

MARS-420-238U3DM(-UV)

MARS Series 4.2MP CMOS USB3.2 sCMOS Camera



The MARS-420-238U3DM(-UV) high-performance sCMOS camera is equipped with a GSENSE6504BSI sensor, capturing broadband spectral images from 200nm to 1100nm. It adopts a USB3.2 interface for high-speed data transmission, and delivers high dynamic range and outstanding quantum efficiency. Four-sided mounting holes provide maximum installation flexibility for the camera, and locking screws ensure stable operation in harsh industrial environments. This makes it an ideal choice for high-performance imaging in scientific research and industrial scenarios, suited for applications requiring high-speed, high-dynamic and high-sensitivity.

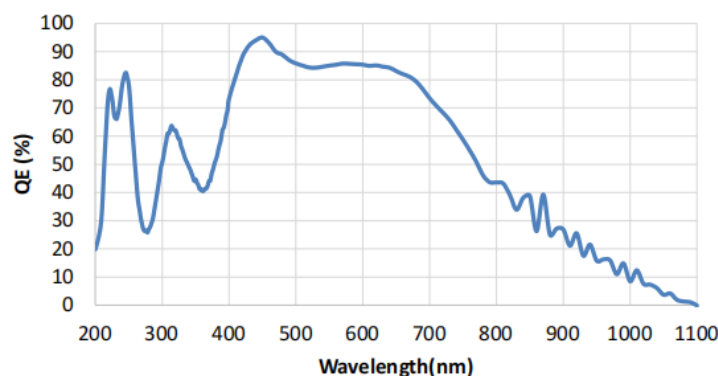
Applications

Suitable for applications such as industrial inspection, semiconductor inspection, biomedical, fluorescence imaging, gene sequencing, scientific research, education and so on

Features

- Gainmode provides multiple mode options for high-speed, high-dynamic, and high-sensitivity applications.
- 16 bit sensor bit depth, 70.94dB high dynamic range
- 95% @ 450nm quantum efficiency
- Time Stamp, ROI, Binning, Reverse X/Y, Sequencer Control
- Timer, Counter, LUTs, User Set Control, Gamma and Black Level
- Remove Parameter Limit
- Static Defect Correction, Sharpness

Spectral Response



Specifications

Model	MARS-420-238U3DM	MARS-420-238U3DM-UV
Resolution	2048(H) × 2048(V)	
Sensor	Gpixel GSENSE6504BSI Scientific Rolling shutter CMOS	
Max. Image Circle	1.2"	
Pixel Size	6.5μm × 6.5μm	
Frame Rate	119fps @ HighDynamicRange; 238.2fps @ HighSpeed; 158.9ps @ HighSensitivity	
Quantum Efficiency	95% @ 450nm	
ADC	12bit	
Pixel Bit Depth	8bit / 12bit / 16bit-HDR	
Mono/Color	Mono	UV
Pixel Formats	Mono8 / Mono12 / Mono12p @ HighSpeed Mono12 / Mono12p @ HighSensitivity Mono16 @ HighDynamicRange	
SNR	sensor temp : 38.1°C 41.56dB @ HighDynamicRange 30.29dB @ HighSpeed 30.06dB @ HighSensitivity	
Fullwell Capacity	sensor temp : 38.1°C 14315e- @ HighDynamicRange 1069e- @ HighSpeed 1014e- @ HighSensitivity	
Readout Noise	sensor temp : 38.1°C 3.53e- @ HighDynamicRange 0.81e- @ HighSpeed 0.72e- @ HighSensitivity	
Dynamic Range	sensor temp : 38.1°C 70.94dB @ HighDynamicRange 57.32dB @ HighSpeed 57.32dB @ HighSensitivity	
Dark Current	sensor temp : 38.1°C 167.55±29.22e-/s @ HighDynamicRange 167.29±2.12e-/s @ HighSpeed 177.41±0.52e-/s @ HighSensitivity	
Exposure Time	Standard: 20μs~0.5s, Actual Steps: 1 row period	
Gain	AnalogAll: 10.5dB / 13.5dB, Default: 10.5dB (Supported only in HighSpeed mode) DigitalAll: 0dB ~ 24dB, Default: 0dB, Steps: 0.1dB	
Binning	FPGA: 1×1, 1×2, 1×4, 2×1, 2×2, 2×4, 4×1, 4×2, 4×4	
Decimation	-	
Synchronization	Hardware trigger, software trigger	
Acquisition Control	Single frame, Continuous, Software trigger, Hardware trigger	

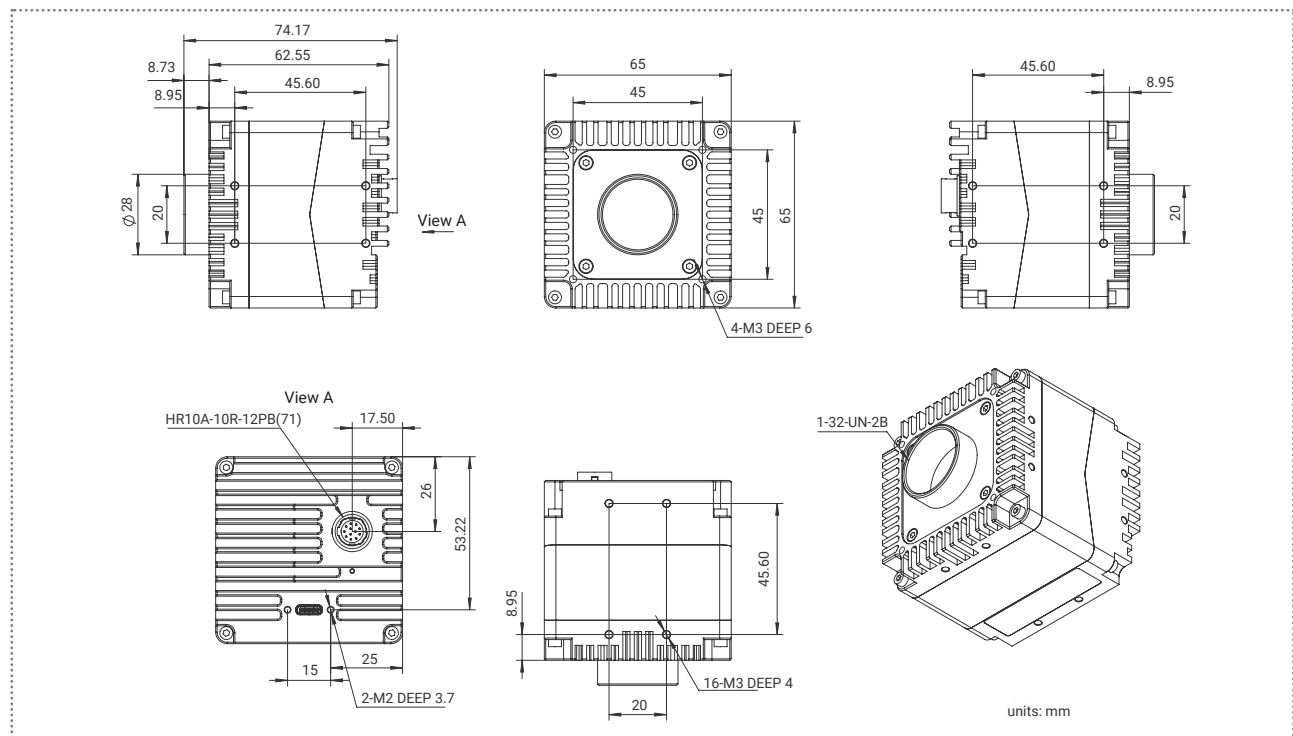
Model	MARS-420-238U3DM	MARS-420-238U3DM-UV
Reverse X/Y	Reverse X/Y	
I/O Interface	1 input and 1 output with opto-isolated, 1 bidirectional GPIO	
Data Interface	USB3.2 Gen2 × 1	
Power Supply	12VDC-10% ~ 24VDC+10% power supply	
Typical Power	7.3W @ 12VDC	
Operating Temp.	0° C ~ +45° C	
Storage Temp.	19° C ~ +25° C	
Operating Humidity	10% ~ 60%	
Storage Rel. Humidity	40% ~ 60%	
Lens Mount	C / M42	
Dimensions	65(W) × 65(H) × 62.55(L) mm (without lens adapter or connectors)	
Weight	369g	
Filters / Transparent Glass	Visible Light Filter	UV Light Filter (200nm~1100nm)
Software	3rd-party software such as HALCON, MERLIC and LabVIEW	
OS	32bit / 64bit Windows	
Conformity	CE, RoHS, FCC, ICES, UKCA, USB3 Vision®, GenICam®	

I/O Interface

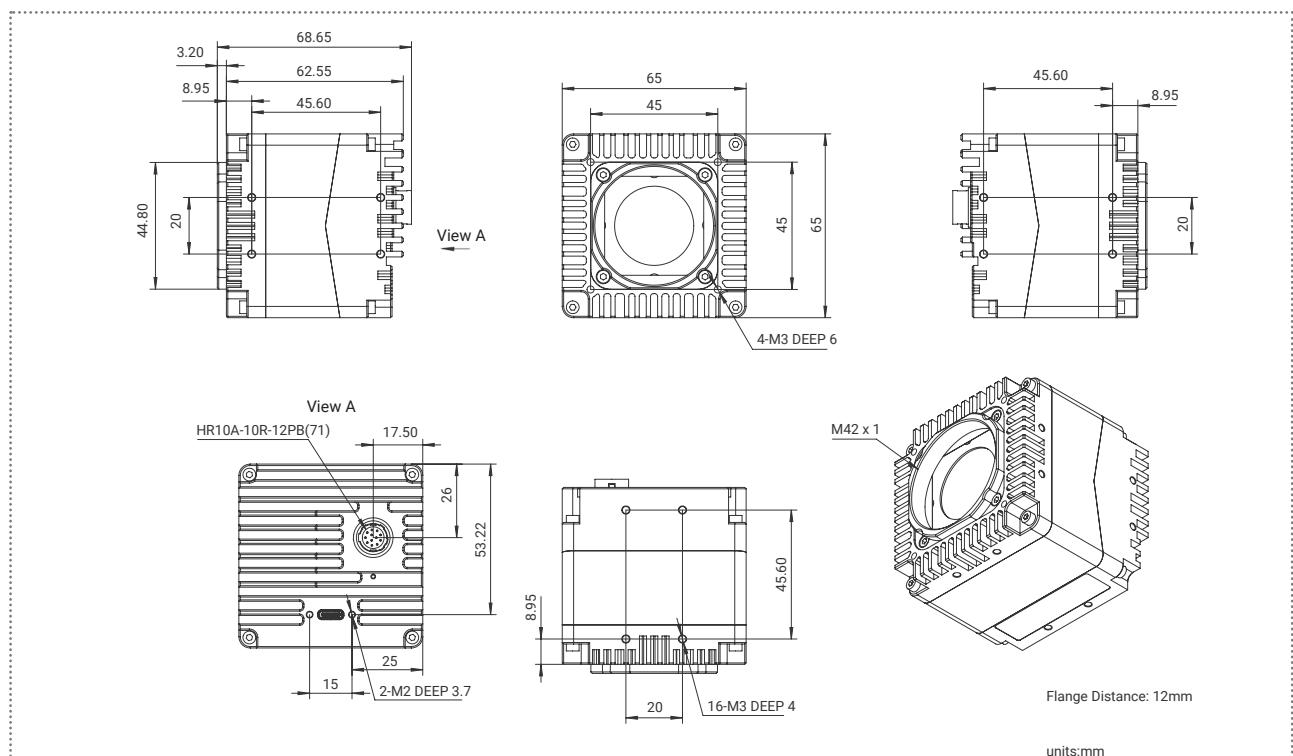


Pin	Definition	Description
1	Line 0+	Opto-isolated input +
2	GND	PWR GND & GPIO GND
3	Line 0-	Opto-isolated input -
4	POWER_IN	Camera external power, +12V DC~+24V DC
5	Line 2	GPIO input/output
6	RS232 Rx	RS232 receive
7	Line 1-	Opto-isolated output -
8	Line 1+	Opto-isolated output +
9	GND	PWR GND & GPIO GND
10	GND	PWR GND & GPIO GND
11	POWER_IN	Camera external power, +12V DC~+24V DC
12	RS232 Tx	RS232 transmit

Technical Drawing



C-MOUNT



M42-MOUNT

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