



C321J Back

PHANTOM Miro[®] C321J Miro[®] C321

COMPACT
HIGH-SPEED CAMERAS

1,480 fps at full HD (1920 x 1080) resolution

Small and rugged

Flexible, with 2 models



SMARTER IMAGING FOR BETTER LIVES

Perth: (08) 9242 5411 Melbourne: (03) 9384 1775 Sydney: (02) 9905 1551

Email: sales@adeptturnkey.com.au
Web site: www.adept.net.au

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

| FRAME RATES & EXPOSURE | |
|---------------------------|--|
| Top FPS at Max Resolution | 1,480 |
| Maximum FPS | 94,510 |
| Minimum FPS | 50 |
| CAR Increments | 640 x 8 |
| Minimum Exposure | 1 μ s |
| Electronic Shutter | Global Shutter |
| PIV Features | Shutter-off mode straddle time = 1180ns Supports Burst Mode |
| Exposure Features | Auto Exposure |

| IMAGING | |
|--------------------------|---|
| Sensor Type | CMOS |
| Maximum Resolution | 1920 x 1080 |
| Bit Depth | 10-bit |
| Pixel Size | 10 μ m |
| Sensor Size | 19.2 x 10.8 mm; 22.03 mm diagonal |
| ISO Daylight (12232 STD) | Mono 10,000; Color 2,000 |
| ISO Tungsten (12232 STD) | Mono 25,000; Color 2,500 |
| Exposure Index | 10,000 - 50,000 Mono; 2,000 - 10,000 Color |
| Dynamic Range | 57 dB |
| Readout Noise | 9.4 e- |

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.

| Maximum Frame Rate - FPS; (8GB Record time - Sec) | |
|--|-------------------|
| Resolution (H x V) | Miro C321J / C321 |
| 1920 x 1080 | 1,480 (2.24) |
| 1920 x 800 | 1,990 (2.25) |
| 1280 x 1024 | 1,560 (3.36) |
| 1280 x 512 | 3,090 (3.39) |
| 640 x 480 | 3,290 (6.8) |
| 640 x 128 | 11,765 (7.16) |
| 640 x 64 | 22,070 (7.60) |
| 640 x 8 | 94,510 (14.2) |





| CONNECTIVITY & SIGNALS | | |
|------------------------|---|--|
| | C321J | C321 |
| Ethernet | Gb Ethernet accessed through System Cable | Gb Ethernet accessed through Fischer Connector |
| Timecode | IRIG In & Out- Unmodulated | IRIG In- Modulated/Unmodulated; IRIG Out - Unmodulated |
| Port Descriptions | 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 |
| IO Signals | Programmable I/O for Fsync, Strobe, Ready, Timecode-out, Event, Memgate, Pretrigger. Assign and define signals in PCC | |
| Hardware Trigger | System cable, to Jbox | Capture port, to MiniBoB |
| Software Trigger | via PCC over Ethernet; via Image Based Auto trigger (IBAT) | |
| Synchronization | External Sync via FSync or IRIG Timecode | |
| Recording Features | Burst mode, Continuous recording & AutoSave to internal Flash | |
| Video Output | HD-SDI, through DIN connector on camera front | |



Miro C321/C321J Connectors With the Miro Junction Box 2.0

| 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 |
| Highlighted Software Features | “Set New CSR Default” for stable black reference, Auto-Save to Flash, Continuous recording, Advanced Image Tools and Processing |

MEMORY & STORAGE

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

POWER

| | |
|-------------------|--|
| AC Power | 100 - 250 VAC, 40W power supply included with C321 Model |
| Voltage Range | 16-36VDC |
| Power Consumption | 14W typical, up to 22W when charging battery |
| Battery Options | Internal battery included for data protection |

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 |
| Mounting Points | 4 x 1/4-20, 16 x M4 x 0.7 |
| Cooling | Active cooling. Quiet mode disables fans during capture. |

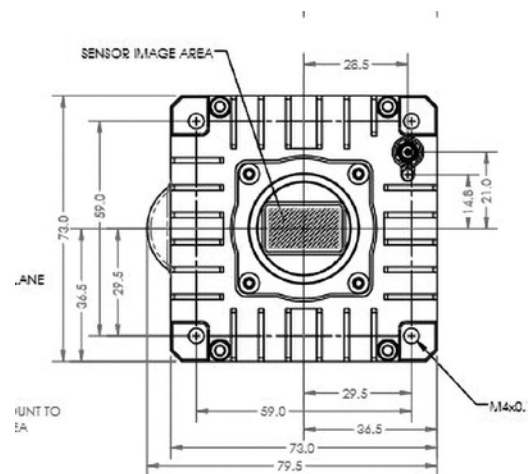
ENVIRONMENTAL

| | |
|-----------------------|--|
| Operating Temperature | 0 to +50°C |
| Storage Temperature | -20 to +70°C |
| Operational Shock | 170G, 6msec sawtooth, 3 axes, 2 directions per axis, 10 shock per direction (60 pulses total) |
| Operational Vibration | 24 Grms, 50Hz-2KHz, 3 axes, 15 min/axis, IAW MIL-STD-202H Method 214-I, Test Condition G |
| Regulatory | Made in the USA CE Emissions - CE Compliant EN 61326-1 CE Immunity - CE Compliant EN 61326-1 FCC - CFR 47, Part 15, Subpart B & ICES-0003, Class A KC Emissions - KC Compliant - KS C 9832 KC Immunity - KC Compliant - KS C 9835 Safety - IEC 60950-1 |

GLOBAL SUPPORT NETWORK

The Phantom Miro C Cameras are supported by Vision Research's Global Service and Support network, offering PhantomCare Performance Services from multiple sites around the globe. Maximize the value of your Phantom camera with a selection of professional services from which to choose.

Learn more about our service offering at www.phantomhighspeed.com/Service-Support



ABOUT VISION RESEARCH

Focused. Since 1950, Vision Research has been designing, and manufacturing high-speed cameras. Our single focus is to invent, build, and support the most advanced cameras possible.

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AMETEK[®]

100 Dey Road
Wayne, NJ 07470 USA
+1.973.696.4500