

Intelligent Ultrasonic Battery Welding Machine For 60 Layer Electrode Welding

Item Number: DH04



Introduction

Intelligent 3600W ultrasonic battery welding machine delivers stable 24 kHz bonding for aluminum and copper electrode stacks up to 60 layers, with automatic amplitude compensation, process monitoring, bilingual touchscreen control, and dependable weld quality.

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Application	Description	Key Benefit
Lithium-ion cell electrode-tab welding	Bonds 0.2 mm aluminum strip to aluminum-foil electrode stacks of up to 60 layers using the specified weld spot sizes.	Supports firm aluminum-to-aluminum joints with low internal resistance and a flat weld appearance.
Copper-foil negative-electrode tab welding	Bonds 0.2 mm nickel strip to copper-foil electrode stacks of up to 60 layers.	Provides a defined process capability for nickel-to-copper electrode assemblies.
Battery R&D sample preparation	Establishes weld settings through time, energy, power, or depth modes during experimental cell fabrication.	Enables parameter-based process evaluation with real-time frequency and welding-power display.
Pilot-line electrode assembly	Repeats controlled tab welding while monitoring process data against configured upper and lower limits.	Helps identify parameter deviations through alarm prompts before they become repeated process issues.
Multilayer pouch-cell electrode production	Joins thick electrode stacks where tab integrity, insulation protection, and bond stability are important.	Designed to avoid false welding, separator burning, insulation-tape heating, and electrode-tab cracking.
Battery quality and process development	Uses live welding data and post-weld pull-strength assessment appropriate to layer count and material thickness.	Supports evaluation of weld strength while maintaining a clear, full, and reliable weld point.
Advanced materials joining studies	Evaluates controlled ultrasonic metal-to-metal joining conditions for aluminum and copper foil stack structures.	Offers selectable control modes and adjustable welding time for structured process trials.

Parameter	Specification
Site-Facing Identifier	DH04
Power	3600W
Frequency	24KHZ
Power Supply	220V/ 50Hz
Air Supply	>=0.5MPa
Control Method	CPU control
Maximum Upper Sonotrode Stroke	20mm
Welding Time	0.05 to 9S
Display	4.3-inch anti-interference touch display
Interface Languages	Chinese and English
Adjustable Parameters	Trigger time; welding time; power; secondary-wave delay time

Parameter	Specification
Real-Time Display	Frequency and welding power
Control Modes	Time, energy, power, energy, depth modes
Frequency Management	Automatic frequency tracking; no manual adjustment required
Amplitude Output	Constant-amplitude output with automatic amplitude compensation
Startup Inspection	Automatic self-test; scans and displays welding-system parameters in real time
Fault Handling	Fault-type alarm prompt; alarm issued when a startup fault is detected
Quality Monitoring	Upper and lower welding-data limits can be configured; alarm prompt for values outside limits
Welding Head Material	Imported powder alloy
Welding Head Characteristics	High hardness; precision-ground pattern; stated service life of more than 150,000 cycles per side
Lower Ultrasonic Electrode Material	Imported special mold steel
Lower Ultrasonic Electrode Characteristics	Wear resistant; high-temperature resistant; good toughness; high mechanical rigidity; low deformation after heat treatment
Main Component: Ceramic Piece	German imported black piece
Main Component: Aluminum Rod	Aluminum rod from an American aluminum company
Main Component: Welding Head	Powder alloy

Welding Configuration	Electrode Stack	Weld Spot Size
0.2mm aluminum strip + aluminum foil	Up to 60 layers of aluminum foil	3 x 6mm, 3 x 8mm, 3 x 12mm
0.2mm nickel strip + copper foil	Up to 60 layers of copper foil	3 x 6mm, 3 x 8mm, 3 x 12mm

Stated Weld Result	Performance Detail
Joint strength	Firm welding; destructive pull force can be tested according to layer count, material, and thickness
Electrical performance	Low internal resistance
Weld integrity	No false welding; no powder vibration; no separator burning; no insulation-tape heating
Electrode protection	No vibration cracking of tabs or electrode sheets; weld-point position does not crack
Metal-to-metal weld area	Residual weld area exceeds 80%
Weld appearance	Flat surface without wrinkles; no protruding burrs on the reverse side; full, clear weld points