

Spinner Comparison

Specifications SPIN spin coaters

- Programmable CW & CCW and puddling rotation
- Automatic safety lid lock with sensor interlock
- Speed 0 rpm - 12.000 rpm, accuracy +/- 0.1 rpm
- Acceleration / deceleration 1 - 30.000 rpm/sec, selectable per step

Specifications POLOS advanced series

- Automatic safety lid lock with sensor interlock
- Automatic sequential or parallel chemical dispense
- Up to 6 spray nozzles, each independently programmable



	SPIN150i	SPIN200i	POLOS200 Advanced	POLOS300 Advanced
Max. substrate diameter	160 mm round or 4" x 4" square	260 mm round or 6" x 6" square	260 mm round or 6" x 6" square	360 mm round or 8" x 8" square
Max. process chamber diameter	202 mm	302 mm	302 mm	402 mm
Dimension (desktop version)	274 (w) x 250 (h) x 451 (d) mm	380 (w) x 307 (h) x 559 (d) mm	380 (w) x 307 (h) x 559 (d) mm	430 (w) x 310 (h) x 650 (d) mm
Shipping weight	14 kg	20 kg	20 kg	32 kg
Shipping dimensions	600 x 380 x 360 mm	680 x 580 x 480 mm	680 x 580 x 480 mm	780 x 620 x 580 mm
Free programmable outputs	3 dry relays, nominal switching capacity 0.5A / 125 VAC - 0.3A / 60DC 3 Programmable Dry Contacts: e.g. for automated control of Dispense unit, Nitrogen diffuser, etc.		3 dry relays, nominal switching capacity 0.5A / 125 VAC - 0.3A / 60DC Up to 16 digital input, 16 digital output, 4 analog input, 4 analog output (with optional IO modules)	

Requirements

Voltage	100 - 120 VAC / 200 - 240 VAC 50 / 60 Hz (auto select)	
Power consumption	Max. 500 W	Max. 1800 W
Max. current	5 A / 2.5 A	10 A / 8 A
Vacuum	- 65 kPa (-19 inHg), ≥ 80 LPM Tube OD Ø8 mm	- 80 kPa (-24 inHg), ≥ 80 LPM Tube OD Ø8 mm
Motor purge gas	20 - 50 kPa, 2-5 L/min, tube OD Ø 6 mm 500 L/hr	
Drain connection	1" M-NPT	

Specifications Automated spin coaters

- Fully automatic operation, stand-alone systems
- Automatic safety lid lock with sensor interlock
- Speed 100 ~ 6000 rpm, accuracy +/- 0.1 rpm
- Acceleration / deceleration 1 - 3.000 rpm/sec, selectable per step



	POLOS450 Advanced	POLOS SPIN4000A	POLOS SPIN5000A
Max. substrate diameter	460 mm round or 10" x 10" square	300 mm round or 8" x 8" square	500 mm round or 10" x 10" square
Max. process chamber diameter	502 mm	15.7" 400 mm	850 mm
Dimension (desktop version)	795 (w) x 638 (h) x 922 (d) mm	650 (w) x 1200 (h) x 945 (d) mm	1700 (w) x 2100 (h) x 1700 (d) mm
Shipping weight	75 kg	350 kg	2150 kg
Shipping dimensions	800 x 790 x 1180 mm	1230 (w) x 1390 (h) x 1420 (d) mm	2200 (w) x 2500 (h) x 2200 (d) mm
Free programmable outputs	3 dry relays, nominal switching capacity 0.5A / 125 VAC - 0.3A / 60DC Up to 16 digital input, 16 digital output, 4 analog input, 4 analog output (with optional IO modules)	HMI : USB / PLC : R232	

Requirements

Voltage	100 - 120 VAC / 200 - 240 VAC 50 / 60 Hz (auto select)	1KW	9,5KW
Power consumption	Max. 1800 W	Pump power: AC 220V Main power: AC 220V/1P/15A	
Max. current	10 A / 8 A		
Vacuum	- 80 kPa (-24 inHg), ≥ 80 LPM Tube OD Ø8 mm	-600 mm Hg	-600 mm Hg
Motor purge gas	20 - 50 kPa, 2-5 L/min, Tube OD Ø 6 mm 500 L/hr	NO	NO
Drain connection	1" M-NPT	50 mm	50 mm

SPIN150i spin coater

The single wafer spin coater SPIN150i is available in NPP or PTFE. These high quality spin coaters are specifically designed for R&D and low volume production in the MEMS, Semiconductor, PV, Microfluidic fields, etc. Suitable for all typical spin processes: cleaning, rinse/dry, coating, developing and etching.



Each Fab, each R&D or even each student in university uses different spin processes. POLOS spin coaters offer unlimited processes: easy, step-by-step recipe programming via a large color touchscreen controller, USB up- or download from your own PC, unlimited programs / steps and graphical representation. And a repeatable spin coating process, time and time again. This makes the POLOS SPIN150i the best laboratory spin coater you can buy! The SPIN150i for up to 150 mm substrates includes a vacuum chuck A-V36 and fragment adapter D-V10. A variety of nozzles, megasonic cleaning and dispense lines can be added as options. The low-cost SPIN150i spin coater is suitable for processing fragments as small as 5 mm up to Ø150 mm (or 6") or 4" x 4" substrates.

System data	SPIN150i
Housing material	Natural polypropylene (NPP)
Process chamber material	Natural polypropylene (NPP) or high chemical resistant PTFE (TFM™)
Interface	Detachable, full-size touchscreen, glove friendly, IP52, chemical resistant
External connection	1 USB port on the side of your display
Max. substrate diameter	160 mm round or 4" x 4" square
Max. process chamber diameter	202 mm
Dimension (desktop version)	274 (w) x 250 (h) x 451 (d) mm

Options SPIN150i & SPIN200i



Syringe holder starter kit consisting of 30cc dispense barrels, needles and plungers.



Center dispense system with higher reliability of results.



Centering tool is easy to use and adjustable for different substrate sizes.



Dispense unit can be mounted in syringe holder and be connected to one of the 3 programmable dry contacts.

SPIN200i spin coater

The single wafer spin coater SPIN200i is an advanced system that offers precise, repeatable process control. An aerodynamically efficient chamber enhances uniformity, while the natural polypropylene or PTFE construction ensures a metal-free, contamination-free process area that is easy to clean.



The SPIN200i comes with a chuck that will hold from 4" to 8" wafers. This spin coater offers exceptional value and capability: precision speed range of up to 12.000 rpm, programmable in 1 rpm, for CW, CCW rotation (ideal for "puddle" develop), and per-step acceleration of max. 30.000. It is also programmable in 1 rpm, to cover any process requirement. It is programmed through an easy-entry color touchscreen. The self-explanatory icons make it easy to operate even for new users.

A quality choice for the long-term, all our spinners are designed and manufactured in Germany.

System data	SPIN200i
Housing material	Natural polypropylene (NPP)
Process chamber material	Natural polypropylene (NPP) or high chemical resistant PTFE (TFM™)
Interface	Detachable, full-size touchscreen, glove friendly, IP52, chemical resistant
External connection	1 USB port on the side of your display
Max. substrate diameter	260 mm round or 6" x 6" square
Max. process chamber diameter	302 mm
Dimension (desktop version)	380 (w) x 307 (h) x 599 (d) mm

Options SPIN150i & SPIN200i



Liners are available in PET. 0.5mm thick, transparent, antistatic (108 - 1010 Ω) to prevent possible build-up of static charge in the chamber.



Central Dispensing Syringe Holder for single or triple syringes, with integrated N2 diffuser.



Corrugated Drainhose and connector in NPP, including connection to connect to the drainport.



Foot Switch for hand free usage; controlling start/stop function and vacuum.

POLOS200 Advanced

Our high quality, all NPP and PTFE POLOS single wafer spin coaters are specifically designed for R&D and single wafer production in the MEMS, Semiconductor, PV, Microfluidic fields, etc. Suitable for all typical spin processes: cleaning, rinse/dry, coating, developing and etching.



The POLOS200 Advanced "Top of the line" spin coater supports fragments starting from 5 mm up to 200 mm (or 8") or 6" x 6" square. This revolutionary spin coater can be used as a full automatic solution for your process. The system will support a large variety of fluids thanks to the full plastic housing available in natural polypropylene as well as PTFE. The control of the motor mode rotation (clockwise/counterclockwise), in combination with the up to 6 automatic dispensers in the POLOS Advanced systems, enables a uniform deposition of multilayer thin films and photoresist development. These features enable a quick process optimization with fully automatic recipes and high reproducibility.

System data	POLOS200 Advanced
Housing material	Natural polypropylene (NPP)
Process chamber material	Natural polypropylene (NPP) or high chemical resistant PTFE (TFM™)
Interface	Detachable, full-size touchscreen, glove friendly, IP52, chemical resistant
External connection	1 USB port on the side of the display
Max. substrate diameter	260 mm round or 6" x 6" square
Max. process chamber diameter	302 mm
Dimension (desktop version)	380 (w) x 307 (h) x 599 (d) mm

Options



The vacuum pump is quiet and reliable.



Auto Dispense Lines Full PTFE dispense vessel automated injector line.



Jet Spray injector for accurate dispensing of chemicals, with adjustable dispensing position.



The sapphire MegPie is a single-wafer megasonic transducer used for cleaning and sonochemical processing.



POLOS300 Advanced

The POLOS300 Advanced single substrate spin processor is perfectly suitable for a wide range of applications, including drying, rinsing, cleaning, and coating. This table-top spin processor is seamless build in a full-plastic, housing in natural polypropylene (NPP) or optional PTFE, and is suitable for processing fragments as small as 5 mm up to substrates sizes up to Ø 300 mm or 8" x 8".



POLOS300 Advanced Table Top

The POLOS300 Advanced allows the user to either dispense manually through a syringe, or use the optional manifold with a selectable valve for dispensing one (1) chemical from the dispense vessel (DV), DI water or N2.

Capabilities

- Post-CMP cleaning
- LIGA processes
- TSV processing
- Mask cleaning
- Etch assist
- SU-8 develop
- Plating pre-cleaning
- Lift off
- Pre-plating bubble removal
- Resist strip
- Post-laser cleaning

System data	POLOS300 Advanced
Housing material	Natural polypropylene (NPP)
Process chamber material	Natural polypropylene (NPP) or high chemical resistant PTFE (TFM™)
Interface	Detachable, full-size touchscreen, glove friendly, IP52, chemical resistant
External connection	1 USB port on the side of your display
Max. substrate diameter	300 mm round or 8" x 8" square
Max. process chamber diameter	342 mm
Dimension (desktop version)	430 (w) x 310 (h) x 650 (d) mm



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**Next generation
of full-field spin
coating systems**
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POLOS450 Advanced

The POLOS series spin processors are advanced systems, offering precise, repeatable process control. An aerodynamically efficient chamber enhances uniformity, while natural polypropylene process chamber guarantees a contamination-free, easy to clean process area. All units feature programmable CW & CCW Rotation and puddle function.



POLOS450 Advanced Table Top

Table top Single Substrate Spinner with NPP housing, spincup and manual chemical dispense. With 500 mm inside diameter for substrates up to max. Ø 500 mm round and 350 x 350 mm square substrates.

Features

- Automatic Sequential or Parallel Chemical Dispenses
- Up to 6 spray nozzles, each programmable independently

Specifications	POLOS450 Advanced Table Top
Spin speed RPM	0 - 1.500 rpm** \pm 1 rpm steps
Spin speed accuracy	\pm 0.1 rpm**
Spin rotational direction	Clockwise, Counter clockwise and Puddle
Max. acceleration	\leq 1.500 rpm/s depends on the load**
Free programmable outputs	3 dry relays, nominal switching capacity 0.5A /125 VAC - 0.3A / 60DC
Max. substrate diameter	460 mm round and 350x350 mm square substrates
Max. process chamber diameter	502 mm
Dimension (desktop version)	795 (w) x 638 (h) x 922 (d) mm
Motor purge gas	20 - 50 kPa. Tube OD Ø 6mm 500 L/hr
Drain connection	1.5" M-NPT

**Measured without substrate, limitations may apply depending on chuck used and substrate specification.

POLOS SPIN4000A

New in our portfolio is the POLOS SPIN4000A. This powerful spin coater system is especially designed for research and variable processes of all applications. It is characterized by its ability to operate fully automatic. The POLOS SPIN4000A represents the next generation of full-field spin coating systems.



POLOS SPIN4000A

The POLOS SPIN4000A is a stand-alone, fully automatic spin coater system. The steel housing guarantees a contamination free work area, and its high-end components ensure a repeatable, programmable spin process of up 300 x 300mm substrates, over and over.

Features

- Automatic Photoresist Dispense with up to 3 spray nozzles (optional)
- 8,5" touch screen
- Vacuum pump
- Upper cover (optional)

Specifications	POLOS SPIN4000A
Spin speed RPM	6000rpm
Spin speed accuracy	0.1 rpm
Spin rotational direction	Clockwise and Counter clockwise
Max. acceleration	≤ 3000 rpm/s depends on the load**
Free programmable outputs	20 steps, 20 Recipes (Save & load)
Max. substrate diameter	300 mm round or 8" x 8" square substrates
Dimension (desktop version)	650 (w) x 1200 (h) x 945 (d) mm

**Measured without substrate, limitations may apply depending on chuck used and substrate specification.

POLOS SPIN5000A

Also new in our portfolio is the POLOS SPIN5000A. This powerful spin coater system is especially designed for research and variable processes of all applications. It is characterized by its ability to be fully customizable and operate fully automatic. The POLOS SPIN5000A represents the next generation of full-field spin coating systems.



POLOS SPIN5000A

The POLOS SPIN5000A is a stand-alone, fully automatic spin coater system. The steel housing guarantees a contamination free work area, and its high-end components ensure a repeatable, programmable spin process of up to 500 x 500mm substrates, over and over.

Features

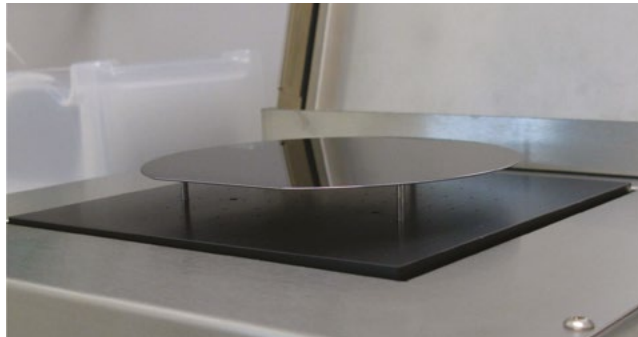
- Automatic Dispense with up to 3 spray nozzles (optional)
- 8,5" touch screen
- Vacuum pump
- Upper cover (optional)

Specifications	POLOS SPIN5000A
Spin speed RPM	1200rpm
Spin speed accuracy	0.1 rpm
Spin rotational direction	Clockwise and Counter clockwise
Max. acceleration	≤ 3000 rpm/s depends on the load**
Free programmable outputs	20 steps, 20 Recipes (Save & load)
Max. substrate diameter	700 mm round or 500x500 mm square substrates
Dimension (desktop version)	1700 (w) × 2100 (h) × 1700 (d) mm

**Measured without substrate, limitations may apply depending on chuck used and substrate specification.

POLOS Precision Bake Plate

Our table top hotplate enables upgradeable options including lifting pins, vacuum bake, proximity pins and hinged lid, making it a versatile and affordable tool for R&D and pilot lines. A precision digital temperature controller enables adjustable temperature steps of 1 °C up to 230 °C. It is suitable for soft bake as well as hard bake processes, and curing of photoresist, epoxy or any other work requiring precise temperature control.



Operational environments. The system is designed for an ambient temperature of 10 °C - 40 °C.

Measurement & Weight	HL200S
Weight	12 kg
Dimensions device	450 x 320 x 135 mm
Dimensions with Hinged Lid	450 x 320 x 200 mm

Operating requirements	HL200S
Voltage	110 or 240 VAC/ 50/60 Hz
Max. current	2.5 / 5A
Power consumption (max.)	550 Watt

Features

- Diagnostic serial interface (RS232)
- Precision temperature controlling system
- Countdown timer (1 - 999 sec.) with acoustic alert
- Low temperature gradient heating unit (safe housing temp.)

Options

- Hinged lid
- Lifting pins
- Proximity pins
- Vacuum bake



HL200S specifications

- Temperature ranges from 50 - 230 °C (adjustable in steps of 1 °C)
- Programmable storage of 10 programs (temperature/time)
- Temperature uniformity ± 0.5 °C
- Heater surface area 220 x 220 mm
- Suitable for 1 x 8" wafer
- Heater block material: aluminum (anodized)

POLOS SPIN Wet Station

An extremely versatile platform for a wide range of processes. Based on the proven high quality POLOS single substrate spin processor, the modular design spin process station provides excellent value for money: full plastic construction, with high-end components, compatible with any chemical environment in a modular set-up, suitable for your specific requirement.



The seamless integration of polypropylene (optional PTFE) spin processor in the base station allows you to work with all kinds of chemicals. In the station housing various modules can be incorporated and centrally controlled for supply of chemicals and gases.

Standard configurations are available for cleaning substrates as well as photo masks, photoresist coating, developing, etching and lift-off processes.

Value for money: Fully automatic, accurate and repeatable processing.

Automatic dispense

- Static chemical dispense through a range of adjustable nozzles in the domed lid. Adjustable back-side spray arm. Heavy-duty motor: programmable for 1 to 12.000 rpm. CW & CCW rotation allowing puddle mode. Megasonic is available as an option.



Freely programmable process

- Sequentially programmable multiple dispense lines.
- Step-less programming of various flows within a process step from 150 up to 2500 ml/min (depending on dispense line thickness). For optional integrated mixing systems, the mixing rates of the various chemicals can be programmed per step.



Source: Fraunhofer ENAS-Dr. Knut Gottfried, Precise Bulk Silicon Wet Etching 2013