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VA-1MC / VA-2MC

VA-4MC / VA-8MC

VA-16MC / VA-29MC

1 / 2 / 4 / 8 / 16 / 29 MEGAPIXEL RESOLUTION

HIGH-SPEED PROGRAMMABLE DIGITAL CAMERA



VA Series cameras are progressive scan high performance digital cameras based on the 5.5  $\mu\text{m}$  4-tap CCD sensor technology of ON Semiconductor (formerly Truesense Imaging, Inc.). ON Semiconductor's 4-tap readout structure results in 2 $\times$  the frame rate as compared to previous generation image sensors. Frame rates as high as 125 frames per second at 1 million pixel resolution can be achieved. This camera series is ideal for demanding applications such as semi-conductor inspection, electronics inspection, aerial imaging inspection, and FPD inspection.

**VIEWORKS**

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1 / 2 / 4 / 8 / 16 / 29 MEGAPIXEL RESOLUTION – HIGH-SPEED PROGRAMMABLE DIGITAL CAMERA

## Main Features

- \* ON Semiconductor Progressive Scan IT CCD Imager
- \* 14 bit A/D Converter
- \* 8/10/12 bit Data Output
- \* 1/2/4 Tap for Full Resolution Readout from 4.8 up to 120 fps
- \* Field Upgradable Firmware
- \* Flat Field Correction
- \* Pixel Defect Correction
- \* Excellent Anti-blooming and Anti-smear

## Applications

- \* Machine Vision Inspection
- \* Research and Scientific Imaging
- \* Microscopy and Metrology
- \* Remote Sensing and Scanning
- \* Intelligent Transport System (ITS)

## Specifications

Model	VA-1MC-M/C 120	VA-2MC-M/C 68	VA-4MC-M/C 32
Resolution (H × V)	1024 × 1024	1600 × 1200	2336 × 1752
Sensor (ON Semiconductor)	KAI-01050	KAI-02050	KAI-04050
Sensor Size (Optical Format)	1/2"	2/3"	1"
Sensor Type	Progressive Scan Interline Transfer CCD		
Pixel Size	5.5 μm × 5.5 μm		
Sensor Output	1, 2 or 4 Tap		
Interface	Camera Link		
Max. Frame Rate	125 fps	70 fps	33 fps
Exposure Time	1/100000 ~ 7 s (10 μs step)		
Partial Scan (Max. Speed)	337 fps at 120 Lines	183 fps at 150 Lines	142 fps at 200 Lines
Pixel Data Format	8 / 10 / 12 bit		
Electronic Shutter	Global Shutter		
Data Output Pixel Clock Speed	40 MHz (1 or 2 Tap) / 80 MHz (4 Tap)		
Trigger Mode	Free-Run, Standard, Fast, Double, Overlap Programmable Exposure Time and Trigger Polarity		
Dynamic Range	64 dB		
Binning	×1, ×2, ×4 (Horizontal and Vertical Independent)		
Lookup Table	User Defined Lookup Table (LUT)		
Analog Offset	Adjustable (0 ~ 127 LSB at 12 bit, 256 steps)		
Analog Gain	0 ~ 32 dB, 900 steps		
Dimension / Weight	68 mm × 68 mm × 54 mm, 420 g (with C-mount) 68 mm × 68 mm × 83 mm, 460 g (with F-mount)		
Temperature	Operating: -5°C ~ 40°C, Storage: -40°C ~ 70°C		
Lens Mount	C or F-mount, Custom mount available upon request		
Power	10 ~ 14 V DC, Typ. 6 W	10 ~ 14 V DC, Typ. 6.5 W	10 ~ 14 V DC, Typ. 6.5 W
Compliance	CE, FCC, KC		
Configuration Software	Configurator		

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## Specifications

Model	VA-8MC-M/C 16	VA-16MC-M/C 8	VA-29MC-M/C 5
Resolution (H × V)	3296 × 2472	4896 × 3264	6576 × 4384
Sensor (ON Semiconductor)	KAI-08051	KAI-16050	KAI-29050
Sensor Size (Optical Format)	4/3"	32 mm (APS-H)	35 mm
Sensor Type	Progressive Scan Interline Transfer CCD		
Pixel Size	5.5 μm × 5.5 μm		
Sensor Output	1, 2 or 4 Tap		
Interface	Camera Link		
Max. Frame Rate	16 fps	8 fps	4.8 fps
Exposure Time	1/100000 ~ 7 s (10 μs step)		
Partial Scan (Max. Speed)	84 fps at 300 Lines	23 fps at 1000 Lines	15.2 fps at 1000 Lines
Pixel Data Format	8 / 10 / 12 bit		
Electronic Shutter	Global Shutter		
Data Output	40 MHz (1 or 2 Tap)	Low Speed: 30 MHz (1/2 Tap) / 60 MHz (4 Tap)	
Pixel Clock Speed	80 MHz (4 Tap)	High Speed: 40 MHz (1/2 Tap) / 80 MHz (4 Tap)	
Trigger Mode	Free-Run, Standard, Fast, Double, Overlap Programmable Exposure Time and Trigger Polarity		
Dynamic Range	66 dB	64 dB	
Binning	×1, ×2, ×4 (Horizontal and Vertical Independent)		
Lookup Table	User Defined Lookup Table (LUT)		
Analog Offset	Adjustable (0 ~ 127 LSB at 12 bit, 256 steps)		
Analog Gain	0 ~ 32 dB, 900 steps		
Dimension / Weight	68 mm × 68 mm × 54 mm, 420 g (with C-mount) 68 mm × 68 mm × 83 mm, 460 g (with F-mount)	68 mm × 68 mm × 104 mm 500 g (with F-mount)	
Temperature	Operating: -5°C ~ 40°C, Storage: -40°C ~ 70°C		
Lens Mount	C or F-mount	F-mount, Custom mount available upon request	
Power	10 ~ 14 V DC, Typ. 7 W	10 ~ 14 V DC, Typ. 8 W	10 ~ 14 V DC, Typ. 9.5 W
Compliance	CE, FCC, KC (Application of VA-16MC in preparation)		
Configuration Software	Configurator		

## Ordering Scheme

VA - 29M C - M 5 AO	
Series VA Series	Sensor Options AO - ON Semiconductor
Sensor Resolution 1M - 1 Megapixels 2M - 2 Megapixels 4M - 4 Megapixels 8M - 8 Megapixels 16M - 16 Megapixels 29M - 29 Megapixels	Frame Rate 5 - 4.8 fps 8 - 8 fps 16 - 16 fps 32 - 33 fps 68 - 70 fps 120 - 125 fps
Interface C - Camera Link	Mono / Color M - Monochrome C - Color

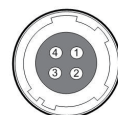
## Connector Specification

Power



1 2 3: +12V DC, 4 5 6: GND  
(HR10A-7R-6PB)

Control



1: Trigger IN+, 2: Trigger IN-  
3: DC Ground, 4: Strobe OUT+  
(HR10A-7R-4S)

Connectors on camera body

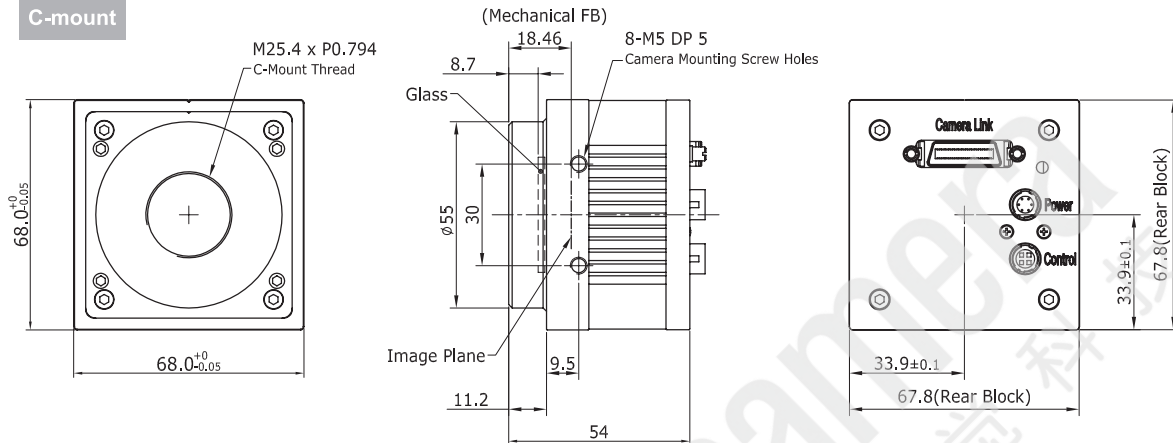
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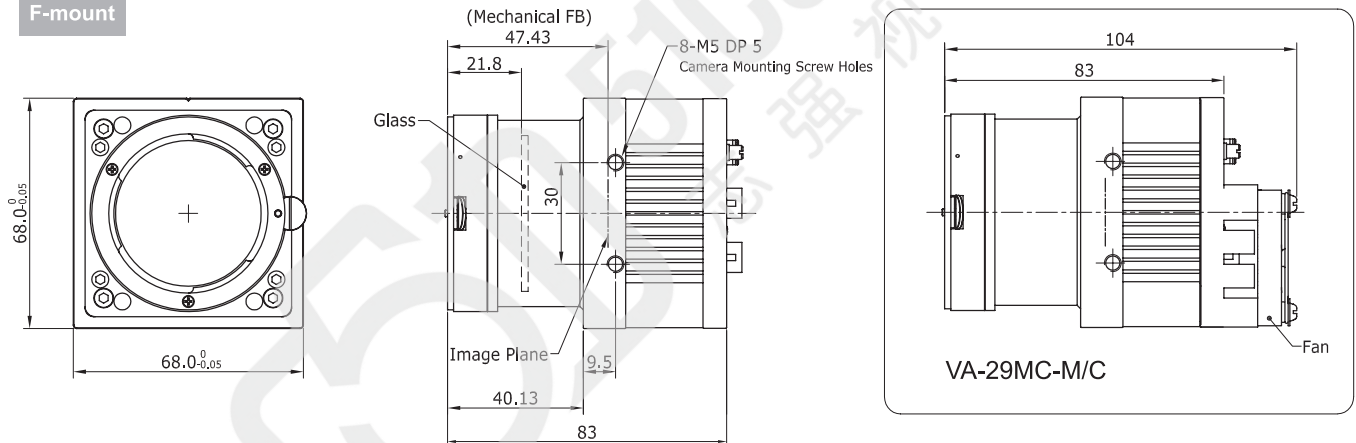
## Mechanical Dimensions

Unit: mm

### C-mount



### F-mount



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RA14-11A-008

# VIEWORKS

41-3, Burim-ro 170 beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14055 Republic of Korea  
tel +82-70-7011-6161 fax +82-31-386-8631 e-mail sales@vieworks.com