

Extremely Compact Single Scanner Mobile Mapping System

Typical Applications

scan data and imagery.

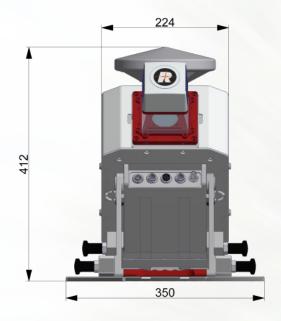
• GIS Mapping & Asset Management • Transportation Infrastructure Mapping • HD Mapping for Autonomous Vehicles • City Modeling • Rapid Capture of Construction Sites and Bulk Material • Open-Pit Mine Surveying • As-Built Surveying



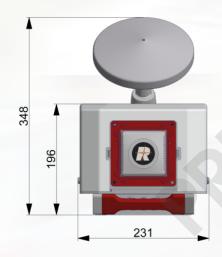




RIEGL VMY-1 Technical Data









VMY-1MH shown with antenna type of AP subsystem, dimensions in mm

Physical Data	Main Dimensions (L x W x H)	Weight (approx.)
VMY-1MH Measuring Head (in measuring position) with IMU VMY-RM Roof Mount	409 x 350 x 412 mm	8.4 kg
including mounting plate and mounting brackets, without GAMS	1006 x 441 x 171 mm	12.0 kg
VM Power Supply Box	415 x 330 x 175 mm	7.8 kg
VMY-MC Main Cable	standard length 5 m	0.6 kg



RIEGL VMY Foldable Design

The innovative design of the system enables folding and thus a convenient transport and space-saving storage.









RIEGL VMY Multi-Position-Plate (optional)

The VMY-1MH Measuring Head can be easily set to three different positions (-15 deg / 0 deg / 0 deg / 0 deg / 0 by using the VMY Multi-Position-Plate mounted onto the VMY-RM Roof Mount. This allows the operator to achieve different point cloud patterns to meet the specific project requirements.



position +15°



position 0°



nosition -15°



RIEGL VMY-1 Technical Data



measurement range



pulse repetition rate (peak)

target capability

multiple



online waveform processing



eye safe operation at Laser Class 1

VMY-1 Scanner Performance

digital camera

optional

Laser Class	Laser Class 1 (Class 1 Laser Product according to IEC 60825-1:2014)		
Effective Measurement Rate 1)	100 kHz	200 kHz	300 kHz
Max. Range, Target Reflectivity $\rho \geq 80\%^{ 2)}$	270 m	240 m	200 m
Max. Range, Target Reflectivity $\rho \geq 60\%$ 2)	240 m	210 m	170 m
Max. Range, Target Reflectivity $\rho \geq 20\%$ 2)	140 m	120 m	100 m
Max. Number of Targets per Pulse 3)	5	5	5
Minimum Range	1 m		
Accuracy 4) 6) / Precision 5) 6) 7)	5 mm / 4 mm		
Field of View (selectable)	up to 360°		
Scan Speed 8) (selectable)	up to 150 scans/sec		

IMU/GNSS Performance

	APX-20	AP+30	AP+50	RIEGL RILOC-F 11)
Position Accuracy Horizontal Position Accuracy Vertical	typ. 0.02 m typ. 0.03 m	/ ' ·	typ. 0.02 m typ. 0.03 m	typ. 0.02 m typ. 0.03 m
Roll & Pitch Accuracy	0.015° 9)	0.010° ⁹⁾	0.005° ⁹⁾	0.005°
Heading Accuracy	0.05° 9)	0.025° 9) 10)	0.015° 9) 10)	0.020°

RIEGL RILOC®-F (Localization/Orientation Component) Additional Data

IMU Sampling Rate	more than 700 Hz	
IMU Acceleration Range	± 8 g	
IMU Angular Rate Range	± 300°/sec	
GNSS System	multi-constellations (GPS, GLONASS, Galileo, and BeiDou) up to triple-frequency	
IMU/GNSS/LiDAR Performance RiLOC-F 12)		
3D Point Accuracy / 3D Point Precision	0.02 - 0.03 m / 0.01- 0.02 m	

¹²⁾ Typical accuracy/precision (1 sigma @ 50 m range) after integrated georeferencing, under *RIEGL* test conditions. Accuracy depends on GNSS positioning, above caveats apply (short baseline < 10km, no GNSS outages). Overlapping scan data, varied environment geometry and/or man-made objects with planar features are required. Recommended maximum mission duration: 4 h

⁹⁾ Absolute accuracy specifications (RMS). Typical performance. Actual results are dependent upon satellite configuration, atmospheric conditions, and other envirnmental effects. Post processed using using base station data. No GNSS outages, with DMI option.

10) Improved heading accuracy with dual antenna option @ 2 m base line.

11) Typical accuracy under ideal conditions, RMS values, no GNSS outages, short baseline < 10km. Positioning performance depends on satellite visibility, atmospheric conditions, and other environmental effects. Navigation performance depends on vehicle dynamics.



RIEGL VMY-1 Technical Data

General Technical Data

Power Supply Input Voltage	11 - 15 V DC
Power Consumption with APX-20 with AP+30/AP+50 with RiLOC-F	typ. 43 W ¹³⁾ typ. 46 W ¹³⁾ typ. 39 W ¹³⁾
Temperature Range	-10°C up to $+40$ °C (operation) / -20°C up to $+50$ °C (storage)
Humidity	max 80% non condensing @+31°C

¹³⁾ with 1x spherical camera

Interfaces

Interfaces Measuring Head (VMY-1MH)	VM Power Supply Box
4x trigger pulse, exposure pulse, NMEA data (e.g. for optional cameras or additional devices) 14) 1x PPS out pulse for synchronization of additional device 1x secondary antenna connector for GPS azimuth measurement subsystem 15)	1x DMI input (for distance measuring indicator; odometer) 3x power supply socket (2x 24V DC / 1x 12V DC)

¹⁴⁾ without integrated RiSYS-CU-23 Box only 2 cameras interfaces available

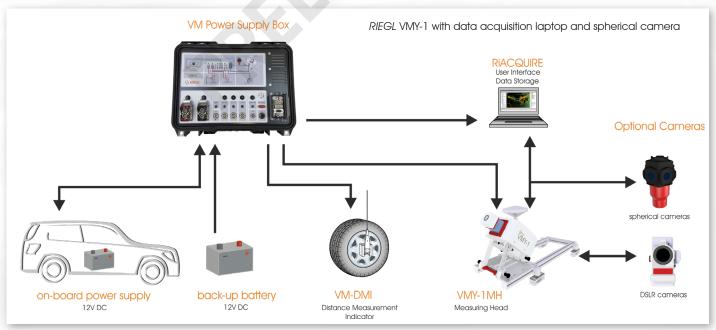
RIEGL VMY-1 System Block Diagram

RIEGL VMY-1 System Components

- RIEGL VMY-1MH Measuring Head
- RIEGL VM Power Supply Box
- VM-DMI Distance Measurement Indicator
- sustainable power supply with back-up battery
- connecting cables



RIEGL MLS Systems Camera Options





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¹⁵⁾ only applicable with IMU/GNSS type AP+30 / AP+50 system