

FARO Laser Scanner Photon 120/20



Longest Range 3D Phase-Shift Laser Scanner

Patented Hypermodulation technology enables scanner to produce virtual images comprised of millions of 3D measurement points collected within an unprecedented range - 120m (395 ft.)^{1,2}

High Speed Survey and Inspection

Scan at rates of up to 976,000 points-per-second

Speed Control

Balance speed and scan quality according to your application

High Accuracy

± 2mm ranging error³ at 25 m

Best-in-Class Field-of-View

360° horizontal and 320° vertical - the largest field-of-view on the market

Modular Design

Removable sealed modules for convenient system upgrade and maintenance

Wireless Operability

Independent web server; data recording on 80GB internal hard disk; control via iPod® touch or most wireless PDAs

Universal Quick Mount

For mounting on a surveyor tripod

Compact Power Base (option)

Provides up to 6 hours of operation per charge

The Photon 120 : Large Scale Scanning at its Fastest

A high-speed 3D scanner rated for full-detail survey and documentation! Utilizing non-contact laser technology, the FARO Photon generates highly detailed three-dimensional replicas of complex environments and geometries in a matter of minutes. Photon recreates the real world and defines it within a virtual space. The resulting image is a collection of millions of 3D measurements, providing an accurate digital representation of as-built or as-is conditions. Capable of scanning at a blistering rate of 976,000 points-per-second, the Photon 120 offers the most efficient method for documenting your world in three dimensions. Due to the Hypermodulation technology-developed by FARO - the strength of the signal could be improved and the range could be increased to reach 120m.

Document With Confidence

With Photon, digitally capture all the required documentation for engineering, procurement, construction, and investigation - in complete detail. Replace cumbersome data collection via tape measures, laser range finders, digital cameras, and total stations that involve additional effort and risk.

Additional Features

- ▶ Color camera option for photo-realistic high-resolution scans
- ▶ Mobile scanning interface for scanning along roads, rails, and tunnels with optional integration software
- ▶ Optimized for exceptional image quality in outdoor conditions
- ▶ Automatic target recognition, naming, and registration
- ▶ Crisp object definition
- ▶ Hypermodulation for longer range and less noise



Commercial



Industrial



Residential



Manufacturing

Specifications

Ranging unit

Unambiguity interval: 153.49m (503.58ft)

Range² (Photon 120): 0.6m - 120m indoor or outdoor with low ambient light and normal incidence to a 90% reflective surface

Range² (Photon 20): 0.6m - 20m at normal incidence on >2% matte reflective surface

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

Ranging error³: ±2mm at 10m and 25m, each at 90% and 10% reflectivity

Ranging noise⁴: standard deviation

@10m - raw data: 0.8mm @ 90% refl. | 1.4mm @ 10% refl.

@10m - noise compressed⁵: 0.4mm @ 90% refl. | 0.7mm @ 10% refl.

@25m - raw data: 1.0mm @ 90% refl. | 2.7mm @ 10% refl.

@25m - noise compressed⁵: 0.5mm @ 90% refl. | 1.35mm @ 10% refl.

Deflection unit

Vertical field of view: 320°

Horizontal field of view: 360°

Vertical step size: 0.009° (40,000 3D pixel on 360°)

Horizontal step size: 0.009° (40,000 3D pixel on 360°)

Max. vertical scan speed: 2,880 rpm

Laser (Optical transmitter)

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

Wavelength: 785 nm

Beam divergence: Typical 0.16 mrad (0.009°)

Beam diameter at exit: 3.3 mm, circular

Handling of data

Internal PC: Intel Celeron-M 600MHz, 512 MB RAM, 80 GB HD

Data storage: Local: on internal hard disk drive (for most resolutions)

Remote: via Ethernet on external PC or laptop

Scanner control: via Ethernet or WLAN by PC or PDA, on local network, internet or independent operation

¹ Range specification applies to the Photon 120.

² 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.

³ **Ranging error** is defined as the maximum error in the distance measured by the scanner from its origin point to a point on a planar target.

⁴ **Ranging noise** is defined as standard deviation of values about the best-fit plane.

⁵ A noise-compression algorithm may be activated to average points in sets of four or sixteen, thereby compressing raw data noise by a factor of 2 or 4.

⁶ Based on vendor specification

Subject to change without prior notice. More information available at www.faro.com.

General

Power supply voltage: 24 V DC (Battery pack or AC converter)

Power consumption: ~60 W

Ambient temperature: 5° - 40° C

Humidity: Non condensing

Inclination sensor⁶: Accuracy 0.02°; Resolution 0.001°; Range ±15°

Weight: 14.5 kg (31.97lb)

Size (LxWxH): 410 mm x 160 mm x 280 mm

Maintenance calibration: Once a year

Exchange modules: Distance sensor / mirror axis / PC

Georeferencing: Yes

Cable connector: Located in scanner mount

Parallax-free color overlay (with color camera option)

