



TORONTECH

PROGRAMMABLE HI-SPEED SPIN COATER



Programmable Hi-Speed Spin Coater - ToronSC™ 1000P

ToronSC™ 1000P is a programmable high-speed vacuum spin coater engineered for precision thin film deposition on substrates up to 5 inches (127 mm) in diameter at speeds up to 10,000 rpm. Designed as a step up from basic two-segment spin coaters, the ToronSC™ 1000P spin coating machine stores up to 12 complete coating programs, each consisting of up to 6 independently programmable speed segments — delivering the multi-step process flexibility required for complex multilayer spin coating sequences, photoresist profile optimization, and research-grade sol-gel deposition protocols.

Driven by a precision 24V brushless DC servo motor, the ToronSC™ 1000P achieves fast, stable acceleration to target speed with low noise and low vibration — critical for maintaining film uniformity across the full substrate surface during high-speed spin coating. The CE-certified design and LCD control interface make this instrument a trusted choice for semiconductor research, photovoltaic thin film development, university laboratories, and industrial R&D environments. Two vacuum chuck sizes are included as standard, with additional chuck sizes available for substrate flexibility.

APPLICATIONS

Programmable Hi-Speed Spin Coater - ToronSC™ 1000P Applications

The ToronSC™ 1000P programmable high speed spin coater is designed for spin coating applications involving chemically aggressive solutions:

- Semiconductor process research: photoresist spin coating and sol-gel dielectric film deposition on wafers up to 5" at up to 10,000 rpm
- Photovoltaic thin film research: perovskite, organic, and inorganic absorber layer deposition for solar cell research and development
- Optical coating: deposition of anti-reflection, filter, and functional optical thin films with multi-step thickness control

- Multilayer film deposition: complex multi-step spin coating sequences stored as named programs for reproducible layer-by-layer deposition
- Organic electronics: active layer, transport layer, and encapsulant spin coating for OLED and organic photovoltaic research
- Ceramic and glass substrate coating: sol-gel and nanoparticle suspension coating on non-silicon substrates for functional film applications
- Industrial R&D and university labs: general-purpose programmable spin coater for multi-material, multi-process thin film research programs



FEATURES

Programmable Hi-Speed Spin Coater - ToronSC™ 1000P Key Features

1. 12 Programs × 6 Segments — Advanced Recipe Storage

Stores up to 12 complete spin coating programs, each with up to 6 independently programmable stages (speed, time, and acceleration per segment). This enables complex, multi-step spin coating protocols to be saved, recalled, and executed repeatably by different operators without re-programming.

2. 10,000 rpm High-Speed Brushless DC Servo Motor

The 24V brushless DC servo motor delivers fast, stable, and precise acceleration to speeds up to 10,000 rpm with high reliability, low noise, and minimal vibration. Stable operation throughout the acceleration and at target speed ensures film uniformity across the substrate.

3. LCD Display with User-Friendly Interface

The backlit LCD display provides real-time indication of spin speed, elapsed time, current program step, and program parameters. The keyboard interface allows intuitive program entry, modification, and selection.

4. Anti-Corrosion Polypropylene Chamber

The spin coating chamber is constructed from PP, providing chemical resistance for use with acidic, alkaline, and organic solvent-based coating solutions without chamber degradation.

5. Inert Gas Inlet Port for Atmospheric Control

One gas inlet port on the cover allows inert gas (nitrogen or argon) to be introduced during coating, enabling atmospheric control for moisture-sensitive or oxygen-sensitive spin coating processes without a full glovebox.

6. Sample Centering Positioning Tool

A centering positioning tool is included to ensure precise substrate placement on the chuck before each run, reducing vibration and fly-out risk caused by misaligned substrates at high spin speeds.

7. Multiple Chuck Sizes — Easy Exchange

Two vacuum chuck sizes are included as standard for immediate use across different substrate sizes. Additional chuck sizes are available, and chuck exchange is straightforward and fast without tools.

8. CE Certified Design

The ToronSC™ 1000P spin coater is CE certified, confirming compliance with European safety, health, and environmental protection requirements.

THEORY & METHOD

Theory and Method

The ToronSC™ 1000P operates on the centrifugal spin coating principle, using programmed multi-stage spin profiles to deposit precise, reproducible thin films. The substrate is secured to the vacuum chuck by vacuum suction from the included oilless vacuum pump. Coating solution is dispensed onto the substrate center, and the brushless DC motor executes the programmed speed sequence — typically a low-speed spread step, followed by one or more high-speed thinning steps, and optionally a slow ramp-down.

The 12-program, 6-segment architecture allows the operator to develop and store complete spin coating recipes for different materials, substrates, and target film thicknesses. Within each program, each of the 6 segments independently controls spin speed (rpm), spin time (seconds), and acceleration rate. The LCD display provides real-time feedback on current spin speed, elapsed time, and active program step. The polypropylene (PP) chamber provides chemical resistance to corrosive coating

solutions, and an inert gas inlet port on the cover allows the coating to be performed under an inert atmosphere.

TECHNICAL SPECIFICATIONS

Programmable Hi-Speed Spin Coater - ToronSC™ 1000P Technical Specifications

Parameter	Specification
Model	ToronSC™ 1000P
Maximum Substrate Size	5" (127 mm) diameter
Spin Speed Range	500 - 10,000 rpm
Motor Type	24V Brushless DC servo motor
Programs	12 programs, 6 segments per program
Display	LCD display with keyboard interface
Chamber Material	Polypropylene (PP) — anti-corrosion
Atmosphere Control	Inert gas inlet port on cover (N ₂ / Ar compatible)
Substrate Fixation	Vacuum chuck
Vacuum Chucks Included	2 sizes (standard)
Centering Tool	Included
Vacuum Pump	Oilless vacuum pump (included)
Voltage	AC 110/220V, 50/60 Hz

Parameter	Specification
Certification	CE



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