



BATTERY SPOT WELDER

Capacitor Energy Storage Precision Welding Machine

USS-BSW00007



User Manual

Contents

I. Product Introduction.....1

II. Usage Scenarios.....2

III. Welding Reference Table.....2

IV. Product Parameters.....3

V. Package List.....3

VI. Product Diagram.....4

VII. How To Use.....6

- Usage Diagram.....6
- ‘AT/MT’ Welding Modes.....8
- ‘AL-NI’ Super Mode.....9
- Time-delay Welding.....9
- 73B Integrated-style Welding Pen.....11
- 75A Separated-style Welding Pen.....13
- 73S Handle-push Welding Arm.....14

VIII. Usage Notice 15

IX. Troubleshooting Table.....16

X. Warranty.....17

XI. Contact Info.....18

Thank you for choosing the U.S. Solid battery spot welder.

Please check the package firstly to make sure it is not damaged in transit before use. For questions, please contact us at service@ussolid.com for help.

To ensure the best user experience, we recommend reading the user manual thoroughly and keeping it for future reference.

Product Introduction

- The newly designed U.S. Solid USS-BSW00007 high-frequency inversion battery spot welder equips with the two super capacitors for energy storage and power supply for pulse welding. Unlike traditional bulky AC transformer spot welders, it is more portable and it does not cause any interference to the electric circuit, eliminating tripping problems.
- The low-consumption super energy-gathered millisecond pulse technology maximizes the pulse energy output in millisecond-level time, the welding spot is excellent and no damage to the battery.
- 21KW/3500A Super Welding Output - Supporting the large-capacity power battery of aluminum terminals welding.
- LED Display Screen & Controlling Buttons - Real-time capacitor voltage, power grade and actual welding current parameters are monitored. Convenient parameter adjustments can be made by pressing the buttons.
- 'AT/MT' Two Welding Modes - 'AT' automatic mode for quick welding and 'MT' foot pedal controlling mode for beginners or precise welding.
- Multiple welding pen accessories are available for different welding requirements.
(Please notice that the package only contains the default 73B/75A welding pen for 18650/LFP lithium battery welding, additional purchase required for other-types welding pen)
- **The newly added 'AL-NI' super power mode function** provides a max welding current of 3.5 KA, 0.2mm pure nickel can be directly welded to the aluminum terminals of LiFePO4 battery, saving you the expensive cost of using aluminum-nickel composite strips.

Usage Scenarios

Lithium battery pack quick building & maintenance for electric appliances, electric vehicles, etc.

Especially designed for the large-capacity power battery aluminum terminals welding.

Circuit Board/Hardware/Electronic Components/Lead Wire spot welding.

(Tips: Different welding pen accessories additional purchase required, the package only includes the 73B/75A welding pen for lithium battery pack building).

Widely used for the common metal welding like stainless steel, iron, nickel, aluminum, titanium, molybdenum, etc.

Welding Reference Table

Material	Thickness	Surface	Power Grade
Pure Nickel	0.1 mm	Stainless Steel	10-15 t
Pure Nickel	0.15 mm	Stainless Steel	15-20 t
Pure Nickel	0.2 mm	Stainless Steel	20-25 t
Nickel Plated	0.1 mm	Stainless Steel	5-10 t
Nickel Plated	0.15 mm	Stainless Steel	10-15 t
Nickel Plated	0.2 mm	Stainless Steel	15-20 t
Pure Nickel	0.15 mm	Aluminum	50-60 t
Pure Nickel	0.2 mm	Aluminum	60-70 t
Nickel-aluminum	0.15 mm	Aluminum	35-45 t
Nickel-aluminum	0.2 mm	Aluminum	45-55 t

Notes:

The table is for reference only, the actual welding effect also influenced by the material size, surface flatness, oxidation condition, etc.

Product Parameters

Model	USS-BSW00007	Welding Mode	AT/MT
Machine Input	AC 100-240 V 50/60 Hz	Pulse Delay Time	20/100-500 ms
Charging Current	6 A	Wire Sectional Area(75A)	25 mm ²
Charging Time	≤ 15 mins	Welding Electrodes Size(75A)	Φ3mm x 15mm
Max Welding Voltage	6 V	Welding Thickness of Nickel Plated	0.05-0.5 mm
Max Welding Current	3500 A	Welding Thickness of Pure Nickel	0.05-0.4 mm
Max Welding Power	21 KW	Product Size	2.6x6.4x5.1 inches
Max Welding Energy	420 J	Product Weight	4.6 lbs
Pulse Time	20 ms	Package Size	8.9x8.1x7.7 inches
Power Adjustment	0-99 t (0.2ms/t)	Package Weight	7.6 lbs

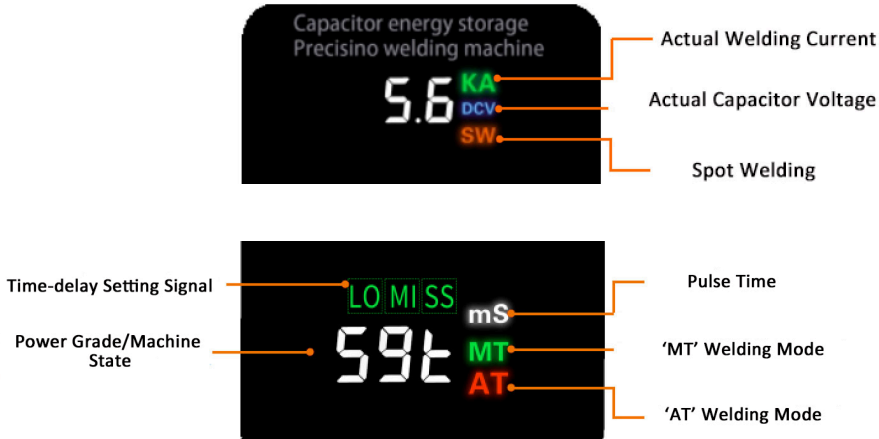
Package List



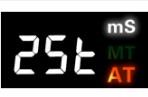




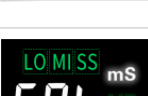

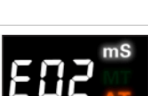
- Main Machine x 1 pc
- Power Adapter x 1 pc
- 73B Intelligent Welding Pen x 1 pc
- 75A Separated-style Welding Pen x 1 pc
- 73S Handle-push Welding Arm x 1 pc
- Foot Pedal Switch x 1 pc
- Aluminum-nickel Composite Strips x 20 pcs
- Pure Nickel Strips - 20 pcs

Product Diagram



Panel Diagram



	Actual Capacitor Voltage - 5.5 V.
	Actual Welding Current - 2.8 KA. The 'SW' signal will light up instantly when welding pulse is released.
	Power Grade - 25t (0-99t) ; Pulse Time - 5ms (0.2ms/t) 'AT' - Automatic Welding Mode
	'LO MI SS' Flashing - 100ms Time-delay Welding
	'SS' Normally On - 200ms Time-delay Welding
	'MI' Normally On - 300ms Time-delay Welding
	'LO' Normally On - 400ms time-delay welding
	'LO MI SS' Normally On - 500ms time-delay welding
	'E01' Error - Check the Troubleshooting Table
	'E02' Error - Check the Troubleshooting Table

How To Use

Usage Diagram



1. Plug in the power adapter and connect to the power supply.

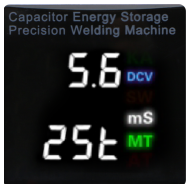
(Tips: Confirm the power supply and plug type)



2. Press the 'PWR/SET' button to switch on the machine and charging. The screen will display the 'CH' signal and capacitor voltage alternately.



3. Plug in the 73B/75A welding pen or install the 73S welding arm according to specific welding requirements.



4. When 'CH' signal disappears and capacitor voltage reaches 5.6V, machine is ready for work.



5. Press the 'PWR/SET' button first time to select the 'tens place' of the power grade number(the 'place' will blink once selected), you can adjust it between '0-9' via 'UP/DOWN' two buttons.



6. Press the 'PWR/SET' button second time to select the 'ones place' of the power grade number, by the same way you can adjust it between '0-9' via 'UP/DOWN' buttons.

(Tips: Try from low power grade to test the welding effect and set an appropriate power grade according to specific welding material and thickness)



7. Press the 'PWR/SET' button third time to select the 'AT/MT' welding modes, you can switch the mode via 'UP/DOWN' buttons.

(Press the 'PWR/SET' button finally to save all settings)



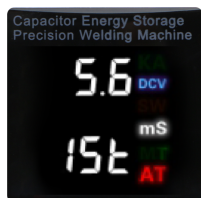
8. Press the 'PWR/SET' button for 2 seconds to shut down the machine when not using and unplug it.



9. When not using the machine for a long time, unplug the machine and place it at an upside-down position, red light will be on at 'power interface' position, the machine will discharge automatically.

(Tips: When shaking the machine, the auto-discharging triggering device will make normal sounds)

'AT' Mode - Automatic Welding Mode



Set the 'AT' welding mode

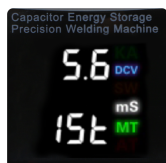


Press two welding electrodes on welding pieces with an enough and uniform pressure, welding pulse will be released automatically after a short delay.



Check the welding effect

'MT' Mode - Foot Pedal Switch Controlling Mode



Set the 'MT' welding mode



Plug in the foot pedal switch



Press two welding electrodes on welding pieces with an enough and uniform pressure, step on the foot pedal switch, welding pulse is released after a short delay.



Check the welding effect

Tips:

- 1. The 73B/75A welding pen and 73S welding arm are all compatible with 'AT/MT' two welding modes.*
- 2. Put enough pressure on two welding electrodes to get the welding pieces and welding surface fully contacted, otherwise the welding pieces will be penetrated and cause a bad welding effect.*
- 3. 'MT' welding mode is recommended for new user, after getting familiar with the welding operation(such as welding power setting and welding pressure adjustment), you can switch to the 'AT' automatic welding mode to finish welding work quickly and efficiently.*
- 4. In 'AT' quick welding mode, please often check the welding effect to avoid bad welding.*

New Functions - Super Power 'AL-NI' Mode & Time-delay Welding

'AL-NI' Super Power Mode

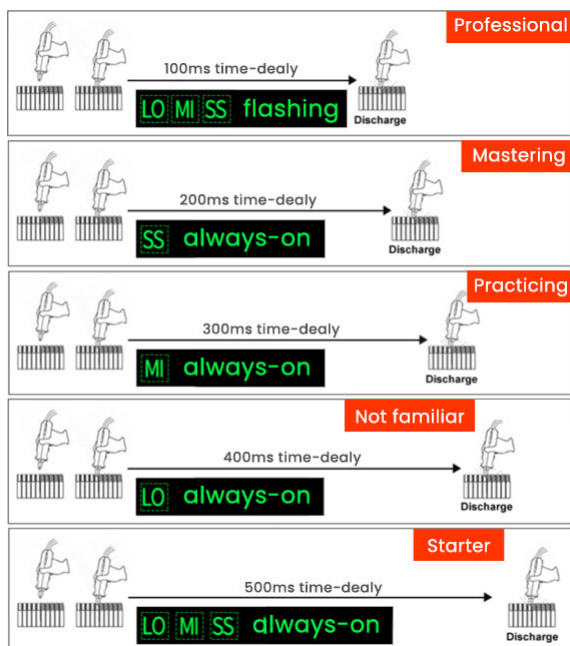
The new-added 'AL-NI' super power mode is especially designed for the direct welding of pure nickel to the aluminum terminals of LiFePo4 lithium battery . 0.2mm pure nickel is supported with a max welding current of 3.5 KA, saving you the expensive cost of using aluminum-nickel composite strips.

(Tips: Do not set the 'AL-NI' mode when welding battery such as 18650, too large current may cause large welding sparks and penetrate the battery.)

Mode	Normal Mode	'AL-NI' Super Power Mode
Capacitor Voltage	5.6 V	6 V
Max Welding Current	2 KA	3.5 KA
Time-delay Welding	20ms	100-500ms
Dual Welding Pulses	N/A	Triggered when 500ms time-delay

Time-delay Welding Function

Appropriate delay time setting allows the welding pressure adjustment and ensure a good welding effect.





'AL-NI' Super Power Mode

Press the 'LFP/NCR' button to turn on the 'AL-NI' super power mode, the capacitor voltage will be charged up to 6V in this mode, 0.2mm pure nickel can be directly welded to the aluminum terminals of LiFePO4 battery.

(Tips: 75A separated-style welding pen is especially designed for LFP battery welding)



Time-delay Welding

Press the 'DISCH DELAY' button to switch the time-delay welding setting.

(set the 'AL-NI' super power mode and 'AT' welding mode firstly)

- I. When 'LO MI SS' Signal is flashing, the pulse delay time is 100ms;
- II. When 'SS' signal is normally on, the pulse delay time is 200ms;
- III. When 'MI' signal is normally on, the pulse delay time is 300ms;
- IV. When 'LO' signal is normally on, the pulse time is 400ms;
- V. Press the 'DISCH DELAY' button for 2 seconds when 'LO MI SS' signal is flashing. The 'LO MI SS' signal will be normally on and the pulse delay time is 500ms, you can press the 'DISCH DELAY' button again for 2 seconds to cancel this setting.

Tips:

1. Time-delay function only works under 'AL-NI' super-power mode & 'AT' welding mode, other modes have a preset fixed time-delay setting.
2. Dual pulses are released when time-delay setting is 500ms(only).

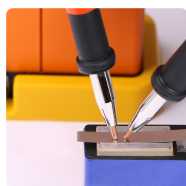
Installation of Machine Base



The machine should be inserted into the base vertically



Machine with 75A positioned in the base



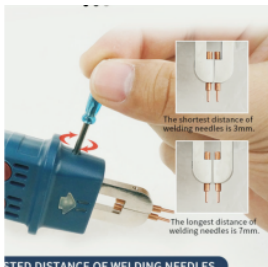
The machine base helps to prevent movement when welding work

73B Intelligent Welding Pen





Welding pressure can be adjusted by rotating the knob. The adjustment range is 600-1200g.



Distance of two welding pins can be easily adjusted by turning the screws. The adjustment range is 3-7mm.



The level of two welding pins can also be adjusted easily by turning the screws.



Spot welding indicator light



Push-down welding function - plug the wire to the 'foot control' of machine, set the welding mode to 'MT' welding mode. Push down the welding pen to trigger the output pulse.



16/25 square two types copper wires can be selected. The default type is 16 square copper wire.

Replacement of 73B Welding Pins



1. Unscrew the head



2. Take down used pins

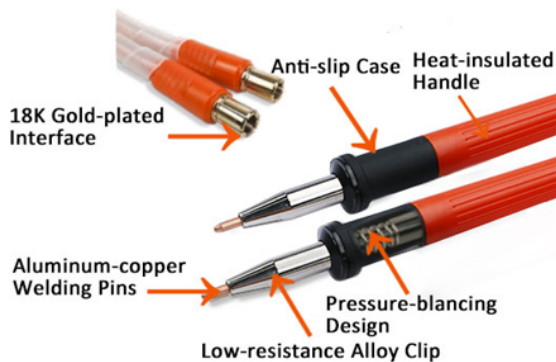


3. Replace new pins



4. Screw the head

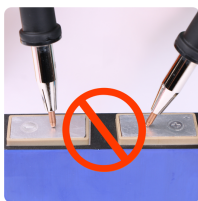
75A Separated-style Welding Pen



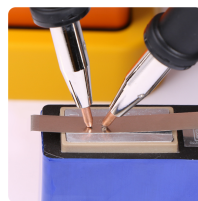
75A Usage Notice



Never contact the two welding electrodes

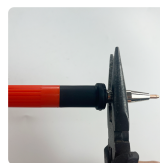


Never contact the battery positive and negative terminals at the same time



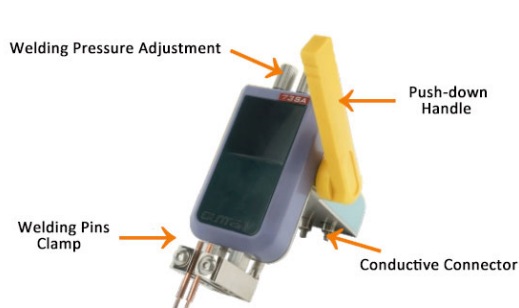
Correct Operation

Replacement of 75A'S Welding Electrodes



(Tips: regular replacement of welding electrodes are needed for optimal welding effects)

73S Handle-push Welding Arm



The distance between the welding needle and battery pack is 4-9mm.

Installation of 73S welding arm



1. Install the handle
2. Unscrew the lid
3. Take down the lid
4. Tighten the retaining screws
5. Recover the lid

Replacement of 73S' welding pins



1. Unscrew the welding head
2. Take down the used pins
3. Replace with new welding pins
4. Screw the welding head

(Tips: regular replacement of welding pins are needed for optimal welding effects)

Usage Notices

- Precious metals like gold, silver and jewelry cannot be welded.
- Never contact the two welding electrodes of welding pen.
- Never contact the battery positive and negative terminals at the same time.
- Do not set the power grade too high, otherwise will cause large sparks and penetrate the battery.
- Welding sparks may occur, wear goggles and keep a safe distance.
- Charge the machine firstly for first time use and wait the capacitor voltage reaches 5.6-6V.
(The machine has been discharged to the lowest voltage before leaving the factory for safety transportation).
- 'AT' automatic mode is for quick welding and 'MT' foot pedal controlling mode is for the beginner or precise welding. The welding effect needs to be checked in AT quick welding mode to avoid the neglected bad welding spots.
- Apply enough and uniform pressure on two welding electrodes to get the welding pieces and welding surface fully contacted for optimal welding effect.
(Apply different pressure according to different materials and thickness).
- Keep the welding pieces and welding surface clean and flat to avoid poor welding effect.
- Clean or replace the welding electrodes regularly for optimal welding effect.
- Twist and tighten the welding electrodes firmly for best conductivity.
- Do not take down the plastic shell of the welding pen.
- Lubricating oil can be smeared on the welding electrodes to prevent oxidization.
- The package list only contains the default 73B/75A welding pen for 18650/LiFePO4 lithium battery welding, additional purchase required for other-types welding pen.
- Only use the welding accessories(welding pen, electrodes) from U.S. Solid.
- Only charge the machine with the original power cord.
- Keep the machine plugged in for working.
- Normal meter cannot measure the actual instant welding current(pulse).
- The milliohm meter function cannot measure the electriferous object(battery).
- Shut down the machine when not using and unplug it.
- Do not take part and modify the machine personally, doing so may cause danger.
- Do not use the machine if lacking of related knowledge and experience.
- Do not use in inflammable, explosive dangerous environments.
- Keep out of reach of children.

Special Notice for Welding Effect Test of Large-capacity Batteries of Aluminum Terminals

Because the aluminum metal is softer than stainless steel and copper, so the welding effect test method of batteries of aluminum terminals is different. The welding pieces should be flat pulled but not torn off because the metal joints cannot hold the pulling force.

Troubleshooting Table

Problems	Possible Causes	Solutions
Error Type - 'E01' (welding signal triggered but no welding current)	welding material not supported	check the material
	welding material too thick	check the thickness
	the welding pen electrodes, welding pieces and welding surface are not clean, stains or oxides exist;	clean the welding components or replace new welding electrodes
	internal circuit board broken (machine short circuit: contact the welding pen two electrodes; contact the battery positive and negative terminals at the same time)	replace new circuit board
Error Type - 'E02' (welding signal continuously triggered in short time)	step on the pedal switch always or too fast	step by interval time
	the pedal switch is broken(stuck)	repair or replace new pedal switch
Weak Welding	low capacitor voltage	charge and wait the voltage reaches 5.6-6V
	set the power grade too low	turn up the power grade
	welding pen or its welding electrodes not plugged in firmly	check the connection
Large Welding Spark	not enough pressure applied on the welding pieces	apply enough pressure
	exceed the pulse delayed time	quicken the welding operation
Welding Spots Not Uniform	not uniform pressure applied on the welding pieces	apply uniform pressure
Battery Penetrated	set the power grade too high	turn down the power grade

For troubles cannot be solved by this table or needing of replacement accessories, please contact us at service@ussolid.com for help.

Please provide the pictures or video of the broken machine if possible, which will help us analyze and solve the problems.

One Year Limited Warranty

U.S. Solid warrants your battery spot welder to be free from defects in materials or workmanship under normal use and service for one year from the date of original purchase. All defective devices under normal use will be repaired or replaced for free. All parts, except for consumable welding accessories, will be covered under this warranty.

This warranty shall not apply to any U.S. Solid battery spot welder that:

- *is defective due to misuse, neglect or accident;*
- *is used for a purpose that the device is not designed for;*
- *has been repaired or altered in a way that adversely affect its performance and reliability;*
- *is serviced by unauthorized parties;*
- *is intended for commercial or professional use.*

This warranty is only applicable to the original purchaser.

U.S. Solid would not assume or authorize any person to assume any other liability in connection with its product. No responsibility is assumed for any consequential damages that may result from the use of a U.S. Solid product, nor for damages due to accident, abuse, lack of care, affixing of unauthorized attachment, loss of parts or subjecting this unit to any but the specified voltage.

If your product is broken and meets the warranty requirements, please email us to service@ussolid.com with the original receipt showing the purchase date and the description of the problem for customer service.

Please note should any return or replacement be incurred, transportation and packing costs are the responsibility of the customer.

This warranty gives you specific legal rights, you may have other rights that may vary from state to state.

For More High-quality Products From U.S. Solid, Please Visit
www.ussolid.com

Contact Info

Website: www.ussolid.com

Email: service@ussolid.com

Address: 1200 E 55th St. Cleveland, OH 44103, USA