

Technical Solution

Fiber Laser Welding Machine TA- FLW-1000W



About TA

Wuhan TA Laser Machinery Co., Ltd is an integration of laser cutting machine manufacturer and industrial machinery trading company based in south central China, Wuhan city.

Wuhan TA Laser Machinery Co., Ltd

Wuhan TA is dedicated and committed to represent the highest quality in equipment and customer service.

Who we are

- An ambitious laser cutting machine manufacturer that enjoys a leaping growth over the past 6 continuous years;
- Laser cutting machine and parts exporter in China
- Metal sheet processing machinery & parts international trading and exporting
- Tech service provider, including machine installation, debugging, upgrading, maintenance, trouble-shooting.
- Purchasing service provider, we help purchase all the industrial machinery and parts for clients.



1. Standard Specifications Of TA-FLW-1000W

Main Specifications`		
Describe	Unit	Parameter
Supply Power	V/Hz	380/50/60Hz
Working time	Hour	24 Hours
Total power	KW	6.3KW
Weight	KG	300KG
Laser source	Raycus	Raycus 1000W
Cooling method		Water cooling
Indicating method		Red light
Cable length	mm	5000mm (Standard)
Gas		Argon
Machine dimensions (L*W*H)	mm	1000MM*650MM*1250MM
Wavelength	nm	1070
Laser power	W	1000W
Through welding ability (One side)	mm	2.5MM Mildsteel,2.5MM Stainless

2. Standard Configurations Of TA-FLW-1000W

Main Configurations		
Describe	Unit	Brand
Laser Saurce	Set	Raycus China
Water Chiller	Set	TongFei, China
Portable Welding Hand	Set	TA, China
Air Condition	Set	TongFei, China
Control System	Set	TA,China
Electronic Components	Set	Schneider, Germany
Gas System	Set	SMC,Japan



3. Equipment Working Condition

Sub item	Item	Requirements	Notes
Power	Laser Source	3.3KW	The total installed capacity is not less than 7KW, And this machine need very good ground line.
	Chiller	1.7KW	
	Air Condition	0.3KW	
	Other accessories	1KW	
	Stability of 3-phase power	380V±5%	
	Instability of 3-phase power	<2.5%	
	Earthing	<40hm	
Water	Water for Chiller	Distilled water without minerals	Change every month
Gas	Cutting Gas	Ar	The processing parameters
Working	Temperature requirements	5-40 Degree	
	Humidity requirements	Less than 70%	
	Foundation requirement	There should be no vibration source nearby	If there is a vibration source on site or nearby, the user is required to dig an anti-vibration trench around the foundation
Work piece	For CS and SS: quality surface and no rust		

5.Fiber Laser System

5.1 Fiber Laser Generator



No lens built inside laser generator to avoid maintenance

Beam delivery system consists of fibers

Compact-design, easy for integration

Start-up time not needed

Excellent cutting capability

Good beam quality and high-power density

Fiber Laser Conversion Efficiency is more than 30%, compared with YAG or CO2 machine, it significantly saves power consumption when working, saving running costs and to achieve the highest production efficiency.

Fiber laser adopting Semiconductor Modular and Redundancy Design, there is no optical lens in resonant cavity like YAG, it doesn't need any start time, featuring free adjustment, free maintenance, high stability, reducing parts cost and maintenance time, which is incomparable by other traditional cutting machinery.

Operating Model	CW	CW
Wave Length	nm	1070-1080
Standard output power	w	1000
Laser Beam Quality	mm*mrad	4
Adjustable Frequency	Hz	5000
Transmission Fiber Diameter	um	50/100
Stability of Output Power		±2
power Supply	VAC	380-460
Power Consumption	KW	4
Working Temperature	°C	5~35

The machine Optical is Fiber Transmission, it doesn't need complex reflect lens and other light system, the optical path is simple and stable structure, has free maintenance

Laser coupled with optical gate can be a plurality of machine, through the fiber light divided into multiple units at the same time, it's easy to expand function and upgrade. The life time is more than 100,0000 hours.



5.2 Laser Welding Head

- Switzerland imported laser welding head
- Manual Focus function
- Quick and Convenient part changing



The laser cutting head is very easy to operate, the total weight is just 6.3KG. The operator easy to hold and do any metal parts welding.

Quick and Convenient Parts Changing: The laser head belongs to module design product, it is easy to install and disassemble, if you need to change lens or any part, it is very convenient to operate.



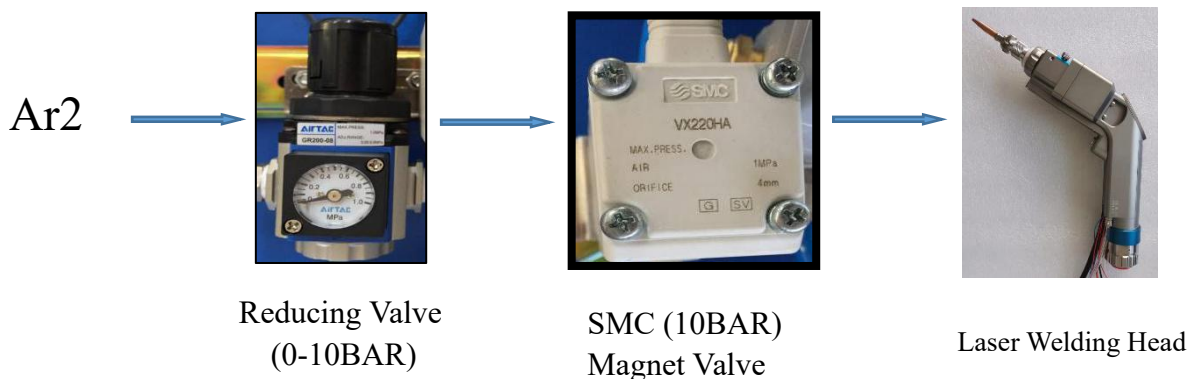
5.3 Laser Cooling System



- The laser resonator, laser cutting head and other key components all get sufficient cooling to ensure machine's smooth and safety running.
- Adopt dual temperature control, which is precise, stable and reliable, able to set and maintain constant temperature
- The chillers have comprehensive protection functions of over-temperature, phase-loss, over-pressure, water-shortage, low-voltage, overload and so on. Since all the key-components and parts are imported, the chiller has the advantages of high stability, easy-maintenance and being in line with the cooling indicator requirement of the laser source and optical path.

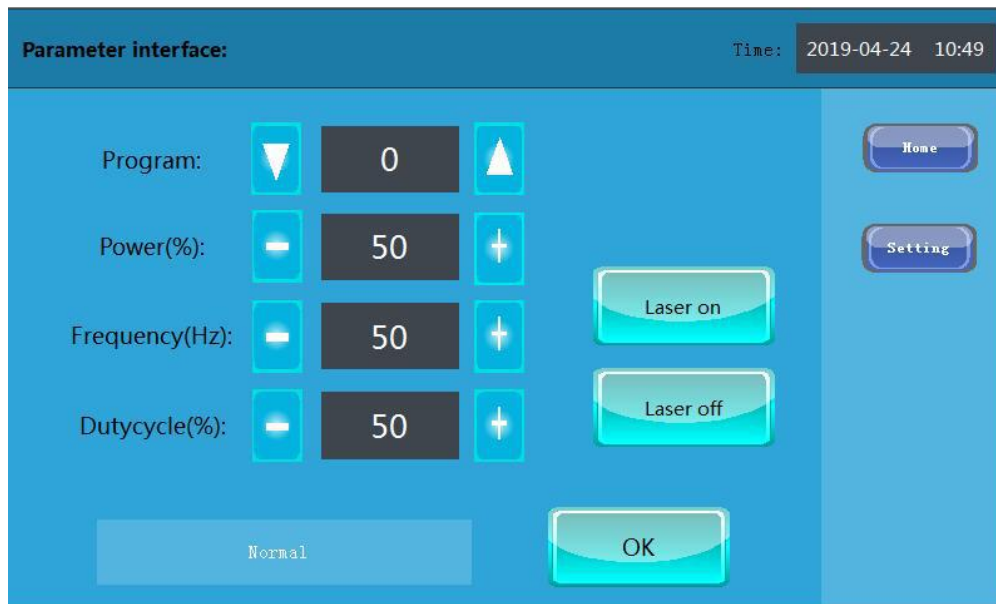


5.4 Laser Welding Gas System



6.Fiber Laser Welding CNC System

6.1 Main parameter interface



Parameter serial number: We can preset about 20 groups of welding parameters according to different materials. Just need to press the up and down button to choose the parameter.

Power: The output power of the laser. The adjustment range is between 10%-100%, and the common welding range is between 50%-100%.

Frequency: Laser output speed. The adjustment range is between 50Hz-20KHz, and the common welding range is between 50-200HZ.

Duty cycle: The ratio of the duration and total time with the laser beams in one cycle. The common welding range is between 40%-80%.

The duty ratio of the laser pulse will reduce, and the peak power will increase when the average power is constant. Each energy of pulse irradiation increases or each processing amount of the laser pulse increase, all can increase the processing capability when welding the thicker materials. In addition, since the stop time is also increased at the same time, So the cooling ability of Inhibition burnt and melting also can increase accordingly.

If the duty ratio is increased, it will close to continuous mode, the peak power will be reduced, the processing capability and cooling capacity will be reduced accordingly when process the thicker materials, and it will also reduce the inhibition burnt and melting when processing with low speed.

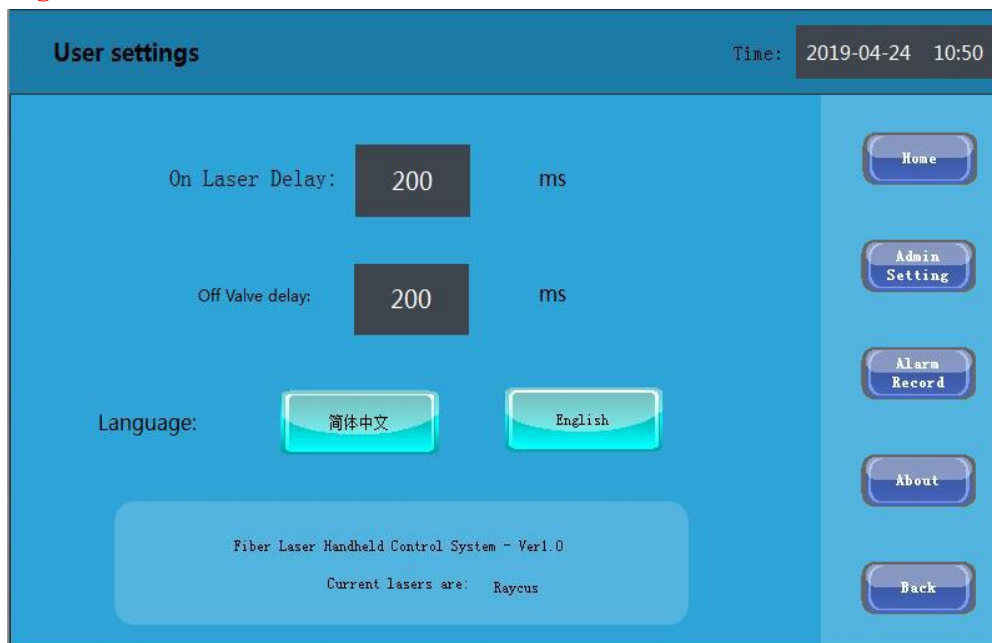
If the duty ratio is too small, the laser beam will be too short in one cycle, and it will make the laser energy too small and which is not benefit for welding using.

If the duty ratio is too large, the laser will have no peak energy, and it will easy to burn or melt the plate, which is also not benefit for welding using.

When you using the machine, just set the parameter you need and click the laser on, press the laser switch and it will have the laser beam.

When the machine is not working, click to turn off the laser, the laser switch will unable to work.

6.2 User settings

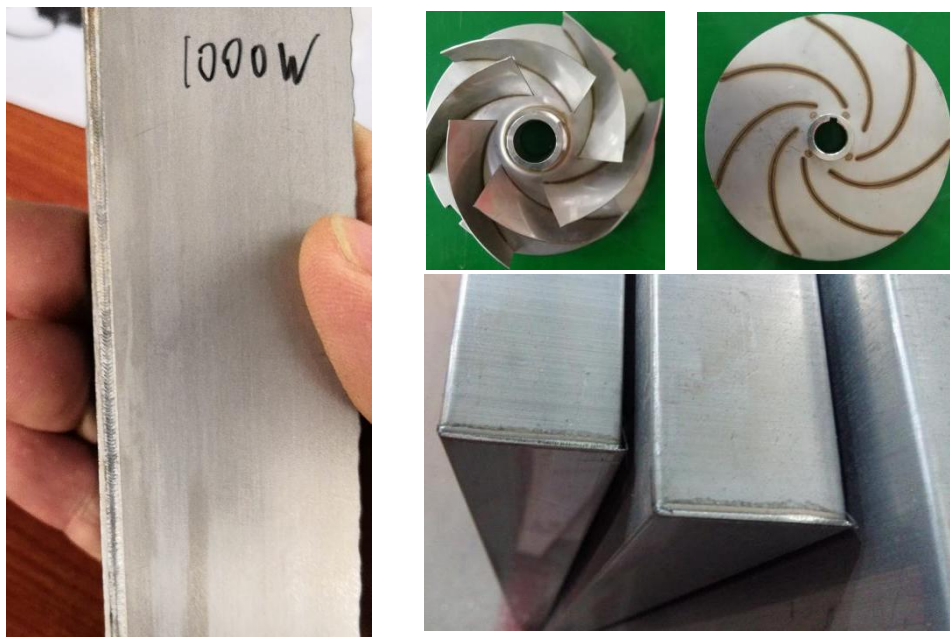


Click Settings on the main parameter interface to enter the user settings interface, as shown above.




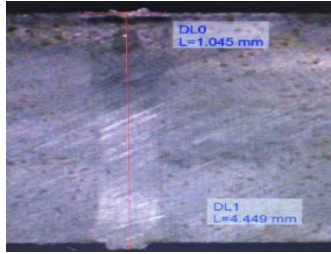
This interface allows for language selection, machine alarm record viewing, system version viewing and more.



8. Laser Welding Samples



9. Product photos and welding quality

 <p>Front side</p>  <p>The reverse side</p>	 
<p>Trough welding products</p>	<p>Through welding intersecting surface</p>



10. One Year Spare Parts list

Serial No	ITEM	Unit	QTY
1	Protection lens	PCS	12
2	Welding nozzles	PCS	10
3	Calibration Lens	Set	1
4	Focus lens	Set	1
5	Protection Glass	PCS	1
6	Lens cleaning paper	PCS	10



14. Equipment Installation

- The seller is responsible for installation, commissioning and delivery, the consumed materials and work pieces that needed for commissioning are to be borne by the buyer, special materials used by the machine are to be borne by the seller. The buyer is required to assist in following :
- The buyer is required to do the preparatory works in accordance with the foundation drawing, user self-preparation list and equipment working conditions that provided by the buyer.
- The buyer is responsible for unloading and placing of the machine at installation site, the seller is responsible for the installation, commissioning and training.
- The buyer is required to provide the conventional tools for installation and commissioning.

16. Technical Training and After-sales Service

16.1 Technical Training

Training plan 1:

S.N.	Item	Content
1	Time	Before machine delivery
2	Location	Manufacturer factory
3	Training contents	① Maintenance : Routine maintenance, lubrication, assembling and disassembling lens; ② Operation: Equipment operation and basic trouble shooting; ③ Programming: the machine tool programming, transfer operations of programming procedures, the use of programming software and so on;

Training plan 2:

S.N.	Item	Contents	Notes
1	Time	Carried out simultaneously with the commissioning on customer's site	
2	Location	Customer's installation site	
3	Training contents	Participate in the whole process of installation and commissioning. Please refer to the Customer Training Program for other information	



16.2 After-sales Service

Warranty period: From the acceptance qualified date, the warranty period for machine will be 1 year,

Note: Raycus Generator Guarantee 2 years (From the date out of raycus factory)

Seller is responsible to offer free fittings in these years (except consumable parts.) Buyer has to send the damaged fitting to sellers.

After the warranty, we will also provide favorable service of long term technical supports and spares supply to ensure machine's stable and continuous running.

The artificial damage in the warranty period and damage after warranty period, Seller offers paid service.

The Seller will give 24 hours service support during warranty time, and giving technical guide by email, telephone, Fax for daily maintenance, if need local support, Buyer has to pay for the travel and accommodation & meal cost for the people from seller's side, no labor charge require.

If products are in the warranty and require on site service, Buyer have to pay for the travel and accommodation & meal cost for the people from seller's side, labor charge is free.

If products are out of warranty and require on site service, Buyer have to pay for the travel and accommodation & meal cost for the people from seller's side, labor charge is require, USD100/day per people.

About the transportation expenses of spare parts will be supported by both parties in the warranty period, like Buyer support the cost of transportation for damage spare part back to supplier; Seller support the new spare part deliver to Buyer. The second year all transportation expenses of spare parts will be supported by Buyer.

