

Product Specifications & User Manual

Product Name: 50W Diode Side-Pumped Nd:YAG Laser Module

Model No. : GN50

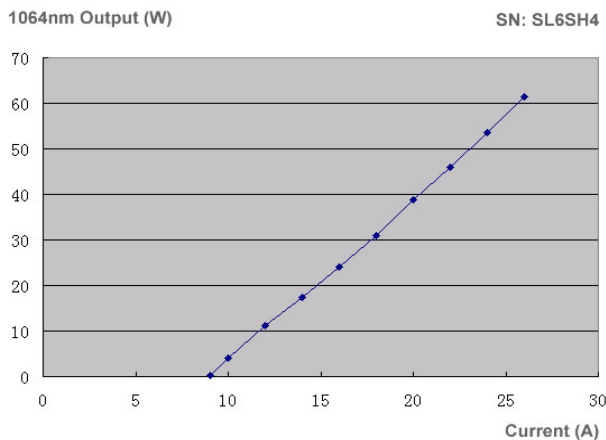
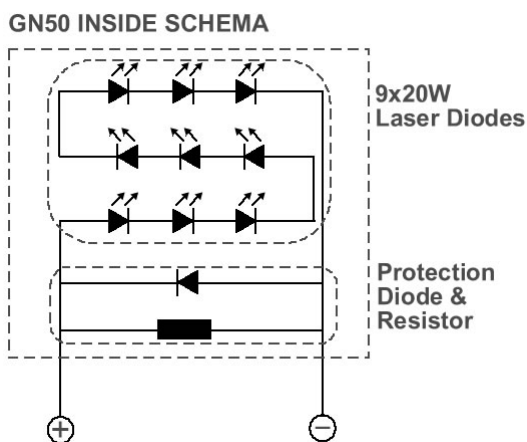
Manufacturer: Sino-Laser (Beijing) Inc.

Product Specifications

Module No.	GN50	Unit
Central Wavelength	1064nm	nm
Typical Output Power	50	W
Typical Operating Current	20-25	A
Typical Operating Voltage	<18	V
Threshold Current	Around 7-10	A
Nd:YAG Diameter	3	mm
Nd:YAG Length	65	mm
Nd:YAG Center Height	40	mm
Nd:YAG Doping	0.6%	-

1. Minimum 1064 nm multi-mode output in a short cavity (200 mm, Plane-Plane Resonator, OC T=20%).
2. Expected life time is around 10,000 hours.
3. Other doping level can be customized upon request.
4. Other DPSS laser modules can be customized according to specific requirements.
5. QCW / Plused modules available.
6. Warranty: 13 months after delivery.

Product Schema & Typical P/I Chart



The P/I chart may be different according to various modules. Please refer to burn-in-test record for each DPSS laser module along with the ex-work products.

Typical Operation Conditions

Item	Recommended	Allowed
Current Limit Set	23A	<27A
Environment Moisture	<20%	<30%
Environment Temperature	<25 Deg.C	<30 Deg.C
Chiller Temperature Set	23.5 Deg.C	18-28 Deg.C
Chiller Water Flow Rate	6 L/Min	>4L/Min
Chiller Pressure	0.15 Mpa	>0.12 Mpa
Chiller Accuracy	+/-0.1 Deg.C	Better than +/-0.2 Deg.C
Chiller Cooling Capability	>1200W	>800W
Water Requirement	Deionized Water	Distilled Water or Purified Water
Chiller Water Filter	Must	Must
Output Coupler	R=80% (T=20%) @ 1064nm	R>70%
Rear Mirror	Plane, HR @1064nm	HR @ 1064nm Concave or Plane

Operation & Warranty Manuals**1. Installation**

Please take following steps to start the DPSS laser module.

- 1) Position the laser module on the optic rails and make sure that the beam output is in parallel with it. Position the high reflection mirror (HR, R>99% at 1064nm) and output coupler (OC, R=80% @ 1064nm) and adjust them with He-Ne guide beam (or red diode laser) into an optical resonator. The distance between HR and OC can be adjusted by users and other components can be inserted (such as Q-switch, aperture or etc).
- 2) Connect the water inlet & outlet with water pipes from chiller and make sure the water flow is not jamed. Connect the protection wire from the water chiller to the laser diode driver's interlock.
- 3) The laser module must be driven by professional laser diode driver.
- 4) Remove the covers at the ends of the Nd:YAG rod. Adjust the beam path and other optics.
- 5) Start the water chiller. Adjust the chiller's target temperature (20-25 Deg.C as normal) and the pressure (around 0.15Mpa). Then make sure the water flow is smooth.
- 6) Start the laser diode driver, push the LD ON button and adjust the current set to drive the laser module. Increase the current slowly till the recommended operation current. If the output power of 1064nm is too weak comparing with the datasheet, please adjust the HR & OC to optimize the output power. If necessary, you can adjust the chiller's temperature to improve the the output power, too.
- 7) When the operation is over, please adjust the current slowly till min current, and then turn off the LD ON button and shut down the power switch of the diode driver. And then, shut down the chiller.

2. Maintenance

- 1) Deionized Water or Purified Water must be used for the chiller and water filter for the chiller is must. You should check the water monthly for the color and conductance for the water. If the color of the water changed, or the resistivity <0.5M/cm, the water and filter must be changed.

- 2) If the DPSS laser module has ever been stored in low temperature, especially for < 0 Deg.C (there may be ice inside), you should put the laser module in regular temperature environment for 12 hours to ensure the inside heat balance has been achieved.
- 3) Please don't stay too long time after you start the chiller to avoid water condensing inside the module.
- 4) The optical resonator & cavity must be sealed and the environment should be clean. Check both ends of the Nd:YAG rod regularly to ensure there is no dust attached.
- 5) If there is any emergency during operation, you can turn off the laser diode driver by the LD ON button directly (instead of adjust the current set), and then shut down the chiller and any other power supply switches.

3. Operation Notice

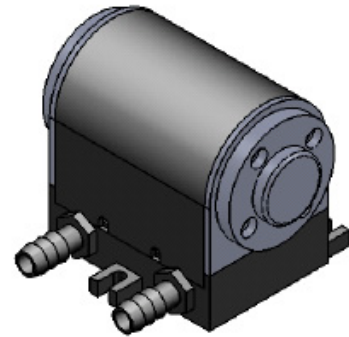
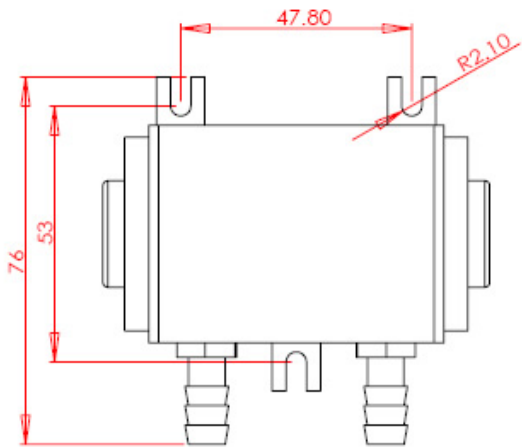
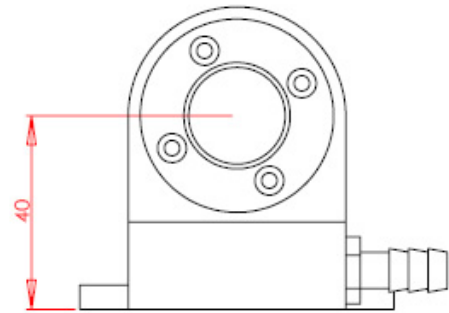
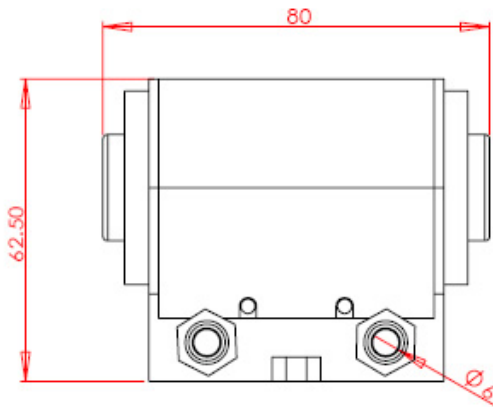
- 1) This component comes with high power 1064nm laser, and the security level is CLASS I. Protections must be taken during the operation to avoid harm to human eyes and bodies. Any operator must be well trained before operation, and laser goggles are necessary.
- 2) The chiller cooling capability must be no less than 800W with pressure no less than 0.12Mpa.
- 3) Operation at higher current than the current limit is strictly prohibited, or the laser module may be damaged.
- 4) The laser module must be horizontally placed and leaning & shaking is prohibited.
- 5) If the laser module is not used, please cover the laser rod ends to avoid dust.
- 6) Storage under 0 Deg.C is strictly prohibited or there may be ice inside the module. If it has been stored under 0 Deg.C, please keep it at a warm environment for 12 hours before operation.
- 7) Environment with high temperature, high moisture and too much dust will influence the life time of the laser module, and please avoid using the module in such situations.

4. Warranty Notice

Please take necessary protections for the operation of the laser diode module, and notice that following situations can not be warranted:

- 1) Over current damage over current limit (please set the current limit as instructed).
- 2) Over heat damage (usually happens to the operation without chiller protection wire connected).
- 3) Condensation-water damage (Air conditioner is recommended).
- 4) Open the laser modules or remove the service tags without permission.
- 5) Other manual operating mistakes.

CAD Dimensions



Product Photos

