

# MicroLine ML402

Quality. Cooled. Cameras.

## 768 x 512 Imaging Array

## 9 $\mu\text{m}$ Pixel Size

At 3.7 x 3.7 x 4.8 inches the MicroLine is a small camera with big camera capabilities. Each component of the MicroLine camera is designed and manufactured for a long life in the most demanding conditions. MicroLine download speeds are fast yet maintain the 16-bit resolution necessary to produce high quality images. MicroLine cameras can achieve up to 60°C below ambient cooling without water assist. Simply set the MicroLine cooling where you want it and the camera will do the rest, quickly and without worries.



### Applications

- Digital Radiography
- Astronomy
- Bioluminescence
- Chemiluminescence
- Gel Documentation
- Forensic Imaging
- Satellite Imaging
- Low Light Level Imaging

Features	Benefits
2.8 MHz digitization	Fast Image capture with full 16-bit resolution
768 x 512 Array with 9 $\mu\text{m}$ pixels	Resolves fine detail
Flexible binning and readout	Increases frame rate
Thermoelectric Cooling to 60°C Below Ambient	Excellent low-noise imaging
Excellent quantum efficiency	High sensitivity for fast image acquisition
C-mount; optional Nikon F-mount or Canon mount	Wide variety of optical choices
Acquisition software included	Ease of integration with open source SDK
USB 2.0 interface	Industry standard connectivity; fast data transfer



## Engineering Excellence

*Because Your Image Depends On It.*

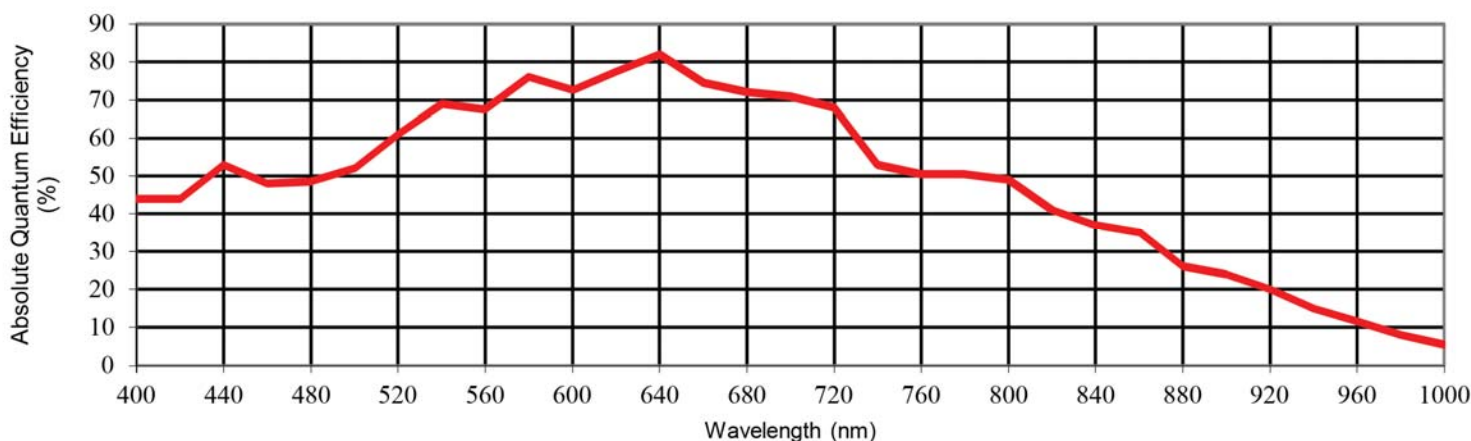
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\*Due to continuous development, all specifications subject to change without notice.

## Sensor Specifications (from manufacturer)

<b>Sensor</b>	On Semi KAF-0402ME	<b>Sensor Size</b>	6.9 X 4.6 mm	<b>Megapixels</b>	0.39
<b>Pixels</b>	768 x 512	<b>Sensor Diagonal</b>	8.2 mm	<b>Video Size (inch)</b>	.5"
<b>Pixel Size</b>	9 x 9 $\mu$ m	<b>CCD Variants</b>			
<b>Full Well Capacity</b>	100000 electrons	<b>CCD Grades</b>	1, 2		
<b>Color Options</b>	Monochrome only	<b>Anti-Blooming</b>	NA		
<b>CCD Type</b>	Full frame				

## Sensor Quantum Efficiency (Absolute)



## Camera Performance

<b>Typical Maximum Cooling</b>	60°C below ambient	<b>Dark Current (typical)</b>	.02 eps at -25°C
<b>Temperature Stability</b>	0.1°C	<b>Cooling Method</b>	Air (Optional liquid)
<b>Digitization Speed</b>	2.8 MHz		
<b>Typical System Noise</b>	16e- at 2.8 MHz	<b>Non-Linearity</b>	<1%
<b>Focal Plane to Face Plate</b>	15.8 mm	<b>Weight</b>	2.8 lbs (1.2 kg)
<b>Typical Gain</b>	1.35 e-/ADU	<b>Housing</b>	3.7 X 3.7 X 4.77 inches (9.3 X 9.3 X 12.1 cm)
<b>Lens Mounts</b>	C-mount (optional Nikon or Canon lens adapters)		
<b>Interface</b>	USB 2.0	<b>Camera Channels</b>	1
<b>Available Shutters</b>	25mm		
<b>External Triggering</b>	Standard	<b>Shutter MTBF</b>	1000000
<b>Environment</b>	-30°C to 45°C   10% - 90% Relative Humidity		
<b>Power</b>	12V (100-240V AC to 12V DC power supply included). With TEC off: <1A. TEC at 100%: 4.4A. Shutter open: 4A pulse for 100msec. Shutter held open, add 0.22A.		



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