



## High precision laser resistor trimming system

### Brief Description

Laser resistance modulation locates a very thin laser beam on the thick film resistor, the beam cuts the resistor according to the computer predetermined program, and changes the resistance value by changing the cross-sectional area of the resistor.

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### System introduction

Laser resistance modulation locates a very thin laser beam on the thick film resistor, the beam cuts the resistor according to the computer predetermined program, and changes the resistance value by changing the cross-sectional area of the resistor.

At the same time of laser cutting resistance, the resistance value is measured in real time through the high-speed measurement system to keep it close to the target resistance value.

When the resistance reaches the target value, the laser beam is turned off, so as to realize the precise adjustment of the resistance.

The laser resistance modulation system has a variety of adjustment functions, which can adjust the thickness of thin-film resistor network, capacitor network, ceramic based thin-film integrated components and realize the function adjustment of hybrid integrated circuits.

### System Characters

The self-developed PMU measurement system has high precision, fast speed, good consistency, full range design and full range resistance regulation.

The self-developed resistance regulation software system supports varies of different kinds of resistance adjustment knife types and meets the customized requirement at the same time.

The equipment has powerful functions and supports the adjustment of parameters of resistance, AC and DC voltage and current

The equipment is stable and reliable, and the reliability of the repaired and adjusted values of product parameter is high and will not drift

Low operation and maintenance cost, high efficiency and low energy consumption. It is equipped with dust-proof, anti-static, leakage protection and personal safety protection functions, it can be used safely

The laser cutter knife includes type I, type II, type L, type U, type J, type M, scanning type, type I muster, type I indent, type L indent and type u indent


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## Application

Chip resistor adjustment (01005、0201、0402、0603、0805、1206、1210、2010、2512)

Thick film circuit (medium and high-end applications such as automotive electronics, sensors, aerospace and military integrated circuits, communication electronics, instruments and meters, heating tubes, industrial electronics, high-frequency and high-power microwave circuits)

Circuit function adjustment (adjust circuit output voltage, current and other circuit function signals)

Thin film circuit, thin film resistor

## System parameter

Laser	Laser type	Fiber laser	
	Central laser wavelength	1064nm	
	Output power	20W	
	Repeating frequency	1-100kHz	
	Pulse width	3-500ns	
	Typical spot size	15-40 $\mu$ m	
Beam positioning	Scanning range	70mm $\times$ 70mm	
	Scanning resolution	1 $\mu$ m	
	Repeated positioning precision	$\pm$ 1 $\mu$ m	
Vision	Coaxial monitoring system	500W pixel monitoring camera	
Worktable	Motion platform	Linear motor with grating ruler	
	Motion range	200mm $\times$ 300mm	
	Repeated positioning precision	$\pm$ 2 $\mu$ m	
	Max motion speed	1000mm/s	
Measurement system	Compatibility of test system	Compatible with low resistance, medium resistance and high resistance measurement	
	Test way	2-wire measurement or 4-wire measurement	
	Resistance measurement	Range	50m $\Omega$ ~100M $\Omega$
		low resistance:	$\pm$ 【0.05%+0.5%/R ( $\Omega$ )】
		medium resistance:	$\pm$ 0.05%
	Voltage measurement	high resistance:	$\pm$ 【0.05% +0.05% x R (M $\Omega$ )】
		Range:	-10V~+50V
		Measurement accuracy in full range:	0.01%
	Measurement channel	48~288 (48 channels on each panel, can be expanded)	
	Measurement time	2 $\mu$ s/time, adjustable based on customer' s requirement	
Error compensation	Automatic calibration by one key		



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