

8MP Color HDR ONVIF GigE Camera Camera based on Onsemi AR0821 Sensor

Vadzo Innova-821CRS is a 4K HDR GigE camera based on the Onsemi AR0821 sensor coupled with a high-performance onboard ISP that supports features such as Auto Exposure, LED Flicker Mitigation (LFM), and multi-exposure HDR processing. Leveraging the sensor's embedded HDR (eHDR) technology, the camera delivers a dynamic range greater than 120+ dB. The camera supports a maximum resolution of 8MP and provides video streaming in 4K, 1080p, and 720p. It comes with an M12/S-Mount lens holder that supports a 74° DFOV lens by default. You shall be able to stream video in H.264 and H.265 formats and capture images in MJPEG format.

Key Features

- Sensor Model: AR0821 Onsemi Sensor
- Max Resolution: 8MP
- Pixel Size: 2.1 μm x 2.1 μm
- Shutter: Rolling Shutter
- Lens FOV: 74 DFOV
- Compliance: ONVIF, RoHS 3, REACH



Applications

- **Warehouse Robotics:** Object Scanning, Document Scanning, OCR, Obstacle Detection.
- **Automation & Robotics:** Outdoor AGVs, Outdoor Drones, Last-Mile Delivery AGVs.
- **Smart Surveillance Camera:** Facial Recognition, Day/Night Video Recording, Smart Parking, Pedestrian Safety.
- **Telematics & Fleet Management:** Dashcam, Cargo Monitoring, Pedestrian Safety, Fleet Monitoring, eMirror Cameras.

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1. Introduction

Innova-821CRS is an ONVIF-compliant GigE fixed-focus colour camera based on the Onsemi AR0821 sensor.

The camera incorporates the AR0821 sensor from Onsemi integrated with an onboard Image Signal Processor (ISP) to perform functions such as debayering, demosaicing, colour correction, contrast correction, gamma correction, denoising, lens corrections, and multi-exposure HDR processing. In addition to this, the ISP supports Auto functions such as Auto Exposure (AE), LED Flicker Mitigation (LFM), and Auto White Balance (AWB).

2. Camera Specifications

General Information	
Product Family	Innova series
Camera Model	Vadzo Innova-821CRS
Sensor	
Sensor	AR0821 Sensor from Onsemi
Sensor Format	1/1.7"
Pixel Size	2.1 μm x 2.1 μm
Max Resolution	8MP – 3840(H) x 2160(V)
Shutter	Rolling Shutter
Chroma	Colour
Camera Data	
Interface	100Base-T and 1000base-T modes
Pixel Depth	12bit
Output Format	H.264, H.265, and MJPEG
Exposure Control	Manual Control via software & Auto-Exposure
GPIO	Night Mode IR Illumination with cut filter support LED Board
Camera Hardware	
Lens	S Mount (M12 Standard)

Connector	Standard RJ45 Ethernet Interface
Power Supply	Power over Ethernet (Compliance with PoE 802.3af standard 36 to 57V) or Power over USB (Micro USB)
Power Requirement	Max: 1.75 W at PoE (Without LED Board) Min: 1.05 W at PoE (Without LED Board) Max: 1.9 W at USB, Min: 0.95 W at USB
Operating Temperature	-40°C to 85°C
Dimension	38mm (L) x 38mm (B) Three Board
Weight	25 Grams (Without Lens)
Camera Software	
Video Resolutions	VGA, HD, Full HD and 4K
Video formats	H.264 and H.265
Still Image Resolutions	VGA, HD, and Full HD and 4K
Image Capture formats	JPEG
Image Capture Modes	Software trigger
Camera Controls	Brightness, Exposure, Contrast, Sharpness, Saturation, Gamma, Gain, White Balance
Additional Controls	CBR (Constant Bit Rate), VBR (Variable Bit Rate), Quality Control, Flip, IR Brightness Control along with IR Cut Filter Control* (For Specific Variant)
OS Supported	Windows, Linux, and Android
Conformity	
Conformity	ONVIF Profile S (Streaming), Profile T (Events), Profile G (Recording) compliant; RoHS 3, REACH

3. Supported Resolutions

Single Stream Mode:

Resolution	Frame Rates (FPS) in 100Base-T and 1000base-T modes Mode	
	H.264	H.265
640 x 480 (VGA)	60	60
1280 x 720 (HD)	60	60
1920 x 1080 (FHD)	60	60
3840 x 2160 (4K)	15	15

Multiple Stream Mode:

Resolution	Frame Rates (FPS) in 100Base-T and 1000base-T modes Mode	
	Stream 1	Stream 2
	H.264	H.265
640 x 480 (VGA)	60	60
1280 x 720 (HD)	60	60
1920 x 1080 (FHD)	60	60
3840 x 2160 (4K)	15	15

4. Supported Camera Functions

The List of functions supported by the Innova-821CRS camera are:

- Resolution Control
- Image Format Setting
- Video Format Setting – H.264 and H.265
- Dual Stream capability can be enabled
- Image Capture Software Trigger
- Gain – Auto & Manual
- Exposure – Auto & Manual
- White Balance – Auto & Manual
- Anti Flicker – 50Hz/60Hz
- Contrast Control and Gamma Control
- Hue & Saturation Control
- Sharpness Control

5. GigE Interface

The camera module features a standard RJ45 Ethernet interface, supporting 100Base-T, and 1000Base-T modes for versatile connectivity options. This interface allows for reliable and high-speed data transfer, transmitting video data, control signals, and power over a single Ethernet cable. The GigE interface adheres to GigE Vision standards, ensuring seamless integration with compatible devices. Vadzo recommends using certified Ethernet cables for optimal performance and reliability.

6. Status LED

Status LED's indicate the below:

- Green colour indicates Device is powered ON and connected on 1000base T-mode.
- Orange colour indicates: If the camera connected on 100base T-mode.

7. IR LED Board

The IR LED Board is equipped with advanced IR illumination LEDs and an integrated IR Cut Filter Control for enhanced night vision and image clarity.

IR LED Brightness Control: Adjust the brightness of the IR LEDs easily via the web UI, allowing for optimal illumination based on environmental conditions.

IR Cut Filter Control: The IR Cut Filter operates in two modes

- **Auto Mode:** Automatically switches between day and night modes based on lighting conditions.
- **Manual Mode:** Gives users full control to toggle between day and night modes via the web UI.

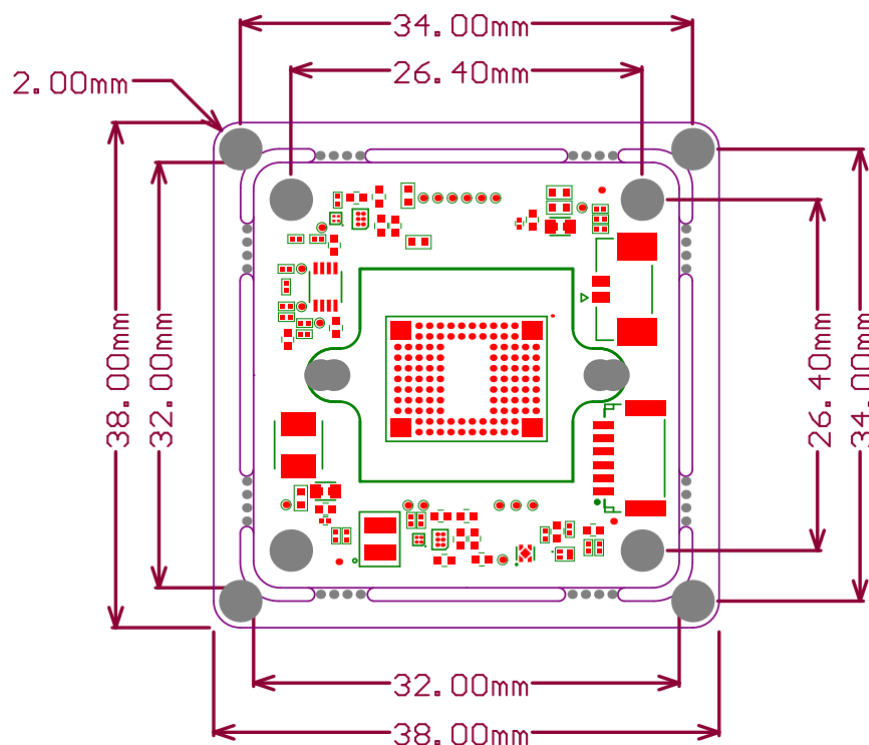
Both brightness and IR Cut Filter configurations can be seamlessly managed through the user-friendly web interface, providing flexible and precise control for various lighting environments.

8. Temperature and Humidity Specifications

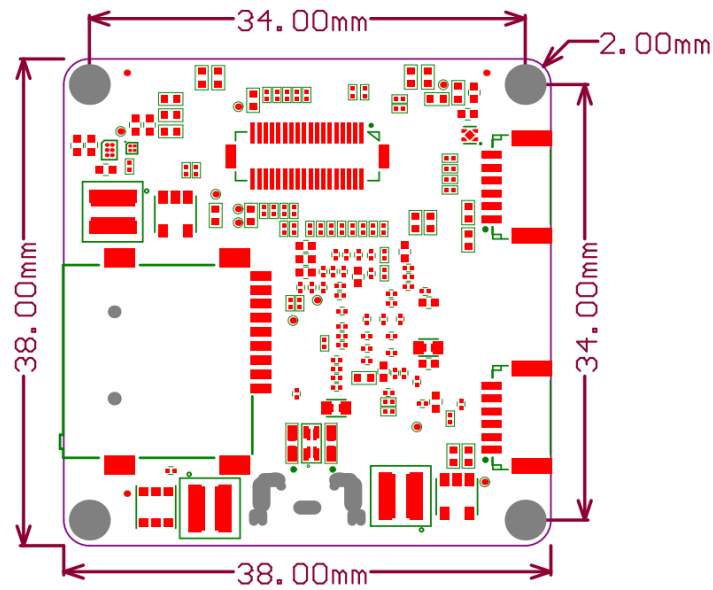
Description	Specification
Operating Temperature	-30°C to 70°C
Storage Temperature	-30°C to 70°C
Humidity	20% to 80%, Relative, non-condensing.

9. Dimensions

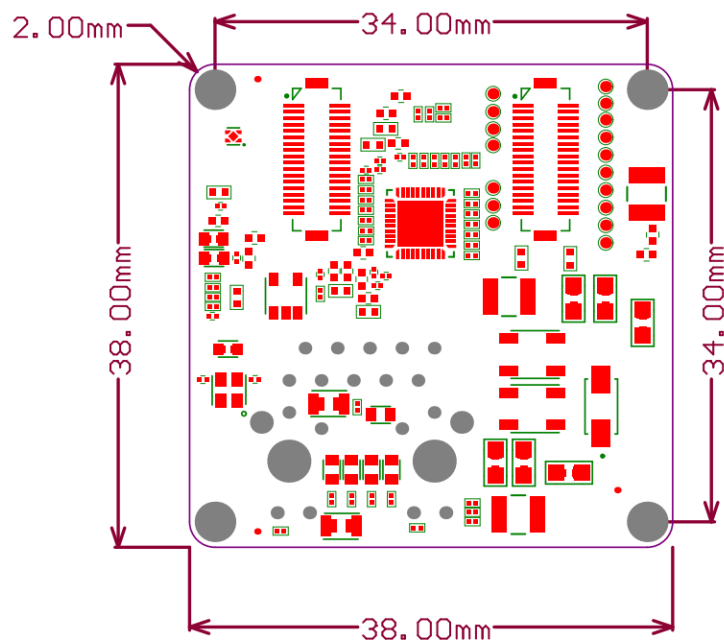
Board 1: Top Board – 2D



Board 2: Base Board - 2D



Board 3: ATR PoE Board - 2D



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