Parallel Synthesizer

PRS-6 x 250

Operation Instructions

Technical parameters of RPS parallel synthesizer:

Product Model	PRS-6 x 250
Size Of Working Disk	7.0（in）
Disk Material	(SUS304) Stainless steels/Surface PTFE spraying
Module Material	Non magnetic aluminum alloy/Surface oxidation treatment
Motor Type	Brushless DC motor
Number Of Test Tubes	6（Flask type）
Motor Input Power	40[W]
Power	0.67[HP]
Voltage	110[VAC]
Frequency	60[Hz]
Number Of Mixing Points	6
Maximum Mixing Volume	50(Optional)/100(Optional)/250(standard configuration)（H2O）[ml]
Mixing Sub Type	Rod-shaped/Jujube core type/Hexagonal pattern/Cross-bonding
Speed Range	0-1400[rpm]
Speed Display	Digital display
Function	Timekeeping function, Condensing module, Nitrogen protection, Quick sampling, Vacuum system, Cooling module
Heating Temperature Range	Room temperature - 220[℃]/428[℉]
Temperature Display	Digital display
Working Disc Safety Temperature	220[℃]/428[℉]
Protection Level	IP42
Permissible Ambient Temperature	5-40[℃]/41-104[℉]

——Quick to use guide

Under the premise of cutting off the power supply and wearing gloves, gently place the heating parallel synthesis reaction basic module on the magnetic stirring heating plate.

Tighten the cover of the reaction tube and be careful not to use excessive force to avoid damaging the reaction tube.

Place the reaction tube vertically and rely on its own gravity and elastic fastening ring to slowly drop the reaction tube to the bottom heating plate without external force.

Magnetic stirrer control panel:

A.Heating on/off button
B.Stirring on/off button
C.Setting key/SET
D.Shift key/Self tuning key ／<
E.Set minus key ／ ∨
F.Set up keying ／ ∧
G.Temperature setting display window/PV
H.Speed setting display window/r/min
I.Timing settings/Time display window/timing
J.Heating output indicator light/Green light
K.Check back key



Debug

1.Fix the upright rod in the screw hole above the back of the mixer, adjust the height of the cross clamp, fix the reaction bottle with a universal clamp, place a suitable stirring bar, plug in the internal sensor plug/external sensor probe, insert the power supply to 110V, and turn on the main switch.

2.Temperature setting： Press the heating switch button to enter the heating state, and there is a digital display in the PV window. Press the SET key, the numbers in the PV window will flash, and the numbers in the PV window can be adjusted using the" < "," ∨ ", and" Λ "buttons.Press the SET key again to exit the PV window temperature setting state, and the PV window temperature setting is completed. When the instrument is working, the PV window displays the measured temperature. Set the required heating temperature, such as 100℃/212℉. A green light on indicates heating, and a green light off indicates stopping. The microcomputer will determine the

heating amount based on the temperature difference between the set temperature and the current temperature, ensuring that there is no temperature surge and the heating is achieved at once. It will also maintain a balance between the set value and the displayed value at a temperature difference of ± 1℃/33.8℉, making the heating process easy to complete.

3.Rotation speed setting： Press the mixing switch button to enter the mixing state, and the r/min window has a numerical display. Press the SET key, the number in the PV window will flash. Press the SET key again, and the PV window setting status will exit. The number in the r/min window will flash, and the number in the r/min window can be adjusted using the "<", "∨", and "Λ" buttons. Press the SET key again to exit the r/min window speed setting state, and the r/min window speed setting is completed. When the instrument is working, the r/min window displays the measured speed. 100-2500 rpm, LCD display, button selection, stable low speed, strong high speed.

4.Timing function：Turn on the main switch and the timing window will display '0'. Press the mixing switch button or heating switch button, and the timing window will display the timing time set for the last operation. Press the SET setting key, the numbers in the PV window will flash. Press the SET setting key again, the PV window setting state will exit, and the numbers in the r/min window will flash. Press the SET setting key again, the r/min window setting state will exit, and the numbers in the timing window will flash. The numbers in the timing window can be adjusted using the<"," ∨ ", and" Λ "buttons.Press the SET key again to exit the timing window timing time setting state, and the timing window time setting is completed. Set the required heating and stirring timing time, such as 5 minutes. The numbers in the timing window decrease gradually as the stirring time increases, until 5, 4, 3, 2, and 1 are displayed until End. The heating and stirring stop, and the PV window and r/min window are not displayed. The timing window unit is minutes, with a timing range of 1-999. The timing window number is set to "0", indicating an indefinite state. The instrument can be heated and stirred at the same time, or can be timed separately.

5.After the experiment is completed, turn off the main switch. The experiment still needs to be conducted again. You can press the heating switch button and stirring switch button to conduct the experiment again.

6.Check back function： It is convenient to view the set values of various functions while the instrument is in operation. Press the back check button to see the temperature value set in the PV window. Press the back check button again to see the speed value set in the r/min window. Press the back check button again to see the timing time set in the timing window. Press the back check button again to exit the back check status.During the operation process, after viewing a certain set value, do not look at anything else and do not press the check back button. After 8 seconds, the check back status will automatically exit and enter the normal display state.

7.Self tuning function：Start the self tuning function can make different heating section or heating power and solution how much irregularity, the shortest heating time, the smallest flushing temperature, the best balance, However, after changing the heating medium or heating conditions, the self tuning should be reset.

8.Start self tuning: In the normal measurement control state, press and hold the "<" button for 8 seconds to enter the self-tuning state. In the self-tuning state, the AT light flashes. If the process needs to stop self-tuning, press and hold the "<" button again for 8 seconds.

9.When pressing the SET setting button to adjust various functional parameters, there will be no button operation within 8 seconds, and the instrument will automatically exit the setting state and enter the normal display state. If the parameters still need to be adjusted, you need to press the SET setting button again to enter the setting state.

10.There is a rubber plug below the mixer to protect the external thermocouple socket from

corrosion, rust, and internal wires. If removed, the internal probe will be disconnected and the machine will stop working. When using external thermocouples, the plug should be removed and stored. Insert the external thermocouple plug into the socket and lock the nut. Then, place the stainless steel probe in the solution for temperature control heating.
11.This appliance is equipped with a couple breaking protection function. When the thermocouple connection is poor, the green light in the display window "hhhh" will go out, and the appliance will stop heating. It needs to be checked before use.

If it is necessary to replace the water outlet/inlet hose, press down on the top of the connector and pull out the pipe.

Although the PRS parallel synthesizer provides a sealed environment, there may still be a slight loss of solvent. The experimental loss data is shown in the table below:

Table 1:

RPS Series Parallel Synthesizer Solvent Evaporation（No coolant environment）

Solvent	Boiling point	1h	2h	3h	6h	12h	24h
Ether	35℃/95℉	0.9	1.2	1.5	2.3	3.5	4.9
Dichloromethane	40℃/104℉	/	0.1	0.2	0.7	1.2	1.8
Acetone	56℃/132.8℉	/	/	/	0.1	0.3	0.5
Chloroform	62℃/143.6℉	/	/	/	/	0.1	0.2
Tetrahydrofuran	67℃/152.6℉	/	/	/	/	0.1	0.1
Tert butanol	82℃/179.6℉	/	/	/	/	/	/
Dioxane	101℃/213.8℉	/	/	/	/	/	/
Toluene	111℃/231.8℉	/	/	/	/	/	/
Butanol	118℃/244.4℉	/	/	/	/	/	/
Chlorobenzene	132℃/269.6℉	/	/	/	/	/	/
Dimethylformamide	153℃/307.4℉	/	/	/	/	/	/

Store 20ml of solvent at a temperature of 7-10℃/44.6-50℉

Data displayed in milliliters

Table 2:

Solvent	Boiling point	1h	2h	3h	6h	12h	24h
ether	35℃/95℉	/	/	0.1	0.2	0.3	0.6
Dichloromethane	40℃/104℉	/	/	/	0.1	0.2	0.5
Acetone	56℃/132.8℉	/	/	/	/	0.2	0.4

Store 20ml of solvent at 0℃/32℉

Data displayed in milliliters

Technical parameter table of magnetic stirrer:

Power supply: 110V 60Hz	Stirring speed: 0-1400rmp	Temperature probe: PT100
Temperature control range: 0-300℃/32-572℉	Temperature control accuracy: ±0.5℃/32.9℉	Heating power: 500W

Packing list:

Magnetic stirrer×1 Synthesis module×1 Module 50ml×6 Module 100ml×6 Built in sensor×1
External sensor×1 Double mouthed bottle 250ml×6 Double mouthed bottle 100ml×6 Double mouthed bottle 50ml×6
Multifunctional interface × 6 Three-way valve × 6 Constant pressure drip funnel 25ml × 6 Hollow Plug 19# × 6
Stainless Steel Clip 19#×6 Vacuum tube×6 Intake pipe×1 Inlet pipe×1 Discharge pipe×1 Adapter Φ15* Φ8×3
Headspace nut×6 O-ring×6 Stirrer×40 Cooling module×1 High temperature insulation clothing×1
Low temperature module insulation clothing×1 Hose Clamp×4

Note

- The instrument needs to be self tuned for the first use, and can be used normally after self tuning is completed.
- When the buzzer sounds, you can press any key to silence it.
- The temperature control sensor can only be selected at the time of power on. If an external sensor is connected during operation, it is effective when powered on again after power off.
- If the temperature display window displays【 ---- 】, it indicates that the current temperature sensor is faulty or the controller itself is faulty. The controller automatically disconnects the heating output, the buzzer continuously sounds, and the 【 】 alarm light is on. Please carefully check the temperature sensor and its wiring.
- When the upper deviation over-temperature alarm occurs, the buzzer beeps and beeps, the [ ] alarm lamp lights, and the heating output is disconnected. If the over-temperature alarm occurs due to changing the temperature setting value, [ ] alarm lamp lights, but the buzzer does not beep.
- When the display screen displays errors [E-1] [Er-2] or [Er-3], the motor automatically stops running. Please contact after-sales personnel as soon as possible to troubleshoot before continuing to use.

- When the display screen displays an error [SEr], it indicates that the external sensor has fallen off. After inspection and repair, it is necessary to manually run the heating again to restore the normal state.
- If the self-tuning start menu is not entered during the self-tuning process, i.e. the display screen does not display the [AT] status, you can press and hold the [Time Setting] button for about 3 seconds to exit the main interface.
- The operating time of the mixer should not be too long. It can last for 8 hours at medium speed and 4 hours at high speed.
- Note: The temperature sensor detachment detection function (only valid when external sensors are connected to the host) is only effective when both the conditions of "temperature measurement value ≤ 50℃/122℉" and "(temperature setting value - temperature measurement value) ≥ 10℃/50℉" are met. In other cases, the temperature sensor detachment detection function is invalid. The sensor detachment alarm displays [SEr], and it is necessary to manually run the heating again to restore to normal state.

----Please note during operation：

- ◆ Only operate in fume hoods with protective safety measures.
- ◆ The PRS series reactors are not designed for pressurized reactions and should not be pressurized above 1 psi.
- ◆ The fluoropolymer coating on the surface is resistant to most chemicals and solvents, and it should be noted that this coating will not be scratched or damaged in any way, as doing so may expose the aluminum under the coating, increasing the likelihood of damage to the main body of the aluminum product.

- The reflux head is an integrated design, do not attempt to disassemble the reflux head in any way.
- To avoid the accumulation of scale in the water channel of the reflux head, please avoid using hard water.
- There is a risk of burns, so be careful not to touch the reaction block during heating.
- After the heat source is turned off, the PRS reactor will remain at high temperature for a considerable period of time. It is recommended to install a temperature probe or temperature sensitive label to indicate the surface temperature. If it is too cold or too hot, do not touch it.
- The recommended maximum operating temperature is 180℃/356℉, and the theoretical maximum temperature can reach 220℃/428℉. However, prolonged use above 180℃/356℉ should be avoided as this will reduce the service life of the instrument. The theoretical hot plate temperature of a magnetic stirrer can reach 220℃/428 ℉, but reaching this temperature depends on various factors such as environmental temperature, number of reaction tubes, solvent surface velocity, and temperature. It is not recommended to heat the reaction tube above 220℃/428℉, as this may cause irreversible damage to the heating plate and other components of the instrument.
- The RPS series parallel synthesis workstation can only be operated after passing training.
- The instrument is not designed for unmanned operation, and it should be ensured that there are personnel around to monitor it during use.