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### **NileCAM21\_CUXVR**



## **Datasheet**

Revision 1.1

24<sup>th</sup> March 2021



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## 1 Revision History

Rev	Date	Description	Author
1.0	22-Oct-2020	Initial Draft	Camera Team
1.1	24-Mar-2021	Pinouts updated	Camera Team



## 2 Introduction

NileCAM21\_CUXVR is family of NileCAM cameras from e-con Systems with high-speed unified serial interface that carries video data, control data and power in a single coaxial cable. It uses serializer-deserializer (SerDes) technology that allows single coaxial cable interface for the camera. With coaxial cable lengths of up to 15m, NileCAM21\_CUXVR offers greater flexibility for the system architects to place the cameras in mechanically challenging designs of new generation embedded, automotive and autonomous driving applications. The flexibility of coaxial cable and the ability to carry video data, control data and power in a single cable makes NileCAM21\_CUXVR fast (low latency), flexible and yet reliable.

NileCAM21\_CUXVR uses Maxim's Gigabit Multimedia Serial Link (GMSL) interface technology for the serial interface to the camera. This serial interface uses coaxial cable that carries high-speed video data from the camera, bidirectional control data between the camera and host controller, and power supply for the camera. The power to the camera is supplied from the host processor through this coaxial cable. NileCAM21\_CUXVR embeds the Maxim's serializer which serializes the high-speed image data and transmits over coaxial cable. The serializer also supports the bidirectional control data communication between the camera and host controller. The on-board electronics of NileCAM21\_CUXVRserializer recovers the power supplied from the host controller without contaminating the data transfers.

NileCAM21\_CUXVR board has been designed and developed by e-con Systems for the NVIDIA® Jetson™ Xavier™ development kit. NileCAM21\_CUXVR is a 2 MP GMSL camera contains a 1/2.5" AR0233AT CMOS image sensor from ON Semiconductor® along with on-board ISP. The coaxial cable is connected to Serializer board through a rugged FAKRA connector. NileCAM21\_CUXVR is interfaced to the J509 connector on the Xavier™ using the NileCAM21\_CUXVR Deserializer board.

The NVIDIA® Jetson™ Xavier™ developer kit is a full-featured development platform for visual computing. It is ideal for applications requiring high computational performance in a low power envelope. The Jetson™ Xavier™ developer kit is pre-flashed with a Linux environment which includes support for many common APIs. This kit is supported by NVIDIA® complete development tool chain.

e-con Systems provides the sample applications that demonstrates the features of this camera. However, this camera can also be utilized by any V4L2 application.

This document describes about the features of NileCAM21\_CUXVR board including the mechanical diagram.

## 3 Disclaimer

The specifications and features of NileCAM21\_CUXVR camera board are provided here as reference only and e-con Systems reserve the right to edit/modify this document without any prior intimation of whatsoever.



## 4 Description

The NileCAM21\_CUXVR board is designed to interface six 2 MP custom lens camera modules with the Jetson™ Xavier™ development kit. NileCAM21\_CUXVR is a three-board solution and has two parts. The first part has two boards: one is standard NileCAM21\_CUXVR camera module that has 1/2.5" AR0233AT image sensor from ON Semiconductor® along with Image Signal Processor (ISP) and the other one is Serializer board. The second part is Deserializer board, which is used to interface with Jetson™ Xavier™ development kit.

NileCAM21\_CUXVR is a multi-board solution, which has three boards as follows:

- e-CAM213\_CU0233\_MOD (Camera Module Board)
- e-CAM20\_CUXVR\_SER\_BRD (Serializer Board)
- e-CAM20\_HEXCUXVR\_DESER\_BRD (Deserializer Board)

The below figures show the Camera Module board, Serializer board and Deserializer board.

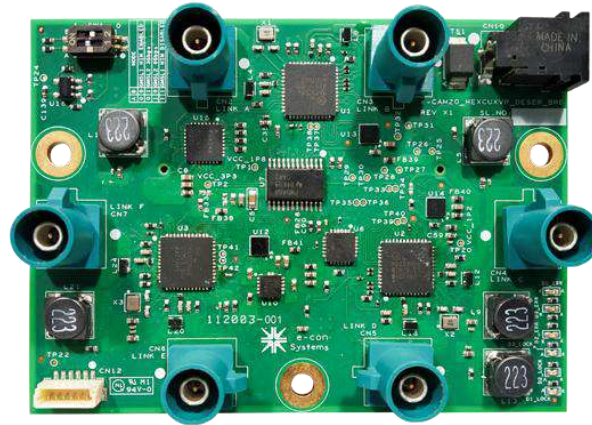


Figure 1: NileCAM21\_CUXVR Camera Module



Figure 2: NileCAM21\_CUXVR Serializer Board





**Figure 3: NileCAM21\_CUXVR Deserializer Board**

The camera board is based on AR0233AT, a 1/2.5" CMOS image sensor from ON Semiconductor® along with Image Signal Processor (ISP). The camera is available with M12 metal lens holder allowing customers to choose the lens as per their requirements. The Serializer board is based on Maxim GMSL serializer and has all the circuitry required for bidirectional data communication, power and data separation and so on. FAKRA connectors are used for the coaxial cable interface. The Deserializer board needs external power supply, which supplies the power to the Serializer Board over coaxial cable using FAKRA connector. The Deserializer board has six Fakra connectors, through which you can connect six cameras at the same time.

NileCAM21\_CUXVR has two different variants, which are listed in below table.

Part Number	Deserializer Board	Serializer Board	Module Board	Coaxial Cable	Lens
NileCAM21_CUXVR_SOLO	1	1	1	1	1
NileCAM21_CUXVR_HEX	1	6	6	6	6

**Table 1: NileCAM21\_CUXVR Variants**

**Note:** The default variants of NileCAM21\_CUXVR\_HEX is given above, for different number of camera modules, write to <https://www.e-consystems.com/>

NileCAM21\_CUXVR operates in two modes as follows:

- Asynchronous Mode
- Synchronous Mode

#### 4.1 Asynchronous Mode

The asynchronous mode is the normal streaming mode. In this mode, all six cameras can be controlled individually.

The below table list the supported frame rates in asynchronous mode.



Resolution	640 x 480 (VGA)	960 x 540 (qHD)	1280 x 720 (HD)	1920 x 1080 (FHD)
UYVY	60	58	45	30

**Table 2: Maximum Frame Rates in Asynchronous Mode**

## 4.2 Synchronous Mode

The synchronous mode is the special feature of NileCAM21\_CUXVR board. The NileCAM21\_CUXVR board contains on-board Pulse Width Modulation (PWM) generator circuit to provide the necessary trigger signal for synchronous mode. The camera output from each camera is frame synchronized. By default, PWM trigger signal frequency is 30 Hz.

The below table list the supported frame rates in synchronous mode.

Resolution	640 x 480 (VGA)	960 x 540 (qHD)	1280 x 720 (HD)	1920 x 1080 (FHD)
UYVY	30	30	30	30

**Table 3: Maximum Frame Rates in Synchronous Mode**

NileCAM21\_CUXVR synchronize all the frames of camera according to the provided PWM pulse as trigger. This PWM trigger pulses can be provided internally (Internal Trigger Mode) or externally (External Trigger Mode).

In Internal Trigger Mode, NileCAM21\_CUXVR contains on-board PWM generator circuit to provide the necessary trigger signal for frame synchronization. The output from each camera is frame synchronized. The overall tolerance for the generated PWM signal frequency is 1%. e-con Systems presently supports 30 Hz PWM pulse in Internal Trigger Mode. For customization of PWM frequency, please write to [techsupport@e-consystems.com](mailto:techsupport@e-consystems.com).

In External Trigger Mode, NileCAM21\_CUXVR board has an I/O Header (CN12), through which you can provide PWM pulse of any frequency (less than 60Hz) to synchronize all camera frames. The external trigger signal IO voltage is 3.3V. The Internal or External Trigger Mode selected through software.

## 4.3 Features

The features of NileCAM21\_CUXVR are as follows:

- Multi-board solution
- Six 2 MP camera modules with 1/2.5" optical form factor
- Standard M12 metal lens holder for use with customized optics or lenses for various applications.
- Asynchronous and synchronous modes.
- Shielded coaxial cable for transmission of both power and data for long distance (up to 15m)
- Uncompressed UYVY format

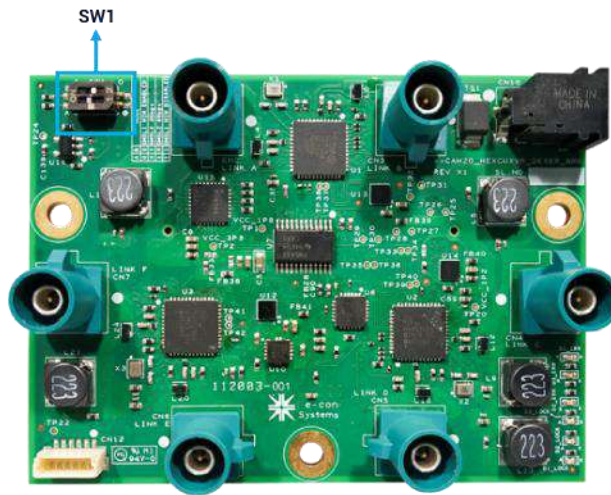




- Imaging applications: Still capture supported resolution VGA, qHD, HD, FHD.
- Lightweight, versatile, and portable design
- Operating Temperature: -40°C to 85°C
- Typical Power consumption: 14.328W
- Restriction of Hazardous Substances (RoHS) compliant

#### 4.4 GMSL Mode Selecting Switch

NileCAM21\_CUXVR is backward compatible with our GMSL1 cameras (NileCAM\_30). SW1 switch is used for selecting GMSL 1 or GMSL2 operations. The position of switch is shown below.



**Figure 4: Position of SW1 Switch**

The below table describes the different modes in the switch.

A	B	Mode
0	0	GMSL 1 HIM Enabled
0	1	GMSL 2 3Gbps
1	0	GMSL 2 6Gbps
1	1	GMSL 1 HIM Disabled

**Table 4: Modes in Switch**

## 5 Key Specifications

The following table lists the key specifications of NileCAM21\_CUXVR.

Description	Specification
Video Format	UYVY
Image Resolution	1920 x 1080 (2MP)
Supported OS	Ubuntu 18.04

**Table 5: Key Specifications of NileCAM21\_CUXVR**





## 5.1 CMOS Image Sensor Specification

The following table lists the specifications of the CMOS image sensor used in NileCAM21\_CUXVR board.

Sensor Specification	
Type / Optical Size	1/2.5" Optical format CMOS Image sensor
Resolution	2MP
Sensor Type	24-Bit RGB Bayer
Pixel Size	3.0 $\mu\text{m}$ x 3.0 $\mu\text{m}$
Sensor Active Area	2048H x 1280V
Responsivity	30.4 Ke-/lux-sec
Signal to Noise Ratio (SNR)	>43.1 dB
Dynamic Range	Max up to 140 dB

**Table 6: CMOS Image Sensor Specification**

For more information about the AR0233AT sensor or for datasheet, please contact ON Semiconductor®.

## 5.2 Maximum Frame Rates Supported by NileCAM21\_CUXVR

The following table lists the maximum frame rate supported when connected to the Jetson™ Xavier.

Resolution	Frame Rate (Uncompressed UYVY)	% Crop in FOV	
		Horizontal	Vertical
640 x 480	60 fps	66.67%	55.55%
960 x 540	58 fps	50.00%	50.00%
1280 x 720	45 fps	33.33%	33.33%
1920 x 1080	30 fps	0.00%	0.00%

**Table 7: Maximum Frame Rate Supported for Jetson Xavier**

## 6 Connector Details

The following sections describe the pins descriptions of the serializer board and deserializer board connectors.

- [Serializer Board Connectors](#)
- [Deserializer Board Connectors](#)

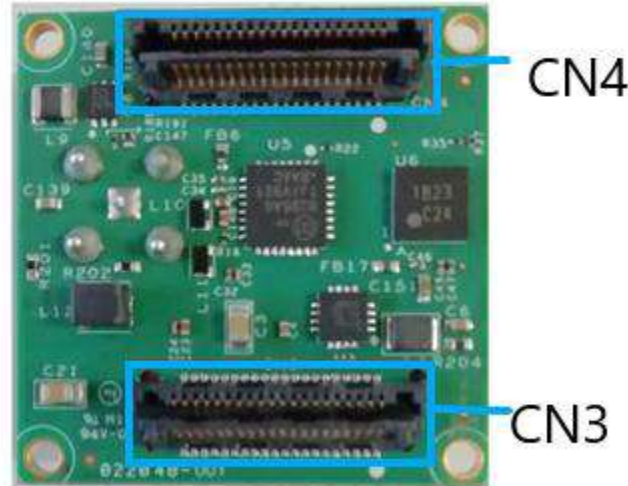
### 6.1 Serializer Board Connectors

The serializer board has two on-board connectors for connecting with camera modules. The below section describe the pin-outs and connector locations.



### 6.1.1 Serializer to Module Mating Connectors (CN3 and CN4)

NileCAM21\_CUXVR Serializer board has two dual rows, 20-pin connectors. CN3 and CN4 connectors are used for mating with Module board. The connector on Serializer board is shown below.



**Figure 5: Connectors on Serializer Board**

The CN3 pin numbers, signal names, pin types and their description from serializer board perspective are listed in following table.

CN3 Pin No	Signal Name	Pin Type	Description
1	ISP_D0	INPUT	2.8V IO parallel data0 signal from camera module
2	ISP_D8	INPUT	2.8V IO parallel data8 signal from camera module
3	ISP_D1	INPUT	2.8V IO parallel data1 signal from camera module
4	ISP_D9	INPUT	2.8V IO parallel data9 signal from camera module
5	ISP_D2	INPUT	2.8V IO parallel data2 signal from camera module
6	ISP_D10	INPUT	2.8V IO parallel data10 signal from camera module
7	ISP_D3	INPUT	2.8V IO parallel data3 signal from camera module
8	ISP_D11	INPUT	2.8V IO parallel data11 signal from camera module
9	GND	POWER	POWER
10	GND	POWER	POWER
11	ISP_D4	INPUT	2.8V IO parallel data4 signal from camera module
12	ISP_D12	INPUT	2.8V IO parallel data12 signal from camera module
13	ISP_D5	INPUT	2.8V IO parallel data5 signal from camera module
14	ISP_D13	INPUT	2.8V IO parallel data13 signal from camera module
15	ISP_D6	INPUT	2.8V IO parallel data6 signal from camera module
16	ISP_D14	INPUT	2.8V IO parallel data14 signal from camera module
17	ISP_D7	INPUT	2.8V IO parallel data7 signal from camera module
18	ISP_D15	INPUT	2.8V IO parallel data15 signal from camera module
19	GND	POWER	Ground
20	GND	POWER	Ground



21	VCC_2P8	POWER	2.8V Power supply for camera module
22	CLK_PARALLEL_ISP	INPUT	2.8V IO parallel clock signal from camera module
23	VCC_2P8	POWER	2.8V Power supply for camera module
24	GND	POWER	Ground
25	CAM_I2C_SCL	OUTPUT	I2C Clock signal with Internal pull up to 2.8V through 4.7k resistor
26	ISP_FV	INPUT	2.8V IO parallel vertical sync signal from camera module
27	CAM_I2C_SDA	BI-DIR	I2C Data signal with Internal pull up to 2.8V through 4.7k resistor
28	ISP_LV	INPUT	2.8V IO parallel horizontal sync signal from camera module
29	RSVD	-	Reserved
30	GND	POWER	Ground
31	GND	POWER	Ground
32	RSVD	-	Reserved
33	RSVD	-	Reserved
34	RSVD	-	Reserved
35	GND	POWER	Ground
36	GND	POWER	Ground
37	VCC_3P3	POWER	3.3V Power supply for camera module
38	VCC_3P3	POWER	3.3V Power supply for camera module
39	VCC_3P3	POWER	3.3V Power supply for camera module
40	VCC_3P3	POWER	3.3V Power supply for camera module

**Table 8: CN3 Pin Descriptions**

The CN4 pin numbers, signal names, pin types and their description are listed in following table.

CN4 Pin No	Signal Name	Pin Type	Description
1	ISP_D16	INPUT	2.8V IO parallel data16 signal from camera module
2	RSVD	-	Reserved
3	ISP_D17	INPUT	2.8V IO parallel data17 signal from camera module
4	RSVD	-	Reserved
5	ISP_D18	INPUT	2.8V IO parallel data18 signal from camera module
6	RSVD	-	Reserved
7	ISP_D19	INPUT	2.8V IO parallel data19 signal from camera module
8	RSVD	-	Reserved
9	GND	POWER	POWER
10	GND	POWER	POWER
11	ISP_D20	INPUT	2.8V IO parallel data20 signal from camera module
12	RSVD	-	Reserved
13	ISP_D21	INPUT	2.8V IO parallel data21 signal from camera module
14	RSVD	-	Reserved



15	ISP_D22	INPUT	2.8V IO parallel data22 signal from camera module
16	RSVD	-	Reserved
17	ISP_D23	INPUT	2.8V IO parallel data23 signal from camera module
18	GPIO5	BI-DIR	2.8V GPIO signal for camera module
19	GND	POWER	Ground
20	GND	POWER	Ground
21	RSVD	-	Reserved
22	CAM_TRIGGER	OUTPUT	2.8V IO Camera Trigger signal for camera module
23	GPIO3	BI-DIR	2.8V IO GPIO signal for camera module
24	RSVD	-	Reserved
25	RSVD	-	Reserved
26	GND	POWER	Ground
27	RSVD	-	Reserved
28	VCC_1P8	POWER	1.8V Power supply for camera module
29	GND	POWER	Ground
30	VCC_1P8	POWER	1.8V Power supply for camera module
31	GPIO8	BI-DIR	2.8V IO GPIO signal for camera module
32	GND	POWER	Ground
33	nRST_uC	OUTPUT	2.8V active low RESET signal for camera module
34	VCC_3P3	POWER	3.3V Power supply for camera module
35	uC_BOOT0	OUTPUT	2.8V Boot selection signal for camera module 0 – Boot from MCU flash memory (by default) 1 – Reprogram the MCU Flash memory
36	VCC_3P3	POWER	3.3V Power supply for camera module
37	GND	POWER	Ground
38	GPIO6	BI-DIR	2.8V IO GPIO signal for camera module
39	VDDIO_2P8	POWER	2.8V IO Power supply for camera module
40	RSVD	-	Reserved

Table 9: CN4 Pin Descriptions

### 6.1.2 FAKRA Straight Plug (Coax Connector) Pin Description (CN1)

The connector on serializer board is shown below.

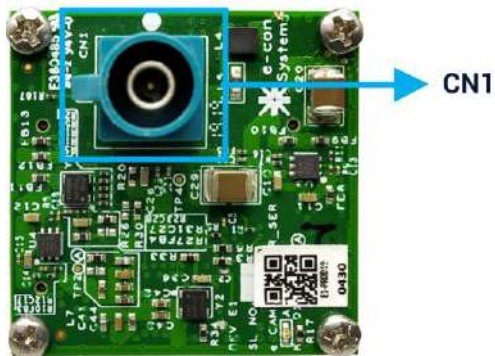


Figure 6: Connector on Serializer Board



The serializer board has a high frequency FAKRA straight plug (CN1) with neutral coding, to mate with coaxial cable. The same FAKRA straight plug and pinouts are used in the Deserializer board.

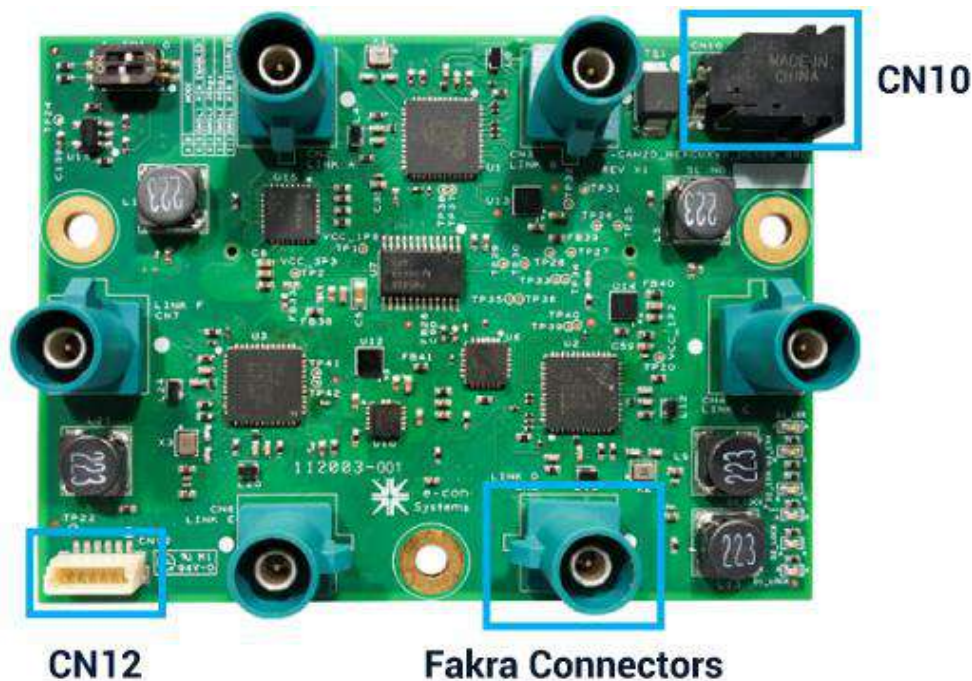
The following table lists the pinouts details of FAKRA plug.

Pin No	Signal	Pin Type	Description
1	Coax	Input / Output	Coaxial signal that carries both power and bidirectional data
2	GND	Power	Ground
3	GND		Ground
4	GND		Ground
5	GND		Ground

**Table 10: FAKRA Plug Pinouts Details for Serializer board**

## 6.2 Deserializer Board Connectors

The Deserializer board has six fakra connectors (CN2, CN3, CN4, CN5, CN6, CN7), power supply connector (CN10) and External trigger connector (CN12). The following figure shows the location of the connectors.



**Figure 7: Connectors on Deserializer Board**

### 6.2.1 Power Supply Connector (CN10)

This connector is used for supplying power for NileCAM21\_CUXVR camera modules through POC. This DC jack connector has internal diameter 1.75mm and outer diameter 4.75mm. e-con Systems provided the mating power supply adapter with 12V 2A.



The following table lists the CN10 connector pin-out details.

Pin No	Signal	Pin Type	Description
1	VCC_POC	POWER	Power for camera Modules. Supports 5V to 15V.
2	GND	POWER	Ground
3	GND	POWER	Ground

**Table 11: CN10 Connector Pin-out Details**

**Note:** Kindly use e-con Systems provided adaptor or make ensure your power adaptor supports 24W power.

### 6.2.2 Fakra Connectors (CN2, CN3, CN4, CN5, CN6, CN7)

NileCAM21\_CUXVR deserializer board has six fakra connectors for interfacing with six cameras. This connector is used for carrying power to camera modules and receiving high speed data from camera module through POC. The following table lists the FAKRA plug pin-out details.

Pin No	Signal	Pin Type	Description
1	Coax	Input / Output	Coaxial signal that carries both power and bidirectional data
2	GND	Power	Ground
3	GND		Ground
4	GND		Ground
5	GND		Ground

**Table 12: FAKRA Plug Pin-outs Details for Deserialiser Board**

### 6.2.3 External Trigger connector (CN12)

The external trigger connector is used for providing external trigger for NileCAM21\_CUXVR synchronization and also an external GPIO option for camera control is available. The following table lists the external trigger connector details.

Pin No	Signal	Pin Type	Description
1	VCC_3P3	POWER	3.3V power for external circuitry
2	EXT_TRIG	INPUT	3.3V IO PWM input signal for cameras. All connected cameras frame are synced to this PWM frequency.
3	D1_MFP6	BI-DIR	3.3V IO GPIO signal for LINK A & LINK B cameras
4	D2_MFP6	BI-DIR	3.3V IO GPIO signal for LINK C & LINK D cameras
5	D3_MFP6	BI-DIR	3.3V IO GPIO signal for LINK E & LINK F cameras
6	GND	POWER	Ground

**Table 13: CN12 Connector Pin-outs Details**





## 7 Connector Part Numbers

The following table describes the connectors used in the NileCAM21\_CUXVR camera board and its compatible mating connectors.

Board	Connector	Manufacturer	Part Number
Serializer Board	CONN FAKRA Plug Receptacle 5Pos 50Ohm 6GHz Vertical Through Hole (CN1)	Rosenberger	59S10H-400T5-Z
	CONN Board to Board Hermaphroditic Strip P-0.64mm 40Pos Dual Row Vertical SMT (CN3, CN4)	Samtec	LSS-120-01-F-DV-A
Deserializer Board	CONN Jack Power Male 2 Conductors, 3 Contacts 24VDC 5A Right Angle Through Hole (CN10)	CUI Inc	PJ-042H
	CONN Header Male P-1mm Shrouded 6Pos Vertical SMT (CN12)	JST Sales America Inc	BM06B-SRSS-TB(LF)(SN)
	CONN FAKRA Plug Receptacle 5Pos 50Ohm 6GHz Vertical Through Hole (CN2, CN3, CN4, CN5, CN6, CN7)	Rosenberger	59S10H-400T5-Z

**Table 14: Connectors Part Numbers**

## 8 Electrical Specification

This section lists the electrical specification and recommended operating conditions of NileCAM21\_CUXVR.

### 8.1 Recommended Operating Condition

NileCAM21\_CUXVR requires two power sources for normal operation. One is for deserializer board and the other is for camera module plus serializer boards. NileCAM21\_CUXVR uses Jetson Xavier camera expansion connector power for powering deserializer board and CN10 connector power for powering camera modules.

#### 8.1.1 Power Consumption (from Xavier) of Deserializer Board

NileCAM21\_CUXVR deserializer board uses only 1.8V and 3.3V power supplies from Jetson Xavier camera expansion connector where else 2.8V and 5V power supplies are unused.



Parameter	Typical Power consumption (W) in 1.8V supply	Typical Power consumption (W) in 3.3V supply
Six cameras streaming condition at 1920 x 1080 30fps synchronous mode (Maximum Power)	2.061	0.396

**Table 15: Power Consumption Details (Xavier)**

**Note:** These values are measured in e-con Systems lab and this can be used as reference only. The current measurements are typical values and are subject to change for different camera boards under different conditions. However, these values can be taken as a reference for power estimation and power supply design.

### 8.1.2 Power Consumption of Serializer and Module Boards

For Camera modules and serializer boards, NileCAM21\_CUXVR uses power from CN10 connector, which supports 5 to 15V power supply. By default e-con provides 12V 2A power adapter. The power consumption details for NileCAM21\_CUXVR from one to six cameras in synchronous and asynchronous modes are listed below.

#### In Synchronous Mode power consumption:

The following table lists the power consumption of NileCAM21\_CUXVR in Synchronous Mode.

S. No	Resolution	Frame Rate	SOLO	DUAL	TRIPLE	QUAD	PENT	HEX
1	640 x 480	30 fps	1.896W	3.996W	5.976W	7.644W	9.684W	11.676W
2	960 x 540	30 fps	1.812W	4.116W	6.168W	7.848W	9.960W	11.952W
3	1280 x 720	30 fps	1.944W	4.320W	6.468W	8.364W	10.512W	12.720W
4	1920 x 1080	30 fps	2.196W	4.608W	6.960W	9.360W	11.832W	14.328W

**Table 16: Power Consumption Details of NileCAM21\_CUXVR in Synchronous Mode**

#### In Asynchronous Mode power consumption:

The following table lists the power consumption of NileCAM21\_CUXVR in Asynchronous Mode.

S. No	Resolution	Frame Rate	SOLO	DUAL	TRIPLE	QUAD	PENT	HEX
1	640 x 480	60 fps	1.884W	3.996W	6.012W	8.016W	10.128W	12.228W
2	960 x 540	58 fps	1.944W	4.128W	6.204W	8.292W	10.464W	12.624W
3	1280 x 720	45 fps	2.052W	4.344W	6.492W	8.664W	10.956W	13.200W
4	1920 x 1080	30 fps	2.196W	4.668W	6.996W	9.360W	11.832W	14.232W

**Table 17: Power Consumption Details of NileCAM21\_CUXVR in Asynchronous Mode**

**Note:** These values are measured in e-con Systems lab and this can be used as reference only. The current measurements are typical values and are subject to change for different camera boards under different conditions. However, these values can be taken as a reference for power estimation and power supply design.

## 8.2 Operating Temperature Range

The following table lists the operating temperature range of NileCAM21\_CUXVR.

Parameter Description	Temperature Range
Operating temperature range <sup>1</sup>	-40°C to 85°C
Stable Image Temperature Range	-40°C to 70°C

**Table 18: Operating Temperature Range**

<sup>1</sup>This is the maximum temperature range up to which the camera sensor can be operated.

**Note:** The default lens supplied with this camera has an operating range of -20°C to 85°C. Customers can choose wider operating temperature lens as per their requirements.

## 9 Mechanical Specifications

NileCAM21\_CUXVR is a three-board solution. The camera module and serializer boards are each of size 30 mm x 30 mm. The dimension of deserializer board is 75 mm x 55 mm.

The board dimensions are shown in the below sections:

- [Camera Module Board Dimensions](#)
- [Serializer Board Dimensions](#)
- [Deserializer Board Dimensions](#)
- [Lens Holder Dimensions](#)

### 9.1 Camera Module Board Dimensions

The front and rear views of NileCAM21\_CUXVR board with mechanical details are shown in the following figures.



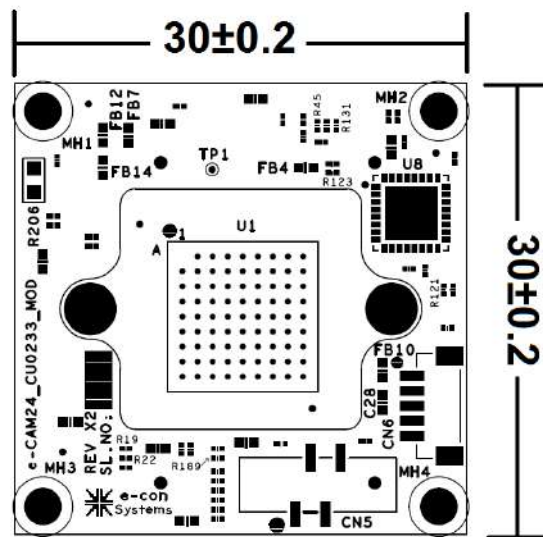


Figure 8: NileCAM21\_CUXVR Camera Module Board Front View

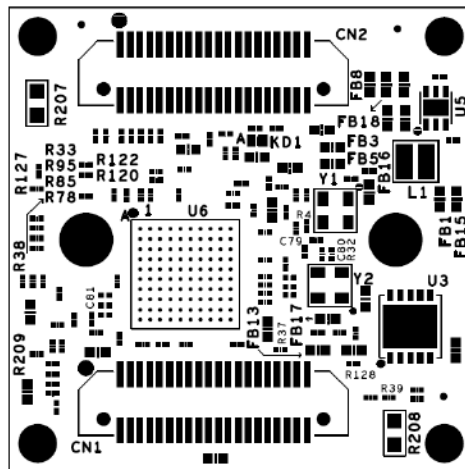


Figure 9: NileCAM21\_CUXVR Camera Module Board Rear View

**Note:** All dimensions are in mm.

## 9.2 NileCAM21\_CUXVR Serializer Board Dimensions

The front and rear views of NileCAM21\_CUXVR serializer board with mechanical details is shown in the following figures.



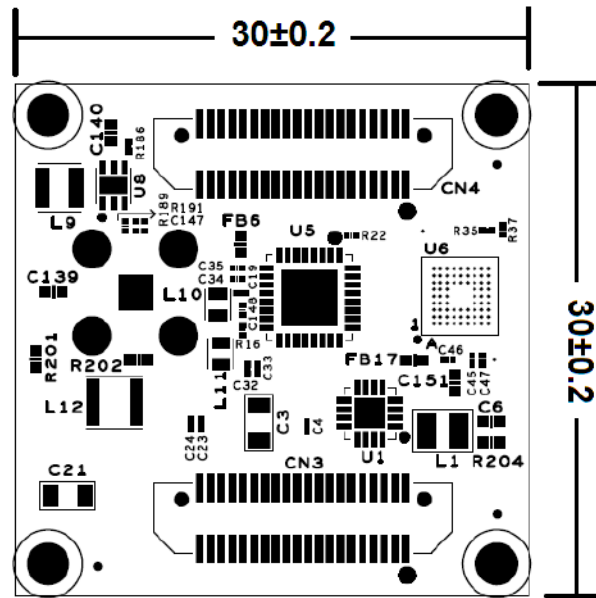


Figure 10: NileCAM21\_CUXVR Serializer Board Front View

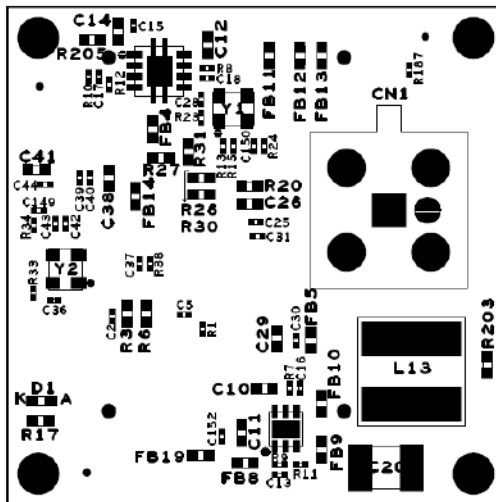


Figure 11: NileCAM21\_CUXVR Serializer Board Rear View

**Note:** All dimensions are in mm.

### 9.3 Deserializer Board Dimensions

The front and rear views of NileCAM21\_CUXVRdeserializerboard with mechanical details is shown in the following figures.



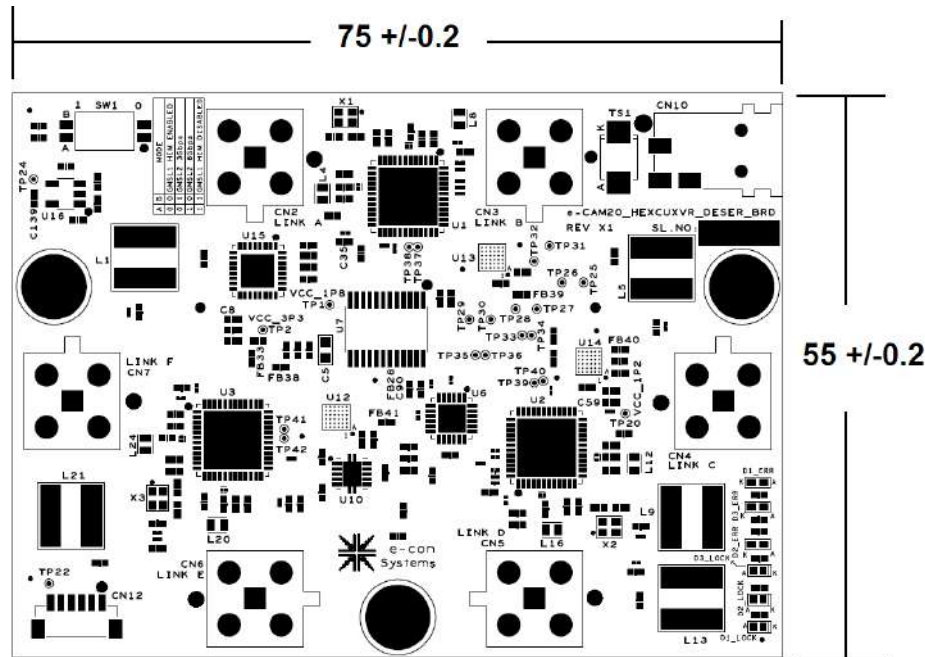


Figure 12: NileCAM21\_CUXVR Deserializer Board Front View

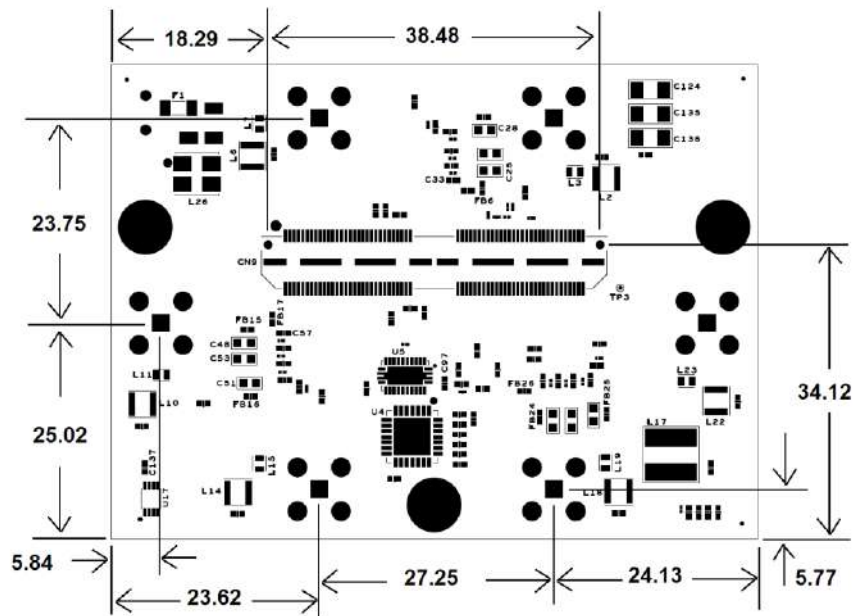


Figure 13: NileCAM21\_CUXVR Deserializer Board Rear View

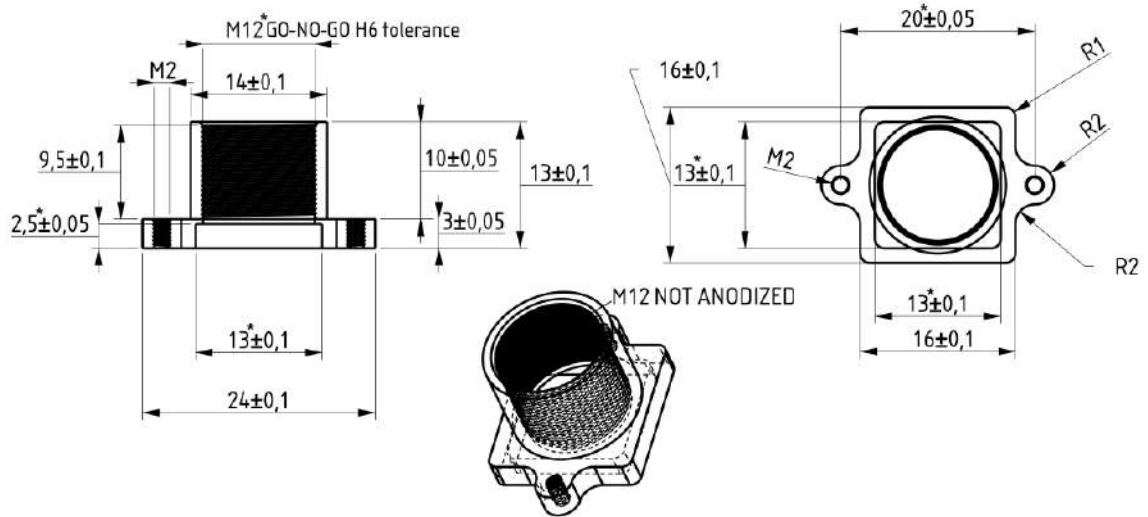
**Note:** All dimensions are in mm.

## 9.4 Lens Holder Dimensions

The following figure shows the dimension details of S-Mount metal lens holder.







**Figure 14: S-Mount Metal Lens Holder Outline Dimension**

**Note:** All dimensions are in mm.



## Support

### Contact Us

If you need any support on NileCAM21\_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>

