

# 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 analyse, collaborate and execute decisions to improve and maintain the overall project and product quality.

The Focus<sup>S</sup> Laser Scanner series offers advanced functionality. In addition to increased distance, angular accuracy, and range, the Focus<sup>S</sup> and Focus<sup>S</sup> Plus scanners' on-site compensation function ensures high-quality measurements, while external accessory bays and HDR functionality make the scanner extremely flexible.



Focus<sup>S</sup> Series

### Accuracy

Highest accuracy and range by using a combination of the most advanced sensor technologies.

### 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 and traceable documentation.

### On-Site Registration

During on-site data capture, the laser scanner immediately transmits scan data wirelessly to FARO SCENE for real-time scan processing and registration, providing efficiency and time savings.

### Rescanning of Distant Targets

The Scan Group feature identifies multiple areas to be rescanned with higher resolution to either perform accurate target detection or to capture smaller areas on interest with greater detail.

### IP Rating 54 and Extended Temperature Range

With the sealed design and certified with the industry standard Ingress Protection (IP) Rating, IP54, the Focus can be used in wet weather conditions at temperatures from -20°C to 55°C<sup>9</sup>.

### Compact and Portable

Focus Laser Scanners are the smallest and lightest devices in their performance class.

## Benefits

- Confidence and documented data-quality by traceable 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> Plus 350	Focus <sup>S</sup> Plus 150	Focus <sup>S</sup> 350	Focus <sup>S</sup> 150	Focus <sup>S</sup> 70	Focus <sup>M</sup> 70
<b>Ranging Unit</b>						
Unambiguity Interval	614m for up to 0.5 mil pts/sec 307m at 1 mil pts/sec 153m at 2 mil pts/sec		614m for up to 0.5 mil pts/sec 307m at 1 mil pts/sec			614m for up to 0.5 mil pts/sec
<b>Range<sup>1</sup></b>						
90% Reflectivity (white)	0.6-350m	0.6-150m	0.6-350m	0.6-150m	0.6-70m	0.6-70m
10% Reflectivity (dark-gray)	0.6-150m	0.6-150m	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	0.6-50m	0.6-50m
<b>Range Noise<sup>2</sup> (mm)</b>						
@10m 90% (white)	0.1		0.3			0.7
@10m 10% (dark-gray)	0.3		0.4			0.8
@10m 2% (black)	0.9		1.3			1.5
@25m 90% (white)	0.2		0.3			0.7
@25m 10% (dark-gray)	0.5		0.5			0.8
@25m 2% (black)	1.6		2.0			2.1
Max. Measurement Speed (mil. pts/sec)	Up to 2		Up to 1			Up to 0.5
Ranging Error <sup>3</sup> (mm)	±1					±3
Angular Accuracy <sup>4</sup>	19 arcsec for vertical/horizontal angles					not specified
3D Point Accuracy <sup>5</sup>	2 @10m 3.5 @25m		2 @10m 3.5 @25m			not specified

Additional Performance Specifications	
<b>Colour Unit</b>	
Colour Resolution	Up to 165-megapixel color
HDR Camera	Exposure bracketing 2x, 3x, 5x
Parallax	Minimised due to co-axial design
<b>Deflection Unit</b>	
Field of View	300° vertical <sup>6</sup> / 360° horizontal
Step Size	0.0009 (40,960 3D-pixel on 360°) vertical / 0.0009 (40,960 3D-pixel on 360°) horizontal
Max. Scan Speed	97Hz (vertical)
<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	SDHC™, SDXC™, 32GB card
Scanner Control	Via touch screen display and WLAN connection, Access by mobile devices with HTML5
<b>Interface Connection</b>	
WLAN	802.11n (150Mbit/s), as access point or client in existing networks

Additional Features	
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>7</sup>	The electronic compass gives the scan an orientation
GNSS	Integrated GPS & GLONASS
On-Site Compensation*	Creates current quality report and improves 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, real-time scan processing and registration, overview map
Electronic Automation Interface*	Available as option, only at point of sale
Digital Hash Function	Scans are cryptographically hashed and signed by the scanner
Rescanning of Distant Targets	Defined areas recaptured in higher resolution at a greater distance
Retake Photos	Select individual photographs with unwanted objects and retake them

\*Not integrated with the Focus<sup>M</sup> 70

General Specifications	
Power Supply	19V (external supply), 14.4V (internal battery)
Power Consumption	15W idle, 25W scanning, 80W charging
Battery Service Life	4.5 hours
Temperature	Operating: 5° - 40° C   Extended Operating <sup>8</sup> : -20° - 55° C   Storage: -10° - 60°C
Ingress Protection (IP) Rating Class	IP54
Humidity Resistance	Non-condensing
Weight	4.2 kg (including battery)
Size/Dimensions	230 x 183 x 103mm
Maintenance / Calibration	Recommended 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** Ranging error is defined as a systematic measurement error at around 10m and 25m. **4**. On-site compensation required. **5**. For distances larger 25m add 0.1mm/m of uncertainty. **6**. 2x150°, homogenous point spacing is not guaranteed. **7**. Ferromagnetic objects can disturb the earth magnetic field and lead to inaccurate measurements. **8**. 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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