

KW-4A User Manual



SETCAS LLC

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MISSION

Create high-end equipment

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Company profile:

SETCAS LLC is a new high-tech enterprise, mainly engaged in the research and development of semiconductor devices and electronic products.

The company specializes in mechanical design, software development, automatic control , and industrial design technologies.

Packing List

No.	Name		Amount
1	Pump Extension Cord	Pump	1
		Pump Silencer	1
		Pump Power Cord	1
		Φ8 hose	1
		User manual	1
		Qualification Certificate	1
		Warranty card	1
		Company Product Brochure	1
2	KW-4A Spin Coater	Spin Coater	1
		Pump Power Cord	1
		Spin Coater Power Cord	1
		Spin Bowl	1
		Spin Chuck	3
		User manual	1
		Qualification Certificate	1
		Warranty Card	1
		Company Product Brochure	1
		Use Attention	1



Attentions

- The product is intended for use in a clean and low- humidity room environment. temperature: 0-40°C; humidity: < 85%;
- Always wear the proper personal protective equipment (PPE) for the job, including safety glasses, gloves, and other equipment as needed to protect from mechanical and chemical hazards.;
- This machine has components capable of very-high-speed rotation. Ensure all lids and panels are in place before activating the rotational features;
- High voltage is present in the machine. Disconnect the power before servicing.
- The unit is very heavy, and proper precautions should be taken when handling or moving the machine to minimize risk of injury.



Services and Maintenance

- 1-year full warranty on parts and labor;
- Free remote technical support (phone, email, fax) for the life of the product;
- Application process assistance for the life of the product;
- Maintain on-site or in the factory.



Feedback

If you have any comments and suggestions, please let us know.

- Tel: **+1 858-537-7743**;
- Web: **www.setcas.online**;
- Email : **paw@live.com**.

Product Feature

- Prevent the cleaners and solvents travelling down the motor;
- Set speed and time with the keypad, convenient and accurate.
- Take button and start button interlock, prevent the substrate flying out ;
- Add the Take/Absorb button to control the start and stop of the pump, reduce the pump noise pollution and extend the pump life.

Performance parameters

- Spin-coater power: 100w, spin-coating uniformity: $\pm 2\%$, pump power: 350w, pumping speed: $\geq 60\text{L}/\text{MIN}$;
- The motor is closed-loop control, there are two speed sections: high-speed range: 1000-8500rpm, low-speed range: 500-8500rpm;
- Set time of each speed section separately, time range of high-speed: 0-999s, time range of high-speed: 0-999s;
- Motor speed stability: $\pm 1\%$, timing accuracy: $\pm 20\text{ppm}$;
- Speed indicator range: 0-9990rpm, precision: $\pm 10\text{rpm}$; Time indicator range 0-999s, precision: $\pm 20\text{ppm}$;
- Voltage: 100-240VAC, single phase;
- Dimensions: 215mm (W) \times 240mm (D) \times 220mm (H) ;
- Product weight: spin coater, 9 kg; pump, 8.5kg;
- Substrate sizes: 5mm to 100mm round, 141mm \times 141mm square.

Intallation

🔧 Pump Installation

Place the pump horizontal, and install the silencer on the pump as the fig.1 below.

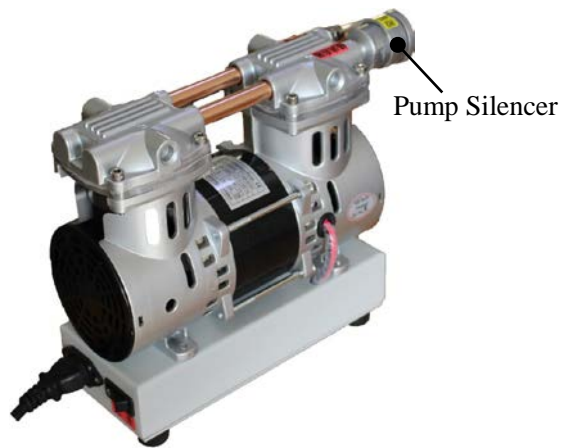


Fig.1 Pump Installation Diagram

🔧 Spin Coater Installation

Place the spin coater horizontally, complete its installation by following the steps below:

1. Spin bowl: place the spin bowl on the top of the spin coater ;
2. Spin chuck: place spin chuck of the right size on the encoder;



Fig.2 Spin Coater Installation Diagram

✚ Connection of spin coater and pump

The connection spin coater and pump mainly includes three items. Please follow fig3 to complete the connection.

Note: please make sure the power is off before the connection.

- Spin coater power cord and socket connection, ③ ;
- Pump power cord and socket connection, ②-② ;
- Pipe connection of Spin coater and pump, ①-① .

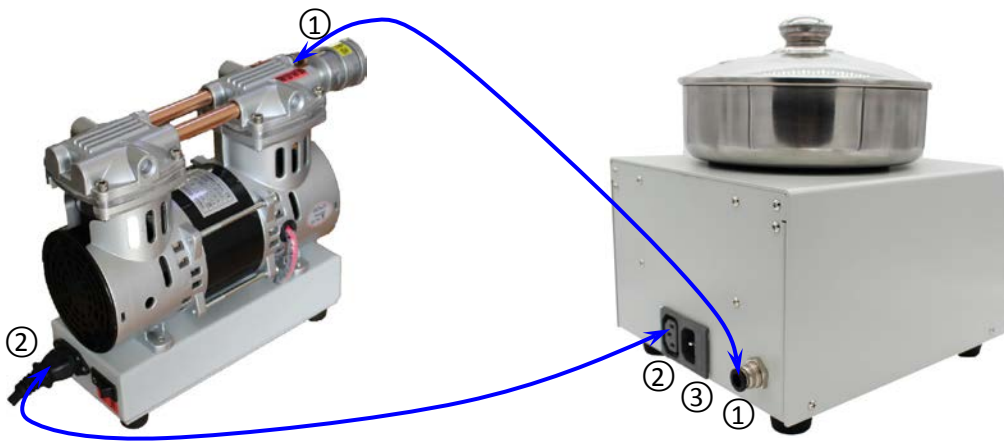


Fig.3 Connection Diagram of Pump and Spin coater

①Pipe, ②Pump power cord, ③Spin coater power cord.

Product Operation Procedure

✦ Operation panel introduction

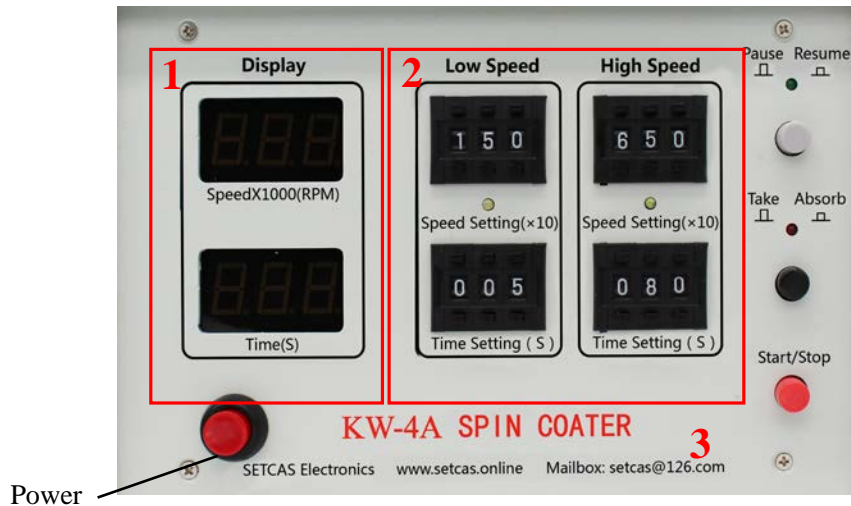


Fig.4 Operation panel

1、 Display

- **Speed indicator (×1000rpm):** shows the current speed of the spindle, the current speed = the display speed × 1000;
- **Time indicator:** shows the time remaining on the current process step.

2、 Speed

➤ Low-speed

- **Speed setting (×10) :** set the speed of the spindle spinning at the low-speed section, the spinning speed = the setting speed×10;
- **Time setting (S) :** set the time of the spindle spinning at the low-speed section.
- **Low-speed lamp:** Show the motor is running at the low speed section currently.

➤ High-speed

- **Speed setting (×10) :** set the speed of the spindle spinning at the high-speed section, the spinning speed = the setting speed×10;
- **Time setting (S) :** set the time of the spindle spinning at the high-speed section.
- **High-speed lamp:** Show the motor is running at the high speed section currently.

3、 Buttons

- **Power:** press the power button, connect or cut off the electricity supply, then turn on or turn off the machine.
- **Pause/Resume**
 - a. **Pause:** press the Pause button to pause the spindle spinning,when the lamp is off;
 - b. **Resume:** press the Resume button to continue the spindle spinning that was paused before,when the lamp is on.
- **Take /Absorb**
 - a. **Take:** press the Take button, the vacuum at the spin chuck is turned off, then you can take away the substrate,when the lamp is off .
 - b. **Absorb:** press the Absorb button, the vacuum at the spin chuck is turned on, then you can start the spindle spinning,when the lamp is on .

- **Start/Stop**
- **a. Start:** Start the spindle spinning using the entered velocity and time,when the lamp of Pause/Resume and Take /Absorb are all on;
- **b. Stop:** Stop the spindle.

Spin-coating procedure

After finishing the installation and connection of the pump and spin coater, please follow the following steps below to complete the spin coating:

- 1、 Power connection: turn on the power switch of the spin coater and pump successively;
- 2、 Inspection: after step1,if the LED of display are on, you can continue the next steps;
- 3、 Parameter setting: set the parameters using the keypad on the operation panel;
- 4、 Substrate placing: place the substrate on the right size spin chuck, as shown in fig.5, ;
- 5、 Substrate sorbing: press the absorb button, the substrate is absorbed on the spin chuck ;
- 6、 Spindle spinning: press the start button, the spindle spins using the entered velocity and time, when the lamp of Pause/Resume and Take /Absorb are all on.
- 7、 Solvents spraying:
 - Spraying motionless
If you need spray motionless, please do it during step 5 and 6.
 - Spray at a low speed
If you need spray at a low speed, please do it at this step at the low-speed section.
- 8、 Substrate lifting
 - Lift during a spin-coating process

If you want take the substrate away without stopping the spin-coating process, please press the pause button first, when the lamp is off, then press the take button, when the lamp is off, and you can take away or replace the substrate after the spindle paused.

- Lift after a spin-coating process

If you want take away or replace the substrate after the spin-coating process, please press the stop button or wait for the finish of the spin-coating process, then press the take button, when the lamp is off, then you can take away or replace the substrate after the spindle stopped.

✚ Use attentions

1、Substrate Placing

- The round hole on the spin chuck must be covered by the substrate;
- Spin chucks with vacuum holes only apply to substrates with a thickness of 0.3mm to 2mm, special spin chuck need be customized for substrates of other thickness;
- Substrate diameter must be 2mm to 4mm lager than the spin chuck diameter, as shown in fig.5: $a \geq 1 \sim 2\text{mm}$

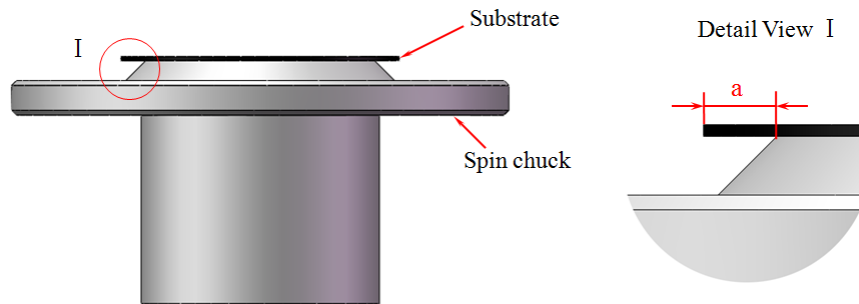


Fig.5 Substrate Placing diagram

2、Cleaning

Any of the following situations occur, please clean the vacuum chamber:

- Normal use for more than 3 months;
- The spindle spinning is unstable or stuck;
- The substrate flying out during a spin-coating process without enough vacuum adsorption;
- The cleaners or solvents go down the spindle vacuum hole or the vacuum chamber.

Date	Version	Updates
13-8-2018	V2.0	Update error, etc.