

# Trimble UX5 HP

## Unmanned Aircraft System

### Key Features

High-performance Trimble GNSS receiver with **PPK technology**

36 MP, full-frame, **high resolution camera**

Orthomosaics **resolution down to 1 cm** and 3D models with up to 1,000 pts/m<sup>2</sup>

Survey quality accuracy **without ground control**

**Fully automated Trimble Access workflows** for ease-of-use and safe operation

**Simple data processing** with Trimble Business Center photogrammetry module

**Advanced data processing** with Trimble Inpho UASMaster

### HIGH PRECISION MAPPING AND SURVEYING SOLUTION

The Trimble® UX5 HP Unmanned Aircraft System (UAS) is an easy to use, fully automated, high precision system capable of capturing aerial photography with resolutions down to 1 cm. Featuring Trimble Access™ Aerial Imaging field software and Trimble Business Center office software, this complete system provides an intuitive workflow that allows you to quickly create the highest quality orthomosaics and 3D models for applications such as survey grade mapping, power line monitoring, field leveling, site and route planning, progress monitoring and asset mapping.

#### Superior Image Acquisition and Accuracy

The UX5 HP delivers precise data by integrating a high-performance Trimble GNSS receiver and a superior camera. Post-Processed Kinematic (PPK) GNSS technology is used to establish very accurate image locations in absolute coordinate systems, eliminating the need for ground control. As a result, less time is spent in the field and high precision results can be achieved even in the most inaccessible areas. With PPK, georeferencing aerial data is more robust and accurate than RTK, providing a superior level of reliability and accuracy. Use either your own base station or work with data from reference stations to georeference your deliverables with the highest accuracy possible.

The Trimble UX5 HP features an industry-leading 36 MP full-frame sensor camera capable of capturing sharp, high resolution images. The camera achieves a leading level of image resolution—orthomosaics down to 1 cm GSD and point clouds up to several thousands points per square meter.

#### Configure for the Job

No one project is ever the same, that is why you can select a camera and lens combination that match your project needs. You have the flexibility to choose between a near infrared or RGB sensor system, and a selection of lenses. The lenses include a 35 mm lens for high resolution, a 15 mm wide angle lens for increased flight coverage or a 25 mm lens delivering both resolution and increased flight coverage.

#### Trusted Performance

The Trimble UX5 HP is an extremely safe and durable system, made from impact resistant foam, that can withstand extreme temperatures, winds up to 55 km/h, and light rain—making it ideal for use in conditions that most unmanned aircrafts struggle to operate in.

#### Intuitive Workflows with Trimble Access

The Trimble Access Aerial Imaging application loaded onto the Trimble Tablet Rugged PC operates the UX5 HP and is a single software tool for planning your aerial missions, performing pre-flight checks and monitoring your flights. Now you can map corridors, cover disconnected areas in a single flight, import multiple map layers, fly irregular shaped areas and heights, plan or change multiple takeoff and landing locations during flight, and perform flight simulations to confirm the plan. The export functionality gathers all required data into a single file that can be imported into Trimble Business Center.

#### Valuable Photogrammetry Deliverables

Optimized to process data from the Trimble UX5 HP, the Trimble Business Center Photogrammetry Module creates impressive deliverables. With a single drag-and-drop, imported GNSS information, base station or reference station data, and onboard images are processed in Trimble Business Center to produce a scaled orthophoto, point clouds, Triangulated Irregular Network (TIN) models and contour maps of the area flown. These can then be used in planning a project, calculating volumes, excavation planning, drainage planning and many other functions.

Alternatively, Inpho UASMaster provides the power user or photogrammetrist with the right set of tools to use the full potential of aerial data. With feature-based seamline-finding, terrain editing capabilities, state-of-the-art DTM generation, classification and filtering, even the most challenging projects can be processed.



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## PERFORMANCE SPECIFICATIONS

- Maximized image footprint without compromising resolution, obtained with a custom wide-angle lens and full frame sensor.
- Maximized coverage per flight and per hour due to large image footprint, sharp turning capability and high cruise speed.
- Reversed thrust technology for a short and steep landing circuit.
- Powerful propulsion system for steep climbs and high altitude flights.
- High airframe service life due to wing robustness and maintainability.
- Short setup time with automated procedures in Trimble Access field software.
- Self-check and failsafe procedures for safe operation.
- One-button export to Trimble Business Center to create deliverables.
- Optimized data accuracy when processed with Trimble Business Center or Trimble Inpho UASMaster.
- High precision GNSS receiver to georeference deliverables accurately and easily.

## HARDWARE

Type ..... Fixed wing  
 Weight ..... 2.9 kg  
 Wingspan ..... 1 m  
 Wing area ..... 34 dm<sup>2</sup>  
 Dimensions ..... 100 cm x 65 cm X 10.5 cm  
 Material ..... EPP foam; carbon frame structure; composite elements  
 Propulsion ..... Electric pusher propeller; brushless 1400 W motor  
 Battery ..... 14.8 V, 6600 mAh  
 Camera ..... 36 MP mirrorless full frame with custom 15, 25 or 35 mm lens  
 GNSS receiver ..... L1/L2 GNSS, 20 Hz (GPS, GLONASS, BeiDou, Galileo Ready)  
 Controller ..... Trimble Tablet Rugged PC

## SOFTWARE

### Trimble Access Aerial Imaging application

- Project management
- Mission planning with option for multiple flights
- Automated pre-flight checks
- Automatic take off, flight and landing
- Autonomous camera triggering
- Automated fail-safe routines
- User controlled fail-safe commands
- Automated data consistency checks
- Export to Trimble Business Center, Trimble UASMaster and a generic format for image processing

## OPERATION

Endurance<sup>1</sup> ..... 35 minutes  
 Range<sup>1</sup> ..... 52 km  
 Cruise speed ..... 85 kph  
 Maximum ceiling<sup>2</sup> ..... 5000 m  
 Pre-flight system setup time ..... 5 minutes  
 Take off  
   Type ..... Catapult launch  
   Angle ..... 30 degrees  
 Landing  
   Type ..... Belly landing  
   Angle ..... 14 degrees  
 Landing space (L x W)<sup>3</sup>  
   Typical ..... 20 m x 6 m  
   Recommended ..... 50 m x 30 m  
 Weather limit ..... 55 km/h and light rain  
 Communication and control frequency ..... 2.4 GHz (FHSS)  
 Communication and control range ..... Up to 5 km

## ACQUISITION PERFORMANCE

Resolution (GSD) ..... 1 cm to 25 cm  
 Height above take-off location (AGL) ..... 75 m to 750 m  
 Absolute accuracy (no ground control points) ..... down to 2 cm (0.8 in)  
 Relative accuracy (XY/Z) ..... 1-2x/1-5x GSD

## AREA COVERAGE TABLE<sup>[1]</sup>

Height AGL	GSD 15 mm lens	Area/flight 15 mm lens	GSD 25 mm lens	Area/flight 25 mm lens	GSD 35 mm lens	Area/flight 35 mm lens
75 m	2.4 cm	1.4 km <sup>2</sup>	1.5 cm	0.8 km <sup>2</sup>	1.0 cm	0.6 km <sup>2</sup>
100 m	3.3 cm	1.9 km <sup>2</sup>	1.9 cm	1.2 km <sup>2</sup>	1.4 cm	0.8 km <sup>2</sup>
120 m	3.9 cm	2.4 km <sup>2</sup>	2.3 cm	1.4 km <sup>2</sup>	1.7 cm	1.0 km <sup>2</sup>
150 m	4.9 cm	3.1 km <sup>2</sup>	2.9 cm	1.8 km <sup>2</sup>	2.1 cm	1.2 km <sup>2</sup>
300 m	9.8 cm	6.5 km <sup>2</sup>	5.8 cm	3.7 km <sup>2</sup>	4.2 cm	2.7 km <sup>2</sup>
750 m	25 cm	16.1 km <sup>2</sup>	14.6 cm	9.3 km <sup>2</sup>	10.5 cm	6.3 km <sup>2</sup>

[1] For a 5:1 aspect ratio of a single rectangular flight block, at 80% lateral overlap, including 5 min of traveling time from take-off to the first waypoint and from the last waypoint to the landing.

1 ISO standard atmosphere conditions.  
 2 Recommended; UX5-HP not tested above 5,000 m.  
 3 1 sigma for wind <30 kph.

Specifications subject to change without notice.



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