Falcon 801/802 Wafer Prober

Falcon F801: The Next Evolution in Automated Wafer Probing

The Falcon F801 is a high-performance, fully automated wafer prober developed through a comprehensive architectural upgrade of the industry-classic 2001 system. By replacing legacy components and addressing design obsolescence, the F801 delivers superior stability, precision, and productivity, featuring 2KV high-voltage testing capability and the ability to handle warped wafers.

Key Hardware Enhancements

Integrating advanced modules from the Falcon Series, the F801 significantly reduces Total Cost of Ownership (TCO) and maintenance complexity:

- **Next-Gen Robotic Handling:** Equipped with an ultra-compact, collaborative-style robotic arm. It features high-sensitivity collision detection and active vibration suppression, achieving a **repeatability of ±0.05mm** and a **60% reduction in settling time**.
- **Advanced Pre-Aligner:** Beyond standard flat/notch detection, it supports edge flatness inspection, wafer warpage measurement, and automatic cassette size identification.
- **High-Efficiency Switching Power Supply:** Replaces legacy linear units with a high-conversion (80–95%) switching module. It provides stabilized 5V, 9V, ±12V, and ±28V DC outputs, eliminating system crashes and motor anomalies caused by voltage fluctuations.
- **Digital Pneumatic Control:** Utilizes electronic solenoid valves and digital pressure switches for rapid response and leak prevention. Air pressure parameters can be monitored and calibrated in real-time via a digital display.
- **Ultra Thin and Warpage (Option):** The system supports wafer handling with warpage exceeding 3mm, and even up to 10mm. The precisely controlled robotic arm ensures enhanced safety whether wafers are moving in/out of the cassette or being placed onto the chuck.

High Voltage Test: The standard model is already equipped with 2KV high-voltage testing capability, ensuring the equipment operates normally without interference under such high voltage. Additionally, 3–10KV ultra-high voltage options are available to meet future demands.

Software Optimization:

Powered by the **Falcon OS**, the F801 optimizes production workflows and mitigates common pain points:

- **Precision Alignment:** Enhanced image recognition algorithms and theta-angle correction procedures minimize alignment errors.
- **Intelligent Protection:** Advanced interpretation of Z-axis encoder data effectively eliminates "Z-Slip" false alarms.
- **Visualized Metrology:** Integrated visualization for Profiler results allows for intuitive evaluation of Chuck flatness and planarity.

Wafer Size Capacity

100mm (Option), 125mm, 150mm, 200mm

Wafer Handling

Max 2 Cassette, 50 wafers
Min 100um Thickness
Max 3mm Warpage

Step Accuracy

±0.25mil (6.4µm) includes X & Y.

Standard Interfaces

Hardware- RS232C, TTL (Parallel I/O), GPIB (IEEE-488)

Z-stage

Z Scale	0.25mil
Rec. Load	10lbs (4.5kgs)
Resolution Z	0.25mil/step
Speed	0.7ms/step
Probing Range	200mil (5.1mm)
Travel- Full	420mil (10.7mm)
Repeatability Z	0.2mil (5.1 µ m)
ϕ Travel	±10º

The Verdict

Think of the **Falcon F801** as a **"digitally retrofitted classic race car."** While it maintains the familiar handling and operational logic you trust, it is powered by a high-performance engine (Switching Power Supply), a precision steering system (New Robot), and an array of advanced sensors (WSSC/PVS). The F801 allows a time-tested architecture to deliver peak performance on the most demanding tracks of modern semiconductor manufacturing.

Contact me

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