GeoLas 280U/560U Laserscanner Upgrade

Economic

The ***GeoLas 280U/560U*** laserscanner upgrade boosts the performance of first- and second generation Riegl LMS-Q280(i) and LMS-Q560 laserscanners to competitive levels while costing only a fraction of the price of a new laserscanner.

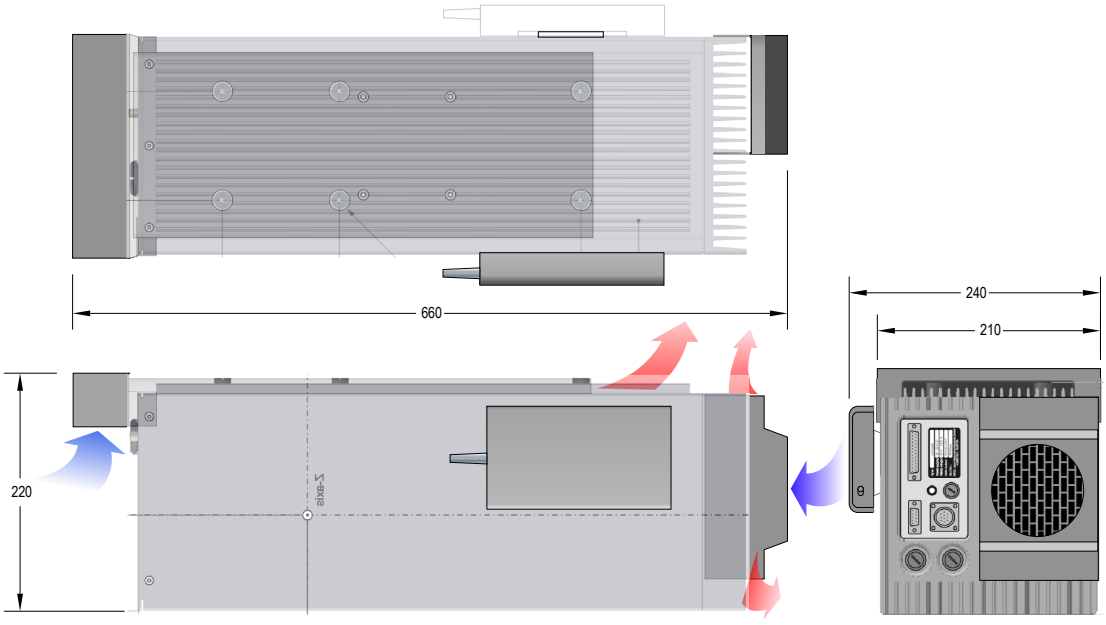
Efficient

The improved ranging capability of more than 1750 m allows operation at up to 1500 m AGL flying height, increasing the swath width up to 1750 m for efficient and economic large-area surveys.

Accurate

The pulse repetition frequency of 100 - 400 kHz provides ground sample densities of 1 - 8.5 pt/m^2 at fixed-wing flying speeds for more accurate surface modelling. *Full-waveform* data acquisition with an unrivalled 14-bit sampling depth improves ranging accuracy and enables a virtually unlimited number of surface returns to be detected for each laser shot, enhancing penetration of vegetation and ground surface modelling accuracy further, especially in the case of the LMS-Q280(i) with its originally very limited return detection capability.

The upgrade replaces the rangefinder optics, electronics, and laser source by state-of-the-art components while retaining the enclosure and the proven beam deflection unit of the original laserscanner. With the same footprint as the original unit and only a minor increase in power consumption, most previous installations can be used without modification.



Specifications

Parameter	Value	Conditions/Remarks
Measurement range	1750 m	single target, flat surface, 15% diffuse reflectance, 60° incidence angle, ≥30km visibility, 150kHz PRF, 100% output power
Range uncertainty	≤ 0.03 m (RMS)	flat surface, 20% reflectance, 90° incidence angle, 1200 m AGL
Laser pulse repetition frequency	100kHz - 400kHz	adjustable (program-controlled, increasing pulse repetition frequency reduces maximum range)
Effective measurement rate	75 - 310 k meas/s	±35° scan angle
Beam divergence	0.4 mrad	
Average laser output power	up to 2.5 W	adjustable (10 - 100%, program-controlled)
Laser wavelength	1064 nm	
Eye-safety class	Class 1 / (Class 4)	in flight for observers on the ground / (at instrument aperture)
Eye-safe distance	NOHD: 65 m ENOHD: 505 m	100% output power, 100 kHz PRF, ≥30 scans/s, in flight, for observer on the ground
Ranging method	pulse time-of-flight, full-waveform digitization	range, return intensity, and return pulse spreading are derived from stored waveform data in post-processing
Radiometric resolution	14 bit/sample	
Intensity	16 bit/return	
Number of returns per pulse	unlimited	
Return separation	0.5 m	return pulse width can be used to identify multiple targets with less separation
Data rate (max.)	100 MB/s	
Internal data storage capacity	1 TB	
External data storage capacity	2 TB	SSD, swapable in flight
Scan angle range	±5° - ±35°	adjustable (program-controlled, reducing scanning range clips measurements, i.e. reduces effective measurement rate)
Scan rate	same as original unit	adjustable (program-controlled)
Max. operational AGL	1500 m	flat surface, 13% reflectance, ≥30km visibility, 150kHz PRF, 100% output power
Swath width	1730 m	flat surface, 1500 m AGL, ±30° scan angle
Laser point size on ground	0.6 m	1500 m AGL, 90° incidence angle (nadir on flat surface)
Point density	1 pts/m^2 5.1 pts/m^2 10 pts/m^2	1500 m AGL, 110 kts ground speed, 150kHz PRF, ±30°scan angle 800 m AGL, 110 kts ground speed, 400kHz PRF 600 m AGL, 75 kts ground speed, 400kHz PRF
Dimensions	660 x 220 x 240/210 mm	L x H x W (with/without external SSD enclosure)
Weight	approx. 25 kg	
Power consumption	20 - 32 VDC, max 125 W	
Included software	*280U_Controller* *GeocodeU*	Laserscanner control and data acquisition Waveform-processing and pointcloud geocoding

NOTE: the RGB true color output of the LMS-Q280 is not be supported by the upgrade.

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Specifications subject to change without notice.

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