SENSOFAR

METROLOGY

S lynx

FACILITY SPECIFICATIONS

TD46-02-EN, A

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CHAPTER

1 SYSTEM SPECIFICATIONS

Facility Specifications is a document which aims at specifying and explaining all the requirements the installation place—or facility—must meet in order to comply with the technical and metrological specifications of the equipment.

1.1 Technical specifications

System weight

Weights of each component for the standard configuration:

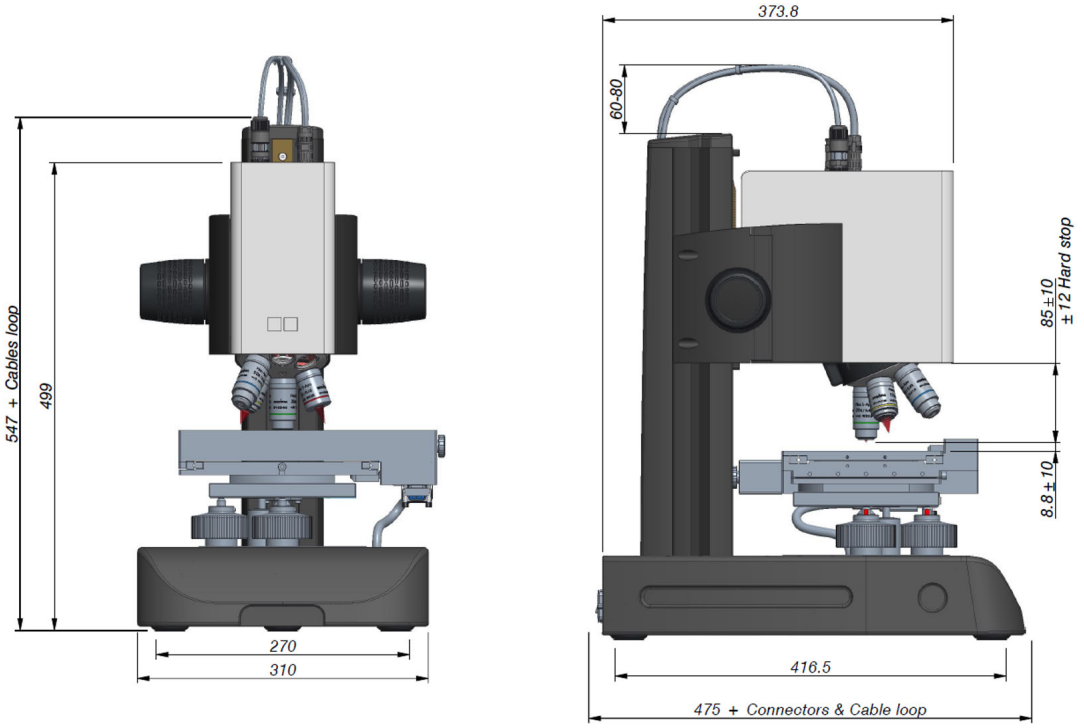
Component	Weight (kg)
Base and column	17.2
Set of 6 objectives	1*
Sensor and Z-coarse	8.3
Tip-tilt and XY stage	8.4
Total S lynx 2	34.9

*Depending on the configuration.

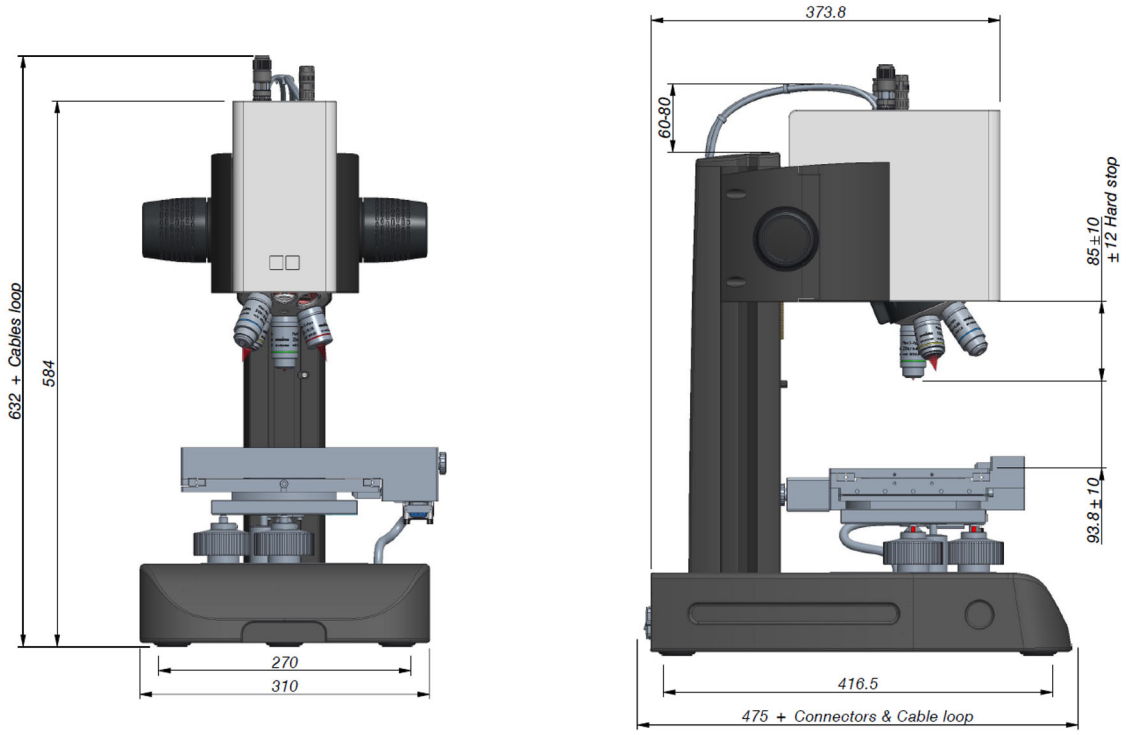
Mechanical dimensions

The dimensions for the sensor head are given in mm in the images below:

Standard position



Top position



WARNING

The system must be installed in a location with proper free space around it to have a sufficient airflow and avoid for controllers to overheat. It is also important to leave some space above the system—around 70 mm— and behind it—around 25mm—for the cable bundles.

CHAPTER

2

SAFETY & MAINTENANCE

This section provides important information about safety procedures, maintenance routine, and general considerations for using your S lynx 2.

For your safety and that of your equipment, follow these rules for handling and cleaning your S lynx 2. Keep these instructions handy for reference by you and others.

For an optimal performance, it is strongly recommended not to install any external software in the computer.

NOTE Any modification or invalid use of the S lynx 2 will automatically void the manufacturer's warranty.

2.1 Important safety information

The following safety information refers to the system as a whole.

WARNING

Failure to follow these safety instructions could result in fire, electric shock or other injury or damage.

Power specifications

- *AC line input.*
- *Type of distribution system*: TT-System/TN-System
- *Voltage range*: 100-240 V alternating current (AC), 1.25 A Max.
- *Frequency:* 50/60 HZ single phase
- *Power*: 125 W
- *Fuse rating*: 4 A
- *Fuse model*: S501-4-R V 5 x 20 mm
- *Mains supply voltage fluctuations*: ±10%

WARNING

A protective earth (PE) connection with the mains is always required.

Use a CO_2 fire extinguisher in case of fire.

Do not carry out repairs yourself

Do not attempt to install, repair, or open your system. If your system needs a service, contact the local distributor or support service.

If you open your equipment or install other items, you risk damaging it. Such damage is not covered by the limited warranty of your S lynx 2.

2.2 Important handling information

The system is not considered a portable machine or a hand-guided machine.

Operating environment

As a high precision measurement tool capable of measuring surface variations in the order of nanometers, S lynx 2 performance is influenced by the environment in which it operates.

This section lists minimal requirements/conditions that must be fulfilled for optimal system performance. In addition to these requirements, there are some basic environmental conditions that need to be met based on the desired performance of the system:

- **Standard operating conditions:** the area housing S lynx 2 must be free of excessive dust. The system should be placed on a robust and stable surface; standard desks are not suitable tables for the system, an optical frame with a breadboard is recommended. Vibration and acoustic levels should be minimal for a proper operation of the system. When making measurements the operating environment must be as motion free as possible.
- **Optimal operating conditions:** for very critical measurements, an active vibration isolation system is recommended. Due to the scanning mechanism sensitivity to transient convective flow of the system, do not allow direct airflows to point towards it. The system should be placed on a basement or ground level floor. In the event that the system is placed on an upper level floor, position it close to a master pillar or a master wall but not in contact with the pillar or the wall itself. In this case, never place the system in the center of the room. Vibrating equipment or pumping machines should not be placed in the same room of the system or at an adjacent room.

Parameters	Room conditions
Temperature	10 °C to 35 °C (recommended 20 ± 1 °C)
Rate of Temperature Change	<1 °C per 15 min
Relative Humidity	5% to 80%
Altitude	< 2000m
Cleanroom	Not required, Class 6 (ISO 14644-1) / Class 1000 (U.S. Federal Standard 209E) or better recommended
Vibration Isolation	Required for vibration isolation frequencies in the range of 1 Hz to 120 Hz
Vibration Criterion	VC-C or better
Acoustic Noise	Not to exceed 60 dB
Overvoltage	Category II
Pollution degree of the intended environment	PD2

NOTE Failure to follow these operating conditions could result in a poor performance of the system. Sensofar will provide recommendation for vibration isolation solutions, but it is the customer's responsibility to procure additional hardware necessary to fulfill the described conditions.

Vibration Considerations

Environmental vibrations can affect the quality of the S lynx 2 measurements. After testing the repeatability of the measurements under a wide spectrum of amplitude and frequency vibrations, we can conclude:

Low Frequencies (0 -10 Hz)

Vibration frequencies in this range are not critically affecting the accuracy of the measurement. In this range, vibrations are slow compared with the image acquisition frequency and is not affecting 3D reconstruction algorithm. Interferometric measurements are almost insensitive to low frequencies.

Low frequency vibrations may cause sub-nanometer accuracy loss.

Medium Frequencies (10-200 Hz)

Vibrations within this range have a frequency similar to the acquisition rate. Those are the vibration frequencies affecting most seriously the system accuracy. We may lose system accuracy if vibrations between these frequencies and over a certain value are present.

Medium frequency vibrations are the most critical for measurement repeatability.

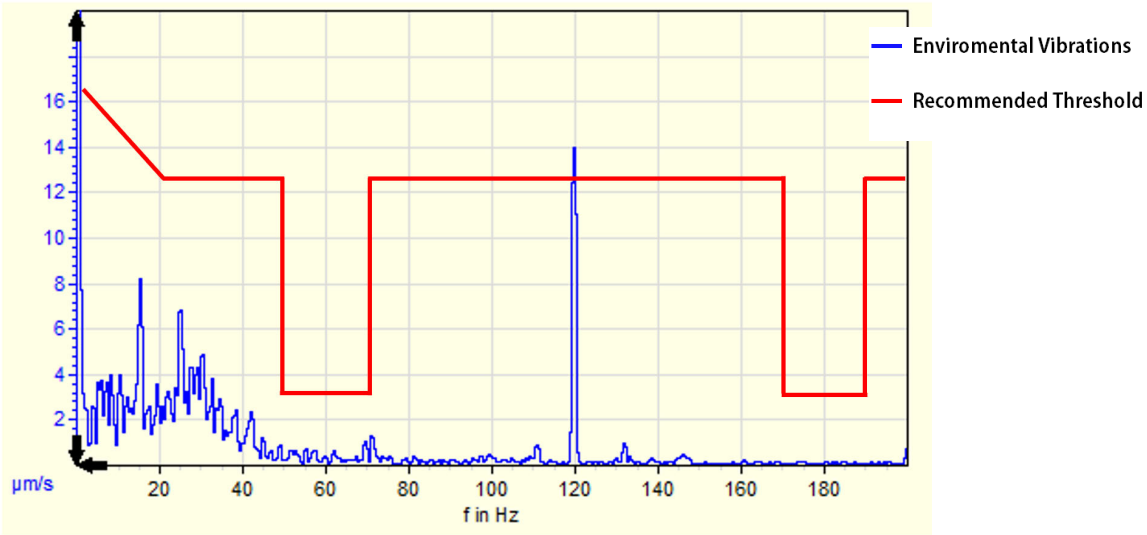
High Frequencies (more than 200 Hz)

High frequency vibrations are not critical for system accuracy, although they may affect fringe contrast. Frequencies in this range are much higher than acquisition rate, and are not affecting the 3D reconstruction algorithm.

High frequency vibrations cause fringe contrast loss.

Sensofar vibration threshold recommendation

Taking in consideration the referred analysis we can recommend a vibration frequency threshold. The threshold recommended is refereed to an accelerometer sensor placed on the base where the system is intended to be placed.



The recommended threshold is more relaxed for most frequencies and much tighter for the critical vibration frequencies affecting system repeatability, The recommended relaxed threshold corresponds to the VC-C vibration criteria curve, while for the frequencies [50-70 Hz] and [170-190 Hz] corresponds to the VC-E vibration criteria curve.

Failure to follow these operating conditions could result on a poor performance of the system. Sensofar will provide recommendation for vibration isolation solutions, but it is customer's responsibility to procure additional hardware necessary to fulfill the described conditions.

Operational safety specifications

The acoustic noise emitted by the equipment is within the limits set by applicable regulations to ensure user safety. Therefore, no additional corrective actions or personal protective equipment are required to mitigate acoustic risk.

The vibration levels generated by the equipment are below the thresholds that could affect user safety or health. Consequently, no additional corrective measures are required to control user exposure to vibration.

Emergency shutdown

The emergency off (EMO) switch must be installed between the mains and the IEC inlet of the system. It is activated by pushing the red push-switch button.

After an emergency off and before resetting the system, it should be checked if the system has any damage.

To reboot after an emergency off, the system must be shut down and the software application must be closed. After that, the emergency stop button can be reset by turning clockwise and the user can follow again the usual start up procedure.

Carrying your S lynx 2

Before you lift or re-position your S lynx 2, lock the active vibration isolation table, shut down the system and disconnect all cables.

WARNING

If the sensor head is not disassembled, at least two people are required to lift and carry the system.

2.3 Good use practices

As a high precision measurement tool, some basic good practice rules must be followed to avoid poor performance on the measurements.

During measurements

Do not disturb the system operation touching the system or the surface where it is placed in the course of a measurement. Do not subject the system to direct airflows coming from air conditioning systems or ventilation systems. Do not open or close a door near the system during a measurement.

How to minimize electrical noise

To avoid vibrations caused by electrical noise, do not install the instrument near elements such as:

- Dynamos
- Inductive equipment
- High consumption choppers

Concerning these elements, please consider items such as fluorescent lamps, elevators, motors, relays, arc welders or belt conveyors.

In addition, the following elements could be installed on the instrument input AC line to minimize the electromagnetic disturbances in the power supply.

- EMI mains filter
- Cable ferrites
- Surge protectors
- Uninterruptible power supply (UPS)
- Insulation transformers

NOTE The addition of these elements alters the certified test conditions for the instrument. There are no guarantees that under an alteration of the known and tested conditions, the robustness and safety of the instrument will remain as specified.

2.4 General maintenance

Clean your S lynx 2

Cleaning procedures must be carried out **ONLY** if dirt of dust is detected in the system.

If you need to clean your S lynx 2, follow these instructions:

1. Shut down the sensor head when exiting the SensoSCAN ML software.
2. Turn off your computer.
3. Clean the S lynx with a soft cloth dampened with water. Do not use detergent.
4. The objective lenses should be cleaned with a blower.

NOTE Do not use alcohol, aerosol sprays, solvents or abrasives that might damage the finish on the case.

Clean the reference mirror

If you need to clean the reference mirror, follow these instructions:

1. Place optical paper over the reference mirror.
2. Use one or two drops of acetone.
3. Then, slide the optical paper smoothly taking with it the dust particles on the mirror. Never rub hard because dust particles can scratch the mirror.

Objective calibration process

A description of the complete calibration process can be found in the User Manual. In general, objectives should be calibrated when they are mounted, when they are unscrewed from the nosepiece or when the system is exposed to temperature changes.

CHAPTER

3 WARRANTY

3.1 Service & Support

Contact

If you have any problems with the system you can contact your local Service & Support center (usually your local Distributor). You are welcome to do this even if the warranty on your system has expired.

The contact details for Sensofar headquarters in Spain are shown below:

Sensofar-Tech, S.L.
Parc Audiovisual Catalunya
Ctra. BV1274, KM 1
08225 Terrassa, Spain

Tel.: +34 937 001 492
Fax: +34 937 860 116

support@sensofar.com
www.sensofar.com

Sensofar and all recognized Distributors can supply all system components and spare parts and carry out any necessary calibrations and repairs.

Locating your Serial Number

To locate your Serial Number (SN), open the SensoSCAN ML software. Click on Menu > Help > About… The About panel will open and your SN and version will be shown:

It is also visible on the label on top of the sensor head.

Conditions

The system is delivered with a 1-year warranty by default. Warranty starts after the system is installed by Sensofar/ Certified Distributor. To activate the warranty, the "Installation Qualification" document must be reported back to Sensofar to register the product.

3.2 Copyright

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Regulatory Compliance Information

CE

Sensofar-Tech, S.L. declares that the system is in compliance with the requirements of the Machinery Directive 2006/42/EC, the EMC directive 2014/30/EU and the RoHS directive 2011/65/EU and carries the CE marking accordingly

European Union - Disposal Information

The above symbol means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches the end of its life, take it to a collection point designated by the local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

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SENSOFAR

METROLOGY

SENSOFAR is a leading-edge technology company that has the highest quality standards within the field of surface metrology.

Sensofar Metrology provides high-accuracy optical profilers based on confocal, interferometry, Ai focus variation and fringe projection techniques, from standard setups for R&D and quality inspection laboratories to complete non-contact metrology solutions for in-line production processes.

The Sensofar Group has its headquarters in Barcelona, also known as a technology and innovation hub in Europe. The Group is represented in over 30 countries through a global network of partners and has its own offices in Asia, Germany and the United States.

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