

LiteMapper 5600



SYSTEM PARAMETER	CONDITIONS	LiteMapper 5600	
model sensor head		Riegls LMS-Q560	
Range Measurement Performance			
	<i>@ laser PRF</i>	<i>natural targets, ρ = 30%</i>	<i>natural targets, ρ = 60%</i>
max. measurement range	70 kHz	1500 m	1800 m
	100 kHz	1200 m	1200 m
	200 kHz	700 m	700 m
minimum range		30 m	
max. operating altitude AGL @ 45 deg	PRF = 70 kHz	1500 m	
	PRF = 100 kHz	1100 m	
	PRF = 200 kHz	550 m	
accuracy	flat surface, normal to beam	20 mm	
precision		10 mm	
max. pulse repetition frequency (PRF)		200 000 Hz	
max. # of recorded echoes		unlimited	
multiple target separation within single shot		0.6 m	
return pulse width resolution		0.15 m	
laser wavelength		1550 nm	
pulse length		3.5 ns	
effective measurement rate		100.000 Hz @ 45 deg scan angle 133.000 Hz @ 60 deg scan angle	
laser beam divergence		≤ 0.5 mrad	

Specifications subject to change without notice.



Riegls LMS-Q560 laser scanner.





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SYSTEM	CONDITIONS	LiteMapper 5600	
PARAMETER			
Scanner Performance			
scanning mechanism		rotating polygon mirror	
scan pattern		parallel scanning lines	
scan angle range (user selectable)		±22.5 deg = 45 deg total, ±30 deg = 60 deg total	
angle readout resolution		0.001 deg	
angle step width		0.004 deg @ PRF 100 000 Hz	
scan speed		10 - 160 scans/s	
swath width		0.83 x altitude @ 45 deg total 1.15 x altitude @ 60 deg total	
Operational Parameters			
ground point spacing / point density	@ 50 m AGL / 30 kts	helicopter	150 pts / m ²
	@ 100 m AGL / 40 kts		56 pts / m ²
	@ 200 m AGL / 40 kts		28 pts / m ²
	@ 300 m AGL / 40 kts		19 pts / m ²
	@ 300 m AGL / 100 kts	fixed-wing aircraft	7.5 pts / m ²
	@ 500 m AGL / 100 kts		4.5 pts / m ²
	@ 700 m AGL / 100 kts		3.2 pts / m ²
	@ 1000 m AGL / 100 kts		1.1 pts / m ²
	@ 1200 m AGL / 100 kts		0.9 pts / m ²
ground sample spot diameter		0.4 m (@ 800 m AGL)	
surface point accuracy (horizontal / vertical), excluding GPS errors		0.1 m / 0.03 m (1sigma) (@ 800 m AGL)	
Intensity (return amplitude) detection		16 bit per return	
special features		full waveform digitization: unlimited number of returns, 1 GHz, 16 bit dynamic range	
Data Recorder Performance			
model		Riegl DR560 / DR560RD	
storage capacity		2x 320 GByte single hard disk RAID 0 or RAID 1	



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SYSTEM	CONDITIONS	LiteMapper 5600
PARAMETER		
Computer Systems		
Flight Management System		CCNS + WinMP mission planning software
Precise Positioning System		AEROcontrol + AEROoffice post-processing software
Inertial Measurement Unit (IMU)		IMU IId
IMU sampling rate		256 Hz
IMU accuracy (roll/pitch/heading)		0.004/0.004/0.01
IMU velocity		0.005 deg
GPS		12 channel, dual frequency, 2 Hz
Sensor Control System		LMcontrol + TerraSolid post-processing software
Operational Parameters		
eye-safety class		class 1 (eye-safe)
power supply (polarity safe)		18 - 32 VDC
temperature range		0°C to +40°C (operation) / -10°C to +50°C (storage)
humidity		0% - 90% non-condensing
Digital Camera System (option)		
model		DigiCAM-H/39
sensor size		39 Megapixel, 7216 x 5412 pixel
sensor dimensions		36.80 x 49.07 mm
pixel size		6.8 µm
analog to digital conversion		16 bits
field of view		
max. operating altitude		3000 m
data storage		external storage units, each for 850 images
max. exposure rate		1.9 sec
shutter		electronically controlled leaf shutter
shutter speed options		1/800 to 1/125 sec
lenses		35, 50, 80, 100, 150, 300 mm
filter array		Color (VIS) or Color-Infrared (CIR)
image data formats		TIFF, JPEG, DNG (optionally 8 or 16 bit)
modular replaceability		shutter integrated in lens for easy change; interchangeable digital back
calibration		calibration with full report

LiteMapper 5600



COMPONENTS	DIMENSIONS	WEIGHT
Laser scanner	560 x 200 x 217 mm	20,0 kg
Data recorder DR 560	337 x 178 x 197 mm	7,0 kg
LMcontrol unit	270 x 162 x 62 mm	2,2 kg
CCNS computer	250 x 209 x 132 mm	4,9 kg
AEROcontrol computer	250 x 209 x 132 mm	4,4 kg
IMU	133 x 138 x 185 mm	3,3 kg
8" TFT monitor	212 x 162 x 36 mm	0,9 kg
5" TFT display	159 x 105 x 35 mm	0,6 kg
Aircraft Connector Box	208 x 85 x 94 mm	0,8 kg
Mounting, cables, antenna		3,7 kg

~ 48 kg

OPTIONAL		
Uninterruptable power supply	210 x 162 x 190 mm	8,5 kg
Shock-absorbing platform	customized	
DigiCAM-H/39 system		6,6 kg

Image showing the modular LiteMapper 5600 system (from left to right): 5" TFT display, 8" TFT touch-screen, CCNS, AEROcontrol, laser scanner and data recorder - RiegL LMS-Q560, LMcontrol, IMU and shock-absorbing platform.



DR560

Airborne Data Recorder for Full Waveform Analysis



The RIEGL Airborne Data Recorder DR560 is the companion Digital Data Recorder to the Airborne Laser Scanner RIEGL LMS-Q560 for full waveform analysis.

Data Recorder Performance

Storage Capacity	
Single Hard Disk	2 x 320 GByte
RAID 0	640 GByte
RAID 1	320 GByte
Data Rate (Input)	
Single Hard Disk	up to 40 MByte/sec
RAID 0	up to 80 MByte/sec
RAID 1	up to 40 MByte/sec
Data Rate (Output)	
Web Server	up to 5 MByte/sec
USB	up to 25 MByte/sec
Logging Capacity¹⁾	
Single Hard Disk	typically 2 x 8 h
RAID 0	typically 16 h
RAID 1	typically 8 h



Data Interfaces

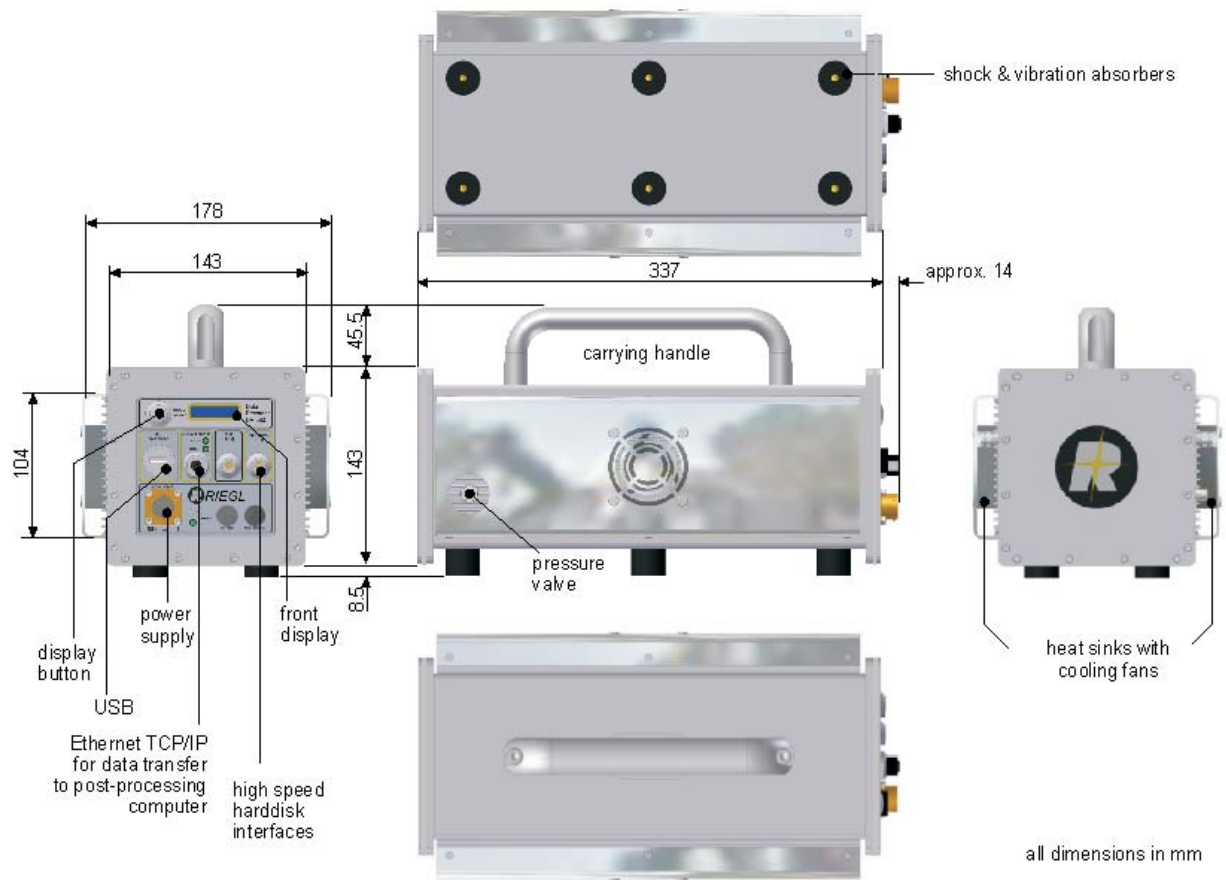
Input Interface	High Speed Serial Data Link
Output Interface	High Speed Universal Serial Bus 2.0

General Technical Data

Power Supply	18 - 32 V DC
Current Consumption	approx. 3 A @ 24 V DC
Main Dimension (L x W x H)	337 x 178 x 197 mm
Weight	approx. 7 kg
Protection Class	IP 64
Altitude	up to 3048 m (10 000 ft.)
Temperature Range	
Operation	0° C up to +40° C
Storage	-10° C up to +50° C

1) at 100 kHz laser pulse repetition frequency of the LMS-Q560 scanner, 2 targets (200 Bytes/Measurement), 45° scan angle

DR560 (continued)



DR560-RD

Airborne Data Recorder for Full Waveform Analysis



The RIEGL DR560-RD is the companion Digital Data Recorder to the Airborne Laser Scanner RIEGL LMS-Q560 for full waveform analysis using two removable disks for smooth operation.

This high performance data storage device is capable of handling the continuous high-speed input data stream provided by the RIEGL Airborne Laser Scanners. The Data Recorder DR560-RD supports RAID 1 to achieve higher data integrity and RAID 0 for increased data throughput. Additionally an online data integrity check is performed prior to transferring the full waveform data to the hard disks.

Data Recorder Performance

Storage Capacity	
Single Hard Disk	2 x 320 GByte
RAID 0	640 GByte
RAID 1	320 GByte
Data Rate (Input)	
Single Hard Disk	up to 40 MByte/sec
RAID 0	up to 80 MByte/sec
RAID 1	up to 40 MByte/sec
Data Rate (Output)¹⁾	up to 60 MByte/sec
Logging Capacity²⁾	
Single Hard Disk	typically 2 x 8 h
RAID 0	typically 16 h
RAID 1	typically 8 h

Key Features

- * Removable disks
- * Storage capacity up to 640 GByte
- * Up to 16 hours airborne data logging capacity
- * Input data rate up to 80 MByte/sec
- * Supports RAID 0 and RAID 1
- * Online data integrity check

Data Interfaces

Input Interface	High Speed Serial Data Link
Output Interface	SATA on removeable driver carrier

General Technical Data

Power Supply	18 - 32 V DC
Current Consumption	approx. 3 A @ 24 V DC
Main Dimension (L x W x H)	306 x 276 x 112 mm
Weight	approx. 6.4 kg (2 hard disks included)
Altitude	up to 3048 m (10 000 ft.)
Temperature Range	
Operation	0° C up to +40° C
Storage	-10° C up to +50° C



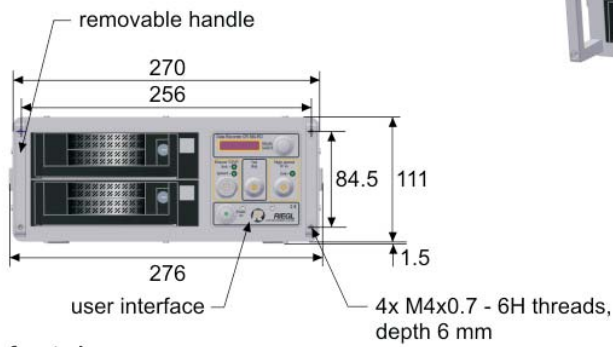
1) removeable hard disc in mounting frame with SATA interface on up to date PC

2) at 100 kHz laser pulse repetition frequency of the LMS-Q560 scanner, 2 targets (200 Bytes/Measurement), 45° scan angle

DR560-RD (continued)



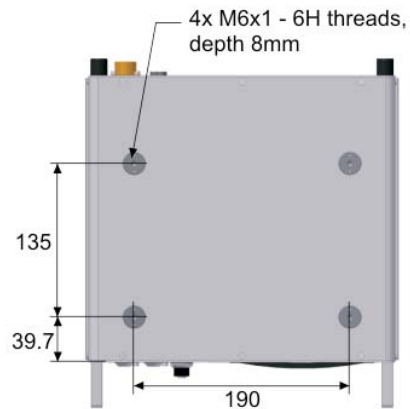
All dimensions in mm



front view



top view



bottom view



side view



rear view

LMcontrol

LiteMapper

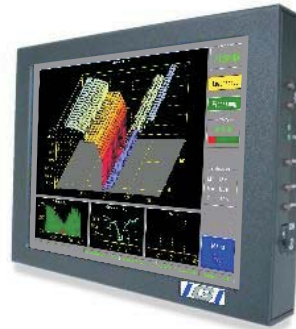


Technical Features	
Performance	
Processor	Low Power Pentium III® CPU, 700 MHz
Video	SVGA Interface
Indicator	6 activity LED's + 2 user definable
Data Interfaces	
Ethernet	10BaseT /100BaseTX
	Fast 10/100 Mbit/s
Physical Parameters	
Chassis	rugged chromated aluminum with best EMI protection
Dimensions (L x W x H)	270 x 162 x 62 mm
Weight	2.2 kg
Power Supply	8 - 28 VDC
Power Consumption	typically 17 Watt
Temperature Range	0°C up to +60°C
Humidity	10% - 90% non condensing
Shock & Vibration	complies with EN60068-2-6 and EN60068-2-27 (optional)
Electromagnetic Compatibility	complies with EN50081-2, EN50082-2 , EN61000-6-2

Specifications subject to change without notice.

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LMcontrol (continued)



Specifications VGA Display Unit	
Technology	TFT-Stripe-RGB, 6-bit per color (262k colors)
Resolution	800 x 600, SVGA
Touchscreen	Resistive
Operating Humidity	10 ... 90% non-condensing
Backlight Lamp Lifetime	50,000 h
Viewing Angle	Left & Right: min 60°, typ 100° Upper & Lower: min 45°, typ 90°
Brightness	5 ... 350 cd/m ² Up-/down-keys Automatic adaptation to environmental brightness
Contrast Ratio	250:01:00
Video Inputs	DOS Text, VGA 640x480, SVGA 800x600, XGA 1024x768, 56..85 Hz, RGB analog, 0,7Vpp, DC-Restore, H- und V-Sync NTSC, PAL, SECAM as S-Video, 75 Ohm
Video-Timing	DOS-Text 720 x 400 @ 56 ... 85 Hz (72 Hz typ.), zoomed or centered VGA 640 x 480 @ 56 ... 85 Hz, zoomed or centered SVGA 800 x 600 @ 56 ... 85 Hz XGA 1024 x 768 @ 56 ... 85 Hz, shrank or cropped Video PAL, NTSC, SECAM (square pixel or CCIR601), S-Video
Connectors	1. PC graphics 15-pin HD D-Sub receptacle 2. S-Video Mini-DIN 4 3. Supply: 5-pin D-Sub Header 4. Touch panel: 9-pin D-Sub header
Power consumption	15W @ 9 ... 36 VDC (max. brightness)
Dimensions	212mm (W) x 162mm (H) x 36mm (D)
Display Area	170,4mm (W) x 127,8mm (H)
Weight	860 g
Operating Temperature	0°C to +55°C
Storage Temperature	-25°C to +60°C