

WELD The welder's Choice®
FORCE



HLW 1500W/2000W/3000W- MAX

**Handheld Laser Welding Machine with
Water Cooling System**



What is Handheld Laser Welding Machine?

Handheld laser welding machines are compact, it uses for welding various materials with high precision using laser technology. It uses a focused laser beam to melt and fuse materials together. Shield gas can be Argon or Nitrogen.

What is Advantages of Handheld Laser Welding Machine?

- **Simple Operation:**

Simple and easy to learn for beginners without welding skills, it allows beginners to make welds like seasoned pros. It saves labor cost on skillful welders.

- **High Safety:**

It is safe for operator without arc radiation.

- **High Precision:**

Laser welding provides a focused, narrow beam that allows for precise control over the weld, resulting in high-quality and aesthetically pleasing welds.

- **Minimal Heat-Affected Zone (HAZ):**

The concentrated laser beam minimizes the heat spread to surrounding areas, reducing distortion and thermal damage.

- **Fast Welding speed:**

Laser welding is often quicker than traditional welding methods due to its high energy density and efficient heat delivery.

- **Low Post-Weld Cleanup:**

Less spatter and contamination mean reduced need for post-weld cleaning and finishing.

- **Variety of Processes:**

Processes of one machine includes Welding, cutting and cleaning.

Advantages and Benefits Handheld Laser Welding Machines vs. Inverter Welding Machines

Description	Laser Welding machine	Traditional Welding machine
Speed	Fast-over 4 times faster than TIG	Average
Quality	Consistent, high quality results	Depending on user's experience and skills
Learning curve	Quick and easy	Steep
Part set-up	Minimal and fast	Critical and time-consuming
Material Flexibility	Wide range with no set-up	Limited with consumables changes
Heat affected zone	Small	Large
Distortion & deformation	Very low	High
Wobble welding	Yes up to 5mm	No
Pre-cleaning	Yes, removes rust, oxides, oil and greases	No
Post-weld finish	Yes, removes rust, oxides, oil and greases	No

HLW 1500W/2000W/3000W - MAX

Handheld Laser Welding Machine with Water Cooling System



Quick Guide

Applications

Decoration
light industrial
Semi-ndustrial

Processes

Welding
Cutting
Clean

HLW 1500W-MAX

Net Weight 150kg
Dimensions 950*750*800(mm)

HLW 2000W-MAX

Net Weight 180kg
Dimensions 950*750*1030(mm)

HLW 3000W-MAX

Net Weight 200kg
Dimensions 1260*750*1260(mm)

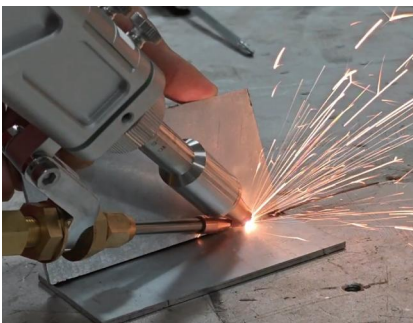
HLW 1500W/2000W/3000W - MAX

Working Principle

The light from the laser is transmitted through the optical fiber to the handheld laser welding gun, where it emits the laser. The laser transforms into heat, which is then transferred to the surface of the workpiece, causing it to melt or the welding wire to melt. This, aided by an inert gas for cooling, results in the formation of a welded joint, firmly bonding the two objects together.

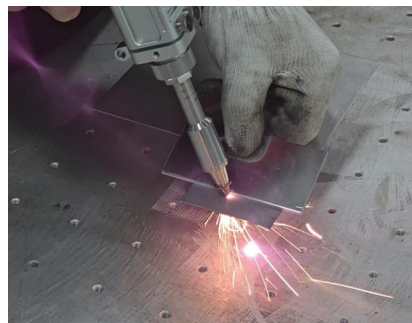
Characteristics Advantages

- Simple and easy to learn, no welding certificate required, no need for professional welders.
- No need for a face shield, no arc radiation.
- Smooth and aesthetically pleasing welds, minimal or no need for grinding.
- By controlling laser energy, welds remain non-deformed or have minimal deformation.
- Low operating cost, low consumption of electricity, gas, and consumables like lenses.
- Fiber optic cable extends up to 10 meters, extendable to 15 meters as require.
- Multiple welding processes available, fillet welding, groove welding, circular welding, and more.
- The welding speed for metals such as stainless steel, mild steel, and galvanized sheet.
- For aluminum alloy welding with aluminum wire, the welding speed is 1.2 - 2 meters per minute.



Laser welding

It uses for welding various materials with high precision using laser technology. It uses a focused laser beam to melt and fuse materials together.



Laser cutting

It uses a high-powered laser beam to precisely cut. It produces clean edges with minimal heat distortion and little to no post-finishing required.



Laser cleaning

It can remove contaminants, coatings, rust, oxides, oil and greases from a material surface by using high-intensity laser beams. It is valued for its efficiency, precision and environmentally friendly approach, making it a preferred method for many industrial and maintenance.



Front View

Model	HLW1500W-MAX	HLW2000W-MAX	HLW3000W-MAX
Laser Power (W)	1500	2000	3000
Operating mode	Continuous/Modulated	Continuous/Modulated	Continuous/Modulated
Central Emission Wavelength (nm)	1070-1090	1070-1090	1070-1090
Pulse Frequency (Hz)	50-5000	50-5000	50-5000
Cooling Method	Water Cooling	Water Cooling	Water Cooling
Output Fiber Length (m)	10 (Vulnerable 8)	10 (Vulnerable 8)	10 (Vulnerable 8)
Output Power Stability	<3%	<3%	<3%
Power Requirements	AC 200-240V (Single Phase)	AC 200-240V (Single Phase)	380v
Beam Quality	1.1	1.1	1.1
Focus Beam Diameter (mm)	0.3-1.5 (Adjustable)	0.3-1.5 (Adjustable)	0.3-1.5 (Adjustable)
Net weight(kg)	150	180	200
Dimensions(mm)	950*750*800	950*750*1030	1260*750*1260

Instruction of SCL-1500 water cooler

Working conditions

- Temperature” 0-45 °C
- Relative humidity: ≤90%
- Altitude: ≤3000m



Water quality requirements and risk warnings

The secondary refrigerant must be softened water, such as purified water, distilled water, high-purity water, etc

Recommended water quality parameters: PH 7.2-8.1, CONDUCTIVITY 10-500Us/cm, chloride concentration less than 50mg/L.

If the water quality is not as above required, the risks could be as below,

- Tap water or impure water will form scale after high temperature heating, and the scale will affect the internal purity of the laser head and cause the laser head to burn out.
- Microorganisms will breed in the water tank, which will attach to the plate changer and laser through the water circulation, affecting the heat exchange effect. As the microorganisms continue to multiply, it will cause plate replacement and laser blockage, resulting in laser high temperature alarm.
- If the tap water is acidic or alkaline, it may corrode the cold plate of laser, and the solid oxides generated by the reaction will seriously block the internal channel of the plate, resulting in high system pressure and even water leakage.

Antifreeze requirement

- It is allowed to add a volume ratio of ≤30% ethylene glycol or a volume ratio of ≤20% ethanol.
- It is allowed to add preservatives and bactericides approved by the manufacture.
- It is strictly prohibited to use antifreeze with a volume ratio of >30%, it is strictly prohibited to use oil and oil-based liquids.
- It is strictly prohibited to use flammable and explosive liquids.
- It is strictly prohibited to use liquids with solid particles, especially liquids that are corrosive to aluminum and stainless steel.

Two Optional Of Wire Feeders:

HLW-WF-MAX-A

Multifunctional automatic wire feeder



Features

Touch display, four-wheel dual-drivewire feeding mechanism, wire feedingspeed continuously adjustable from15-600cm/min, supporting continuouswire feeding mode and pulse mode.

Support wire diameter

0.8/1.0/1.2/1.6mm
2.0/2.5mm can be customized

HLW-WF-MAX-D

Multifunctional double wire automatic wire feeder



Features

Touch display, wire feeding speed iscontinuously adjustable from15-600cm/min, supports continuouswire feeding mode, pulse mode, singlewire mode, double wire mode,supports double wire synchronousadjustment.

Support wire diameter

0.8/1.0/1.2/1.6/2.0mm

Dual wire

Support wire diameter

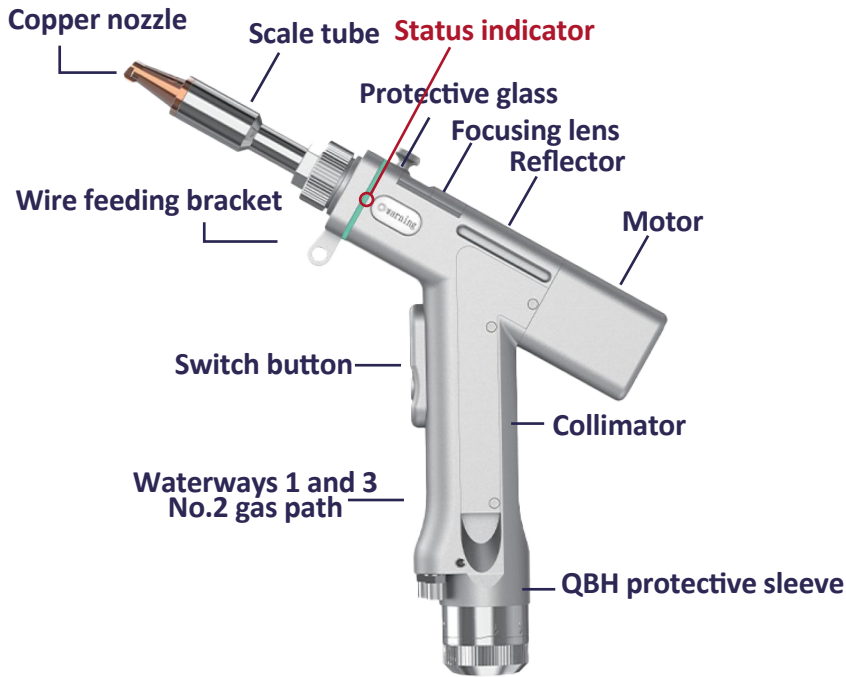
1.6/2.0mm
2.5mm can be customized

Model	HLW-WF-MAX-A	HLW-WF-MAX-D
Rated input	220±5%50/60hz	220±5%50/60hz
Maximum power and current	60W/2.5A	150W/6.5A
Rated wire feed speed	15~600cm/min	15~600cm/min
Applicable welding wire	0.8/1.0/1.2/1.6mm(standard) 2.0/2.5mm(custom made) Shaft diameter:MIN50mm	0.8/1.0/1.2/1.6 mm (single wire feed) 1.6/2.0/2.5 mm (double wire feed) Shaft diameter:MIN50mm
Applicable wire spool	outer diameter:MAX300mm width:MAX105mm weight: < 20kg	outer diameter:MAX300mm width:MAX105mm weight: < 20kg
Product Size	13.2kg	30kg
Product Name	560mm*250mm*350mm	575mm*250mm*670mm

Two Optional Of Handheld Laser Welding Heads:

SUP23T

Handheld laser welding head (4-in-1) Power level 300W



- **Safe -Foolproof**

Independently Developed Safety Detection System With Built-In Real-Time Temperature Monitoring.

- **Save Time-Efficient And Convenient**

The Focusing Mirror And Protective Mirror Are Drawer-Like, And The Collimating Mirror Is Integrated With The QBH And Is Removable For Easy On-Site Replacement.

- **Lightweight-Lightweight And Less Burdensome**

Compared With The Previous Generation, The Weight Is Further Reduced, The Operation Is More Flexible, The Hand Is Easier To Use, And The Grip Is More Comfortable.

- **Quality-Beautiful Welding**

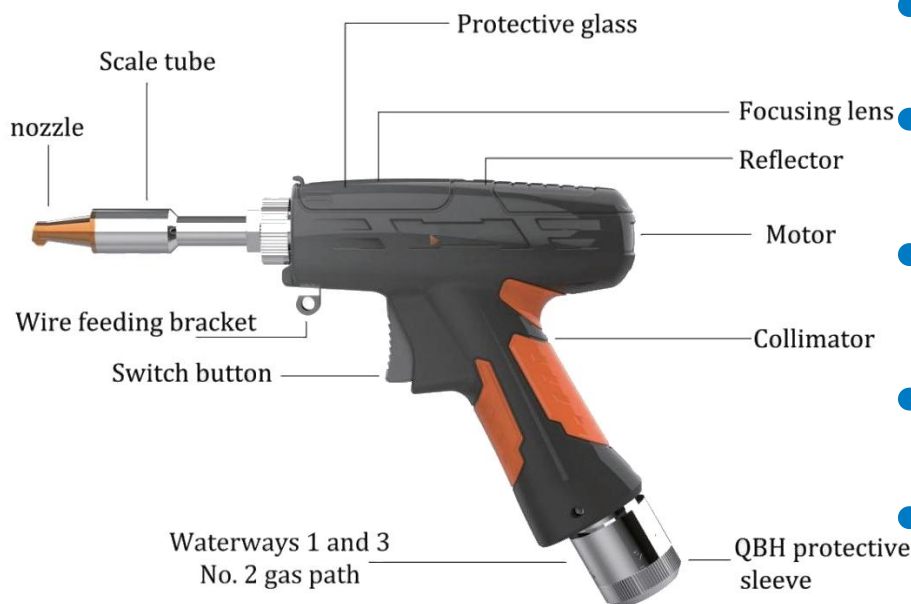
Stable Performance, Further Optimized Optical Structure, High Welding Strength, Small Deformation, High Penetration.

- **Performance -Multiple Functions**

Supports Handheld Continuous Welding, Spot Welding, -Cleaning, Weld Bead Cleaning, Cutting, "Hand" And "Self" Integration, Password Authorization, Real-Time Monitoring Of All Interfaces, Convenient On-Site Maintenance, And Remote Support.

SUP21T

Handheld laser welding head (4-in-1) Power level 300W



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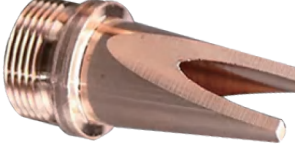


Increased Motor Maintenance Window To Facilitate Central Adjustment.

- **Quality-Beautiful Welding**

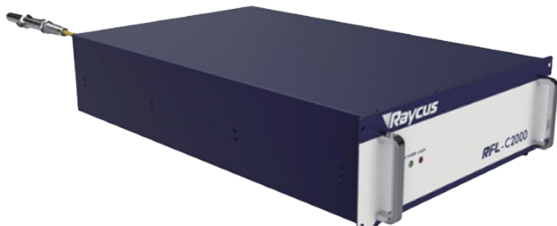
Stable Performance, Further Optimized Optical Structure, High Welding Strength, Small Deformation, High Penetration.

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 <p>Description: Copper Nozzle Model: AS-12 Function: Welding Wire diameter: ≤1.2mm Welding position: Flat corner welding Internal corner welding Outside corner welding</p>	 <p>Description: Copper Nozzle Model: BS-16 Function: Welding Wire diameter: 1.6mm Welding position: Flat corner welding Internal corner welding Outside corner welding</p>	 <p>Description: Copper Nozzle Model: CS-12 Function: Welding Wire diameter: ≤1.2mm Welding position: Outside corner welding</p>	 <p>Description: Copper Nozzle Model: ES-12 Function: Welding Wire diameter: ≤1.2mm Welding position: Outside corner welding</p>	
 <p>Description: Copper Nozzle Model: FS-16 Function: Welding Wire diameter: 1.6mm Welding position: Outside corner welding</p>	 <p>Description: Copper Nozzle Model: AS-20 Function: Welding Wire diameter: 2.0mm Welding position: Flat corner welding Internal corner welding Outside corner welding</p>	 <p>Description: Copper Nozzle Model: C Function: Welding Welding position: Outside corner welding</p>	 <p>Description: Cutting Tip C Model: C Function: Cutting</p>	 <p>Description: Scale tube Focus: F150 Application: 23T/21T</p>

Three Optional Laser Generators:



Product Feature

Premium components, superior performance and longer lifetime



Up to 3KW Output From CW Single Module Series

Better beam quality vs. multi module lasers
Greatly improved efficiency



Excellent Material Processing Performance

High speed in thin sheet cutting
Strong capability in thick material processing



Compact Design, Maintenance Free

Highly integrated system with modular design
Easy maintenance significantly reduce TCO



Smaller Size with Higher Stability

>60% reduction in volume
Higher flexibility when integrated in to system



High Level Vertical Integration

All key components are designed and produced in house
Strict quality control, high consistency and reliability

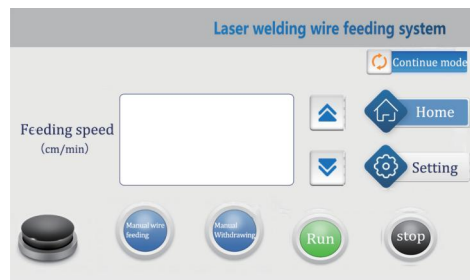
Control Panel

Supported languages: 19 languages.

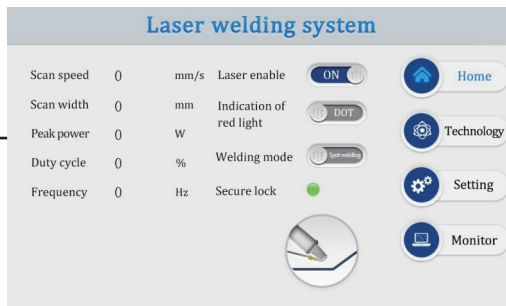


Language switching

Simplified Chinese	English	Korean	Russian
Traditional Chinese	Japanese	Dervin	French
Italian	Spanish	Portuguese	Turkish
Greek	Czech	Slovak	Polish
Thai	Vietnam	Romania	

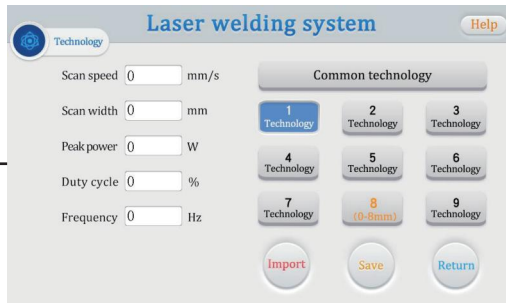


- "Continuous Mode" indicates that the current wire feeding mode is "Continuous Mode". Click the button in the upper right corner to switch to the "Pulse Mode".
- "Wire Feed Speed" controls how fast the wire is fed during welding. The range is 15 ~ 600 cm/min, which can be directly input by the keyboard by clicking the "number", or can be quickly adjusted by the "arrow". Note: "Wire feeding speed" is not equal to "manual wire feeding speed".
- "Manual Wire Feeding" controls the speed of the motor during manual wire feeding, which is usually used for daily debugging of the equipment. Range: 15 ~ 600 cm/min. Press "Manual wire feeding" continuously to change from blue to green. The motor feeds wire continuously at "Manual wire feeding speed". Release the button to stop wire feeding.
- "Manual Withdrawal" controls the speed of the motor during manual withdrawal, which is usually used for daily commissioning of the equipment. Range: 15 ~ 600 cm/min. Keep pressing the "Manual Withdrawal" button to change from blue to green. The motor continues to withdraw at the "Manual Withdrawal Speed". Release the button to stop withdrawing.
- "run" and "stop" controls the wire feeder to switch working status. Click "Run" to change from black to green and "Stop" to black. At this time, it is in the "running" state, and the motor can feed wire normally. Click "Stop" to change from black to red and "Run" to black. At this time, it is in the "stop" state, the motor stops working, and no wire feeding or withdrawal can be carried out.
- "wire feed indicator" shows the wire feed status while welding. When the welding gun trigger wire feeder is pressed for wire feeding, the "indicator light" changes from black to green, indicating that the wire feeder is operating normally. Note: The "indicator light" will display green only during welding. "Manual wire feeding" and "manual withdrawal" will not change the status of the "indicator light".
- "Home". Currently, the screen displays the home page of the wire feeder system. Clicking is invalid.
- "Settings", click to switch to the "Continuous Mode Settings Page".



The front page of the control panel

- This interface can see the current process parameters (this page can not be modified process) and real-time alarm information.
- The default is ON, the red light is LINE by default, and the welding mode is continuous. When the enabling is turned off, the enabling signal will not be sent to the laser and can be used to test the outlet function. Close the red light indicator, the motor stops swinging, and the red light is a point to adjust the center position. The welding mode is divided into continuous and spot welding. When the spot welding is selected, the spot welding type needs to be set on the setting page.
- The safety lock is divided into gray and green. When the metal clip is clamped on the processing piece and the copper nozzle of the gun contacts the processing piece, the 5 and 6 feet of the signal interface 1 are connected, and the safety lock indicator is displayed as green. At this time, the light can be realized according to the trigger.
- Click on the upper right corner to switch to the cleaning mode.



Control panel process page

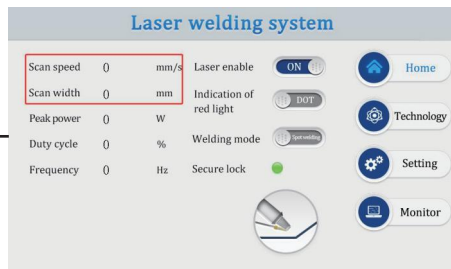
- The process interface contains the process parameters of debugging, click the box (red) to modify, click OK, and then save in the quick process, click import (modify-save-import).
- The scan speed range is 2-6000mm / S, and the scan width range is 0 ^ 6mm. The scan speed is limited by the scan width, which is: 10 scan speed / (scan width * 2)1000. If the limit is exceeded, it automatically becomes the limit value. When the scan width is set to 0, it does not scan (ie, a point light source) (The most commonly used scanning speed: 300mm / S, width of 2.5-4mm).
- The peak power should be less than or equal to the laser power of the parameter page (if the laser power is 1000W, this value is not higher than 1000).
- Duty cycle range 0 to 100 (default 100, usually not changed).
- The pulse frequency range is recommended from 5-5000Hz (default 2000, usually no modification).
- Click the HELP button on the top right to get more relevant parameter explanations.
- After modifying the parameters, you can see whether the import is successful on the home page.
- Reference process, can be used in the small program process reference.



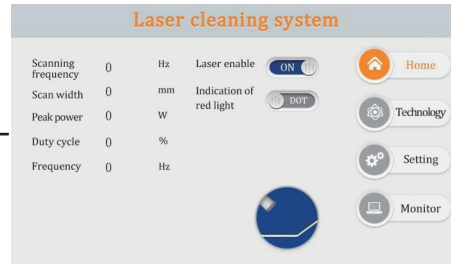
Control Panel setting page

- The laser power is the power of the used laser, please fill in correctly.
- The default air delay default 200ms, range 0 ms to 3000 ms.
- From N1% of process power to 100%; from 100% of process power to N2; Generally preset switch light power 20%, switch light step time 200ms.
- Silk delay compensation is the advance time relative to the light signal, which can be used with the withdrawal function, not set by default;
- The maximum value of the three temperature alarm valves is 70 °C. When the value is set to 0, the temperature is not detected, and the buzzer alarms when the measured temperature is greater than the set value;
- Scan correction coefficient = target line width / measured line width, range from 0.01 to 4. Generally set to 1;
- Laser center offset-3~3mm, decrease to the left, increase to the right, applied to adjust the red axis light center;
- Air pressure / water cooler / laser alarm level signal is low level, and when this alarm signal is used, the alarm level here should be set to the same with the alarm level of external equipment;
- The spot welding duration is the light output time in each cycle in the spot welding mode, and the spot welding interval time is the light stop time in each cycle in the spot welding mode;
- Click on the Help button at the top right to get more relevant parameter explanations.

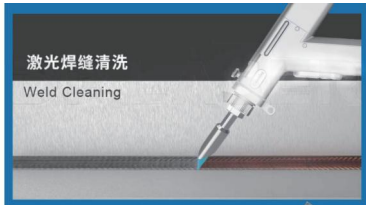




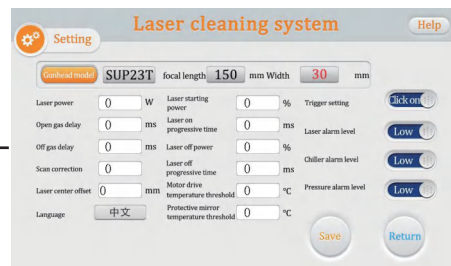
Cutting mode



Cleaning mode



Cleaning mode



Cleaning mode

- [Scan width] is set to [0], which refers to the [copper mouth] for replacing cutting, which can be cut. [safe ground lock] needs to be ensured.

- This interface can see the current process parameters (this page can not be modified process) and real-time alarm information.
- The default state is ON, indicating that the red light is LINE by default. When the enabling is turned off, the enabling signal will not be sent to the laser and can be used to test the outlet function. Close the red light indicator, the motor stops swinging, and the red light is a point to adjust the center position.
- Click on the upper right corner to switch to the cleaning mode.

- The process interface contains the process parameters of debugging, click the box (red) to modify, click OK, and then save in the quick process, click import(modify-save-import).
- The scan frequency range is 10-100 HZ, and the scan width range is $0 \sim 30$ mm. (At the focusing lens F800, the maximum width is 130mm. At the focusing mirror F150, the maximum width is 30mm).
- Peak power should be less than or equal to the parameter page laser power. (If the laser power is 1000W, then this value is not higher than 1000).
- Duty cycle range 0 to 100 (default 100, usually not changed).
- The pulse frequency range is recommended from 5-5000Hz (default 2000, usually no modification).
- Click the "Help" button on the top right to get more relevant parameters explained.
- After modifying the parameters, you can see whether the import is successful on the home page.
- Reference process, can be used in the small program process reference.

- The laser power is the power of the used laser, please fill in correctly.
- The default gas delay default 200ms, range 200ms-3000ms.
- From N1% of process power to 100%; from 100% of process power to N2; The higher the process power, the lower the recommended open light power. Open light power usually should not exceed 50%, too high open light power will greatly reduce the service life of the lens.
- The maximum temperature alarm valve value is 65 °C. When the value is set to 0, the temperature alarm is not detected.
- Scan correction coefficient range 0.01-4, coefficient target line width / measured line width: the default is 1.0.
- Laser center offset: The cleaning mode only shows the current offset. If you need to adjust the center, please cut back to the welding mode, and replace the F150 aggregation mirror to ensure accuracy.
- The pressure / water cooler / laser alarm level signal is low level by default. When this alarm signal is used, if the external pressure alarm is installed, it will be changed to high level, otherwise there will be abnormal alarm will occur, and other alarm signals should be the same.
- Click the "Language" button, you can switch to other languages in the language selection bar. Currently, the standard version supports 19 languages. Please contact us if necessary.
- Click "Help" in the upper right corner to enter the help page of the Settings page. Long press "Restore factory Settings" to restore the setting parameters to the factory state. Long press "Save as factory settings" to modify the factory parameters.
- Click "Gun size number" to focus the mirror to select the maximum scanning width.

What are the Handheld Laser Welding machine applications?



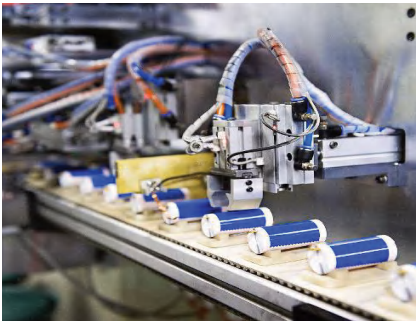
Metal Processing



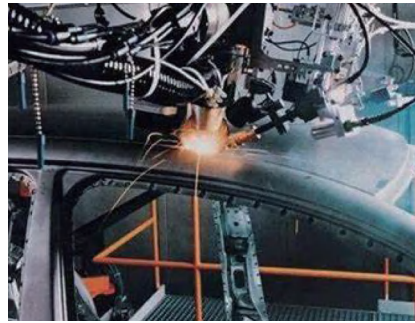
Electronics Welding



Construction Industry



New Energy Industry

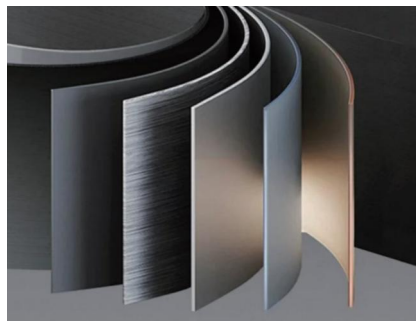


*Automotive Manufacturing
and Repair*



Metal workshop

What are the Handheld Laser Welding machine welding Metal types?



Stainless Steel



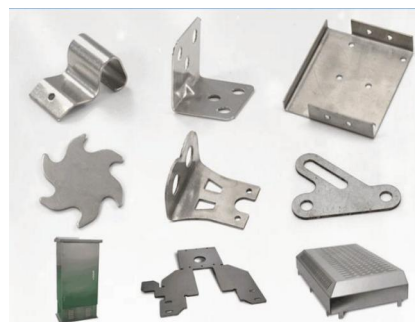
Aluminum Alloy



Carbon Steel



Aluminum Sheet



Other Metals

What are the Laser Safe Modular Enclosures?



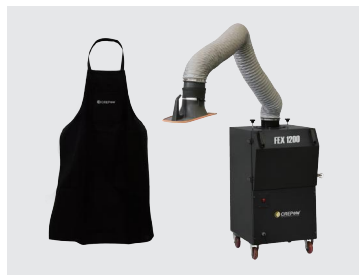
Laser safety cabins



Welding Tables



Welding Goggles



*PPE and Welding
Fume Extraction*