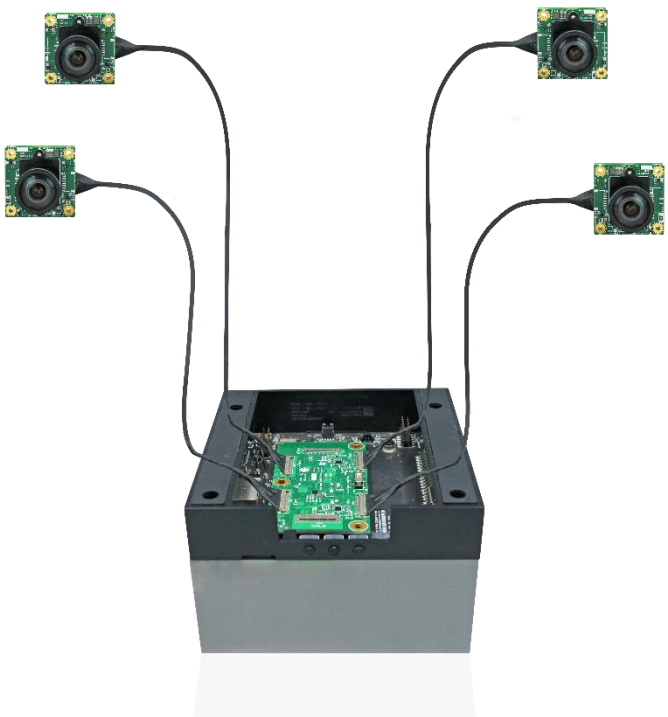
e-CAM56_CUOAGX

eCAM_Argus_Camera Build and Install Guide



e-con Systems

Think Camera. Think e-con.

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Contents

Introduction to eCAM_Argus_Camera

eCAM_argus_camera is a sample application provided by e-con Systems, a company with over two decades of experience in designing, developing, and manufacturing OEM cameras to use NVIDIA® libargus APIs. It is based on argus_camera which is NVIDIA® default camera application in Jetson AGX Orin™ development kit. eCAM_argus_camera is a modified video viewer and capture software for the camera in the Jetson AGX Orin™ development kit and it demonstrates the features of e-CAM56_CUOAGX.

The command in this document is represented by color as shown in the below table.

Table 1: Notation of Color

Color	Notation
Blue	Commands running in Development Kit

This document explains how to install eCAM_argus_camera application executable files from the delivery package and how to build and install the eCAM_argus_camera application from the source.

Prerequisites

The libraries such as cmake, build-essential, gtk and so on are required to build eCAM_argus_camera software package. Please refer to the *e-CAM56_CUOAGX_Release_Notes_Rev_<ver>.pdf* for the compatible Linux distribution version (L4T version).

The package requirements are as follows:

- cmake
- build-essential
- pkg-config
- X11
- gtk+-3.0>=3.0.0
- expat
- JPEG
- gstreamer-1.0
- v4l-utils
- libv4l2-dev

Note: You must make sure that the Jetson AGX Orin™ development kit contains all the dependencies.

Installing Build Dependencies

The steps to install the build dependencies are as follows:

1. Run the following commands in the Jetson AGX Orin™ development kit to enable all the repositories which are required for installing the dependencies.

```
sudo apt-add-repository universe
sudo apt-get update
```

Note: Make sure that you have connected the Jetson AGX Orin™ development kit to a stable network.

2. Run the following command to install the dependencies in the Jetson AGX Orin™ development kit.

```
sudo apt-get install cmake build-essential pkg-config
libx11-dev libgtk-3-dev libexpat1-dev libjpeg-dev
libgstreamer1.0-dev v4l-utils libv4l-dev cuda-toolkit-
11-4
```

Description

The eCAM_argus_camera application is a simple interface for capturing and viewing video from the devices supported on the Jetson AGX Orin™ development kit.

Using eCAM_argus_camera application, you can perform the following:

- Change resolution, frame rate and bits per pixel (bpp), if different resolutions are supported by the device.
- Display the currently configured values of preview.
- Capture the still images and set the path where still images will be saved.
- Select the required frame rate.

All the above listed properties can be configured by attractive and easy to use Graphical User Interface (GUI).

Identifying Deliverables

This section describes about identifying the deliverables.

The release package contains the application source code, eCAM_argus_camera application executables and documents. Please refer to the *e-CAM56_CUOAGX_Release_Notes_Rev_<ver>.pdf* for the compatible Linux distribution version.

The steps for identifying the deliverables are as follows:

1. Copy the release package tar file to the home directory of the board.
2. Run the following commands to extract the e-CAM56_CUOAGX release package.

```
tar -xaf e-CAM56_CUOAGX_JETSON_XAVIER_ORIN_<L4T_version>_<release_date>_<release_version>.tar.gz
cd  e-CAM56_CUOAGX_JETSON_XAVIER_ORIN_<L4T_version>_<release_date>_<release_version>
```

The source code for the eCAM_argus_camera application is present in the release package at the following location.

Application/eCAM_argus_camera/Source/eCAM_argus_camera.tar.gz

The eCAM_argus_camera application executables for aarch64 are present in the release package at the following location.

Application/Binaries/eCAM_argus_camera

Please refer to the Building and Installing eCAM_argus_camera from Source section to build application from the source or refer to the Installing Application Executables section to use eCAM_argus_camera application.

Building and Installing eCAM_argus_camera from Source

This section describes about building and installing eCAM_argus_camera from the source.

The steps to build and install eCAM_argus_camera from the source are as follows:

1. Run the following commands to navigate to the application source directory in the Jetson AGX Orin™ development kit.

```
cd Application/eCAM_argus_camera/Source/
tar -xaf eCAM_argus_camera.tar.gz
cd eCAM_argus_camera/argus
```

2. Run the following commands to create the makefiles.

```
mkdir build && cd build
cmake -DMULTI_SESSION_SUPPORTED=1 ..
```

If CMake cannot find an include path for any dependencies, it may be required to provide them explicitly. To include path for any dependencies, run the following command.

```
'cmake -DOPENGLES_INCLUDE_DIR=/path/to/khronos/include
s ..'
```

3. Run the following make command to build the eCAM_argus_camera application.

```
make eCAM_argus_camera -j4
```

The application will be built in the following location.

build/apps/camera/ui/camera/

4. Run the following make install command to install the built application.

```
sudo make install
```

The eCAM_argus_camera application will be installed in **/usr/local/bin** location of Jetson AGX Orin™ development kit. This application is used to capture and view video from the camera.

Note: Run the following jetson_clocks command to achieve stable frame rate before launching the eCAM_argus_camera application in the JetsonAGX Orin™ development kit.

```
sudo nvpmodel -m 0
sudo jetson_clocks
```

```
cd  e-
CAM56_CUOAGX_JETSON_XAVIER_ORIN_<L4T_version>_<release
_date>_<release_version>
sudo /misc/max-isp-vi-clks.sh
```

Then, Run the following command to stream more than two cameras in Multi Session mode.

```
$ sudo service nvargus-daemon stop
$ sudo enableCamInfiniteTimeout=1 nvargus-daemon
```

Installing Application Executables

This section describes about installing the eCAM_argus_camera application executables.

The steps to install prebuilt files are as follows:

1. Run the following commands to install the application binaries in the Jetson AGX Orin™ development kit.

```
cd Application/Binaries/eCAM_argus_camera
sudo cp eCAM_argus_camera
/usr/local/bin/eCAM_argus_camera
```

The prebuilt files will be installed to **/usr/local/bin** directory on the Jetson AGX Orin™ development kit.

Note: Make sure that the required dependencies listed in Prerequisites section are installed. If the required dependencies are not installed, the eCAM_argus_camera executables will not work properly.

2. Run the following jetson_clocks commands to achieve stable frame rate before launching the eCAM_argus_camera application in the Jetson AGX Orin™ development kit.

```
sudo nvpmodel -m 0
sudo jetson_clocks
cd  e-
CAM56_CUOAGX_JETSON_XAVIER_ORIN_<L4T_version>_<release
_date>_<release_version>
sudo /misc/max-isp-vi-clks.sh
```

Then, Run the following command to stream more than two cameras in Multi Session mode.

```
$ sudo service nvargus-daemon stop
$ sudo enableCamInfiniteTimeout=1 nvargus-daemon
```

3. Run the following command to launch the camera application.

```
$ eCAM_argus_camera
```

```
nvidia@ubuntu:~$ eCAM_argus_camera
Executing Argus Sample Application (eCAM_argus_camera)
Argus Version: 0.99.3.3:4614913 (multi-process)
```

Figure 1: Executing Argus Sample Application to Stream single camera

Multiple Cameras Streaming

To run the multiple cameras simultaneously, run the following command.

```
$ eCAM_argus_camera -d n
```

Note: 'n' denotes the device number. Here, ‘n’ will be 0-3.

Troubleshooting

In this section, you can view the commonly occurring issue and their troubleshooting step.

Encounters an error in *make* or *make install* stage.

Make sure that you have installed all the dependency packages listed in the Prerequisites section. Please refer to the Installing Build Dependencies section to install build dependencies and try again.

FAQ

1. **Is the eCAM_argus_camera application compatible to all the L4T versions?**

   No, the application is tested and verified in specific L4T version. The steps mentioned in this document is not compatible to all the L4T/Jetpack version. Please refer to the *e-CAM56_CUOAGX_Release_Notes_Rev_<ver>.pdf* for the compatible Linux distribution version (L4T version).

2. **After fresh installation of quick start package, do I need to follow this document to setup eCAM_argus_camera application?**

   No, after fresh installation of quick start package, the application binary will be available in the Jetson AGX Orin™ development kit. If you modify the application source, then refer this document to build and install the new version of application.

What's Next?

After understanding the build and installation procedure of eCAM_argus_camera application, you can refer to the following documents to understand more about e-CAM56_CUOAGX.

- *e-CAM56_CUOAGX Release Notes*
- *e-CAM56_CUOAGX e-CAM_Argus_Camera App User Manual*

Glossary

API: Application Programming Interface.

GIMP: GNU Image Manipulation Program.

GNU: GNU's Not Unix.

GTK: GIMP Toolkit.

GUI: Graphical User Interface.

JPEG: Joint Photographic Experts Group.

L4T: Linux for Tegra.

Support

Contact Us

If you need any support on e-CAM56_CUOAGX product, please contact us using the Live Chat option available on our website - https://www.e-consystems.com/

Creating a Ticket

If you need to create a ticket for any type of issue, please visit the ticketing page on our website - https://www.e-consystems.com/create-ticket.asp

RMA

To know about our Return Material Authorization (RMA) policy, please visit the RMA Policy page on our website - https://www.e-consystems.com/RMA-Policy.asp

General Product Warranty Terms

To know about our General Product Warranty Terms, please visit the General Warranty Terms page on our website - https://www.e-consystems.com/warranty.asp

Revision History

Rev	Date	Description	Author
1.0	22-Aug-2023	Initial Draft	Camera Dev Team
1.1	20-Oct-2023	Updated to L4T35.4.1 and eCAM_argus_camera version	Camera Dev Team
1.2	30-Jan-2024	Updated with Multi Session fix for more than two camera streams	Camera Dev Team
1.3	11-Mar-2024	Updated eCAM_argus_camera version	Camera Dev Team
1.4	21-Mar-2024	Updated product image in home page	Camera Dev Team