



Laser Systems GmbH

Thick-film laser trimmer

LS9000TD automates, rationalises and improves your trimmer application. You trim fast, economic and with best efficiency even small batches.

Precise values by laser trimming

LS9000TD is a laser trim system for passive and active adjustment of thick-film circuits. Due to its construction the laser needs neither cooling water nor three-phase current, but only 220V supply.

Laser unit, galvanometer beam deflection and camera are mounted on a precise guide and are height-adjustable by a micrometer screw.



LS9000TD thick-film trimmers are mounted on a profile frame. Personal computer, laser power supply, motor control and measuring instruments are embedded within the frame. The whole front side of the work station can be lifted for set-up (change of probe cards). The housing is already prepared for a later adaption of loader units.

The work station is accessible by a sliding door at the front side. The slider is equipped with an interlock switch, which interrupts the laser beam by opening the door. Vacuum keeps substrates in place at the step&repat table, which is designed for substrates up to 4"x6". An internal exhaust exist up to an external interface.

LS9000TD corresponds according DIN EN 60825/VDE 0837 resp. VGB 93
Laser safety class 1.

Quality Made in Germany, Research, development, production, application and service in one company guarantee optimised support and quality.

Experience Decades of know-how in laser technology.

Advice Our application lab waits for your process studies and tests.



Technical Data

Software		Substrat handling	
Surface:	process control in flowchart-logic program run in real-time or single step configurable display function display with html-format	DC motor driven step&repeat handler Substrat fixture: up to 4"x6" fixed via vacuum Speed: 800 mm/s Resolution: 0,001 mm Range: 200x350 mm ² Prober unit: height programmable 20 mm stroke	
Functions:	cut geometry I, J, L, D, meander, shave zero offset free scalable any angle round edges 3 comparator-inputs (calculated also) automatic pre-, end- and contact-test save of data with any format marking option (serial numbers) complete marker software		
Variables:	alphanumeric integer floating point free choose of variable names different I/O possibilities serial numbers, even alphanumeric save and load database connection via ODBC		
Control:	while-loops for-loops case differentiation manual data input		
Measuring system		Laser specifications	
Scanner:	low thermal voltage bi-stable relay 40 high/low test-points 40 high/low guard test-points any numbers of test- and guard-points response time about 1 ms 2 outputs	Laser name: 9650 9520 Laser type: Nd:YAG Nd:YAG Stimulation: laser diodes laser diodes Wavelength [nm]: 1064 1064 Laser power (TEM ₀₀) [W]: > 6,5 > 3,0 Divergence [mrad]: < 1,5 < 2 mrad Pulsefrequency [kHz]: 0,1 up to 50 0,1 up to 50 Pulse energy at 1kHz: > 1,5 mJ / 70 ns > 0,75 mJ / 30 ns Cooling: air cooling air cooling	
Meas. bridge:	four-wire Kelvin measurement measuring rate 5 kHz rolling digital filter active guard up to 100 mA		
Resistor:	four-wire Kelvin measurement range: 100 m - 100 MOhm resolution: 0,01% of range accuracy ^a : ±0,02% in middle range		
Voltage:	16 Bit ADC with pre-amplifier range: 0,1 - 100 V resolution: 30 ppm of range accuracy ^a : ±0,02% in middle range		
Control (Hardware)		Power supply	
	RS232-interface parallel interface WinSocket I/O-ports CAN-bus network (optional) IEEE-Bus (optional)	Main supply [VAC]: 230 ±10% Power consumption ^c [W]: < 500 Dimensions: 19" technology	
Options			
		motor driven z-axes motor driven phi-Axes linear motor driven step&repeat handler automatic loading and unloading additional test-points costumised prober card	

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a) depends on measuring range, filter depth and probing

b) depends on camera optics

c) depends on laserpower