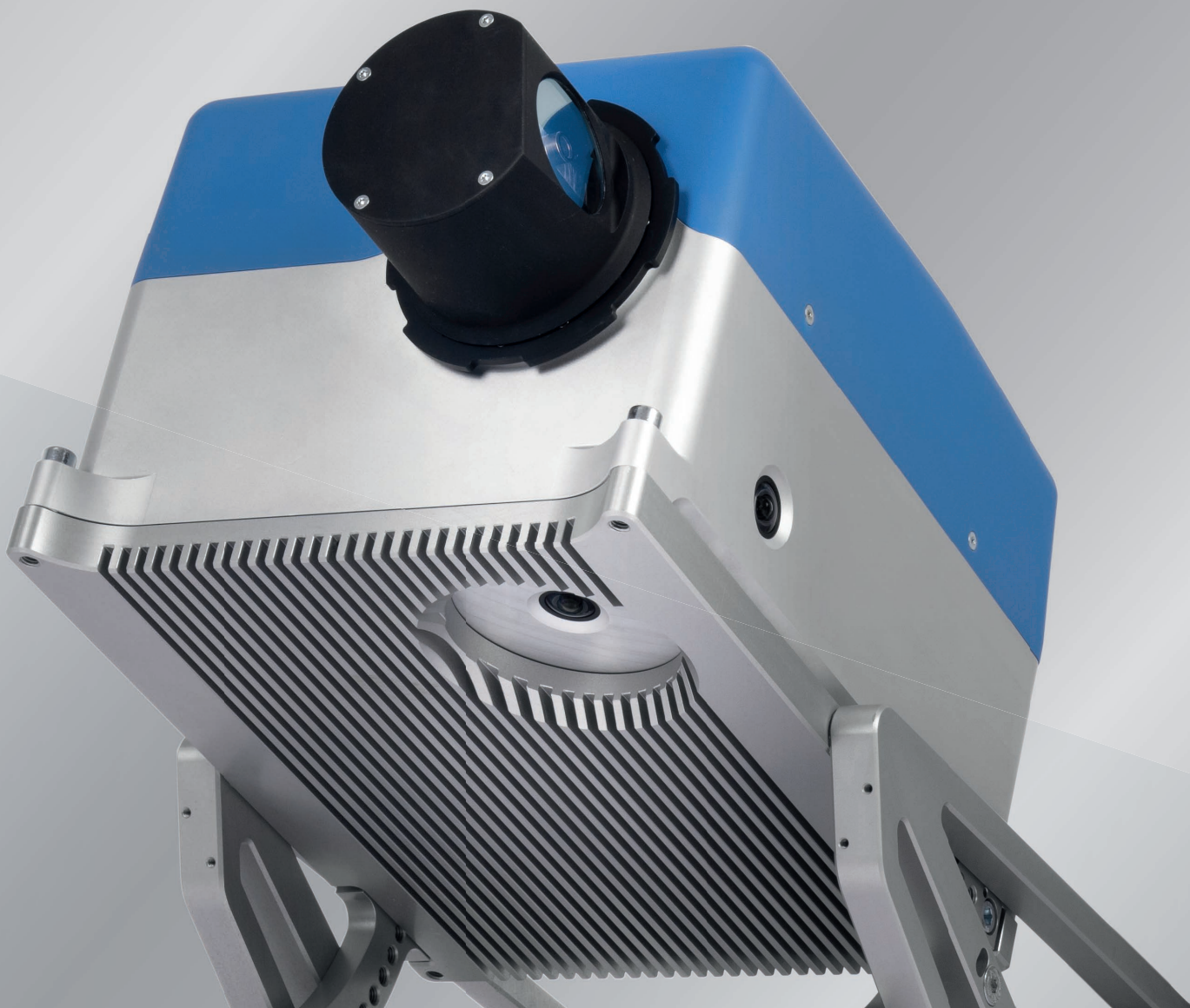




Z+F PROFILER[®] 9025C | 9025CM



Z+F PROFILER® 9025C | 9025CM

2D Laser Scanner

Z+F PROFILER® 9025C – High-Performance Mobile Laser Scanner
The Z+F PROFILER® 9025C enables precise mobile surveying with up to 267 rotations per second and an ambiguity distance of 182 m – ideal for rapid data acquisition at high speeds. Four integrated 8-megapixel cameras deliver high-resolution color images with excellent dynamic range.

The newly developed camera platform processes images directly within the scanner, reducing cabling and eliminating the need for high-performance computers. The fully calibrated camera system ensures accurate point cloud colorization without manual adjustment.

Optional Marker-Mode: The Marker-Mode allows specific areas in the scan profile to be visually highlighted during data acquisition. A red laser beam marks defined areas – enabling fast and accurate identification of relevant structures.

Technical Highlights

- + 267 profiles/sec.
- + 2.188 million pixels/sec.
- + 182 m ambiguity distance
- + 360° field of view
- + 4 integrated cameras
- + Integrated reference plate
- + Fully calibrated system
- + Laser class 1

Z+F PROFILER® 9025C & 9020C comparison

Feature	Z+F PROFILER® 9025C	Z+F PROFILER® 9020C
Cameras	4 x 8.13 MPx	4 x 5.05 MPx
Internal Storage Scanner	256 GB	256 GB
Internal Storage Cameras	2 TB	-
Internal Image Processing	✓	-
Maximum Frame Rate	10 Hz	7 Hz
Auto Exposure and Auto White Balance	✓	-
Streaming Images	✓ (Ethernet)	✓ (USB 3.1)
Marker-Mode Upgrade available	✓	✓



Z+F PROFILER® 9025C | 9025CM

Data sheet

Laser system	
Laser class	1 (according to IEC EN 60825-1)
Beam divergence	< 0.5 mrad (half angle, $1/e^2$)
Beam diameter	Approx. 1.9 mm (at 0.1 m distance)
Ambiguity distance	182 m (above, range reading restarts at zero)
Minimum distance	0.3 m
Range resolution	0.1 mm
Data acquisition rate	Max. 2.188 million pixel/sec.

Accuracy / Precision			
Linearity error	≤ 1 mm		
Range drift (full -10° C ... +50° C)	< 0.3 mm (shortly after internal reference activation), < 2 mm (without reference at steady operating temperature)		
Target Distance	White (80%) ¹	Grey (37%) ¹	Black (14%) ¹
1 Sigma Range Noise, 1 m	0.2 mm	0.3 mm	0.4 mm
1 Sigma Range Noise, 2 m	0.2 mm	0.2 mm	0.3 mm
1 Sigma Range Noise, 5 m	0.2 mm	0.2 mm	0.3 mm
1 Sigma Range Noise, 10 m	0.2 mm	0.2 mm	0.3 mm
1 Sigma Range Noise, 25 m	0.2 mm	0.3 mm	0.5 mm
1 Sigma Range Noise, 50 m	0.4 mm	0.6 mm	1.2 mm
1 Sigma Range Noise, 80 m ⁷	0.8 mm	1.5 mm	3.5 mm

Deflection unit	
Deflection system	Completely encapsulated, rotating mirror
Vertical field of view	360° unobstructed
Angular resolution	0.0088°
Angular accuracy	0.007° rms ² (122 μ rad)
Rotation speed	50 Hz up to 267 Hz (max. 16,020 rpm)

Available Settings (Resolution [Pixel/360°] / Rotor speed [rps] / Pixel rate [kHz])					
Data rate	2188 kHz	1094 kHz	547 kHz	274 kHz	137 kHz
Resolution					
20.480 / 360°	107 rps	53 rps	---	---	---
10.240 / 360°	214 rps	107 rps	53 rps	---	---
8.192 / 360°	267 rps	134 rps	67 rps	---	---
6.827 / 360°	---	160 rps	80 rps	---	---
5.120 / 360°	---	214 rps	107 rps	53 rps	---
4.096 / 360°	---	267 rps	134 rps	67 rps	---
3.413 / 360°	---	---	160 rps	80 rps	---
2.048 / 360°	---	---	267 rps	134 rps	67 rps
1.024 / 360°	---	---	---	267 rps	134 rps

Camera system	
Number of cameras	4
Resolution	4 x 8.13 MPx
Camera field of view	each camera 110° x 110°
Maximum Frame Rate	10 Hz

Interfaces	
Internal data storage scanner	256 GB
Internal storage camera images	2 TB
Data interface scanner	1x GBit Ethernet
Data recording time ³	9h in total for internal 256 GB memory ⁴
Synchronization interface	• External encoder input for wheel sensor (Odometer) • GPS input (PPS pulse + NMEA message over RS232) • Linesync output (TTL pulse per profile) • Rotor sync in / out (angular movement of two parallel devices can be synchronized) • External camera trigger

Power supply			
Input voltage	PROFILER: 20 - 30 V DC (24 V DC typ.), Inrush < 12A (@ 24 V) AC-Power supply: 100 – 240 V AC		
Power consumption ⁵ Current @ 24 V / Speed	100 Hz	200 Hz	267 Hz
+20°C, speed up	2.8 A	5.6 A	7.9 A
+20°C, scanning	1.9 A	3.5 A	5.0 A
-10°C, speed up	3.1 A	6.3 A	9.7 A
-10°C, scanning	2.2 A	4.5 A	6.6 A

Ambient conditions	
Operating temperature	-10 °C ... +50 °C
Storage temperature	-20 °C ... +70 °C
Humidity	Non-condensing
Protection class	IP 66 (rotor speed ≥ 50 rps or with protective cap)

Dimensions and weight	
Dimensions (w x d x h)	314 x 200 x 155 mm
Weight	7.0 kg (15.4 lbs)
Mounting flanges ⁶	Only bottom flange 2 x 6.02 mm / H7 register pins 4 x 6.6 mm holes for M6 x 25 mm mounting screws

Additional technical specifications of the Z+F PROFILER® 9025CM

Laser system marker-mode	
laser class	3R (according to IEC EN 60825-1)

¹ Range Noise (1-Sigma interval) is specified at 136 KHz data rate, which is the standard data rate for Z+F noise specs.

² RMS (Root Mean Square): root of mean square errors.

³ Continuous data recording at max. data rate of 2.188 million pixel/sec

⁴ Data compression factor depends on scanned scene. Reducing the data rate by half doubles the typical maximum data acquisition time.

⁵ Additional +0.3 A when operating the camera.

⁶ See manual for drawings.

⁷ Not fully production tested, only verified for a small number of specimen.



Hauptsitz – Deutschland
Head office – Germany

Zoller + Fröhlich GmbH
Simoniusstrasse 22
88239 Wangen im Allgäu
Germany

Phone: +49 7522 9308-0
Fax: +49 7522 9308-252
www.zofre.de | info@zofre.de

Niederlassung – USA
Subsidiary – USA

Z+F USA, Inc.
700 Old Pond Road
Suite 606
Bridgeville, PA 15017 (USA)

Phone: +1 412 257 8575
Fax: +1 412 257 8576
www.zf-usa.com | info@zf-usa.com