



# FALCON-900MGS

## 3.2MP Monochrome USB 3.0 UVC Camera based on Sony Pregius S IMX900 Sensor

Vadzo's Falcon-900MGS is a 3MP monochrome global shutter USB 3.0 camera powered by the Sony® Pregius S™ IMX900 CMOS sensor, designed for high-speed and high-precision imaging. With Quad HDR (up to 120dB), NIR sensitivity, and fast auto-exposure technology, it delivers exceptional sharp high-quality images, even in challenging lighting conditions. The camera's Quad Shutter Control and global shutter technology ensure distortion-free imaging, even in fast-moving subjects & high-speed environments. You shall be able to stream video in Y8 & Y12 format and capture images in BMP and RAW format respectively.

### Key Features

- Sensor Model: Sony® Pregius S™ IMX900
- Max Resolution: 3.2 MP
- Pixel: 2.25  $\mu\text{m}$  x 2.25  $\mu\text{m}$
- Shutter: Global Shutter
- Lens FOV: 74 DFOV
- Compliance: UVC, RoHS 3, REACH



### Applications

- **Industrial Automation Cameras:** Barcode reading camera, Picking robot Camera, Autonomous Guided Vehicle Camera, Embedded vision camera.
- **Warehouse Robotics Cameras:** Object Scanning, Document Scanning, OCR, Obstacle Detection.
- **Smart Surveillance Cameras:** Facial Recognition, Day/Night Video Recording, Smart Parking, Pedestrian Safety.

## INDEX

|                                                   |   |
|---------------------------------------------------|---|
| <b>1. Introduction</b>                            | 3 |
| <b>2. Camera Specifications</b>                   | 3 |
| <b>3. Supported Resolutions</b>                   | 5 |
| <b>4. Supported Camera Functions</b>              | 5 |
| <b>5. USB 3.0 Interface</b>                       | 5 |
| <b>6. Status LED</b>                              | 5 |
| <b>7. General Purpose I/O Lines</b>               | 6 |
| <b>8. Temperature and Humidity Specifications</b> | 6 |
| <b>9. Dimensions</b>                              | 7 |
| Board Top Side – 2D                               | 7 |
| Board Bottom Side - 2D                            | 7 |

## 1. Introduction

Falcon-900MGS is a UVC Compliant USB 3.0 Fixed-Focus Global Shutter monochrome camera based on Sony® Pregius S™ IMX900 sensor. The camera is designed to be backward compatible with USB 2.0 as well. The camera supports key features like Quad HDR (up to 120dB), Fast Auto-Exposure, Superior NIR Sensitivity, Global shutter, and so on. It supports image capture in BMP(Y8) & RAW(Y12) and video streaming in Y8 & Y12 formats.

The Image Signal Processor is integrated with the USB 3.0 controller to provide UVC Compliant USB 3.0 camera. The USB controller is also programmed to support HID Pipeline that 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-900MGS                         |
| Sensor              |                                             |
| Sensor              | IMX900 CMOS Sensor from Sony® Pregius S™    |
| Sensor Format       | 1/3.1"                                      |
| Pixel Size          | 2.25 µm x 2.25 µm                           |
| Max Resolution      | 3.2 MP – 2064(H) x 1552(V)                  |
| Shutter             | Global Shutter                              |
| Chroma              | Mono                                        |
| Camera Data         |                                             |
| Interface           | USB 3.2 Gen1 Backward compatible to USB 2.0 |
| Pixel Depth         | 8bit / 12bit                                |
| Output Format       | Y8, Y12                                     |
| Exposure Control    | Manual Control via software & Auto-Exposure |

|                         |                                                                                |
|-------------------------|--------------------------------------------------------------------------------|
| GPIO                    | 6 pins. 1x Digital Input, 1x Digital Output, 2x NC, 1xGPIO and GND             |
| <b>Camera Hardware</b>  |                                                                                |
| Lens                    | S Mount (M12 Standard)                                                         |
| USB connector           | Type C                                                                         |
| GPIO connector          | Connector on-board: Wurth 665306124022<br>Mating connector: Wurth 665006113322 |
| Power Supply            | USB powered                                                                    |
| Power Requirement       | Max: 1.75 W at 5VDC<br>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 (Without Lens)                                                        |
| <b>Camera Software</b>  |                                                                                |
| Video Resolutions       | VGA, HD, FHD and FULL                                                          |
| Video formats           | Y8 and Y12                                                                     |
| Still Image Resolutions | VGA, HD, FHD and FULL                                                          |
| Image Capture formats   | BMP(Y8) & RAW(Y12)                                                             |
| Image Capture Modes     | Software trigger                                                               |
| UVC Camera Controls     | Brightness, Manual and Auto Exposure                                           |
| OS Supported            | Windows, Linux, Android (need additional SDK)                                  |
| <b>Conformity</b>       |                                                                                |
| Conformity              | UVC Compliant, RoHS 3, REACH                                                   |

## 3. Supported Resolutions

| Resolution                             | Frame Rates (FPS) in USB 3.0 |         | Frame Rates (FPS) in USB 2.0 |     |
|----------------------------------------|------------------------------|---------|------------------------------|-----|
|                                        | Y8                           | Y12     | Y8                           | Y12 |
| <b>640 x 480 (VGA)</b>                 | 60 & 30                      | 60 & 30 | 60 & 30                      | 30  |
| <b>1280 x 720 (HD)</b>                 | 60 & 30                      | 60 & 30 | 30                           | 15  |
| <b>1920 x 1080 (FHD)</b>               | 60 & 30                      | 45 & 30 | 15                           | 10  |
| <b>2064 x 1552 (FULL)</b>              | 50                           | 30      | 10                           | 10  |
| <b>1032 x 776<br/>(Custom for HDR)</b> | 50                           | -       | -                            | -   |

## 4. Supported Camera Functions

The List of functions supported by the Falcon-900MGS camera are:

- Resolution Control
- Image Format Setting – BMP(Y8) & RAW(Y12)
- Video Format Setting – Y8 & Y12
- Image Capture Software Trigger
- Exposure – Auto & Manual
- Brightness 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 LED's 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   | NC      | Do not use*                                                                                      |
| 2   | Output1 | Strobe                                                                                           |
| 3   | NC      | Do not use*                                                                                      |
| 4   | GPIO    | General Purpose I/O (GPIO) line with 1.8V tolerant directly connected to MCU<br>Preset: I/O Line |
| 5   | Input1  | Trigger                                                                                          |
| 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.*

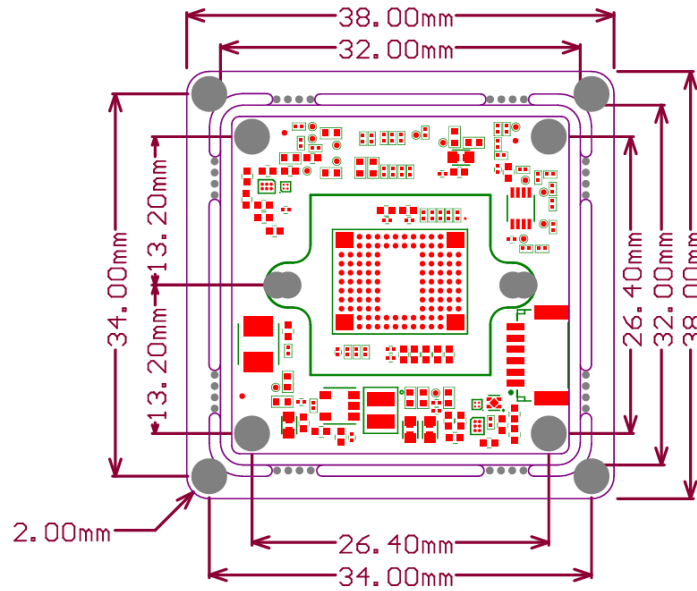
Recommended mating connector from Würth Elektronik part number 665006113322.

## 8. Temperature and Humidity Specifications

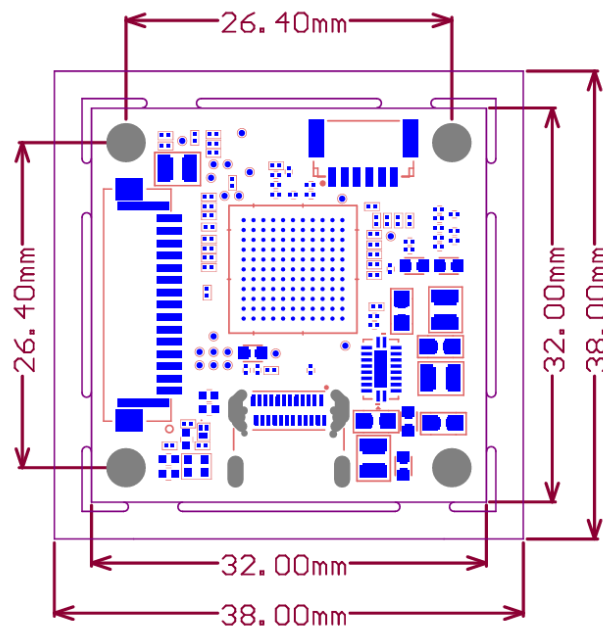
| Description           | Specification                         |
|-----------------------|---------------------------------------|
| Operating Temperature | -40°C to 85°C                         |
| Storage Temperature   | -40°C to 85°C                         |
| Humidity              | 20% to 80%,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

## 9. Dimensions

### Board Top Side – 2D



### Board Bottom Side - 2D



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