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MATERIALS MANAGEMENT DIVISION
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IR Camera Technical Specifications

Parameters	Specification
Sensor Material	<ul style="list-style-type: none">• MCT (Mercury-Cadmium-Telluride) * <p>*Suited for present experiments (Ref: Sharma and Desai, Infra Red Detectors, M. Tech Credit Sem. Rep., EE Dept, IIT Bombay, 2004)</p>
Minimum size of focal plane array	<ul style="list-style-type: none">• 640 x 512 pixels.
detector cooling	<ul style="list-style-type: none">• The Stirling cooler MTBF should be greater than 7000 hours.
Spectral range	<ul style="list-style-type: none">• 3.8 - 4.8 μm (MWIR) or similar
Camera Aperture	<ul style="list-style-type: none">• F/4.0 or similar
Sensor Pixel size/pitch	<ul style="list-style-type: none">• 15 μm
NETD	<ul style="list-style-type: none">• $\leq 25\text{mK}$ at 25 degree Celsius or better
Exposure/integration time control	<ul style="list-style-type: none">• minimum range should be 100 ns to 20 ms with several time steps in between• User defined arbitrary exposure control would be preferred
Integration time mode	<ul style="list-style-type: none">• Integrate While Read(IWR) / Integrate Then Read (ITR)

Sub-window modes & Adjustable frame rate	<ul style="list-style-type: none"> • 640 x 512 pixels - 145Hz or more format • 320 x 256 pixels - 525Hz or more format • 160 x 128 pixels - 1500Hz or more format • 136 x 8 pixels - 3600Hz or more format • Temperature data must be available at all pixels at any specified frame rate for every frame acquired.
Triggering	<ul style="list-style-type: none"> • Trigger in for external synchronization through TTL or other signals that can be sent from a standard oscilloscope or a multifunction data acquisition system.
Dynamic Range	<ul style="list-style-type: none"> • at least 14 bit with digital output
Data Streaming	<ul style="list-style-type: none"> • Gigabit Ethernet or better data transfer technology
Camera control	<ul style="list-style-type: none"> • Genicam for interface with other software
Power supply	<ul style="list-style-type: none"> • Should work with 220-240 V AC / 24V DC power supply and Cables to be provided
Operating temperature	<ul style="list-style-type: none"> • at least between -20°C to 50°C
Shock and Vibration	<ul style="list-style-type: none"> • greater than 10g shock • 2g RMS random vibration along all 3 axes
Lens	
Lens 1	<ul style="list-style-type: none"> • 50mm (3.5-5μm) ; F/2.0 (11°x8,8°) or similar-USL motorized
Lens 2	<ul style="list-style-type: none"> • Far Focus G1LD Microscope (3.5-5μm) , F/3.0 or similar • High temperature calibrated upto atleast 500 °C or similar
	<ul style="list-style-type: none"> • Extension rings length 12 mm and 18 mm
	<ul style="list-style-type: none"> • Calibration must be possible in radiance as well as temperature
Calibration	<ul style="list-style-type: none"> • Specify temperature window, with or without a filter
	<ul style="list-style-type: none"> • Lens mount: Bayonet
Software features	
	<ul style="list-style-type: none"> • compatible with Windows 7 and above operating systems. It should run on both PC and Laptop computer
	<ul style="list-style-type: none"> • Display, record and store images
	<ul style="list-style-type: none"> • Post-processing of fast thermal events
	<ul style="list-style-type: none"> • Generate time-temperature plots from live images or recorded sequences
	<ul style="list-style-type: none"> • Advanced start/stop conditions including triggering external condition, time/date

	<ul style="list-style-type: none"> • File organizer with Quick collection and preview of sequences
	<ul style="list-style-type: none"> • Zoom and Pan for closer look (thermally and spatially)
	<ul style="list-style-type: none"> • Oscillograph graph of temperatures
	<ul style="list-style-type: none"> • Customized calibration wizard with production of calibration files
	<ul style="list-style-type: none"> • Float and dock user interface - allows the end user to float graphs and image windows to multiple monitors connected to data system
	<ul style="list-style-type: none"> • Software must have ability for Camera and recording control, External Triggering, Frame rate, Exposure time, User camera calibration and Non Uniformity Calculation, intuitive image colorization, and super-framing
Installation Requirements	
	<ul style="list-style-type: none"> • Software should be freely installable in an PC or laptop and work with software license (atleast 5 licenses should be provided). • Feature to install data analysis software freely on any PC to be provided by vendor
	<ul style="list-style-type: none"> • must be exportable to a file: desirable feature
	<ul style="list-style-type: none"> • Warranty: 2 years from date of installation
	<ul style="list-style-type: none"> • Installation on site by a factory trained engineer and demonstrate its proper operation
Mandatory requirements:	
	<ul style="list-style-type: none"> • <u>Cooled IR MCT camera with microscope long distance lens</u> must be installed in India atleast at one site, please give detailed contact details. Proof i.e. purchase order and satisfactory certificate from the user must be provided
	<ul style="list-style-type: none"> • The camera must be repairable in India since it is export licence controlled. Please provide proof of direct presence of OEM with a fully qualified service centre stating that the current camera is repairable in that centre.
	<ul style="list-style-type: none"> • The datasheet of the specific quoted manual should be submitted with the bid from which compliance with tender specifications must be possible. The datasheet should also be available on the website of the OEM.
	<ul style="list-style-type: none"> • Detailed point wise compliance must be submitted certified by OEM, any vague remarks will disqualify the bid