

Confidentiality
Version V0.2.6

Documentation:
Mark

FLS-1535-01-5555-030

Mini Type Pulsed Fiber Laser

Specification

Edit:

Review:

Countersign:

Approve:

21st, Oct, 2024

Amendment History Information Table

Version	Rev. Date	Content	Chapter	Reviser	Order	Remarks
V0.1	2022/04/20	Initial issue		Qiu	NA	
V0.2.0	2022/04/25	The structure was changed to 55*55		Qiu	NA	
V0.2.1	2022/11/14	Increased the power-frequency curve Increased the power-% setting curve		Qiu	NA	
V0.2.2	2022/11/22	Custom parameters (pulse width 3ns, peak power optimization)		Qiu/Yang	NA	
V0.2.3	2023/03/10	The connector was changed to Molex		Qiu		
V0.2.4	2023/11/04	High temperature test temperature 75 degrees		Qiu		
V0.2.5	2024/7/23	1) Increase the average power by 2MHz 2) Correct power accuracy 3) Add pulse width range 4) Increase jumper length range 5) Correction of reference light peak range 6) Add precautions for use		Yang		
V0.2.6	2024/9/29	Add power stability requirements		Chen		

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1. Description

This product is a 1.5μm pulsed fiber laser source for human eye safety developed by Lumispot. The product can produce peak power output, with high electric-optical conversion efficiency, low ASE and nonlinear effect noise, and wide temperature operating range. It is suitable for use as LiDAR emission light source.

2. Application Field

The products mentioned in this specification are applicable to the specifications, models and product codes shown in the table below.

Model	Central Wavelength
FLS-1535-01-5555-030	1535nm

3. Performance Data

Item	Unit	Min	Typ	Max	Notification
Operation mode		Pused			
Central wavelength	nm	1532	1535	1557	
Pulsed width (FWHM)	ns	2.5	3	3.5	
Re-frequency	kHz	100	500	2000	Adjustable
Ave. Power	W			1.4	
Peak power	W			3000 ^①	Vary depends on repetition frequency
Reference light peak power	mW	0.4	0.5	0.6	
Average power stability (-20~50℃)	%			10	
Average power stability (-40~75℃)	%			15	

Pulsed Fiber Laser Specification by Lumispot Tech

Spectral distribution	%	70			4nm spectral power /50nm spectral power 3ns, 100k > 70% 3ns, 200k, 300k > 80% 3ns, 400k, 500k > 85% 3ns, 1000k > 90%
Polarization state	NA	Random			
Burst mode	NA	External triggering			
Delay between the reference light pulse and the main output pulse (light-light delay)	ns			70	The difference of the same laser at different temperatures is less than 20 ps
Pulse output delay jitter	ps			80	Measurement method: Based on the reference light, measure the jitter of the main output pulse and the jitter of the falling edge of the pulse observed from the oscilloscope (automatic afterglow).
Electricity consumption	W			13	@300kHz&1W output
Operating voltage	V	9	12	13	
Operating temperature (@ shell)	°C	-40		75	The laser shuts down at 95°C
Storage temperature	°C	-40		85	
Package size	mm	55x55x16			
Weight	g			100	
Optical output mode		FC/APC + FC/UPC			
Output fiber length (Main light)	mm	260	270	280	900T sleeving
Output fiber length (Reference light)	mm	230	240	250	900T sleeving
Electrical interface		MOLEX 505567-1281			

type			
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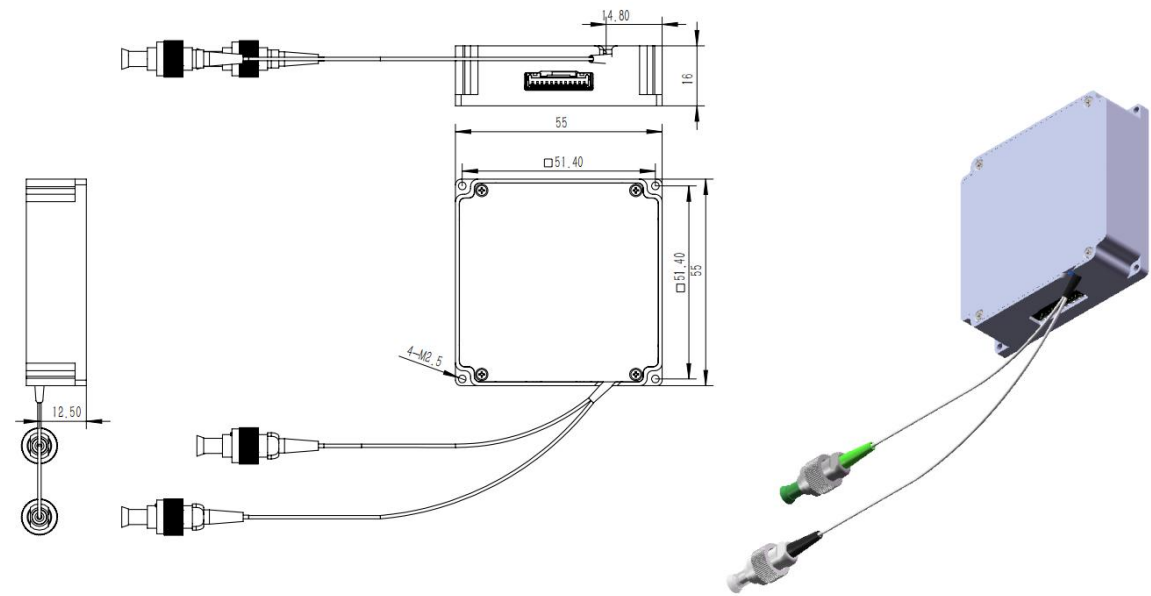
Notification:

Typical value @3ns, 100khz, 0.9W, 25°C

For a 1535nm laser, the reference value of the output pulse peak power @3ns typical rep. frequency (the average power accuracy is P~P+0.5W②) is shown in the following table

Rep. (kHz)	100	200	300	400	500	1000	1500	2000
Ave. Power(W)	0.9	1.1	1.2	1.4	1.4	1.4	1.4	1.4
Peak Power(W)	3000	1833	1333	1000	933	467	311	233

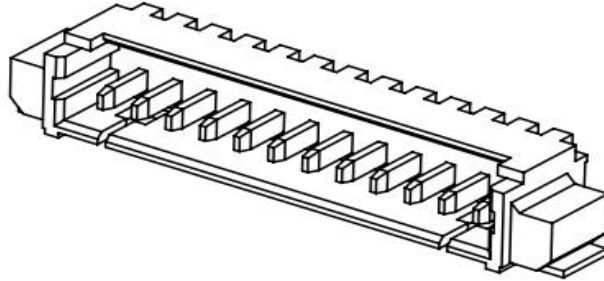
4. Dimension



Note: The above is the standard 55*55*16mm. According to customer needs, we can provide customized structures that are shaped and open for easy integration

5. Electrical Parameter

5.1 Electrical interface definition



The laser adopts the pin holder of Molex model 505567-1281, with 12pin and 1.25mm foot spacing. The pin definition is shown in the following table:

Pin	Name	INPUT/OUTPUT	Function Description
1、 2、	GND	Power	GND
3、 4、	POWER	Power	+12V power supply
5	UART TX	Output	LVTTTL, UART TX output
6	UART RX	Input	LVTTTL, UART RX input
7	Differential Negative Trigger Clock	Input	LVDS differential negative trigger clock input
8	Differential Positive Trigger Clock	Input	LVDS differential positive trigger clock input
9	Pump Enable	Input	LVTTTL input
			1: Enable pump laser
			0: Close pump laser
			Internal latched down to GND level with 100KΩ.
10	NA	NA	NA
11	NA	NA	NA
12	NA	NA	NA

Note: Some lasers are connected with scattered wires according to customer customization, and the pin function definition is as shown in the table above.

5.2 Communication protocols and commands

See annex "Mini Type Laser Communication Protocol" for details.

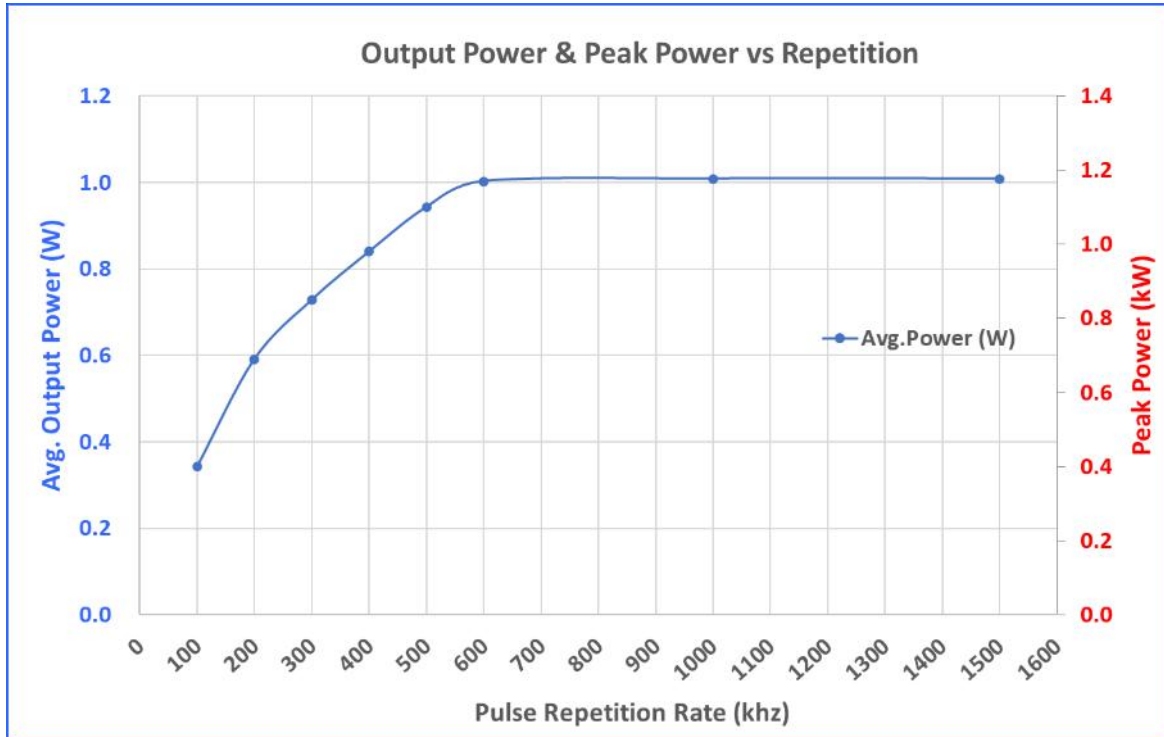
6. Peak power – Typ frequency

Laser output pulse peak power @3ns/100% power/reference value under typical refrequency, as shown in the following figure

Rep (KHz)	100	200	300	400	500	1000	1500
Average power (W)	0.4	0.69	0.84	0.95	1.177	1.177	1.177
Peak power (W)	1333	1150	933	791	784	261	196

7. Average power-typical repetition frequency curve

Under the condition of pulse width 3ns/25°C, the relationship between the average output power and the trigger repetition frequency of the signal can be referred to the following curve



8. Average power-percentage setpoint curve

Under the condition of pulse width 3ns/500k/25°C, the output average power and power set value (maximum 100%) of the laser can be referred to the following curve

