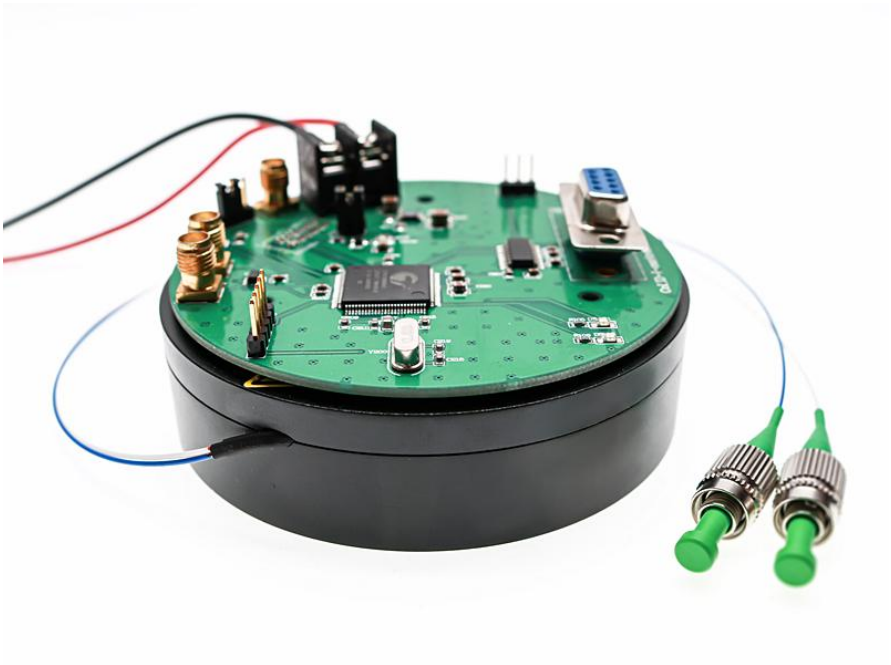
1550nm high peak power pulsed fiber laser (solid-state laser Lidar emission source)



Product Description

Idealphotonics develops an eye-safe high peak power pulse light source. The product has high electro-optical conversion efficiency, small nonlinear effect and ASE, and a wide operating temperature range. This product is suitable as a solid-state laser Lidar emission light source.

Part Number

PL-FIBER-1-D4-110-SA

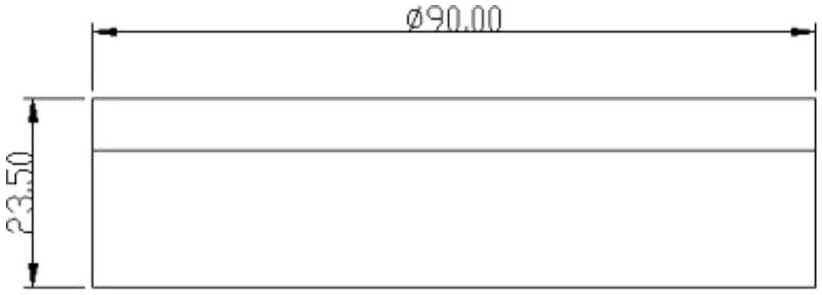
Product features

High reliability/high efficiency 、 High peak power 、 Good spectral characteristics、 Low noise and low loss

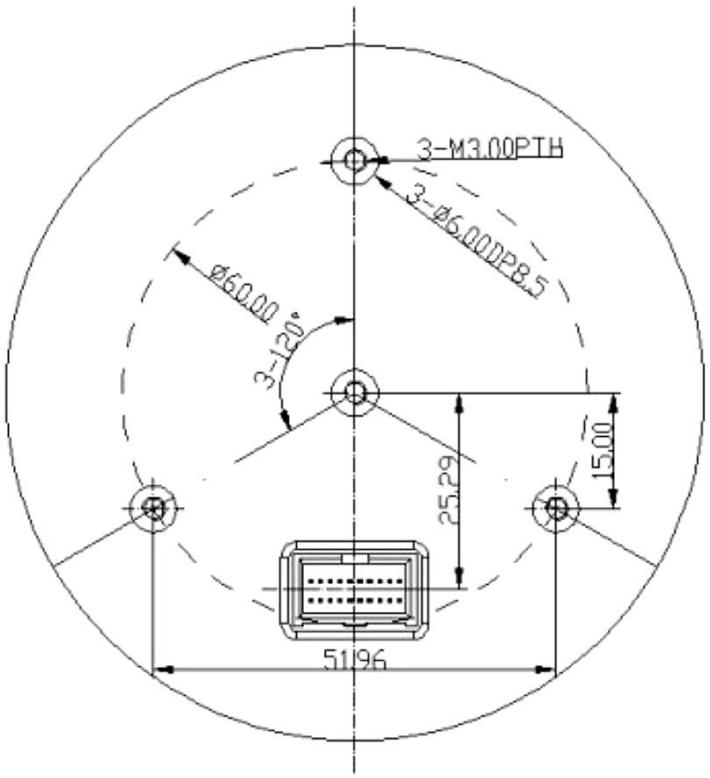
Application area

Ranging、Weapon simulation、Measurement equipment、Homeland security、LiDAR、 Adaptive cruise control

Dimensional Drawing



Side View



Top View

Parameters

Parameter	Unit	Min	Typical	Max	Note
Wavelength Center	nm	1547	1550	1553	
Pulse Width(FWHM)	ns	1		10	Adjustable
Repetition Rate	MHz	0.1	0.5	2	Adjustable
Average Power	W		1①		
Peak Power	kw		1①	1	
Monitor Power	uw		1uW		@1MHz,2ns
Noise Ratio	%			5	
Polarization	NA	Random			
Trigger Mode	NA	External Trigger			
Power Consumption	W		13①		
Operating Voltage	V	9	12	13	
Operating Temperature(@Case)	℃	-40		+85	
Storage Temperature	℃	-40		+105	
Dimension	mm	50x55x19			
Output Termination		FC/APC			
Output Fiber Length	m		1		
Connector		MOLEX 505567-1281			

Note ①: Typical@ 500KHz, 2ns, 1W,25℃

Spectrum

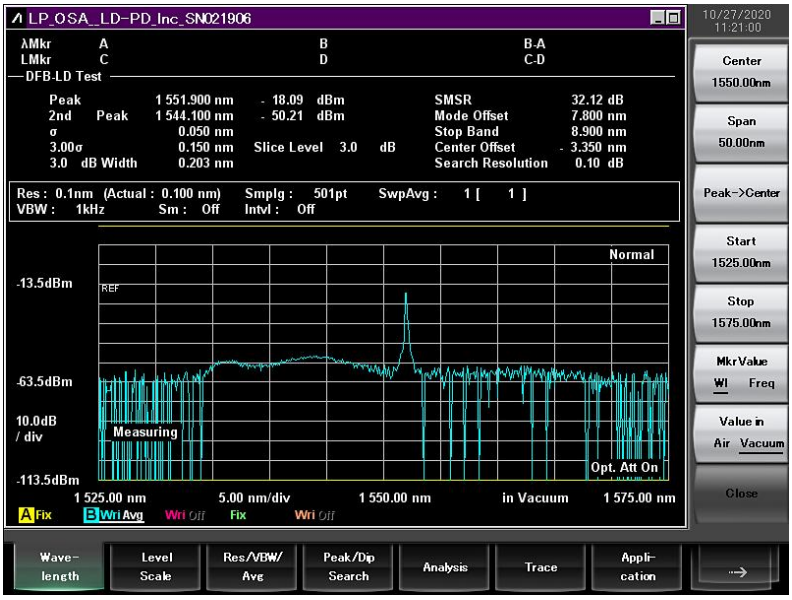


Figure 1 Main power end spectrum (center wavelength 1551.9nm)

The repetition frequency range of fiber pulse laser is 100kHz-3MHz. The maximum repetition frequency will decrease when the main power is low. The repetition frequency diagrams of 100kHz and 3MHz are shown in Figures 1 and 2.

Figure 2 100kHz repetition frequency

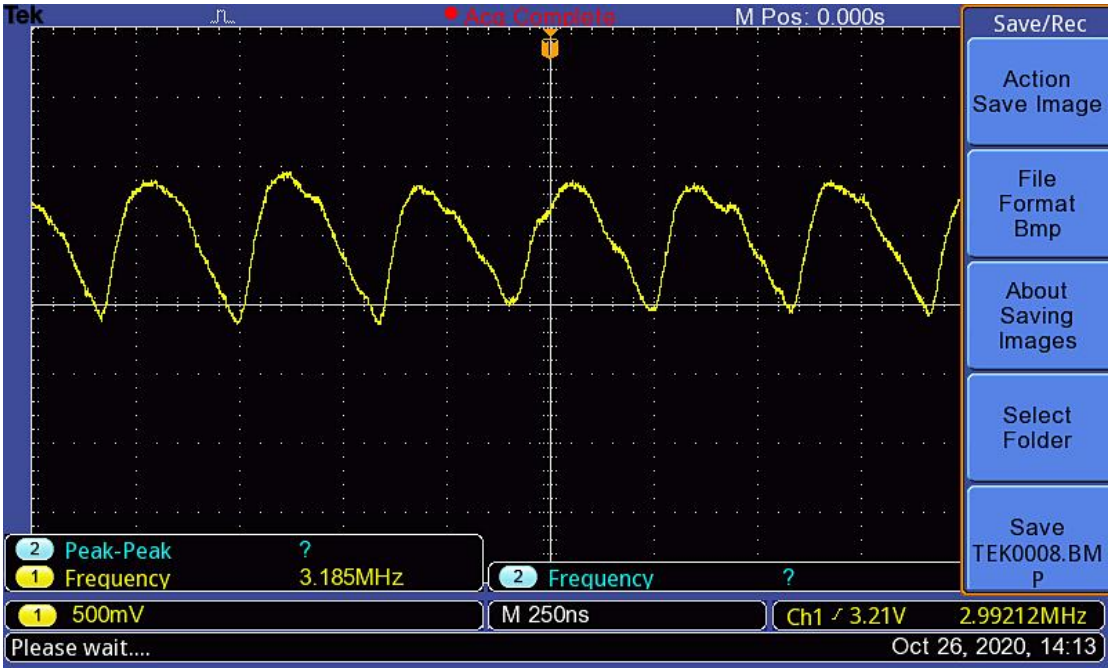


Figure 3 3kHz repetition frequency

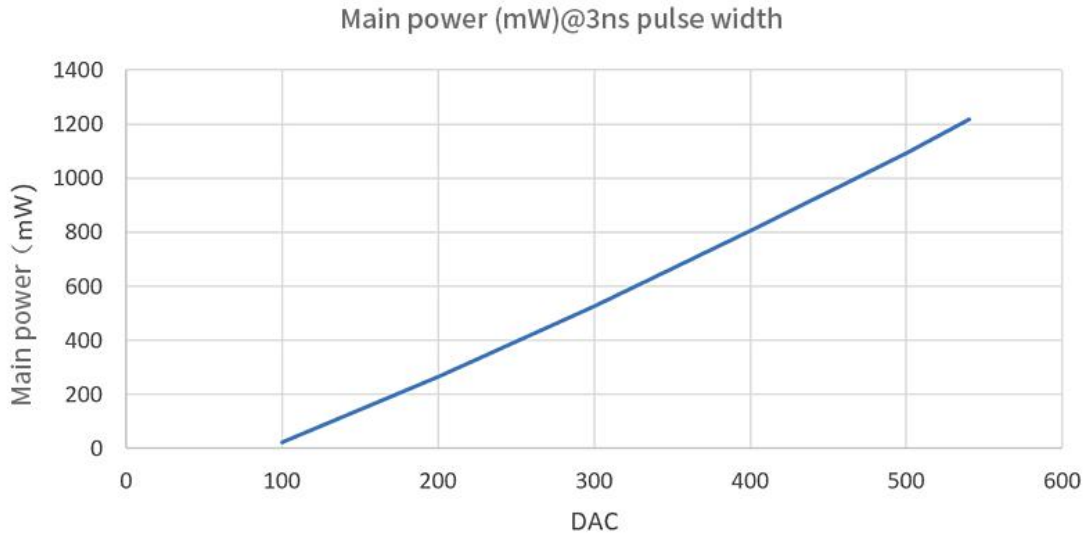
Table 1 shows the main power of the laser at different repetition frequencies and different pulse widths at 25° C and DAC=100. From Table 1, it can be seen that the main power increases with the increase of repetition frequency or pulse width.

DAC	Repetition frequency(Hz)	Main power(mW)@Pulse width				
		@1ns	@2ns	@3ns	@4ns	@5ns
100	100K	14	15.9	17.2	18	18.7
	1M	20.5	22.1	22.9	24.1	24.5
	3M	23.2	24.6	25.1	25	25.3

Table 2 shows the main power corresponding to different DACs when the laser is at 25° C, repetition frequency = 1MHz and pulse width = 3ns. The maximum main power can reach 1.217W.

Repetition frequency(Hz)	DAC	Main power(mW) @3ns pulse width
1M	100	22.9
	200	266.2
	300	527.1
	400	805.3
	500	1091.8
	540	1217.5

The relationship between the laser main power and DAC is shown in Figure 3, and the linearity is good.



Testing and usage requirements

1. Heat dissipation requirements
This light source consumes a lot of power and must be well cooled, otherwise the light source cannot work well, affecting the stability of the equipment or causing damage.
2. Repetition frequency and output power requirements
This product needs to be used at a continuous repetition frequency with uninterrupted trigger pulses;
3. Power supply use
Please make sure that the input power is within the voltage and current range required by the product indicators, and the power must not be directly cut off when it is not turned off during use. If there is an accidental power outage, be sure to turn off the power of the product.
4. Electrostatic protection
The laser and some chips inside this pulse light source are electrostatic sensitive devices, which are prone to irreversible damage when there is high static electricity outside. The equipment needs to be well grounded and the operator should take electrostatic protection measures.
5. Optical fiber end face protection
Before use, clean the end face of the output optical fiber with a wipe paper dipped in alcohol to ensure that the output end face is clean, otherwise the output power or stability will decrease easily, and even the optical fiber end face will burn.
6. Personal safety
The pulse light source belongs to Class IV light source. When working, you cannot look directly at the output end of the optical fiber with your naked eyes, and you cannot expose your skin directly to strong light, otherwise it will cause damage.

Ordering information

PL-Fiber-□□□□-XX-P△-C▽

□□□□: Average Power

05: 0.5w
*****
1: 1w
2: 2W

XX: Package Type

D1=120X90X20mm;

D2=80X90X23mm；
D3=90mm disc；
D4=50X50X19mm

P△: Pulse Width

1: 1ns
10: 10ns
110-1-10ns

C▽: Pigtail and Connector

SA=SMF-28E+FC/APC
PP=PM1550+FC/PC