

Detailed Specifications

Subsystem	Item	jetlab 4
Motion	Substrate Size	160 × 120 mm xl versions: 210 x 260 mm
	X Stage Travel	200 mm xl versions: 300 mm
	Y Stage Travel	150 mm xl versions: 300 mm
	Z Stage Travel	50 mm manual Option: 50 mm motorized
	X, Y Encoder Resolution	0.8 um
	Positioning Accuracy	±30 um, unidirectional xl-A: ± 25um
	Positioning Repeatability	±20 um xl-A: ± 5um
	X & Y Stage Travel Speed	50 mm/s
	X & Y Stage Acceleration	1500 mm/s ²
	X & Y Stage Payload, maximum	10 kg
	Z Stage Travel Speed	Manual Option: 10 mm/s
	Z Stage Payload (printhead), maximum	3 kg
	Material Load/Unload	manual
Vision	Downward-looking Camera	Option: for alignment to fiducials and inspection of printed features
	Alignment Method	Program-assisted manual Option: teach/semiautomatic
	Post-printing Visual Inspection	Option: manual survey
	Jet Set-up & Observation Camera	Includes synchronized LED strobe
	Jet Set-up Method	Manual Option: semiautomatic measurement / monitoring
	Field of View (horizontal and vertical)	4 mm x 3 mm (typical)
Thermal & Pneumatic	Pneumatics Control Circuit	three state pneumatic control
	Operating Pressure Control	Manual vacuum / pressure fine adjust to 2 mbar Option: electronic control
	Pressure Gages	digital
	Number of Pressure Outputs (includes control and display for each)	1 Option: up to 4 (xl versions)
	Pneumatic Control Method	Manual Option: electronic
	Pressure Input	60 psig [420 kPa] 20 scfm [0.6 scmm]
	Vacuum Input	below -20 in Hg
	Temperature Controllers	Option: 1-2; 1-4 on xl versions

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Mechanical, Electrical & Environ.	Work Surface	flat plate
	Workpiece holder	flat plate with alignment edges Options: vacuum platen; heated vacuum platen; fixtures for microscope slides, MALDI plates, microtitre plates, etc.; custom
	Vibration Isolated Work Surface	elastomeric feet
	Enclosed Work Area	standard
	HEPA Filters Overhead	Option: xl versions
	HEPA Blower Unit	Option: xl versions
	Solvent Ventilation	Optional duct connection
	Footprint	25"x22.5" [63 cm x 57 cm] tabletop xl and xl-A: 30"x27" [75 cm x 67 cm] tabletop
	Safety	CE approved
	Power	220-240V, 6A, 50-60Hz Option: 120V, 6A, 50-60Hz
	Clean Room Compatibility	no
Printing Control & Drive Electronics	Stationary Printhead	standard
	Motorized Z-Axis Control of Print Head	Option
	Point-to-Point Operation	standard
	Print-on-the-Fly Operation	Standard, printing at any angle, both stages moving; curvilinear motion (2012)
	Jet Drive Electronics	JetDrive V: bipolar and arb mode Option (xl versions): multi-channel JetDrive III-(n)
	Drive Electronics Multiplexer	Option: integrated (xl versions)
	TTL control signals	Option (xl versions): 8 outputs minus number of multiplexed jets; on/off and timed
	Jet On-Line / Off-Line Selection	through user interface, scripts
	Operating Frequency	up to 30 kHz
Print Pattern	Built in Patterns	line, rectangular border, array, array-of-arrays (arbitrary angle)
	Rotation Correction	standard
	Multiple Fluid Control	standard
	Print Pattern Import	GDS II & Gerber converters; monochrome BMP
	Complex Print Jobs	Script file: nesting, repetition with offsets, wait states, maintenance, & TTL controls, arbitrary printing resolution and direction
Printheads	Select one or more (not included in base price)	Choose from PH-41, PH-41H & PH-47 xl versions: Mounts all MicroFab standard printheads; Interchangeable
Jetting Devices	Select one or more (not included in base price)	Standard orifice diameters, 20-80 um in 5 um increments; 10, 15, & 90-120 um specials.
Control system	Computing hardware	Panel PC, 1GHz Atom, 1 GB RAM 160+ GB HD, DVDRW, Ethernet port, USB 2.0 port; RS-232 ports, keyboard, monitor, mouse.
	Operating system	Microsoft Windows 7
	Machine control program	Integrated control program for (multiple) jet setup and selection, positioning calibrations, pattern printing and surveying, TTL-controllable auxiliary equipment, depending on and supporting <i>all</i> hardware and software options on <i>all</i> jetlab models.