AUVIDEA
SOFTWARE SETUP GUIDE

SCOPE OF WORK
Help you to flash your Auvidea carrier board system for the first time and get everything up and running.

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SECTION 1 Document revisions and changes

Document version	Changes
1.1	Document overhaul of quick starter guide, internal verification process
1.2	Small fixes
1.3	Fixed spelling, cleaner Headings
1.6	Surpassed QuickStart guide version number to better indicate that the Software_Setup_Guide should be used in the future

SECTION 2 Simple flashing guide (recommended)

This section describes how to flash your Auvidea carrier board system so it can boot and run. With this guide everything you need is included in the download package from Auvidea. This flashing guide is recommended for the Auvidea carrier board series.

2.1 Before you start

- Please make sure to use a Linux host PC with Ubuntu 18.04 operating system. Please use a native setup (no virtual machine). This Host PC should have a high bandwidth internet connection for the download of 3GByte+ installation file in the following steps.
- You will also need a high-quality standard USB 2.0 Type A to micro-USB 2.0 cable.

2.2 Download installation file from Auvidea

1) Download the installation file for your setup from Auvidea https://auvidea.eu/firmware/
2) Open a terminal window (CTRL + ALT + T) on your Linux host PC and navigate to your download location.

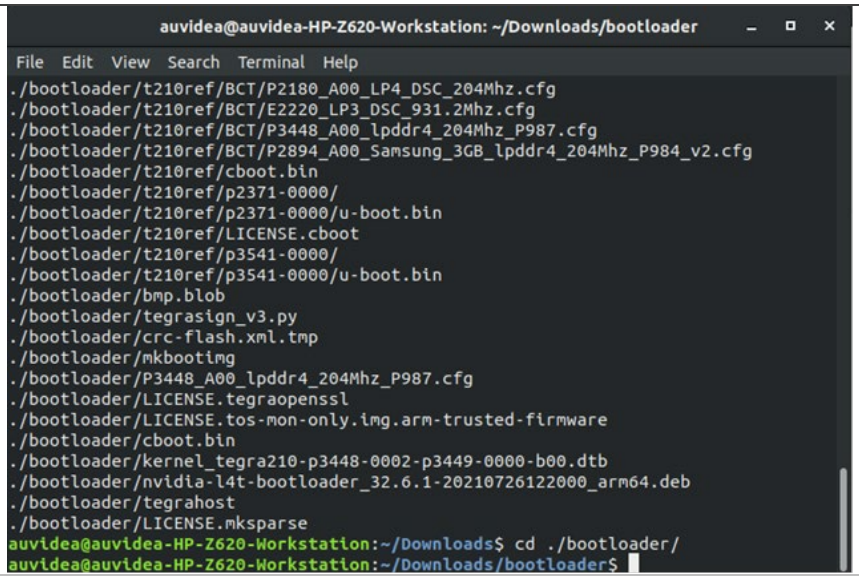
```
cd <path_to_downloadeded_tar>
```

3) Extract the tar.gz file you just downloaded.

Command host PC	`tar xvzf bootloader.tar.gz`
Terminal host PC example	auvidea@auvidea-HP-Z620-Workstation: ~/Downloads File Edit View Search Terminal Help auvidea@auvidea-HP-Z620-Workstation:~/Downloads$ tar xvzf bootloader.tar.gz ./bootloader/ ./bootloader/nv_boot_control.conf ./bootloader/mkbctpart ./bootloader/kernel_tegra210-p3448-0002-p3449-0000-b00.dtb.sb ./bootloader/flash.xml.sb ./bootloader/initrd ./bootloader/rp4.blob ./bootloader/flash_win.bat ./bootloader/tegrasign_v3_internal.py ./bootloader/eks.img ./bootloader/BUP_generator.py ./bootloader/nvtboot.bin ./bootloader/LICENSE ./bootloader/LICENSE.mkgpt ./bootloader/tos.img ./bootloader/mksparse ./bootloader/tos-mon-only.img ./bootloader/system.img

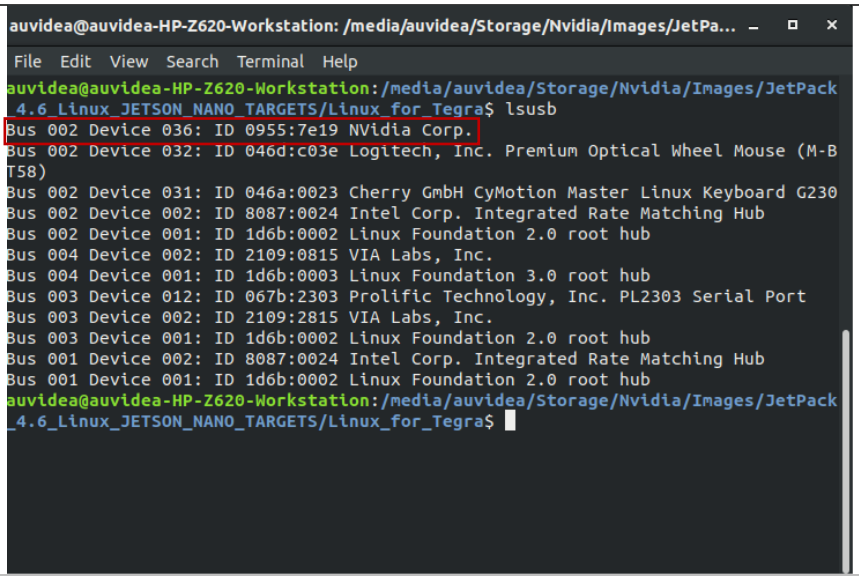
4) Change directory to the extracted bootloader folder.

Command host PC	`cd ./bootloader`

Terminal host PC example	

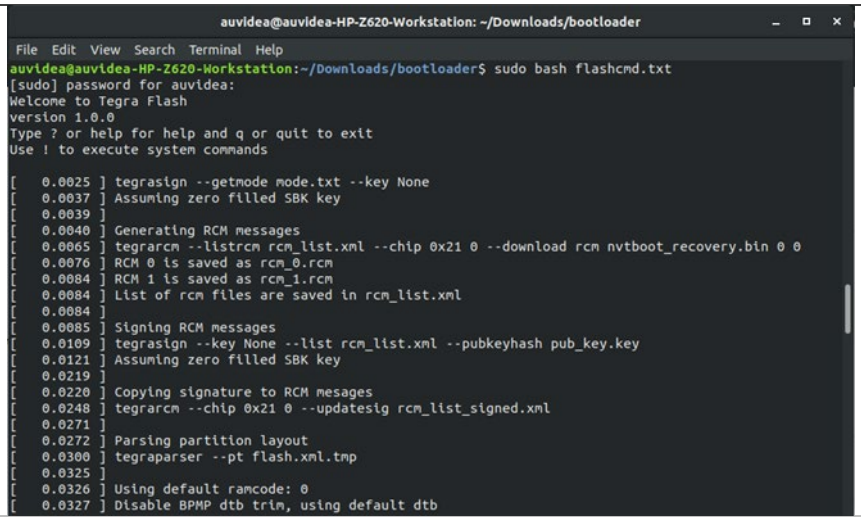
2.3 Connect carrier board to host PC

5) Connect the system to the Linux host PC. Please use a USB 2.0 cable (micro-USB on the carrier board).
6) After connecting to the host PC power up the system. The system will detect the host PC and automatically enter the flashing state (also called force recovery mode).
7) Check that the connection is established with the lsusb command. You should find one entry with Nvidia Corp. as highlighted below.

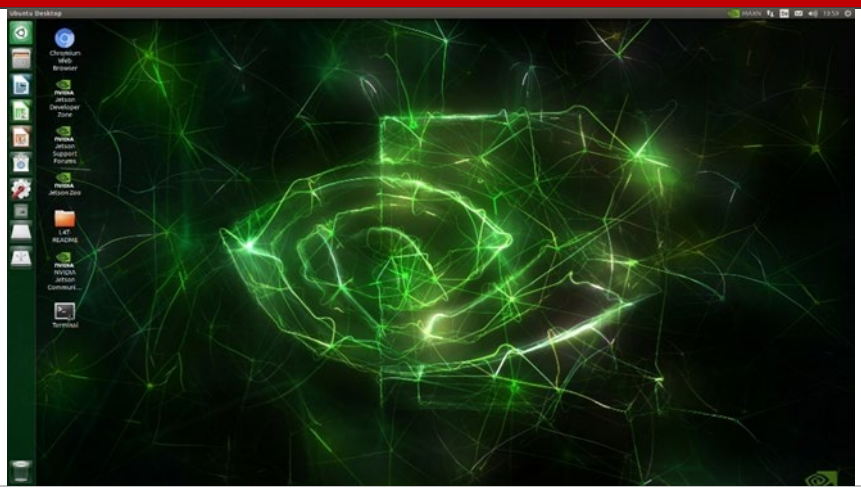
Command host PC	`lsusb`
Terminal host PC example	

2.4 Flashing of system

8) Use the flashcmd script in the extracted bootloader folder to transfer the software into the Jetson compute module and flash it.

Command host PC	`sudo bash ./flashcmd.txt`
Terminal host PC example	

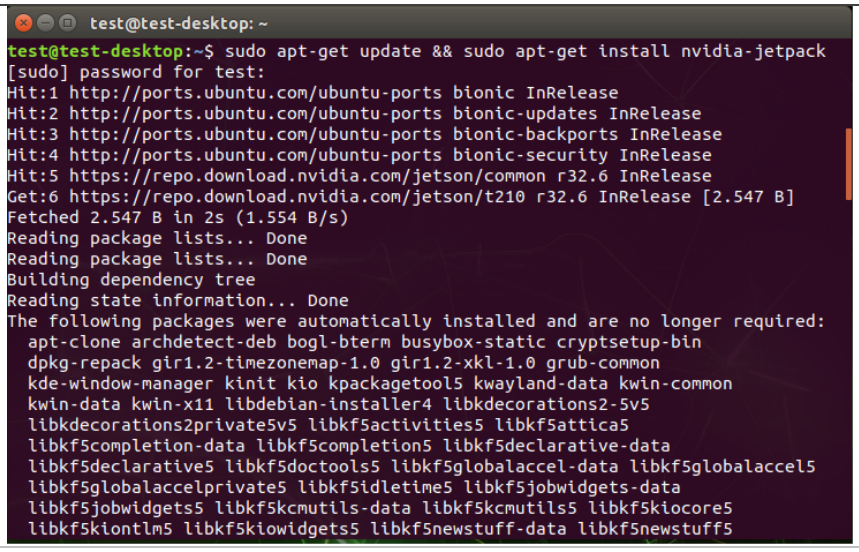
9) Please connect a monitor to the system. After the flashing process has completed the should automatically boot and show the Ubuntu desktop.

HDMI monitor dev system	

You now have a functioning system ready for your needs.

2.5 Installing additional NVIDIA SDK components

10) Now you can install additional NVIDIA SDK components. Please connect the system to the Internet. Open a terminal window on the system (CTRL ALT T). Use aptget to install the components. If this fails, please check the Internet connection of the system.

Command dev system	`sudo apt-get update && sudo apt-get install nvidia-jetpack`
Terminal dev system example	

SECTION 3 Advanced flashing guide (experienced users)

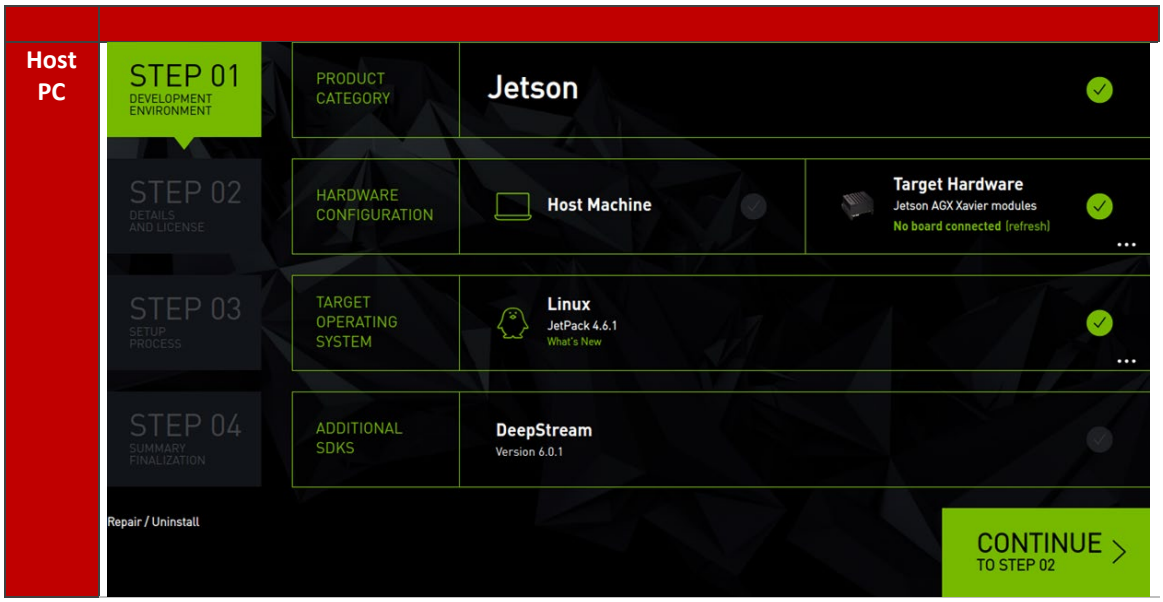
The alternative flashing guide is intended to be used if you encounter problems with the recommended guide. This guide is more general and should also work with boards from other vendors and requires a few more steps. In this guide you will download the core operating system from NVIDIA with the SDK manager and only download the files that need to be changed for your carrier board from Auvidea.

3.1 Before you start

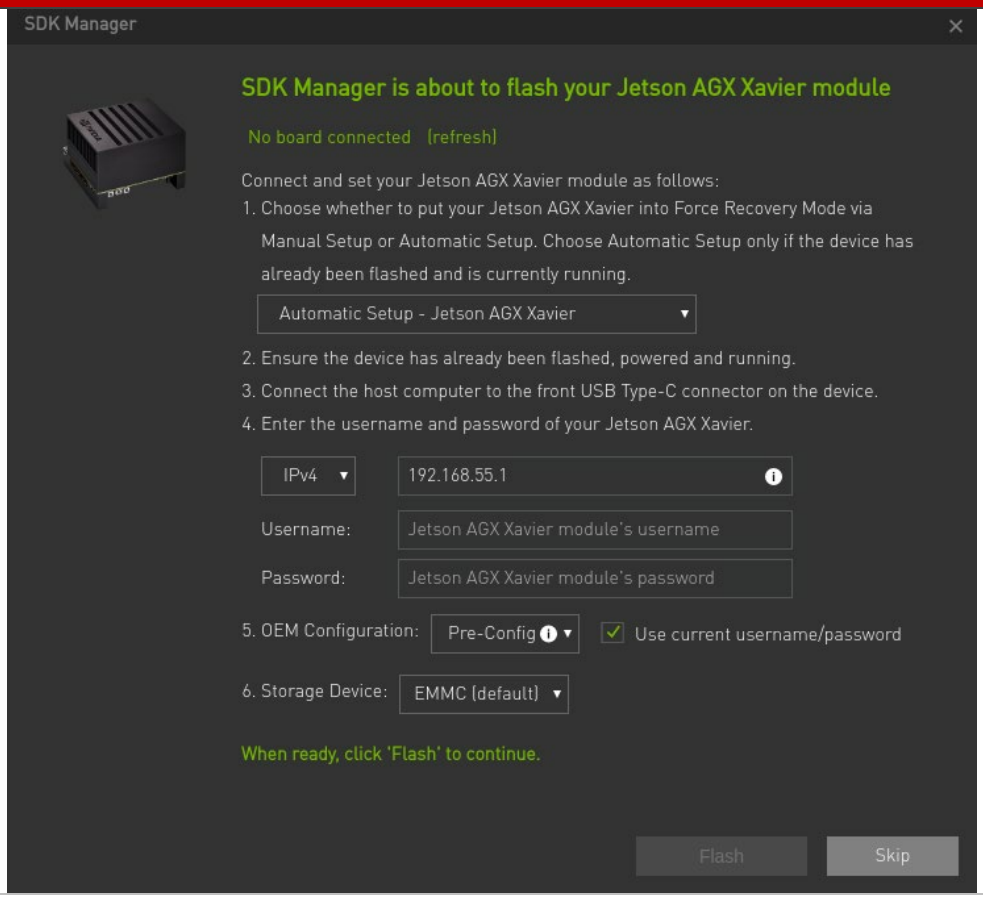
- Please make sure to use a Linux host PC with Ubuntu 18.04 operating system. Please use a native setup (no virtual machine). This host PC should have a high bandwidth internet connection for the download of 2GB+ installation file in the following steps.
- You will also need a high-quality standard USB 2.0 Type A to micro-USB 2.0 cable.

3.2 Install and configure NVIDIA SDK manager

1) Download and install the Nvidia SDK manager for Ubuntu
   https://developer.nvidia.com/nvidia-sdk-manager
2) Install Jetpack 4.6 and up for your Jetson module (AGX Xavier)

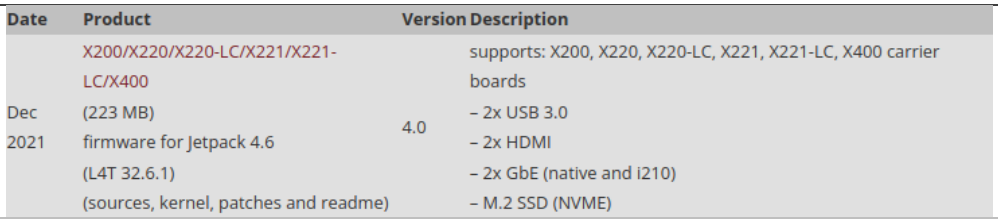


3) Skip the flashing process after installation. This step is necessary to set up the file system and contents of you Host PC. Do not flash with this configuration! Specific steps need to be performed to enable all functionality of you carrier board as described in the following steps.

Host PC	

3.3 Download installation files from Auvidea

4) Download our latest firmware for your carrier board

Link	https://auvidea.eu/firmware/
Auvidea webpage (example)	

Date	Product	Version	Description
Dec 2021	X200/X220/X220-LC/X221/X221-LC/X400 (223 MB) firmware for Jetpack 4.6 (L4T 32.6.1) (sources, kernel, patches and readme)	4.0	supports: X200, X220, X220-LC, X221, X221-LC, X400 carrier boards – 2x USB 3.0 – 2x HDMI – 2x GbE (native and i210) – M.2 SSD (NVME)

5) Extract the download tar ball from our website

Command host PC	`tar xvf <your_downloaded_tar>.tar.bz2`

6) Change directory into the extracted files and extract the "kernel_out.tar.bz2"

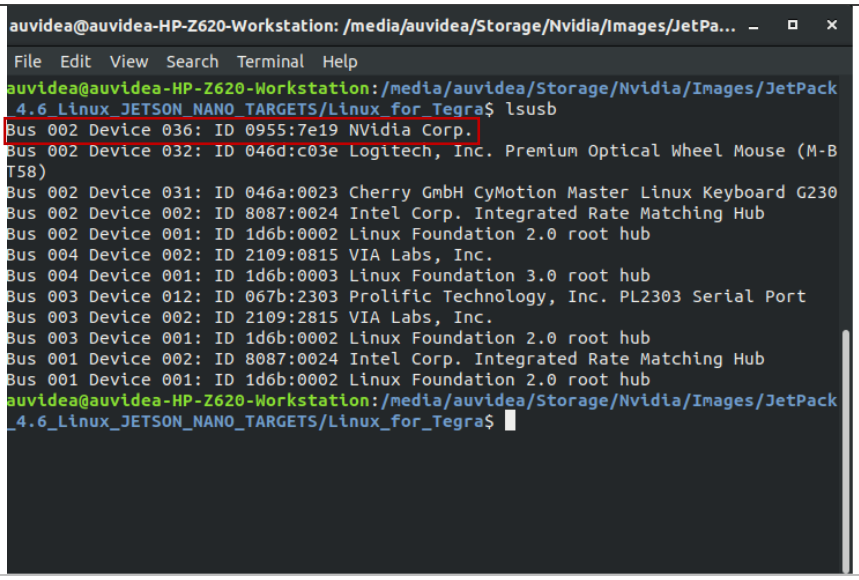
Command host PC	`cd <your_extracted_downloaded_tar>` `tar xvf kernel_out.tar.bz2`

7) Copy the extracted kernel_out folder into your jetpack 4.6 or up L4t folder. <Jetpakc_L4T_folder> is usually located at: "/home/<YOUR_USERNAME>/nvidia/nvidia_sdk/JetPack_<Jetpack_version>_Linux_<Jetson_module>/Linux_for_Tegra"

Command host PC	`rsync -axHAWX --numeric-ids --info=progress2./kernel_out/<Jetpack_L4T_folder>` (Modify for your version/module needs)

3.4 Flashing of system

8) Connect a USB 2 micro USB cable to the Jetson bevor powering it up
9) After connecting to host PC power up the Xavier AGX. This will put the system in to flashing mode (also force recovery mode) with a connected Host PC.
10) Check that the connection is established with the lsusb command. You should find one entry with Nvidia Corp. as highlighted below.

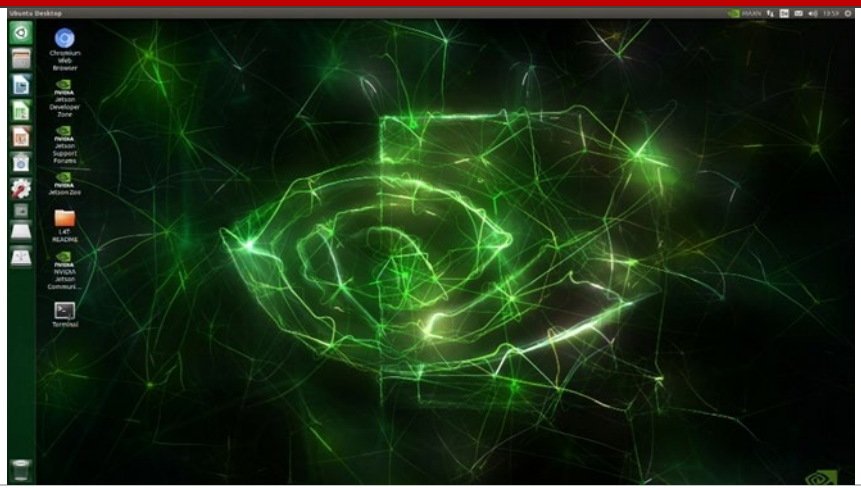
Command host PC	`lsusb`
Terminal host PC example	

11) Open your terminal in the <Jetpakc_L4T_folder> folder if you are not already in it.
12) You can now flash your system using the following command

Module name:	**<your_module>:**
Jetson Nano	jetson-nano-emmc
Jetson AGX-Xavier	jetson-xavier
Jetson Xavier NX	jetson-xavier-nx-devkit-emmc
Jetson TX2 NX	jetson-xavier-nx-devkit-tx2-nx
…	…

Command host PC	`sudo ./flash <your_module> mmcblk0p1`

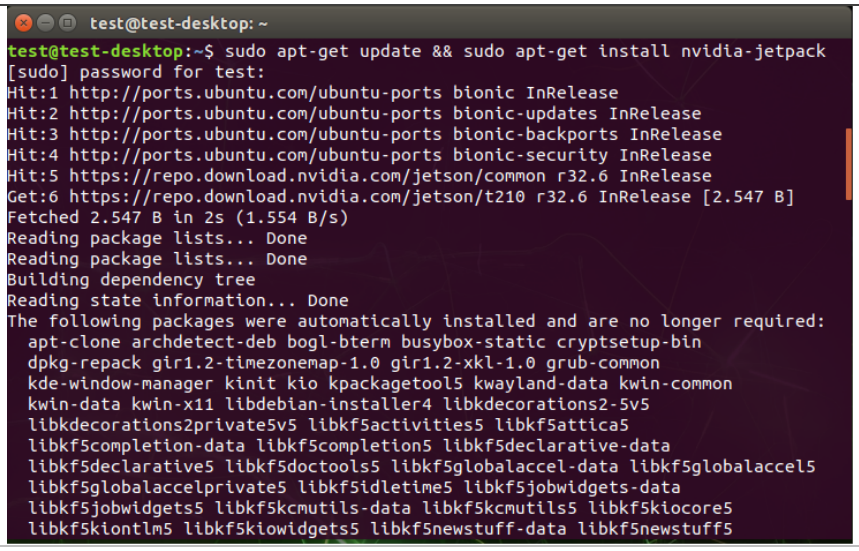
13) Please connect a monitor to the system. After the flashing process has completed the system should automatically boot and show the Ubuntu desktop.

HDMI monitor dev system	

You now have a functioning system ready for your needs.

3.5 Installing additional NVIDIA SDK components

14) Now you can install additional NVIDIA SDK components. Please connect the system to the internet. Open a terminal window on the system (CTRL ALT T). Use aptget to install the components. If this fails, please check the Internet connection of the system.

Command dev system	`sudo apt-get update && sudo apt-get install nvidia-jetpack`
Terminal dev system example	

SECTION 4 Disclaimer

Thank you for reading this manual. If you have found any typos or errors in this document, please let us know.
This is the preliminary version of this data sheet. Please treat all specifications with caution as there may be any typos or errors.

The Auvidea Team

SECTION 5 Trademarks

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SECTION 6 END OF DOCUMENT

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