HELTEC BMS **SW03A Integrated**

Industrial Pneumatic Spot Welder

Built-in Compressed Air Pump

Instruction Manual



Manufacturer:Chengdu Heltec Energy Technology Co.,Ltd
Website:www.Heltec-BMS.com
E-mail:Echo@heltec-bms.com
Tel:18123313360
Address:64th ChengHong road,chenghua Section,
Chengdu,SiChuan,China.

Attention:

Please make sure the GFCI(Ground Fault Circuit Interrupter) is up to 63A or more before turn on the spot welder.

In order to obtain good weld effect, please don't use the active socket, and should be used the wall socket to ensure stable power supply.Please store this manual in a safe location for both current and future reference.

Overview and Features

High performance microcomputer high-frequency inverter spot welding machine has the world's advanced technology level, and is specially designed based on the extensive application and assembly of lithium batteries (nickel cadmium, nickel hydrogen, lithium batteries) in the world. The welding machine is controlled by a microcomputer single chip and displayed on a large blue LCD screen. It is the latest spot welding machine specially designed for high-end spot welding by our company, with the crystallization of our company's technology for a long time. The welding quality is firm, beautiful, and the performance is more stable and reliable.

It mainly has the following characteristics:

1. Microcomputer control, large LCD display, graphical display of the current working status.
2. Microcomputer single-chip control, it can realize single-pulse, double-pulse and multi-pulse welding.
3. Accurate microcomputer control: the microcomputer inside scans the input voltage at high speed for a long time, and when the current fluctuates, the compensation data will be calculated immediately, and the welding energy will be changed, no false welding or fire explosion will occur due to voltage fluctuation, and the welding effect is consistent each time. The welding spark is small, which has little impact on the battery.
4. The first detachable standardized pneumatic spot welding head, which is convenient for transportation and installation.
5. Standard pneumatic spot welding head can be assembled on gantry or automation equipment as a separate product.
6. The pneumatic spot welding head adopts a buffer design, the pressure of the two welding needles is independently adjustable, and the adjustment is convenient. When the left and right electrodes are not at the same height or there is a slight height difference between the left and right sides of the battery, the force of the two electrodes is still balanced, and the welding quality will not be affected.
7. It is equipped with laser alignment and positioning, as well as welding needle lighting device, to improve the accuracy of welding and production efficiency.
8. The pressing and reset speed of the pneumatic spot welding head are independently adjustable, and the adjustment is convenient.
9. The circuit of the pneumatic spot welding head adopts gold-plated contacts, and with digital display screen to display the spot welding voltage and current, which is convenient for observation.
10. With two-stage beam energy flash welding parameter adjustment function, pre-welding removes the oxide layer, eliminates debris, and reduces sparks; continuous welding ensures that the solder joints are beautiful and firm, and the solder joints are uniform and not black.
11. The air pressure gauge and air pressure adjustment knob are on the front of the machine, which is ergonomically designed for observation and adjustment.
12. Equipped with an intelligent cooling system to adapt to long-term uninterrupted spot welding operations.
13. With automatic counting function, single-day output can be automatically counted from 0000-9999, which is convenient to calculate single-day output and improve work efficiency.

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Applications

- ◆ Spot welding of Lithium iron phosphate battery,Ternary lithium battery,nickel steel.
- ◆ Assemble or repair battery packs and portable sources.
- ◆ Production of small battery packs for mobile electronic devices.
- ◆ Welding of lithium polymer battery,cell phone battery and protective circuit board.
- ◆ Spot welding leaders to different metal projects,such as iron stainless steel brass nickel,molybdenum and titanium.

Electrical Specifications

Model	SW03A	Power frequency	50HZ/60HZ
Pulse power	6KW	Power supply	AC 110V or 220V
Spot welding output voltage	AC 6V	Output current	100~1200A
Duty cycle	＜55%	Operating air presssure	0.35~0.55MPa
Downward pressure of electrode	1.5KG(single)	Electrode stroke	24mm
Arm length of welding electrode	146mm	Number of pulses	01-05
Pre-welding energy grade	01-99	Continuous welding current grade	01-99
Dimension	50.5x19x34(CM)	Net weight	19.8KG

SW03A- Packing List

① Main machine x1
② 73B welding pen x1
③ A30 pneumatic spot welding head x1
④ Sheave bakelite board x1
⑤ Foot pedel x1
⑥ Welding arm pins x4
⑦ Welding pen pins x2
⑧ Hexagon spanner x1
⑨ Manual & Warranty card x1
⑩ Fuse tube x3

Product function analysis

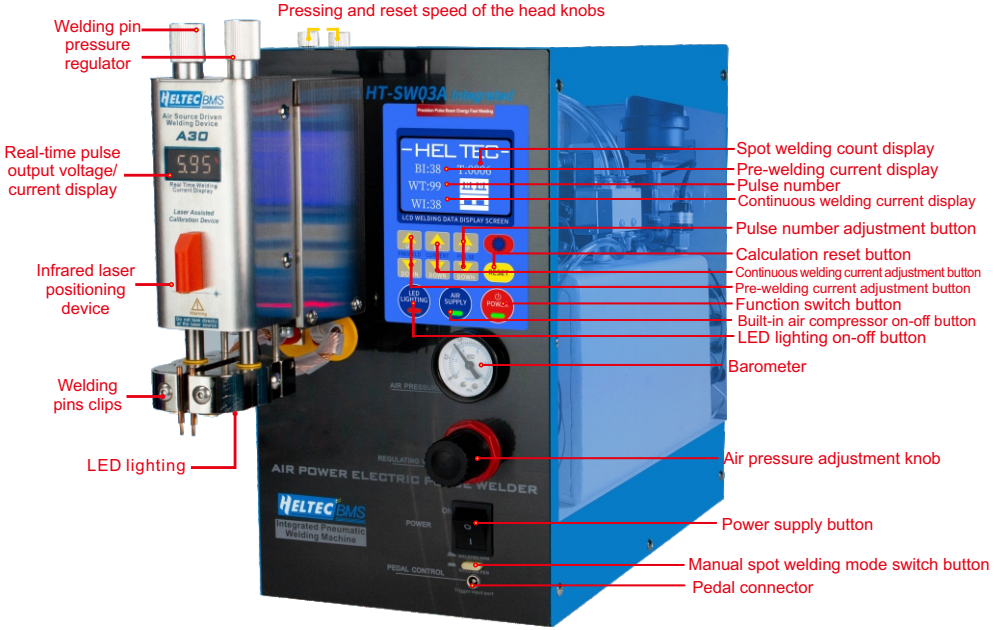
Front



Back



Panel diagram



Built-in air compressor



Integrated and convenient pneumatic spot welder
Built-in air compressor, work efficiently,space simply



Laser alignment positioning and solder pins lighting device, spot welding position more professional, detailed and accurate .



External air compressor
Disorderly and unsystematic

Removable standardized pneumatic welding head



Loosening the pneumatic weld head screw to remove the weld head



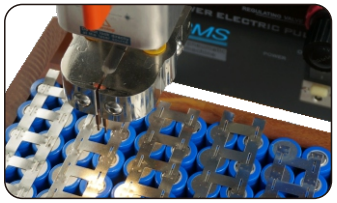
Removable standardized pneumatic welding head

(The welding head adopts a buffer design and can adjust the pressure)

Welding pins lighting device



Press the “LED” key, turn on the lighting device



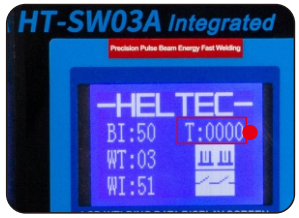
Laser alignment positioning and welding needle lighting device, spot welding position more professional, detailed and accurate .

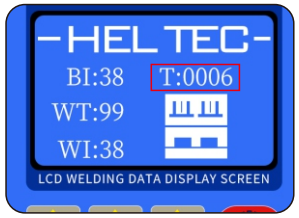
Operation and setting interface



The operation and setting interface is ergonomically designed with comprehensive operation setting, microcomputerized parameters, and LCD display.

Automatic counting





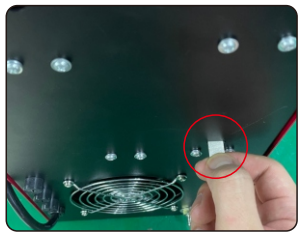
One-day output can be automatically counted from 0000-9999, which is convenient to calculate single-day output and improve work efficiency.



Note:When the spot weld count reaches 9999. Press the " RESET " key return to zero.

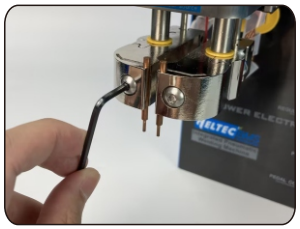
How to use the spot welding machine

1.



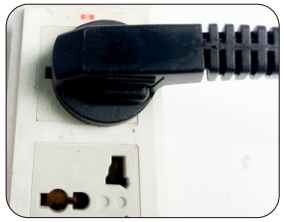
Pull out the paddle before use, press hard and deflate.

2.



Disconnect the power supply, loosen the fastening screws of the soldering pin holder, install the equipped soldering pins and carefully adjust the height of the solder pins, then fasten the screws and adjust the welding pressure.

3.







Plug in the power supply (110V or 220V), turn the power switch and press the "POWER" key on the panel machine,the welding machine enters the standby working state.

Attention:

① Master brake switch
(Leakage protection switch)
40-63A requirement.
② The requirement of cable is 2.5 square.





③ Please use wall socket to instead use universal extension socket. Because the diameter of universal extension socket is different. The over current is small. This will influence welding current and welding effect.



④ Please pay attention the socket must fix and not loose to avoid loose contact. Otherwise it is easy to burn fuse or burn silicon control.

4.



“ AIR SUPPLY ” key

Press the "AIR SUPPLY" button to start the built-in air compressor, and automatically stop when the air is inflated to the set air pressure.

5.



Barometer

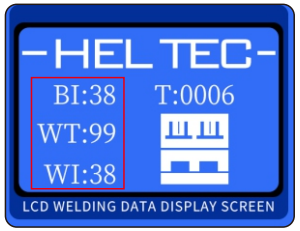


Air pressure adjustment knob

Set the air pressure: Pull out the panel air pressure adjustment knob "REGULATING VALVE", observe the air pressure gauge above the knob, adjust the pointer of the air pressure gauge clockwise or counterclockwise to 0.4MPa, then push the air pressure adjustment knob "REGULATING VALVE" to lock state.

6.





Adjust the value of the pre-pressure spot welding current "PREWELD", the number of trigger pulses "PULSE", and the continuous spot welding current "CURRENT" value, the specific methods are as follows:

❶ Press the "UP/DOWN" of the "PREWELD" key to adjust the BI value on the LCD screen, the larger the value, the greater the spot welding current. The adjustable range of this value is 01-99.

❷ Press "UP/DOWN" of the "CURRENT" key to adjust the WI value on the LCD screen, the larger the value, the greater the spot welding current. The adjustable range of this value is 01-99.

❸ Press "UP/DOWN" of the "PULSE" key to adjust the WT value on the LCD screen, 01 means spot welding triggers one pulse, and the maximum adjustable number is 05. The more trigger pulses, the higher the current intensity case, the greater the energy released.

❹ If the set number of pulses is "01", the spot welding current is subject to the value of "BI"; If the set number of pulses is "02", the first pulse current is the set value of "BI", and the second pulse current is the set value of "WI"; If the set number of pulses is "03", the first pulse current of spot welding is "BI" Set value, the second pulse current is the "WI" setting value, the third pulse current is the "BI" setting value, and so on.

7.



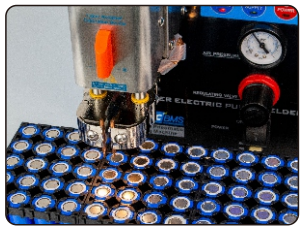
Insert the pedal switch plug into the foot switch socket on the panel. It control the pneumatic welding arm and welding pen.

WELDING ARM

WELDING PEN

8.





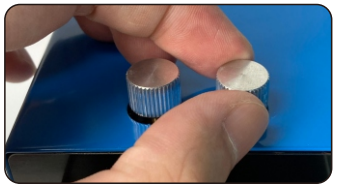
Set the current value and the number of pulses according to the thickness of the welding material, place the welding material and the workpiece under the welding needle, adjust the welded workpiece to make sure the infrared laser irradiation point in the middle of the position where the two welding needles are about to weld. The optimal height range between the solder pins and workpiece is 5-8 mm.

Air pressure regulation

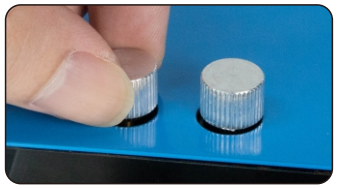
① Since the spot welding is triggered by a photoelectric switch, the distance between the welding needle and the workpiece to be welded is too high to trigger spot welding. At this time, the height between the workpiece and the welding needle should be adjusted to an appropriate range (5~8mm), and then the pedal switch should be pressed to complete the spot welding.

② The running and reset speed of the pneumatic spot welding head can be adjusted by two knobs above the machine panel.

Adjust pressing speed



Adjust reset speed



Needle pressure adjustment

A pressure regulator is designed above the pneumatic spot welding head, and the pressure of each welding needle is independently adjustable. Its function is to adjust the pressure between the solder pins and the workpiece according to the thickness of the workpiece to be welded. When welding thinner materials, adjust the adjustment knob counterclockwise; when welding thicker materials, adjust the adjustment knob clockwise. Observe the welding spots after each pressure adjustment. When the two welding spots have small dents and small welding spot diameters, the welding spots are more firm. Adjust the pressure to achieve precision welding.

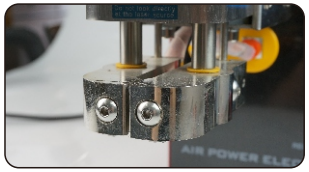
Pressure regulator(Left)



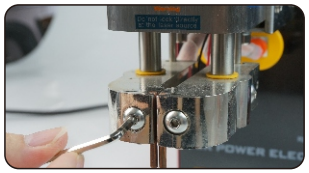
Pressure regulator(Right)



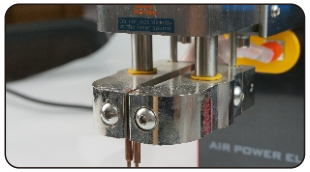
Solder pin installation method and adjustment



(1) Loosen the solder pin chuck with an Allen wrench, put the solder pin into the slot hole of the solder pin in the chuck, and then tighten the allen screw.



(2) The adjustment of the distance between the tips of the welding needles is achieved by fine-tuning the angle of the two welding needles, slightly loosening the hexagon socket screws to adjust the needle distance.



(3) The adjustment of the height of the welding pin is the same as the above process.

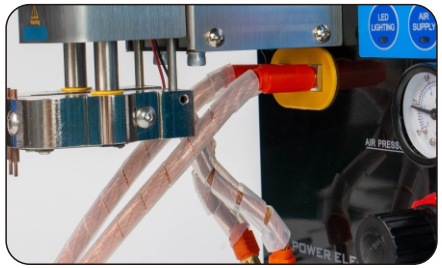
Note: When installing and adjusting the soldering pins, pay attention that the two soldering pins cannot touch and short-circuit, otherwise normal spot welding cannot be achieved.

Precautions for the use of pneumatic spot welding heads

1.Do not put hands between the pneumatic spot welding head and the workpiece to be welded during spot welding to avoid personal injury.
2.The straight-line distance between the welding needle tip of the pneumatic spot welding head and the plane of the workpiece to be welded should be between 5-8 mm. Beyond this distance,the pneumatic spot welding head will operate normally without spot welding.
3.The height of the two poles of the pneumatic spot welding head should be the same to avoid the explosion caused by the unbalanced spot welding pressure.
4.The solder pins must be locked on the pin seat with an Allen wrench. Poor contact will cause the solder pins and pin seat to form an oxide layer, lead to poor welding.

73B Mobile spot welding pen (optional)



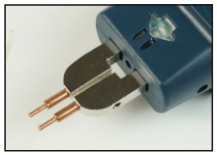


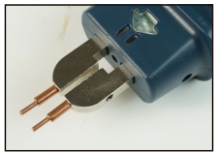


73B mobile spot welding pen

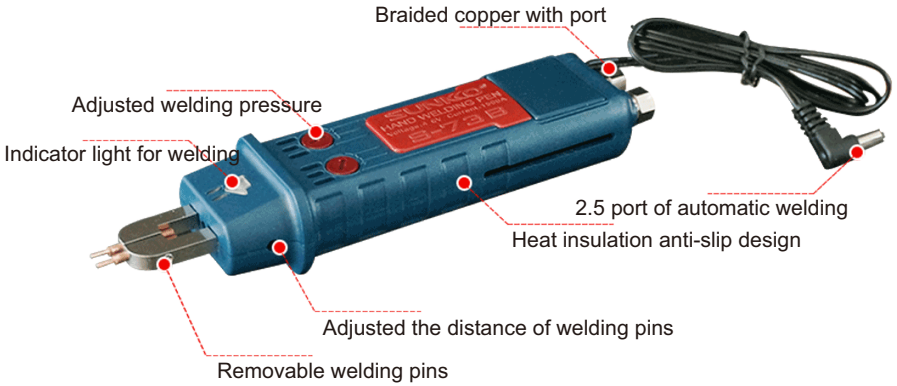
- Wider range of welding.
- Improve efficiency.
- Solderable to 0.2mm pure nickel.

Product information





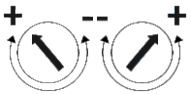
Distance of welding pins	3 ~ 7mm
Total length	580mm
Braided copper diameter	16²
Size of welding pins	⦰1.5mm X 7mm



Welding pins pressure adjusting knob

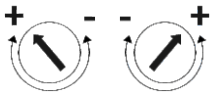


The max. welding pressure is 1200g



It is suitable for welding 0.3mm nickel strip

The min. welding pressure is 600g



It is suitable for welding 0.1mm nickel strip

Adjusting the distance between welding pins



First must be loosen

First use a Phillips screwdriver to loosen the two screws behind the spot welding pen.Then use a one-way screwdriver adjust the side screws to adjust the solder pin spacing.



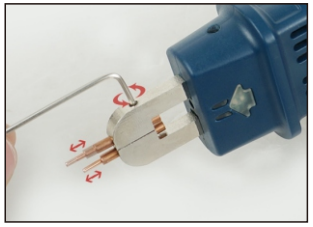


The shortest distance of solder pins is 3mm



The longest distance of solder pins is 7mm

Removable solder pins

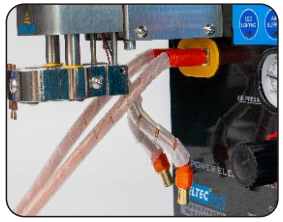




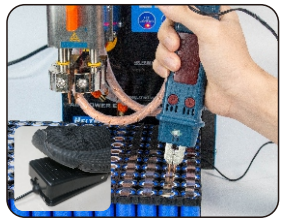
Adjust the level of the solder pins

How to use the mobile spot welding pen?

(1) Unplug the gold-plated plug of the pneumatic spot welding head, move the gold-plated plug of the spot welding pen to the output interface of the spot welding machine, and pay attention to insert it to the end and do not loosen it.
(2) Insert the wire-controlled pedal switch, and press the button to switch the manual spot welding mode.
(3) Hold the welding needle of the spot welding pen and press the welding part tightly, and step on the wire-controlled foot switch to trigger spot welding.







Mobile spot welding pen parameters

Thickness / Materials	0.1mm	0.15mm	0.2mm
Pure Nickel	BI/WT/WI	BI/WT/WI	BI/WT/WI
	08/02/08	35/02/35	65/03/65
Nickel Plated	BI/WT/WI	BI/WT/WI	BI/WT/WI
	02/01/02	30/02/30	40/03/40

Specific parameter settings are adjusted according to actual spot welding requirements.

PS:Please choose the proper energy grade and pulse current according to different object materials and thicknesses.
B I:(01-99 energy grade) Pre-welding current grade value;
WT:(01-05 pulse) spot welding pulses;
W I:(01-99 energy grade) continuous welding current.

The maintenance of welding pins

1.Use sanding paper to polish if the clips are covered by oxide.
2.Also use sanding paper to polish if the welding pins are covered by oxide.
3.Paint a little lube oil for avoiding welding clips and pins get oxide.
4.Please use original welding pins.

Deal with simple breakdown

Phenormenon	Solution
No power	Check the power supply and the fuse on the back of spot welder.
Bad welding quality	1.Check the power cable whether is over to 2.5mm². 2.Please check the power supply is whether lower than 200V. Check power connection. 3 Check the power supply.
Welding not well	Check the installation of welding needle and the tip of welding needle whether in oxidation. And adjust the welding pressure to reach to the welding requirement.
Leakage switch tripped	The leakage switch tripped when the spot welder is in first used. Please change 40-63A leakage switch or other power supply line.
Air compressor not work	Pull out the air release paddle back of the machine, press hard and deflate to deflation.
Air compressor quite noisy	Tighten the screws of fixing the air pump at the bottom.

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SAFETY INSTRUCTIONS

SAFETY WARNING

- All contents of this product are related to safety. Users must abide by them. Failure to operate in accordance with the instructions may be dangerous.
- The safety warning in this item are mainly for the correct use of this product. The precautions explain the danger, the degree of harm, and the possible matters. Illegal operation may damage your goods, property, and even endanger your personal safety.

1. Before using the spot welder, please read this manual carefully and keep it properly for future use.
2. Do not use other accessories without the permission of the manufacturer, do not modify welding machine, and do not disassemble and repair them by non-professional maintenance personnel, otherwise fire, electric shock and injury accidents may occur.
3. Please check whether the product is damaged after unpacking, check whether the accessories are safe, and pay attention to check that the plug and power cord must be intact to avoid the risk of electric shock.
4. Please keep this product out of the reach of children or incapacitated persons. Children and incapacitated persons should use this product under the supervision of a guardian.
5. In the event of a malfunction, remove the power plug immediately and do not leave the defective product in working order.
6. Before use:Make sure your power source is adequate for the product voltage rating.The voltage rating is on the product label.The procuct users either 100-127Vac or 220-240Vac and 50/60 HZ.Connect the power cord between the product and a grounded AC outlet.
7. Must be use single-phase fixed three-stage socket with reliable grounding. It is strictly prohibited to use flexible wire mobile socket and to share a socket with other electrical appliances.
8. It is normal produce sparks when spot welding.Please wear glasses and gloves during the welding process.
9. Please do not worry about the lighting in flash.Spot welder is a high power machine and discharging high current instantaneously.Because this moment is in 20ms and it is normal.
10. When not in use, the power supply should be cut off to ensure safety.
11. Do not use this product in a water mist environment or in a flammable or explosive environment.
12. Keep the power cord away from heat sources.