STONEX

STONEX X9

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Technical Data

STONEX

Compact, high-speed, phase-based laser scanner with great precision, range and spherical field of view. Unique stand-alone concept with integrated battery and color display with touch screen. Built-in dual-axis compensator and laser plummet. This device is also available as the Stonex X9 in the 2D version for kinematical applications.

Technical features	X9

Laser system			
Laser class	1		
Beam divergence	< 0.3 mrad		
Beam diameter	approx. 3.5 mm (at 0.1 m distance)		
Range	187.3 m (unambiguity interval)		
Minimum distance	0.3 m		
Resolution range	0.1 mm		
Data acquisition rate	Max. 1.016 million pixel/sec.		
Linearity error[1]	≤ 1 mm		
Range noise	black 14%	gray 37%	white 80%
Range noise, 10 m[1 2]	0.5 mm rms	0.4 mm rms	0.3 mm rms
Range noise, 25 m[1 2]	1.0 mm rms	0.6 mm rms	0.5 mm rms
Range noise, 50 m[1 2]	2.7 mm rms	1.2 mm rms	0.8 mm rms
Range noise, 100 m[1 2 3]	10 mm rms	3.8 mm rms	2.0 mm rms
Temperature drift	negligible		

Deflection unit	Imager	Profiler
Vertical system	completely encapsulated rotating mirror	
Horizontal system	device rotates about its vertical axis	
Vertical field of view	320°	320°
Horizontal field of view	360°	
Vertical resolution	0.0004°	0.0016°
Horizontal resolution	0.0002°	
Vertical accuracy[1]	0.007° rms	0.007° rms
Horizontal accuracy[1]	0.007° rms	
Scanning speed	max. 50 rev/s (3000 rev/min)	max. 100 rev/s (6000 rev/min)

Deflection unit	Imager	Imager and profiler				Profiler
		Scan duration				
Angle resolution	pixel/360° horizontal & vertical	low quality[6]	normal quality[6]	high quality[6]	premium quality[6]	pixel/360° vertical
"preview"[4]	1,250	0:13 min	0:26 min	0:52 min	1:44 min	1,280
"low"	2,500	0:26 min	0:52 min	1:44 min	3:24 min	2,560
"middle"	5,000	0:52 min	1:44 min	3:22 min	6:44 min	5,120
"high"	10,000	1:44 min	3:22 min	6:44 min	13:28 min	10,240
"super high"	20,000	3:28 min	6:44 min	13:28 min	26:56 min	20,480
"ultra high"[5]	40,000	6:56 min	13:28 min	26:56 min	53:20 min	40,960
"extremely high"[5]	100,000	---	1:21 h	2:42 h	3:24 h	---

Miscellaneous	Imager	Profiler
Dual-axis compensator	resolution: 0.001° measurement range: +/- 0.5° accuracy: < 0.007° choice of on / off	---
Laser plummet	laser class: 2 accuracy of plummet: 0.5 mm/1m laser point diameter: < 1.5 mm at 1.5 m	---
Levelling display	electronic level onboard display and LRC	---
Communication	Ethernet / W-LAN	Ethernet
Data storage	internal 64 GB flash card, 2 x external 32 GB USB flash drive	
Data transmission	Ethernet or USB 2.0	
Integrated operating panel	touch screen operation, colour display to view 3D laser data and colour pictures with measuring and navigation functions	
Interfaces	2 x USB, LEMO 9-pin und LEMO 7-pin connections for M-Cam and external sensors like GPS, odometer, etc.	

Power supply	Imager	Profiler
Input voltage	24 V DC (scanner) 100 – 240 V AC (power unit)	24 V DC (scanner) 100 – 240 V AC (power unit)
Power consumption	< 65 W (on average)	< 75 W (on average)
Operating time	> 2.5 h (internal battery)	unlimited

Ambient conditions	Imager and Profiler
Operating temperature	-10° C … +45° C
Storage temperature	-20° C … +50° C
Lighting conditions	operational in all conditions, even in bright sunlight or pitch darkness
Humidity	non-condensing
Protection class	IP 53

Dimensions and weights	Imager	Profiler
Scanner Dimensions (w/d/h) Weight	170 x 286 x 395 mm 9,8 kg	170 x 286 x 395 mm 9,8 kg
Battery Dimensions (w/d/h) Weight	170 x 88 x 61 mm 1,2 kg	---
AC power unit Dimensions Weight	35 x 67 x 167 mm 0,54 kg	35 x 67 x 167 mm 0,54 kg

1) Data rate 127,000 pixel/sec. (equivalent to "high resolution, high quality" scan), 1 Sigma range noise, unfiltered raw data, in high power mode
2) All values extrapolated
3) Resolution not recommended for exact measurements, only for positioning higher resolution scan selections!
4) Only recommended for scan selections because of the enormous amount of data
5) Doubling ("low quality") and halving ("high quality") the data rate (pixel/sec.) theoretically increases the range noise on each pixel by 40% ("low quality") or decreases it by 40% ("high quality") compared to "normal quality". Depending on the roughness of the surface measured, in reality this difference could be less, especially when scanning objects with a bright surface at short distances, e.g. indoors

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