

## **Scanning Equipment November 2019**

### **Scanner**

Faro Focus 3D x130 3D Laser Scanner

Ser: LLS071405869

Incl all accessories.

LLS05869-20190528-EU Calibration certificate(Dated 28 May 2019)

### **Tripod**

Manfrotto Gruppo Tripod

### **Scanning Desktop**

Windows 10

Intel Core I7-6700 CPU @ 3.40GHz

32 Gb Ram

NVIDIA GeForce GTX 970

### **Scanning Laptop**

Windows 7

Intel Core I7-4610M CPU @ 3.00GHz

16 Gb Ram

Intel HD Graphics 4600

### **Sd Card Reader**

Scandisk Image Mate All-in-one USB 3.0 Reader

### **Scanning Spheres**

Laser Scanner Reference Sphere Set (Basic) for FARO Focus3D and Trimble TX5 (x10)

### **Software**

Trimble Real Works 10.0

### **Price**

**Total asking price R450 000.00 excluding VAT.**



# FARO Customer Service Europe Headquarters



5/28/2019

Repair Letter

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iQLaser-Sales Ltd.  
PO Box 1846  
1747 Muldersdrift  
South Africa

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RMA-NUMBER:	01185773
SERIAL NUMBER:	LLS071405869
DEVICE:	Focus 3D X
SERVICE-DESCRIPTION:	Annual Cleaning & Calibration

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Dear Ms. Corinna Metcalfe,

We are pleased to inform you that the service has been performed successfully on your FARO device. Hereby we want to inform you about the work carried out.

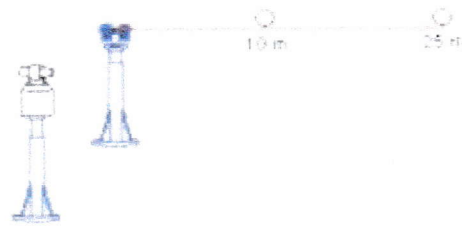
- Base Module Motor Test
- Mirror Module Motor Test
- Firmware Revision Check
- Test on Measurement Track
- SDRAM Test
- Sensor Electronics Calibration
- Mandatory Upgrades
- Software Upgrade
- Firmware Upgraded

Your device has been set to factory specifications. If you have any further questions concerning your service please contact the FARO Customer Service Department.

Kind Regards.

## Ranging Measurement - Uncertainty Budget

The range measurement calibration is performed by scanning spheres in distances of ca. 10 m and 25 m, and comparing the results from the scanner with the expected results based on measurements from a reference laser tracker.



### Uncertainty Contributors

Absolute Position of the Scanner

$$u_{sc} = 0.182\text{mm}$$

(Includes the uncertainty of the laser tracker, the SMR holder assembly TA0083, and repeatability)

Absolute Position of the Sphere

$$u_{sp} = 0.460\text{mm}$$

(Includes the uncertainty of the laser tracker, the SMR holder, the sphere's radius and eccentricity, and repeatability)

Fitting a Sphere into Scan Points

$$u_f = 0.044\text{mm}$$

(Includes the noise in the measurements of the sphere's surface)

### Combined Uncertainty

Combined standard uncertainty  $u_{cRanging}$ :

$$u_{cRanging} = \sqrt{u_{sc}^2 + u_{sp}^2 + u_f^2}$$

$$u_{cRanging} = 0.496\text{mm}$$

Further details regarding the uncertainty budget are available on request.

### Ranging Noise Measurement - Uncertainty Budget

Ranging noise is defined as a standard deviation of values of the best-fit plane.

Combined standard uncertainty  $u_{cNoise}$ :

$$u_{cNoise} = 0.067\text{mm}$$

All measurements for this calibration certificate were made with a measurement speed of 122,000 points/sec