

Family of LPKF ProtoMat[®] Circuit Board Plotters



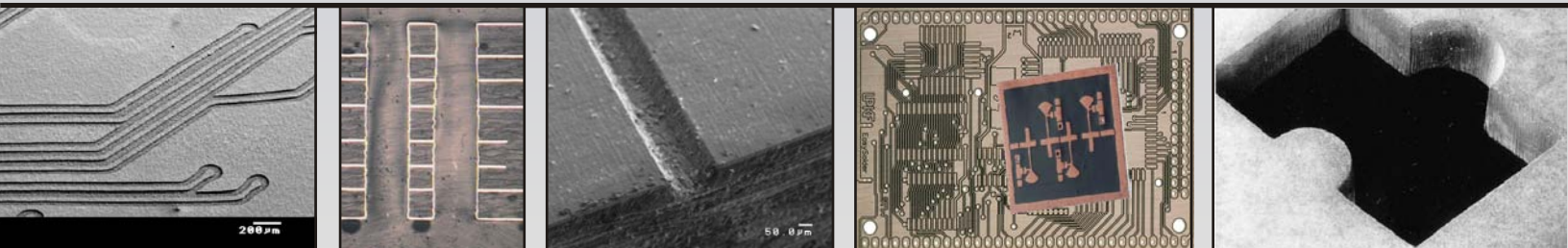
Standard Table “S” Systems

The LPKF ProtoMat[®] standard table “S” systems are designed for PCB labs that need to produce large volumes of varied prototypes, or for users that require a high level of system automation.



Large Table Systems

The LPKF ProtoMat[®] large table systems provide a variety of generous table sizes. These systems are ideal for milling large analog and digital multilayer boards, or for producing multiple copies of the same or different layouts.



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Standard Table "S" Systems Rapid PCB Prototyping Solutions



ProtoMat® S42

Entry level system for precision PCB prototypes

Applications

- FR3, FR4, G10, aluminum, panels, single-sided, double-sided, and multilayer
- Polyimide, ceramic, glass-filled PTFE (RT/Duroid®, etc.)
- Non-stick plastic, gold, or flex

ProtoMat® S62

Motorized Z-axis and automatic tool change

Applications

- FR3, FR4, G10, aluminum, panels, single-sided, double-sided, and multilayer
- Polyimide, ceramic, glass-filled PTFE (RT/Duroid®, etc.)
- Non-stick plastic, gold, or flex

Unique Features

- Integrated acoustic cabinet

ProtoMat® S100

High-performance PCB prototyping

Applications

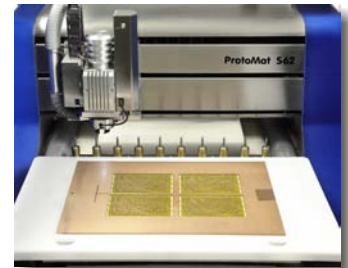
- FR3, FR4, G10, aluminum, panels, single-sided, double-sided, and multilayer
- Polyimide, ceramic, glass-filled PTFE (RT/Duroid®, etc.)
- Non-stick plastic, gold, or flex

Unique Features

- High-speed 100,000 RPM milling motor

Specifications	ProtoMat® S42	ProtoMat® S62	ProtoMat® S100
Maximum board size	9" x 12" (340 mm x 200 mm)	9" x 12" (340 mm x 200 mm)	9" x 12" (340 mm x 200 mm)
Minimum hole size	6 mil and up (0.15 mm)	6 mil and up (0.15 mm)	6 mil and up (0.15 mm)
X/Y travel speed	1.97"/sec (50 mm/sec)	6"/sec (150 mm/sec)	6"/sec (150 mm/sec)
Resolution	0.3 mil (7.5 µm)	0.01 mil (0.25 µm)	0.01 mil (0.25 µm)
Minimum trace/isolation	4 mil/8 mil (100 µm/200 µm)	4 mil/4 mil (100 µm/100 µm)	4 mil/4 mil (100 µm/100 µm)
Tool motor speed (RPM)	42,000	3-phase motor, Programmable, 5,000-62,000	3-phase motor, Programmable, 5,000-100,000
Milling depth sensing	–	–	–
Z-axis depth control	Solenoid	Stepper motor:1.5" (38mm)	Stepper motor:1.5" (38mm)
Tool change	Manual	Fully automatic	Fully automatic
Tool holder	1/8" collet	1/8" pneumatic collet	1/8" quick-release collet
Drilling speed	90 strokes/min	150 strokes/min	150 strokes/min
Front to back registration	Pin positioning/optional CircuitView camera	Pin positioning/optional CircuitView camera	Pin positioning/optional CircuitView camera
CircuitCAM	Lite	PCB	PCB
X/Y drive	2-phase stepper motors	3-phase stepper motors	3-phase stepper motors
Repetition accuracy	0.2 mil (0.005 mm)	0.2 mil (0.005 mm)	0.2 mil (0.005 mm)
Dimensions (w x h x d)	22.8" x 18.9" x 24.4"	25.6" x 21" x 31.5"	25.6" x 20" x 31.5"
Weight	94.8 lbs	121 lbs	121 lbs
Power consumption	200 VA	200 VA	200 VA

Options and Accessories



Integrated vacuum table

The vacuum table top holds the board material securely in place, eliminating any misalignment errors that can occur if the material shifts during the milling process.

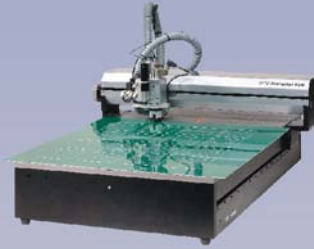


Brush foot

Anti-static brush gently removes milling residue without requiring milling depth adjustments.

Fiducial recognition camera system

Front-to-back and multilayer alignment accuracy is automated by this camera system that recognizes board fiducials embedded in the PCB layers. Once the fiducials are located the board can be removed, remounted or flipped and it will always be properly aligned, eliminating user interaction and simplifying the board alignment process.



ProtoMat® M60

For precise large circuit boards and multilayer PCBs

Applications

- FR3, FR4, G10 single-sided, double-sided, and multilayer
- Polyimide, ceramic, glass-filled PTFE (RT/Duroid®, etc.)

ProtoMat® X60

Ideal for drilling, routing and depaneling

Applications

- FR3, FR4, G10, aluminum, panels, single-sided, double-sided, and multilayer
- Polyimide, ceramic, glass-filled PTFE (RT/Duroid®, etc.)

ProtoMat® H100

The fastest prototyping system yet

Applications

- FR3, FR4, G10, aluminum, panels, single-sided, double-sided, and multilayer
- Polyimide, ceramic, glass-filled PTFE (RT/Duroid®, etc.)
- Non-stick plastic, gold, or flex
- Rigid flex, µBGA

Unique Features

- Vacuum table top

Specifications	ProtoMat® M60	ProtoMat® X60	ProtoMat® H100
Maximum board size	21.3" x 15" (540 mm x 375 mm)	20.9" x 25.6" (530 mm x 630 mm)	17" x 15" (420 mm x 475 mm)
Minimum hole size	8 mil and up (0.2 mm)	8 mil and up (0.2 mm)	6 mil and up (0.15 mm)
X/Y travel speed	1.57"/sec (40 mm/sec)	2.4"/sec (60 mm/sec)	1.57"/sec (40 mm/sec)
Resolution	0.0003125" (8 µm)	0.0001968" (5 µm)	0.04 mil (1 µm)
Minimum trace/isolation	4 mil/4 mil (0.1 mm/0.1 mm)	4 mil/4 mil (0.1 mm/0.1 mm)	3.1 mil/4 mil (80 µm/100 µm)
Tool motor speed (RPM)	3-phase motor, 10,000-60,000	3-phase motor, Programmable, 10,000-60,000	3-phase motor, 10,000-100,000
Milling depth sensing	Coaxial mechanical sensing/mechanical foot with integrated head lighting	Coaxial mechanical sensing/mechanical foot with integrated head lighting	Air bearing foot and automatic depth sensing with integrated head lighting
Z-axis depth control	Optional micrometer	Pneumatic:0.55" (14mm) Mechanical adjustment: 0.125 mil per step Optional: micrometer	Pneumatic:0.55" (14mm) Automatic: 5 µm per step
Tool change	Semi-automatic	Semi-automatic	Fully automatic
Tool holder	1/8" collet top release	1/8" pneumatic collet	1/8" pneumatic collet
Drilling speed	90 strokes/min	120 strokes/min	120 strokes/min
Front to back registration	Pin positioning/optional CircuitView camera	Pin positioning/optional CircuitView camera	Pin positioning, camera fiducial recognition
CircuitCAM	PCB	PCB	PCB
X/Y drive	Stepper motors, precision lead screw, precise roller guides	Stepper motors, precision recirculating lead screw, precise roller guides	Stepper motors, precision recirculating lead screw, precise roller guides
Repetition accuracy	0.2 mil (0.005 mm)	0.2 mil (0.005 mm)	0.04 mil (0.001 mm)
Dimensions (w x h x d)	23.6" x 15" x 29.9"	29.5" x 16.5" x 35.4"	25.6" x 17" x 29.5"
Weight	97 lbs	151.8 lbs	110 lbs (without cabinet)
Power consumption	200 VA	240 VA	240 VA