

# InSight® X3+™ Systems Pre-installation Guide



*InSight® X3+™ and X3+ A™ laser systems*

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## Introduction

Thank you for purchasing a Spectra-Physics InSight X3 System. This guide describes the pre-installation information for your laser system. Within one week of your delivery date, you will receive a call from one of our factory trained Customer Service Engineers.

Some preliminary planning is essential to avoid unnecessary delays during installation and to ensure easy operation and access to your system. You are requested to carefully consider your operating environment prior to installation. Proper power, and room temperature are required for each system. A detailed checklist of pre-installation considerations is provided in this brochure. You are responsible for meeting these requirements prior to installation, with due consideration given to all applicable building and safety codes.

We at Spectra-Physics intend to provide you with responsive support so that you can derive great satisfaction and value in using our systems for your applications. We are available to you for technical support at 1-800-456-2552 or [service@spectra-physics.com](mailto:service@spectra-physics.com).

## 1.0 Pre-installation Considerations

### 1.1 Inspection

When the system arrives, any sign of damage to the shipping crates should be brought to the attention of the delivering freight company and noted on the invoice before signing the invoice. A claim must be filed with that commercial carrier (usually within 30 days). Notify the originating Spectra-Physics office of any shipping damage. Shipping damage is not covered by Spectra-Physics. Your packing list will show all items that you have ordered. Open all the packages and check each item for possible damage during shipping. Check the items against your packing list. Some items may have been installed at the factory.

Each system comes with a User's Manual you should familiarize yourself with. Please report any missing or damaged items to Spectra-Physics at 1-800-456-2552 or [service@spectra-physics.com](mailto:service@spectra-physics.com). You should also contact your Spectra-Physics Field Sales Engineer at 1-800-775-5273, or [sales@spectra-physics.com](mailto:sales@spectra-physics.com).

### 1.2 Review Instruction Manuals

Please read the manual to get vital information about your system. Familiarize yourself with the system. You are encouraged to spend as much time as possible reviewing the system components before your Spectra-Physics Customer Service Engineer arrives for the installation and training. Refer to Chapter 4 of the User's Manual for more information on installation.

### 1.3 Laser Safety Considerations

In addition to reviewing the sections in the manual regarding laser safety, be sure to have the proper safety glasses available for ALL lab personnel present during the installation and testing of your system. For more information, please call Spectra-Physics at 1-800-456-2556. Please refer to Chapter 2 of the User's Manual for more information on laser safety.

### 1.4 Diagnostics

During installation, power measurements will be demonstrated on all the appropriate wavelengths. Your Customer Service Engineer can identify which specifications will be demonstrated and the equipment necessary to conduct such tests. A non-standard system will require special consideration.

To have other published specifications demonstrated, consult with your Customer Service Engineer to determine whether additional diagnostic equipment will be required.

Basic diagnostics equipment such as power meter and spectrometer are required to operate and maintain the laser systems. We recommend that you obtain this basic diagnostics equipment before the system is installed. Please contact Newport at 1-800-222-6440 or [sales@newport.com](mailto:sales@newport.com) for Sales or Technical Questions.

## 2.0 Pre-installation Considerations Continue

### 2.1 Location and Environment

The location of the system and environment of your lab should have the following features:

- A. A safe location that meets all applicable building codes.
- B. Easy access with adequate clearance around the instrument.
- C. An optical table that will meet the space requirement of the instruments to be installed.
- D. Proper air conditioning could be critical for the performance of the laser. For certain applications ambient room temperature changes may be an important factor for the laser system's performance. Air ducts should not blow directly on laser or optical path.
- E. To ensure stable day-to-day operation, the recommended minimum and maximum operating room temperatures are 20 - 25°C. Room temperature should ideally be 22°C and should not fluctuate more than  $\pm 1^\circ\text{C}$  during any two-hour period. See specifications in Table 1-1 and table 1-3 in the User's Manual.
- F. In some applications vibration isolation may be required for your system. Structural integrity of the flooring could play an important role.
- G. Please note that the laser head is very heavy and requires a sturdy and stable optical table.

Consider room requirements for future maintenance and upgrades by your Spectra-Physics Field Service Engineer. Space between optical table and wall should be 2ft. to access the laser.

### 2.2 Physical Description

#### Dimensions and Weights

Unit	In. (L, W, H)	Cm. (L, W, H)	Lb.	Kg.
Laser Head, X3+	35.9 x 19.8W x 7.3	91.0 x 50.2W x 18.4	140	64
Laser Head, X3+DA	42.5 x 19.8W x 7.65	1080 x 502W x 19.4	185	84
Model IPS Supply	17.9 x 19.0W x 6.9	45.5 x 49.3W x 17.6	28.0	13.0
Umbilical Length	10ft	3m		
Chiller SSC TR401	20.0 x 19.0 x 10.5	50.8 x 48.3 x 26.7	50.0	23.0

## 2.0 Pre-installation Considerations Continue

### 2.3 Utility Requirements

#### Coolant

The InSight X3, X3+, X3+DA is a closed loop coolant system and requires no external utility water services. Use ONLY full-strength *Nalco* 460-PCCL104 liquid corrosion inhibitor as a coolant. *Never use deionized water.* Fill the chiller reservoir following the instructions in the chiller manufacturer's user manual. Do not place the chiller above the laser. Should the unit not be installed properly, and a leak develops, dripping water may damage the laser. The chiller must always be on when the power supply is on, even if the diode lasers are not on.

#### Power Requirements

The laser and the chiller must be connected to separate AC power circuits.

#### IPS-300 Power Supply

Electrical Single Phase

Voltage 100-120VAC/ 200-240VAC, 50/60 Hz

Current 10A/ 6A max.

Heat Load is 1.44kW max. at 20C.

#### Chiller SSC ThermoRack 401

Voltage 120-240VAC, 50/60 Hz

Current 9A max

Heat Load is 2.16kW max. at 20C.

### 2.4 Computer Requirements

Two modes of control are offered for the standard InSight system:

- A. InSight graphical user interface (GUI) control software for use on a Windows® base computer through the supplied USB cable. For more information on the control software, refer to the User's Manual.
- B. Serial commands that can be sent to the InSight laser head from the user's host system using the supplied RS-232 serial cable.

For more information on the control software, refer to the User's Manual. In order to run the GUI control software, the control computer must meet these minimum requirements:

- Intel or AMD 32 or 64-bit, single or multi-core processor with > 1 GHz clock speed
- 1 GB RAM
- 10 MB available disk space for installation
- an USB 2.0 or higher port.
- a mouse or other Windows®-compatible pointing device
- a video display with 1024 x 768 (SVGA) or higher resolution
- Microsoft Windows 10® operating system

Before the arrival of your Spectra-Physics Service Engineer please review the following pre-installation requirements. When all the requirements have been met, fax a signed copy to the Spectra-Physics Service department at **(408) 980-6921** or email a signed copy to **service@spectra-physics.com**.

### 3.0 Pre-installation Considerations

#### Physical Location:

- \_ A location with adequate clearance around system to conduct service and accessible by Spectra-Physics personnel.
- \_ A temperature-controlled room.
- \_ Utility services have been installed.
- \_ Local building and safety codes are complying and have been verified.

#### When Your System Arrives:

- \_ Upon receiving your system, immediately inspect the outside of the shipping containers. If there is any sign of damage immediately call Spectra-Physics and file a claim with the carrier.
- \_ Spectra-Physics crates have been engineered to protect the equipment.
- \_ The InSight X3 laser system will be installed on site by a factory-trained installation engineer. Do not open the laser packaging prior to the engineer's arrival unless specifically told to do so by the factory.  
(Two or more people will be required to lift some equipment.)
- \_ Compare the packing list with your quotation. Call your Spectra-Physics office about any discrepancies.
- \_ Check that all manuals were received. Manuals are installed on the USB stick.
- \_ Save all packing and shipping material until the installation has been completed.
- \_ Obtain the correct safety glasses and a power meter.
- \_ Read the User's Manual section.

\_\_\_\_\_  
**Customer Signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Phone Number**

\_\_\_\_\_  
**Fax Number**

\_\_\_\_\_  
**E-mail**

\_\_\_\_\_  
**Sales Order Number**

## 4.0 Maintenance Requirements

To maintain a valid warranty on your Spectra-Physics system, it is necessary for the customer to assume the responsibility and perform the routine maintenance program. Failure to do so may result in the warranty being voided.

### 4.1 Chiller Maintenance

The chiller fluid level should be appropriate for the model laser and must meet Spectra-Physics specification requirements. Insufficient cooling could result in a decrease of performance or damage to the laser system. Chiller coolant should be checked monthly and chiller filters should be cleaned every 6 months and the chiller coolant changed every 6 months.

The Nalco Circulating solution is a premixed liquid corrosion inhibitor designed for use in closed loop cooling systems. It can be added directly to a closed cooling system (used in place of water), resulting in a proper treatment without dilution for up to 6 months (even if the pink tracer turns clear). This solution is a complete inhibitor that protects ferrous metals and copper alloys from corrosion. It is nitrite free and minimizes the challenge of bacteria control (depending on environment and usage).

If the laser is not going to be used for an extended period of time, turn off the laser and drain the cooling solution.

**\*NOTE:** to restrict the growth of algae in the reservoir, it is recommended that the reservoir cover be kept in place and that all circulation lines be opaque. This will eliminate the entrance of light that is required for the growth of most common algae.

### 4.2 Head Filter

The Purge Filter should be replaced when the humidity >10%. This filter has an average lifetime greater than one year depending on the relative humidity and the temperature of the operating environment.

### 4.3 General Procedures

The chiller operation of the laser system should be checked once a week. The power output and the mode-locking of the system should also be checked once a week by verifying the output values. If any of the output characteristics have changed, please call Spectra-Physics Technical Support at **1-800-456-2552 with the model and serial number of the laser.**