

User manual

SG8A-ORIN-GMSL2



Version 1.0

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Chapter 2 SG8A-ORIN-GMSL2 Instructions for using the adapter plate

Reference link to Nvidia's official website:

Software Setup

https://developer.nvidia.com/embedded/learn/jetson-agx-orin-devkit-user-guid

e/two ways to set up software.html

To Flash the Jetson Developer Kit Operating Software

https://docs.nvidia.com/jetson/archives/r35.1/DeveloperGuide/text/IN/QuickSta

rt.html#to-flash-the-jetson-developer-kit-operating- software

2.1 Setting up the environment

The driver package for the SG8A-ORIN-GMSL2 adapter board is developed on a specific Jetson Linux version and you need to make sure the Jetson Linux version matches before installing the driver. If it does not match, you need to re-flash the system, otherwise the system will not boot after installing the driver. NVIDIA Jetson AGX Orin/Xavier supports two types of flashes using SDK Manager and Flash.sh script.

Preparation required:

- NVIDIA Jetson AGX Orin/Xavier Development Kit
- Computer with Ubuntu 18.04/20.04s 1
- USB TYPE-C data cable 1pc

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2.1.1 Set RECOVERY download mode

The Nvidia Jetson platform software is upgraded via the USB interface and the Jetson device needs to be put into Recovery mode before the upgrade can take place, which includes the Kernel Kernel, the file system RootFS, the JetPack SDK and more.

To enter Recovery download mode in the off state, proceed as follows:

(1) Connecting a USB TYPE-C cable

Use a USB TYPE-C cable to connect the Jetson device to the Ubuntu Host, with one end connected to the TYPE-C port of the Jetson device[®] and the other end connected to the USB port of the Ubuntu Host



(2) Press and hold the Force Recovery button at 2 and do not release it yet





(3) Access to power

Can be connected to the power supply using the Type-C connector @



Can also be connected to the power supply using the DC interface (5)





(4) If the white LED[®] does not light up, press and hold the power on button[®] to

switch on







(5) Wait for more than 5s and release all buttons to enter Recovery download mode

You can run the command Isusb on the Ubuntu Host to check for NVIDIA Corp.

APX devices to confirm that the Jetson device has successfully entered Recovery

download mode.

sens	sensing@ubuntu:~\$ lsusb					
Bus	004	Device	001:	ID	1d6b:0003	Linux Foundation 3.0 root hub
Bus	003	Device	004:	ID	0e0f:0002	VMware, Inc. Virtual USB Hub
Bus	003	Device	003:	ID	0e0f:0002	VMware, Inc. Virtual USB Hub
Bus	003	Device	005:	ID	0955:7023	NVIDIA Corp. APX
Bus	003	Device	002:	ID	0e0f:0003	VMware, Inc. Virtual Mouse
Bus	003	Device	001:	ID	1d6b:0002	Linux Foundation 2.0 root hub
Bus	001	Device	001:	ID	1d6b:0002	Linux Foundation 2.0 root hub
Bus	002	Device	003:	ID	0e0f:0002	VMware, Inc. Virtual USB Hub
Bus	002	Device	002:	ID	0e0f:0008	VMware, Inc. Virtual Bluetooth Adapter
Bus	002	Device	001:	ID	1d6b:0001	Linux Foundation 1.1 root hub
sensing@ubuntu:~\$						

2.1.2 Use the SDK Manager to brush your phone

(1) Download SDK Manager



Download the latest SDK Manager from the official website and select the .deb

format for Ubuntu.

https://developer.nvidia.com/nvidia-sdk-manager

Once downloaded, copy it to the working directory of your Ubuntu Host and install it.

\$ sudo apt install . /sdkmanager_1.9.2-10884_amd64.deb

(2) Run SDK Manager

Before running SDK Manager, please refer to section "2.1.1 Setting up RECOVERY download mode" to put the Jetson device into Recovery download mode. Find and click on the "SDKManager" icon in the application to run the SDK Manager, or run it from the terminal with the following command.

\$ sdkmanager

Once launched, you will need to log in with your account, if you don't already have one, you can register for a developer account.



SDK Maesger 1.9.2.10866 x86, 64	**
International development Northallne: partners words com OFFLINE from local feider NUDIA DEVELOPER DOBLO International feider NUDIA DEVELOPER LOGIN Control feider Control feider Unix LODIN to instate login process in your default browser. SDR Marager will start since does. Control feider	
LOGIN Convert Lagen	
Copyright & Zozzz, Notzia, ColdoDation, All rights researce 1 MIDIA.Developer	

(3) Refresh

STEP 01: Automatically identify the Jetson device, select the JetPack version to match the Jetson Linux version required by the driver package, here JetPack 5.0.2 (Jetson Linux 35.1) is used as an example. Note that if there is no matching version, you need to use the Flash.sh script brushing method instead.

SDK Manager 1.9.2.10884 x86_64					
				,	. Hello Norman ∨
STEP 01 DEVELOPMENT ENVIRONMENT	PRODUCT CATEGORY	Jetson			0
STEP 02	HARDWARE	Host Machine	0	Harget Hardware Jetson AGX Orin modules → Jetson AGX Grin [3268 develope kit version] ●	r
	TARGET OPERATING SYSTEM	Linux JetPack 5.0.2 (rev. 2) See what's new			<u></u>
	ADDITIONAL SDKS	DeepStream DeepStream 6.1.1			
Repair / Uninstall				CONTIN TO STEP 02	UE >
🐵 NVIDIA. Copyright © 2023, NVIDIA CO	RPORATION: All rights reserved. J NVIDIA				

STEP 02: Select the components to be installed according to your needs www.sensing-world.com | Copyright belongs to SENSING | SZ Sensing TECH.,LTD



			🞗 Hello Norman 🗸
STEP I	JETPACK 5.0.2 (REV. 2) LINUX FOR JETSON AGX ORIN 1		Expand all
DEVELOPMENT	✓ HOST COMPONENTS	DOWNLOAD SIZE	STATUS
	> CUDA	3.241 MB	S. S. M. 1992
	> NvSci		
STEP	> Computer Vision		
DETAILS	> Developer Taols	1,124 MB	
AND LICENSE			
			STATUS
	V 🗸 Jetson Linux		
	J.3 > Jetson Linux image	1,995 MB	
	> Flash Jetson Linux	0 MB	
	Jetson SDK Components		
	> CUDA	1,430 MB	
	> CUDA-X AI	1,634 MB	
	> Computer Vision	110.5 MB	
	System requires up to 39GB (host) and 14GB (target) of available of	disk space during setup.	CONTINUE
			IO STEP 00
	I accept the terms and conditions of the license agreement	5. Download now. Install later.	< BACK TO STEP 01

STEP 03: Download and Installation

SDK Manager 1.9.2.10884 x86_64			R Hello Norm	- ×
STEP 01	DETAILS TERMINAL JETPACK 5.0.2 (REV. 2) LINUX FOR JETSON AG			
STEP 02 DETAILS AND LICENSE	HOST COMPONENTS OUDA NvSci Computer Vision Developer Tools	DOWNLOAD SIZE 3,241 MB 0.4 MB 83.7 MB 1,124 MB	STATUS Digwnloading - 14% Instatl Pending Instatl Pending Downloading - 76%	
STEP 03		DOWNLOAD SIZE 1,995 MB 0 MB	STATUS Downloading - 5% Flash Pending	
STEP 04				
	Deventeering 20429 119 33MB/4) installing 0.00% Download folder: /home/sensing/Downloads/hvidia/sdk		PAUSE	
OPPOINT Copyright © 2023, NVIDIA CO	RPORATION. All rights reserved. NVIDIA Developer			

As the Jetson device is already in Recovery mode, here select Manual Setup, and set a new username and password.



SDK Manager 1.9.2.10884 x86_64		
	SDK Manager SDK Manager is about to flash your Jetson AGX Orin module	× A Hello Norman v
STEP 01 PRECOMENT ENVIRONMENT STEP 02	Letson AGX Orini (3208 developer kit version) [1-2] Image: Terminal Connect and set your Jetson AGX Orini module as follows: Connect and set your Jetson AGX Orini module as follows: Concouse whether is pay your Jetson AGX Orini (3268 developer kit version] inte Force Recovery Mode via Manual Settor or Automatic Setup. Choose Automatic Setup sink/it the device has already been flashed and is currently running Manual Setup - Jetson AGX Orini (3268 developer kit version) minimal Setup - Jetson AGX Orini (3268 developer kit version) Make sure the device is cannected to the power adapter. but powered att	Expand all US statled statled
STEP 03 SERVE PROCESS	3. Connect the had compater to the front USB Type C connector on the device. 4. Pross and hold the indiff. Birce Recoveryl botton. 5. Press and hold the left (Plower) botton. 6. Release both fluttons. 7. OEM Configuration: Pre-Config Ov New Username notice	ataliad datied US S image roady taak Pending
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	✓ HOST COMPONENTS			
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STEP 02	> NvSci	0.4 MB	Installed	
DETAILS AND LICENSE	Computer Vision	83.7 MB	Installed	
	> Developer Tools	1,124 MB	C Installed	
STEP 03	TARGET COMPONENTS Jetson Linux			
PROCESS	 Jetson Linux image 	1,995 MB	OS image ready	
	Flash Jetson Linux	0 MB	Plashing - 49%	
STEP 04 SUMMARY FINAL DATION				
2	Download completed successfully Installing 91.5% Dewnload folder: //some/sensing/Downloads/nvela/sd	km_downlaads	PAUSE	
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STEP 04: Installation complete



SDK Manager 1.9.2.10884 x86_64				_ ×
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OTTO AL	DETAILS TERMINAL			
SIEP 01				
ENVIRONMENT	JETPACK 5.0.2 IREV. 21 LINUX FOR JETSON AI	3X ORIN MODULES	Exp	and all
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STEP 02	> NvSci	0.4 MB	Installed	
DETAILS AND LICENSE	Computer Vision	83.7 MB	Installed	
	 Developer Tools 	1,124 MB		
7				
STEP 03	V TARGET COMPUNENTS			
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SUMMARY				
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	INSTALLATION CON	MPLETED SUCCESSFULLY.		\times
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			< BACK TO STEP 01	
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TO TOTAL Copyright O 2023, WIDIA COR	PONATION, AUTIGNIS LESITIVES, LINVIDIA Developer			

Once the swipe is complete, the Jetson device automatically boots into the Linux

desktop.



2.1.3 Use the flash.sh script to flush the machine

(1) Download the brush package

https://developer.nvidia.com/embedded/jetson-linux

Depending on the driver version, select the corresponding Jetson Linux version,

here JetPack 5.0.2 (Jetson Linux 35.1) is used as an example.

	Jetson Orin modules and developer kit	Jetson Xavier modules and developer kits				
DRIVERS	Drive	iver Package (BSP)				
	Sample Root Filesystem					
SOURCES	Driver Pa	ckage (BSP) Sources				
	Sample Root Filesystem Sources					
	Sensor Proc	Sensor Processing Engine Sources				
DOCS	Jetson AGX Orin Developer Kit User Guide	Jetson AGX Xavier Developer Kit User Guide				
		Jetson AGX Xavier Platform Adaptation Guide				
	Release Notes					
	Jetson Linux Developer Guide (online version)					
	Jetson Linux Developer Guide (downloadable version)					
	Software License Agreement					
	Jetson Linux API Reference (formerly named Multimedia API Reference)					
	nvbuf_utils to NvUtils Migration Guide					

Downloads and Links

Click on Driver Package to download to get Jetson_Linux_R35.1.0_aarch64.tbz2

Click on Sample Root Filesystem to download

Tegra_Linux_Sample-Root-Filesystem_R35.1.0_aarch64. tbz2 and copy it to the

working directory of your Ubuntu Host.





(2) Unzip and install the brush package

Unzip the package, note that the filesystem needs to be extracted to the

Linux_for_Tegr a/rootfs directory via sudo.

\$ tar -jxvf Jetson_Linux_R35.1.0_aarch64.tbz2

\$ sudo tar -jxvf Tegra_Linux_Sample-Root-Filesystem_R35.1.0_aarch64.tbz2 -C Linux_for_Tegr

a/rootfs/

Execute the apply_binaries.sh script

\$ cd Linux_for_Tegra/

\$ sudo . /apply_binaries.sh

```
Setting up nvidia-l4t-initrd (35.1.0-20220810203728) ...
Pre-installing initrd package, skip flashing
Setting up nvidia-l4t-jetson-io (35.1.0-20220810203728) ...
Setting up nvidia-l4t-multimedia (35.1.0-20220810203728) ...
Setting up nvidia-l4t-pva (35.1.0-20220810203728) ...
Setting up nvidia-l4t-vulkan-sc-samples (35.1.0-20220810203728) ...
Setting up nvidia-l4t-weston (35.1.0-20220810203728) ...
Setting up nvidia-l4t-display-kernel (5.10.104-tegra-35.1.0-20220810203728) ...
Setting up nvidia-14t-camera (35.1.0-20220810203728) ...
Setting up nvidia-l4t-graphics-demos (35.1.0-20220810203728) ...
Setting up nvidia-l4t-gstreamer (35.1.0-20220810203728) ...
Processing triggers for nvidia-l4t-kernel (5.10.104-tegra-35.1.0-20220810203728)
Processing triggers for libc-bin (2.31-Oubuntu9.9) ...
/home/sensing/nvidia/Linux for Tegra
Removing QEMU binary from rootfs
Removing stashed Debian packages from rootfs
L4T BSP package installation completed!
Disabling NetworkManager-wait-online.service
Disable the ondemand service by changing the runlevels to 'K'
Success!
```

Note: If an error is reported during the execution of this script, follow the prompts to

install the appropriate dependency package.

(3) Refresh



Refer to section "2.1.1 Setting up Recovery Download Mode" to put the Jetson

device into Recovery download mode. After confirming that the device is recognized

with the lsusb command, execute the following command to refresh the device.

```
$ sudo . /flash.sh jetson-agx-orin-devkit mmcblk0p1
[ 688.5490 ] Bootloader version 01.00.0000
 688.5808 ] Writing partition A MEM BCT with mem coldboot sigheader.bct.encrypt
 [ 243712 bytes ]
[ 688.5826 ] [....] 100%
[ 691.6344 ] tegradevflash_v2 --write B_MEM_BCT mem_coldboot_sigheader.bct.encry
pt
[ 691.6494 ] Bootloader version 01.00.0000
[ 691.6854 ] Writing partition B MEM BCT with mem coldboot sigheader.bct.encrypt
 [ 243712 bytes ]
[ 691.6886 ] [.....] 100%
[ 694.7130 ] Flashing completed
[ 694.7228 ] Coldbooting the device
 694.7371 ] tegrarcm_v2 --chip 0x23 0 --ismb2
 694.7568 ] MB2 version 01.00.0000
694.7947 ] Coldbooting the device
694.7960 ] tegrarcm_v2 --chip 0x23 0 --reboot coldboot
  694.8031 ] MB2 version 01.00.0000
*** The target t186ref has been flashed successfully. ***
Reset the board to boot from internal eMMC.
```

After brushing, the Jetson device automatically reboots into Linux and follows the

wizard to complete the configuration to access the desktop.



2.2 Driver installation and camera lighting

For a list of supported cameras and driver installation spotlights, please contact

sales for a copy.





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