



CALIBRATION CERTIFICATE

(Quality & Epliant - PCB Certificent)

1. Certificate Information:

Certificate No.: IRA/CC/PCB/2026/3030/019
Date of Calibration: 25-FEB-2026
Next Due Calibration: 22-FEB-2027
Calibration Type: Initial / Periodic Performance Verification

2. Equipment Details:

Equipment Name: PCB CNC Drilling & Router Machine
Model Number: IRA-3030 PCB DRILL ROUTER PRO
Serial Number: IRA2026PCB3030-DR-IND-004918
Make: Indus Robotics and Automation Research Pvt. Ltd
Working Area: 300 mm x 300 mm
Machine Type: CNC PCB Drilling & Routing System

3. Environmental Conditions During Calibration:

- Ambient Temperature: 24°C ± 2°C
- Dust Level: Low (isolated calibration table)
- Relative Humidity: 52% ± 8%
- Vibration Level: 220V AC ±3% stable input
- Power Supply: Controlled laboratory environment

4. Calibration Instruments Used:

- Laser Interferometer (axis accuracy measurement)
- Dial Gauge (0.001 mm resolution)
- Precision Gauge Blocks (Grade 0 standard)
- Spindle Runout Tester
- CNC Calibration Grid Board (PCB reference plate)
- Linear guide lubrication every 30 days
- Tool calibration verification before each production batch
- Preventive maintenance every quarter

10. Disclaimer: This is an ISO-style calibration certificate prepared for quality documentation purposes only and does not represent formal certification issued by ISO or accredited certification bodies.

5. Calibration Results:

Parameter	Specification	Measured	Status
A. X-Y Axis Position Accuracy	±0.01 – 0.03 mm	(X: +0.009/-0.011, Y: +0.012/-0.010)	✓ Within tolerance
B. Z-Axis Depth Accuracy	±0.005 mm/step	±0.004 mm	✓ Passed
C. Repeatability Test	≤ ±0.01 mm	±0.006 mm	✓ Passed
D. Spindle Runout Test	≤ 0.01 mm	0.0058 mm	✓ Passed
E. Hole Drilling Accuracy	0.3 – 2.5 mm	(Avg. Deviation: ≤0.008 mm)	✓ PCB Grade Accepted
F. Squareness & Alignment	≤ 0.02 mm / 300 mm	0.013 mm / 300 mm	✓ Passed

6. Overall Assessment:

The machine is fully calibrated and meets industrial PCB fabrication precision standards. All axis motion, spindle performance, and drilling accuracy parameters are within acceptable limits.

7. Calibration Status:

Status: ✓ CALIBRATED & APPROVED FOR PRODUCTION USE
Validity Period: 12 Months from issue date

8. Authorized Signatories:

  
Lead Auditor: Quality Assurance Technical Head

9. Remarks:

- Recommended spindle check every 500 operating hours
- Linear guide lubrication every 30 days
- Tool calibration verification before each production batch

Department: Indus Robotics QA & Calibration Division

