

e-CAM20\_CUXVR

# eCAM\_Argus\_Camera Build and Install Guide



**e-con Systems**

Your Product Development Partner

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# Introduction to eCAM\_Argus\_Camera

e-con Systems is a leading Embedded Product Design Services Company, which provides two sample applications such as eCAM\_argus\_camera and eCAM\_Argus\_MultiCamera to use NVIDIA® libargus APIs.

e-con Systems eCAM\_argus\_camera application is based on argus\_camera which is NVIDIA® default camera application in Jetson Xavier™/TX2™ platform.

eCAM\_argus\_camera is a modified video viewer and capture software for the camera in Jetson Xavier™/TX2™ and demonstrates the features of e-CAM20\_CUXVR.

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

**Table 1: Notation of Color**

Color	Notation
Blue	Commands running in Development Board

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-CAM20\_CUXVR\_Release\_Notes.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 Xavier™/TX2™ 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 Jetson™ board 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 Jetson™ board to a stable network.

2. Run the following command to install the dependencies in Jetson™ board.

```
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
```

## Description

The eCAM\_argus\_camera application is a simple interface for capturing and viewing video from the devices supported on the Jetson Xavier™/TX2™.

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 the Deliverables

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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-CAM20\_CUXVR\_Release\_Notes.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-CAM20\_CUXVR release package.

```
tar -xvf e-  
CAM20_CUXVR_JETSON_XAVIER_TX2_<L4T_version>_<release_d  
ate>_<release_version>.tar.bz2  
  
cd e-  
CAM20_CUXVR_JETSON_XAVIER_TX2_<L4T_version>_<release_d  
ate>_<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.bz2**

The eCAM\_argus\_camera application executables for aarch64 are present in the release package at the following location.

**e-CAM20\_CUXVR\_L4T32.2.1\_JP4.2.2\_JETSON-XAVIER-  
TX2\_R02\_RC2/Application/Binaries/eCAM\_argus\_camera/  
eCAM\_argus\_camera**

**Note:** If this folder is not available use untar the binaries package inside release package by using the following command.

```
tar -xmf e-CAM20_CUXVR_L4T32.2.1_JP4.2.2_JETSON-  
XAVIER-TX2_R02_RC2.tar.bz2
```

Please refer to the *Building and Installing eCAM\_argus\_camera from Source* section to build application from the source or refer to the *Installing* section to use eCAM\_argus\_camera application.

# Building and Installing eCAM\_argus\_camera from Source

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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 Jetson™ board.

```
cd Application/eCAM_argus_camera/Source/  
tar -xvf eCAM_argus_camera.tar.bz2  
cd eCAM_argus_camera/argus
```

2. Run the following commands to create the makefiles.

```
mkdir build && cd build  
cmake ..
```

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.

**/tegra\_multimedia\_api/argus/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™ board. 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 Jetson™ board.

```
sudo jetson_clocks  
sudo /home/max-isp-vi-clks.sh  
sudo nvpmodel -m 0
```

# Installing Application Executables

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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 Jetson™ board.

```
cd e-CAM20_CUXVR_L4T32.2.1_JP4.2.2_JETSON-XAVIER-  
TX2_R02_RC2/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™ board.

**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™ board.

```
sudo jetson_clocks  
sudo /home/max-isp-vi-clks.sh  
sudo nvpmodel -m 0
```



# Troubleshooting

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

## **What can I do when I encounter 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.

**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-CAM20\_CUXVR\_Release\_Notes.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™ board. If you modify the application source, then refer this document to build and install the new version of application.

# What's Next?

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After understanding the build and installation procedure of eCAM\_argus\_camera application, you can refer to the following documents to understand more about e-CAM20\_CUXVR.

- *e-CAM20\_CUXVR Release Notes*
- *e-CAM20\_CUXVR Linux App User Manual*

# Glossary

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**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

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## **Contact Us**

If you need any support on e-CAM20\_CUXVR 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	13-May-2019	Initial Draft	Camera Dev Team
1.1	07-June-2019	Updated changes from Doc Team	Camera Dev Team
1.2	09-July-2019	Modified changes for four camera setup	Camera Dev Team
1.3	29-July-2019	Added four camera setup support for Jetson TX2™	Camera Dev Team
1.4	13-November-2019	New release package structure	Camera Dev Team
1.5	27-January-2020	Corrected Filenames and directory structure	Camera Dev Team