



Desktop PCBA Manufacturing, **End-to-End.**

Fully manufactured and assembled PCBAs in under two hours. No chemical baths. No etching tanks. No outsourcing. No internet connection required. Your IP never leaves the room.

Built before the parts arrive.

<2 hrs

Gerber to populated board

4/2 mil

Min trace / space

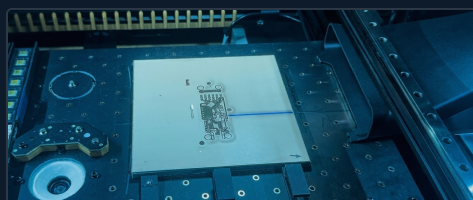
Air-gapped

No internet required

Ruggedized

Field-portable

The DoD spends **\$10 billion annually** on electronic-part obsolescence. CircuitJet IV eliminates the weeks-long board-house pipeline — laser-etching traces, inkjet-depositing solder mask and ENIG, dispensing paste, and placing components in a **single unattended run**. Currently in SBIR Phase II field trials with the **58th Maintenance Group at Kirtland AFB**.



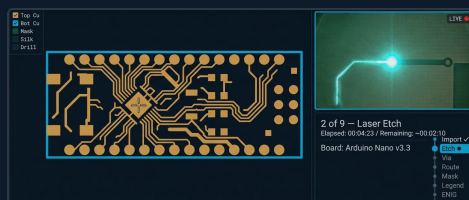
UV Laser Processing

4 mil trace • 2 mil space • 30 µm spot



Inkjet Deposition

Mask • Legend • ENIG • No tanks



CircuitBuild Software

Gerber • ODB++ • Air-gapped

Technical Specifications & Process

CircuitJet IV — Desktop PCB & PCBA Manufacturing · SBIR Phase II · AFX245-PCSO1

PCB Fabrication Capabilities

Build area	130 × 130 mm (5.1 × 5.1 in)
PCB layers	Up to 2-layer
Substrate	Copper-clad FR4, 0.2–3 mm
Min trace width	100 µm (4 mil)
Min space	50 µm (2 mil)
Min pitch	150 µm (6 mil)
Via plating	Inkjet conductive ink fill
Surface finish	ENIG via inkjet
File input	Gerber RS-274X, ODB++

UV Laser System

Wavelength	355 nm (UV)
Power	12 W
Spot diameter	30 µm
Cooling	Air-cooled
Functions	Etch · drill · route · slot

Inkjet System

Solder mask	Electroninks proprietary, UV cure
Silkscreen	Electroninks proprietary ink
ENIG	Electroninks metallic ink
Via fill	Particle-free conductive ink
Ink technology	Particle-free metal-complex

SMT Assembly

Nozzles	2 vacuum
Feeders	Up to 50 slots (8 mm / 12 mm)
Min component	0402 / 0.4 mm pitch / 0.5 mm BGA
Throughput	1,580+ CPH
Vision	Fiducial + bottom part inspect
Paste	Volumetric, stencil-free

System & Safety

Software	CircuitBuild (included)
Network	Air-gapped (USB / optional Ethernet)
Laser safety	Class 1, UV-blocking enclosure
Filtration	H13 HEPA + 3-layer carbon
Airflow	253 CFM, 99.97% @ 0.3 µm

Physical & Electrical

Dimensions	44 × 30 × 28 in
Weight	175 lbs (79 kg)
Power	120 V AC, 50–60 Hz, 10 A
Environment	18–22 °C, <60% RH
Transport	Pelican AL5834-1028 case

Nine-Step Manufacturing Process

Every step runs inside a single benchtop enclosure. No hand-offs, no chemical baths, no network connection.

01 Insert Stock Copper-clad FR4 substrate	02 Laser Etch UV laser ablation, no chemicals	03 Via Drill Same UV laser, no tool change	04 Via Plate Inkjet conductive ink fill	05 Solder Mask Inkjet, Electroninks proprietary	06 Legend Inkjet, Electroninks ink	07 ENIG Inkjet metallic ink, no tanks	08 Paste Volumetric, stencil-free	09 Place PnP, bottom-vision inspect
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SBIR Phase II · AFX245-PCSO1 · \$1.25M

Partnered with the 58th Maintenance Group at Kirtland AFB. Adding solder dispensing, laser etching/soldering, and pick-and-place to a ruggedized form factor for forward deployment. Funded by the Air Force Rapid Sustainment Office.

Request a Demo or Field Trial

Electroninks is a world leader in particle-free conductive ink technology for advanced electronics manufacturing. Our metal-complex ink formulations achieve up to 90% of bulk metal conductivity at low processing temperatures, enabling PCB fabrication without traditional chemical etching or electroplating.

Schedule an on-site demonstration or discuss integration into your program.

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