

# FARO® Laser Scanner Photon 120/20



## **Longest Range 3D Phase-Shift Laser Scanner**

Produce virtual images comprised of millions of 3D measurement points collected within an unprecedented range of 120m (395ft.)<sup>1,2</sup>

## **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 application.

## **High Accuracy**

±2mm ranging error<sup>3</sup> at 25m.

## **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 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 the blistering rate of 976,000 points-per-second and a maximum reach of 120m, the Photon 120 offers the most efficient method for documenting your world in three dimensions.

## **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. Photon, also available in a 20m model, is the ultimate digital documentation instrument.

## **Features**

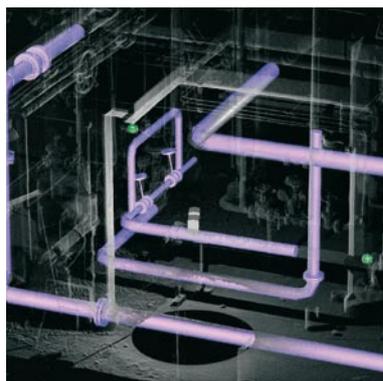
- ▶ Colour camera option for photo-realistic high-resolution colour scans
- ▶ Mobile scanning interface for scanning along roads, rails, and tunnels with optional integration software
- ▶ Optimised for exceptional image quality in outdoor conditions
- ▶ Automatic target recognition, naming, and registration
- ▶ Crisp object definition

# FARO® Laser Scanner Photon 120/20

## Applications



Commercial



Industrial



Residential



Manufacturing

## Specifications

### Ranging unit

- Unambiguity interval:** 153.49m (503.58ft)
- Range<sup>2</sup>:** 0.6m - 120m indoor or outdoor with low ambient light and normal incidence to a 90% reflective surface
- Range (Photon 20<sup>2</sup>):** 0.6m - 20m at normal incidence on >2% matte reflective surface
- Measurement speed:** 122,000 / 244,000 / 488,000 / 976,000 points/sec
- Ranging error<sup>3</sup>:** ±2mm at 10m and 25m, each at 90% and 10% reflectivity
- Ranging noise<sup>4</sup>:** standard deviation
- @10m - raw data:** 0.8mm @ 90% refl. | 1.4mm @ 10% refl.
- @10m - noise compressed<sup>5</sup>:** 0.4mm @ 90% refl. | 0.7mm @ 10% refl.
- @25m - raw data:** 1.0mm @ 90% refl. | 2.7mm @ 10% refl.
- @25m - noise compressed<sup>5</sup>:** 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:** 2,880rpm

### Laser (Optical transmitter)

- Laser power (cw Ø):** 20mW (Laser class 3R)
- Wavelength:** 785nm
- Beam divergence:** Typical 0.16mrad (0.009°)
- Beam diameter at exit:** 3.3mm, circular

### Handling of data

- Internal PC:** Intel Celeron-M 600MHz, 512MB RAM, 80GB hard drive
- 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 a standard deviation of values about the best-fit plane.  
 5) 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  
 6) Based on vendor specification  
 Subject to change without prior notice.



## General

- Power supply voltage:** 24V DC (Battery pack or AC converter)
- Power consumption:** ~60W
- Ambient temperature:** 5° - 40°C
- Humidity:** Noncondensing
- Inclination sensor<sup>6</sup>:** Accuracy 0.02°; Resolution 0.001°; Range ±15°
- Weight:** 14.5kg (31.97lb)

- Size (LxWxH):** 410mmx160mmx280mm
- Maintenance calibration:** Once a year
- Exchange modules:** Distance sensor / mirror axis / PC
- Georeferencing:** Yes
- Cable connector:** Located in scanner mount
- Parallax-free:** Yes

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