

2100 Series Portable Automatic Water Sampler



Installation and Operation Manual

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Introduction:

The Spectra 2100 Series Portable Automatic Water Sampler has been designed to offer the user a wide range of options in a specialized environmental monitoring instrument. The unit uses a 12 VDC power source and can be operated using a 230/ 120 VAC to 12 VDC power supply, 12 VDC battery or 12 VDC battery\solar panel package for remote location sampling. The 2100 Series incorporates a temperature-controlled sample storage chamber that utilizes both refrigeration and heating to maintain sample temperature requirements. There is no need for ice or to stop monitoring when outdoor temperatures go below freezing. It uses a peristaltic pump design for liquid draw. The unit is controlled by a single-microchip computer. Fully programmable, the user can set sampling time interval, sampling quantity and sampling mode according to as well as other application parameters according to their requirements. The 2100 series can be equipped with a flow sensor to accomplish volume-based sampling as well and time-based sampling.

Specifications:

1.Sampling Method:

* Composite sampling:

Sampling delay time: Any setting of 1-9999 minutes with increments of 1minute. Sampling

interval time: Any setting of 1-9999 minutes with increments of 1minute.

Sampling volumes: 50~700 ml with increment in 1 ml.

Number of mixed samples: 1-20

*Flowmeter control sampling: Dedicated flowmeter control sampling

*Sampling with Flow Sensor with Pulse output. Control 1~ 9999 pulses.

2. Characteristic of Peristaltic Pump: 3.4L/min (suction height 3m); 2.2/min (suction height 6m)

3. Sampling Error: $\pm 8\%$

4. Repeat Sampling Accuracy: $\pm 5\text{ml}$

5. Vertical Head: 8m

6. Horizontal Suction Head: 50m. Sampling tube has automatic air purge function.

7. Sampling Bottle: 1 x 7000ml Polyethylene bottle

8. System clock time control error: $\Delta 1 \leq 0.1\%$ and $\Delta 24 \leq 30\text{S}$

9. Air tightness of pipeline system: $\leq -0.05\text{Mpa}$

10. Mean Time Between Failure (MTBF): $\geq 1440\text{h/time}$

11. Insulation Resistance: $>20\text{M}\Omega$

12. Software lock, it can protect programs from modification.

13. It can preset and save maximum 10 programs according to needs.

14. Sampler can auto-record and save samples. The stored data will not be lost when power off, so you can check it at any time. Users can perform data analysis based on these data and water sample test results.

15. Working temperature: -25°C to $+50^{\circ}\text{C}$

16. Power: 12V DC, 80W

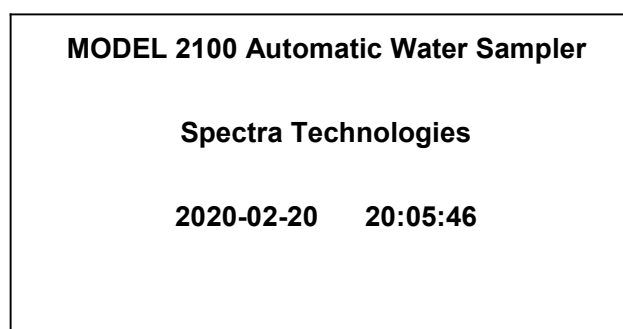
17. Size: 580mm(L) x 320mm(W) x 520mm(H); Weight: 15Kg

Installation Precautions:

1. When placing the sampling bottle, be sure to press the sampling bottle to the bottom to prevent dispenser from colliding with the top of sampling bottle and not working properly.
2. Pump tube should be checked regularly and replaced immediately if damaged. Leave a gap of 2mm between the pump tube and the
3. If the sampler is abnormal, please cut off the power immediately and notify the manufacturer to repair it.
4. If the pumping accuracy does not meet the setting parameter, user can adjust the length of pumping pipe to meet the requirements. For more details, please refer to pumping parameter settings.

Programming Guide:

After system is on, interface shows:



With the above display Press ↑ (up) to make the pump rotate forward. Press ↓ (down) to make the pump rotate in the reverse direction.

1. Manual Sampling

When in startup display, press → (right) to enter Manual sampling mode:

<p>MODEL 2100 Automatic Water Sampler</p> <p>Manual Sampling _</p> <p>Set 0100 ml (50-1000ml)</p> <p>Press Enter to confirm.</p> <p>Press M to cancel.</p>

Press ← (left) or → (right) to move cursor. Press ↑ (up) or ↓ (down) to increase or decrease number by 1. After setting the desired volume, press Enter ↵ (Enter) to save the setting. Press (M) to cancel. Use the same procedure for each parameter.

2. Automatic Sampling

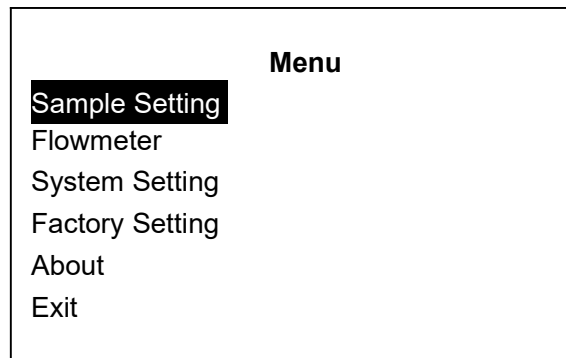
Press ↵ (Enter) under start-up interface to enter automatic sampling mode:

<p>MODEL 2100 Automatic Water Sampler</p> <p>Auto-sampling</p> <p>Please enter program number 01</p> <p>Press Enter to confirm</p> <p>Press M to cancel</p>
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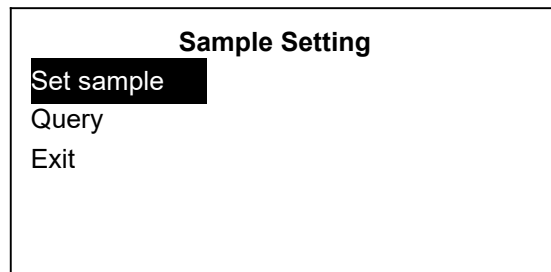
Select required program number then press ↵ (Enter) go to Auto-sample model. Press M button to cancel

3. Automatic Sampling Parameter Setting

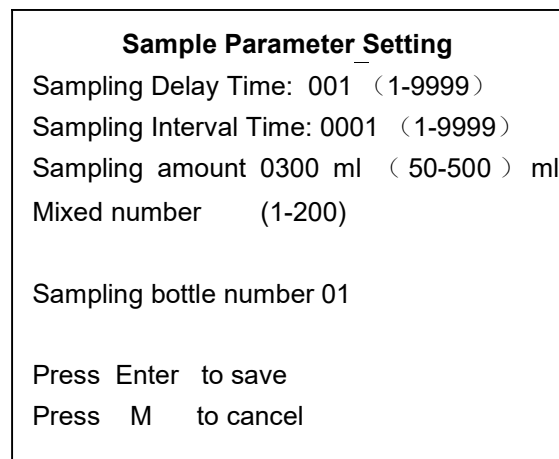
Menu: Press **M** to enter main menu (Press M again go back to start-up interface)。



Select "Sample Setting"



Press ↵ (Enter) to sample parameter setting interface:



To cancel setting, press M, going back to "Menu". To save the setting press ↵ (Enter). As below:

Setting Confirm

`Number 01 Save or cancel?

Press Enter to save

Pres M to cancel

The Sampler can save and install up to 10 preset programs. After setting, select "Query" to find the preset programs parameters.

Sample Setting

Sampling setting

Query

Exit

Query

Sampling Time Delay 0001 (1-9999)

Sampling Interval Time 0001 (1-9999)

Sampling amount 0050 ml (50-500)

4. Time Setting

At the Start-up display → System setting as below:

System setting

Time Setting

Communication Setting

Peristaltic Pump Parameter setting

Password Setting

Blacklight

Exit

Press ↵ (Enter) to Time Setting:

Time Setting	
20 -02-	20
20:35:58	
Press	Enter to confirm
Press	M to cancel

5. Suction Tube Length Setting

Go into Suction Tube Length Setting interface, select the normal length.

Suction Tube Length Setting	
Current tube length: 0700 CM	
Set pipe length:	—
	000 CM
Press	Enter to confirm
Press	M to cancel

If the actual tube is longer or shorter than the pump tube provided, you should update the data.

6. Manual Calibration

Manual Calibration	
Current Calibration: 0000	
Setting Calibration:	—
	000
Press	Enter to confirm
Press	M to cancel

How to set the Calibration:

1st step: Set up the length of suction tube.

2nd step: Press ↑ (up) on the start-up interface to make the pump rotate forward. If there's water is being dispensed the set up was successful; Otherwise, continue to press ↑ (up) until water is dispensed.

3rd step: Repeat the step 2 step 3 or 4 times. When the water output amount is stable, you can measure the amount and input the number to "Setting Coefficient". Press ↵ (Enter) to save.

7. Number of Air Purges

Setting Number of Purges

Current flushing times: 01

Setting flushing times: 0 ▬

Press Enter to confirm

Press M to cancel

The number of air purges indicates the number of backflushes before each sampling

8. Password Setting

Password Setting

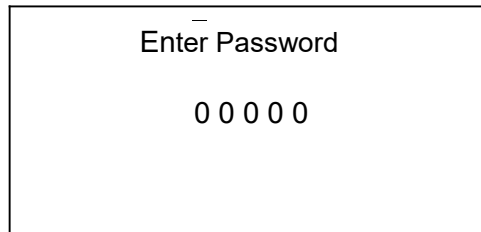
Password set/cancel

Change password

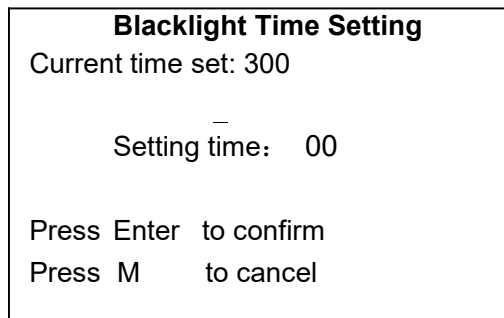
Exit

As the above shows √ means password has been enabled. Press ↵ (Enter) to stop password enable state.
Original

Password: 123456. If you want to change password, goes into the "Change password" interface:



9. Backlight Time



10. Refrigerator

- A. Connect to the power and press ON/OFF key to run on. Now the "Power" light is on. The digital display will indicate the current temperature inside the chamber.

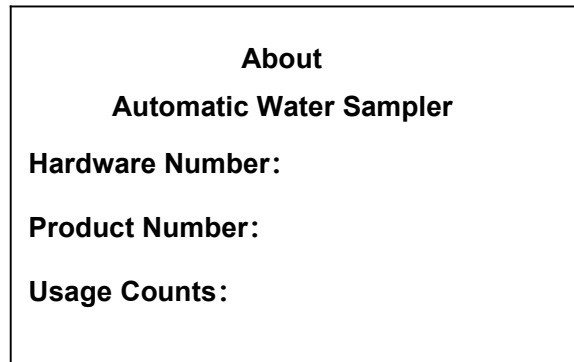


- B. If the power is off or disconnected, the refrigerator will shut down automatically. But it will operate in the mode set before when power returns.
- C. Press Δ UP or ∇ DOWN can set the temperature.
- D. When continuously press "SET" until the display shows "ECO" or "HH", you can set the refrigerator to run in ECO energy-saving mode or MAX(HH) speed mode. The corresponding indicator light will be on.
- E. Under "ECO" mode, the compressor is running at low speed to save energy. When working in "MAX" mode, the compressor is running at high speed, and the power consumption will increase. It is

recommended to start the MAX mode when rapid colling is required or the freezing temperature needs to be as low as -20°C.

11. About

Press M to start-up interface, "About" as:



12. Temperature Controller:

Heating Mode Setting

Key Point : Start up temperature < Stop temperature (The program automatically turn on the heating mode)

Set up:

1. Long press the ▲ up botton until the screen flashes. Then press the ▲ up or ▼ down botton to set up the Start up temperature.
2. long press the ▼ down botton until the screen flashes. Then press the ▲ up or ▼ down botton to set up the Stop temperature.

For example:

How should I set it up if I want to stop heating at 4 °C, and start heating again when temperature drops to 0°C

1st : Make sure it is in heating mode, Start up temperature < Stop temperature

2nd : long press the ▲ up botton until the screen flashes. Set Start temperture to 0°C.

3rd: long press the down ▼ botton until the screen flashes. Set Stop temperture to 6°C

Packing List

1. Enclosure	1
2. Pumping Pipe	1
4. Pumping pipe with filter	1x6m
5. Polycarbonate Sampling Bottle	1x7000ml
6. Operation Manual	1
7. Certificate	1
8. DC power cord	1
9. AC power adapter	1