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Manta G-504 series

The following table provides model series specifications. The values are valid for Manta G-504B and G-504C models. For specifications common to all models, see Specifications common to all models.

Feature	Specification	
	Manta G-504B	**Manta G-504C**
Sensor model	Sony ICX655AL	Sony ICX655AQ
Resolution	2452 (H) × 2056 (V); 5 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 2/3	
Sensor size	11.016 mm diagonal	
Pixel size	3.45 µm × 3.45 µm	
Max. frame rate at full resolution	9.2 fps	
Max. image bit depth	12-bit	
Image buffer	32 MB	
StreamHoldCapacity	Up to 6 frames at full resolution	
Mono pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	BayerGB8, BayerGB12Packed, BayerGB12
Exposure time control	38 µs to 60 s; 1 µs increments	
Gain control	0 to 32 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns; Vertical: 1 to 14 rows	
Decimation X/Y	Horizontal and Vertical: 1, 2, 4, 8 factor	
Power consumption	External power: 2.9 W at 12 VDC; PoE: 3.6 W	
Trigger latency[1]	Idle state: 12.8 µs; Frame valid state: 34 µs	
Trigger jitter[1]	Idle state: ±9.1 µs; Frame valid state: ±30.3 µs	

Table 69: Manta G-504 model series specifications (sheet 1 of 2)

Feature	Specification	
	Manta G-504B	**Manta G-504C**
Time between exposures	**Pixel format**	**Value**
	Mono8, BayerGB8, Mono12Packed, BayerGB12Packed, YUV411Packed	29 µs
Camera dimensions (L × W × H)	86.4 × 44 × 29 mm	
Mass (typical)	PoE model: 210 g; Non-PoE model: 200 g	

[1] It's possible to start the exposure of the next frame while the previous frame is read out:

- Idle state: the sensor is ready, and the camera is idle. The camera is waiting for the next trigger.
- Frame valid state: the sensor is reading out data and camera is busy. If the next frame is requested by an external trigger in this state, higher latency may occur as compared to the idle state.

Table 69: Manta G-504 model series specifications (sheet 2 of 2)

Imaging performance

Measurement	Symbol	Manta G-504B[1]	Manta G-504C[2]
Quantum efficiency at 448 nm	η		41 %
Quantum efficiency at 529 nm	η	57 %	44 %
Quantum efficiency at 632 nm	η		35 %
Inverse of overall system gain	$1/K$	1.78 e^-/DN	1.66 e^-/DN
Temporal dark noise	σ_{d0}	13.5 e^-	11.8 e^-
Dark signal non-uniformity ($DSNU_{1288}$)	σ_0	0.9 e^-	1.2 e^-
Photo response non-uniformity ($PRNU_{1288}$)	S_g	0.5 %	0.8 %
Saturation capacity	$\mu_{e.sat}$	6900 e^-	6500 e^-
Signal to noise ratio at saturation	SNR_{max}	38.4 dB, 6.4 bits	38.1 dB, 6.3 bits
Dynamic range	DR	53.9 dB, 8.9 bits	54.4 dB, 9 bits
Absolute sensitivity threshold	$\mu_{e.min}$	14 e^-	12.3 e^-

[1] The following camera settings and test conditions were used: Gain: 0, Offset: 20.93, Temperature: ~38 °C, Pixel format: Mono12.

[2] The following camera settings and test conditions were used: Gain: 0, Offset: 19.70, Temperature: ~38 °C, Pixel format: BayerRG12.

Table 70: Manta G-504 (Sony ICX655) imaging performance

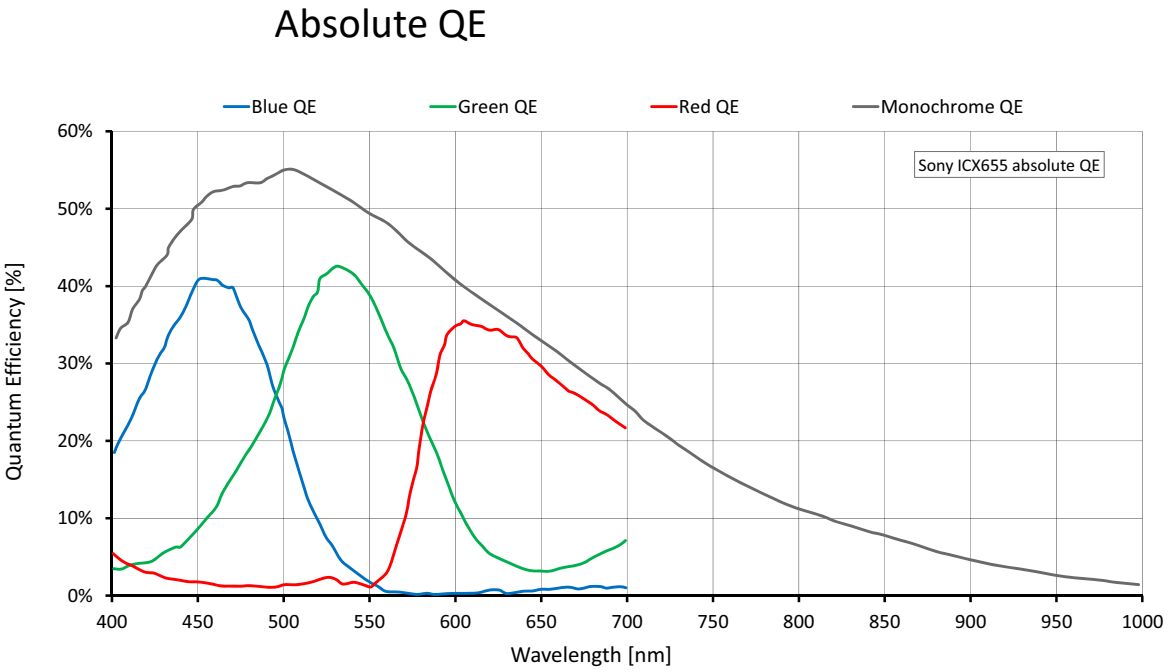


Figure 62: Manta G-504 (Sony ICX655) absolute QE

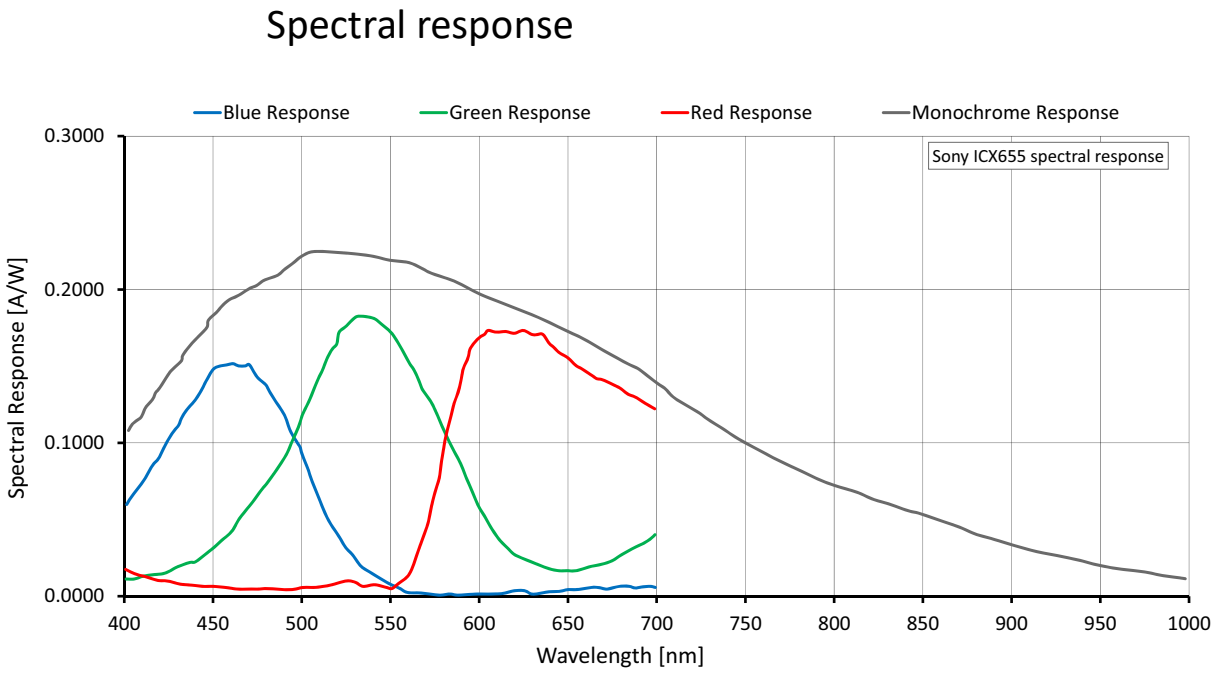


Figure 63: Manta G-504 (Sony ICX655) spectral response

ROI frame rate

$$\text{Max. frame rate} = \frac{1}{52.55\ \mu s \times \text{ROI height} + 10.27\ \mu s \times (2056 - \text{ROI height}) + 295.62\ \mu s}$$

Maximum frame rate at full resolution according formula: 9.2 fps

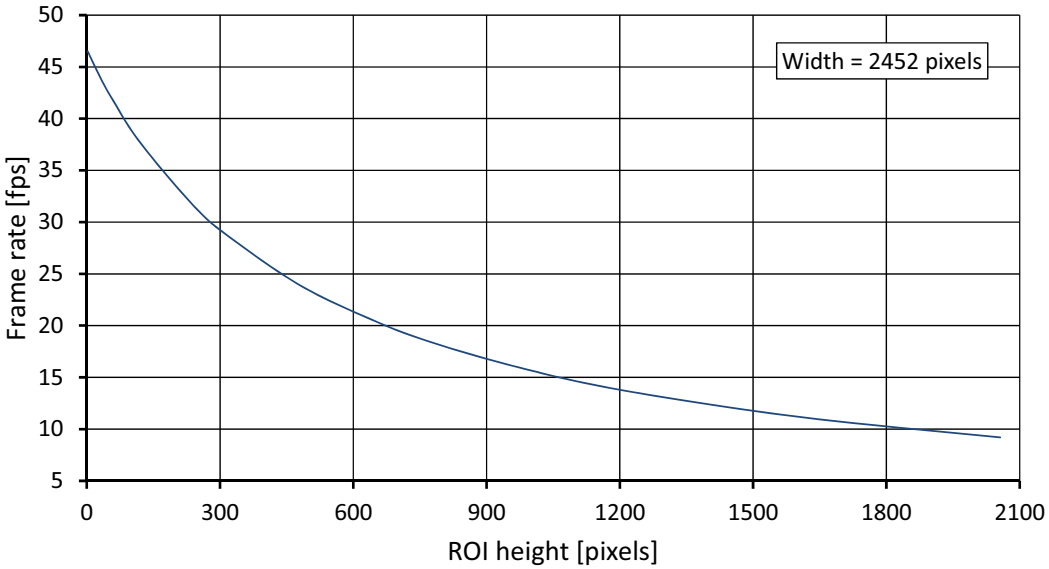


Figure 64: Manta G-504 frame rate as a function of ROI height

Height	Frame rate (fps)
2056	9.2
1600	11.2
1200	13.8
960	16.1
768	18.5
640	20.6
480	23.9

Height	Frame rate (fps)
320	28.6
240	31.6
120	37.7
60	41.7
30	44
10	45.8
2	46.5

Table 71: Frame rate as a function of ROI height values (Width=2452 pixels)

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