

600i Series

Data Sheet

600i Series overview

The 600i Series is targeted toward sensitive applications using both standard materials and those that produce particulate contamination. The tools in this family surpass the criteria for deposition of thin films in high-density devices and other applications requiring absolutely minimal defects.

Systems in this series

- 603i ■ 654I
- 643I ■ 654ix
- 643ix

600i Series details

The 600i Series provides multi-process sputtering for greater process flexibility and higher throughput. The 600ix Series also features KDF’s Linear Moving Magnetron™ Cathode, a patented design engineered for demanding applications with high-rate reactive processing, full-face erosion, and low particle generation. The 600i Series accommodates one 8” wafer or up to thirty-six 2” wafers, with optional gas delivery systems available for enhanced reactive processes.

Specifications

- Chamber ultimate ≤1 x 10⁻⁷ torr.
- Chamber leak rate, 20 minutes to 1 x 10⁻⁴ torr.
- High vacuum dome ultimate ≤1 x 10⁻⁷ torr.
- High vacuum dome leak rate, 15 minutes to 1 x 10⁻⁴ torr.
- Pump down from atmosphere 110 minutes or less to 1 x 10⁻⁶ torr or 2 x 10⁻⁷ torr overnight.



Key capabilities

- Vertical side sputtering systems
- 13” x 13” pallet size
- Small footprint
- Dual-process loadlock
- Optional OPUS Robot designed for particulate-free, reliable cassette to cassette substrate handling operations
- Multiple bias types enable denser films and planarization
- Multi-size capability enables rapid change from one substrate to another; substrate size can be changed run to run (pallet based)
- Optional integrated RGA for process and fault monitoring of gas peaks along with integrated hivac step
- New in situ pallet optical measurement hardware with integrated software allowing operators to program and control actual pallet temperature

SYSTEM CAPACITY							
600i PALLET 13" x 13"	2" wafers	3" wafers	4" wafers	5" wafers	6" wafers	8" wafers	300mm wafers
	36	16	9	5	4	1	1



System hardware features

- 12kW low stored energy DC power supplies (Advanced Energy). Optional Pinnacle Plus power supplies.
- Integrated throttling SS VAT valve allowing for upstream or downstream pressure control.
- MKS multi component “Smart” 390 and 925 gauges for integrated vacuum measurements.
- Process gas control with up to four gas controllers; feedback controlled capacitance manometer; master/slave gas select ability; and gas ratio control.
- Stepper motor pallet carrier drive with optical encoder providing accurate programmable pallet carrier positioning, scan velocity profiling available.
- Low pressure hydraulics system for safety and smooth operation.
- Loadlock linear sensor – computer controller positioning system for increased loadlock accuracy and more limited fail-safe.
- Optional 1.25 or 3.0 kW RF solid state power supply (Advanced Energy).
- Complies with NFPA79 guidelines.
- Consult factory for an extensive list of standard options.

Computer subsystem

- Windows® 10-based real-time GUI environment with a 24” LCD touchscreen mounted on an umbilical mobile HMI cart.
- Context-sensitive recipe manager running from a Microsoft® SQL database.
- Integrated software package for real-time data display, data logging, report generation, remote interface, and printing; compatible with Excel® and other Windows® applications.
- Optional connectivity to SECS/GEM communications and Windows® applications through an OPC server interface.
- Distributed Rockwell control system using DeviceNet and EtherNet/IP fieldbus technologies.
- Maintenance test suite with full diagnostic and manual process-control capability.
- Service-friendly, fully enclosed electronics cabinet.

System descriptions details

The 603i

The 603i is designed for sensitive applications using target materials that generate high particulate contamination. Its rough-pumped load lock supports fast production exchange cycles.

The 603i is commonly used in telecommunications manufacturing, chip resistor and resistor network production, and other thin-film manufacturing processes.

The 643i

The 643i builds on the 603i platform with advanced mechanical and electrical design features that support tight process control, high reliability, and low defect rates. The system adds a high-vacuum pumped load lock with quartz heat lamps and a palletized batch processing area for rapid substrate-size changes.

Pallets can be changed from run to run, enabling support for applications such as front- or backside GaAs wafer processing. KDF maintains a large pallet library optimized for a wide range of applications.

The 654i

Developed for telecommunications and compound semiconductor manufacturing, the 654i features four-target versatility for a broad range of advanced microelectronic component applications. The system supports enhanced etch and deposition uniformity with high-speed batch processing.

The 643ix and 654ix

The 643ix and 654ix are part of KDF’s x Series™ product line. Both systems feature KDF’s latest 17-inch cathode designs, which improve uniformity across the full pallet. x Series™ cathodes are available in Planar™, Inset™, and RF/DC LMM™ configurations, along with other options in the KDF cathode family.

