

## Specifications for PPK based drone with RGB, Multispectral and Thermal sensors:

### 1. Technical specifications for drone:

Parameters	Range
01. Category	: Small category Quadcopter
02. Operational range	: $\geq 5$ Km
03. Flight endurance time	: At least 45 Minutes
04. Flight speed	: $\geq 20$ m/s.
06. Operating Altitude	: $\geq 100$ m above ground level
07. Net weight including payload	: $\geq 4$ Kg
09. PPK enabled with internal storage	: Yes
10. RGB Sensor/camera module	: Yes
11. Flight management software	: Yes
12. DGCA Approved	: Yes
13. NPNT Approved	: Yes
14. Make in India	: Yes

### 2. Technical Specification for thermal camera/sensor:

Parameters	Range
01. Field of View	: $32^\circ$
02. Measuring Spectral band range	: $7.5-13.5 \mu\text{m}$
03. Operating temperature range	: $-10^\circ\text{C}$ to $+ 50^\circ\text{C}$
04. Operational Height	: $\geq 100$ m
06. Capture/Frame Rate	: 7.5 Hz
07. Weight	: $\leq 250$ grams
08. Nominal Power Consumption	: $\leq 4$ W

### 3. Technical Specification for multispectral camera/sensor:

Parameters	Range
01. Field of View	: $\geq 45^\circ$
02. Spectral bands	: Blue, Green, Red, Red edge, near IR
03. Capture/Frame Rate	: 1 capture per second
04. Weight	: $\leq 250$ grams
05. Nominal Power Consumption	: $\leq 4$ W

### 4. Software required:

- a. For Post processing (3D reconstruction)
  - i. Spatial aerial triangulation,
  - ii. Dense Cloud orthorectification and mosaic creation,
  - iii. Digital terrain model,
  - iv. 3D modeling
- b. For Photogrammetry analysis with capabilities of
  - i. Image processing & Georeferencing
  - ii. Geospatial Analysis
  - iii. Multispectral and hyperspectral image processing

5. Must include rugged tablet for ground control station with loaded necessary software for flight planning and data acquisition.
6. Spare propellers, batteries, charging unit and other peripherals with a carrying case must be included.
7. Onsite training of all modules/components must be done within 15 days post-delivery. Two weeks training at laboratory and at field site of landslide in hilly terrain must be given by the supplier.

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