



# PHANTOM<sup>®</sup>

## Miro C

DATASHEET



C321J Back

# PHANTOM Miro<sup>®</sup> C321J Miro<sup>®</sup> C321

COMPACT  
HIGH-SPEED CAMERA

1,480 fps at full HD (1920 x 1080) resolution  
Small and rugged  
Flexible, with 2 models

## FEATURES & BENEFITS

### HIGH QUALITY HD IMAGES IN A COMPACT AND FLEXIBLE CAMERA

- Maximized image quality for reliable data even in challenging environments.
- "Set Default CSR" feature for consistent images on power-up, eliminating the need for CSR.
- 2 body types for specific system needs - the C321J for multi-camera set-ups with the Miro Junction Box, and the C321, for stand-alone use, or connected to the JBox with an adapter. They blend perfectly with Phantom off-board cameras for a full family solution.
- Proven design and independently tested rugged up to 170G. Tough, easy-to-use single cable system to Junction Box.

### FOCUS ON DATA PROTECTION AND MANAGEMENT

- Internal, non-removable battery for data protection in case of power loss
- 240GB of internal Flash keeps data safe
- 8GB or 16GB of RAM, with up to 63 partitions for multiple shots

## IMAGE & SENSITIVITY

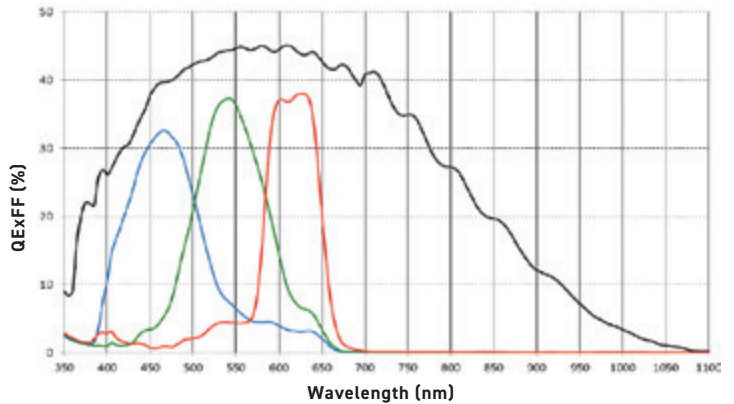
Sensor Type	CMOS, with Global Shutter
Maximum Resolution	1920 x 1080
CAR Increments	640 x 8
Pixel Size	10 $\mu$ m
Sensor Size	19.2 x 10.8 mm; 22.03 mm diagonal
Bit Depth	10 bit
<b>EMVA 1288 Measurements (at 532 nm)</b>	
Quantum Efficiency %	45.3% mono 31.5% color
Max. SNR (dB)	37.4
Absolute Sensitivity Threshold (p)	33.5 mono 43.3 color
Saturation Capacity (e-)	5501 mono 5311 color
Temporal Dark Noise (e-)	14.55
Dynamic Range (dB)	51.2

- Reported measurements were taken at 532 nm with both monochrome and color cameras

- Visit: [www.phantomhighspeed.com/emva](http://www.phantomhighspeed.com/emva) for more information on EMVA 1288

## SPECTRAL RESPONSE

### Quantum Efficiency Monochrome and Color



Miro C321 / C321J Connectors With the Miro Junction Box 2.0

## CONNECTIVITY & SIGNALS

C321J	C321	
Gb Ethernet accessed through System Cable	Gb Ethernet accessed through Fischer Connector	
IRIG In & Out- Unmodulated	IRIG In- Modulated/Unmodulated; IRIG Out - Unmodulated	
Fischer 27-pin System port, for Trigger, IRIG In/Out, Strobe, Event, Memgate, FSYNC, READY Out, Programmable I/O, Power from J-Box	Fischer 12-Pin	Capture port, for Trigger, IRIG In/Out, Strobe, Event, Memgate, FSYNC, READY Out, and Programmable IO Signals from MiniBoB
	Fischer 8-pin	Gb Ethernet
	Fischer 6-pin	Power
Programmable I/O for Fsync, Strobe, Ready, Timecode-out, Event, Memgate, Pretrigger. Assign and define signals in PCC		
System cable, to Jbox	Capture port, to MiniBoB	
via PCC over Ethernet; via Image Based Auto trigger (IBAT)		
External Sync via FSync or IRIG Timecode		
Burst mode, Continuous recording & AutoSave to internal Flash		
HD-SDI, through DIN connector on camera front		



MEMORY & STORAGE	
RAM Buffer	8GB, 16GB RAM
Multi-Cine	Up-to 63 Partitions
Non-Volatile Media	240GB of internal Flash included

FRAME RATES & EXPOSURE	
	1,480
	1,990
	94,510
	50
	1 μs
Shutter-off mode straddle time = 1180ns Supports Burst Mode	
Auto Exposure	

### FRAME RATE CHART

Table provides examples of common resolutions and frame rates. The record times shown are for 8GB RAM at the frame rate shown. Duration will be double for 16GB.

Resolution (H x V)	Miro C321J / C321
	1,480 (2.24)
	1,990 (2.25)
	1,560 (3.36)
	3,090 (3.39)
	3,290 (6.8)
	11,765 (7.16)
	22,070 (7.60)
	94,510 (14.2)



## CONTROL

Software & OS	Phantom PCC (Windows x64); SDK available for C/C++, C#, Python, MatLab and LabView
Primary File Format	Phantom Cine RAW (.cine)
Alternative File Formats	Easily convert to formats including .mp4, Apple ProRes .mov, .avi, Tiff, JPG, DNG and many more using PCC. Cine files are directly compatible with many major video editing and motion analysis programs.
Software Features	"Set New CSR Default" for stable black reference, Auto-Save to Flash, Continuous recording, Advanced Image Tools and Processing

## MECHANICAL

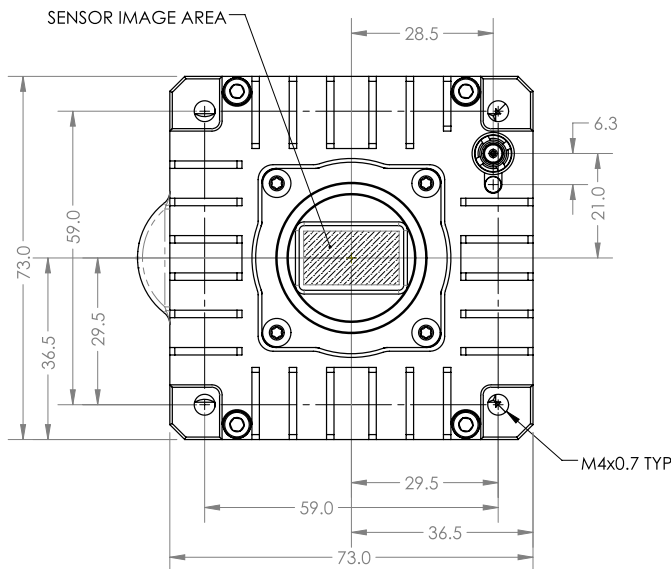
Housing Variants	C321J and C321
Size	C321J: 2.9 x 3.1 x 3.4" (73 x 79.5 x 87.2 mm); C321: 2.9 x 2.9 x 3.4" (73 x 73 x 87.2 mm)
Weight	1.2 lbs (0.54 kg)
Lens Mounts	1" C-mount, 4/3" lens recommended
Mounting Points	4 x 1/4-20, 10 x M4
Cooling	Active cooling. Quiet mode disables fans during capture.

## POWER

AC Power	100 - 250 VAC, 40W power supply included with C321 Model
Voltage Range	16-36VDC
Power Consumption	13 W typical, up to 22W when charging battery
Battery Options	Internal battery included for data protection

## ENVIRONMENTAL

Operating Temperature	0 to +50°C
Storage Temperature	-20 to +70°C
Relative Humidity	5% - 95%
Operational Shock	170G, sawtooth wave, 6ms, +/- 10 pulses all axes
Operational Vibration	24 Grms, IAW MIL-STD-202G Method 214-A.; Test Condition G, 15 min per axis
Regulatory	<b>Emissions</b> - CE & UKCA Compliant EN 61326-1, Class A <b>Immunity</b> - CE & UKCA Compliant EN 61326-1, Class A <b>FCC</b> - CFR 47, Part 15, Subpart B & ICES-003, Class A <b>KC Emissions</b> - KC Compliant - KS C 9832 <b>KC Immunity</b> - KC Compliant - KS C 9835 <b>Safety</b> - IEC 60950-1 (2012)



## GLOBAL SUPPORT NETWORK

The Phantom Miro C cameras are supported by Vision Research's Global Service and Support network, offering PhantomCare service from multiple sites around the globe. Maximize the value of your Phantom camera with professional support services designed to meet your needs.

*Learn more about our service offering at [www.phantomhighspeed.com/Support](http://www.phantomhighspeed.com/Support)*

## ABOUT VISION RESEARCH



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