

Supercapacitor Laser Welding Machine Laser Welder

Item Number: CX03



Introduction

Precision laser welding machine for supercapacitor and lithium ion battery sealing, delivering narrow welds, minimal heat affected zones, accurate positioning, strong joints, and automation ready production performance.

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Application	Description	Key Benefit
Supercapacitor cell-to-cover sealing	Welds supercapacitor cell bodies to upper and lower cover plates during enclosure assembly.	Supports compact, controlled sealing welds with limited local heat influence.
Supercapacitor cap welding	Joins caps used in supercapacitor cell assembly and closure operations.	Produces smooth weld seams that may need little or no post-weld treatment.
Electrolyte filling-hole closure	Performs sealing welds at supercapacitor electrolyte filling-hole locations after filling operations.	Enables precise focal positioning on a small, critical sealing feature.
Lithium-ion battery welding	Supports laser welding work within lithium-ion battery manufacturing, where laser processing is widely used.	Delivers the speed, narrow weld width, and small heat-affected zone associated with laser welding.
Automated energy-storage cell assembly	Integrates into controlled welding sequences for repeated joining of cell covers, caps, and closure features.	The controllable focused laser process is well suited to automation.
Dissimilar-material component joining	Applies laser welding where different materials must be joined within an energy-storage assembly.	Provides a joining method capable of welding dissimilar materials.

Parameter	Specification
Site-Facing Item Number	CX03
Equipment Type	Laser welding machine
Primary Application	Sealing welding of supercapacitor cells with upper and lower cover plates, caps, and electrolyte filling holes
Relevant Welding Field	Lithium-ion battery and supercapacitor welding
Welding Method	High-energy pulsed laser welding
Laser Generation Principle	The laser power supply ignites a pulsed xenon lamp and discharges it to form light waves with a defined frequency and pulse width. The light is radiated into a concentrating cavity and excites an Nd3+:YAG laser crystal.
Laser Resonance Process	Light emitted by the excited Nd3+:YAG laser crystal resonates in the laser cavity to generate pulsed laser output.
Laser Wavelength	1064 nm
Beam Delivery and Focusing	The pulsed laser is expanded and reflected, or transmitted through optical fiber, then focused onto the workpiece.
Weld Geometry Characteristic	High depth-to-width ratio; small weld width
Heat Influence Characteristic	Small heat-affected zone

Parameter	Specification
Deformation Characteristic	Small deformation
Welding Speed Characteristic	Fast welding speed
Weld Appearance	Smooth and aesthetically refined weld seam
Post-Weld Processing	No post-weld treatment required, or only a simple treatment process required
Positioning Characteristic	Small focused spot and high-precision positioning capability
Automation Characteristic	Easy to automate
Material Compatibility	Capable of welding dissimilar materials
Weld Quality Characteristic	High weld quality with no porosity