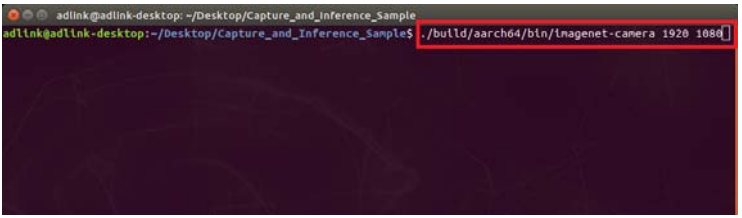
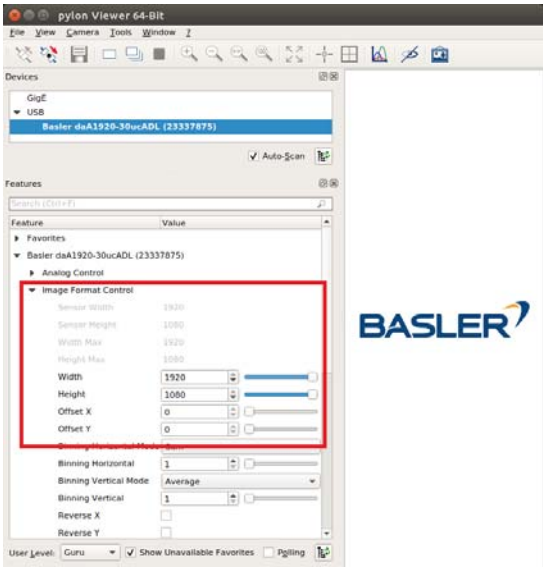


Image capture and inference results will appear in a new window, with the inference result in the upper-left corner.



You can also modify the Sensor_width and Sensor_height settings in the **pylon Viewer** utility.



For details, see **Modifying Image Sensor Settings in pylon**.

3.5.2 Inference Concepts and Sample Code

This section illustrates the main concepts of inference with sample files and also provides a link to examples from NVIDIA. The default path of the sample files is **/home/Desktop/Capture_and_Inference_Sample**.

The following folders and files in this directory are essential for image capture and inference tasks:

- **System requirements and sample build-up procedures:** /Capture_and_Inference_Sample /README.md
- **Pre-training model for image classification:** /Capture_and_Inference_Sample/data/networks
- **Sample code:** /Capture_and_Inference_Sample/examples/imagenet-camera/imagenet-camera.cpp
- **Capturing images:** /Capture_and_Inference_Sample/utils/camera/indCamera.cpp
- **Execution file:** /Capture_and_Inference_Sample/build/aarch64/bin/imagenet-camera

To learn more about image sensors, samples and documents are included in **/opt/pylon5**. For more samples relating to image inference, NVIDIA provides examples at https://github.com/dusty-nv/jetson-inference.

3.5.3 Image Inference Procedure

Use these steps to set up a streaming camera and to display and classify an image inference.

1. Create a camera.

ADLINK provides **indcamera.cpp** and **indcamera.h**, which package several pylon APIs for developers to create custom applications for the NEON-2000-JT2-X.

2. Create an ImageNet.

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Make sure to create an inference model before using it. This sample uses ImageNet as an example.

3. Start streaming.

In this sample, the NEON-2000-JT2-X is in free run mode and frames are passed one at a time. You can set the pixel format of the camera output to RGB mode in pylon Viewer via **Features > Basler [Product Name] > Image Format Control > Pixel Format > RGB8**.

4. Classify the image.

The image source can be defined as either from the NEON-2000-JT2-X or storage media. The following commands will result in errors if the NEON-2000-JT2-X sensor is still connected to pylon Viewer. If an error occurs, disconnect the camera by clicking **Close Camera** in pylon Viewer:

```
./build/aarch64/bin/imagenet-camera [input_width]
[input_height]
```

```
./build/aarch64/bin/imagenet-console [input_image]
[output_image]
```

```
CD:
```

```
~/Desktop/Capture_and_Inference Sample/
```

5. Update the display.

Draw frames and the inference result using OpenGL.

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3.6 Using the Basler pylon Utility

This section describes how to use the Basler pylon utility to capture images and adjust, load, and save sensor settings.

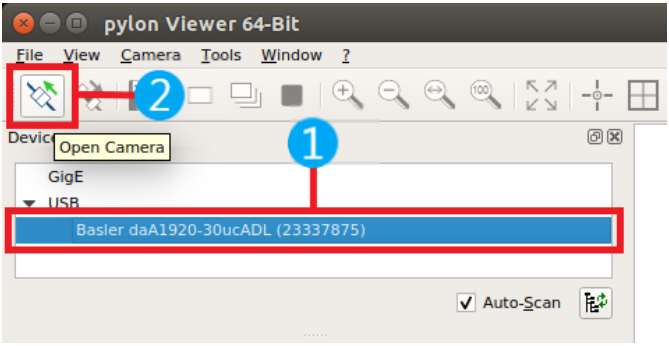
3.6.1 Capturing Images in pylon

The following steps illustrate how to capture images using the Basler **pylon Viewer** application.

1. Click the **pylon Viewer** icon.



2. Select the sensor name and click the **Open Camera** button to open the camera.

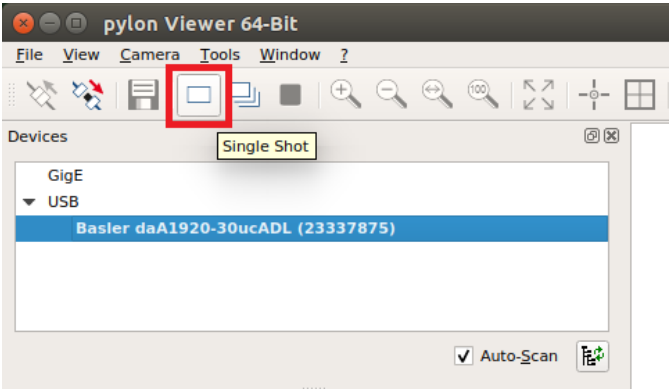


NOTE:

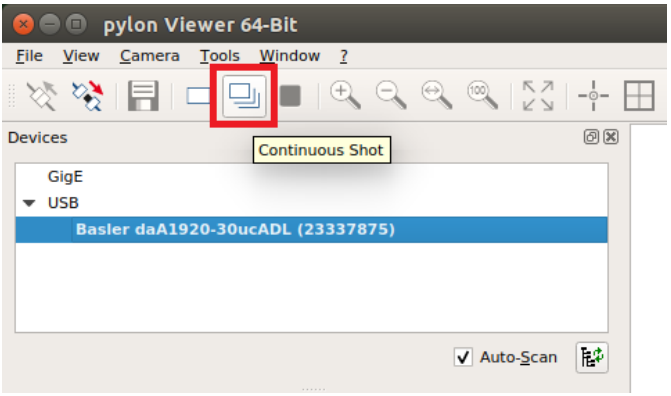
Basler daA1920-30ucADL is the image sensor for the NEON-203B-JT2-X and NEON-204B-JT2-X. The sensor name that appears will reflect the model being used.

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3. Click the **Single Shot** or **Continuous Shot** button to capture images.



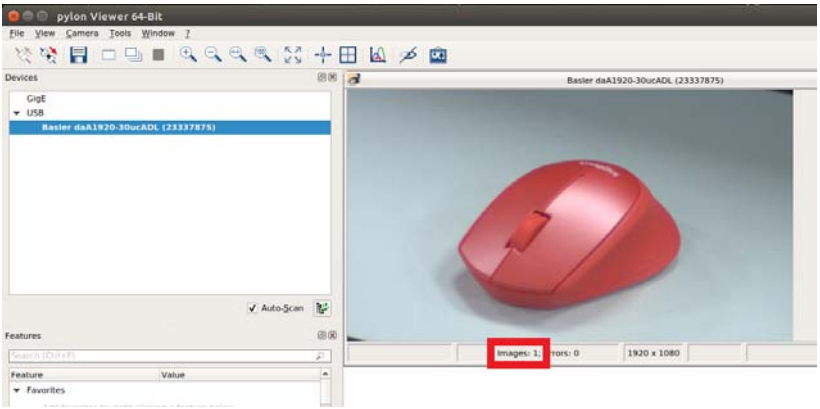
Single Shot



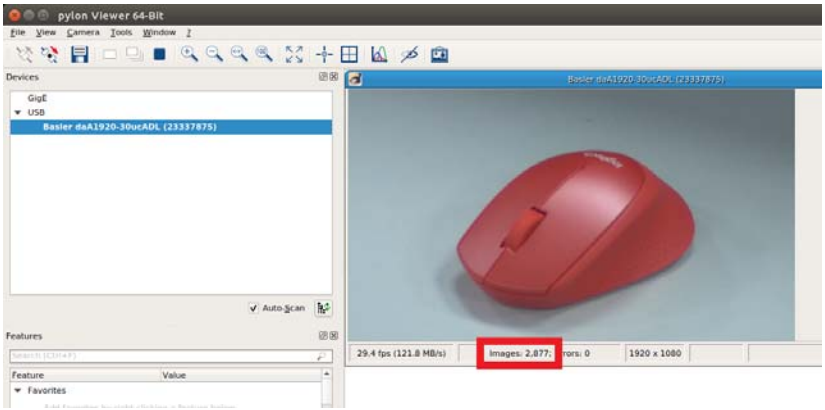
Continuous Shot

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The camera will capture images and display activity according to the selected option.



Single Shot



Continuous Shot

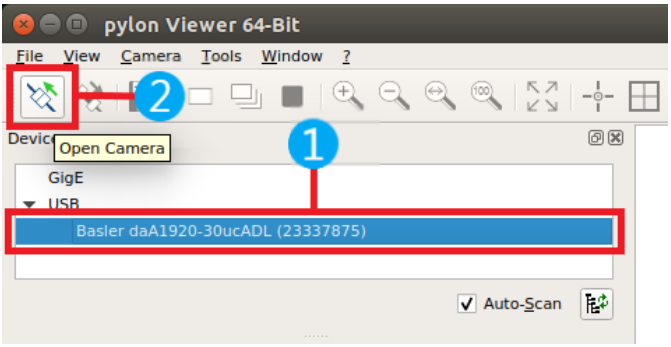
3.6.2 Modifying Image Sensor Settings in pylon

The default NEON-2000-JT2-X image sensor settings may not be suitable for all applications. This section illustrates how to modify image sensor settings in the Basler pylon utility.

1. Click the **pylon Viewer** icon.



2. Select the sensor name and click the **Open Camera** button to open the camera.

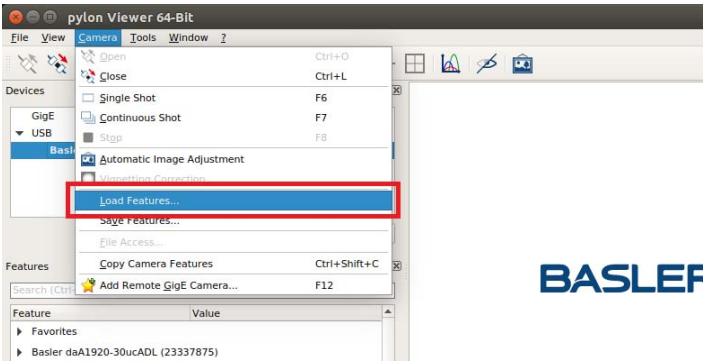


NOTE:

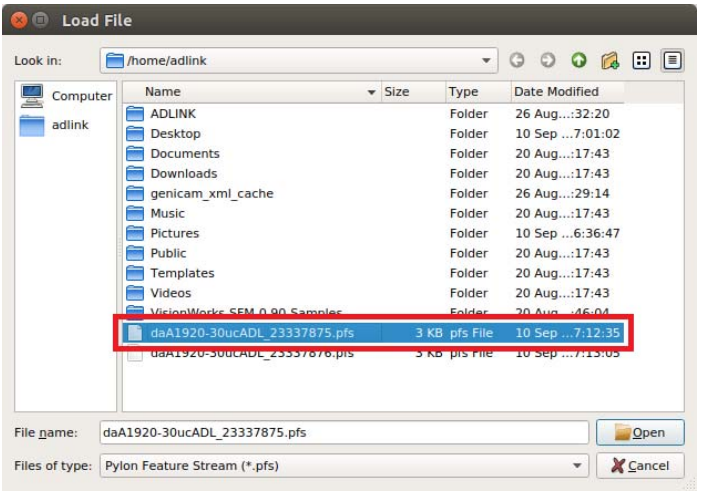
Basler daA1920-30ucADL is the image sensor for the NEON-203B-JT2-X and NEON-204B-JT2-X. The sensor name that appears will reflect the model being used.

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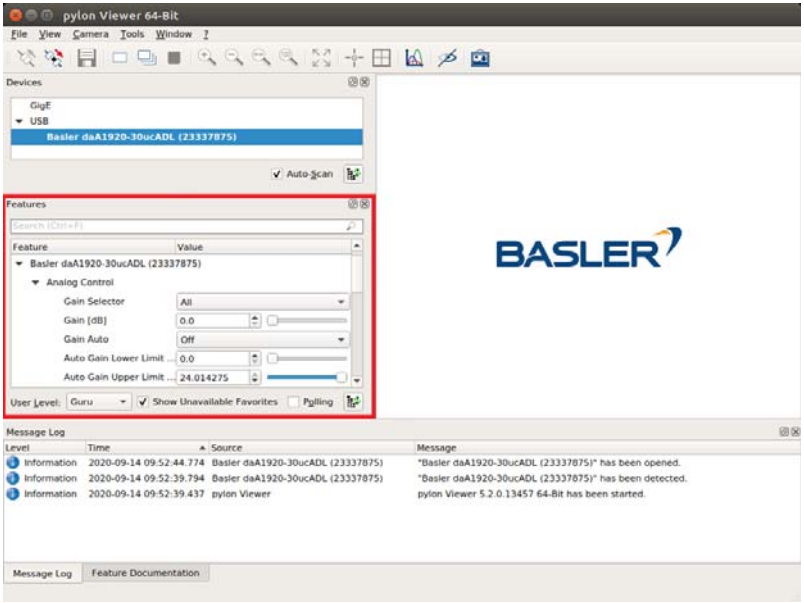
3. Click **Camera > Load Features...**



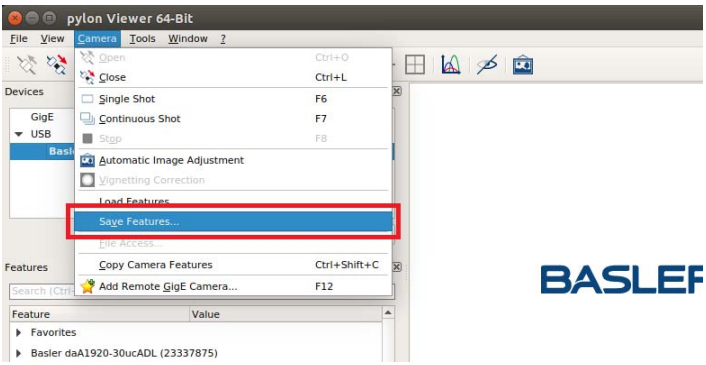
4. Select the desired *.pfs file and click **Open** to load the sensor settings.



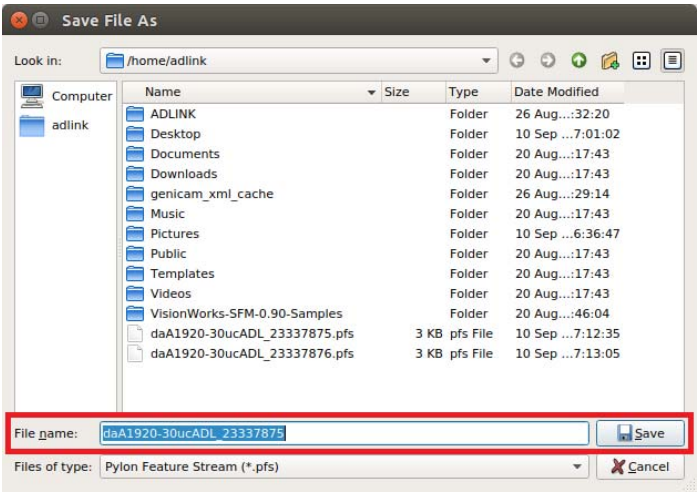
The image sensor settings will update and appear under **Features** in the main window.



5. Modify the image sensor settings as needed.
6. Click **Camera > Save Features**.



7. Select a location, specify a name for the *.pfs file, and click **Save** to save the sensor settings.



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3.6.3 Using APIs to Modify Image Sensor Settings

After opening the device, you can add the **PylonFeaturePersistenceLoad** function to load features and modify the image sensor settings.

You can find supporting documentation and additional sample code in the following directories:

- **/opt/pylon5/share/doc/C**
- **/opt/pylon5/Samples/C**

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4 Software Upgrade

Each NEON-2000-JT2-X comes with Ubuntu and Jetpck pre-installed. ADLINK builds custom flash files to upgrade the NEON-2000-JT2-X based on NVIDIA's release schedule.

Important Notice

NVIDIA official operating system releases for the Jetson TX2 development kit **CANNOT** be used on the NEON-2000-JT2-X. Be sure to upgrade the NEON-2000-JT2-X with an operating system or flash file **ONLY** from ADLINK.

DO NOT use the NVIDIA SDK manager to upgrade the NEON-2000-JT2-X.

4.1 System Flash

This section describes the equipment and procedures required to flash the NEON-2000-JT2-X OS image.

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4.1.1 System Flashing Equipment

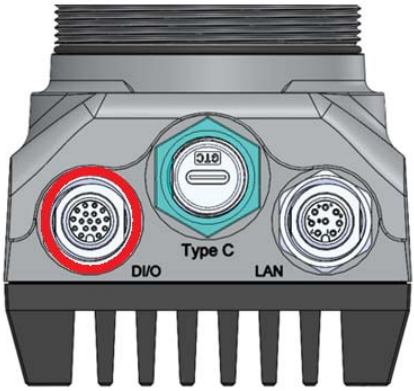
The following table lists the required tools for flashing the NEON-2000-JT2-X OS image.

Item	Description	Note
1	1x Host PC	Minimum requirements: ▶ Intel® Core™ i3 CPU, 4 GB DDR and 128 GB of free SSD/HDD space. ▶ Ubuntu Desktop 16.04 or 18.04
3	System Flash Cable	 ADLINK P/N: 30-01338-0000-A0

4.1.2 System Flashing Procedure

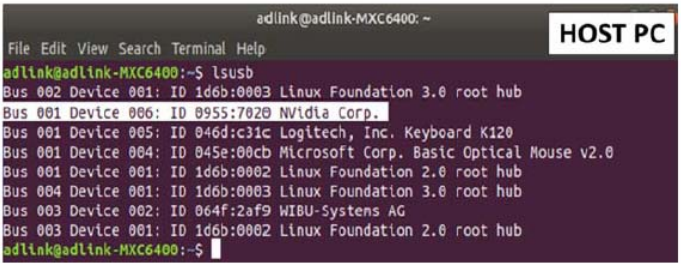
This section illustrates how to flash the NEON-2000-JT2-X OS image. Ensure that you have obtained the correct image file from ADLINK and have saved it to the host PC before performing the following procedure.

1. Connect the M12 17-pin connector (male) on the system flash cable to the DI/O input on the bottom side of the NEON-2000-JT2-X.



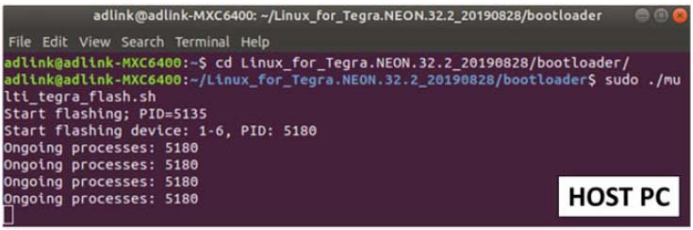
2. Power on the NEON-2000-JT2-X and wait for the status LED to solid light orange (not flashing).
3. Connect the NEON-2000-JT2-X to the host PC using the system flash cable.
4. Enter Recovery Mode using the system flash cable.
5. Press and hold the black button for at least three seconds.
6. With the black button depressed, press the red button, and then release the black button.
7. Execute the **lsusb** command on the host PC.
   If "NVIDIA Corp." appears on the list, then the NEON-2000-JT2-X has successfully entered Recovery Mode.

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8. Navigate to the directory containing the flash file and execute the flash script to begin the flashing process.

   ```
   cd Linux_for_Tegra.NEON.32.2_20190828/bootloader
   sudo ./multi_tegra_flash.sh
   ```



NOTE: The names of the directory and flash file in this example are for illustration only. Directory and flash file names will vary according to your system configuration and the specific flash file used.

The system flash process is now started. The flash process takes about twelve minutes to complete.

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Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

- Read these safety instructions carefully
- Keep the User's Manual for future reference
- Read the Specifications section of this manual for detailed information on the recommended operating environment
- Operating temperature: 35ºC with USB Type-C hub/adapter or 40ºC with the AC/DC adapter.
- When installing/mounting or uninstalling/removing device; or when removal of a chassis cover is required for user servicing:
  - Turn off power and unplug any power cords/cables
  - Reinstall all chassis covers before restoring power
- To avoid electrical shock and/or damage to device:
  - Keep device away from water or liquid sources
  - Keep device away from high heat or humidity
  - Keep device properly ventilated (do not block or cover-ventilation openings)
  - Always use recommended voltage and power source settings
  - Always install and operate device near an easily accessible electrical outlet
  - Secure the power cord (do not place any object on/over the power cord)
  - Only install/attach and operate device on stable surfaces and/or recommended mountings
- If the device will not be used for long periods of time, turn off and unplug from its power source
- Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools

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- A Lithium-type battery may be provided for uninterrupted backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.

- The device must be serviced by authorized technicians when:
  - The power cord or plug is damaged
  - Liquid has entered the device interior
  - The device has been exposed to high humidity and/or moisture
  - The device is not functioning or does not function according to the User's Manual
  - The device has been dropped and/or damaged and/or shows obvious signs of breakage
- Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up
- It is recommended that the device be installed only in a server room or computer room where access is:
  - Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required
  - Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location
- It is recommended that the device be installed in Information Technology Rooms that are in accordance with Article 645 of the National Electrical Code and NFPA 75.

	***BURN HAZARD*** Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.

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Consignes de Sécurité Importante

S'il vous plaît prêter attention stricte à tous les avertissements et mises en garde figurant sur l'appareil, pour éviter des blessures ou des dommages.

- *Lisez attentivement ces consignes de sécurité.*
- *Conservez le manuel de l'utilisateur pour pouvoir le consulter ultérieurement.*
- *Lisez la section Spécifications de ce manuel pour des informations détaillées sur l'environnement d'exploitation recommandé.*
- *Température de fonctionnement: 35 ° C avec adaptateur / concentrateur USB Type C ou 40 ° C avec l'adaptateur.*
- *Lors de l'installation / du montage ou de la désinstallation / suppression du périphérique; ou lorsque le retrait d'un capot de châssis est requis pour l'entretien par l'utilisateur:*
  - *Coupez l'alimentation et débranchez tous les cordons / câbles d'alimentation*
  - *Réinstallez tous les couvercles de châssis avant de rétablir l'alimentation*
- *Pour éviter les chocs électriques et / ou les dommages à l'appareil:*
  - *Gardez l'appareil éloigné de l'eau ou des sources de liquide*
  - *Gardez l'appareil loin de la chaleur ou de l'humidité élevée*
  - *Gardez l'appareil correctement ventilé (ne bloquez pas et ne couvrez pas les ouvertures de ventilation)*
  - *Utilisez toujours les paramètres de tension et de source d'alimentation recommandés*
  - *Installez et utilisez toujours l'appareil à proximité d'une prise électrique facilement accessible*
  - *Fixez le cordon d'alimentation (ne placez aucun objet sur / par-dessus le cordon d'alimentation)*
  - *Installez / fixez et utilisez l'appareil uniquement sur des surfaces stables et / ou des supports recommandés*
- *Si l'appareil n'est pas utilisé pendant de longues périodes, éteignez-le et débranchez-le de sa source d'alimentation*
- *N'essayez jamais de réparer l'appareil, qui ne doit être entre-*

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tenu que par du personnel technique qualifié à l'aide d'outils appropriés.

- *Une batterie de type lithium peut être fournie pour une alimentation de secours ou une alimentation de secours ininterrompue.*



Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- *L'appareil doit être réparé par des techniciens autorisés lorsque:*
  - *Le cordon d'alimentation ou la fiche est endommagé*
  - *Du liquide a pénétré à l'intérieur de l'appareil*
  - *L'appareil a été exposé à une humidité élevée et / ou à l'humidité*
  - *L'appareil ne fonctionne pas ou ne fonctionne pas selon le manuel de l'utilisateur*
  - *L'appareil est tombé et / ou endommagé et / ou montre des signes évidents de casse*
- *Débranchez le cordon d'alimentation avant de desserrer les vis moletées et fixez toujours les vis moletées avec un tournevis avant de démarrer le système*
- *Il est recommandé d'installer l'appareil uniquement dans une salle de serveurs ou une salle informatique où l'accès est:*
  - *Réservé au personnel de service qualifié ou aux utilisateurs familiers avec les restrictions appliquées à l'emplacement, les raisons de celles-ci et les précautions nécessaires*
  - *Seulement permis par l'utilisation d'un outil ou d'une serrure et d'une clé, ou d'autres moyens de sécurité, et contrôlé par l'autorité responsable de l'emplacement*
- *Il est recommandé que l'appareil soit installé dans des salles informatiques conformes à l'article 645 du Code national de l'électricité et à la NFPA 75.*

	***RISQUE DE BRÛLURES*** *Ne touchez pas cette surface, cela pourrait entraîner des blessures.* *Pour éviter tout danger, laissez la surface refroidir avant de la toucher.*

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Getting Service

Ask an Expert: http://askanexpert.adlinktech.com

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