ideaForge
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q6

THE HIGH-ALTITUDE SENTINEL

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DATASHEET

About

Belonging to the pedigree family of Q Series UAVs, the Q6 UAV is purpose-built for high-altitude operations. The UAV boasts of best-in-class flight time and range, and features robust build and surveillance capabilities to deliver critical on-ground situational awareness in tough weather and terrain conditions.

Up to
3000 m AMSL
Maximum Laaunch Altitude

Up to
10x HD Optical Zoom
Daylight Surveillance Payload
20MP+ Mapping Payload, PPK enabled

Over
5 km
Operational Range

Over
60+ min
Flight Time

Up to 16X
More Linear Coverage
As compared to
boots-on-ground

Up to 63X
Increase in Surveillance
Frequency as compared to
boots-on-ground

Payload Options

Day Camera

- HD 720p streaming image
- 10x Optical Zoom with Field of View as narrow as 4.6°
- 800 meter (~2600 ft) Target Detection range
- Mechanically & electronically stabilized
- Payload-to-UAV Ratio: 0.46 (Including Swappable Battery)

Dual EVA Payload

- HD 10x Optical Zoom capable Daylight video stream
- 640 x 512 Thermal / Night surveillance video stream
- Daytime Target Detection: 750 m (~2500 ft)
- Nighttime Target Detection: 400 m (~1300 ft)
- Payload-to-UAV Ratio: 0.46 (Including Swappable Battery)

Thermal Camera

- 640 x 480 Streaming Image
- 500 meter (~1650 ft) Target Detection Range
- Mechanically & Electronically stabilized
- Payload-to-UAV Ratio: 0.46 (Including Swappable Battery)

Mapping Camera

- 20+ Megapixel Photogrammetry Payload
- Optional High Accuracy PPK
- X,Y Accuracy: <10 cm @ 400 ft AGL
- Z Accuracy: <20 cm @ 400 ft AGL
- Payload-to-UAV Ratio: 0.50 (Including Swappable Battery)

Ground Control Station

ideaForge's state-of-the-art GCS enables fully autonomous flight with utmost privacy and provides a host of safety features.

- Terrain Avoidance to keep your Q6 UAV safe
- Easy take-off and landing ensures you concentrate on outcomes
- Waypoint based navigation for ease of flying
- Live Display of Flight Parameters to keep you updated every step of the way
- Encrypted Communication for highest privacy
- Capability to Integrate with User Provided Maps
- Annotation of points of interest
- Fail-safe Features for Communication Loss, Low Battery, High Wind, Temperature Range Violation

Tech Spec

Aerial Vehicle (AV) Characteristics	
UAV Weight with battery and max. payload	<6 kg
UAV Size with Propeller	<1.5 m x 1.5 m
Endurance (upto 1000m AMSL Take-Off)	60 minutes+
Range of live transmission (LOS)	5 km (un-obstructed & interference free)
Typical Cruise Speed	10 m/s
Propulsion	Battery Powered Electric Propulsion
Maximum operating altitude (AGL)	500 m AGL (Above Ground Level)
Maximum launch altitude (AMSL)	3000 m AMSL (Above Mean Sea Level)
Functional Temperature Range	0°C to +50°C (Self Certified)
Dust & Drizzle Resistance	IP53 rating (Self Certified)
Aural Signature	<40 Db @300 meters AGL (Self Certified)
Wind Resistance	Upto 10m/s (36kmph or ~20knots)
Technical Life of UAV (Landings)	Minimum 500 landings (Self Certified)
Launch & Recovery	Autonomous Vertical Take-off & Landing (VTOL)
Maximum space required for recovery	25 m x 25 m open area
Area Coverage at 120 m (for mapping applications with 20 MP payload)	Minimum 2 sq km at 120 m AGL with 80/60 overlap
Autonomy	Fully autonomous from Take-off to Landing without using any R/C controller
Operating Crew	Maximum 2
Deployment Time	< 10 minutes
Navigation Lights	Switchable (from GCS)

Aerial Vehicle (AV) Characteristics	
Packaging and Storage	Waterproof Backpacks to carry all mission critical components with IP66 or better rating for dust and drizzle protection(OEM certification)
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 and Land on exceeding the UAV health parameters (Temperature, vibration and throttle limit of the system)
Flight Modes	Altitude Hold
	Hover at a defined waypoint
	Autonomous Waypoint Navigation (pre-defined as well as dynamically adjustable waypoints during flight)
	Remotely Piloted mode (RPV Mode)
	Real-time Target Tracking of designated static and moving targets
Payload Characteristics	
Payload (Options)	Daylight HD (1280 X 720) with 10x optical zoom video payload
	Thermal 320 X 240 video payload (Optional)
	Thermal 640 X 480 video payload (Optional)
	Mapping payload (Optional) 20 MP Photogrammetry payload High accuracy L1 & L2 Frequency Band Enabled PPK X, Y Accuracy: <10 cm at 120 m AGL (with 95% confidence interval) Z Accuracy: <20 cm at 120 m AGL (with 95% confidence interval) Onboard Storage: Minimum 64 GB (expandable)"
	Dual Payload (Day and TI) - Optional
Video Stabilization	Electronic and Gimbal stabilization of video output at all zoom levels in real-time (Applicable only with surveillance payload)
Payload Replacement Time	<5 minutes
Payload Control (in flight)	Pan: 360º continuous (with UAV) Tilt: 90º (Only with surveillance payload)
Target Detection Slant Range (Human Size Target)	Daylight: Minimum 800 m Thermal (640 X 480): Minimum 400 m Thermal (320 X 240): Minimum 200 m
Ground Control Station (GCS) Software Features	
3D Maps	Switchable between 2D/3D map views, capability to tilt/rotate 3D map as per user input
GUI Display parameters	Geographic Map along with UAV location, UAV trajectory, camera view polygon, waypoints and flight plan (Applicable only for surveillance payloads)
	Real-time video from the UAV with on-screen display of important parameters like UAV co-ordinates, target (payload) co-ordinates and range from UAV, true North indication, Distance from HOME, etc. (Applicable only for surveillance payloads)
	Real-time video displayed at all times during the flight (Applicable only for surveillance payloads)
	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
Free Hand Annotation	Capability to annotate a desired location on the map screen

Ground Control Station (GCS) Software Features	
Terrain Avoidance	Detects and avoids natural terrain by using elevation data (where available)
Terrain Huggings	Capability to maintain uniform altitude separation from ground during navigation over non-uniform terrain
No Fly Zone	Ability for user to mark zones which they do not desire the UAV to enter during flight. Also highlights airports in the vicinity and restricts UAV from entering those areas
Geo Fencing	Capability in creating a virtual fence/perimeter for a real-world geographical area. It enables the user in creating a predefined boundary to avoid the RPA venturing beyond the defined area accidentally
Channel Scan	Ability to estimate the best suited channel for a desired location based on the colour indication for effective flight operations
User Controls	Take-off/Land without any manual assistance
	Set altitude of the UAV
	Waypoint navigation
	Dynamic flight plan adjustment
	Point payload to ground co-ordinate function (Applicable only in surveillance payloads
	RPV Mode which allows UAV to be flown in semi autonomous mode
Joystick Controls	Full camera controls Pan/Tilt & Zoom In/Out (Applicable only for surveillance payloads)
	RPV mode
	Altitude control
Video	Video recorded on the GCS and exported in commonly portable video format (AVI/MP4 etc.). (Applicable only for surveillance payloads)
	Video of the full flight is recorded by default with option to turn recording off (Applicable only for surveillance payloads)
	Capability of taking image snapshots with on-screen display parameters at any time during flight (Applicable only for surveillance payloads)
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
Optional GCS Features	
Remote Video Streaming	OPTIONAL - Stream Live Video from GCS to remote location over Internet or local network. - Option of ONVIF stream and control at remote location for 3rd party VMS integration. (Applicable only for surveillance payloads)
Moving Target Indication	OPTIONAL - Highlight moving objects in live video display. (Applicable only for surveillance payloads)"
Recommended GCS Controller Specification	
Type	Laptop or Tablet
Screen Size	Min. 10" diagonal
Functional Temperature Range	0°C to +50°C (OEM certification)
GCS Controller Battery back-up	Atleast 2 full endurance flight without spare battery
IP Rating	IP53
Communication link Characteristics	
Auto Tracking Comm Box	Auto tracking directional antenna
Frequency Band	2.4GHz or 5GHz (depending on application)

Communication link Characteristics	
Communication link capabilities	Transmit control commands from GCS to UAV
	Transmit telemetry data from UAV GCS
	"Transmit day and night video from UAV to GCS (Applicable only for surveillance payloads)"
	Secure Communication link between UAV and GCS with 128-bit AES encryption
	Digital and Encrypted

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Frequently Asked Questions

Are ideaForge UAV indigenous?

Yes, ideaForge's drones are designed & made in India.

Is the NETRA Prime UAV BVLOS system?

Yes, the Q6 UAV is capable of traveling up to 5 km from the Ground Control Station in unobstructed & interference free environments.

How does a 10X Optical Zoom HD Camera compare to a 4K Camera?

4K videos, usually taken by commercial grade drones feature wide sweeping shots, with the intent of personal or professional cinematography. When it comes to Surveillance footage, the intent is to be able to look at individual targets to be able to detect, recognise & identify them. Thus, with an HD camera and a high optical zoom, the amount of actual information in terms of pixels that ideaForge's drones are able to extract from a single target far exceeds what is available on a simple cinematic 4K stream.

How does terrain avoidance work?

Terrain avoidance works using the elevation data provided to the autopilot at the flight location. Once the autopilot has this information, the Drone is able to maintain a safe distance away from the terrain.

How much time does it take to replace the payloads?

the Q6 UAV's payloads can be replaced in less than 5 minutes.

How much clear space does the UAV need for launch and recovery?

Q6 UAV can safely land in as little as a 25 m x 25 m open area.

What material is the UAV body made of?

The airframe is made of Carbon Fibre.

Can we buy a thermal at a later date and integrate it with the bird?

Yes, as Q6 UAV's payloads are modular, different payloads can be purchased at a later date and swapped with the existing payload to provide your drone with new mission capabilities.

What all map formats does the software support?

The software supports Raster, DTED, GIF, TIFF and also shape files.

What are all the safety features available on the Q6 UAV?

The Q6 UAV comes with the following safety features:

a. Auto-Return to Home and Land on Communication disruption

b. Auto-Return to Home and Land on Low Battery

c. Multiple GPS on-board for redundancy

d. Auto-Return to Home and Land on High Wind

e. Auto-Return to Home and Land on Battery Imbalance

f. Auto-Return to Home and Land on exceeding Temperature limits of the system

What happens in case of communication failure? While returning back what happens if it regains communication?

In case of communication failure, the Q6 UAV continues its mission for 7 seconds

a. If communication is regained within 7 seconds it will conitnue the mission

b. If the communication is not regained till 7 seconds, the UAV automatically returns back to the Home/Take-off location and lands safely

c. If the communication is regained after 7 seconds the UAV hovers at the point where communication was regained awaiting further commands