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DAVI LASER

SPECIALLY PRODUCE
RF.CO_2 LASER

Manual book about DAVI laser T70

Product pictures

DAVI 大威

T70激光器规格使用条件

T70 LASER Specifications and conditions of use

型号 / Model	T70
波长 / Wave Length	10.6μm
连续额定输出功率 / Output Power	70W
功率稳定度 / Power Stability Rate	±5%
模式质量/ Mode Quality	M^2<1.2
出口光束直径1/e^2 / Beam Diameter1/e^2	2.5mm
光束发散角 / Beam Divergence Angle	≤5.2 mR (Mrad Full Angle)
占空比可调范围/Duty Cycle Range	0-100%
工作频率/Working Frequency	0-100KHz
输入电压 Input Voltage / 电流 Current	48V/28A
冷却方式 / Cooling Way	风冷 Air Cooling
热负荷/ Heat Load	<1.4kW
重量 / Weight	15kg

1.激光功率在激光器温度25℃条件下测得，高于25℃每上升1℃输出功率约降低1%。
2.稳定度定议±（Pmax-Pmin）/（2Pmax），
稳定度测试条件：开机预热10分钟，恒定控制占空比，正常运行环境下。

1. The laser power measure under the condition of the laser temperature 25 ℃, higher than 25 ℃ per 1 ℃ power output by about 1%.
2. Stability is constant. (Pmax - Pmin)/(2Pmax),
Stability test condition: 10 minutes of preheating, constant control of air ratio, normal operating environment.

T70 Laser signal wiring method&Notes

RJ45 Connector	Wiring instruction	Signal instruction
8	Correspond marking or cutting card of PWM positive signal	RF Enabled
6	2 and 6 short circuit	Laser status output TTL Logical output:0=Laser ok,1=Laser fault
2		Control enabled TTL Logical input:0=laser control enabled,1=Laser control off
1□3□4	Correspond marking or cutting card of PWM signal ground	GND

Notice□

1□ 48V 30A power supply required grounding

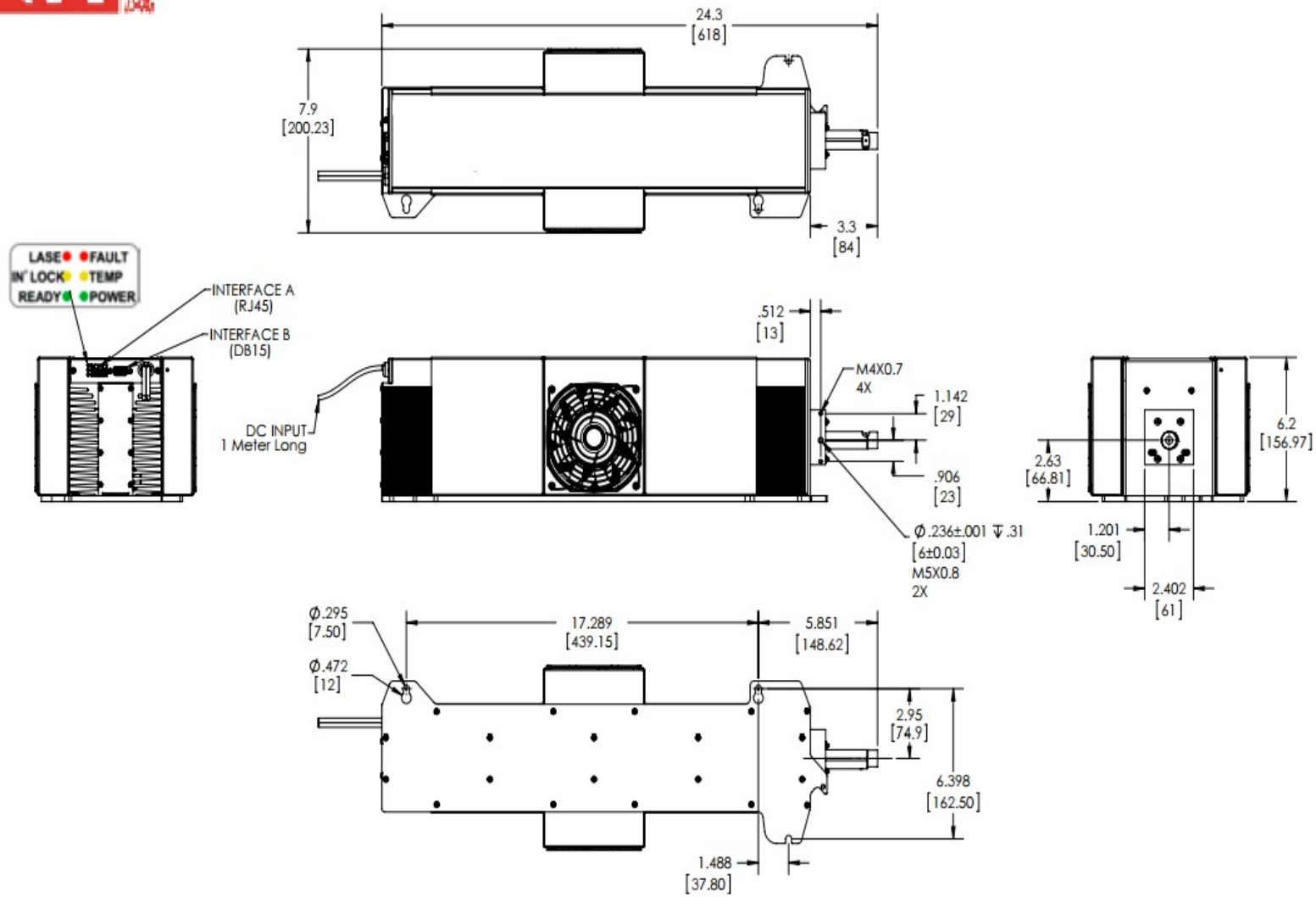
2□ Note the dust protection of the laser output window. Prevent the lens from burning due to dust particles. Especially the way laser output window faces up.

3) Be careful to prevent backward reflection,any backward reflection can cause laser damage.

4) We suggest that the front and back end of the laser shouldn't be all fixed at the same time, avoid the deformation of the cavity of the laser cavity due to the stress caused by the heat expansion and shrinkage of the material

5□ The fan is inhaled, there must be sufficient space(greater than 3CM)around the radiator to heat the air,clean the fan in time to ensure good ventilation.

If there are any problems during the usage of the laser, please contact us for your timely solution.


24.3
[618]
7.9
[200.23]
3.3
[84]
LASE
FAULT
IN LOCK
TEMP
READY
POWER
INTERFACE A
(RJ45)
INTERFACE B
(DB15)
DC INPUT
1 Meter Long
.512
[13]
M4X0.7
4X
1.142
[29]
.906
[23]
Ø.236±.001 ↧.31
[6±0.03]
M5X0.8
2X
2.63
[66.81]
6.2
[156.97]
1.201
[30.50]
2.402
[61]
Ø.295
[7.50]
Ø.472
[12]
17.289
[439.15]
5.851
[148.62]
2.95
[74.9]
6.398
[162.50]
1.488
[37.80]

Common questions and answers during Laser use

Question 1: The laser may fail to start properly after being laid aside for a period of time. Why does this problem arise, how to solve it when it happens?
Answer: If the laser tube was laid aside for a long time, when use it again,the laser module may not be able to start preionization properly.Under this situation,the electronic circuit of the laser module may test a high degree back reflection voltage, which will cause SWR fault (Laser OK Fault) so the laser can't start work normally. When you start to use the laser tube after putting aside for a long time , it is advised to set the duty cycle of Modulation Signal less than 10% frequency less than 25KHz,this operation can avoid trigger SWR Fault. When a SWR fault already ocurred,you can add the Modulation Signal to the laser tube, the electronic circuit will send a Secondary ionization pulse which can help the laser tube heating up.

Question 2: When the laser module start to work ,it needs a certain of time for preionization reason. If we send modulation signal to the laser,could it speed up the preionization ?
Answer : No, it couldn't . The preionization function was accomplished by the preionization electronic circuit .Once the power was connected to the laser, the preionization start to work. Adding more modulation signal to the laser can't make the laser tube finish preionization status earlier.

Question 3: Do the fans and heat sink of the air cooling lasers need to be cleaned up regularly ?
Answer: Yes, they do . Because the dust in the air may adhere to the fans and heat sink after the fans run for a period of time, which will greatly decrease the ventilation effect of the heat sink,more serious and irreparable damage may occur if the heat can't be ventilated properly.

Question 4: What will happen when the laser module is in overheating protection? How to handle it when it happens?
Answer: If the laser module triggers heat protection,it will stop working.When it happens,the user should do these work : 1. turn off the laser power. 2. For water cooling type laser tubes, Inspect if the water cooling machine is normally working or not. 3.For the air cooling type laser tubes, inspect if the fans are normally working or not. 4. Inspect if the fans and heat sink of the air cooling laser should make a cleaning. 5. Check if there is enough ventilation space around the air cooling laser. 6. When the above problems happen, you should wait and don't turn on the laser tube until the laser tube temperature drops to normal level.
Question 5: After the laser tube is powered on,why the control foot can't suspend in the air or stay in high impedance state?
Answer: When the power is put through,the laser tube gets right to work. But if the control foot is suspended in the air or stay in high impedance state, the electrical level of the control foot is in unknown status,it may lead to these problems: 1. the control foot may get high noise signal, which will damage the laser tube. 2.If the control foot gets unknown high level voltage,the laser tube may release laser beam unexpectedly,which will harm the safety of the operator.

Question 6: Could we make pin 7 (Control Enable) as the signal modulation port to modulate laser beam output?
Answer : No, it couldn't . Pin 7 is the laser tube's Control Enable, turning on and off too frequently will cause damage to the laser module. The switching frequency of this signal pin should keep less than 200Hz.

Question 7: What problems must we pay attention to during the storage and transport process ?
Answer : First, during the storage and transport process,please make sure the cooling

water stored inside the laser tube has been dried up completely. We recommend Purity 99.95% dry nitrogen to blow dry. If not,the remained cooling water may cause irreparable damage to the laser tube. Secondly, the beam output window should be sealed during storage and transport process, in case the beam output window being polluted. Thirdly, in order to prevent the unexpected impact to damage the laser tube, please handle it gently during storage and transport. At the same time , please make sure the water pipe of the laser tube doesn't bear force,in case to prevent the water pipe shape distortion.

Question 8: What are the requirements for the use of the laser?

Answer:1）Environmental temperature should be kept at 5 □ to 40 □ when necessary to use air conditioner .

2）Environmental cleanliness,in the case of the laser without external dustproof equipment, high dust degree will cause the laser window to burn out.

3) Environment humidity requires the phenomenon of non condensation of laser.

4) Environmental acid-base degree keeps neutral.

Question 9 : If the laser output window lens is polluted, how should we handle it? can we wipe it with a cotton swab?

Answer :No. Wiping with a cotton swab will further damage the lens. If only a small amount of particles is attached to the front lens, and the lens coating film has not been burned, you can try to blow the lens with 99.95% pure nitrogen. When testing the lens,it is necessary to pull out the power line.

Question 10: If you know the size of the spot, how do you choose the size of the lens in the light path?

Answer: The size of the lens in the external optical path should be twice as large as the actual spot size.

Question 11: What is the reason for the enough output power of the laser, but the low power of the processing terminal?

Answer: In this case, it is usually caused by high energy loss in the optical path of the laser, Users should check the following points:

1) Whether the size of the external optical path lens and the size of clear aperture are big enough

2) Whether the quality of lens of external optical path is qualified, the loss rate of a single lens must not exceed 3%.

3) Whether the lens of external optical path is contaminated or damaged.

4) Whether the external optical path has been correctly aligned.

Question 12 : What should be done when the laser is low or unstable during use?

Answer : In this case, the user should check the following items first:

1) Use the multimeter to measure the voltage of the DC power supply of the laser.

2) Measuring the DC power output of the laser with an oscilloscope has great fluctuation or not.

3) Use an oscilloscope to measure the control signal to the laser is normal or not .

4) Whether the water cooling machine of water cooled laser is normal and the flow rate conform to the requirements.

5) Check whether the cooling fan and heat sink of the air cooled laser are in normal condition or not.

Question 13 : The surface of the laser has a lot of sealing labels.what is the function of the label?

Answer : Each laser has a seal label. Please protect the seal label. If the sealing label is damaged, the laser will not receive the proper warranty service.

Question 14 : What is the guarantee condition of the laser?

Answer : In the warranty period if the laser output index is lower than the commitment made by Beijing Dawei laser technology co.,ltd ,the user can enjoy free warranty service. But it does not include damage to the laser caused by human reasons or due to improper use, and the seal label needs to be kept intact.