HT-LS02H

Handheld Cantilever Laser Welding Machine

User Manual



Thanks for choosing HELTEC ENERGY series produces.It will bring you convenience and efficiency for spot welding work.For optimal user experience,please read the manual carefully before using and store it properly for future reference.

HELTEC ENERGY has the right to upgrade the machine and modify the manual without prior notice. Thanks for understanding!

Summarizes

HT-LS02H Cantilever Laser Welding Machine For Lithium Battery adapts three-axis linkage cantilever structure. It can spot weld aluminum, nickel, copper and other materials on lithium battery electrodes.Precise and reliable welding reduces the contact resistance of lithium batteries during assembly and improves the output and performance of lithium battery packs. The output power is1500W ,which can be easily welded automotive-grade batteries.

Features

❶ The cantilever adopts a three-axis linkage structure, which has high flexibility and more accurate welding.
❷ The welding speed is faster than the traditional method and improves production efficiency.
❸ Achieve multi-shape welding through program control, and flexibly adapt to the welding requirements of various complex shapes.
❹ Equipped with software of graphics processing functions, which makes operation easier.
❺ It uses an advanced control system and high-quality lenses and has very good stability.It can work continuously for a long time with stable welding quality.
❻ Diversified welding, not only can weld single pattern ,but also mark and draw. It is easy and efficient.
❼ According to different welding materials, the output energy waveform can be set and controlled to achieve a more ideal welding effect.
❽ The machine shell is thickened and reinforced, which can be used as a highly rigid workbench, eliminating the need for an additional workbench and improving space utilization.

Parameters

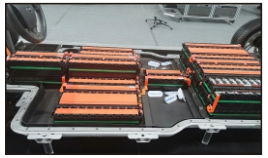
Product name	Cantilever Laser Welding Machine	Model	HT-LS02H
Supply voltage	AC220V±10%	Output power	1500W
Power consumption	≤6KW	Laser wavelength	1070±10nm
Cooling system	Water cooling	Cantilever swing range	90cm
Size	54*97*157cm	Net weight	About 140kg

Application

Applicable to new energy vehicle maintenance, lithium battery dealers, and battery pack manufacturers,stainless steel nameplate marking.



Energy storage lithium battery pack



Battery pack of new energy vehicle



Power battery shell nameplate marking

❶

Product Diagram



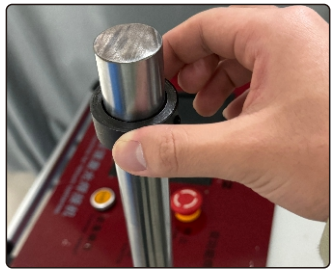


❷

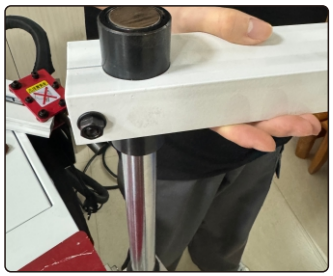
Assemble Cantilever



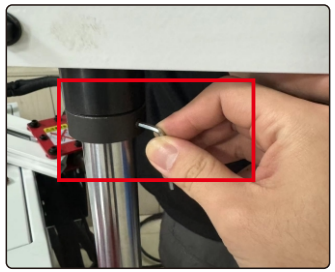
1.Adjust the height of the column. After confirming the height, use a hex wrench to fix the screws on the upper and lower sides.



2.Insert the black round buckle into the column.



3.Clamp the cantilever beam to the column to ensure that the top of the column is level with the beam casing.



4.Place the black circular sleeve under the beam sleeve, and use a hexagonal wrench to tighten the screws on both sides of the circular buckle.



5.Insert the cantilever laser head part into the sleeve at the other end of the beam (the laser head has a little weight, please pay attention to it).



6.After assembly is completed, the cantilever laser welder can work normally..

Preparation Before Use



1.Connect the power harness to the air switch to ensure that the switch can withstand the maximum power of the machine 1500W.



2.Open the lower cover of the machine and add purified water until the water level reaches the green range.



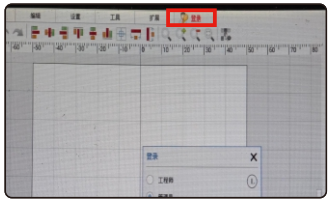
3.Connect the air compressor to the air inlet on the back of the machine.

Lithium Battery Welding Mode

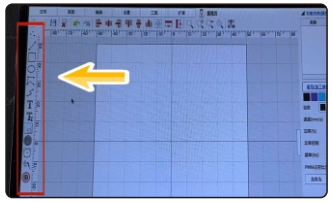
Basic operation and settings:



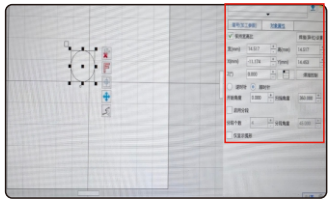
1.Start the machine - after powering on, rotate the emergency stop button and press the green button.



2.After the display screen is turned on, use the mouse to click “Login” , choose "Administrator" and enter the password. (Default password"111111")



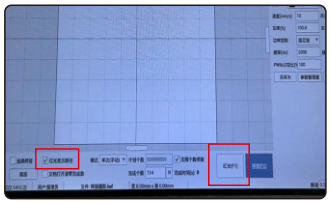
3.Click the path、graphic and text for laser welding.



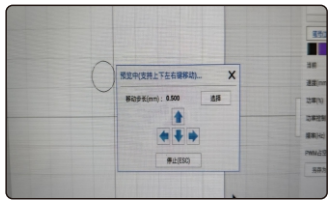
4.Draw the shape that needs to be welded, and use the left mouse button to select the shape. Click" Property " on the right



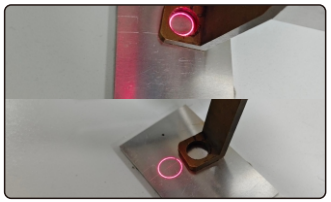
5.Click "Property " and set the graphic size.



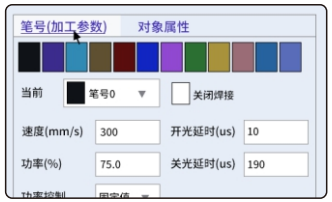
6.Tick "Preview path" below and click "Infrared Preview"



7.Adjust the red light path according to the size of the graphic.



8.If the graphic size is bigger than the locator frame, you can move the red light out of the frame by moving up, down, left, and right.



9.Adjust welding parameters (power, speed, frequency,PWM ratio%) according to welding material and thickness



10.Press the yellow button to allow laser emission after confirming the red light position and welding parameters.

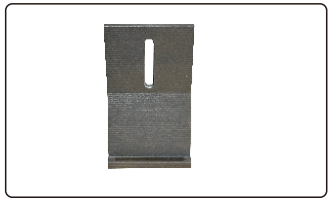


11.Press the handle switch button, and the machine starts to emit laser for welding.



12.During welding, you need to keep pressing down. Do not touch the switch button repeatedly to avoid repeated laser emission.

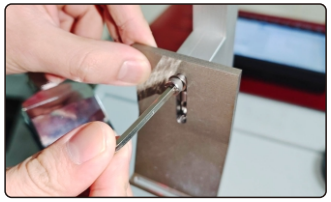
Replace the welding height limit device



1.If you need to weld soft pack batteries, you can replace the professional head for welding soft pack batteries.



2.Use the No. 4 hexagonal wrench to remove the original height limit device.



3.When assembling, make sure the top of the welding head is flush to avoid problems with too high/low focal length.

Introduction To Parameter Setting Page



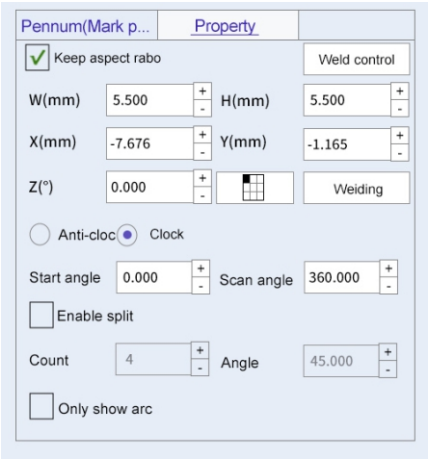
PenNum(Mark parameter)

1.Speed(mm/s):The speed at which the laser completes graphics; the slower the speed, the higher the output and the higher the heat . (Recommended setting is 100.)

2.Power（%）: Setting the laser power (1% -100% adjustable)

3.Freq(Hz)： The lower the frequency, the higher the laser penetration. (Recommended setting is 2000.)

4.PWM ratio(%):Laser waveform laser duty (Normally recommended setting is 99.)



Property

1.H(mm) / W(mm):set the laser graphics size.

2.Weld control :Choose whether to use sprial.
(Tick "Enable"to use sprial / Don't tick means disable the use of sprial.)

3.Line type： Select the spiral shape during welding .(No setting required if disabled.)

4.Spiral dist(mm)/Spiral diameter(mm)： the size of spiral.(No setting required if disabled.)

Welding Parameter

Copper aluminum composite sheet → aluminum			
Thickness (mm)	**Power (W)**	**Speed (mm/s)**	**Frequency (Hz)**
1	40%	100	1000
1.5	55%	100	1000
2	75%	100	1000
2.5	90%	100	1000

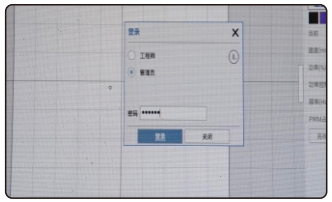
Pure aluminum→ aluminum			
Thickness (mm)	**Power (W)**	**Speed (mm/s)**	**Frequency (Hz)**
1	40%	100	1000
1.5	55%	100	1000
2	75%	100	1000
2.5	90%	100	1000

Copper→ Copper			
Thickness (mm)	**Power (W)**	**Speed (mm/s)**	**Frequency (Hz)**
1	55%	100	2000
1.5	85%	100	2000

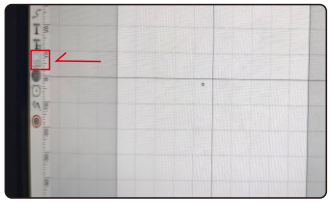
Pattern/Text Marking Operation



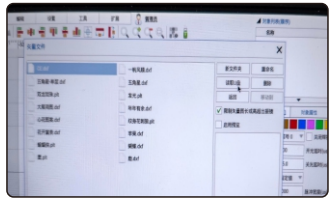
1.Insert the USB flash drive to import DXF format pictures for marking.



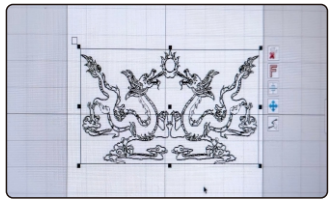
2.After the display screen is turned on, use the mouse to click“Login” , choose " Administrator" and enter the password.(Default password"111111")



3.Click on the "File" on the left side of the page.



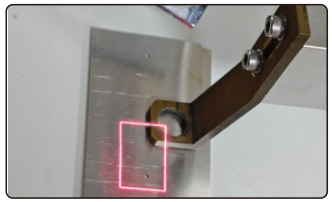
4.Import the vector image files in the USB flash drive, or export the images in the laser welding machine system to the USB flash drive.



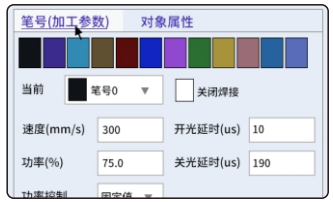
5.Adjust the size of the vector image files so that the welding range is within the white grid range.



6.Click "Infrared Preview" to observe the welding position.



7. Move the red light to the appropriate position by clicking the direction key (avoid scanning the red light on the limiter).



8.Adjust the power ,speed and frequency.(Recommended power for marking stainless steel : 10 , Speed: 800 , Frequency: 5000.)



9.Press the yellow button to allow laser emission and the handle switch button, the machine starts to emit laser for welding.

Summarizes

HT-LS02H Cantilever Laser Welding Machine For Lithium Battery adapts three-axis linkage cantilever structure. It can spot weld aluminum, nickel, copper and other materials on lithium battery electrodes.Precise and reliable welding reduces the contact resistance of lithium batteries during assembly and improves the output and performance of lithium battery packs. The output power is1500W ,which can be easily welded automotive-grade batteries.

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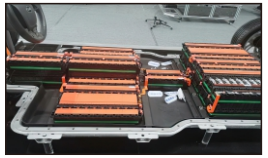
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Application

Applicable to new energy vehicle maintenance, lithium battery dealers, and battery pack manufacturers,stainless steel nameplate marking.


Energy storage lithium battery pack


Battery pack of new energy vehicle

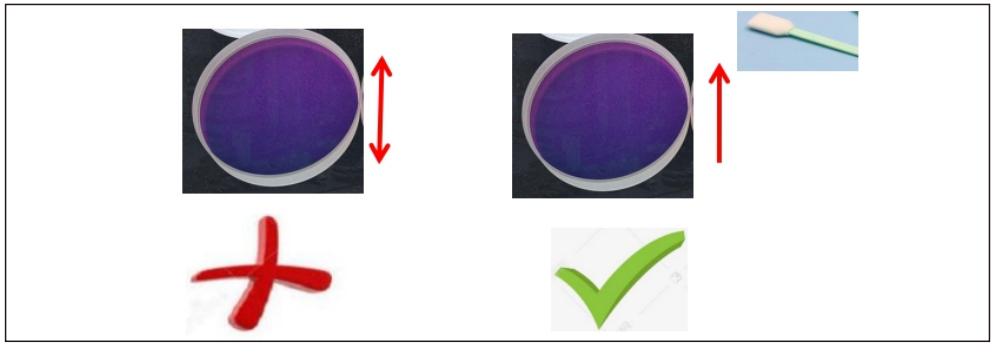

Power battery shell nameplate marking

Precautions

1.To ensure personal safety, please wear special fiber laser protective glasses before operation

2. Keep the product clean to prevent coolant, condensation or other foreign matter from intruding into the machine, otherwise it will cause functional contamination and functional impact on related parts.

3.When cleaning optical lenses, you need to prepare dust-free gloves or finger cots, dust-free cotton swabs, isopropyl alcohol, and filled with dry and pure compressed air.Spray isopropyl alcohol onto a dust free swab with the lenses facing the eyes.Gently hold the side edge of the lens with your left thumb and index finger, hold a dust-free wiping cotton swab in your right hand, and gently wipe the front and back of the lens in one direction from bottom to top or from left to right.(Do not wipe back and forth to avoid secondary contamination of the lenses.)And blow the surface of the lenses with filling, dry and pure compressed air to confirm that there is no foreign matter on the surface of the lens after cleaning. As shown below.



Packing List


Cantilever Laser Welding


Protective lens*4


Welding tool for soft pack batteries


Communication lines


Wireless mouse and keyboard set (random style)


Communication lines