DVS 240

The DVS 240 is a 240 x 180 pixels DVS event camera with USB 3.0 interface.

Specifications

DVS Resolution	240 x 180 pixels
Frame Resolution	240 x 180 pixels, Grayscale, calibration mode only
DVS Dynamic range	120 dB
Min. latency	~ 12 us @ 1 klux with optimized biases
Lens mount	CS-mount
Connectors / Power	USB 3.0 micro
Bandwidth	12 MEvents / second
Software	DV-Platform
Power consumption	< 180mA @ 5V DC
Dimensions	H 40 x W 60 x D 25 [mm]
Weight	75g (without lens)
Hardware multi-camera sync	Supported (HiRose Connector)
IMU	6-Axis Built-in
Case	Machined polycarbonate, 4 mounting points
Tripod mount	Whitworth ¼" female
APS Frame Shutter	Configurable, Global or Rolling Shutter
CMOS Technology	0.18 um 1P6M MIM CIS
Chip size	5 x 5 [mm]
Pixel size	18.5 x 18.5 [um]
Array size	3.33 x 4.44 [mm]
Fill factor	22 %
Pixel complexity	48 transistors, 2 capacitors, 1 photodiode with micro-lens
Chip voltages	1.8 V and 3.3 V
Chip power consumption	5-14mW (activity dependent)

Specifications not guaranteed. All specifications subject to change without notice

Latest change: 15 August 2019

Physical dimensions

The DVS 240 camera is housed in a machined polycarbonate case. The case dimensions are depicted below.

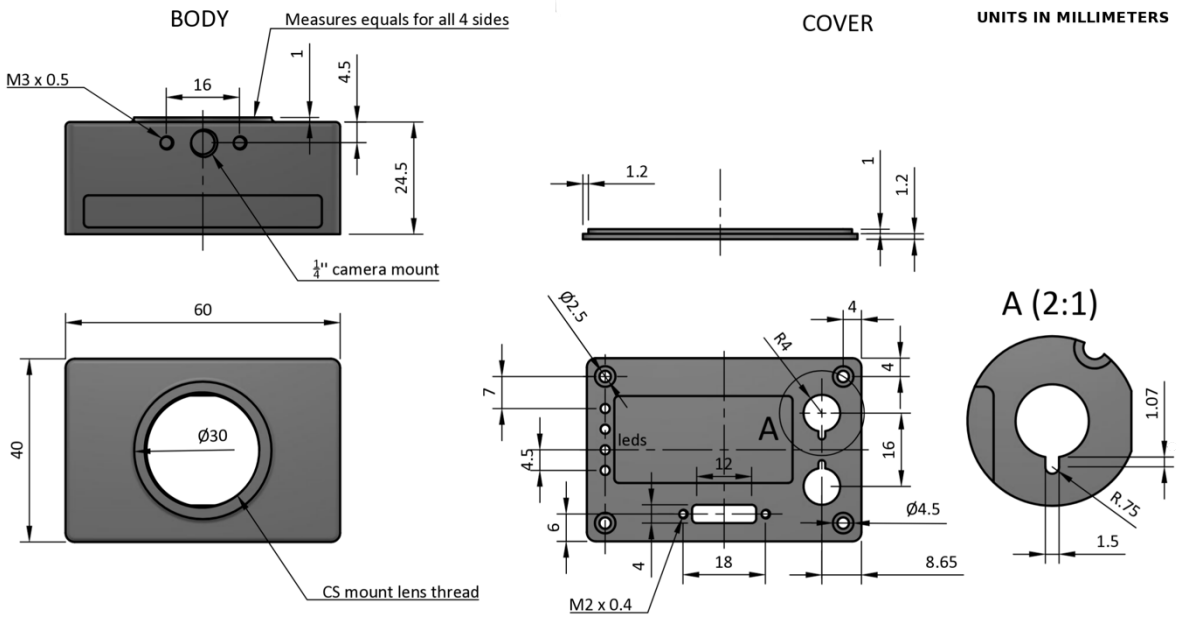

Figure 1 Dimensions of the DVS 240 camera case

Connectors

DVS 240 has three connectors on the back. One USB 3.0 connector for data and power, and two sync ports for syncing the camera with other cameras or external trigger devices

Figure 2 Connectors on the back of DVS 240

USB 3.0 connector

The USB 3.0 connector is used for data and power. Any USB 3.0 or USB 2.0 cable with micro B connector can be used. However, USB 3.0 speeds are only supported when using a USB 3.0 cable. Usage of cables with appropriate locking screws are recommended for a more secure and robust connection.

Sync connectors

The synchronization connectors are HiRose HR10A-7R-4P (male, SYNC OUTPUT) and HR10A-7R-4S (female, SYNC INPUT) connectors. Cables should use the matching connectors HR10A-7P-4S (female) and HR10A-7P-4P (male).

Please note that to keep full electrical isolation between different cameras, the cable should not be shielded, or if it is, the shield should not connect one end of the cable to the other.

Input signals can be 3.3V or 5V, depending on the VDD_IN supplied externally, output signals are 5V, as is VDD_OUT. If you chain cameras together for synchronization, the clock and VDD will be 5V, for example.

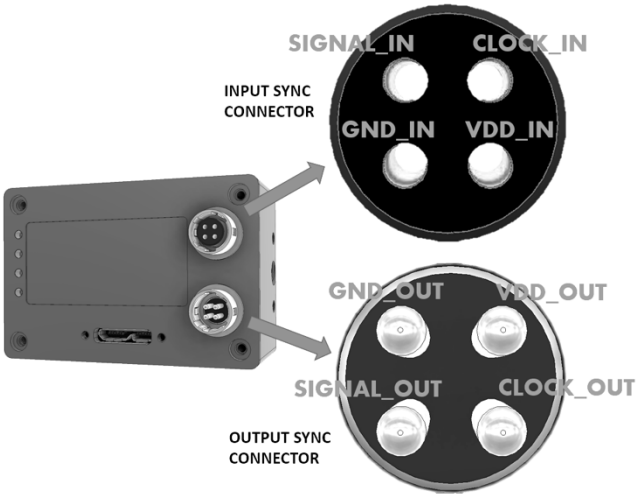

Figure 3 Sync connector pinouts on DVS 240

Synchronization connectors pinout is shown in the image above. Please note that all the pins in the SYNC IN ports are isolated from the SYNC OUT ports.

Optics

The camera lens mount is designed to accommodate CS-mount lenses. Other lenses can be accommodated by using adapters. The standard lens shipped with the camera is a C-mount lens and ships with an adapter. The chip requires a lens designed for 1/3-inch imagers.

The field of view (FOV) depends on the focal length L of the lens and the size W of the pixel array. It is computed from geometrical optics, not accounting for any lens distortion. The angular field of view ($AFOV$) is given by:

$$AFOV = 2\tan^{-1}\left(\frac{W}{2L}\right)$$

The linear FOV ($LFOV$) at a distance D from the lens is given by

$$LFOV = D * W/L$$

The pixel array has a resolution of 240 x 180 and measures:

- Width: 240 pixels x 18.5 um/pixel = 4.44 mm
- Height: 180 pixels x 18.5 um/pixel = 3.33 mm

The following table shows the horizontal and vertical field of view in degrees and its size at various distances for different common focal lengths. Computations of Field of View

Lens focal length [mm]		3.5	4.5	6	12
Angular field of view horizontal [deg]		64.6	52.3	40.5	20.9
Angular field of view vertical [deg]		50.6	40.4	30.9	15.7
Angular field of view diagonal [deg]		76.6	63.1	49.4	25.9
Linear field of view horizontal [cm]	dist. 10 cm	12.6	9.8	7.4	3.7
	dist. 30 cm	37.9	29.5	22.1	11.1
	dist. 100 cm	126.3	98.3	73.7	36.8

Software

DVS 240 is compatible with DV software platform. Go to inivation.com to access the newest version of the software and SDK.

Serial number

The serial number of the device can be found on the case, usually a four-digit number printed on a black label located at the top of the camera case.

Package contents

DVS 240 ships with the following items

- DVS 240 camera
- USB 3.0 cable, 1m with locking screws
- Varifocal C mount lens
- CS to C mount lens adapter