The RiCOPTER is a high-performance unmanned multi-rotor aircraft equipped with RIEGL’s VUX-SYS sensor system to offer a fully integrated turnkey solution for professional UAS surveying missions.

The excellent measurement performance of the VUX-1UAV in combination with IMU/GNSS unit, antenna, control unit, and optional digital cameras results in survey grade measurement accuracy.

The RiCOPTER is a complete UAS LiDAR solution from one single manufacturer!

Typical Applications

- Agriculture and Forestry
- Topography in Open-Cast Mining
- Terrain and Canyon Mapping
- Surveying of Urban Environments
- Archeology and Cultural Heritage Documentation
- Construction-Site Monitoring
- Corridor Mapping: Power Line, Railway Track, and Pipeline Inspection

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**RiCOPTER Main Features & Key Facts**

- robust and reliable airborne scanner carrying platform
- full mechanical and electrical integration of sensor system components with aircraft fuselage
- carbon fibre main frame, foldable propeller carrier arms, and shock-absorbing undercarriage for stable flight, landings and comfortable transportation
- **RiCOPTERControl (RICC):**
  - redundant flight control system developed and produced by RIEGL
  - optimized for operation of VUX-SYS Sensor System including camera(s)
  - remote control Graupner MC32 (2.4 GHz; telemetry supported)
  - 433, 868 or 915 MHz command and control link (details on request); 5.8 GHz live video downstream
- UN 38.3 certified batteries

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**RiCOPTER Aircraft Technical Data**

### Specifications and Performance:

<table>
<thead>
<tr>
<th>Main Dimensions</th>
<th>MTOM (Maximum Take-Off Mass)</th>
<th>Max. Sensor Load</th>
<th>Empty Weight</th>
<th>Max. tested and permitted Operating Altitude AMSL</th>
<th>Max. Flight Endurance</th>
<th>Cruise Speed</th>
<th>Productivity (area coverage) per flight</th>
<th>Take-off / Landing</th>
</tr>
</thead>
<tbody>
<tr>
<td>ready to fly, arms folded for transportation &amp; storage</td>
<td>25 kg</td>
<td>up to 6.5 kg</td>
<td>11 kg</td>
<td>up to 4000 m (13,100 ft) (under ISA) conditions</td>
<td>up to 30 min</td>
<td>typ. 6 - 8 m/sec</td>
<td>up to 2 km² @ 8 m/s, 100 m AGL</td>
<td>VTOL (Vertical Take-off and Landing)</td>
</tr>
<tr>
<td>arms unfolded for safe flight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,920 mm x 1,820 mm x 470 mm</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>624 mm x 986 mm x 470 mm</td>
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</tr>
</tbody>
</table>

### RiCOPTER Transportation Case:

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Empty weight</th>
<th>approx. 20 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>empty weight</td>
<td>1,220 mm x 810 mm x 540 mm</td>
<td></td>
</tr>
</tbody>
</table>

### RiCOPTER Ground Control Unit:

| Weight components | approx. 1.2 kg | | | | | | | |
|-------------------|----------------|---|---|---|---|---|---|
| • integrated datalink interface | | | | | | | |
| • integrated receiver of video signal for FPV camera | | | | | | | |
| • powered via USB connection | | | | | | | |
| • status display | | | | | | | |

### Limitations:

<table>
<thead>
<tr>
<th>Max. Ground Speed</th>
<th>14 m/sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Tolerable Wind Speed</td>
<td>8 m/sec</td>
</tr>
<tr>
<td>Max. Climb Rate</td>
<td>5 m/sec</td>
</tr>
<tr>
<td>Max. Descent Rate</td>
<td>2 m/sec</td>
</tr>
</tbody>
</table>

### Hot / Cold Weather Operation:

<table>
<thead>
<tr>
<th>Min. Operating Temperature</th>
<th>-5°C OAT (Outside Air Temperature)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Operating Temperature</td>
<td>+40°C OAT (Outside Air Temperature)</td>
</tr>
</tbody>
</table>
**RiCOPTER Setup with Integrated RIEGL VUX-SYS Sensor System**

The VUX-SYS fits the dedicated mounting bay of the RiCOPTER directly without any adaptations. The system is supplemented by two digital cameras, covering a field of view of approximately 160 degrees. The low weight of the VUX-SYS enables the RiCOPTER to operate up to half an hour at a gross weight of 25 kg.

**RIEGL VUX-SYS Sensor System Technical Data**

<table>
<thead>
<tr>
<th>System Components</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• RIEGL VUX-1UAV</td>
<td>• IMU/GNSS unit (APX-20 UAV) with antenna</td>
</tr>
<tr>
<td>• up to 3 cameras (optional), e.g.</td>
<td>• 2x oblique RGB cameras (or 1x nadir RGB camera), and</td>
</tr>
<tr>
<td>2x oblique RGB cameras</td>
<td>1x nadir thermal camera</td>
</tr>
<tr>
<td>(or 1x nadir RGB camera), and</td>
<td></td>
</tr>
<tr>
<td>1x nadir thermal camera</td>
<td></td>
</tr>
</tbody>
</table>

**RIEGL VUX-1UAV Scanner Performance when integrated in RiCOPTER**

- Field of View (FOV): 230°
- max. effective measurement rate: up to 350,000 meas./sec
- max. range @ target reflectivity 20%: 550 m
- minimum range: 3 m
- range accuracy: 10 mm
- Laser Safety Class according to IEC 60825-1:2014: Laser Class 1 (eye safe)

**IMU/GNSS Unit (Applanix APX-20 UAV)**

- accuracy Roll, Pitch / Heading: ±0.015° / 0.035°
- IMU sampling rate: 200 Hz
- position accuracy (typ.): 0.05 m - 0.3 m

**Camera Interfaces**

- up to 4 x trigger and event marker

The VUX-SYS Sensor System can also be equipped with the RIEGL VUX-1LR (details on request). Details to be found in the latest RIEGL VUX-1UAV, VUX-1LR & VUX-SYS data sheets.
Executive Summary
Power Line Project

For receiving more information about the scope of delivery, pricing, and availability of sample data, please get in contact with info@ricopter.com.

Reference projects have already been carried out successfully in applications like power line & infrastructure mapping, forestry & agriculture, environmental monitoring, flood analysis, and many more.

Further Information & Scan Data Projects

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Optional RiCOPTER Components / Accessories

### RiCOPTER Ground Control Unit

The Ground Control Unit comes with according tripod mount.

- integrated datalink interface (433, 868 or 915 MHz)
- integrated receiver of video signal for FPV camera (5.8 GHz)
- powered via USB connection
- status display
- rugged PC for flight planning and configuration of the mission (optional)

### RiCOPTER Charging Control Unit

- professional PELI-Carrying-Case for easy and safe transportation
- equipped with all required connectors and cables
- Power Supply: 100 – 240 VAC / max. 1.200 Watt
- 2 charging slots for max. 10 A each (2 Charging Control Units are recommended)
- charging time: approx. 1 hour for 1 set (4 batteries; 2 Charging Control Units)

Further accessories available (more information on request).

Further Information & Scan Data Projects

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The RiCOPTER is a high performance unmanned multi-rotor aircraft, designed & manufactured by RIEGL Laser Measurement Systems GmbH. It is distributed, supported and serviced by RiCOPTER UAV GmbH, also a RIEGL company.

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