

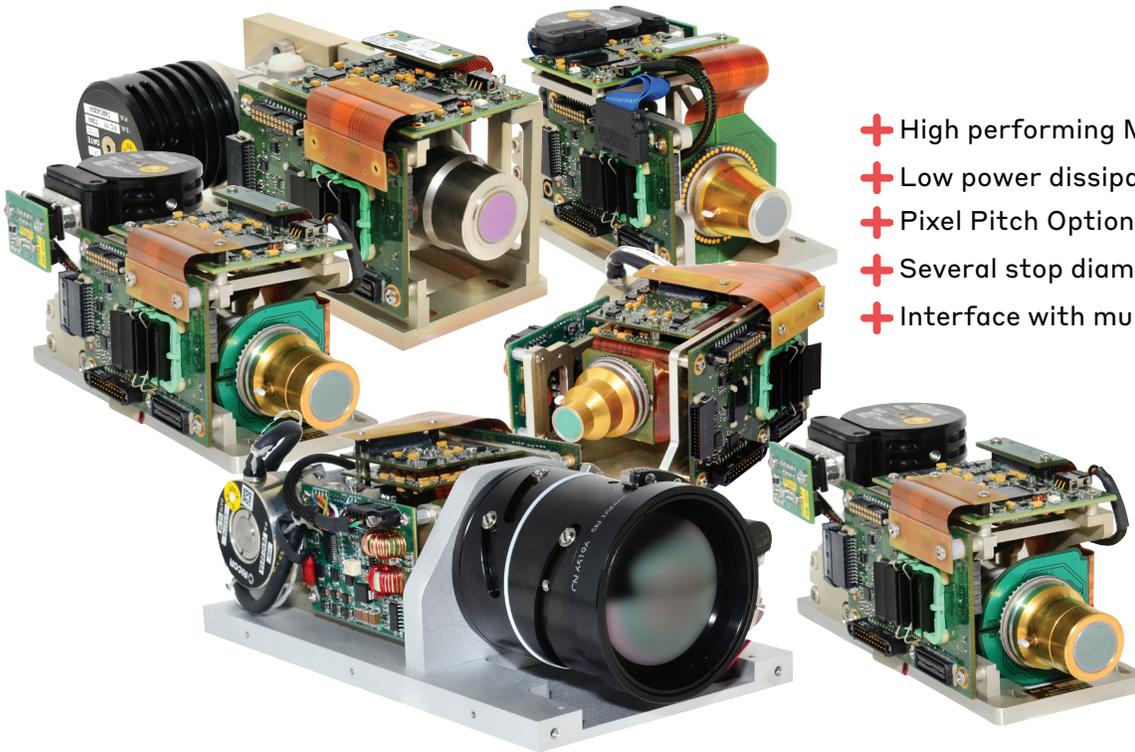
# MiTIE™



LYNRED USA

Access to the World's Leading Infrared Technology

Miniature Infrared Thermal Imaging Engines



- + High performing MW & LW infrared imaging
- + Low power dissipation, compact design
- + Pixel Pitch Options of 10  $\mu\text{m}$ , 15  $\mu\text{m}$ , & 30  $\mu\text{m}$
- + Several stop diameter options
- + Interface with multiple COTS optics

The MiTIE Series of miniature thermal imaging engines are designed for OEM and system integrators that wish to incorporate a small, lightweight, low power cooled camera engine into their electro-optical system.

The MiTIE cores are based on high performance Mercury Cadmium Telluride (MCT) or Indium Antimonide (InSb) Integrated Detector/Dewar/Cooler Assemblies and are available in several configurations having MW or LW spectral responses and in various array sizes.

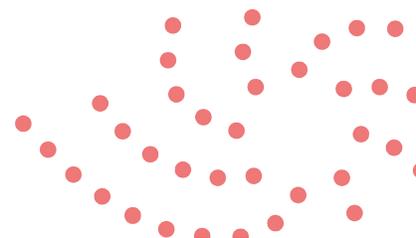
The MiTIE cores include camera control and cooler electronics and produce corrected analog, HDMI, and 14-bit Camera Link digital video. Communication is via USB or Camera Link interface. Because of their, lightweight and low power consumption, the MiTIE camera cores are ideal for applications that have demanding SWaP (space/weight power) constraints.

## FEATURES

On-board non-uniformity correction and BPR  
14-bit Camera Link output  
Image processing functions include:  
binning, edge enhancement, histogram  
equalization, flip video, digital zoom  
Connection kit facilitates testing

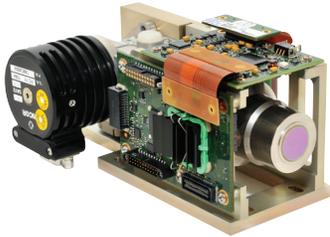
Windows Graphical User Interface  
Plug-and-play OEM operation

Available Software Options:  
• Desktop Analysis software  
• C++ Software Development Kit (SDK)





### ≥ XGA MWIR ENGINES

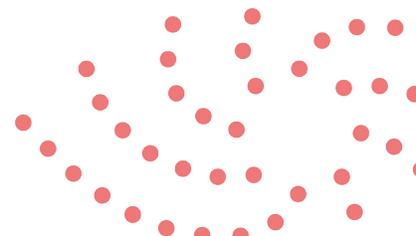
	MiTiE MWIR-1280/15- Jupiter Engine	MiTiE MWIR-1280/10- Daphnis Engine	MiTiE MWIR-1024/10- Daphnis Engine
			
<b>IDCCA</b>	Jupiter	Daphnis HD	Daphnis XGA
<b>Detector</b>	1280x1024 MCT	1280x720 MCT	1024x768 MCT
<b>Pixel Pitch</b>	15 μm	10 μm	
<b>Spectral Response</b>	3.7-4.8 μm	3.7-4.8 μm	
<b>NETD (typical)</b>	19.36 mK @f2 @293K	20 mK	
<b>Cold Shield</b>	f/2, f/4.6	f/2, f/4	
<b>Capacity</b>	1.5 Me-, 4 Me-	0.7 Me-, 2.2 Me-	
<b>QE</b>	75%	80%	
<b>Operability</b>	99.8% typical		
<b>INT Time Control</b>	Tint min = 1 MC = 0.1 μs @10 MHz	Tint min = 25 MC = 0.6 μs @ 40 MHz	
<b>Pixel Rate</b>	40 MHz		
<b>A/D</b>	14-bit		
<b>Readout</b>	IWR	ITR	
<b>Windowing</b>	256 x 2	320 x 8	
<b>Frame Rate (user-definable sub-windowing for higher frame rate)</b>	30 Hz (full frame) 1KHz @ 256 x 142 >15KHz @ 256 x 2	60 Hz (full frame)	60 Hz (full frame)
<b>Digital Output</b>	HDMI, 14-bit Camera Link		
<b>Video Output</b>	NTSC or PAL output		
<b>Operating Temperature Range</b>	-40°C to +71°C		
<b>Available Image Processing Functions</b>	Non-Uniformity Correction, Bad Pixel Replacement, frame accumulation capability (63 frames), binning, edge enhancement, AGC, histogram equalization, gamma correction, symbology, flip video, digital zoom*		
<b>Cooldown Time</b>	7 minutes @ 20 C (K548 cooler)	4 minutes (RM3, K508, RM4) 5 minutes (RM2 & K563);	
<b>Cooler</b>	Rotary K548	Rotary RM2, RM3, RM4,	Rotary RM2, RM3, RM4
<b>Power Consumption</b>	14 - 27 W	9 - 14.5 W (RM2 / K563) 9 - 16.5 W (RM3 / K508) 10 - 19.5 W (RM4)	9 - 14.5 W (RM2 / K563) 9 - 16.5 W (RM3 / K508) 10 - 19.5 W (RM4)
<b>Dimensions (W x H x L)</b>	6.2" x 3.6" x 3.4"		
<b>Comments</b>		16:9 format, ideal for use in applications having significant horizontal aspect.	Same size as VGA-15μm systems. Significant range improvement with same optics.

\* some exclusions for DAPHNIS



### VGA MWIR ENGINES

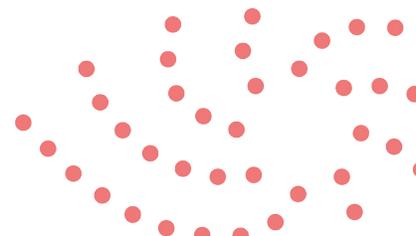
	MiTiE MWIR-640/15-Scorpio Engine	MiTiE MWIR-640/15-Leo Engine
		
<b>IDCCA</b>	Scorpio MW	Leo MW
<b>Detector</b>	640x512 MCT	
<b>Pixel Pitch</b>	15 μm	
<b>Spectral Response</b>	3.7-4.8 μm	
<b>NETD (typical)</b>	< 18 mK @f/2; 14.9 mK (typical)uuy	20 mK @f/4 25 mK @f5.5 (both typical)
<b>Cold Shield</b>	f/2.0, f/2.24, f/4	f/4.0, f/5.5
<b>Capacity</b>	5 Me-, 6.5 Me-	
<b>QE</b>	75%	
<b>Operability</b>	> 99.5% 99.8% (typical)	> 99.5% 99.9% (typical)
<b>INT Time Control</b>	Tint min = 1.5 MC = 150 μs @ 10 MHz	
<b>Pixel Rate</b>	40 MHz	22 MHz
<b>A/D</b>	14-bit	
<b>Readout</b>	ITR for 6.4 Me- gain; IWR for 5 Me- gain	
<b>Windowing</b>	Dynamic and user definable down to 160 x 1	
<b>Frame Rate (user-definable sub-windowing for higher frame rate)</b>	117 Hz (full frame) 1KHz @ 166 x 166 > 3.2KHz @ 160 x 1	65 Hz (full frame) 1KHz @ 160 x 60 > 1.77KHz @ 160 x 1
<b>Adjustable Integration Time</b>	< 3 μsec to 20 msec	
<b>Digital Output</b>	HDMI, 14-bit Camera Link	
<b>Video Output</b>	NTSC or PAL output	
<b>Operating Temperature Range</b>	-40°C to +71°C	
<b>Available Image Processing Functions</b>	Non-Uniformity Correction, Bad Pixel Replacement, frame accumulation capability (63 frames), binning, edge enhancement, AGC, histogram equalization, gamma correction, symbology, flip video, digital zoom	
<b>Cooldown Time</b>	< 5 minutes @ 20C (K508 cooler)	4 minutes @ 20C (K563 cooler)
<b>Cooler</b>	Rotary K508	Rotary K563 or RM2
<b>Power Consumption</b>	9.5 - 19.5 W (K508 cooler)	8.5 - 16.5 W (K563 or RM2)
<b>Dimensions (L x W x H)</b>	3" x 3" x 5.8"	4" x 2.5" x 5"
<b>Comments</b>		Available with 19-275mm CZ lens f5.5





### LWIR ENGINES

	MiTiE LWIR-640/15-Scorpio Engine	MiTiE LWIR-320/30-Mars Engine
		
<b>IDCCA</b>	Scorpio LW	Mars LW
<b>Detector</b>	640x512 MCT	320x256
<b>Pixel Pitch</b>	15 μm	30 μm
<b>Spectral Response</b>	7.7-9.4 μm	7.7-9.4 μm
<b>NETD (typical)</b>	20 mK	17 mK
<b>Cold Shield</b>	f/2.0, f/2.24	f/2.0, f/4.0
<b>Capacity</b>	13.5 Me-, 27 Me- (binning mode)	12 Me-, 36 Me-
<b>QE</b>	70% average from 7.7 - 9.4 μm >85% from 7.7 - 8.5 μm	65% average from 7.7 - 9.4 μm >80% from 7.7 - 8.5 μm
<b>Operability</b>	> 99.5% 99.8% (typical)	> 99.5% 99.7% (typical)
<b>INT Time Control</b>	10 μs to full frame	600 ns to full frame
<b>Pixel Rate</b>	40 MHz	20 MHz
<b>A/D</b>	14-bit	
<b>Readout</b>	ITR	
<b>Windowing</b>	160 x 1	64 x 1
<b>Frame Rate (user-definable sub-windowing for higher frame rate)</b>	117 Hz (full frame) 1 kHz @ 185 x 185 14.6 kHz @ 160 x 1	244 Hz (full frame) 1 kHz @ 141 x 141 133 kHz @ 64 x 1
<b>Adjustable Integration Time</b>	< 3μsec to 20 msec	
<b>Digital Output</b>	HDMI, 14-bit Camera Link	
<b>Video Output</b>	NTSC or PAL output	
<b>Operating Temperature Range</b>	-40°C to +71°C	
<b>Available Image Processing Functions</b>	Non-Uniformity Correction, Bad Pixel Replacement, frame accumulation capability (63 frames), binning, edge enhancement, AGC, histogram equalization, gamma correction, symbology, flip video, digital zoom	
<b>Cooldown Time</b>	5 minutes @ 20C (K508 cooler)	< 6 minutes @ 20C (K508 cooler)
<b>Cooler</b>	Rotary K508	
<b>Power Consumption</b>	9 - 16.5 W (K508 cooler)	9 - 14 W (K508 cooler)
<b>Dimensions (L x W x H)</b>	3" x 3" x 6"	3" x 3" x 6"



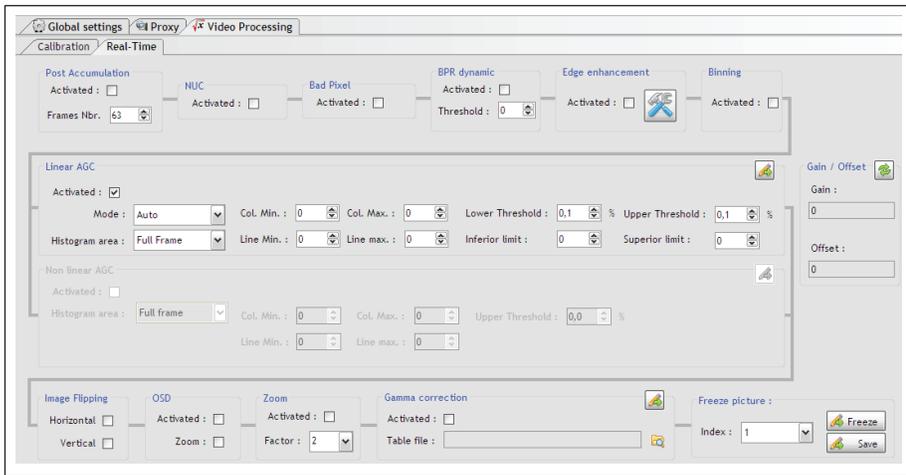


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# MiTiE™ Desktop Software

## Graphical User Interface (GUI)



### GUI Software Features:

- Integration time change
- Non-uniformity correction
- Sub-windowing
- External trigger
- For Microsoft Windows

**Also available:** C++  
Software Developer's Kit  
for MiTiE

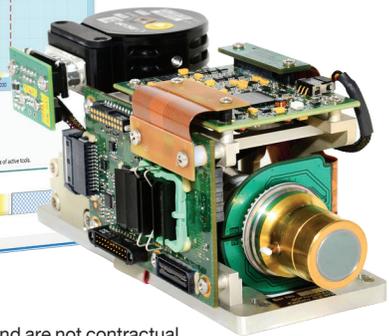
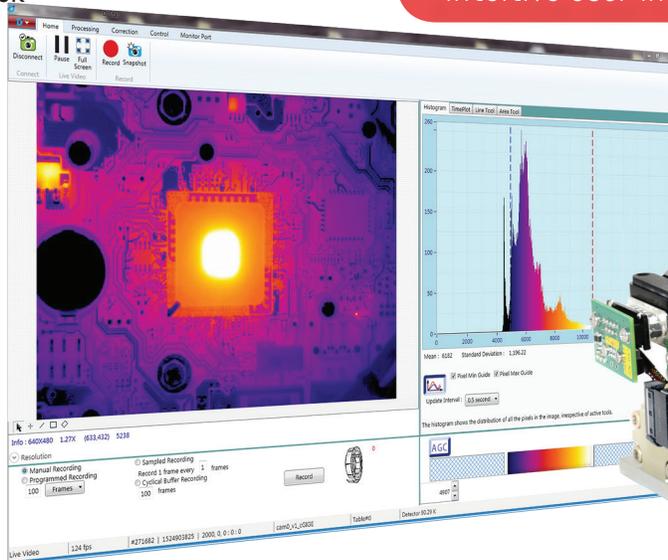
## D\*STAR for MiTiE

### Digital Storage and Retrieval and Image Processing Software Suite

#### D\*STAR for MiTiE Software Features:

- Real-time recording and playback
- Single image capture and playback
- 14-bit image conversion to .AVI
- Export of data to standard files
- Multiple color palette selection
- Image averaging
- Span and level control
- AGC
- Spot meter
- Line profile
- Region of interest – user-defined rectangle
- Histogram analysis (ROI)
- Time plot

- Comprehensive camera control
- Real-time digital recording
- Power analysis tools
- Intuitive user interface



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