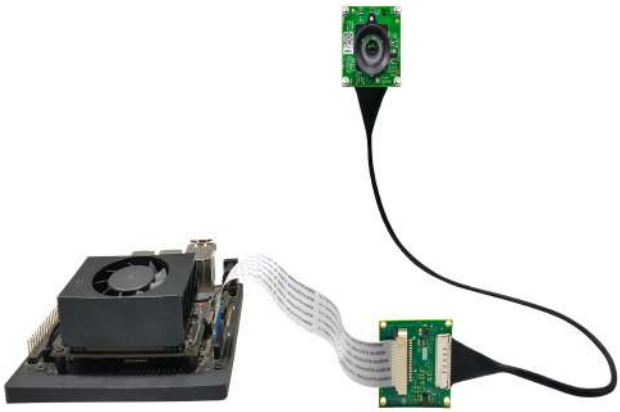
e-CAM23_CUNX

e-CAM_TK1-GUVCView Build and Install Guide



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Contents

Introduction to ecam_tk1_guvcview

e-con Systems is a leading Embedded Product Design Services Company which provides ecam_tk1_guvcview sample application for demonstrating the features of e-CAM23_CUNX camera. However, this camera can utilize any Video for Linux version 2 (V4L2) application.

The ecam_tk1_guvcview application is based on guvcview, but all the controls are performed with GTK+ interface allowing for a more user-friendly Graphical User Interface (GUI). This application forms the basic testing tool for the e-CAM23_CUNX camera. ecam_tk1_guvcview is a V4L2 video viewer and capture software for the camera driver of Jetson NANO™/Xavier NX™ board, customized to demonstrate the features of e-CAM23_CUNX.

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 build and install the ecam_tk1_guvcview application from the source.

Prerequisites

The libraries such as gtk, glib, libavcodec and so on are essential to build e-cam_tk1_guvcview software package. Please refer to the *e-CAM23_CUNX_Release_Notes_<REV>.pdf* for the compatible Linux distribution version (L4T version).

The package requirements are as follows:

- gtk+-3.0>=3.0.0
- glib-2.0>=2.10.0
- sdl>=1.2.10
- portaudio-2.0
- libpng
- libavcodec
- libavutil
- libv4l2
- libudev
- libusb-1.0
- intltool

Note: You must make sure that the Jetson Xavier NX™ board contains all the dependencies.

Installing Build Dependencies

The steps to install the build dependencies are as follows:

1. Run the following command in Jetson Nano™/Xavier NX™ board to enable all the repositories which are required for installing the dependencies.

```
$ sudo apt-get update
```

Note: Make sure that you have connected Jetson Nano/ Xavier NX™ board to a stable network.

2. Run the following command to install the dependencies in Jetson Nano/ Xavier NX™ board.

```
$ sudo apt-get install intltool libsdl1.2-dev libusb-1.0-0-dev libv4l-dev libudev-dev libportaudio-ocaml-dev libpango1.0-dev libatk1.0-dev libgdk-pixbuf2.0-dev libatk-bridge2.0-dev libcairo2-dev libgtk-3-dev libavutil-dev libavcodec-dev lbzip2
```

Note: If the installation stops with unmet dependencies, then run the following command to fix the libraries.

```
$ sudo apt --fix-broken install
```

3. Run the following commands to install the FFMPEG dependency package.

```
$ wget -c http://ffmpeg.org/releases/ffmpeg-2.8.15.tar.xz
$ tar -xf ffmpeg-2.8.15.tar.xz
$ cd ffmpeg-2.8.15
#For fast install change the power mode to maximum
$ sudo nvpmodel -m 0
$ sudo jetson_clocks
$./configure
$ make -j4
$ sudo make install
```

Note: You can also use the FFMPEG package source provided in **e-CAM23_CUNX_JETSON_NX_XAVIER_<L4T_version>_<release_date>_<release_version>.tar.gz** release package at **Application/ecam_tk1_guvcview/Source/ecam_tk1_guvcview_dependency.tar.gz** location.

Description

The e-CAM23_CUNX guvcviewer or ecam_tk1_guvcview application is a simple GTK+ interface for capturing and viewing video from the devices supported on the Jetson Nano/Xavier NX™ board.

Using e-CAM_TK1 guvcviewer or ecam_tk1_guvcview application, you can perform the following:

- Enumerate and list all video devices connected.
- Display properties of video renderer.
- Change the resolution and color space or compression for video stream, if different resolutions are supported by the device.
- Display currently configured values of preview.
- Capture the still images and setting the path where still images will be saved.
- Display the average frame rate.

All the above listed properties can be configured by attractive and easy to use GUI.

Identifying the Deliverables

This section describes about identifying the deliverables.

The release package contains the application source code, ecam_tk1_guvcview application executables and documents. Please refer to the *e-CAM23_CUNX_Release_Notes_<REV>.pdf* for the Linux for Tegra (L4T) 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-CAM23_CUNX release package.

```
tar -xf e-CAM23_CUNX_JETSON_NX_XAVIER_<L4T_version>_<release_date>_<release_version>.tar.gz
cd e-CAM23_CUNX_JETSON_NX_XAVIER_<L4T_version>_<release_date>_<release_version>
```

Note: Do not right click to extract the package.

The source code for the ecam_tk1_guvcview application is present in the release package at the following location.

Application/ecam_tk1_guvcview/Source/e-CAM_TK1_guvcview-src-1.7.2.tar.gz

Please refer to the *Building and Installing ecam_tk1_guvcview from the Source* section to build application from the source

Building and Installing ecam_tk1_guvcview from the Source

This section describes about building and installing ecam_tk1_guvcview from the source.

The steps to build and install ecam_tk1_guvcview from the source are as follows:

1. Run the following commands to navigate to the application source directory in Jetson Xavier NX™ board and extract the package.

```
cd Application/ecam_tk1_guvcview/Source/
tar -xf e-CAM_TK1_guvcview-src-1.7.2.tar.gz
cd e-CAM_TK1_guvcview-src-1.7.2/
```

2. Run the following commands to configure the ecam_tk1_guvcview source.

```
./configure --prefix=/usr/local/ecam_tk1
echo 'export PATH=$PATH:/usr/local/ecam_tk1/bin' >> $HOME/.bashrc
source ~/.bashrc
```

The configuration is required to check the presence of dependent packages and to create the makefiles. If you want to change the **default /usr/local/bin** binary installation directory, add **--prefix = <path_to_install>**.

To know more information on configuring ecam_tk1_guvcview source, run the following command.

```
./configure --help
```

Note: If configuration fails, please contact the Ubuntu's Help Center to know on how to install any required packages.

3. Run the following make command to build the ecam_tk1_guvcview application from source.

```
make -j4
```

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

```
sudo make install
```

The ecam_tk1_guvcview application will be installed in **/usr/local/ecam_tk1/bin** location of Jetson Xavier NX™ board. This application is used to capture and view video from the camera.

Troubleshooting

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.

What can I do when apt-get update fails?

Make sure that you have installed all the dependency packages listed in the *Prerequisites* section before building the binaries. If the apt-get update requires a long time to run and fails, kindly wait for some time and retry. This issue might occur due to network problem.

FAQ

1. **Is the ecam_tk1_guvcview 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-CAM23_CUNX_Release_Notes.pdf* for the compatible Linux distribution version (L4T version).

2. **How can I get the updated package?**

   Please login to the Developer Resources website to download the latest release package.

What's Next?

After understanding the build and installation procedure of eCAM_tk1_guvcview application, you can refer to the following documents to understand more about e-CAM23_CUNX.

- *e-CAM23_CUNX Release Notes*
- *e-CAM23_CUNX Linux App User Manual*

Glossary

API: Application Programming Interface.

FFMPEG: Fast Forward Motion Picture Experts Group.

GIMP: GNU Image Manipulation Program.

GNU: GNU's Not Unix.

GTK: GIMP Toolkit.

GUI: Graphical User Interface.

L4T: Linux for Tegra.

V4L2: Video4Linux2 is a collection of device drivers and API for supporting real-time video capture on Linux systems.

Support

Contact Us

If you need any support on e-CAM23_CUNX 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	15-Feb-2021	Initial Draft	Application Engineering Team