Pre-installation Information for Ultrafast Systems

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Introduction

Congratulations on your purchase of a Spectra-Physics system. This brochure describes the pre-installation information for your laser system.

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 water, 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 at **1-800-456-2552.**

When the System Arrives

Inspection

When the system arrives, any sign of damage to the shipping crates should be brought to the attention of the delivering freight company. 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, verify.

Please report any missing or damaged items to Spectra-Physics, or you may contact your Spectra-Physics' Sales Engineer.

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' Service Engineer arrives for the installation and training.

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 **1-800-456-2552**.

Diagnostics

During the course of installation, power measurements will be demonstrated on all of the appropriate wavelengths. Your 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 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.

Tsunami Laser Systems

Location and Environment for the Tsunami Laser Systems

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

- A safe location that meets all applicable building codes.
- Easy access with adequate clearance around the instrument to be installed.
- Optical table that will meet the space requirement of the instruments to be installed.
- 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 the laser or optical path.
- To ensure stable day-to-day operation, the recommended minimum and maximum room temperatures are 15° and 25º C. Room temperature should ideally be 22º C and should not fluctuate ±1º C during any two-hour period.
- In some applications vibration isolation for the optical table may be required for your system. Structural integrity of the flooring could play an important role.
- Some optics sets in the Tsunami require nitrogen purging. Electronic Grade 5, oil free, dry nitrogen is required.
- Heat producing items (e.g., chiller, power supply, etc.) should not be placed under the optical table. If there is no other option, one or more fans should be placed under the table to remove the heat.
- Straight-in pumping of the Tsunami is recommended but, if space is limited please discuss the layout options with your Spectra-Physics' service engineer before scheduling the installation. Routing mirror(s) and associated beam tubes would need to be ordered to configure the system. However, the long-term stability integrity of the system may be compromised.
- Consider room and table space requirements for maintenance and potential future upgrades prior to scheduling the installation. Consult with your Spectra-Physics Service Engineer.

Tsunami Laser Systems (Cont'd)

Physical Description

Dimensions and Weights

Unit	Dimensions		Weight	
	In. (L,W,H)	Cm (L,W,H)	Lb.	Kg.
Tsunami Models				
3941 / 3941C	32.0 x 12.3 x 9.0	81.3 x 31.1 x 22.9	78	35.38
3950 / 3950C	32.0 x 12.3 x 9.0	81.3 x 31.1 x 22.9	78	35.38
3960 / 3960C	32.0 x 12.3 x 9.0	81.3 x 31.1 x 22.9	78	35.38
Accessories				
3910	6.8 x 10.1 x 5.4	17.3 x 25.7 x 13.7	5.2	2.36
3930	14.3 x 17 x 4.3	36.32 x 43.18 x 11.0	16.2	7.35
3955	14.3 x 17 x 4.3	36.32 x 43.18 x 11.0	15.8	7.17
3980	16.7 x 12.24 x	42.4 x 31.09 x 21.81	34	15.5
3986	14.37 x 17 x 5.71	36.5 x 43.3 x 14.5	20.7	9.41
3983	11.0 x 8.0 x 6.03	27.94 x 20.32 x	7	3.18
Chiller M-25	20.2 x 12.7 x 23.9	51.3 x 32.3 x 60.7	150	68

Utilities Requirements

Water

The Tsunami is a closed loop water cooled system and requires no utility water services.

Do not place the chiller above the laser. Should the unit not be installed properly, and a leak develops, dripping water may damage one or both lasers.

The hoses are 3.6 M (12ft) long.

Connect the Chiller output first to the Millennia, from the Millennia to the Tsunami then back to the chiller.

Tsunami Laser Systems (Cont'd)

Power Requirement

Electrical

	3955/3930*	3955/3930*	Chiller
Type	Single Phase**	Single phase**	Single phase**
Voltage	110 VAC	220 VAC	110 / 220 VAC
Current	<1A	<0.5A	10A

*With optional Lok-To-Clock configuration.
**With earth ground.

Power connections

Before connecting the power supply to the AC power line, make sure that all the power supply power switches are ***OFF.***

SPECTRA-PHYSICS' SERVICE ENGINEERS CANNOT PERFORM ELECTRICAL OR PLUMBING WORK AT YOUR SITE.

Final Check:

Upon the completion of the installation of utilities, verify that the services meet all building safety codes.

Tsunami Laser Systems (Cont'd)

Nitrogen Purge for Tsunami

The Tsunami head is sealed so it can be purged. The Model 3910 regulator/filter purge unit is provided for filtering and drying bottled nitrogen gas. Purging the laser cavity with this gas not only eliminates the typical problems associated with dust and contamination, but also prevents tuning discontinuities caused by oxygen and water vapor. Reduction of the latter is important for operation in the long wavelengths.

Model 3910 Pressure range is a maximum of 67 kPa (10 PSI).

Input from dry nitrogen gas supply should be limited to a pressure of 67 kPa (10 lbs. per square inch.

Do not connect the Model 3910 to a gas source with a pressure greater the 80 kPa (12 PSI) or damage to the filters will result.

Use the 3.6 m (12ft) PTFE purge line provided to connect the model 3910 to the laser head.

Note:
Electronic Grade 5, oil free, dry nitrogen is required.

Maintenance

The condition of the environment and the amount of time the laser is used will affect your periodic maintenance schedule. Optics will obviously stay clean much longer if not exposed to smoke or other air-born contaminants.

Condensation due to excessive humidity can also contaminate the optical surfaces. Try to provide a smoke-free, filtered, dry environment for the laser. The cleaner the environment, the slower the rate of contamination.

Replacing Filters in the Optional Model 3910 Purge Unit

The schedule for replacing the filters and dryer/sieve assembly depends on the amount and quality of purge nitrogen used. Change all three filters (Figure 7-3) when the blue desiccant in the sieve assembly turns pink. In some areas, the indicator dye in the desiccant is considered a hazardous material. Consult your materials manager and/or local government environmental agency for guidelines on proper disposal methods. Refer to the Material Safety Data Sheets in Appendix A for information on the materials contained in these filters. Part numbers for filters are listed in Table 8-3 at the end of Chapter 8.

To replace the filters and sieve assembly:

1. Turn the unit upside down with the flow gauge facing away from you and remove the small screws (2) on the side nearest you.
2. Disconnect the filter assembly from the flow gauge and output port.
3. Press in on the connector spring-clips and pull out the hoses.
4. Rotate the entire filter assembly so the small filters point upward, then move the assembly to the right (away from the flow gauge) and lift it out.
5. Remove the filter hose fittings.
6. Note the placement and orientation of each filter before disassembling the hoses. Loosen the screws and remove the filter assemblies.
7. Discard the filter assemblies.
8. Assemble a new filter assembly from new parts. The screws at each end of the two small filters should be tight. However, over-tightening will crack the plastic.
9. Place the new filter assembly in the box and connect and secure it in reverse order of disassembly. Push the hose fittings into their mating connectors until they snap into place.

This completes the filter replacement procedure.

0449-7240 B FILTER ASSY,3910

OPAL

Location and Environment

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

- A safe location that meets all applicable building codes.
- Easy access with adequate clearance around the instrument.
- An optical table that will meet the space requirement of the instruments to be installed.
- 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.
- To ensure stable day-to-day operation, the recommended minimum and maximum room temperatures are 15° and 25° C. Room temperature should ideally be 22° C and should not fluctuate ±1° C during any two-hour period.
- In some applications vibration isolation may be required for your system. Structural integrity of the flooring could play an important role.
- Please note that the laser head is very heavy and requires a sturdy and stable workbench.
- Consider room requirements for future maintenance and upgrades by your Spectra-Physics' Field Service Engineer.

OPAL (Continued)

Physical Description

Dimensions and Weights

Unit	Dimensions		Weight	
	In.(L,W,H)	cm.(L,W,H)	Lb.	Kg.
Optical Unit	36.0 x 12.3 x 7.6	91.5 x 31.1 x 19.4	99.6	42.3
Electronic Module	14.3 x 17.0 x 5.25	36.3 x 43.2 x 13.4	16.6	7.6

Power Requirements

Electrical

Type	Single Phase*	Single Phase*
Voltage	100 - 120 VAC, 50/60 Hz	220 - 240 VAC, 50/60 Hz
Current	<5A	<3A

*With earth ground.

Nitrogen Purge for Opal

The OPAL is sealed so it can be purged. The Model 3910 regulator/filter purge unit is provided for filtering and drying bottled nitrogen gas. Purging the laser cavity with this gas not only eliminates the typical problems associated with dust and contamination, but also prevents tuning discontinuities caused by oxygen and water vapor.

	Maximum Pressure					
	3910 range		**Input from a cylinder**		**from a gas source**	
3910	**80.0 kPa**	**12 PSI**	**67 kPa**	**10 PSI**	**67 kPa**	**10 PSI**
or damage to the filters will result.						
Use the 3.6 m (12ft) PTFE purge line provided to connect the model 3910 to the laser head.						
Refer to Required Maintenance for filter replacement and part number						

MAITAI

Location and Environment

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

- A safe location that meets all applicable building codes.
- Easy access with adequate clearance around the instrument.
- An optical table that will meet the space requirement of the instruments to be installed.
- 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.
- To ensure stable day-to-day operation, the recommended minimum and maximum room temperatures are 15° and 25° C. Room temperature should ideally be 22° C and should not fluctuate ±1° C during any two-hour period.
- In some applications vibration isolation may be required for your system. Structural integrity of the flooring could play an important role.
- Please note that the laser head is very heavy and requires a sturdy and stable workbench.

Consider room requirements for future maintenance and upgrades by your Spectra-Physics' Field Service Engineer

MAITAI (Cont'd)

Physical Description

Dimensions and Weights

Unit	Dimensions		Weight	
	In.(L,W,H)	Cm.(L,W,H)	Lb.	Kg.
Laser Head	23.44 x 13.79 x 5.38	59.54 x 35.03 x 13.65	84	184.8
Power Supply J-40	23.6 x 19 x 7	60 x 48 x 17.8	26.4	12
Power Supply J-80	23.6 x 19 x 7	60 x 48 x 17.8	35.3	16
Chiller M-25	20.2 x 12.7 x 23.9	51.3 x 32.3 x 60.7	150	68

Utility Requirements

Water

The Mai-Tai is a closed loop water cooled system and requires no utility water services. 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 hoses are 3.6 M (12ft) long

Power Requirements

Electrical

Type J-40	Single Phase*	Single Phase*
Voltage	100-127 VAC, 50/60	180-240 VAC, 50/60 Hz
Current	10A	6A
Type J-80	Single Phase*	Single Phase*
Voltage	100-240 VAC, 50/60	
Current	10A	
Chiller M-25**		
Voltage	115 VAC, 60Hz	230 VAC, 50Hz
Current	8.1A	5.1A

*With earth ground.
**If your chiller is other than M-25, see the enclosed chiller manual for installation specifications.

MAITAI (Cont'd)

Required Maintenance:

- Purge filter will need to be replaced if humidity is >10% or purge filter band is no longer blue
  PN:90035539

- Chiller filters, coolant and air filter should be replaced every 6 months. Please call Spectra-Physics for part number depending on the model chiller you have.

Pre-Installation Checklist

Before the arrival of your Spectra-Physics Service Engineer please review the following pre-installation requirements. When all the requirements have been met, initial the boxes and email to service@spectra-physics.com

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:

- ☐ Check crates for damage.
  (If damaged, file a claim with the carrier and notify Spectra-Physics.)
- ☐ Uncrate and place the system on your work surface.
  (Two or more people may 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.
- ☐ Save all packing and shipping material until the installation has been completed.
- ☐ Obtain the correct safety glasses and a power meter.

Customer Signature	**Date**
Phone Number	**Fax Number**
E-Mail	**Sales Order Number**