Pre-Installation Guide for
GREEN PULSED FIBER LASER
(V-Gen)
VPFL-G-10/20/30W and
SPFL-532-40W

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Introduction

Congratulations on your purchase of a Spectra-Physics system. This guide describes 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 checklist of pre-installation considerations is provided in this guide. 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 package 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 are part of your ordered system. 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 USB stick which includes a digital copy of the system's GUI, User Manual and ATR; verify that you have received this item.

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, laser telemetries and power measurements will be demonstrated. Your Service Engineer can identify which specifications will be demonstrated and the equipment necessary to conduct such tests.

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

Pre-Installation Considerations

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.
E. For certain applications ambient room temperature changes may be an important factor for the laser system's performance. Air dust should not blow directly on laser or optical path.
F. 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 ±1°C during any two-hour period. See specifications in User Manual.
G. In some applications vibration isolation may be required for your system. Structural integrity of the flooring could play an important role.
H. Please note that the laser is heavy and requires a sturdy and stable optical table.
I. A 200mm space for air flow from the front and back sides of Laser Engine module are required for proper forced air cooling.
J. Consider room requirements for future maintenance and upgrades by your Spectra-Physics' Field Service Engineer.

Physical Description

Dimensions and Weights

Feature	Specifications		
	10W / 20W	30W	40W
Operational Voltage	24 VDC	24 VDC	24 VDC
Operating Temperature	10-35 °C	10-35 °C	15-35 °C
Laser Engine dimensions (L x W x H)	105 x 195 x 283.14 mm	130 x 210 x 299 mm	130 x 224 x 299 mm
Output Laser Head dimensions (L x W x H)	98.7 x 116.5 x 298.7 mm	135 x 145 x 283.7 mm	123 x 145 x 284 mm
Laser Engine weight	6 kg	6.5 kg	6.8 kg
Output Laser Head weight	4 kg	4.5 kg	7.1 kg
Fiber Length	300 cm	300 cm	300 cm
Output Beam Diameter	2 ±0.3 mm	2.8 ±0.3 mm	2.8 ±0.3 mm

Table 1

Pre-Installation Considerations (Continued)

Water requirements

The SPFL-40 laser head module is a closed loop water cooled system and requires no utility water services. Laser supplied with connectors manufacture: CPC (Colder Products Company), refer to Table 2.

Manufacture P/N	Spectra-Physics P/N	Samples	Description
LQ6D22006RED	MSI-00068		3/8” Hose Barb Valved In-Line Liquid Cooling Insert, Warm Red
LQ6D22006BLU	MSI-00069		3/8” Hose Barb Valved In-Line Liquid Cooling Insert, Cool Blue
LQ6D31006RED	MSI-00072		3/8” G-Thread/BSPP Valved In-line Liquid Cooling Body, Warm Red (installed on the laser head)
LQ6D31006BLU	MSI-00073		3/8” G-Thread/BSPP Valved In-line Liquid Cooling Body, Cool Blue (installed on the laser head)

Table 2

Fill the chiller reservoir with Nalco Solution (P/N 1607-0546) (recommended) or distilled water. Do not use deionized water and do not place the chiller above the laser. Should the unit be installed improperly, 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 laser emission is not ON.

Note, water flow direction is important, and the laser’s head water connections are marked WATER INLET (blue) and WATER OUTLET (red). Proper operation of the laser system requires a chiller that meets the requirements shown in Table 3.

Pre-Installation Considerations (Continued)

Chiller requirements

Parameter	Requirement
Coolant Temperature	20°C ±1°C
Flow Rate	2.5 liters/minute
Coolant pressure	20 psi
Coolant type	Nalco 460-PCCL104 (recommended) or distilled water

Table 3

Maximum ratings (stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the Laser)

Name	Min	Max	units
DC power voltage	-0.5	26	V
TTL signals	-0.5	5.5	V
TTL signals, IO	-15	15	mA
RS232, Vin	-30	+30	V
Storage temperature	0	50	°C
Environment Humidity	8	85	%
Environment Air Cleanness per ISO 14644-1 Cleanroom standard	ISO 9 CLASS		Particles/m³
Fiber minimum bending radius	100		mm
Air flow distance from Front and Back sides of laser	200		mm
Ground wire and connection. Customer should connect the laser body to the 'Earth' chassis connection	16		AWG

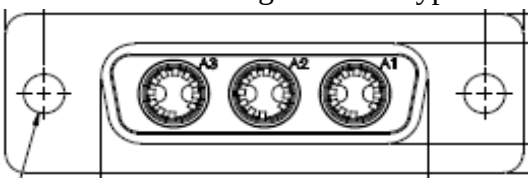
Table 4

Pre-Installation Considerations (Continued)

Power Requirements

Electrical Power Supply
Single Phase - 100 to 240 Vac, 50/60 Hz, 500 VA, 21A

Power and Grounding for Laser types: 10W / 20W / 30W



For interconnection please use following connector or similar:
PN LCC17-A3W3SM-2N0 Manufacturer: Amphenol
Crimp contacts for the specified connector: Male PN FMA026P105; Female PN FMA026S103.
Laser DC input voltage connector electrical pin-out:

PIN	NAME	FUNCTION
A1	NC	Not connected
A2	-	0 VDC
A3	+	24VDC according to specification in section

Table 5

Power and Grounding for Laser type: 40W

For interconnection please use following connector or similar:
Manufacturer for Male Pin is HARTING or equivalent. P/N: 9692100633
Manufacturer for Female Socket is HARTING or equivalent. P/N: 9691815423 and 9692000633
Laser DC input voltage connector electrical pin-out:

PIN	NAME	FUNCTION
A1	-	0 VDC
A2	NC	Not connected
A3	+	24VDC according to specification in section

Table 6

Pre-Installation Considerations (Continued)

Computer Requirements

Two modes of control are offered for the standard Spectra-Physics fiber Laser system:

A. Serial RS232 port - Green Laser graphical user interface (GUI) control software for use on a Microsoft Windows 7, 8, or 10 operating system. For more information on the control software, refer to the User Manual.
B. TTL - D25 connector allows controlling laser emission, power level and pulse repetition rate (PRR) through TTL. For more information on the control and monitoring via TTL refer to the User Manual.

To control the system with user-written software, refer to RS command table in User Manual. For connector information, refer to “Using the RS-232 Serial Port.

In order to maintain CDRH safety requirements, run only the GUI software on the control computer during laser operation, i.e., do not run other software at the same time.

To use the Spectra-Physics Green Laser GUI control programs, Microsoft Windows 7, 8, or 10, 32-bit or 64-bit based host computer must meet these minimum requirements:

- Pentium processor or newer, 1 GHz or higher
- 1 GB RAM
- 500 MB available disk space for installation
- Mouse or other Windows-compatible pointing device
- An available RS-232 serial port (or converting adapter) for standard Spectra-Physics laser systems.
  Note, the serial cable is not provided with the system.

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 fax a signed copy to the Spectra-Physics Service Department at 408-980-6921.

When Your System Arrives:

- ☐ Check package 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 contents with the packing list. 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

Maintenance Agreement

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.

Nalco Mixture

The Nalco Cleaner (P/N 1607-0547) is used to flush your system clean of ferrous metals and copper alloys as a result of corrosion. It is recommended as a maintenance procedure that the chiller/critical cooling loop in each piece of equipment is cleaned and treated every 6 months. The laser does not have to be lasing. The cleaner should be circulated for a minimum of 8 hours (the longer the better if time permits in order to assure thorough cleaning).

The Nalco Solution (P/N 1607-0546) 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 distilled 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).

Chiller Fluid level

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.

Storage

During storage or transportation need to pour out the liquid from the Laser Head unit and seal the laser to prevent penetration of humidity into the Laser Head unit.

General Procedures

The chiller operation of the laser system should be checked once a week. The output power 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.