

TECHNICAL BID PROFORMA

Item Name: “Infrared (IR) Camera with Gimbal”

Bidder Eligibility Criteria:

1.0	Bidder Eligibility Criteria-I (Public Procurement – Preference to Make in India)	Class I / Class II	Local Content value	Reference, Page No.
I	Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE II) dated 16 th September 2020 and other subsequent orders issued therein.			
2.0	Bidder Eligibility Criteria-II	Compliance (Yes/No)	Reference Page No.	Remarks, If any
1	The bidder/OEM should have supplied at least 3 similar items to IITs, NITs, IISERs, CSIR Labs or other Govt. R&D organizations in the last 5 years, PO copies or installation certificates along with contact details of end user need to be submitted as the proof of supply. IIT Madras reserves its right to verify the claims submitted by the bidder and the feedback from the previous customers will be part of technical evaluation.			

3.0 Technical Compliance:

TECHNICAL SPECIFICATION -I				
S.No	SPECIFICATIONS		COMPLIED/NOT COMPLIED	REFERENCE PG.NO
1	Application	Imaging system with long-wave infrared camera for thermal imaging and digital visual camera, mountable on unmanned aerial vehicles		
2	Number of units	3		
3	Super Resolution Mode	Super Resolution Mode 1.3Mpx IR images in one shot		
4	Operating onboard system	OS for full real-time data streaming and control during the flight. Operating system should ensure the full access to all camera functions and should have easy camera control via S.Bus, CAN bus, MavLink, RJ-45 or Trigger		

5	Optical zoom	Full HD 10x optical zoom camera with anti-vibration compensation		
SPECIFICATIONS OF THERMAL CAMERA				
S.No	SPECIFICATIONS		COMPLIED/NOT COMPLIED	REFERENCE PG.NO
1	IR camera resolution	640 x 512 pixels or better		
2	IR Super Resolution Mode	1 266 x 1 010 pixels (improvement of native resolution up to 1.3 Mpx) or better		
3	FPA active sensor size	1.088 x 0.8705 cm or better		
4	Temperature measurement range	-25 °C to +150 °C		
5	Temperature measurement range	0.03 °C (30 mK, 0.054 °F)		
6	Accuracy	±2 %		
7	Frame rate	30 Hz or more		
8	Spectral range	7.5 – 13.5 µm		
9	Calibration of each lens	Package should include a calibration certificate		
10	Lenses	18°, 32°, 45°, 69° (exchangeable and calibrated)		
11	Protective filter on lens	To protect the lens against external damage during flights		
12	Digital zoom	1 – 12x continuous		
13	10-pin digital port Interface	S.BUS CAN bus for DJI M600 and A3 controllers MavLink CANbus & UART External GPS connectivity & External trigger		
SPECIFICATIONS OF DIGITAL VISUAL CAMERA				
S.No	SPECIFICATIONS		COMPLIED/NOT COMPLIED	REFERENCE PG.NO
1	Resolution	1 920 x 1 080 pixels (Full HD), 1/3" sensor, Auto white balance, Wide dynamic range, Backlight compensation, Exposure and Gamma control		
2	Optical zoom	10x optical zoom with vibration compensation		
3	View angle	ultra zoom 6.9° - extra wide 58.2°, focal 33.0 mm - 3.3 mm		

4	Noise reduction	Special 3D noise reduction function		
5	Focus	Autofocus with Direct Focus Zoom synchronization		

MEMORY AND DATA RECORDING

S.No	SPECIFICATIONS		COMPLIED/NOT COMPLIED	REFERENCE PG.NO
1	Memory	Internal high-speed SSD 128GB or 256GB for image and video recording External slot for Micro SD card & USB 2.0 for USB stick for taking images		
2	Image and video formats	Radiometric JPEG images and Digital camera Full HD JPEG images, Radiometric TIFF images (Pix4D and Agisoft compatible for 3D modeling), Digital camera h.264 encode video HD recording, Radiometric full-frame IR recording (raw data recording up to 30 Hz or more)		
3	GPS tagging (image & video)	MavLink or External GPS or DJI A3 controllers compatible via CAN bus		

INTERFACES & REAL-TIME REMOTE CONTROL

S.No	SPECIFICATIONS		COMPLIED/NOT COMPLIED	REFERENCE PG.NO
1	10-pin digital port	S.BUS CAN bus for DJI M600 and A3 controllers MavLink CANbus & UART External GPS connectivity & External trigger		
2	Ethernet (RJ-45) port	Video streaming and camera control		
3	Micro USB 2.0 port	Mass storage		
4	USB 2.0 port	Keyboard connection for in-house camera control		
5	Remote control system	Should ensure real-time control of all camera functions during the flight		

6	Remote control options	S.BUS protocol, Mavlink protocol, CANbus & Command Control Protocol - UART, CAN bus for real-time control on DJI M600 and GPS geo-tagging, RJ-45 for wireless uplink installation (video streaming and camera control)		
7	Camera functions	Measurement functions: Hot/cold spot detection, center point Temperature range settings: Automatic, manual or span mode Advanced alarm modes: Above, below, between, above & below Multi camera modes: Full screen mode, IR only, VIS only, Picture in Picture Periodic capturing: From 1s, IR and VIS images simultaneously Temperature units: Celsius, Fahrenheit, Kelvin NUC control settings: Automatic, manual, by time or triggered by operator		
8	Micro HDMI video output	1 280 x 720 pixels (720p), Aspect ratio 16:9, Micro HDMI video output		

SOFTWARE & SDK

S.No	SPECIFICATIONS		COMPLIED/NOT COMPLIED	REFERENCE PG.NO
1	Desktop software	Advanced thermal analysis and reporting SW for Windows		
2	SDK libraries	Stream SDK, Data SDK, CANbus & UART SDK		

POWER SUPPLY, WEIGHT & DIMENSIONS

S.No	SPECIFICATIONS		COMPLIED/NOT COMPLIED	REFERENCE PG.NO
1	Input supply voltage	9 – 36 VDC, Coaxial 2 x 6.4 mm, outer shell - GND		
2	Power dissipation (avg.)	12 W		
3	Weight	< 430 grams (0.95 lb)		
4	Dimensions(L x W x H)	83 mm x 85 mm x 68 mm (3.26 in x 3.34 in x 2.67 in)		
5	Mounting	2 x 1/4-20 UNC thread (1x bottom side, 1x upper side)		

6	Housing material	Durable aluminium body for long-time measurement stability		
7	Operating temperature range	-15 °C to +50 °C (5 °F to 122 °F)		
8	Storage temperature range	-30 °C to +60 °C (-22 °F to 140 °F)		
ADDITIONAL REQUIREMENTS				
S.No	SPECIFICATIONS		COMPLIED/NOT COMPLIED	REFERENCE PG.NO
1	Vendors should provide continuous technical support and maintenance of equipment.			
2	Vendors have to provide warranty for a minimum of one year			
3	Vendors must provide detailed documentation for the equipment.			
4	Vendors may be called to visit and give a presentation/demonstration on the equipment after opening the technical bid. They need to provide the approximate date for this presentation in the bid. The time period for this presentation would be 14 days from the date of opening of the bid. The presentation/demonstration will be part of technical bid evaluation.			
5	Vendors must provide training to our technical staff for using the equipment.			
6	All the expenses for installation, training and post sales technical support will be borne by the vendor.			

(Note: It is mandatory for the bidders to provide the compliance statement in tabular column format along with catalogue page number (comply/not comply) for the above points with document proof as required. Failing which bidders will be technically disqualified)

**SIGNATURE OF BIDDER ALONG WITH
SEAL OF THE COMPANY WITH DATE**