

## **Technical specifications for the medium-scale quad-rotor system with gimbaled infrared and visible range camera payloads**

**Application:** Commercial-off-the-shelf quad-rotor system with gimbaled infrared and visible range camera payloads

**Operation mode:** Vertical take-off and landing

**Ceiling:** 3 km or higher

**Hover:** Pure hover for 30 minutes or more

**Powerplant:** IC engine or hybrid

**Flight endurance:** 4 hours or more

**Flight range:** At least 100 km

**Operating Temperature:** -5 deg C to 40 deg C

**Maximum takeoff weight:** Must be lesser than 15 kg

**Payload weight:** 4 kg or more

**Payload bay:** Sufficient volume to include gimbaled infrared and visible range camera payloads.

Integration with the infrared and visible range camera payloads (payload specifications given below) to be demonstrated

**Redundancy:** Battery backup in case of engine failure

**Ground control station:** Must be included with telemetry radio (communication must happen in the frequency range of 0.9 GHz to 2.4 GHz without any interference)

**Remote control:** Must be included

**Battery and charger:** Must be included

**Flight controller:** Must include inbuilt GPS-enabled flight controller

### **Payload: Infrared and visible range camera(s) with gimbal**

**Application:** Long-wave infrared camera for thermal imaging that must be mountable on unmanned aerial vehicles. Imaging in the visible range also to be possible.

**Number of units:** 2

**Operating wavelengths for IR imaging:** minimum 7.5  $\mu\text{m}$  or lesser, maximum 13.5  $\mu\text{m}$  or larger

**Lens:** 35 mm and 13 mm lenses

**Field of vision:** Greater than 9° (horizontal ) x greater than 7° (vertical)

**Camera size:** Less than 2.5 inches x 2.5 inches including the lens

**Camera pixel pitch:** 20  $\mu\text{m}$  or lesser

**Camera weight:** 120 grams or lesser

**Gimbal:** Active 3-axis stabilized gimbal system

**Gimbal control:** manual tilt control to be possible

**Gimbal weight:** Less than 250 grams

**Gimbal size:** Less than 100 x 100 x 100 mm

**Gimbal panning angle:** +/- 150 degees

**Gimbal tilt:** Horizontal to 90 degrees vertically down

**Tilting following rate:** Minimum of 2 degrees/sec and a maximum of 45 degrees/sec

**Panning following rate:** Minimum of 3 degrees/sec and a maximum of 75 degrees/sec

Attitude tracking accuracy: +/-0.5 degree

Vibration: Must have an vibration isolation system

Accessories: Must include power/video module, voltage regulator, requisite USB cables, and a remote control interface

**Additional Requirements:**

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 have sufficient experience in supplying equipment in reputed organizations for research purposes. They must provide references like Purchase order Copies of end users whom we can contact for their experience with the supplied machine. Performance Certificate and experience details of the end users will also be used as a criterion for the selection of bids that meet technical requirements.
4. Vendors must provide detailed documentation for the equipment.
5. Vendors may be called to visit and give 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 will be intimated at a later date
6. Vendors must provide training to our technical staff for using the equipment.
7. All the expenses for installation, training and post sales technical support will be borne by the vendor