RIEGL RiCOPTER®
with *RIEGL* VUX®-SYS integrated

ULS

350m | 550kHz

RIEGL VUX-1UAV features

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!

RIEGL RiCOPTER®
Remotely Piloted Aircraft System for Unmanned Laser Scanning (ULS)

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

Scan this QR code with your smartphone to get further information about the *RIEGL* RiCOPTER.

www.riegl.com

RIEGL®

RIEGL LMS GmbH, Austria | *RIEGL USA Inc.* | *RIEGL Japan Ltd.* | *RIEGL China Ltd.*

RIEGL RiCOPTER Main Features & Key Facts

- robust und 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
- redundant flight controllers, live video & telemetry downstream
- optimized for operation of VUX-SYS Sensor System including cameras
- remote control Graupner MC32 (2.4 GHz; telemetry supported)

RIEGL RiCOPTER Aircraft Technical Data

Specifications and Performance:

Main Dimensions ready to fly arms folded for transportation & storage	 1,920mm x 1,820mm x 470mm 624mm x 986mm x 470mm
MTOM (Maximum Take-Off Mass)	< 25 kg
Max. Payload (batteries & sensor load)	up to 16 kg [1]
Empty Weight	8 kg
Max. Operating Altitude AMSL [2]	up to 4000 m (12,000 ft) [3] [4] (under ISA[5] conditions)
Max. Flight Endurance	with 8 kg sensor load: up to 30 min
Cruise Speed	typ. 20 - 30 km/h
Take-off / Landing	VTOL (Vertical Take-off and Landing)
RiOPTER Transportation Case dimensions empty weight	 1,220mm x 810mm x 540mm approx. 20 kg
RiCOPTER Ground Station (optional) dimensions weight components	 600mm x 400mm x 400mm approx. 19 kg • monitor for video downstream • video receiver with two antennas • ground station PC (flight planning, mission guidance) • internal batteries for power supply

1) 8 kg batteries + up to 8 kg sensor load
2) AMSL – Above Mean Sea Level
3) depending on rotor blade configuration
4) For flight altitude above ground level, operational limits for civil unmanned aircraft according to national regulations have to be observed.
5) ISA – International Standard Atmosphere

Limitations:

Max. Horizontal Air Speed	60 km/h
Max. Tolerable Wind Speed	30 km/h
Max. Climb Rate	6 m/sec
Max. Descent Rate	1.3 m/sec
Max. Descent Speed for smooth landings	0.2 m/sec

Hot / Cold Weather Operation:

Min. Operating Temperature	-5°C OAT (Outside Air Temperature)
Max. Operating Temperature	+40°C OAT (Outside Air Temperature)

Remote Control Graupner MC32

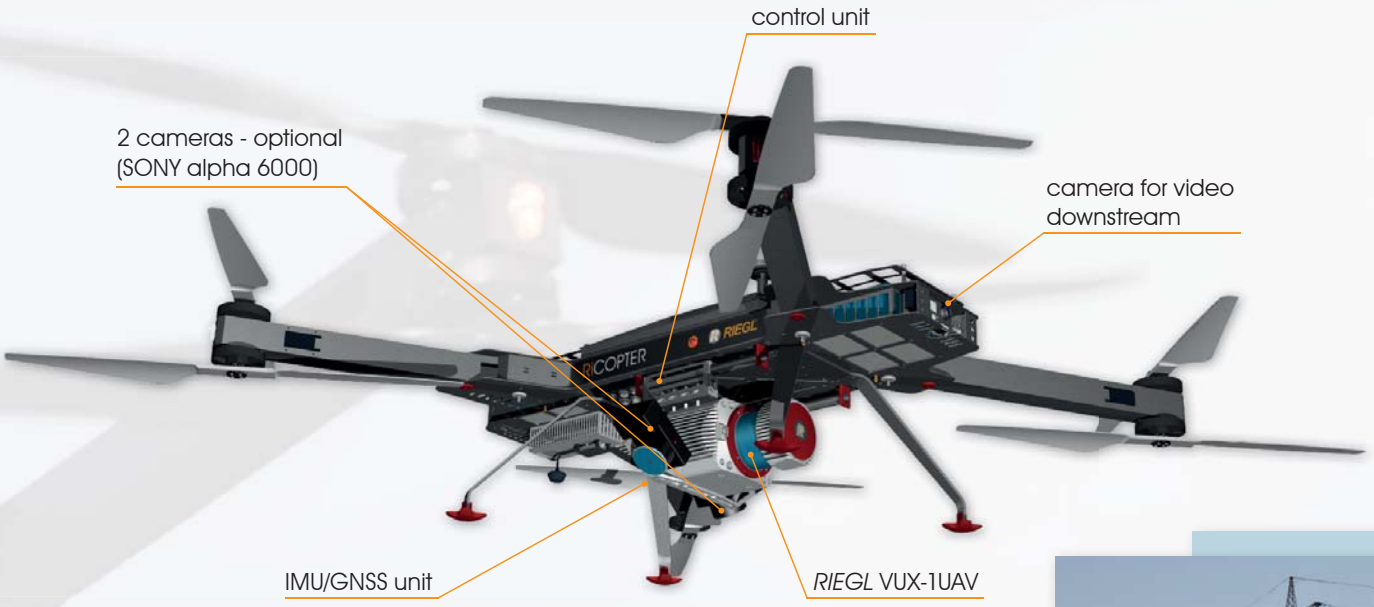
easy to carry with integrated handle

RIEGL RiCOPTER ready for take off

foldable arms facilitate easy transportation and storage

RIEGL RiCOPTER Setup with Integrated 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 25kg.



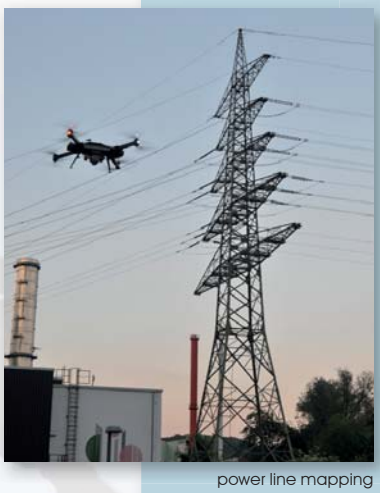
RIEGL VUX-SYS Sensor System Technical Data

System Components	• *RIEGL* VUX-1UAV LiDAR sensor • IMU/GNSS unit with antenna • control unit • up to 2 cameras (optional)
***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 IEC60825-1:2007	Laser Class 1 (eye safe)
IMU/GNSS Unit	
accuracy Roll, Pitch / Heading	0.015° / 0.035°
IMU sampling rate	200 Hz
position accuracy (typ.)	0.05 m - 0.3 m
Camera Interfaces	2x trigger and event marker

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

RIEGL VUX-1UAV
Data Sheet

RIEGL VUX-SYS
Data Sheet



power line mapping

forest inventory

canyon mapping

RIEGL VUX-1UAV Technical Data

- max. measurement range
- pulse repetition rate PRR (peak)
- online waveform processing
- optional digital camera
- multiple target capability
- eye safe operation at Laser Class 1

RIEGL VUX-1UAV LiDAR Sensor

Optional *RIEGL* RiCOPTER Components / Accessories

RIEGL RiCOPTER Ground Station

The Ground Station comes in an aluminum carrying case for easy and safe transportation and includes:

- monitor for receiving the video stream
- video receiver with 2 antennas
- Panasonic Toughbook for flight planning and configuration of the mission
- internal batteries for power supply
- storage for remote control unit

RIEGL RiCOPTER Ground Station

RIEGL RiCOPTER Integrated Charging Station

- professional charging station for RiCOPTER battery set
- 200 – 240 V / max. 2.600 Watt
- 4 loading slots for max. 13A each
- loading time: approx. 1 hour for 1 set (4 batteries)

Further accessories available (more information on request).

RIEGL RiCOPTER Integrated Charging Station

Further Information & Scan Data Projects

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

scan data examples

Executive Summary Power Line Project

Executive Summary Environmental & Flood Analysis

Watch our videos! **youtube.com/riegllms**

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