

MiTIE™ Infrared Cameras

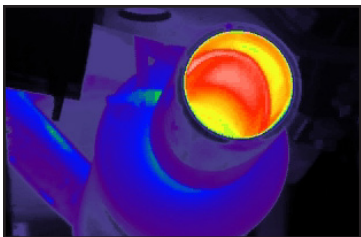
High Performance Cooled Infrared Cameras MWIR/LWIR/VLWIR Spectral Range Options

The Sofradir EC infrared camera family harnesses the full performance of the Sofradir Mars and Scorpio Mercury Cadmium Telluride (MCT) focal plane arrays while offering unique flexibility to meet the needs of any application or OEM requirement. The cameras are available in mid-format (320×256) and VGA (640×512). The mid-format Mars-based cameras have broad spectral response capabilities ranging from broadband MWIR (1.5-5 μm), MWIR (3-5 μm), LWIR (8-10 μm), and VLWIR (8-12 μm). The Scorpio MW and LW based cameras operate in the MWIR (3.2-3.4 μm), MWIR (3-5 μm) and LWIR (8-10 μm) regions. The engines have a common connectivity and interface logic. The Mars and Scorpio camera engines include an integrated detector/dewar/cooler assembly (IDDCA) and electronics.

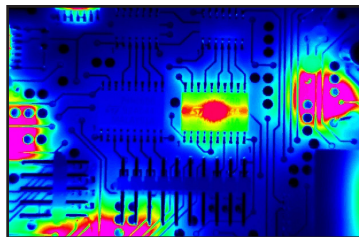
The camera electronics include camera and cooler control modules. The camera produces output signals that are uncorrected or corrected for non-uniformities in an RS-170 video and 14-bit digital data format. Camera communication is available over a serial (RS-232) interface. A 14-bit digital data stream is available via LVDS and Camera Link as well as optionally Gigabit Ethernet. With the optics options, the cameras can be customized to meet any requirement. D*STAR, a digital storage, retrieval and image processing Software Suite is available for infrared imaging research and development applications. In addition, software developer toolkits (SDKs) and command software modules are available for further flexibility.



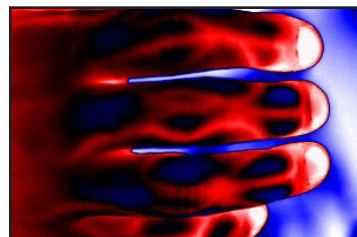
- High Frame Rates
- Multiple detector formats and spectral response configurations for ultimate flexibility
- High Sensitivity
- Customizable Engines
- 15-30 micron Pixel Technology



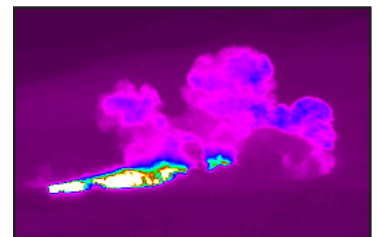
Design, Test and Manufacturing



Research and Development



Medical Imaging



Target Signature

FEATURES

High performance 320×256 imaging in MWIR/LWIR/VLWIR with the 30 μm Mars MCT array

On-board non-uniformity correction and bad pixel replacement

High performance 640×512 MWIR and LWIR imaging with the 15μm Scorpio MCT array

14-bit digital output via LVDS and Camera Link, Gigabit Ethernet optional

High frame rates for full frames (244 Hz for 320×256; 117 Hz for 640×512)

Plug and play OEM operation

Multiple cooler configurations (both linear and rotary options)

Software Development Kit Available

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MWIR SPECIFICATIONS

	MiTIE Camera-320M	MiTIE Camera-640M	MiTIE Camera-640BB
Infrared Focal Plane Array	Sofradir Mars MWIR	Sofradir Scorpio MWIR	Sofradir Scorpio BBMWIR
Detector size	320x256	640x512	
Pixel Pitch	30 μm	15 μm	
Spectral Response	3.7-4.8 μm	3.7-4.8 μm	1.5-5.1 μm
Readout	Snapshot Integration (ITR Only)	Snapshot Integration (ITR/IWR)	
Thermal Resolution (NETD)	8.5 mK @f/2 @ 36.10 ⁶ e- 13 mK @f/4 @ 12.10 ⁶ e-	< 18 mK @f/2 (20 mK in binning mode) Typical Value: 14.9 mK	
Gain Settings	2	1	
Well Capacity	12 Me- / 36 Me-	5 Me- / 6.5 Me-	
Quantum Efficiency	> 75%		
Operability	>99.5% Typical Value: 99.94%	>99.5% Typical Value: 99.8%	
Sub-windowing	Dynamic and user definable to 64x1	Dynamic and user definable to 160x1	
Pixel Clock	20 MHz	40 MHz	
A/D	14-bit		
Cold Shield	F2.0, F4.0	F2.0, F2.3, F4.0	F3.0
Frame Rate (full frame)	244Hz max	117 Hz max	
Frame Rate (windowed)	1 kHz @ 141x141; 133 kHz @ 64x1	1 kHz @ 185x185; 14.6 kHz @ 160x1	
Integration Time Control	Tint min = 3 MC = 0.6us @ 5 MHz	Tint min = 1.5 MC = 150us @ 10 MHz	
Trigger/Sync	0-5 V TTL in/out with delay		
Digital Output	LVDS, Camera Link and Gigabit Ethernet.		
Analog Video Output	RS-170		
Video Symbology	User definable for video output overlay		
Non-uniformity Correction	On board (4 tables)		
Bad Pixel Replacement	On board (4 tables)		
Cooling	Closed-cycle Stirling cooler (linear or rotary; multiple options)		
Cool Down Time	< 5 minutes @ 20°C; < 7 minutes @ 55°C (K508 Cooler)		
Weight w/o Lens	< 6 kg		
Dimensions (L x W x H)	10.7" x 7.3" x 6.7" (27.2 cm x 18.6 cm x 17.0 cm)		
Operational Temperature	-30°C to 55°C		
Shock & Vibration	MIL-SPEC 810G		
Optical Mount Interface	Standard: Bayonet, Optional: M80		
User Interface Panel	Optional. Standard connector interface for LVDS, Camera Link, GigE, Analog Video, Sync In/Out, IRIG, and power		
Power Supply	Included		

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MiTIE™ Infrared Cameras

High Performance Cooled Infrared Cameras
MWIR/LWIR/VLWIR Spectral Range Options



ORDERING INFORMATION

MWIR CAMERAS		MWIR LENS OPTIONS (3µm - 5µm)	
MiTIE Camera-320M MWIR F2	915XX	7mm F2.3 MW Lens	915139
MiTIE Camera 640 MWIR F1.5	915XX	3-5µm; Bayonet Mount focuses 30mm to ∞	
MiTIE Camera-640M MWIR F2.24	915XX	13mm F2.3 MW Lens	915138
MiTIE Camera-640BB Broadband F3	915XX	3-5µm; Bayonet Mount focuses 50mm to ∞	
SOFTWARE / OTHER OPTIONS		25mm F2.3 MW Lens	915057
C++ Software Development Tool Kit	915XXX	3-5µm; Bayonet Mount focuses 200mm to ∞	
CAMERA/LENS CALIBRATION (PER LENS)		50mm F2.3 MW Lens	915056
Ambient range: (-10°C) to (+50°C)		3-5µm; Bayonet Mount focuses 500mm to ∞	
Object range: (-20°C) to (+150°C)		100mm F2.3 MW Lens	915137
Lens F-number < Detector F-number		3-5µm; Bayonet Mount focuses 1.75m to ∞	
		50/250mm F2.3 DFOV Lens	915136
		Bayonet Mount	
		1× Microscope Objective Lens	915175
		Bayonet Mount, inverted image	
		2.5× Microscope Objective Lens	915176
		Bayonet Mount, inverted image	
		4× Microscope Objective Lens	915177
		Bayonet Mount, inverted image	
		Bayonet Mount Extension Ring Kit	915178
		Filter Capture Ring (<1mm)	915454
		MWIR BB Lens Options (1.5µm - 5µm)	
		25mm F2.3 Broadband Lens	915135
		Bayonet Mount	
		50mm F2.3 Broadband Lens	915134
		Bayonet Mount	
		100mm F2.3 Broadband Lens	915133
		Bayonet Mount	
		250mm F2.3 Broadband Lens	915132
		Bayonet Mount	



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MiTIE™ Infrared Cameras

High Performance Cooled Infrared Cameras MWIR/LWIR/VLWIR Spectral Range Options



LWIR SPECIFICATIONS

	MiTIE Camera-320L	MiTIE Camera-640L	MiTIE Camera-320VL
Infrared Focal Plane Array	Sofradir Mars LWIR	Sofradir Scorpio LWIR	Sofradir Mars VLWIR
Detector size	320x256	640x512	320x256
Pixel Pitch	30 μm	15 μm	30 μm
Spectral Response	7.7-9.4 μm		7.7-11.5 μm @ 70K; 7.7-11 μm @ 77K
Readout	ITR Only		
Thermal Resolution (NETD)	17 mK (typical)	20 mK (typical)	18.7 mK (typical)
Gain Settings	2	1	2
Well Capacity	12 Me- / 36 Me-	13.5 Me- (binning mode: 27 Me-)	12 Me- / 36 Me-
Quantum Efficiency	65% (average) from 7.7 - 9.4 μm >80% from 7.7 - 8.5 μm	70% (average) from 7.7 - 9.4 μm >85% from 7.7 - 8.5 μm	60% (average) from 7.7 - 11.5 μm >NA% from 7.7 - 8.5 μm
Operability	> 99.5% / 99.7% (typical)	> 99.5% / 99.8% (typical)	> 99.5% / 99.9% (typical)
Sub-windowing	Dynamic and user definable to 64x1	Dynamic and user definable to 160x1	Dynamic and user definable to 64x1
Pixel Clock	20 MHz	40 MHz	20 MHz
A/D	14-bit		
Cold Shield	F2.0, F4.0	F2.0, F2.3	F2.0
Frame Rate (full frame)	Variable 1 to 244 Hz	Variable 1 to 120 Hz	Variable 1 to 244 Hz
Frame Rate (windowed)	1 kHz @ 141x141; 133 kHz @ 64x1	1 kHz @ 185x185; 14.6 kHz @ 160x1	1 kHz @ 141x141; 133 kHz @ 64x1
Integration Time Control	600 ns to full frame	10 μs to full frame	600 ns to full frame
Trigger/Sync	0-5 V TTL in/out with delay		
Video Output	Digital: LVDS, Camera Link and Gigabit Ethernet. Analog: RS-170		
Video Symbology	User definable for video output overlay		
Non-uniformity correction	On board (4 tables)		
Bad Pixel Replacement	On board (4 tables)		
Cooling	Closed-cycle Stirling cooler (linear or rotary; multiple options)		
Cool Down Time	< 6 minutes @ 20C (K508 cooler)	< 5 minutes @ 20C (K508 cooler)	< 3 minutes @ 20C (LS5 cooler @ 70K)
Weight w/o Lens	< 6 kg		
Dimensions (L x W x H)	10.7" x 7.3" x 6.7" (27.2 cm x 18.6 cm x 17.0 cm)		
Operational Temperature	-30°C to 55°C		
Shock & Vibration	MIL-SPEC 810G		
Optical Mount Interface	Standard: M80, Optional: Bayonet		
User Interface Panel	Optional. Standard connector interface for LVDS, Camera Link, GigE, Analog Video, Sync In/Out, IRIG, and power		
Power Supply	Included		

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ORDERING INFORMATION

LWIR CAMERAS		LWIR LENS OPTIONS (7µm - 14µm)	
MiTIE Camera-320L LWIR F2	915XXX	10mm F2.0 M80 Mount	915131
MiTIE Camera-640L LWIR F2	915XXX	25mm F2.0 M80 Mount	915130
MiTIE Camera-320VL VLWIR F2	915XXX	50mm F2.0 M80 Mount	915129
		100mm F2.0 M80 Mount	915128
		200mm F2.0 M80 Mount	915145
SOFTWARE / OTHER OPTIONS			
C++ Software Development Tool Kit	915189		

CAMERA/LENS CALIBRATION (PER LENS)

Ambient range: (-10°C) to (+50°C)

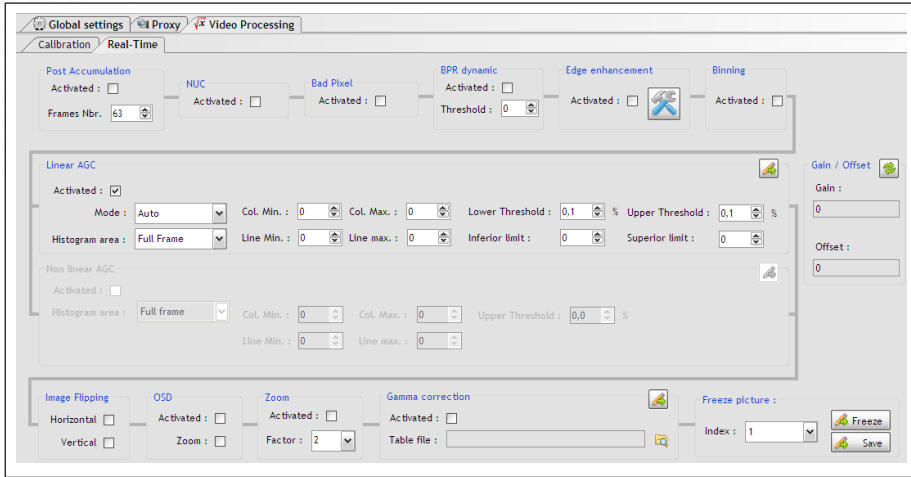
Object range: (-20°C) to (+150°C)

Lens F-number < Detector F-number



D*STAR Cooled

Graphical User Interface (GUI)



GUI Software Features:

- Integration time change
- Non-uniformity correction
- Sub-windowing
- External trigger
- For Windows 7 & 10

D*STAR for MiTIE

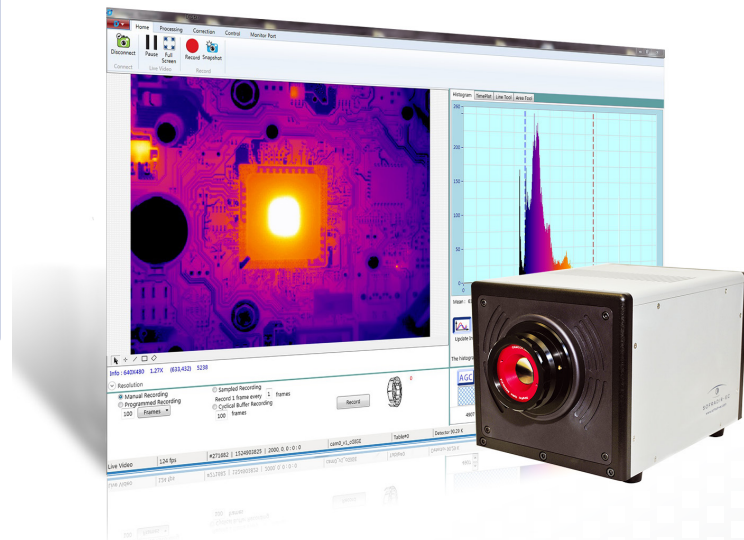
Digital Storage and Retrieval and Image Processing Software Suite

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

Also available: C++ Software Developer's Kit for MiTIE



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