Topcon CR-M1

Your World, Captured in Motion.



The CR-M1 integrates a high-performance laser sensor with an industry-leading 360° camera, making it a versatile tool for capturing detailed, colorized point clouds. Its compact and lightweight design allows for operation in spaces inaccessible to larger scanners, offering you true portability without compromising data quality.

- » Rapid data acquisition: Capture comprehensive 3D data simply by walking through the area
- » Lightweight and ergonomic: For comfortable, single-operator use
- » Real-time feedback: Monitor survey coverage and data quality instantly on the controller
- » High-quality color data: Integrated 360° camera adds realistic color to point clouds
- » Flexible trajectory: Loop closure is not mandatory for accurate data processing
- » Versatile mounting options: Mount on poles, backpacks, or vehicles for any terrain.

Main Features

Suitable environment	indoor/outdoor
Handheld	yes
Wearable	yes
Mountable on various mobile platforms (car, trolley, bike, quad, boat, robot)	yes
SLAM post-processing software included (Onami Desktop)	yes
Point cloud advanced processing software included (Onami Reconstructor)	yes
Free software for x-ray maps visualization and measuring included (GoBlueprint)	yes
Output data	.e57, .las, .ply, export to ReCap
Points per second	640,000
Local accuracy	4 mm (0.16 in.)
Typical survey resolution	5 mm (0.20 in.)
Global accuracy	±2 cm (0.79 in.) in short close rings [1]
Control points acquisition	yes
Global accuracy with control points	1 cm (0.39 in.)
Loop closure	not mandatory
Usable in every light conditions	yes
Initialization and calibration procedures	not required
Single operator	yes
Sensors working time (in continuous acquisition)	~ 1h 30 min (more with extra hot-swappable batteries)
Operating temperature	-10 °C to 45 °C (14 °F to 113 °F)
Storage temperature	-40 °C to 60 °C (-40 °F to 140 °F)
Rugged transport case	yes

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System Controller

Weight	1085 g (2.39 lbs)
Dimensions	160 x 209 x 56 mm (6.30 x 8.23 x 2.32 in.)
Processor	Intel® 11th Gen Core™ 4.1 GHz
Pendrive for data storage	USB 3.1 Gen 1
Memory size	256 GB
Max read speed	up to 300 MB/sec
Max write speed	up to 100 MB/sec
Internal Battery	Li-ion battery
Capacity	6700 mAh | 80.4 Wh
Output	12 V
Working time	~ 1h 30 min (more with extra "plug&go" batteries)

Handheld Pole

Weight (with cable)	965 g (2.13 lbs)
Length	from 400 to 1300 mm (15.75 to 51.18 in.)

Capture Head (Detachable)

Weight | Dimensions	1950 g (4.30 lbs) | 261 x 140 X 120 mm (10.28 x 5.51 x 4.72 in.)
COMPONENTS:	
Laser sensor	32 chs | Class 1 Eye Safe
Wavelength	905 nm
Field of view	360° x 360° [2]
Range	0.05 to 120 m (0.16 to 394 ft)
IMU	yes
RGB pano camera (MG1)	n. 1 | 4 lenses
Continuous acquisition	24 Hz | 4K Ultra HD
Single shot acquisition	8K
Field of view	360°
Auto color/light balance	yes
Auto exposure control	yes [3]

PDA Control Unit (Personal Digital Assistant)

Weight	310 g (0.68 lbs)
Dimensions	167 x 81 x 16 mm (6.57 x 3.19 x 0.63 in.)
Processor	Helio G95 Octa Core 2.1 GHz
Display	6.22" LCD HD + waterdrop screen
Battery	Li-ion | 6350 mAh
Battery charging	24 W Type-C fast charge
Battery working time	15 - 24 h (depending on the display intensity)

Optional Toolkits

Extra batteries	standard | "plug&go" | ~ 1h 30 min | 445 g (0.98 lbs)
Telescopic poles	560 to 1800 mm (22.05 x 70.87 in.) | 1000 g (2.20 lbs)
	1000 to 6000 mm (39.37 x 236.22 in.) | 1880 g (4.14 lbs)
Tilt adapter for Capture Head	Ø32 x 175 mm (Ø1.26 x 6.89 in.) | 200 g (0.44 lbs)
Centering tip	150 mm (5.91 in.) | 12 g (0.03 lbs)
Rugged backpack	540 x 400 x 220 mm (21.26 x 15.75 x 8.666 in.) | 4850 g (10.69 lbs) | cabled
Car mount	case: 375 x 375 x 105 mm (14.76 x 14.76 x 4.13 in.) | 3400 g (7.50 lbs)
Ring LED Light	Ø126 x 184 mm (Ø4.96 x 7.24 in.) | 700 g (1.54 lbs) | 4000 lm | 36 W

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Software Equipment

Reconstructor	included
Reconstructor Onami add-on	included
3D navigation of point clouds and images	yes
Automatic scans registration	yes
Import	TLS data, .ifc BIM, point clouds from UAV, mobile mapping data
Direct import formats	.laz, .e57, .fls, .zfs, .rxp, .x3s, .x3m, .clr, .cl3, .dp, .ixf, .nctri, .txt, .las, .ptx, .pts, .ptg, .asc, .ply, .csv, DEM Ascii
Point cloud filtering, managing and classifying	yes
CAD/Mesh models	.3ds, .ifc, .obj, .dxf, .stl, .txt, .wrl, .vrml, .ply, .mvx, .dae
Mesh creation and manipulation	yes
Volumes and areas computation	yes
Cross sections and profiles (.dxf)	yes
Verification tool	yes
Orthophotos/x-Ray orthophotos (direct export to AutoCAD)	yes
Direct export of 3D point clouds and 2D maps	.las, .e57 with images, ReCap, AutoCAD
Cloud sharing	Topcon Collage Web

Software Equipment

Onami Desktop	**included**
Drift effect reducing (global optimization)	yes
3D local maps patented algorithm	yes
Large coordinates for geolocalization	yes
Split/merge trajectories and point clouds	yes
Automatic post-processing mode	yes
Noise cleaning (attenuation)	yes
Moving objects removing	yes
Constraints tool (control points/control scans)	yes

GoBlueprint	**free software**
Measures on x-Ray maps directly (lines, angles, areas)	yes
Volume calculation based on x-Ray maps	yes
For any Windows-based PC and tablet (to easily bring your maps on-site too)	yes
Deliverables easy to manage and share	yes

Onami Reconstructor 3D Viewer	**free software**
3D model navigation and immersive tour at 8K	yes
Onami Reconstructor MINING add-on	optional
Onami Reconstructor COLOR add-on	optional
ClearEdge3D EdgeWise | Verity	optional

1. The global accuracy depends on the effectiveness of the SLAM registration algorithm, which can be influenced by the geometry of the surveyed environment. Long trajectories in absence of loop closures and cross paths, such as narrow tunnels or narrow stairs, can downgrade the global accuracy to 2-3 cm. The patented and unique algorithms present in Onami Desktop and the use of control points or control scans as constraints can dramatically improve the quality of the global accuracy up to 1 cm.
2. Final FOV guaranteed by walking with the system.
3. The camera may not perform optimally in dark places. In these cases, we suggest the use of the Ring LED Light optional kit.

Specifications subject to change without notice.
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