LS — 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

Surface:	process control in flowchart-logic
	program run in real-time or single step
	configurable display function
	display with html-format
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

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	
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)

RS232-interface
parallel interface
WinSocket
I/O-ports
CAN-bus
network (optional)
IEEE-Bus (optional)

Substrat handling

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 mm²
Prober unit:	height programmable 20 mm stroke

Image processing

Video camera and PC plug-in card
saveable video parameter (contrast, brightness)
Edge detection
Area search
Geometric model finder (optional)

Resolution[b] [mm]:	< 0,010

Beam positioning

Beam deflection by galvanometer mirror

Trim area [mm²]:	110 x 110
Focal diameter [mm]:	0,050 ±10%
Depth of focus [mm]:	±0,6
Speed [mm/s]:	up to 2000

Laser specifications

	9650	9520
Laser name:	9650	9520
Laser type:	Nd:YAG	Nd:YAG
Stimulation:	laser diodes	laser diodes
Wavelength [nm]:	1064	1064
Laser power (TEMoo) [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

Power supply

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

Laser Systems GmbH

Gollierstr. 70
D-80339 Munich
Tel.: ++49 (0)89 502 002 - 0
Fax: ++49 (0)89 502 002 - 30
E-mail: info@ls-laser-systems.com
Internet: www.ls-laser-systems.com

a) depends on measuring range, filter depth and probing
b) depends on camera optics
c) depends on laserpower