

# FARO® Focus Laser Scanner

The most compact lightweight and intuitive laser scanner product line

# FARO®



## FOCUS<sup>S</sup> SERIES

### ACCURACY

The Focus<sup>S</sup> captures environments with increased accuracy and distance with dual-axis compensator and angular measurement.

### ON-SITE COMPENSATION

With the on-site compensation functionality users can verify and adjust the Focus<sup>S</sup> compensation on-site, 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<sup>S</sup> 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

The Focus Laser Scanners measure at 230 x 183 x 103mm and weigh at 4.2kg making them the smallest and most light weight scanners in the market. The devices are equipped with a waterproof transport and ergonomic carrying case for maximum portability.

## 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 into the digital world to deliver information used 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 recognizable 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. Besides an increased distance and angular accuracy all Focus<sup>S</sup> scanners are equipped with an internal accessory bay and an on-site compensation function quality verification. When utilized 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/PC in real time.

## 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.
- 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 online tutorials.
- Efficient integration into existing software infrastructures and workflows are ensured by interfaces into various standard CAD systems.

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## PERFORMANCE SPECIFICATIONS

	FOCUS <sup>S</sup> SERIES S 350   S 150   S 70	FOCUS <sup>M</sup>
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### RANGING UNIT

Unambiguity interval:	614m for 122 to 488kpts/s 307m for 976 kpts/s	not specified
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### RANGE<sup>1</sup> :

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 reduc- tion <sup>3</sup>	@25m	@25m noise reduc- tion <sup>3</sup>	@10m	@10m noise reduc- tion <sup>3</sup>	@25m	@25m noise reduc- tion <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			
Ranging error <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			

### COLOR UNIT

Resolution:	Up to 165 megapixel color
High Dynamic Range (HDR):	Exposure Bracketing 2x, 3x, 5x
Parallax:	Minimized due to co-axial design

### DEFLECTION UNIT

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

### LASER (OPTICAL TRANSMITTER)

Laser class:	Laser class 1
Wavelength:	1550nm
Beam divergence:	0.3mrad (1/e)
Beam diameter at exit:	2.12mm (1/e)

### DATA HANDLING AND CONTROL

Data storage:	SD, SDHC™, SDXC™; 32GB card
Scanner control:	Via touchscreen display and WLAN connection. Access by mobile devices with HTML5

### INTERFACE CONNECTION

WLAN:	802.11n (150Mbit/s), as Access Point or client in existing networks
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### INTEGRATED SENSORS

Dual axis compensator:	Performs a leveling of each scan with an accuracy of 19 arcsec valid within $\pm 2^{\circ}$	
Height sensor:	Via an electronic barometer the height relative to a fixed point can be detected and added to a scan.	
Compass <sup>a</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 is located on top of the laser scanner and is used to connect versatile accessories to the scanner.	-
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.	-

### GENERAL SPECIFICATIONS

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

**CLASS 1  
LASER PRODUCT**

**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** Ranging error 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** Ferro-magnetic 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, further information on request | 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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