WINGCOPTER 178

The WINGCOPTER 178 is a robust, powerful electric fixed wing VTOL with an empty weight of 5.6 kg and 4 kg capacity for payload and batteries. It is designed as an effective combination between a wing aircraft and a multicopter so that it can be vertically launched and landed anywhere. At the same time, this combination allows longer flight times and longer ranges than traditional UAVs.

Thanks to the new aerodynamic design and the innovative tilt-rotors, the WINGCOPTER remains stable in the air in any weather condition. The WINGCOPTER offers autonomous intuitive control for take off and landing as well as for flying over long distances.

WINGCOPTER 178 Heavy Lift

The WINGCOPTER 178 Heavy Lift is the stronger brother in the same airframe. By maxing out the payload potential of the WINGCOPTER 178, we built a platform with a take off weight of 16 kg at an empty weight of 6 kg. This capacity can be used either for range extension or for heavier payloads.

Tilt-rotor mechanism

The unique and patented tilt-rotor mechanism ensures a smooth and steady transition between multicopter mode (hovering) and fixed wing mode (forward flight) within seconds. Therefore, the WINGCOPTER is more stable and thus more utilisable with its wind resistance of 8 m/s during take off and landing. During forward flight, even higher gusty winds can be handled at a flight speed of up to 130 km/h. This is enabled by WINGCOPTER's compact and robust design with the wingspan being only 178 cm.
LiDAR

The WINGCOPTER 178 Heavy Lift enables new possibilities for VTOL LiDAR mapping. LiDAR solutions with a weight of 6 kg can scan a stretch of more than 20 km in one flight. Those lighter than 4 kg can even scan 40 km. The WINGCOPTER 178 carries all different LiDAR solutions below 2 kg over a range of up to 100 km.

Sensor: LiDAR / 3DT-Scanfly
Technical details

External dimensions:
178 cm x 132 cm x 52 cm

Flight time:
max. 120 minutes (fixed wing mode)

Speed (multicopter mode):
min. 0 km/h; max. 50 km/h

Speed (fixed wing mode):
min. 40 km/h; max. 130 km/h

Range:
100 km (fixed wing mode)

Rate of climb:
up to 6 m/s

Altitude:
max. 5000 m

Payload:
up to 2000 g (WINGCOPTER 178)
up to 6000 g (WINGCOPTER 178 Heavy Lift)

Maximum take of weight (MTOW):
WINGCOPTER 178 9.6 kg
(including payload and batteries)
WINGCOPTER 178 Heavy Lift 16 kg
(including payload and batteries)

Construction:
Composite (fiberglass and carbon fiber)

Remote control:
Tablet / ground control
+ software + radio controller

Flight modes:
manual and autonomous

Drive:
electric

Disclaimer
All specifications regarding performance of the WINGCOPTER are variable depending on the configuration of the payload.
Mapping

The WINGCOPTER 178 for mapping comes with different payloads, that can be exchanged modularly. Our basic package for photogrammetry includes the Sony α7R II with a 25-mm Zeiss lens. The built-in solution protects the camera and the lens from all environmental conditions and reduces the exposed surface to a minimum while remaining easy to access below the back cover of the WINGCOPTER. With the tuned combination of mapping system and battery capacity, more than 80 km can be covered in one single flight. The great range of flight speed and the high resolution of the camera system allow our solution to cover wide areas faster. With our WINGCOPTER 178 Heavy Lift we recommend the PhaseOne iXU-RS 1000 with a 40-mm lens.

Case studies

The WINGCOPTER 178 Heavy Lift can map 7.5 square kilometers at 2.8 cm ground sample distance (GSD) and 40% overlap within 70 min at an altitude of 180 m. At an altitude of 100 m the WINGCOPTER 178 can map 2.25 square kilometers in one 80-min flight at a GSD of 2.7 cm and 75% vertical and horizontal overlap. Or 5.5 square kilometers at 30% overlap.
Modularity and customization

With its uncompromising lightweight design, the WINGCOPTER achieves the best weight-to-payload ratio among fixed-wing VTOLs on the market. The WINGCOPTER is the perfect solution for multipurpose use. With interchangeable nose and belly covers and different battery pack sizes, the WINGCOPTER can be quickly retooled for several scenarios. This facilitates customization of power and sensors for all kinds of applications. We can equip the WINGCOPTER with sensors according to your specific requirements and make it the perfect flight system for your needs.

Compatible sensors

RIEGEL VUX-1 UAV LiDAR; 3DT-Scanfly / Velodyne LiDAR; YellowScan LiDAR; Phoenix Aerial AL3-32 LiDAR; Trillium Orion; Gimbaled FLIR; NextVision Nighthawk / Hawkeye; Sony α6000; Sony α7R II; Phase One iXU; SLANTRANGE 3p; Headwall Nano Hyperspectral; Parrot Sequoia; MicaSense RedEdge and any other sensor up to a total weight of 6 kg.

PPK

All photogrammetry packages can be extended with a PPK device. The KLAU Geomatics PPK achieves a 3-cm camera center accuracy within 15 km radius of a local base station. Post-processing kinematics enable high accuracy even on vast mapping missions far beyond visual line of sight and dramatically reduce the post processing effort.
Multispectral

Our package for multispectral photogrammetry comes with the MicaSense RedEdge that is placed in the belly of the WINGCOPTER. The RedEdge's flat and light-weight design allows for more space and weight for additional batteries. Thus, a range of 100 km can be traveled in one single flight. At an altitude of 120 m the WINGCOPTER 178 can map 1.8 square kilometers within one 2-hour flight at a GSD of 8 cm and 70 % horizontal and vertical overlap.
Made in Germany

Each model is produced in a one-off production using precise hand crafting and is made from high strength carbon fiber and fiberglass composites. We rely on more than 30 years of modeling experience with composites and aircraft engineering. We place the highest value on the durability of our products, combining aircraft lightweightness with robustness.

Feel free to contact us

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