

## MegaPlus ES4020

4 megapixels | Interline CCD | Compact design



The MegaPlus ES4020 is a high resolution 4 megapixel digital camera. It is uniquely designed to separate and isolate the camera's primary electronics from the sensor cooling path resulting in true 12-bits per pixel at virtually any operating temperature. By keeping the sensor temperature low, both dark noise and thermal drift are significantly reduced, making the camera the perfect solution for the most demanding scientific and industrial applications. The ES4020 is an ideal choice for applications requiring real time frame data at 15 full frames per second or higher. **The camera supports the latest GigE Vision interface along with Firewire and CameraLink interfaces to make it one of the most versatile imaging platforms on the market.**



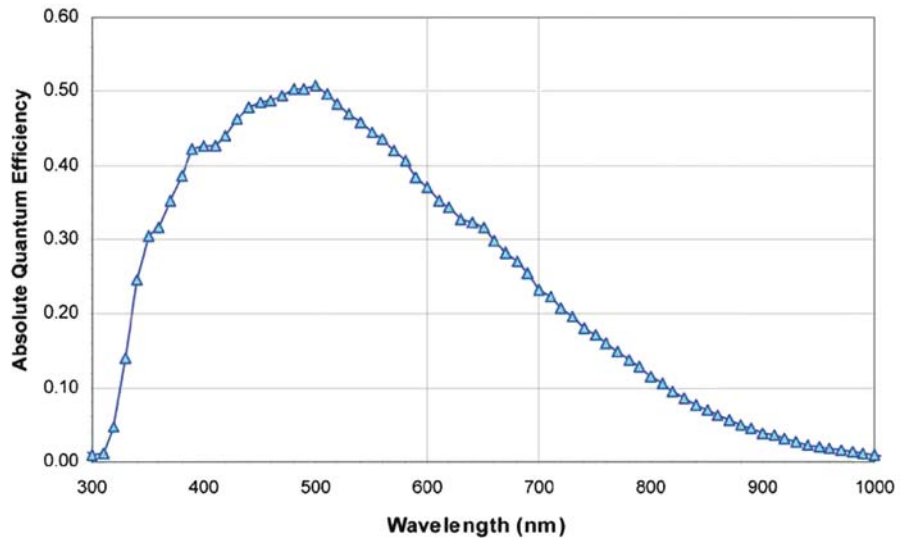
**Applications:** Machine Inspection & Calibration, Scientific Imaging, Document Imaging, Flat Panel Inspection, Ophthalmologic imaging

Features	Benefits
4 megapixel Resolution (2048 x 2048 pixels)	Resolves fine detail
15 mm x 15 mm sensor	Provides large field of view
Two piece camera design	Provides highest imaging performance with lower noise and larger dynamic range by lowering the sensor operating temperature
Interline Transfer Progressive Scan CCD	Eliminates camera vibration, facilitates fast triggering
CameraLink Interface	High bandwidth continuous data interface
New GigE Vision Interface	Ideal for plug-n-play operation over extended distances. No need for expensive frame grabbers.
Firewire (IEEE-1394a) Interface	Seamless, plug-n-play connection to PC notebooks and desktops. No need to install PCI cards
Available in color or monochrome	Allows same camera architecture to be seamlessly integrated across many applications
12-bits per pixel	Quantifies full range of light levels in a single image
Compact design	Small footprint design optimized for integration into applications where space is at a premium

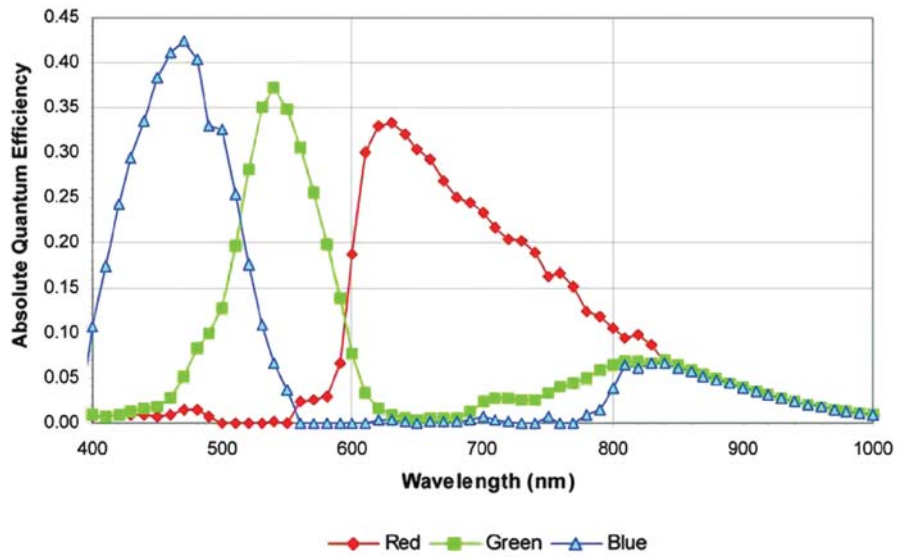
CCD Imager	
Imaging Device	KAI-4021, CCD, Color and Mono
Sensor Readout	Interline, progressive scan
Pixel Size	7.4 μm x 7.4 μm
Resolution	2048 x 2048, 4 megapixels
Imager Size (diagonal)	21.5 mm
Active Area	15 mm (h) x 15 mm (v)
Aspect Ratio	1:1
Sensor dynamic range	60 dB
Shuttering	Electronic
Imaging Performance	
Output Bit Depth	8-, 10-, or 12-bits per pixel
Sensor Clock Rate	30 MHz (optional - over clocked to 38 MHz)
Minimum Integration Time	104 μsec in continuous mode; 75 μsec in triggered mode
Max. Frame Rate (CameraLink)	15 fps
Max. Frame Rate (IEEE1394a)	7.5 fps (monochrome)
Max. Frame Rate w/ 2x2 Binning	27.4 fps
Max. Frame Rate w/ 3x3 Binning	37.2 fps
Max. Frame Rate w/ 4x4 Binning	46.6 fps
Exposure Settings	
Gain Settings	0-36 dB
Binning	Yes
Anti-blooming	Yes
Trigger Modes	Edge, Level, Double exposure, Periodic interval (self), Overlap trigger modes
Mechanical Description	
Lens Mount	F-mount, C-mount (other mounts available upon request)
Camera Head Cable	0.5m, 2m, 5m, 7m
Camera Head Dimensions	54.6 mm x 77.47 mm x 54.6 mm (LxDxH) F-mount 54.6 mm x 47.8 mm x 54.6 mm (LxDxH) C-mount
Controller Dimensions	160.7 mm x 158.3 mm x 50.8 mm (LxDxH) multi-head controller (CameraLink & Firewire) 158.8 mm x 152 mm x 38.1 mm (LxDxH) single-head controller (CameraLink) 158.8 mm x 152 mm x 54.4 mm (LxDxH) single-head controller (GigE Vision)
Camera Head Weight	258 grams
Controller Weight	1140 grams multi-head controller 992 grams single-head controller (CameraLink) 1124 grams single-head controller (GigE Vision)
Environmental	
Operating Temperature	0 - 40 °C, non-condensing
Vibration	3G, sinusoidal from 10 to 500 Hz
Shock	5G
Power Consumption (Single Head with Controller)	15 watts
Certification	CE
Input/Output	
GigE Vision	RJ-45 (for use with Cat 5e/6 cables)
CameraLink	Base, Medium, Dual Base
Firewire	1394a
Serial	RS232
Trigger In	BNC, TTL
Trigger Out	BNC, TTL
Diagnostics	10/100/1000 Base-T (for diagnostics and firmware updates only)

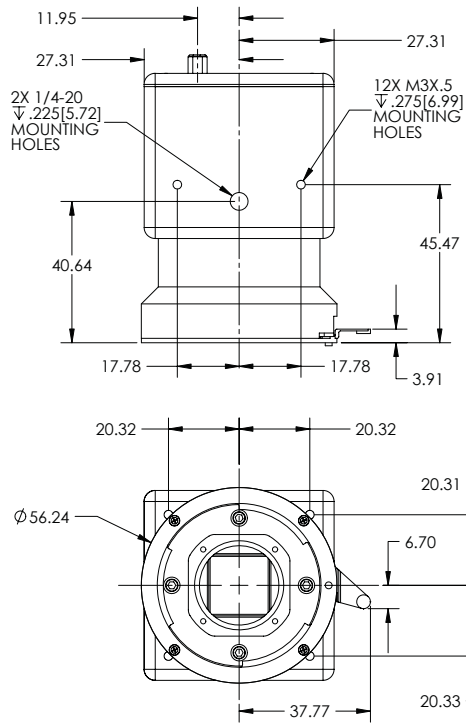
Note: Specifications are subject to change.

Monochrome with Microlens Quantum Efficiency

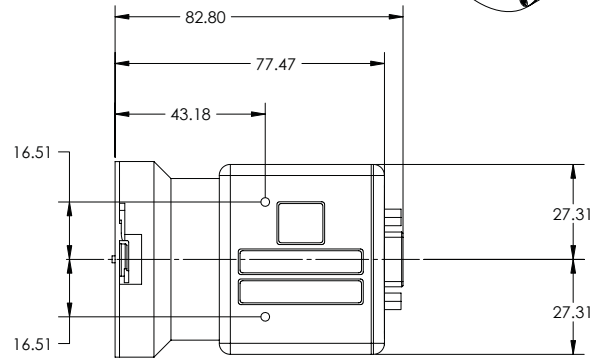
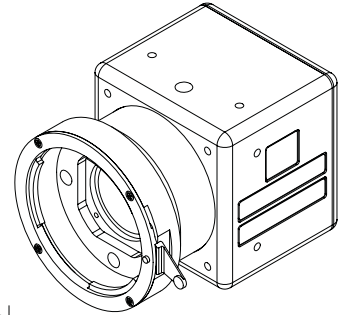


Color with Microlens Quantum Efficiency





[All dimensions are in mm]



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