

2.3MP Color USB 3.0 UVC Camera based on Onsemi AR0235 Sensor

Vadzo's Falcon-235CGS is a high-performance 2.3MP USB 3.2 Gen1 color camera based on the onsemi® Hyperlux™ SG, designed to meet the demands of motion-critical imaging systems. Featuring a global shutter architecture, it delivers low-noise, distortion-free image capture even in high-speed and fast-motion scenarios. Equipped with a UVC-compliant USB Type-C interface, Falcon-235CGS supports true plug-and-play connectivity across Windows, Linux, and Android platforms. The camera offers advanced capabilities including Dynamic ROI video streaming, precise exposure control, low operational power consumption, and high frame rates of up to 120 FPS. The S-Mount (M12) lens Capability that supports 74DFOV lens. You can stream video in UYVY and MJPEG format and capture images in BMP and JPEG format.

Key Features

- Sensor Model: AR0235 Onsemi Sensor
- Max Resolution: 2.3MP
- Pixel: 2.8 μm x 2.8 μm
- Shutter: Global Shutter
- Lens FOV: 74DFOV
- Compliance: UVC, RoHS 3, REACH



Applications

- **Robotics Camera:** Object Scanning, Document Scanning, OCR, Obstacle Detection.
- **Smart Surveillance Camera:** Facial Recognition, Day/Night Video Recording, Smart Parking, Pedestrian Safety.
- **Kiosk Camera:** Document Scanning, OCR, Barcode Reading, Facial Recognition, Demography Analysis.
- **Digital Signage Camera:** Document Scanning, OCR, Barcode Reading, Facial Recognition, Demography Analysis.

INDEX

1. Introduction 3

2. Camera Specifications 3

3. Supported Resolutions 5

4. Supported Camera Functions 5

5. USB 3.0 Interface 5

6. Status LED 6

7. General-Purpose I/O Lines 6

8. Temperature and Humidity Specifications 6

9. Dimensions..... 7

 Board Top Side - 2D 7

 Board Bottom Side - 2D 7

1. Introduction

Falcon-235CGS is a UVC-compliant USB 3.0 Fixed-Focus Global Shutter color camera based on the Onsemi AR0235 sensor. The camera is designed to be backward compatible with USB 2.0 as well.

The camera incorporates the AR0235 CMOS Sensor from Onsemi Hyperlux™ SG integrated with an on-board Image Signal Processor (ISP) to perform functions such as Auto functions such as Auto-Exposure, and Auto-White Balance, debayering, demosaicing, color correction, contrast correction, gamma correction, denoising, lens corrections, and so on. The camera works in USB 3.0 Super Speed mode and USB 2.0 High Speed mode.

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 the HID Pipeline which shall support UVC extension functions that are not supported in the standard UVC drivers.

2. Camera Specifications

General Information	
Product Family	Falcon series
Camera Model	Vadzo Falcon-235CGS
Sensor	
Sensor	AR0235 CMOS Sensor from Onsemi
Sensor Format	1/2.8"
Pixel Size	2.8 μm x 2.8 μm
Max Resolution	2.3MP – 1920(H) x 1200(V)
Shutter	Global Shutter
Chroma	Color
Camera Data	
Interface	USB 3.2 Gen1 is Backward compatible with USB 2.0
Pixel Depth	8bit / 10bit
Output Format	UYVY and MJPEG

Exposure Control	Manual Control via software & Auto-Exposure
GPIO	6 pins. NC.
Camera Hardware	
Lens	S Mount Lens with M12 lens holder
USB connector	Type C
GPIO connector	Present
Power Supply	USB powered
Power Requirement	Max: 1.75 W at 5VDC Min: 1.05 W at 5VDC
Operating Temperature	-40°C to 85°C
Dimension	38mm (L) x 38mm (B) convertible to 32mm (L) x 32mm (B)
Weight	13 Grams
Camera Software	
Video Resolutions	VGA, HD, FHD, FULL
Video formats	UYVY and MJPEG
Still Image Resolutions	VGA, HD, FHD, FULL
Image Capture formats	BMP and JPEG
Image Capture Modes	Software Trigger
UVC Camera Controls	Brightness, Exposure, Contrast, Sharpness, Saturation, Gamma, Gain, White Balance
Additional Controls	ROI-based Auto-Exposure, JPEG Compression Control, Denoising, Flip
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	
	UYVY	MJPEG
640 x 480 (VGA)	60, 120	60, 120
1280 x 720 (HD)	60, 120	60, 120
1920 x 1080 (FHD)	30, 60	30, 60
1920 x 1200 (FULL)	15, 30	30

4. Supported Camera Functions

The List of functions supported by the Falcon-235CGH camera are:

- Resolution Control
- Image Format Setting – UYVY & MJPEG
- Video Format Setting – UYVY & MJPEG
- Image Capture Software Trigger
- Gain – Auto & Manual
- Exposure – Auto & Manual
- White Balance – Auto & Manual
- Anti Flicker – 50Hz/60Hz
- Contrast Control
- Gamma Control
- 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 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) pin socket connectors 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

**The 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 the Vadzo Imaging customisation program.*

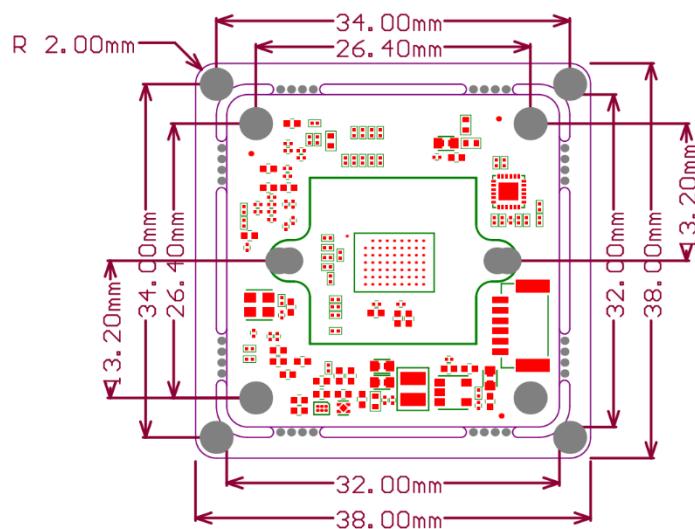
Recommended mating connector from Würth Elektronik part number 665006113322.

8. Temperature and Humidity Specifications

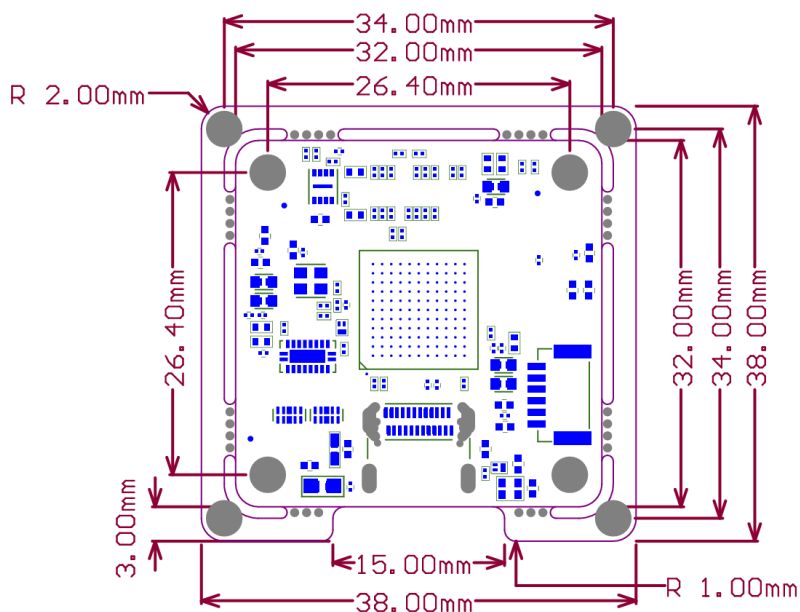
Description	Specification
Operating Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Humidity	20% to 80%, Relative, non-condensing.

9. Dimensions

Board Top Side - 2D



Board Bottom Side - 2D



IMPORTANT NOTICE AND DISCLAIMER

Vadzo Imaging products are sold by description only. Vadzo Imaging reserves the right to change the information in this document, including URL references and/or specifications is subject to change without notice. Customers should obtain the latest relevant information and data sheets before placing orders and should verify that such information is current and complete.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

THIS DOCUMENT IS PROVIDED AS IS WITH NO WARRANTIES WHATSOEVER, INCLUDING ANY WARRANTY OF MERCHANTABILITY, NON-INFRINGEMENT, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY WARRANTY OTHERWISE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE.

All liability, including liability for infringement of any proprietary rights, relating to the use of information in this document is disclaimed. No licenses express or implied, by estoppel or otherwise, to any intellectual property rights are granted herein.

All trade names, trademarks, and registered trademarks mentioned in this document are the property of their respective owners and are hereby acknowledged.



Copyright © 2017–2026 Vadzo Imaging. All Rights Reserved.