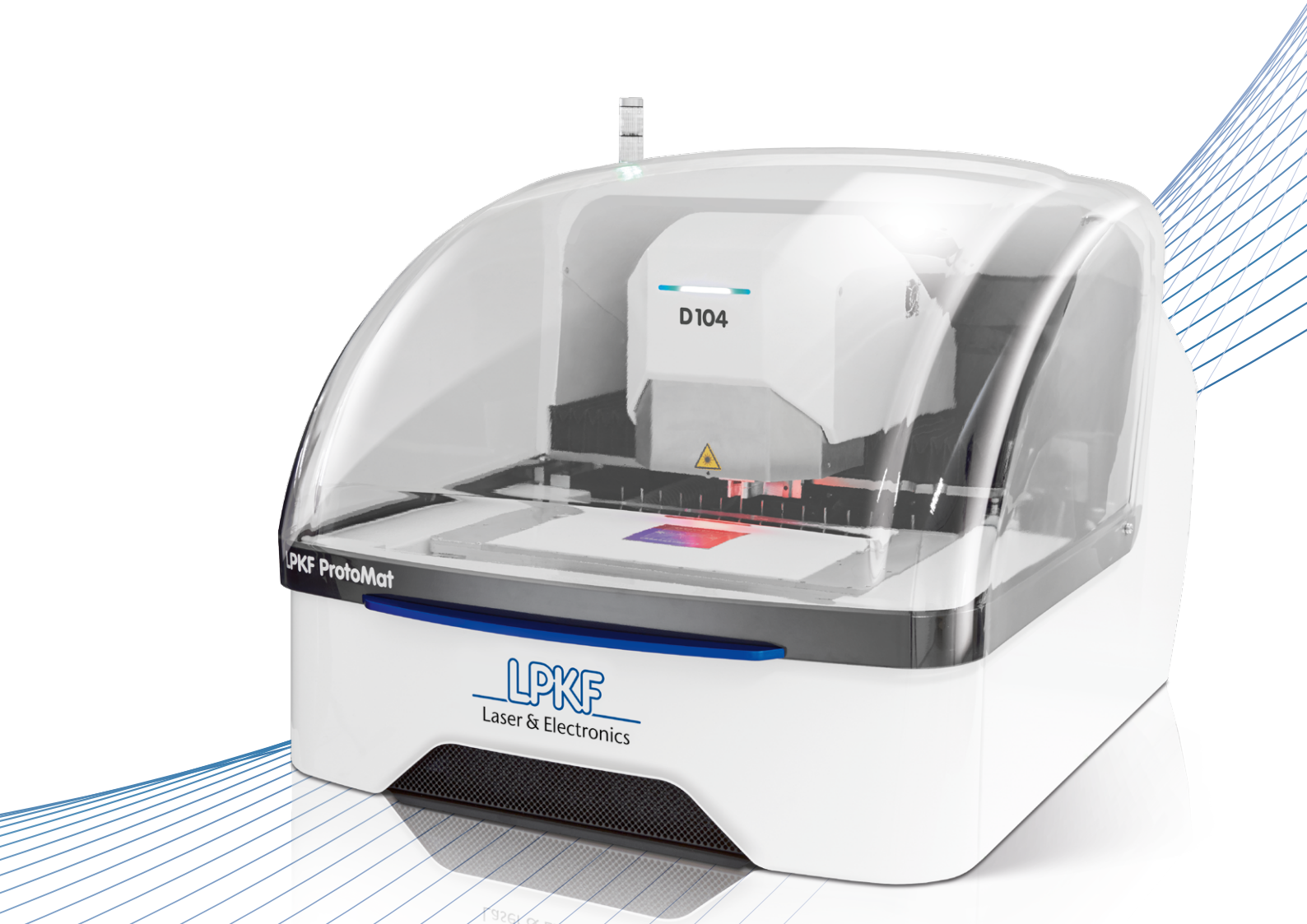
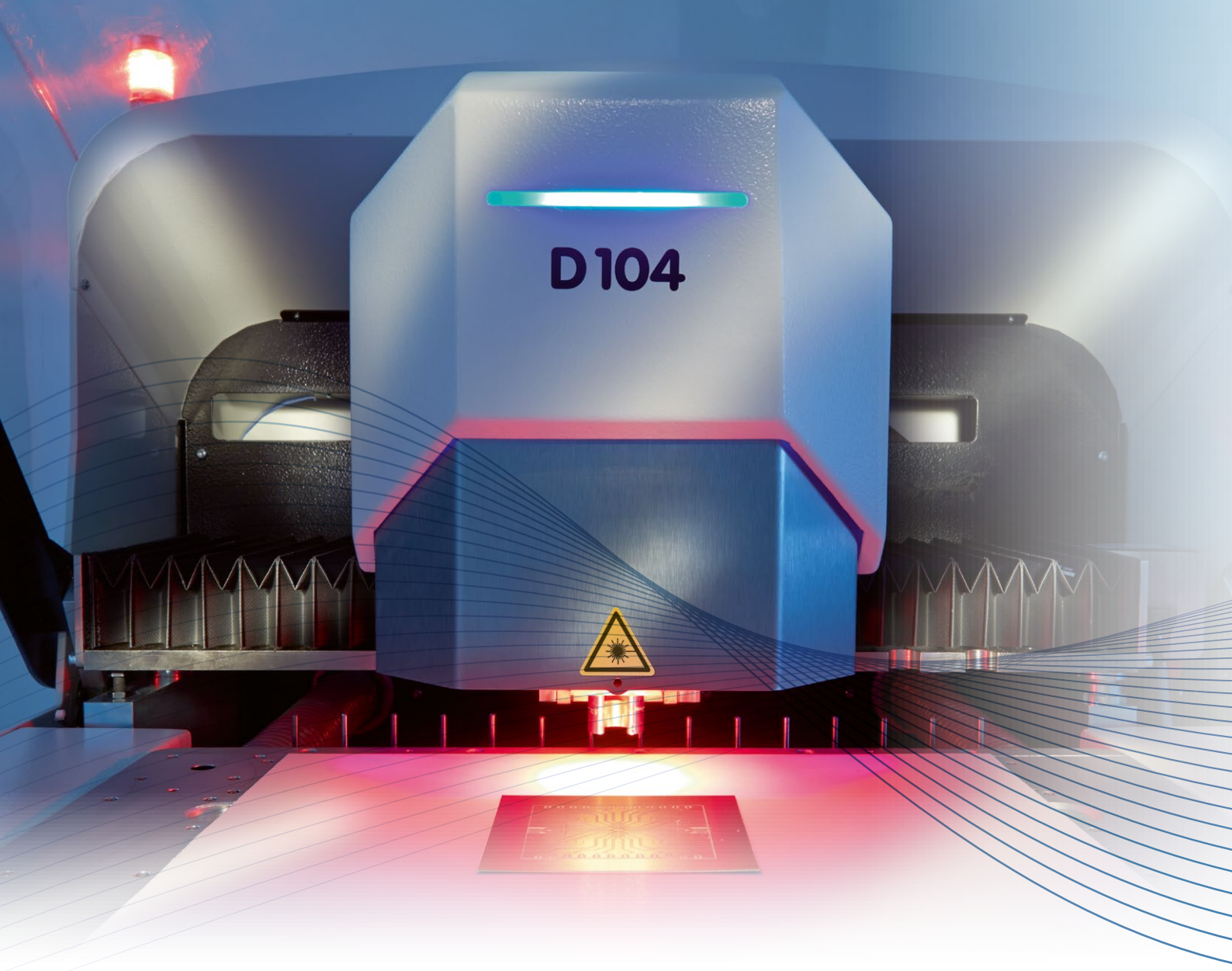
Mechanical and Laser Machining in One System

LPKF ProtoMat D104



Ready to Ship in Early 2014

LPKF
Laser & Electronics



Laser and Circuit Board Plotter United

The LPKF ProtoMats are well established in many R&D departments around the world. They enable in-house mechanical machining of PCB substrates to produce almost production-ready circuit board prototypes. The range has now been supplemented with the LPKF ProtoMat D104 with an integrated high-precision UV laser.

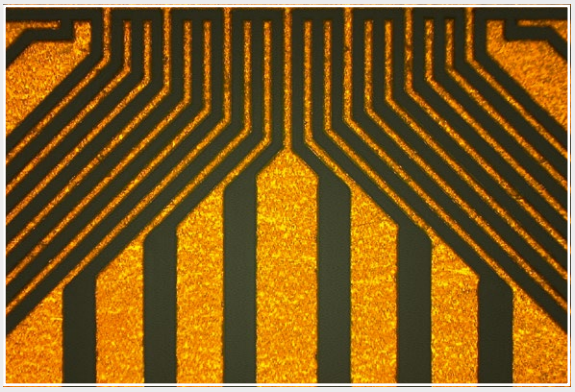
Multifunctional and a High Performer

Chemical-free production of high-quality circuit boards in the R&D department has clear advantages in the time-to-market for new products. Circuit board plotters generate a complex circuitry on a metal-coated base material through insulation channels. Conductive traces are separated from the base material by insulating channels made using various tools such as milling and drilling machines. The LPKF ProtoMat D104 has perfected this functionality, exhibiting spindle speeds of up to 100 000 RPM, up to 15 auto-select tools, and a repeatability of 1 µm.

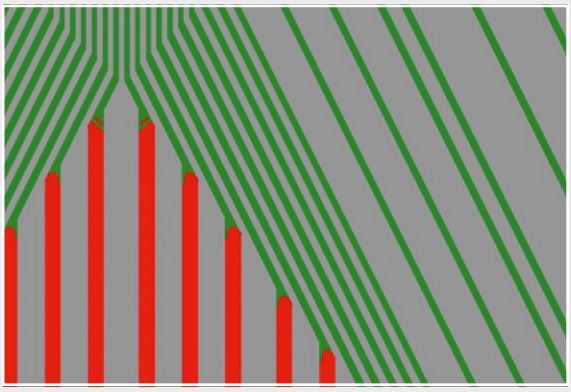
The integrated UV laser extends the range of possible applications: With a focus size of just 15 µm, minimum PCB track widths and spaces of 50 µm and 30 µm, respectively, can be achieved. The smart control system and the advanced software decide independently when the precise laser or the faster mechanical tools are used – depending on the board layout.

- 15 tools plus UV laser
- Non-contact tool setting
- Non-contact working depth limiter
- Integrated measuring camera/vision system

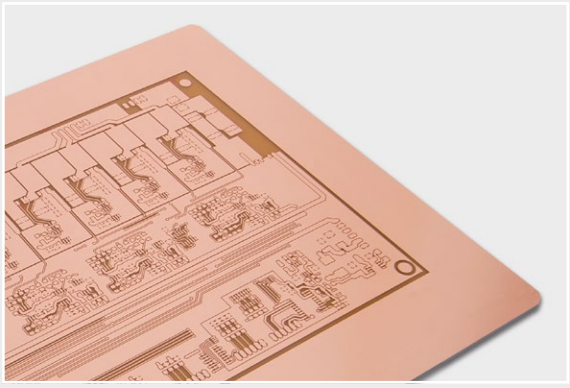
Applications



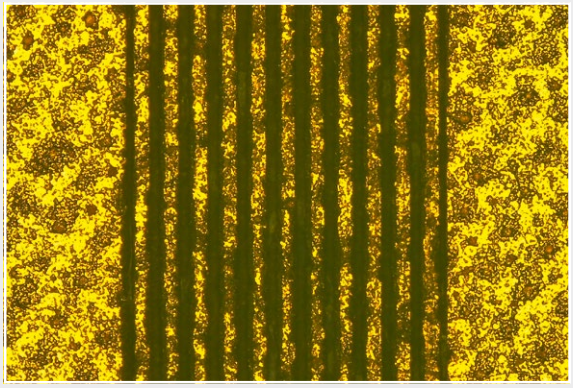
Structuring on FR4 using the laser with 50 µm/30 µm (line/space), milling: 100 µm/100 µm (line/space)



PCB Layout displayed in CircutiPro – red: mechanical processing, green: laser processing



Laminate structuring



Structuring on Al_2O_3 with Cu/Au plating using the laser with 50 µm/25 µm (line/space)

Greater Functionality under the Hood

The ProtoMat D104 comes with a new product design offering easier maintenance. The hood above the work area ensures safe operation with laser class I and improves suctioning.

Tool setting and limitation of the working depth for mechanical work steps are achieved in a non-contact manner, a vacuum table holds the substrate securely in place, and a vision system enables the material position to be read in and the structuring results to be measured.

The ProtoMat D104 combines the best of two worlds and adds new machining options such as depaneling of flex and rigid-flex boards and machining of fired ceramics. As well as the precise geometries with straight side walls required in RF circuits to PCB prototyping.

Service

LPKF circuit board plotters ensure high quality work in laboratories and development departments around the world since years. More than 50 subsidiaries and distributors provide customers with reliable services and support.

Technical Data: LPKF ProtoMat D104	
Work area (X x Y x Z)	305 mm x 229 mm x 10 mm (12” x 9” x 0.4”)
Resolution (X, Y, and Z)	1 µm (0.04 mil)
Repeatability	1 µm (0.04 mil)
Travel speed	100 mm (3.7”)
Milling spindle	Max. 100 000 rpm, software controlled
Tool change	Automatic, 15 positions
Drilling speed	100 strokes/min
Diameter of focused laser beam	15 µm (0.6 mil)
Laser structuring rate	1 mm/s on 18 µm Cu (0.04”)
Laser power (output)	100 mW
Laser wavelength	UV range
Software	LPKF CircuitPro (included)
Features	Vision system for optical fiducials/width monitoring, status light, vacuum table, pneumatic working depth limiter
System dimensions (W x H x D) incl. hood opening	660 mm x 700 mm x 870 mm (26” x 27.6” x 34.3”)
Weight	< 100 kg (220.5 lbs)
Operating conditions	
Power supply (V, Hz, W)	85 V – 260 V AC, 50 – 60 Hz, 440 W
Ambient temperature	22 °C ± 2 °C (71.6 °F ± 4 °F)
Compressed air supply	6 bar / < 100 l/min (87 psi / < 3.5 cfm)
Hardware and software requirements	Windows XP, 32 bit or Windows 7, 32 / 64 bit, min. 2 GHz Single Core, 2 GB RAM, opt. 2.6 GHz Dual Core, 8 GB RAM, 2 x USB 2.0, screen resolution 1 024 x 768 pixels
Required accessories	Exhaust

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Photos may also show optional accessories.

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