

SENFENG
切割 | 折弯 | 焊接 | 熔覆 | 自动化

Senfeng Laser

CRAFTSMANSHIP SPIRIT TO CREATE THE
FUTURE

1. Product Introduction

HWM series

Handheld laser welding machine (1500W-3000W)

- Laser welding uses a focused laser beam as an energy source, and welds by the heat generated by bombarding the weldment.
- Due to the optical properties of laser light such as refraction and focusing, laser welding is very suitable for welding micro parts and parts with poor weldability.
- Laser welding has the characteristics of low heat input, small welding deformation, and is not affected by electromagnetic fields.



- The welding process is heat conduction/penetration type, that is, the surface of the workpiece is heated by laser radiation, and the surface heat diffuses to the inside through heat conduction.
- By controlling the laser power, swing width, frequency and other parameters, the workpiece is melted to form a furnace hearth

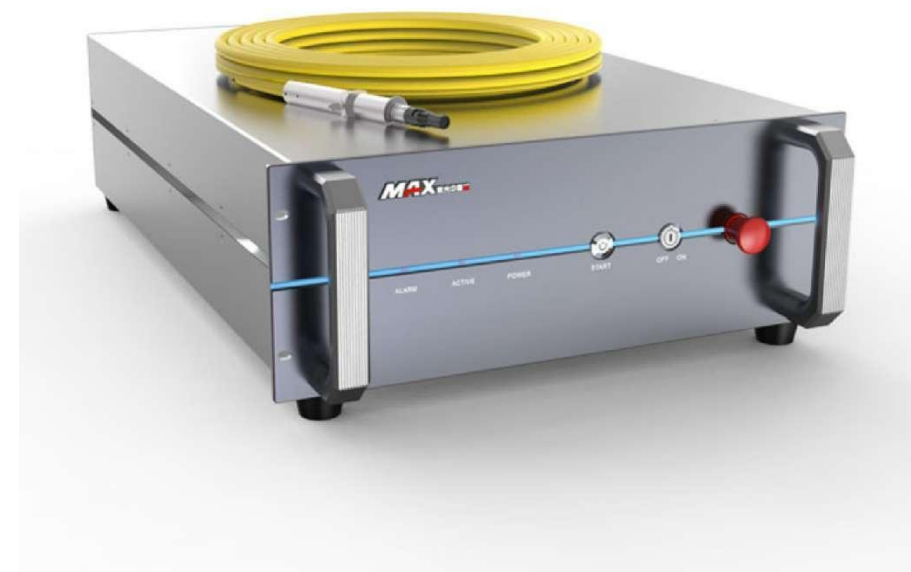
2.Configuration list

Name	Quantity	Brand
Cabinet	1	Senfeng
Water chiller	1	Hanli
Electrical system	1	Schneider/AirTAC
Welding system	1	Senfeng
Laser source	1	Max
Welding head	1	Senfeng
Wire feeder	1	Senfeng
Positioner (optional)	1	Senfeng
Stabilizer (optional)	1	Senfeng
Maintenance tools, user manual	1	Senfeng
Certificate	1	Senfeng

3.Core components

Laser source: MAX

Model	1500W	2000W	3000W
Average output power (W)	1500	2000	3000
Center wavelength (nm)	1080 ± 10		
Operation mode	Continuous / modulation		
Maximum modulation frequency (kHz)	20		
Power stability	± 1.5		
Output connector	QBH		
Core diameter	50um		
Output fiber length(m)	10	20	
Input power supply (VAC)	Single phase 220 ± 10%V AC		Three-phase four-wire 380 ± 10%V AC
Power adjustment range(%)	10-100		
Beam quality BPP	1.5		
Cooling method	Water cooling		



3.Core components

laser welder head

- The welding head structure is upgraded and its main cavity is integrally formed, which improves the dustproof and leakproof, and is lighter in weight, smaller and more stable.
- The structure of the double protective lens is upgraded, and the protective lens is designed to be replaced in a drawer, which ensures better daily protection and more convenient maintenance.
- Add the temperature-sensing alarm indicator light to improve the service life of the welding machine.
- The anti-splash structure is upgraded to optimize the anti-splash scale tube, which reduces the damage to the protective lens.
- Upgraded wire feeder structure with full liquid crystal display. The high torque DC motor ensures more stable and smooth wire feeding.



3.Core components

Nozzle of the laser welding head :



Name: copper nozzle
No.: AS-20D
Note: double wire
feed, 2.0mm



Name: copper nozzle
No.: AS-16D
Note: double wire
feed, 1.6mm

- Copper nozzle C is used for welding without wire feeding;
- Copper nozzle AS-12 is used for inside fillet welding, outside fillet welding and flat fillet welding.
Commonly used for wires below 1.2mm;
- Copper nozzle BS-16 is used for inside fillet welding, outside fillet welding and flat fillet welding with 1.6mm welding wire;
- Copper nozzle CS-12 is used for outside fillet welding. Commonly used for wires below 1.2mm;
- Copper nozzle ES-12 is used for outside fillet welding of thin plate. Commonly used for wires below 1.2mm;
- Copper nozzle FS-16 is used for outside fillet welding with 1.6mm wire;
- Copper nozzle AS-20 is used for inside fillet welding, outside fillet welding and flat fillet welding with 2.0mm wire;
- Copper nozzle single layer 1.5mm is used for cutting;
- Copper nozzle AS-16D is used for double wire feeding with 1.6mm wire;
- Copper nozzle AS-20D is used for double wire feeding with 2.0mm wire.

3.Core components

Welding system:

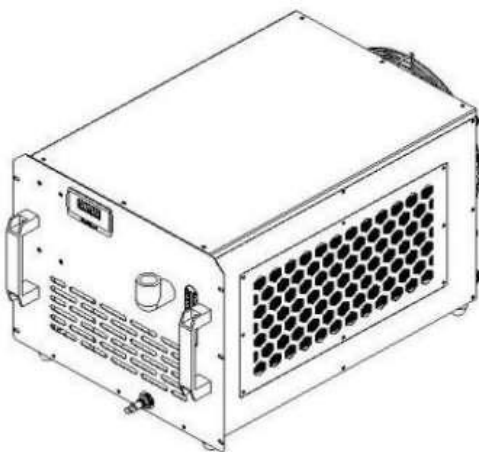


- The new generation of welding system developed by Senfeng integrates continuous welding, spot welding, tungsten inert gas welding and cutting.
- The system control interface is more user-friendly and can quickly check whether each signal is normal.
- Welding process parameters can be conveniently saved and used in real time.
- The gradual function of switching light can effectively reduce the welding pits at the beginning and end of welding.
- The screen is more sensitive to touch and has a notification sound for better customer experience
- Standard 19 languages.



3.Core components

Water cooling svstem



- The dual-temperature and dual-control water chiller adopts segmental control to make the output of the welding beam stable and ensure the life of the laser source and welding head.
- The one-button intelligent control system is easy to operate. ISO9001 quality management system. Fault code inquiry system.
- Integrated design, easy maintenance and repair.

Model	Power supply	Power (kw)	Cooling capacity (kw)	Refrigerant	Lift (m)	Flow rate (m ³ / h)	Weight (kg)	Equipment size (mm)	Water volume (L)
SCH-1500	220V 50Hz	2.1	4.5	R32	20.5	2	41	760X485X430	13
SCH-2000	220V 50Hz	2.5	5.6	R32	27.5	2	43	760X485X430	13
SCH-3000	220V 50Hz	3.9	7.1	R32	51	2	60	850X485X577	13

3.Core components

Automatic wire feeder (single):



供电电压 (V)	220±10% V AC 50/60Hz
安放环境	平整、无振动和冲击
工作环境温度 (℃)	10~40
工作环境湿度 (%)	<70
最大支持焊丝重量	25KG
最大支持送丝丝径	2.0mm

- A high-power four-wheel dual-drive wire feeder is equipped as standard, and the wire feeding speed is adjustable from 25-600cm/min. It supports continuous wire feeding mode and pulse wire feeding mode, making feeding more stable and smooth.
- The wire feeder is equipped with a 1.6mm wire feeding tube as standard, and the aluminum wire feeding with a U-shaped wheel and a graphite wire feeding tube (optional) is provided.
- The wire feeder is equipped with LCD screen as standard, which can intelligently control the wire feeding speed, feeding and unwinding.

3.Core components

Automatic wire feeder (double):



- The new design of the new double send silk, the internal silk disc bracket design for the upper and lower structure, the body is thin and small, saving floor space.
- Standard with two sets of high-power four-wheel dual-drive device, wire delivery speed of 15-600cm / min adjustable.
- Adopt special double wire copper nozzle, double wire connecting block, bottom plate, adjusting block, guide wire mouth to realize the simple and fast installation of double wire structure, and can be switched by switching the single wire and double wire structure parts.
- The wire feeder supports 1.6mm and 2.0mm wire diameter in double wire mode, 0.8-1.6mm wire diameter in single wire mode, and the length of wire feeder is standard with 5 meters.
- In the welding mode of double delivery wire, the effective welding width can reach 8mm, which solves the problems of narrow weld and welding height, and the surface effect after welding is close to that of traditional arc welding.

three. Core components Shiter (optional):

- The speed is not extremely adjustable;
- Precise structure, easy to operate, flexible to use;
- Especially suitable for flange, steel pipe and other ring joint welding;
- Support 3 kinds of load selection 50 KG, 100 KG, 300 KG;

型 号 Model	BY-50	BY-100	BY-300
输入电源 / Input power	AC110V/220V 50/60Hz	AC110V/220V 50/60Hz	AC220V 50/60Hz
负载能力0° / 90° Capacity(horizontal/vertical)	50Kg/25Kg	100Kg/50Kg	300Kg/150Kg
工作台直径 / Table Dimension	315mm	345mm	450mm
工作台高度 / Table height	375mm	415mm	510mm
工作台转速 / Rotation Speed	0.5-3.5/1-7/2-15rpm	0.5-3.5/1-7/2-15rpm	0.3-2.5 rpm
工作台翻转角度 / Tilt angle	0-90°	0-90°	0-90°
工作台翻转方式 / Tilt Mode	手动翻转 Manual	手动翻转 Manual	手动翻转 Manual Drive
回转电机 / Rotation Motor	80W	120W	200W
最大偏心距 / Rated Eccentricity	100mm	100mm	150mm
最大重心距 Rated Center Of Gravity	100mm	100mm	150mm
控制方式 / Control Mode	//	//	变频调速 Inverter + Foot Switch
外形尺寸 / Over dimension	430×430×375mm	500×470×415mm	500×500×510mm
适配卡盘 / Adjustable chuck	D-200 D-300	D-200 D-300	D-200 D-300 D-400

four.
Advantage
contrast

Comparison of laser welding and
conventional welding methods:

Contrast the project	Traditional welding	laser beam welding	A new generation of laser welding
Thermal input	very high	low	low
Workpiece deformation / bite edge	serious	small	small
weld strength	tall	tall	Very high (broken at no weld)
Follow-up processing	Must be polished	No grinding or minor polishing is required	No grinding or minor polishing is required
speed of welding	slow	3- -10 times the welding speed	3- -10 times the welding speed
Applicable materials	single	Welding between various materials or between different materials	Welding between various materials or between different materials
loss	More	few	few
Operation difficulty	complicated	simple	simple
safety	unsafe	safe	safe
Environmental protection	Not environmental protection	environmental protection	environmental protection
Whether the spot is adjustable	deny	can	Adjustable width is large
Welding beauty	difference	good	fine

five technical parameter

laser power	1500W	2000W	3000W
Send wire diameter	Standard with 0.8-1.6mm		Standard with double wire 1.6, 2.0mm, can be switched to single wire 0.8—1.6mm
Welding joint splicing requirements	Self-melt welding is 15% of plate thickness and 0.5mm single wire welding 1.2mm double wire welding 2mm (see technical parameters for details)		
net weight	220KG		265KG
Equipment gross weight	290KG		350KG
Equipment size	954X715X1080mm		1210X715X1200mm
Equipment package size	1400X870X1300mm		1656X870X1420mm
Welding thickness	≤4mm		≤6mm
Total length of welding wire	10m (5 m in length)		
Weld gun weight	≤0.9KG		
Total power of equipment	9KW	12KW	15KW
SL	China, Britain, South Korea, Russia, Japan, Germany, France, etc		
Voltage / frequency	Standard three-phase 380V 50 / 60HZ 2000W below the optional single-phase 220V 50 / 60 HZ		

six. Welding parameters

匠/心/森/峰 智/造/未/来

material quality	Plate thickness	Splicing method	Welding gap	Whether to fill the silk	Filling diameter	laser power	Swing with a width of mm	speed of welding	pressure
Carbon steel, stainless steel, aluminum alloy, etc	0.5mm	welding neck	not have	deny	/	300~500W	2	30-50	0.1~0.2Mpa
		interior angle	< 0.12	deny	/	300~500	2		0.1~0.2Mpa
		an external angle	not have	deny	/	300~500	2		0.1~0.2Mpa
	1.0mm	welding neck	< 0.2	deny	/	500~700	2	30-50	0.1~0.2Mpa
			< 0.5	yes	0.8	500~700	2	20-40	0.1~0.2Mpa
		interior angle	< 0.2	deny	/	400~600	2	30-50	0.1~0.2Mpa
			0.2~0.5	yes	0.8	500~700	2	20-40	0.1~0.2Mpa
		an external angle	< 0.2	deny	/	400~600	2	30-50	0.1~0.2Mpa
			0.2~0.5	yes	0.8	500~700	2	20-40	0.1~0.2Mpa
		welding neck	< 0.4	deny	/	700~1000	2~2.6	20-40	0.1~0.2Mpa
	2.0mm		0.4~1.0	yes	1	800~1200	2~2.6		0.1~0.2Mpa
		interior angle	< 0.4	deny	/	700~1000	2~2.6		0.1~0.2Mpa
			0.4~1.0	yes	1	800~1200	2~2.6		0.1~0.2Mpa
		an external angle	< 0.4	deny	/	700~1000	2~2.6		0.1~0.2Mpa
	3.0mm		0.4~1.0	yes	1	800~1200	2~2.6	20-30	0.1~0.2Mpa
		welding neck	< 0.5	deny	/	900~1300	2.6-3.8		0.1~0.2Mpa
			0.5~1.2	yes	1.0/1.2	1000~1500	2.6-3.8		0.1~0.2Mpa
		interior angle	< 0.5	deny	/	900~1300	2.6-3.8		0.1~0.2Mpa
			0.5~1.2	yes	1.0/1.2	1000~1500	2.6-3.8		0.1~0.2Mpa
		an external angle	< 0.5	deny	/	900~1300	2.6-3.8		0.1~0.2Mpa
		external angle	0.5~1.2	yes	1.0/1.2	1000~1500	2.6-3.8		0.1~0.2Mpa

six. Welding parameters

material quality	Plate thickness	Splicing method	Welding gap	Whether to fill the silk	Filling diameter	laser power	Swing with a width of mm	speed of welding	pressure
	4.0mm	neck	0.5~1.2	yes	1.0/1.2/1.6	1400~1900	2.6-3.8	10-20	0.1~0.2Mpa
		interior angle	< 0.5	deny	/	1200~1700	2.6-3.8		0.1~0.2Mpa
		angle	0.5~1.2	yes	1.0/1.2/1.6	1400~1900	2.6-3.8		0.1~0.2Mpa
		an external angle	< 0.5	deny	/	1200~1700	2.6-3.8		0.1~0.2Mpa
		angle	0.5~1.2	yes	1.0/1.2/1.6	1400~1900	2.6-3.8		0.1~0.2Mpa
			< 0.5	deny	/	1200~1700	2.6-3.8		0.1~0.2Mpa
	6.0mm	welding neck	0.5~1.2	yes	1.0/1.2/1.6	2000~2300	2.6-3.8	10-20	0.1~0.2Mpa
			< 0.5	deny	/	1200~1700	2.6-3.8		0.1~0.2Mpa
		interior angle	0.5~1.2	yes	1.0/1.2/1.6	2400~2900	2.6-8		0.1~0.2Mpa
			< 0.5	deny	/	2200~2700	2.6-3.8		0.1~0.2Mpa
		an external angle	0.5~1.2	yes	1.0/1.2/1.6	2400~2900	2.6-3.8		0.1~0.2Mpa

- The thickness of the test plate is theoretical thickness, different material models, material quality, gas purity (argon, nitrogen), and different welding speed, which will affect the welding effect, which needs to be adjusted according to the field conditions.

six. Welding parameters

material quality	Plate thickness	Splicing method	Welding gap	Whether to fill the silk	Filling diameter	laser power	Swing with a width of mm	speed of welding	pressure
Carbon steel, stainless steel, aluminum alloy, etc	2.0mm	welding neck	< 0.4	deny	/	700~1000	2~2.6	10-20	0.1~0.2Mpa
		interior angle	0.4~1.5	yes	1.6/2.0	800~1200	2~2.6		0.1~0.2Mpa
		an	< 0.4	deny	/	700~1000	2~2.6		0.1~0.2Mpa
		external angle	0.4~1.5	yes	1.6/2.0	800~1200	2~2.6		0.1~0.2Mpa
			< 0.2	deny	/	700~1000	2~2.6		0.1~0.2Mpa
			0.4~1.5	yes	1.6/2.0	800~1200	2~2.6		0.1~0.2Mpa
	3.0mm	welding neck	< 0.5	deny	/	900~1300	2.6-3.8	10-20	0.1~0.2Mpa
		interior angle	0.5~2	yes	1.6/2.0	1000~1500	2.6-3.8		0.1~0.2Mpa
		an	< 0.5	deny	/	900~1300	2.6-3.8		0.1~0.2Mpa
		external angle	0.5~2	yes	1.6/2.0	1000~1500	2.6-3.8		0.1~0.2Mpa
			< 0.5	deny	/	900~1300	2.6-3.8		0.1~0.2Mpa
			0.5~2	yes	1.6/2.0	1000~1500	2.6-3.8		0.1~0.2Mpa
	4.0mm	welding neck	< 0.5	deny	/	900~1300	2.6-3.8	10-20	0.1~0.2Mpa
		interior angle	0.5~2	yes	1.6/2.0	1000~1500	2.6-3.8		0.1~0.2Mpa
		an	< 0.5	deny	/	900~1300	2.6-3.8		0.1~0.2Mpa
		external angle	0.5~2	yes	1.6/2.0	1000~1500	2.6-3.8		0.1~0.2Mpa
			0.5~2	yes	1.6/2.0	1000~1500	2.6-3.8		0.1~0.2Mpa

six. Welding parameters

		welding	< 0.6	deny	/	1200~1700			0.1~0.2Mpa
material quality	Plate thickness	Splicing method	Welding gap	Whether to fill the silk	Filling diameter	laser power	Swing with a width of mm	speed of welding	pressure
	4.0mm	angle	0.6~1.5	yes	1.6/2.0	1400~1900		10-20	0.1~0.2Mpa
		an external angle	< 0.6	deny	/	1200~1700			0.1~0.2Mpa
			0.6~1.5	yes	1.6/2.0	1400~1900			0.1~0.2Mpa
		welding neck	< 0.6	deny	/	1200~1700			0.1~0.2Mpa
	6.0mm		0.6~1.5	yes	1.6/2.0	2000~2300			0.1~0.2Mpa
			< 0.6	deny	/	1200~1700			0.1~0.2Mpa
		interior angle	0.6~1.5	yes	1.6/2.0	2400~2900	4-8	10-20	0.1~0.2Mpa
			< 0.6	deny	/	2200~2700			0.1~0.2Mpa
		an external angle	0.6~1.5	yes	1.6/2.0	2400~2900			0.1~0.2Mpa

- The thickness of the test plate is theoretical thickness, different material models, material quality, gas purity (argon, nitrogen), and different welding speed, which will affect the welding effect, which needs to be adjusted according to the field conditions.

seven. Welding materials and their applications

welding material:

Laser welding machine can be used for welding stainless steel, carbon steel, aluminum, galvanized plate, copper, titanium and other metals; (because brass, copper are high reverse material, mass welding is not recommended)



A l u m i n u m
welding



C a r b o n
s t e e l
welding



a u s t e n i t e
welding



brazing



C o p p e r
welding



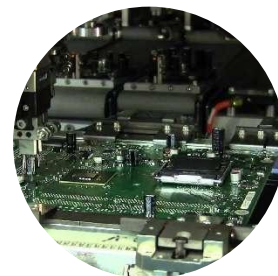
Brass-stainless
steel welding

seven. Welding materials and their applications

Applicati
on
industry



automotive industry



electron industry



Food machinery



domestic appliance

SENFENG
Cutting | Cladding | Cleaning | Welding | Bending | Automation



Metallurgi
cal
industry



Sign the sign

eight.use-cost

project	1500W nitrogen gas welding	2000W nitrogen gas welding	3000W nitrogen gas welding
Ease parts	zero point five yuan /H	zero point five yuan /H	zero point five yuan /H
Gas consumption (continuous welding)	0.01m³/H	0.01m³/H	0.01m³/H
aggregate capacity	9KW	12KW	15KW
Total power consumption (take 60% welding efficiency)	5.4KW/H	7.2KW/H	9KW/H
Total operating cost (continuous welding) (at 1RMB / h)	eleven point nine yuan /H	thirteen point seven yuan /H	fifteen point five yuan /H

nine. User site requirements

order number	project	content	ask	remarks
1	source	Three-phase five-line voltage	380V±5%/50Hz/60A Ground resistance is 4 Ω	Optional 15KVA or 20KVA voltage stabilizing power supply
2	water	Water for cold water machine	Distilled water / purified water	At 80L, the conductivity is 30- -50, and the PH value is neutral
3	gas	Nitrogen (0.3MPa), Nitrogen (0.3MPa) Purity of 99. More than 9%		Bottled gas shall be equipped with cylinder pressure reducing valve (according to the requirements of the supplier)
4	work environment	temperature requirement	-2~40℃	Winter temperatures below freezing require antifreeze
		Humidity requirements	Less than 70%	
		Foundation requirements	The site is flat, without strong vibration	
5	panel	The surface is clean and rust-free to reach the national standards		Or Baosteel factory standard