

5 MP Color Low-Noise ONVIF GigE Camera based on Onsemi AR0521 Sensor

Vadzo Innova-521CRS is a 5.1MP low-noise GigE Camera based on Onsemi AR0521 Sensor coupled with a high-performance ISP. The camera delivers max resolution of 5MP and Video streaming of 1080p@60fps and 720p@60fps. The camera comes with a M12/S-Mount lens holder that supports a 79DFOV lens by default. You shall be able to stream video in H.264, H.265, and MJPEG format and capture images in JPEG format.

Key Features

- Sensor Model: AR0521 Onsemi Sensor
- Max Resolution: 5.1MP
- Pixel Size: 2.2 μm x 2.2 μm
- Shutter: Rolling Shutter
- Lens FOV: 79 DFOV
- Compliance: ONVIF, RoHS 3, REACH



Applications

- **Patient Monitoring Camera:** Patient Bedside Monitoring, Fall Detection & Prevention, Baby Monitoring, ICU Monitoring.
- **Smart Parking Camera:** Parking Space Detection, Traffic Flow Management, Vehicle Monitoring, etc.
- **Smart Surveillance Camera:** Facial Recognition, Day/Night Video Recording, Smart Parking, Pedestrian Safety.

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1. Introduction

Innova-521CRS is an ONVIF Compliant GigE Fixed-Focus colour camera based on the Onsemi AR0521 sensor.

The camera incorporates the AR0521 color sensor from Onsemi integrated with an onboard Image Signal Processor (ISP) to perform functions such as Superior Low-light Performance, colour correction, HDR, External Mechanical Shutter, and so on.

2. Camera Specifications

General Information	
Product Family	Innova series
Camera Model	Vadzo Innova-521CRS
Sensor	
Sensor	AR0521 CMOS sensor from Onsemi
Sensor Format	1/2.5"
Pixel Size	2.2 μm x 2.2 μm
Max Resolution	5.1MP – 2592(H) x 1944(V)
Shutter	Rolling Shutter
Chroma	Color
Camera Data	
Interface	100Base-T and 1000base-T modes
Pixel Depth	10bit
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

GPIO connector	Yes available
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	-30°C to 70°C
Dimension	38mm (L) x 38mm (B) Three Board
Weight	25 Grams (Without Lens)
Camera Software	
Video Resolutions	VGA, HD, Full HD, and 5MP
Video formats	H.264, H.265, and MJPEG
Still Image Resolutions	VGA, HD, Full HD, and 5MP
Image Capture formats	JPEG
Image Capture Modes	Software Trigger
Camera Controls	Brightness, Exposure, Contrast, Sharpness, Saturation, Gamma, Gain, White Balance
Extension Controls	ROI-based Auto-Exposure, Denoising, JPEG Compression
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

Resolution	Frame Rates (FPS)
	H.264/H.265/MJPEG
640 x 480 (VGA)	120
1280 x 720 (HD)	60

1920 x 1080 (FHD)	60
2592 x 1944 (5MP)	30

4. Supported Camera Functions

The List of functions supported by the Innova-521CRS camera are:

- Resolution Control
- Image Format Setting
- Video Format Setting – H.264, H.265, and MJPEG
- Image Capture Software Trigger
- Gain – Auto & Manual
- Exposure – Auto & Manual
- White Balance – Auto & Manual
- Anti Flicker – 50Hz/60Hz
- Contrast Control
- Gamma Control
- Hue & Saturation Control
- Sharpness Control
- Q Factor Control
- Digital Pan, Tilt and Zoom

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 LEDs indicate the below:

- Red color indicates the Device is powered ON with no Streaming.
- The yellow color indicates the camera is currently Streaming.

7. General-Purpose I/O Lines

GPIO lines are terminated through Six (6) a pin socket connector from Würth Elektronik part number 665306124022. Refer to the below table for GPIO Connector Pin Numbering and Assignments.

Pin	Line	Function
1	Power	Do not use.
2	-	Do not use*
3	-	Do not use*
4	Input1	General Purpose I/O (GPIO) line with 1.8V tolerant directly connected to MCU Preset: Input Line
5	Output1	General Purpose I/O (GPIO) line with 1.8V tolerant directly connected to MCU Preset: Output Line
6	GND	Ground

**Vadzo engineering team shall be able to enable the IOs on the firmware level as per the end user technical requirements under the purview of Vadzo Imaging customisation program.*

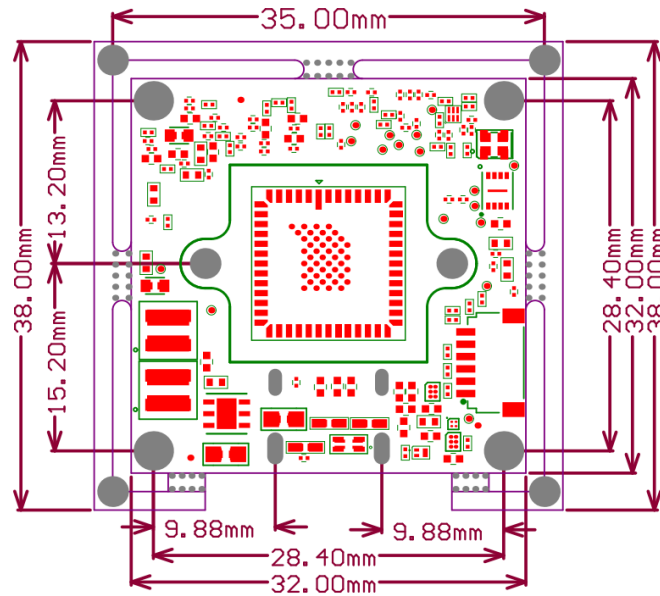
Recommended mating connector from Würth Elektronik part number 665006113322.

8. Temperature and Humidity Specifications

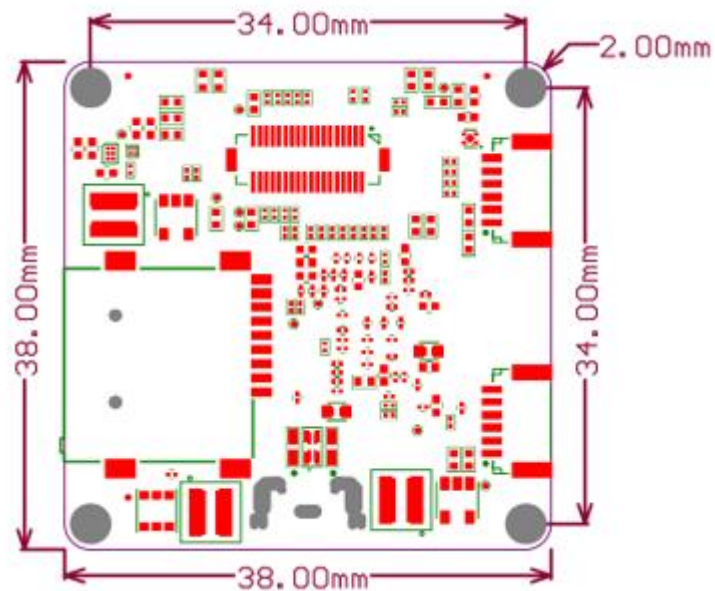
Description	Specification
Operating Temperature	-30 ⁰ C to 70 ⁰ C
Storage Temperature	-30 ⁰ C to 70 ⁰ C
Humidity	20% to 80%, Relative, non-condensing.

9. Dimensions

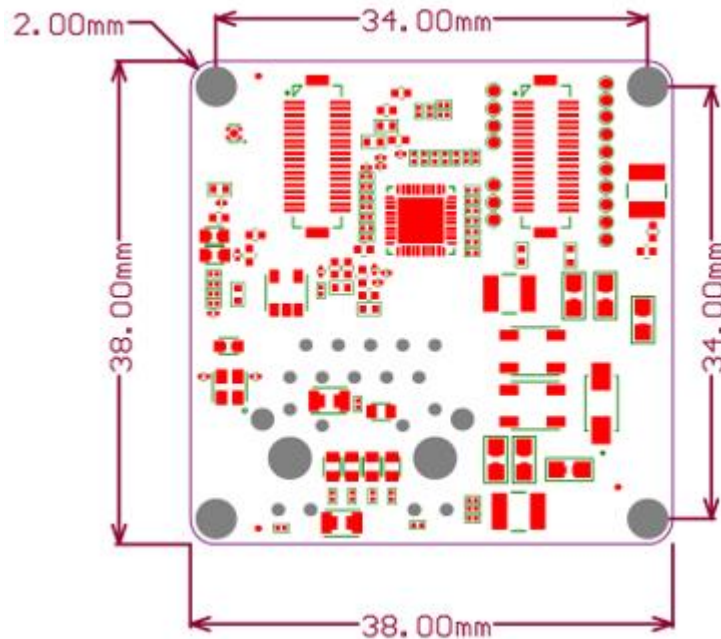
Board 1: Top Board – 2D



Board 2: Base Board - 2D



Board 3: ATR PoE Board - 2D



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