Product information for nanosecond fiber lasers with editable pulse waveforms

Product Name:

Pulse waveform programmable fiber laser

Product Details:

SkyFire Laser has launched a nanosecond fiber laser with editable pulse waveforms . Based on an FPGA high-speed signal processing system, this product can precisely generate high-current-driven pulses with controllable pulse widths and supports user-defined waveform output .

(Figure 1) Illustration of a fiber laser

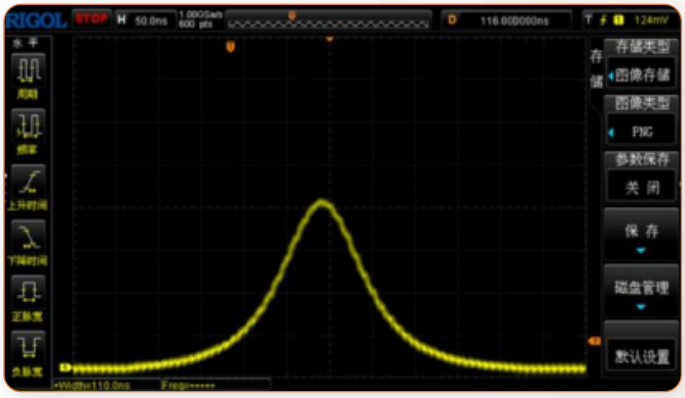
The device adopts an industrial-grade circuit board design, integrates a high-efficiency power management module, and supports 24V DC input. The pulse width can be precisely set via serial port within the range of 20~500 ns. It features a built-in high-speed digital-to-analog converter (DAC) for flexible waveform editing, enabling the generation of drive signals of specific shapes as needed.

Laser support Two working modes:

internal trigger and external trigger .

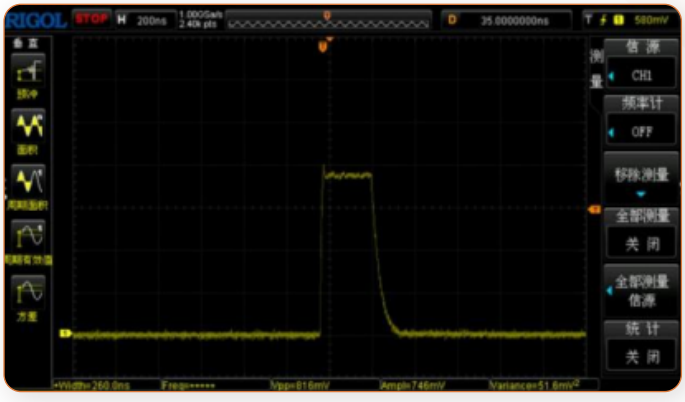
- In internal trigger mode, the repetition frequency can reach up to 50 M Hz ;
- External trigger mode responds quickly and has low timing jitter. ⩽ 0.5 ns ensures high synchronization accuracy.

In addition, system integration TEC Temperature control function allows for precise adjustment of the center wavelength of the seed light source (@DFB seed source). To match the requirements of the subsequent solid-state amplification system, the modulated seed light is efficiently amplified after two stages of fiber amplification, ultimately outputting a high-performance laser pulse that meets application requirements.

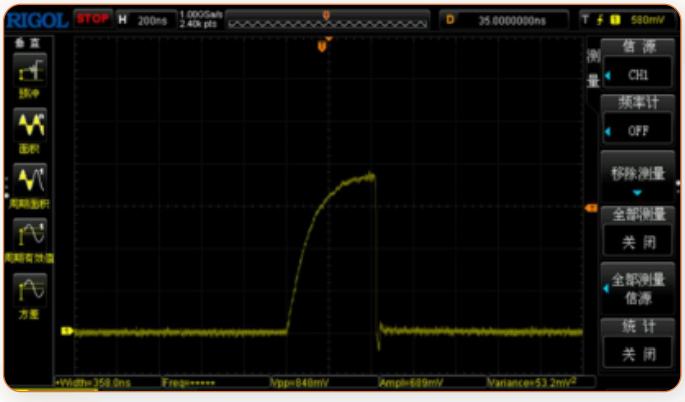


(a) Lorentz waveform

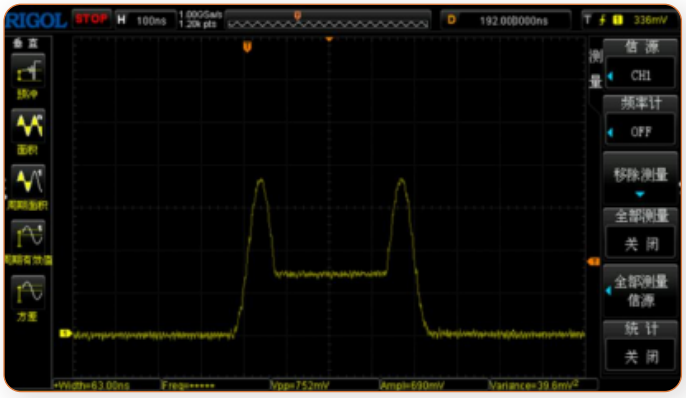
(b) Gaussian waveform



(c) Rising Leading Wave



(d) Falling trailing edge waveform



(e) Double M-type waveform

(f) Voigt waveform

(Figure 2) Waveform example

Technical Specifications:

1.Center wavelength: 1064.3±0.1nm (@DFB seed source, can be tuned via temperature settings , tuning range ⩾) 0.6nm

2.Pulse width: 20ns-500ns Adjustable

3.Repetition frequency: 5kHz-50MHz

4.Average power : >100mW@8kHz@ 150ns

5.Spectral width: ⩽0.3nm

6.Polarization: Linearly polarized output

7.Time-domain waveform: Arbitrary waveforms such as Gaussian and Lorentz can be edited.

8.Power stability: RMS⩽1%@1hr

9.Beam quality: TEM00 M2<1.1

10 .Output method: Fiber optic output, polarization-maintaining fiber, outer diameter 3mm PVC, FC /APC connector

11.Operating voltage: DC, 24V

12.Communication interface: RS232

13.Protection functions include pulse width, repetition frequency, temperature, and upper and lower limits of maximum current.

14.Alarm functions: Includes temperature alarm (LD pump source and DFB temperature exceeds 60 ℃). Upper and lower limit alarms (pulse width and repetition rate are not within the upper and lower limit ranges). Communication anomaly alarm , power anomaly alarm

15.Dimensions: Modular design, (16.3×21.4× 3.25cm)

16.Weight: Lightweight design , (⩽2kg)

18.Operating temperature: 15~50. C

19.Operating humidity: 10~80%

20. The system needs to provide a heat dissipation surface for mounting this laser.