



Discover Precision:
Advanced Scientific Mass Flow Solutions

SEMICONDUCTOR
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In the semiconductor industry, precision is not just a requirement—it's critical. **Sierra's advanced mass flow solutions** are engineered to meet the stringent demands of semiconductor processes, delivering unmatched accuracy, reliability, and scalability.

Why use Sierra Mass Flow Meters? Unparalleled Accuracy, Reliability, and Scalability for Critical Semiconductor Applications:

Chemical Vapor Deposition (CVD)

Optimize precursor gas flows—such as silane (SiH_4), tungsten hexafluoride (WF_6), and ammonia (NH_3)—to ensure uniform thin-film deposition, enhancing wafer quality and yield.

Etching and Cleaning

Maintain precise gas delivery of reactive species (e.g., SF_6 , CF_4 , Cl_2) to achieve superior selectivity and consistency in etching and wafer cleaning processes.

Lithography

Ensure stable and controlled nitrogen or argon gas flows to enhance lithographic accuracy, reduce pattern distortion, and minimize defects.

Gas Delivery Systems

Provide ultra-stable gas flow to meet the precise specifications of semiconductor fabrication steps, ensuring purity and process consistency.



**EMPOWERING SEMICONDUCTOR
MANUFACTURING WITH PRECISION AND
INNOVATION**



Lifetime
NO-DRIFT
Sensor
WARRANTY



Solving Key Challenges in Semiconductor Manufacturing with Sierra Flow Solutions

Contamination Control

- **Challenge:** Preventing contamination in ultra-clean environments.
- **Solution:** Ultra-high purity (UHP) flow controllers with advanced filtration and precise gas flow control minimize contamination risks.

Process Consistency

- **Challenge:** Ensuring uniform layer deposition in CVD and etching.
- **Solution:** High-accuracy mass flow measurement maintains stable gas delivery, enhancing device integrity and yield.

Handling Corrosive Gases

- **Challenge:** Managing reactive and corrosive gases such as HCl, HF, and ClF₃.
- **Solution:** Corrosion-resistant flow solutions using Hastelloy and PFA-coated components ensure long-term reliability.

High-Purity Gas Delivery

Challenge: Maintaining ultra-high-purity (UHP) gas flow to prevent contamination.

Solution: Advanced flow controllers provide precise mass flow regulation, ensuring gas purity at parts-per-billion (ppb) levels.

Vacuum Process Optimization

Challenge: Controlling gas flow in vacuum-based processes such as Physical Vapor Deposition (PVD).

Solution: High-precision mass flow meters optimize background gas delivery (e.g., argon, nitrogen) under varying pressure conditions to enhance plasma stability and deposition uniformity.

SEMICONDUCTOR industry



THE SIERRA ADVANTAGE

Unmatched Precision



Real-Time Integration



Scalability



Unmatched Precision

- Industry-leading accuracy in critical gas and liquid flow measurements, reducing process variability and maximizing yield.

Real-Time Integration

- Seamless compatibility with automated process control systems via Modbus, EtherNet/IP, Profibus, and other digital communication protocols.

Scalability

- From R&D to high-volume production, our solutions adapt to your evolving manufacturing needs.

Semiconductor leaders worldwide trust Sierra for their critical processes. With **cutting-edge technology and dedicated support**, Sierra empowers your operations with precision and reliability at every step.

Contact Us:

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