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RYNO - UAV

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AERIAL VEHICLE CHARACTERISTICS

UAV Weight with battery and max. payload	<2 Kg
UAV Size with Propeller	<80 cm X 80 cm
Endurance (upto 1000m AMSL Take-Off)	40 minutes with mapping payload (upto 1000m AMSL Takeoff)
Range of live transmission (LOS)	4 km (un-obstructed & interference free)
Typical Cruise Speed	10 m/s
Propulsion	Battery Powered Electric Propulsion
Maximum operating altitude (AGL)	400m AGL (Above Ground Level) as per your country guidelines
Maximum launch altitude (AMSL)	3000m AMSL (Above Mean Sea Level)
Functional Temperature Range	-10°C to +50°C
Dust & Drizzle Resistance	IP53 rated
Aural Signature	<40 Db @300 meters Slant Range
Wind Resistance	Up to 10m/s (36kmph or ~20knots)
Technical Life of UAV (Landings)	Up to 2000 flights
Launch & Recovery	Vertical Take-off and Landing without any manual assistance
Maximum space required for recovery	25m x 25m open area
Autonomy	Take-off, Landing and Flight without using any R/C controller
Flight Modes	Altitude Hold Hover at a defined waypoint Waypoint Navigation (pre-defined as well as dynamically adjustable waypoints during flight) Remotely Piloted mode (RPV Mode)
Operating Crew	Minimum 1
Deployment Time	<10 minutes
Packaging and Storage	Backpacks to carry all mission critical components

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AERIAL VEHICLE CHARACTERISTICS

Failsafe features	Auto-Return to Home and Land on Communication Failure Auto-Return to Home and Land on Low Battery Multiple GPS on-board for redundancy Auto-Return to Home and Land on exceeding Wind limit of the system Auto-Return to Home and Land on Battery Imbalance Auto-Return to Home on High Temperature
Navigation Lights	Switchable (from GCS)

SURVEY ANTENNA & BASE STATION

GNSS Grade	High accuracy L1 & L2 Frequency Band Enabled PPK
Base Station	High accuracy L1 & L2 Frequency Band . - IP53 enclosure

MAPPING PERFORMANCE AT 120m AGL

Ground Sampling Distance (GSD)	<3 cm
Absolute X, Y accuracy	<10 cm (with 95% confidence interval)
Absolute Z accuracy	<20 cm (with 95% confidence interval)
Area coverage (under ideal conditions and iF SOPs followed)	Minimum 1 sq km at 120 m AGL with 80/60 overlap* Minimum 0.6 sq km at 60 m AGL with 80/60 overlap*
Onboard Storage	Minimum 64 GB or more (Expandable)

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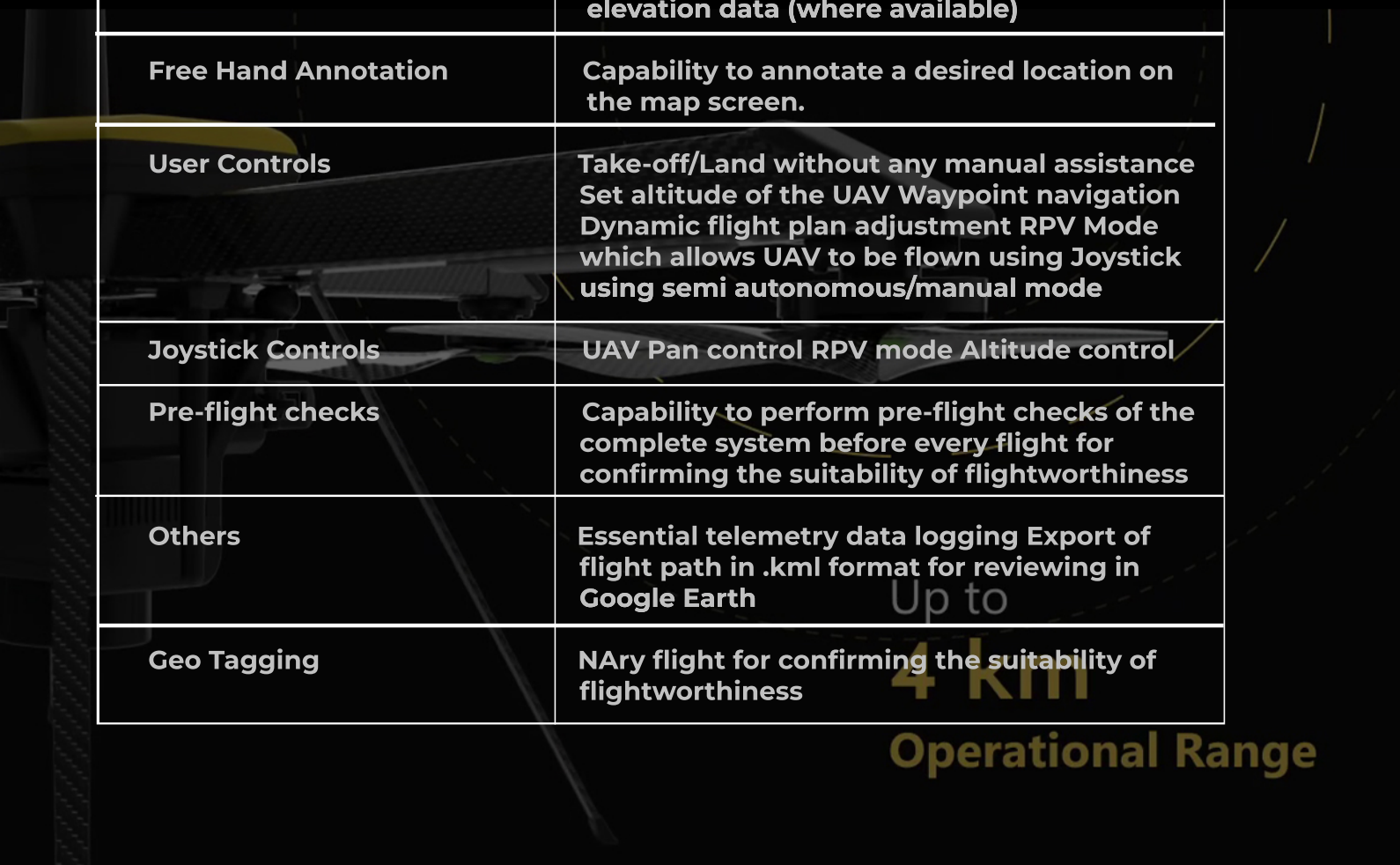
Ground Control Station (GCS) Software Features

3D Maps	Switchable between 2D/3D map views, capability to tilt/rotate 3D maps as per user input
GUI Display parameters	Geographic Map along with UAV location, UAV trajectory, camera view polygon, waypoints and flight plan Real-time telemetry displayed at all times during the flight Artificial Horizon indicating UAV attitude
Maps	Capability of working with some publicly available open-source maps. Application has the capability to download maps automatically after specifying location GPS co-ordinates 2D Maps: Capability to integrate geo-referenced raster maps provided in at least one of the commonly used digital map formats (eg. GIF TIFF) as well as shape file (.shp) 3D Maps: Capability to integrate SRTM and DTED based elevation data
Terrain Avoidance	Detects and avoids natural terrain by using elevation data (where available)
Free Hand Annotation	Capability to annotate a desired location on the map screen.
User Controls	Take-off/Land without any manual assistance Set altitude of the UAV Waypoint navigation Dynamic flight plan adjustment RPV Mode which allows UAV to be flown using Joystick using semi autonomous/manual mode
Joystick Controls	UAV Pan control RPV mode Altitude control
Pre-flight checks	Capability to perform pre-flight checks of the complete system before every flight for confirming the suitability of flightworthiness
Others	Essential telemetry data logging Export of flight path in .kml format for reviewing in Google Earth
Geo Tagging	NAry flight for confirming the suitability of flightworthiness



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COMMUNICATION LINK CHARACTERISTICS

Communication link capabilities	Transmit control commands from GCS to UAV Transmit telemetry data from UAV GCS NA Secure Communication link between UAV and GCS with 128-bit AES encryption Digital and Encrypted
Auto Tracking Comm Box	Auto tracking directional antenna
Frequency Band	2.4GHz or 5GHz (depending on application)

OPTIONAL GCS FEATURES

Multi-Polygon Mapping	Ability to add several polygons in a sequence for mapping

RECOMMENDED GCS CONTROLLER SPECIFICATION

Type	Laptop or Tablet
Screen Size	Min. 10" diagonal
Functional Temperature Range	-10°C to +55°C
GCS Controller Battery back-up	Atleast 2 full endurance flight without spare battery
IP Rating	IP65

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