

Fiber Delivered Direct Diode Blue Laser



Raycus newly launched Fiber Delivered Direct Diode Blue Laser is mainly aimed at the welding applications of common high-reflective materials, especially gold, silver, copper and other non-ferrous metals. It has been discovered that infrared wavelength lasers are not easy to weld copper materials due to the process window, and a lot of spatter will be generated during laser welding.

In the battery industry, parts have to be cleaned after welding is completed. At the same time, the absorption rate of welding with blue laser is higher, which is about 10 times that of infrared band. Therefore, blue light only needs lower power in the same application to ensure the same efficiency and cleanliness.

Mainly used in the welding of gold, silver, copper and other non-ferrous metals, and can be used in the welding of new energy batteries, 3C and alloy welding and other fields.

Product technical features:

Optics: High beam quality, high absorptivity of non-ferrous metals, and high stability.

Electricity: Equipped with an easy-to-operate host computer, which can be connected to the laser through the RS232/network port, which is convenient for the user to interact with the laser. The external control AD mode directly operates the laser to emit light, which is easy to integrate into the user's industrial control system. Comes with a variety of detection functions to ensure the stable operation of the laser.

Structure: The main structure of the chassis is made of high-strength carbon steel, which is stable and reliable, and the reasonable waterway layout is stable and heat dissipation. A total of 4 handles are equipped on the front and rear for convenient and safe transportation.

RFL-B500D Technical index

Technical index	Index value
Power	500W
wavelength	430-470nm
Beam quality	44 mm-mrad
Fiber core diameter	400um
Optical fiber numerical aperture	0.22 NA
Index laser	650nm, 0.25~1mW



Raycus new welding weapon

High Power Fiber Laser with Shutter

Adjustable Beam Profile Fiber Laser

Fiber Delivered Direct Diode Blue Laser

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Reshape Fiber Lasers



High Power Fiber Laser with Shutter

Raycus high-power fiber laser with shutter can make one laser perform cutting, welding, drilling and cladding at the same time. The switching of equipment power and transmission fiber only takes a few milliseconds, which can significantly reduce the user's investment cost in equipment and improve processing efficiency.

Application field: automotive welding



Raycus Adjustable Beam Profile Fiber Laser

Raycus ABP(adjustable beam profile) Fiber Laser is the welding choice for our customers. With our latest beam adjustable technology, the application of welding becomes different. Raycus RFL-ABP used our own developed fiber combiner to independently coupling different optical modules into the core and ring core of the multi-core fiber, the refined output of different modes such as Gaussian spot, ring spot, and mixed spot can be realized. The core ring or ring core power can be independently adjusted to achieve any power ratio, continuous and modulation modes can be adjusted independently, and different modes can be switched in milliseconds. Meeting the needs of high-quality laser cutting and welding has become another weapon to improve processing quality and efficiency.

Advantages of shutter technology:

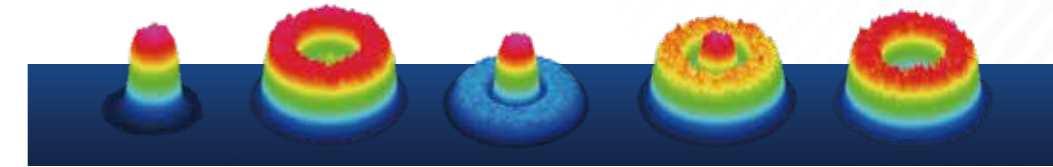
1. Single-way coupler, 2-way and 4-way time sharing fiber to fiber switch
2. Coupling efficiency $\geq 96\%$
3. Short switching time, $< 45\text{ms}$
4. Fast fiber fuse protection
5. Equipped with safe mechanical, electrical, control and monitoring systems
6. The beam switching device is reliable and can achieve hundreds of thousands of continuous switching

Security:

- Comply with ISO 13849-1 international safety standard
- Safety Relays
- Double loop
- Surge protection
- AC voltage detection
- Water flow detection
- Leak detection

Application :

- Lithium battery industry
- Electronic Component
- Car manufacturer



Schematic diagram of ABP ring spot
The core/ring core can be adjusted at any power and independently.

Technical Parameters

Shutter type	Single-way	2-way	4-way
Max. power		12kW	
Input core diameter		100 μm	
Output core diameter		200-1000 μm	
Max.NA		0.14	
High transparent coating		1030-1090nm	
Optical fiber interface type		QBH/QD	
Cooling method		Water cooling	

Raycus independently developed high-power shutters



Technical Support

1. Full fiber structure, stable and reliable
2. The optical module is independently coupled into the core and ring core of the output fiber
3. Adjusted indecently the core or ring core power, millisecond switching between different modes
4. With waveform editing function

Processing Advantage

1. Adjusted independently power of center spot and ring spot
2. Spatter-free welding
3. Stable weld formation and good consistency
4. Larger and stable molten, smaller temperature gradient

The weld pool is wider and the weld seam is smoother



Ring spot 2+4kW
100+300 μm core diameter



Conventional 6kW
100 μm core diameter

RFL-6000/6000-ABP Technical index

Technical index	Index value
Analog response time	$\leq 100\mu\text{s}$
Total output power	12000W
Center power	6000W
Ring power	6000W
Core diameter	50/100 μm
Ring core diameter	150/300 μm
Center beam quality	$\leq 2.5/5 \text{ mm} \times \text{mrad}$
Annular beam quality	$\leq 9/18 \text{ mm} \times \text{mrad}$
Output cable length	20m (Customizable)

Lithium battery manufacturing applications include:



Square battery welding



Soft connection welding in module welding



Bus-bar welding



Side plate welding