

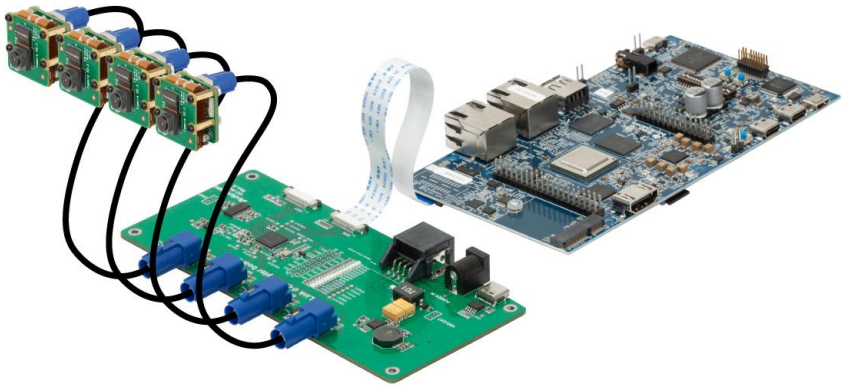
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# ArduCam

## Arducam V<sup>3</sup>Link Camera Solution

### Quick Start Guide

October 20, 2023



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**Catalog**

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# 1. Preparation

## 1.1 Hardware Requirements

- TI SK-AM62A-LP Development Board x 1
- Arducam V3Link d-ch adapter board x 1
- Arducam V3Link camera adapter board x 4
- Fakra Z Female to Female RF Coaxial Cable x 4
- Arducam IMX219 Camera x 4
- MicroSD/TF card ( $\geq 16\text{GB}$ )
- SD card reader
- Ethernet Cable or Micro USB (USB A-MicroB) Cable
- HDMI Cable

## 1.2 Software Requirements

- Windows 10 operating system
- Balena Etcher
- [tisdk-edgeai-image-am62axx-evm.wic.xz](https://www.balena.io/edgeai-image-am62axx-evm.wic.xz)
- dtb files, modules and configuration files

## 2. Physical Connect

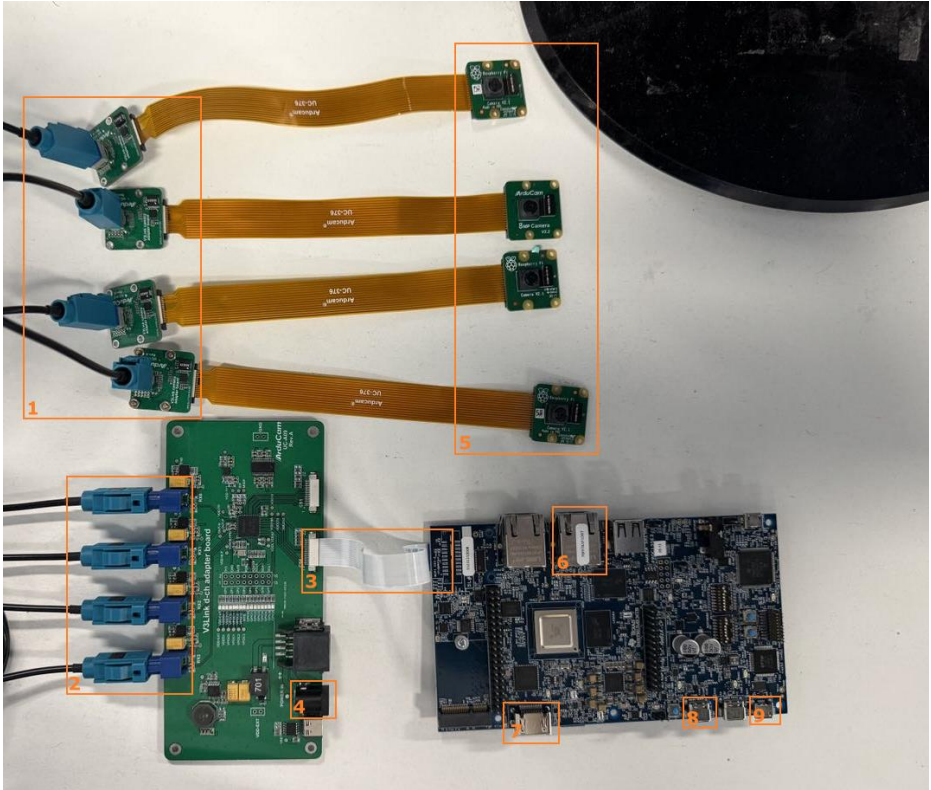


Figure 2.1 Hardware Connection

- 5-1 is camera imx219 connected to Arducam V3Link camera adapter board.
- 1-2 is the Arducam V3Link d-ch adapter board connected to the Arducam V3Link camera adapter board.
- 3 is Arducam V3Link d-ch adapter board csi0 connected to SK-AM62A-LP CSI.
- 4 Requirements Power supply Mini Fusion EVM with 12V.

- 6 Connect to the LAN using an Ethernet cable.
- 7 Connect the monitor using HDMI cable.
- 8 USB-C Power Delivery.
- 9 Serial port connected to host via microUSB

## 3. Environment Configuration

### 3.1 Flashing the Image onto Memory Card

1. Download the latest EDGE AI SDK.WIC.XZ image from the link above.

<https://dr-download.ti.com/software-development/software-development-kit-sdk/MD-D37Ls3JjkT/08.06.00.45/tisdk-edgeai-image-am62axx-evm.wic.xz>

2. Flash the image to SD card using [Balena Etcher](#).

- a. Select the image you want to flash

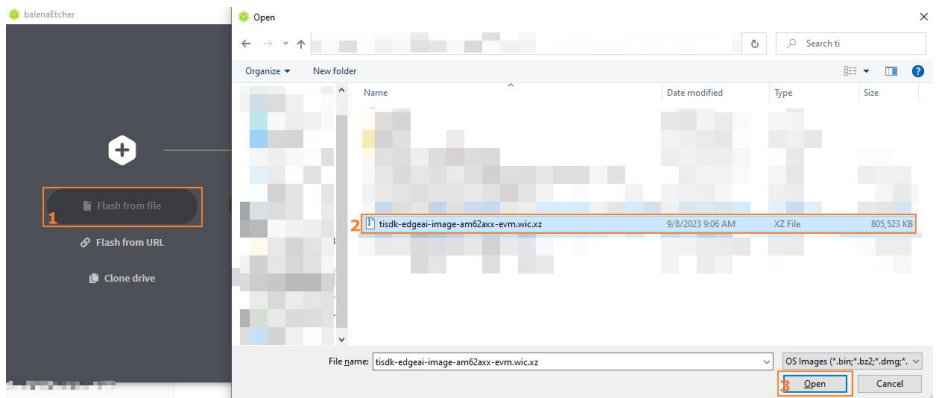


Figure 3.1 Select the flash image

b. Insert your microSD-Card into the Card Reader that is connected to your computer.

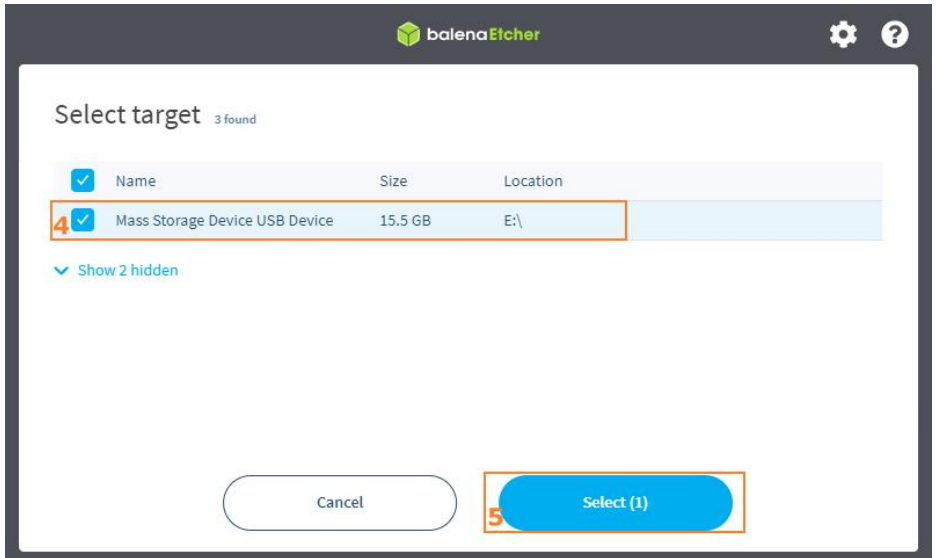


Figure 3.2 Download Memory Image

c. Click the **Flash!** button and wait for the programming to complete.

### 3. Completion

Wait for flashing to complete, Insert the programmed microSD card into SK-AM62A-LP, first power the V3Link d-ch adapter board, and then power the SK-AM62A-LP.

**This is very important and the order cannot be changed!!!**

After waiting for a while you can see the following screen on the display.

TEXAS INSTRUMENTS

Edge AI gallery

- Image Classification
- Object Detection
- Semantic Segmentation
- Custom

**AM62Ax**  
1-2 TOPS | RGB-IR  
Part of AM6xA vision processor family

Web: <https://ti.com/edgeai> | Support: <https://e2e.ti.com/>

Figure 3.3 Finish the Image Installation

## 3.2 Add relevant drivers and change configuration

Log in to the system through the serial port

- a. Download PUTTY according to the link provided <https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>
- b. Right-click the start button on the taskbar, select Device Manager, and you can see several new serial ports in Ports (COM&LPT).
- c. Open PUTCY, select Serial, enter the newly added COM port, change the baud rate to 115200, click to open, there is no exact text description, the serial port terminal is fixed at the smallest port, I recommend opening all four ports and powering on again to view the output information.

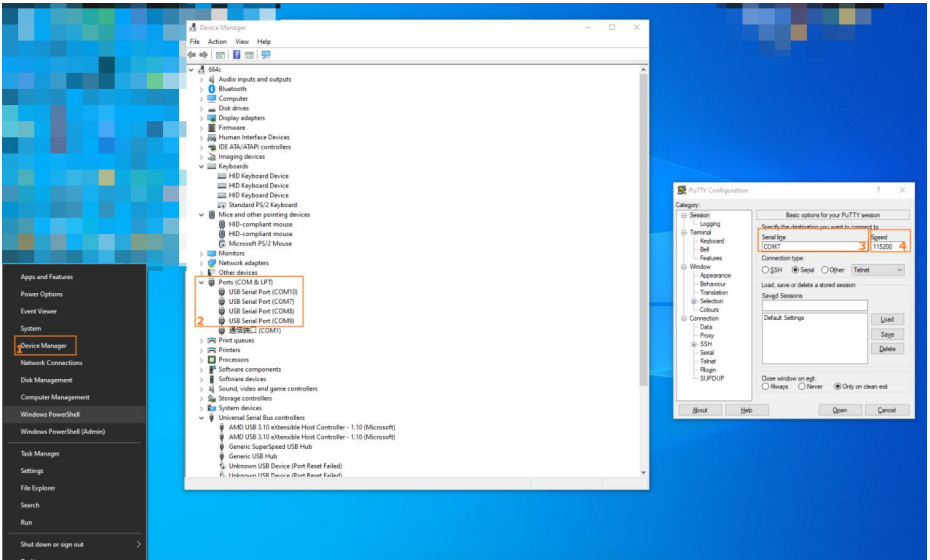


Figure 3.4 Configure the USB Serial Port



d. The output information is as shown in the figure below. COM7 is a serial port terminal. Enter the user name root and there is no need to enter a password to log in to the system.

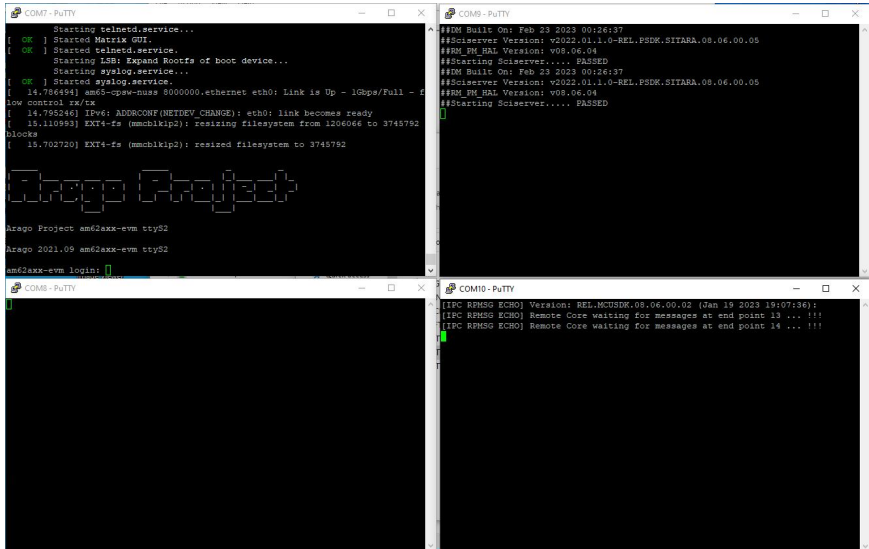


Figure 3.5 Output Information

e. Download AM62ASK-V3Link.zip



AM62ASK-V3Link.zip

<https://www.arducam.com/wp-content/uploads/2023/10/AM62ASK-V3Link.zip>

### 3.3 Configure the system

- Check local ip

```
```shell
# AM62A
root@am62axx-evm:/opt/edgeai-gst-apps# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default
qlen 1000
    link/ether 1c:63:49:17:20:b0 brd ff:ff:ff:ff:ff:ff
    inet 192.168.137.206/24 brd 192.168.137.255 scope global dynamic eth0
        valid_lft 604792sec preferred_lft 604792sec
    inet6 fe80::1e63:49ff:fe17:20b0/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN
group default
    link/ether 02:42:b2:42:d6:22 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
```
```

- Copy to AM62A

```
```shell
```

```
# PC
PS \${USER_PATH}\> scp .\AM62ASK-V3Link.zip root@192.168.137.206:
root@192.168.137.206's password:
AM62ASK-V3Link.zip                               100% 411KB  4.6MB/s  00:
00
...
```

- Configure System Environment

```
```shell
# AM62A
root@am62axx-evm:~# unzip AM62ASK-V3Link.zip
Archive: AM62ASK-V3Link.zip
  creating: AM62ASK-V3Link/
  creating: AM62ASK-V3Link/dtbs/
 inflating: AM62ASK-V3Link/dtbs/k3-am62a7-sk-v3link-fusion-0.dtbo
 inflating: AM62ASK-V3Link/dtbs/k3-am62a7-sk.dtb
 inflating: AM62ASK-V3Link/dtbs/k3-v3link-imx219-0-0.dtbo
 ...
# Copy modules/ds90ub960.ko and modules/im219.ko to/
root@am62axx-evm:~# cp
~/AM62ASK-V3Link/modules/ds90ub960.ko /lib/modules/5.10.168-g2c23e6c538/kernel
/drivers/media/i2c/
root@am62axx-evm:~# cp
~/AM62ASK-V3Link/modules/imx219.ko /lib/modules/5.10.168-g2c23e6c538/kernel/dr
ivers/media/i
2c/
# Copy dtbs/*.dtbo to /boot
root@am62axx-evm:~# cp ~/AM62ASK-V3Link/dtbs/*.dtbo /boot/
root@am62axx-evm:~# cp ~/AM62ASK-V3Link/dtbs/*.dtb /boot/
# Copy dtbs/uEnv.txt to /run/media/mmcblk1p1/
```

```
root@am62axx-evm:~# cp ~/AM62ASK-V3Link/dtbs/uEnv.txt
/run/media/mmcblk1p1/uEnv.txt
Reboot
...

```

- Preview

You need to set the camera format `setup-imx219.sh` first, and then use `stream-4ximx219.sh` to preview the picture, followed by the four camera parameters `video_index` `subdev_index`, as shown below:

```
```shell
root@am62axx-evm:~# chmod +x ~/AM62ASK-V3Link/scripts/*
root@am62axx-evm:/opt/edgeai-gst-apps#
~/AM62ASK-V3Link/scripts/setup-imx219-640x480.sh
IMX219 Camera 0 detected
    device = /dev/video3
    name = IMX219 7-0010
    format = [fmt:SRGGB8_1X8/640x480 field: none]
    subdev_id = /dev/v4l-subdev5
    isp_required = yes
    ldc_required = yes
IMX219 Camera 1 detected
    device = /dev/video4
    name = IMX219 8-0010
    format = [fmt:SRGGB8_1X8/640x480 field: none]
    subdev_id = /dev/v4l-subdev7
    isp_required = yes
    ldc_required = yes
IMX219 Camera 2 detected
    device = /dev/video2
    name = IMX219 6-0010

```

```
format = [fmt:SRGGB8_1X8/640x480 field: none]
subdev_id = /dev/v4l-subdev9
isp_required = yes
ldc_required = yes
IMX219 Camera 3 detected
device = /dev/video5
name = IMX219 9-0010
format = [fmt:SRGGB8_1X8/640x480 field: none]
subdev_id = /dev/v4l-subdev10
isp_required = yes
ldc_required = yes
root@am62axx-evm:/opt/edgeai-gst-apps#
~/AM62ASK-V3Link/scripts/stream-4ximx219-640x480.sh 3 5 4 7 2 9 5 10
# or
root@am62axx-evm:/opt/edgeai-gst-apps# ~/AM62ASK-V3Link/scripts/setup-imx219.sh
root@am62axx-evm:/opt/edgeai-gst-apps#
~/AM62ASK-V3Link/scripts/stream-4ximx219.sh 3 5 4 7 2 9 5 10
^^^
```