

FARO Focus^{3D}

Features, Benefits & Technical Specifications

FARO





A leap in innovation and efficiency to lower your costs

The Focus^{3D} is a high-speed 3D laser scanner for detailed measurement and documentation. With a touch operated screen to control scanning functions and parameters, the Focus^{3D} uses laser technology to produce incredibly detailed three-dimensional images of complex environments and large scale geometries in only a few minutes. The resulting image is an assembly of millions of 3D measurement points that provide an exact digital reproduction of existing conditions.

The Focus^{3D} offers the most efficient method for three-dimensional documentation of building construction, excavation volumes, façade and structural deformations, crime scenes, accident details, product geometry, factories, process plants and more. Given its minimal size and weight as well as touch interface, the Focus^{3D} is easy to work with and saves up to 50% of scan time compared to conventional scanners.

How the Focus^{3D} works

The technology behind the Focus^{3D} is simple. First, it emits a laser beam from a rotating mirror out towards the area being scanned. Then the unit distributes the laser beam at a vertical range of 305° and a horizontal range of 360°. The laser beam is then reflected back to the scanner by objects in its path. The distance to the objects defining an area is calculated as well as their relative vertical and horizontal angles. The data is captured and transmitted via WLAN for calculating precise 3D renderings.



Features of the Focus^{3D}



Intuitive touchscreen display

Control all scanner functions with a touch interface for unparalleled ease of use and control



Small and compact

With a size of only 9.5 x 8 x 4in and a weight of just 11lbs, the Focus^{3D} is the smallest 3D scanner ever built



Integrated color camera

Photorealistic 3D color scans due to an integrated color camera featuring an automatic 70 megapixels parallax-free color overlay



High-performance battery

Integrated lithium-ion battery provides up to five hours of battery life and can be charged during operation



Data management

All data is stored on a SD card enabling easy and secure transfer to a PC. Using SCENE WebShare, images can be shared on the internet



Compass

An electronic compass is now included within the unit to associate directional data to your scans and facilitate the auto-registration process



Height Sensor (Altimeter)

Each scan now includes height information which can be used to scan different floor levels in a building. The data can then be used to differentiate the floors



Dual Axis Compensator

To minimize the number of targets needed, the dual axis compensator enables every scan to have integrated level information



WLAN (WiFi)

WLAN remote control permits you to start, stop, view or download scans at a distance

Benefits to the end user

- Portability allows user to scan complex objects and environments
- Automatic scan registration reduces pre-processing scan time
- Large scanning range reduces the number of scans per project
- Touchscreen interface makes the scanner easy for anyone to use

Benefits to the company

- Provides long term investment for future projects
- Dedicated users can act as general scanning providers within organization
- Real world environments are preserved in a virtual 3D world
- Unsurpassed cost-value proposition make every scanning project economical

Performance Specifications



Ranging Unit

Unambiguity interval: 153.49m (503.58ft)

Range Focus^{3D} 120¹: 0.6m - 120m indoor or outdoor with low ambient light and normal incidence to a 90% reflective surface

Range Focus^{3D} 20: 0.6m - 20m at normal incidence on >10% matte reflective surface*

Measurement speed: 122,000 / 244,000 / 488,000 / 976,000 points/sec

Ranging error²: ±2mm

Ranging noise ³	@10m	@10m - noise compressed ⁴	@25m	@25m - noise compressed ⁴
@ 90% refl.	0.6mm	0.3mm	0.95mm	0.5mm
@ 10% refl.	1.2mm	0.6mm	2.20mm	1.1mm

Color Unit

Resolution: Up to 70 megapixel color

Dynamic color feature: Automatic adaption of brightness

Deflection unit

Vertical field of view (vertical/horizontal): 305° / 360°

Step size (vertical/horizontal): 0.009° (40,960 3D pixels on 360°) / 0.009° (40,960 3D pixels on 360°)

Max. vertical scan speed: 5,820rpm or 97Hz

Laser (Optical transmitter)

Laser power (cw Ø): 20mW (Laser class 3R)

Wavelength: 905nm

Beam divergence: Typical 0.19mrad (0.011°)

Beam diameter at exit: 3.0mm, circular

Data handling and control

Data storage: SD, SDHC™, SDXC™; 32GB card included

Scanner control: Via touch-screen display

New WiFi(WLAN) access: Remote control, Scan Visualization and download are possible on mobile devices with Flash®

Multi-Sensor

Dual axis compensator: Levels each scan with an accuracy of 0.015° and a range of ±5°

Height sensor: Detects the height relative to a fixed point via an electronic barometer and adds it to the scan

Compass: Electronic compass gives the scan an orientation. A calibration feature is included.

1) Depends on ambient light, which can act as a source of noise. Bright ambient light (e.g. sunshine) may shorten the actual range of the scanner to lesser distances. In low ambient light, the range can be more than 120m for normal incidence on high-reflective surfaces. 2) Ranging error is defined as the systematic measurement error at around 10m and 25m, one sigma. 3) Ranging noise is defined as a standard deviation of values about the best-fit plane for measurement speed of 122,000 points/sec. 4) A noise-compression algorithm may be activated to average points in sets of 4 or 16, thereby compressing raw data noise by a factor of 2 or 4. Subject to change without prior notice.

Patented: US 7,430,068 B2; 7,733,544; 7,847,922 B2

*Focus^{3D} 20 not available for distributor resale



Hardware Specifications

Power supply voltage: 19V (external supply), 14.4V (internal battery)

Power consumption: 40W and 80W respectively (while battery charges)

Battery life: Up to 5 hours

Ambient temperature: 5° - 40°C

Humidity: Non-condensing

Cable connector: Located in scanner mount

Weight: 5.0kg

Size: 240x200x100mm³

Maintenance calibration: Annual

Parallax-free: Yes



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