

# FARO® Focus Laser Scanner

The most compact lightweight and intuitive laser scanner product line

## Laser Scanners for short, medium and long range applications

FARO Focus Laser Scanners are specifically designed for both indoor and outdoor measurements in industries such as Architecture, Engineering, Construction, Public Safety and Forensics or Product Design. All devices capture real world information used in the digital world to analyze, collaborate and execute better decisions to improve and maintain the overall project and product quality.

All Focus<sup>s</sup> and Focus<sup>m</sup> scanners are equipped with outstanding features, such as Ingress Protection (IP) Rating, extended temperature range, HDR functionality, all in an ultra portable size.

The Laser Scanner Focus<sup>s</sup> series offers more advanced functionality. In addition to increased distance, angular accuracy, and range, the Focus<sup>s</sup> scanners' on-site compensation function ensures high-quality measurements, while external accessory bays and HDR functionality make the scanner extremely flexible. When used with SCENE software, the Focus<sup>s</sup> supports real time, on-site registration which enables 3D scan data to be wirelessly transmitted, processed, aligned and registered directly to an on-site mobile device or PC in real time.



- Focus<sup>s</sup> Series
- Accuracy**  
 The Focus<sup>s</sup> uses dual-axis compensation to capture environments with increase accuracy and range.
  - On-Site Compensation**  
 With the on-site compensation functionality users can verify and adjust the Focus<sup>s</sup> compensation immediately before scanning, ensuring high-quality scan data.
  - Accessory Bay**  
 The accessory bay allows users to connect additional 3D laser scanning accessories to support a variety of projects.
  - Temperature**  
 Extended temperature range allows scanning in challenging environments. The Focus can operate in temperatures as low as -20°C and up to 55°C.
  - IP Rating - Class 54**  
 With the sealed design and certified with the industry standard Ingress Protection (IP) Rating, IP54, the Focus can be used in high particulate and wet weather conditions.
  - Compact and portable**  
 Focus Laser Scanners are the smallest and lightest devices in their performance class. They are provided with a waterproof transport and ergonomic carrying case for maximum portability.

## Benefits

- Confidence and documented data-quality by traceable vendor calibration and market-leading on-site compensation.
- Scan in challenging environments while providing protection from dust, debris and water splashes. Mount the Focus<sup>s</sup> scanner in an inverted position, e.g. under a ceiling of a hall.
- The Focus Laser Scanner portfolio offers the most economic 3D scanning solution for all requirements and budgets.
- Minimum training effort is ensured by the intuitive and easy to operate touch-screen interface as well as hands-on and online tutorials.
- Efficient integration into existing software infrastructures and workflows are ensured by interfaces to various standard CAD systems.

# Performance Specifications

	Focus <sup>S</sup> Series S 350   S 150   S 70				Focus <sup>M</sup> 70			
<b>Ranging Unit</b>								
Unambiguity interval:	614m for 122 to 488kpts/s 307m for 976kpts/s				614m for 122 to 488kpts/s			
<b>Range1:</b>								
90% reflectivity (white)	0.6-350m   0.6-150m   0.6-70m				0.6 - 70m			
10% reflectivity (dark-gray)	0.6-150m   0.6-150m   0.6-70m				0.6 - 70m			
2% reflectivity (black)	0.6- 50m   0.6- 50m   0.6-50m				0.6 - 50m			
Ranging noise <sup>2</sup>	@10m	@10m noise re-duced <sup>3</sup>	@25m	@25m noise re-duced <sup>3</sup>	@10m	@10m noise re-duced <sup>3</sup>	@25m	@25m noise re-duced <sup>3</sup>
	in mm							
90% reflectivity (white)	0.30	0.15	0.30	0.15	0.70	0.40	0.70	0.40
10% reflectivity (dark-gray)	0.40	0.20	0.50	0.25	0.80	0.40	0.80	0.40
2% reflectivity (black)	1.30	0.65	2.00	1.00	1.50	0.80	2.10	1.10
Measurement speed (pts/sec):	122,000 / 244,000 / 488,000 / 976,000				122,000 / 244,000 / 488,000			
Range accuracy <sup>4</sup>	±1mm				±3mm			
Angular accuracy <sup>5</sup>	19 arcsec for vertical/horizontal angles				not specified			
3D position accuracy <sup>6</sup>	10m: 2mm / 25m: 3.5mm				not specified			
<b>Color Unit</b>								
Resolution:	Up to 165 megapixel color							
High Dynamic Range (HDR):	Exposure Bracketing 2x, 3x, 5x							
Parallax:	Minimized due to co-axial design							
<b>Deflection Unit</b>								
Field of view (vertical <sup>7</sup> /horizontal):	300° / 360°							
Step size (vertical/horizontal):	0.009° (40,960 3D-pixel on 360°) / 0.009° (40,960 3D-pixel on 360°)							
Max. vertical scan speed:	97Hz							
<b>Laser (Optical Transmitter)</b>								
Laser class:	Laser class 1							
Wavelength:	1550nm							
Beam divergence:	0.3mrad (1/e)							
Beam diameter at exit:	2.12mm (1/e)							
<b>Data handling and control</b>								
Data storage:	SD, SDHC™, SDXC™; 32GB card							
Scanner control:	Via touchscreen display and WLAN connection. Access by mobile devices with HTML5							
<b>Interface Connection</b>								

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WLAN:	802.11n (150Mbit/s), as access point or client in existing networks		
<b>Integrated Sensors</b>			
Dual axis compensator:	Performs a leveling of each scan with an accuracy of 19 arcsec valid within ±2°		
Height sensor:	Via an electronic barometer the height relative to a fixed point can be detected and added to a scan.		
Compass <sup>8</sup> :	The electronic compass gives the scan an orientation.		
GNSS:	Integrated GPS & GLONASS		
On-site compensation:	Creates a current quality report and provides the option to improve the devices compensation automatically.	-	
Accessory bay:	The accessory bay connects versatile accessories to the scanner.	-	
Inverse mounting:	Yes	-	
Real-time, on-site registration in SCENE:	Connects to SCENE via WLAN. Processing of scan data, registration and creation of overview map in SCENE in real-time.	-	
Electronic Automation Interface	Available as option, only at point of sale	-	
<b>General specifications</b>			
Power supply voltage:	19V (external supply), 14.4V (internal battery)		
Power consumption:	15W idle, 25W scanning, 80W charging		
Battery service life:	4.5 hours		
Operating temperature:	5 - 40°C		
Extended operating temperature <sup>9</sup> :	-20 - 55°C		
Storage temperature:	-10 - 60°C		
Ingress protection (IP) rating class:	IP54		
Humidity Resistance:	Non-condensing		
Weight incl. battery:	4.2kg		
Size/Dimensions:	230 x 183 x 103mm		
Maintenance / calibration:	Annual		



1 For a Lambertian scatterer. 2 Ranging noise is defined as a standard deviation of values about the best-fit plane for measurement speed of 122,000 points/sec. 3 A noise-reduction algorithm may be activated by averaging raw data. 4 Range accuracy is defined as a systematic measurement error at around 10m and 25m. 5 On-site compensation required. 6 For distances larger 25m add 0.1mm/m of uncertainty. 7 2x150°, homogenous point spacing is not guaranteed. 8 Ferromagnetic objects can disturb the earth magnetic field and lead to inaccurate measurements. 9 Low temperature operation: scanner has to be powered on while internal temperature is at or above 15°C, high temperature operation: additional accessory required. | All accuracy specifications are one sigma, after warm-up and within operating temperature range; unless otherwise noted. Subject to change without prior notice.

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