VADZO

FALCON-246CRS

2MP Color UVC USB 3.0 Camera based on Onsemi Hyperlux™ LH AR0246 Sensor

Vadzo's Falcon-246CRS is a 2MP HDR USB 3.0 Camera based on Onsemi AR0246 Hyperlux™ LH product family Imaging Sensor coupled with high-performance ISP. The camera delivers max resolution of 2MP and Video streaming of VGA,720p and 1080p. The camera comes with advanced features such as On-sensor eHDR with 120dB and Adaptive Local Tuning Mapping (ALTM), LI-HDR, eDR, Wake-on-Motion, and so on.

Key Features

- Sensor Model: AR0246 Onsemi Hyperlux™ LH
- Max Resolution: 2MP
- Pixel Size: 2.0 µm x 2.0 µm
- Shutter: Rolling Shutter
- Lens FOV: 74 DFOV
- Compliance: UVC, RoHS 3, REACH

Applications

- **Smart Surveillance Camera:** Facial Recognition, Wearable Body Camera, Access Control Camera, Day/Night Video Recording, Smart Parking, Pedestrian Safety.
- **Telematics Camera:** Dashcam, Driver Monitoring, Cargo Monitoring Camera, Fleet Management.
- **Kiosk Camera:** Document Scanning, OCR, Barcode Reading, Facial Recognition, Demography Analysis.
- **Digital Signage Camera:** Document Scanning, OCR, Barcode Reading, Facial Recognition, Demography Analysis.

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1. Introduction

Falcon-246CRS is a UVC-Compliant Fixed-Focus color USB 3.0 camera based on Onsemi Hyperlux™ LH AR0246 sensor. The sensor supports an On-sensor eHDR with 120dB and Adaptive Local Tuning Mapping (ALTM). The camera works in USB 3.0 Super Speed mode and USB 2.0 High Speed mode.

The camera incorporates the AR0246 Bayer sensor from Onsemi integrated with an on-board Image Signal Processor (ISP) to perform functions such as debayering, demosaicing, color correction, LI-HDR, eDR, Wake-on-Motion, and so on. In addition to this, the ISP also supports functions such as Auto-Exposure, Auto White Balance, LED lowlight & NIR wavelengths.

The Image Signal Processor is integrated with the USB 3.0 controller to provide a UVC-compliant USB 3.0 camera. The USB controller is also programmed to support low-cost ISPs with excellent image quantity.

2. Camera Specifications

General Information	
Product Family	Falcon series
Camera Model	Vadzo Falcon-246CRS
Sensor	
Sensor	AR0246 Sensor from Onsemi
Sensor Format	1/4”
Pixel Size	2.0 µm x 2.0 µm
Max Resolution	2MP – 1920(H) x 1080(V)
Shutter	Rolling Shutter
Chroma	Color
Camera Data	
Interface	USB 3.2 Gen1 Type C Backward compatible to USB 2.0
Pixel Depth	8bit / 10bit
Output Format	YUV422

Exposure Control	Manual Control via software & Auto-Exposure
GPIO	6 pins. 1x Digital Input, 1x Digital Output, 3x NC and GND
Camera Hardware	
Lens	S Mount (M12 Standard)
USB connector	Type C
GPIO connector	Connector on-board: Wurth 665306124022 Mating connector: Wurth 665006113322
Power Supply	USB powered
Power Requirement	Max: 1.75 W at 5VDC Min: 1.05 W at 5VDC
Operating Temperature	-40^{o}C to 85^{o}C
Dimension	38mm (L) x 38mm (B) convertible to 32mm (L) x 32mm (B)
Weight	13 Grams (Without Lens)
Camera Software	
Video Resolutions	VGA, 720p, and 1080p
Video formats	YUV422, MJPEG
Still Image Resolutions	VGA, HD, and Full HD
Image Capture formats	BMP, JPEG
Image Capture Modes	Software Trigger
UVC Camera Controls	Brightness, Exposure, Contrast, Sharpness, Saturation, Gamma, Gain, White Balance, Focus Control
Extension Controls	Denoising, LFM
OS Supported	Windows, Linux, Android (need additional SDK)
Conformity	
Conformity	UVC Compliant, RoHS 3, REACH

3. Supported Resolutions

Resolution	Frame Rates (FPS) in USB 3.0 Mode
	YUV
640 x 480 (VGA)	60
1280 x 720 (HD)	60
1920 x 1080 (FHD)	30

4. Supported Camera Functions

The List of functions supported by the Falcon-246CRS camera are:

- Resolution Control
- Image Format Setting
- Video Format Setting – YUV422
- 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

5. USB 3.0 Interface

The camera module's USB 3.0 connector is a standard USB Type C connector. It provides a nominal 5 Gbit/s SuperSpeed data transfer connection to supply power to the device and to transmit video data and control signals. The power supply must comply with the Universal Serial Bus 3.0 Specification. The nominal operating voltage is 5 VDC, effective on the camera module’s connector.

Connection assignments and numbering adhere to the Universal Serial Bus 3.0 standard. USB Certified 3.0 Gen 1 or higher cables to be used. Vadzo does not recommend non-certified USB cables.

6. Status LED

Status LEDs indicate the below:

- Red color indicates Device is powered ON with no Streaming.
- Yellow color indicates: Camera is currently Streaming.

7. General Purpose I/O Lines

GPIO lines are terminated through Six (6) 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.*

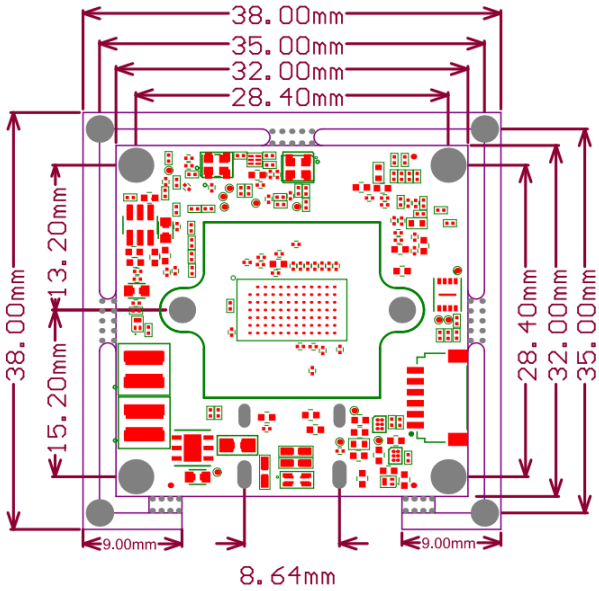
Recommended mating connector from Würth Elektronik part number 665006113322.

8. Temperature and Humidity Specifications

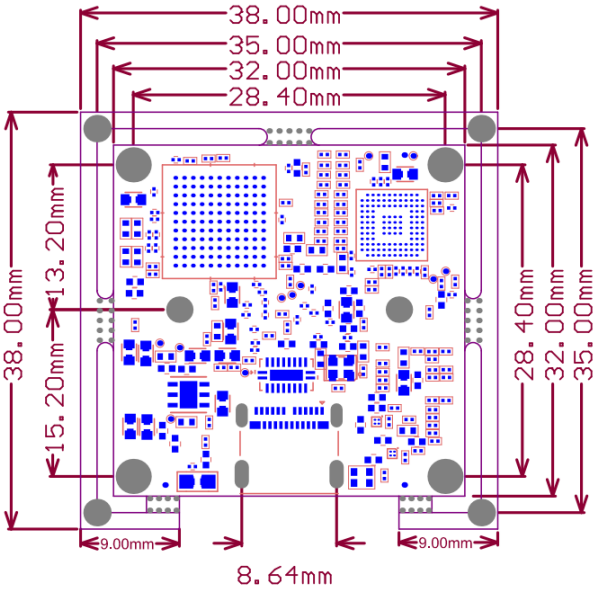
Description	Specification
Operating Temperature	-40^{0}C to 85^{0}C
Storage Temperature	-40^{0}C to 85^{0}C
Humidity	20% to 80%, Relative, non-condensing.

9. Dimensions

Board Top Side – 2D



Board Bottom Side - 2D



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