

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 motorized |
| | X, Y Encoder Resolution | 0.8 μ m |
| | Positioning Accuracy | $\pm 30 \mu$ m, unidirectional xl-A: $\pm 20 \mu$ m |
| | Positioning Repeatability | $\pm 20 \mu$ m xl-A: $\pm 5 \mu$ m |
| | 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 - vertical | 2.0 mm x 1.5 mm |
| | Field of View – horizontal / angled | 2.7 mm x 2.0 mm |
| 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 |

| Subsystem | Item | jetlab 4 |
|--------------------------------------|---|--|
| 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, microtiter 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 |
| Print Pattern | Operating Frequency | up to 30 kHz |
| | 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 |
| Printheads | Complex Print Jobs | Script file: nesting, repetition with offsets, wait states, maintenance, & TTL controls, arbitrary printing resolution and direction |
| | 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, Ethernet port, USB 2.0 port; RS-232 ports, keyboard, monitor, mouse. |
| | Operating system | Microsoft Windows 10 |
| | 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. |