



NVIDIA DRIVE AGX Orin Developer Kit

Hardware Quick Start Guide

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Introduction

Before You Begin

This hardware quick start guide provides the basic steps needed to get your NVIDIA DRIVE AGX Orin™ Developer Kit (hereinafter referred to simply as developer kit) up and running.

The developer kit ships with the NVIDIA DRIVE AGX Orin Developer System (referred to hereinafter as the developer system) with the NVIDIA DRIVE® OS pre-installed.

For more details beyond the high-level view of the developer system and steps on how to bring it up, refer to the NVIDIA DRIVE AGX Orin Developer Kit Mechanical and Installation Guide along with other documentation located at the [NVIDIA DRIVE AGX Orin Documentation](#) page.

Other related up-to-date information is available as follows:

- ▶ [DRIVE AGX Orin Developer Kit Product Brief.](#)
- ▶ [DRIVE AGX Orin Regulatory Compliance and Safety Guide.](#)
- ▶ [A list of hardware accessories, which may be purchased separately.](#)
- ▶ [Details regarding configuration of your development environment.](#)

Developers are required to join as an [NVIDIA Developer](#) and be part of the [NVIDIA DRIVE AGX SDK Developer Program](#) to obtain access to up-to-date information.



Note: Files marked with a lock icon require membership to the NVIDIA DRIVE AGX™ SDK Developer Program.

NVIDIA DRIVE AGX Orin Developer Kit Hardware

Components

This section describes the developer kit hardware components.

Table 1 lists the hardware components and accessories associated with the developer kit and Figure 1 contains a pictorial description of the various developer kit components.

Table 1. NVIDIA DRIVE AGX Orin Developer Kit Hardware List

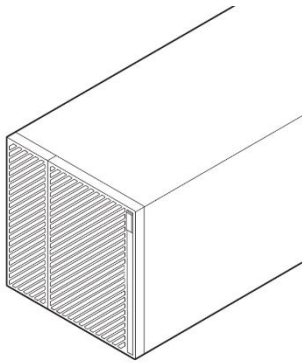
Item	Label	Description
1	Developer System	NVIDIA DRIVE AGX Orin Developer System
2	AC Power Cable	AC Power Cable ^(See Note)
3	Micro USB	USB Type A to Micro USB Cable
4	Type A-to-C USB Cable	USB Type A to USB Type C Cable
5	Type C-to-C USB Cable	USB Type C to USB Type C Cable
6	MATE-AX Camera Splitter Cable	Quad GMSL FAKRA Camera Splitter Cable
7	Dual H-MTD Splitter	Dual H-MTD Splitter Cable
8	Quad H-MTD Splitter	Quad H-MTD Splitter Cable
9	MATEnet Splitter	MATEnet Splitter Cable
10	NIC Adapter	1 GbE NIC Adapter

Note: The AC power cable is included in a select number of developer kit versions.

Figure 1. NVIDIA DRIVE AGX Orin Developer Kit Components



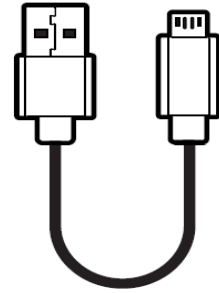
Disclaimer: The line-art images shown here are for illustration purposes only. Your developer kit accessories may differ due to product enhancements, modifications, and substitutions.



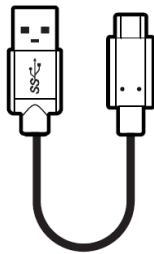
Developer System



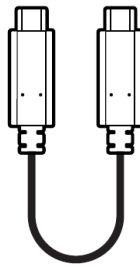
AC Power Cable



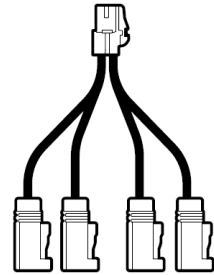
Micro USB Cable



Type A-to-C USB Cable



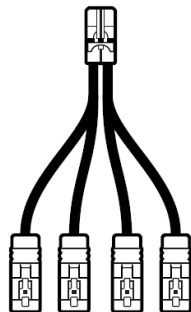
Type C-to-C USB Cable



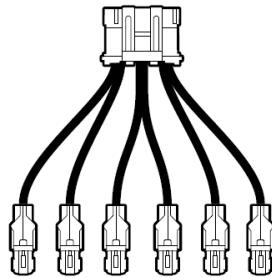
Camera Splitter Cable



Dual H-MTD Splitter



Quad H-MTD Splitter



MATEnet Splitter

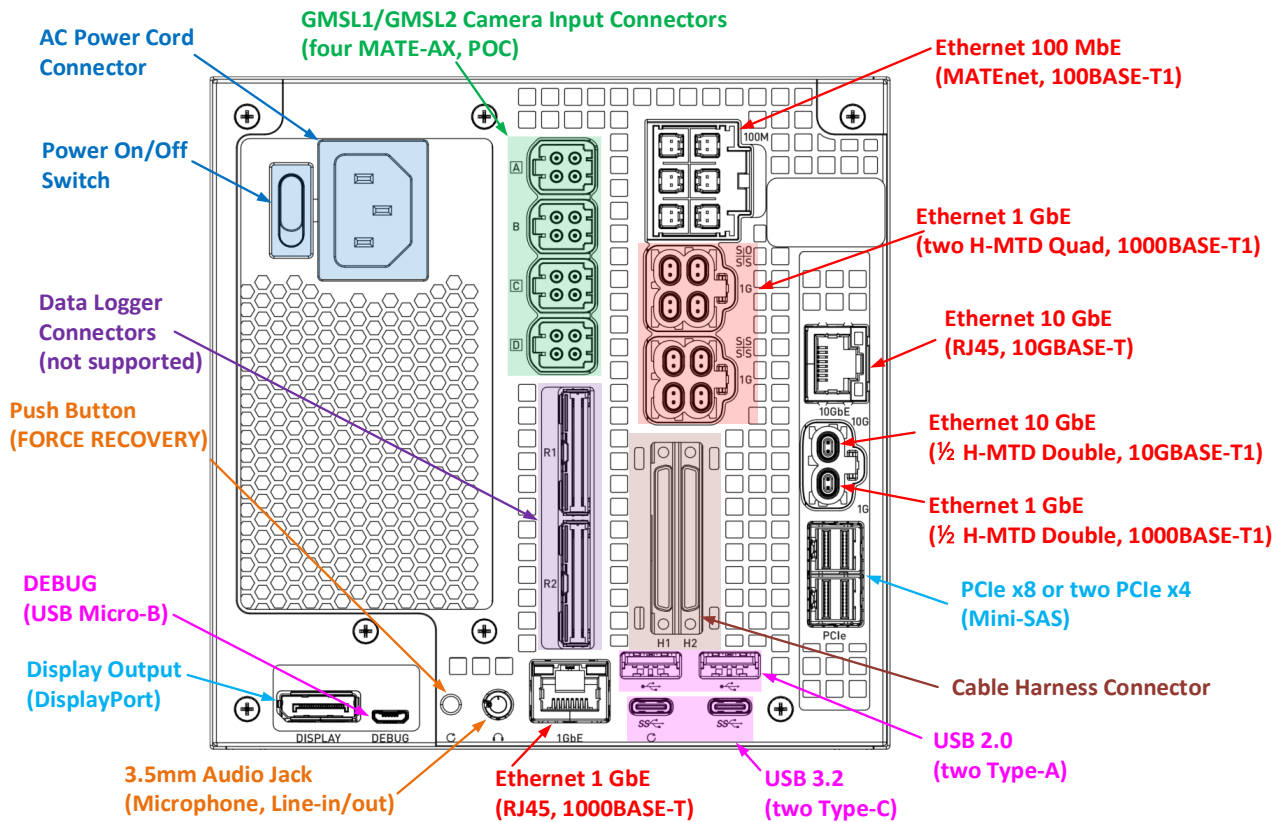


NIC Adapter

Connectors

The figures in this section illustrate the broad range of connectors supported by the developer system.

Figure 2. Rear Panel Connectors



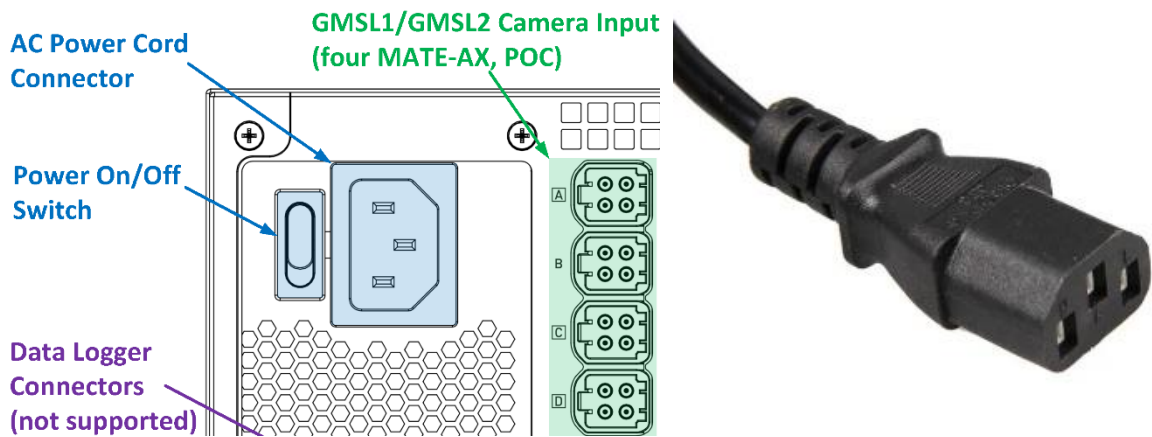
CAUTION: To prevent overheating, it is important to take airflow into consideration when mounting the developer kit. Make sure that there is enough clearance on all sides. Cool air intake must be provided on the front panel where the fan is located; and hot air exhaust should be allowed to flow out from the rear panel. Refer to the [DRIVE AGX Orin Developer Kit Mechanical and Installation Guide](#) for details.

AC Power Cable

The developer system accepts an IEC C13 connector for the power cable.

Note the location of the AC Power Cord connector in Figure 2 which shows the rear panel connectors. Figure 3 shows the zoomed-in location of the power connector on the rear panel and the IEC 60320 C13 power cord (on the right). The international rating of this connector is 250V/10A.

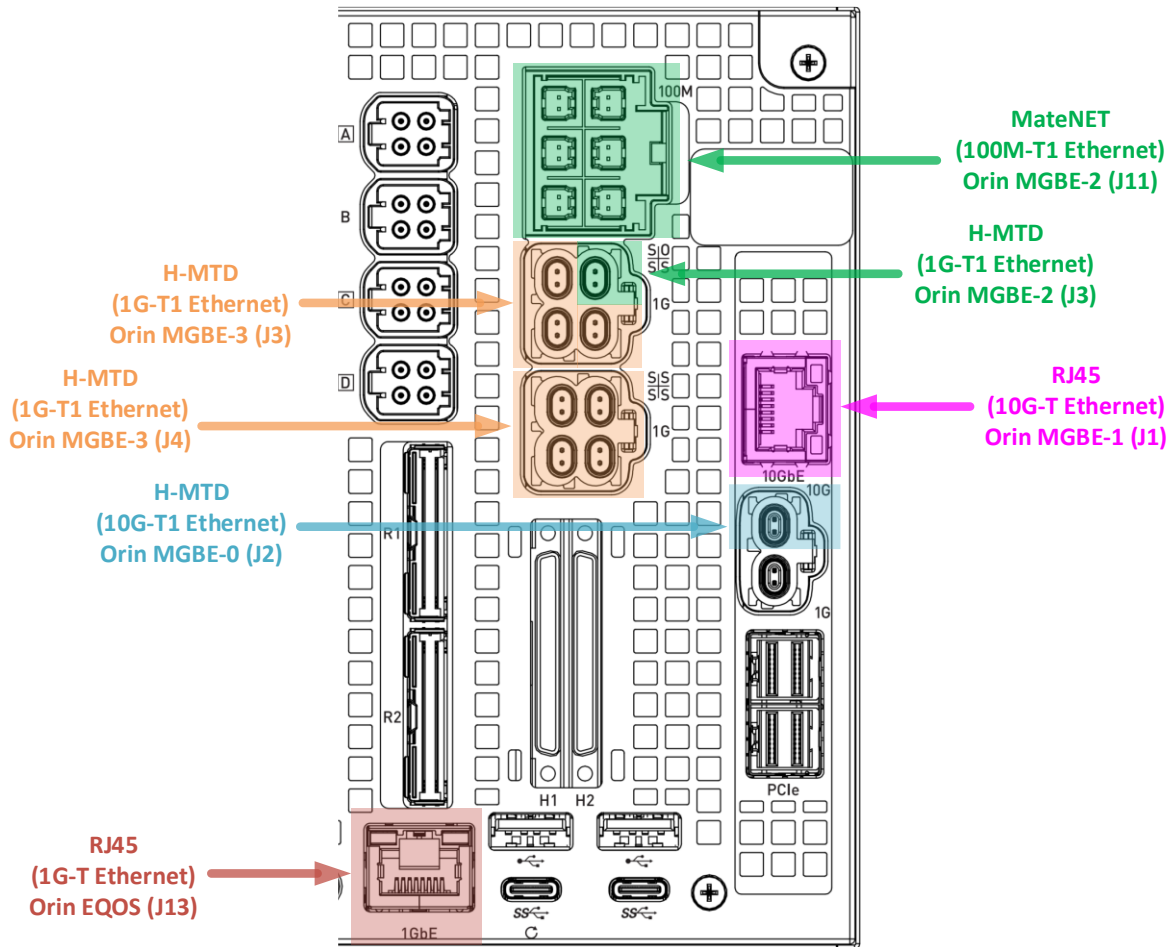
Figure 3. Power Connector and Cord



Ethernet Port Connections

Figure 4 shows the Ethernet port connections.

Figure 4. Ethernet Port Connections



Accessories

This section provides information on hardware components that are required for the development system as well as optional accessories which expand the usage of the development system.

Table 2 lists additional hardware components that are required for the development system.

Table 2. Additional Hardware Required

Item	Description
1	VESA® DisplayPort™ Display with DisplayPort Cable ^(See Note)
2	Ubuntu Host PC for Cross-Compiling, Flashing, and Console Access
3	Ethernet Cable for Internet and Networking Access
Note: The developer system does not support passive DP to HDMI adapters; an ACTIVE DP-to-HDMI or DP-to-DVI adapter may be used with HDMI or DVI displays.	

PCIe Mini-SAS

The developer kit supports mini-SAS cables for the PCIe interfaces.

Note that standard mini-SAS cables do not work with the developer kit.

Table 3 lists the cables from Amphenol which are compatible with the developer kit.

Table 3. PCIe Mini SAS Cables


Description	Mfg P/N
CABLE Assy miniSAS-HD x4 GEN4 500MM Black Male 0° PCI Express to Male 0° PCI Express wire 100ohm UL VW-1	NEDDDF-N904
CABLE Assy miniSAS-HD x4 GEN4 1000MM Black Male 0° PCI Express to Male 0° PCI Express wire 100ohm UL VW-1	NEDDDF-N901
CABLE Assy miniSAS-HD x4 GEN4 3000MM Black Male 0° PCI Express to Male 0° PCI Express wire 100ohm UL VW-1	NEDDDF-N903

Vehicle Accessory Kit

NVIDIA makes available, for separate purchase, an optional vehicle accessory kit to install the developer system in a vehicle. The part number for the vehicle accessory kit is provided in Table 5.

The vehicle accessory kit consists of the following:

- ▶ Vehicle Harness H1B
- ▶ Vehicle Harness H2A
- ▶ Vehicle Mounting Tray

 Note: The Vehicle Accessory Kit may be purchased through Arrow - the NVIDIA DRIVE Worldwide Distributor. To request a quote, please complete the [Arrow Request Form](#).


Additional Accessory Purchase Information

Accessories listed in Table 4 below are included in the accessory kit.

Table 4 provides the manufacturer’s part numbers in case additional accessories need to be purchased.

Table 4. Accessory Manufactures and Part Numbers

Label	Manufacture	Mfg P/N
Micro USB	Simula Technology, Inc	CB842A-8000-10F
Type A-to-C USB Cable	Simula Technology, Inc	CB8A5E-6200-10F
Type C-to-C USB Cable	Wieson America Inc.	AB9932-0011-001-HH
MATE-AX Camera Splitter Cable	TE Connectivity Ltd.	1-120091-2
Dual H-MTD Splitter	Rosenberger of North America, LLC.	LCA-115-1000-Z-ZZ
Quad H-MTD Splitter	Rosenberger of North America, LLC.	LCA-114-1000-Z-ZZZZ

 Note: Please contact TE representative Kent Vu at kent.vu@te.com for details on how to purchase the Camera Splitter Cable.

Accessories listed in Table 5 may be purchased through Arrow - the NVIDIA DRIVE Worldwide Distributor. To request a quote, please complete the [Arrow Request Form](#).

Table 5. Accessories For Purchase

Accessory	Part Number	Included in Developer Kit?
Vehicle Accessory Kit	NVPN 930-62482-0000-100	No
Vehicle Harness H1B	NVPN 030-1592-000	No
Vehicle Harness H2A	NVPN 030-1463-000	No
DRIVE AGX Orin 10GbE H-MTD to RJ45 Adapter	NVPN 930-13584-0000-100	No
DRIVE AGX Orin 1GbE H-MTD to RJ45 Adapter	NVPN 930-13751-0000-100	Yes

Versions

The NVIDIA DRIVE AGX Orin Developer Kit is available in different versions:

- ▶ Production versions: -100, -200, -300, and
- ▶ Sample versions: -A00, -B00, -C00, and -D00.

Product certification information is available in the list of documents located at: [NVIDIA DRIVE Documentation](#).

Certified Production Versions:

- ▶ 940-63710-0010-100 comes with no AC Power Cable.
- ▶ 940-63710-0010-200 comes with North America, Japan, Philippines, Taiwan, and China AC Power Cables.
IEC plug types B and I are used in North America, Taiwan, Japan, Philippines, and China.
- ▶ 940-63710-0010-300 comes with most European Union, United Kingdom, South Korea, and Serbia AC Power Cables.
IEC plug types F and G are used in most European regions, United Kingdom, and South Korea.

Sample Versions:

- ▶ 940-63710-0010-A00
- ▶ 940-63710-0010-B00
- ▶ 940-63710-0010-C00
- ▶ 940-63710-0010-D00

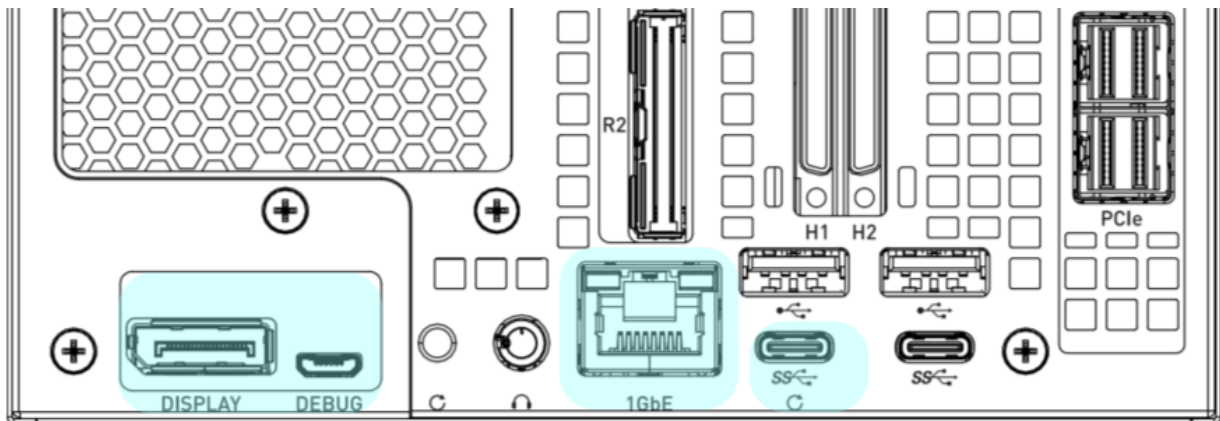
All sample versions come with a North America AC Power Cable.

Getting Started

To use your developer system for the first time, you will need the following:

- ▶ Main AC Power Cable
- ▶ USB Type-A to Micro-USB Cable
- ▶ USB Type-A to USB Type-C Cable OR USB Type-C to USB Type-C Cable
- ▶ Ethernet Cable (optional)
- ▶ DisplayPort Cable (optional)
- ▶ Ubuntu 18.04 or 20.04 Host PC

Figure 5. Rear Panel of the Developer System



Use the following steps to get your developer system up and running:

1. Connect the Main AC Power Cable to the developer system, where applicable.
2. Connect the Micro-USB Cable from the Ubuntu Host PC to the Micro-USB port labeled "DEBUG" on the developer system.
3. Connect the USB Type-A-to-USB Type-C Cable (or USB Type-C-to-USB Type-C Cable depending on your Host PC) from the Ubuntu Host PC to the LEFT USB Type-C port on the developer system (for flashing). Do **NOT** connect the **RIGHT** USB Type-C port.
4. Connect a DisplayPort Monitor to the DisplayPort labeled "Display" (optional).
5. Connect an Ethernet Cable to the networking port labeled "1GbE" on the bottom/middle of the Developer System, next to the USB Type-C ports (optional).

6. Connect a Terminal Emulator from the Ubuntu Host PC to the developer system (putty or minicom recommended) *before turning on power*, to complete the setup of the developer system. Refer to the "[Terminal Emulation](#)" section in the DRIVE OS 6.x Linux SDK Developer Guide for more information.
7. Press the Main Power Switch to the **ON** position.
8. Accept the End User License Agreement (EULA) and set up account username(s) and password(s) in the Terminal Emulator window that was opened in [Step 6](#).
9. Select the SSH Profile and other setup options.

After completing these prompts, the platform boots to the Ubuntu Desktop on the display and the UART console login prompt. To configure your development environment, visit the [NVIDIA DRIVE AGX Orin Setup](#) page for more detailed information.

Changelog

DU-11049-001_v05

Version	Date	Description of Change
01	August 25, 2022	Initial release
02	October 5, 2022	<ul style="list-style-type: none">• Added Section: AC Power Cable• Updated Section: Accessories; added subsections:<ul style="list-style-type: none">> PCIe Mini-SAS> Vehicle Accessory Kit• Updated country support for developer kit version 940-63710-0010-300.
03	November 30, 2022	<ul style="list-style-type: none">• Added Product Brief to the list of reference documentation in Section: Before You Begin.• Updated Step #6 in Section: Getting Started
04	February 6, 2024	<ul style="list-style-type: none">• Updated Table 1 and Figure 1; added MATEnet Splitter Cable.• Added Section: Ethernet Port Connections.• Added Note to Table 2: Additional Hardware Required• Corrected Vehicle Harness H2B in Section: Vehicle Accessory Kit.• Added Section: Additional Accessory Purchase Information.• Added Figure 5 to Section: Getting Started.
05	July 2, 2024	<ul style="list-style-type: none">• Removed NDA related footer information on cover page.• Updated the Note in Section: Vehicle Accessory Kit with details pertaining to purchase of the accessory kit.• Corrected Camera Splitter Cable part number in Table 4.

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