UNICO®

AS-21P Peltier Sipper
USER'S MANUAL
（P/N S2100-109P & SQ2800-109P）

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General Information

The **UNICO®** Peltier/Sipper Package is for flow-thru and continuous temperature control (15°C~40°C). It includes item # S-2100-109 peltier/flow-thru controller and item # S-2100-107A peltier cell holder with panel (requires flowcell and tubing). This manual is the User Manual for **UNICO®** S-2100-107P, S-2100-108P, S-2100-109P, and SQ2800-107P, SQ2800-108P, SQ2800-109P

Appearance of the AS-21P

Refer from Figure-1 to Figure-4 to get acquainted with the AS-21P.

Figure-1 AS-21P Front Operation Panel*
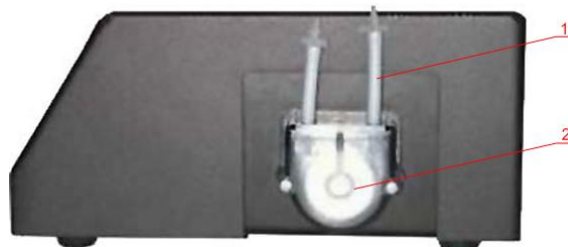* 1: Digital Display; 2: Control Buttons

Figure-2 Pump (At the Right Side Panel of the AS-21P)*
* 1: Sample Input; 2: Pump

Figure-3 AS-21P Back Panel*
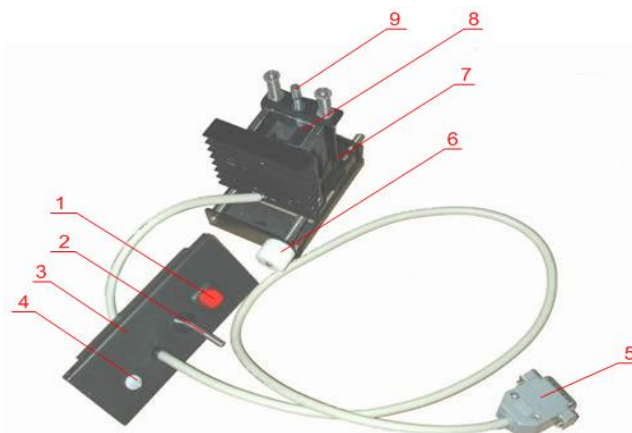* 1: RS232C port; 2: Power Socket; 3: Control Panel port; 4: Power switch

Figure-4 Flowcell and Peltier Controller--Accessories of AS-21P*

* 1: Sample Input Start/Pause Control Button; 2: Sample Inlet; 3: Panel; 4: Sample Output
 (1 to 4 is the **Flowcell Controller**); 5: RS232C Cable Connector to AS-21P;
 6: Horizontal Adjustable Knob; 7: Temperature Control Sensor;
 8: Sample Holder; 9: Vertical Fine Adjustment (5 to 9 is the **Peltier Controller**)

Connecting AS-21P to Spectrophotometer

First connect all the tubing as shown in Figure-5. Figure-5 illustrates the complete test setting of the AS-21P with all the tubing connected.
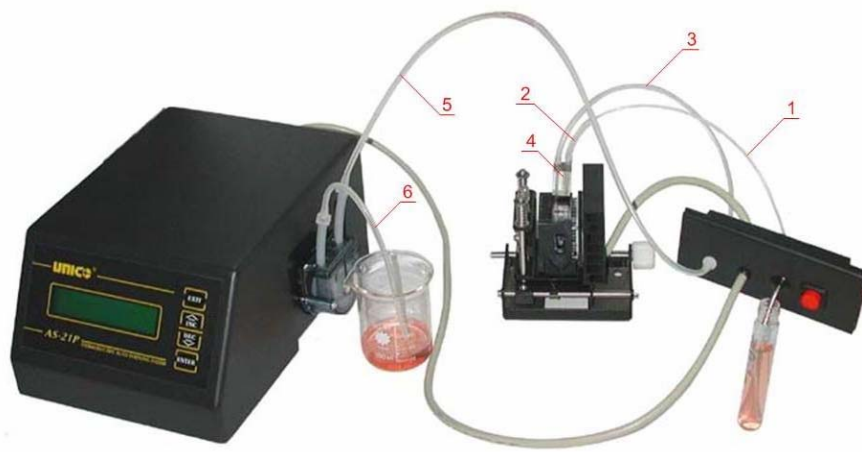
Figure-5 Complete Test Setting of AS-21P*
1: Sample Inlet; 2: Tubing (20 mm); 3: Tubing (150 mm); 4: Micro Cuvette; 5: Tubing (500 mm); 6: Tubing (200 mm)

Then connect the AS-21P to the spectrophotometer. Make sure the spectrophotometer is on:

- Plug the RS232C Cable Connector of the Flowcell Controller into the AS-21P RS232C port
- Connect AS-21P's power cable to the power source, turn on the Power Switch of AS-21P

Turn the AS-21P power on. The LCD display of the AS-21P shows as follow:

```
          ┌─────────────────────────┐
          │      UNICO AS-21P        │
          │      Version 1.1         │
          └─────────────────────────┘
```

Figure-6 Version Display

After several seconds, the Main Menu will display RUN and SET PARAMETER modes:

```
          ┌─────────────────────────┐
          │ * RUN                    │
          │   SET PARAMETER          │
          └─────────────────────────┘
```

Fugire-7 Main Menu

Keyboard

Four functional keys are available on the AS-21P **Keyboard**. They are **INC, DEC, ENTER** and **EXIT** keys:
- Push **INC** and **DEC** key to change the position of ***** or the LCD screen display
- Push **ENTER** key to enter the mode that ***** is shown at the front of the LCD display line or confirm a change
- Push **EXIT** key to return to the Main Menu

Set Parameter

In the **SET PARAMETER** section, there are **FOUR** setting that are available (figure-8):

```
          ┌─────────────────────────────────┐
          │ * TEMPERATURE                    │
          │   RUN SPEED AND RUN TIME         │
          │   EDIT CLOCK                     │
          │   USER DEFINED                   │
          └─────────────────────────────────┘
```

Figure-8 SET PARAMETER

AS-21P can only display two lines and you will only see (Figure 9):

```
          ┌─────────────────────────┐
          │ * SET TEMPURATURE        │
          │   SET PUMP SPEED         │
          └─────────────────────────┘
```

Figure-9 SET PARAMETER Actual Display

You need to use **DEC** key to move the ***** down to get **EDIT CLOCK** and **USER DEFINED** section.

Clock Setting

You may need to set the clock of the AS-21P before using it. The clock is driven by a 3V battery located on the motherboard. It is a commercially available battery. If the clock fails to start running, the battery may need to be replaced. The clock needs to be reset to be active after each battery change.

Follow the procedures below to set the **CLOCK**:
- At the Main Menu, push **DEC** key to select **SET PARAMETER** (move ***** in front of **SET PARAMETER**) (Figure-10), then push **ENTER** key
- Push **DEC** key, select **EDIT CLOCK,** then push **ENTER** key
- Set the clock by following the screen instruction [second (0 – 60), minute (0 - 60), hour (0 - 23), date (0 - 31), month (1 – 12), and year (1 – 100)]. Use **INC** and **DEC** keys to change. Press **ENTER** to confirm your setting
- Push **EXIT** key after all clock settings are done

When clock setting is done, the clock will start to run immediately.

Note: If the clock has not been set, the "Seconds" shows "80". This indicates that the clock is not active.) **THE SIPPER WILL NOT WORK PROPERLY IF CLOCK IS NOT ACTIVATED!**

Temperature Setting

Follow the procedures below to set the Temperature:
- At the Main Menu, push **DEC** key to select **SET PARAMETER** (move ***** in front of **SET PARAMETER**) (Figure-10), then push **ENTER** key
- Push **ENTER** key (Figure-11)
- Push **ENTER** key (Figure-12) (push **INC/DEC** key can set **TEMPERATUR OFF**)
- Push **INC** or **DEC** key (15°C~40°C) to select the temperature desired, then push **ENTER** key to confirm it (Figure-13) and enter temperature variation setting (CORRECT TEMPERATUE). Push **EXIT** to return to the previous menu
- Push **INC** or **DEC** key (-1.9°C to +1.9°C) to set the temperature variation value (Figure-14). This is used to adjust the temperature variation between Senor and the Cuvette for the different test environment
- Push **ENTER**/**EXIT** key to return to the previous Menu

> **RUN**
> *** SET PARAMETER**

Figure-10 Select SET PARAMETER

> *** SET TEMPURATURE**
> **SET PUMP SPEED**

Figure-11 SET PARAMETER Display

> **SET TEMPERATURE**
> **TEMPERATURE ON**

Figure-12 Select SET TEMPERATURE

> **SET TEMPERATURE**
> **TEMPERATURE=22.0C**

Figure-13 Set the TEMPERATURE

> **CORRECT TEMPERATURE**
> **+0.5C**

Figure-14 Set the Temperature Variation Value

Pump Speed and Run Time Setting

Follow the procedures below to set the Pump Speed and Run Time:
- At the Main Menu, push **DEC** key to select **SET PARAMETER** (move ***** in front of **SET PARAMETER**) (Figure-10), then push **ENTER** key
- Push **ENTER** key (Figure-11)
- Push **DEC** to move * to **SET PUMP SPEED,** push **ENTER** key (Figure-15)
- Push **INC** or **DEC** key to select speed (01 to 12) (Figure-16), then push **ENTER** key to confirm it. The screen display as Figure-16 shown
- Push **ENTER** key to go to the **SET PUMP RUN TIME** screen, push **INC** or **DEC** to set the time (001 to 255) (Figure-17)
- Push **ENTER**/**EXIT** key to return to the previous menu

```
SET TEMPERATURE
* SET PUMP SPEED
```

Figure-15 Select SET PUMP SPEED 1

```
SET PUMP SPEED
SPEED=05
```

Figure-16 Select PUMP SPEED 2

```
SET TEMPERATURE
* SET PUMP SPEED
```

Figure-17 Select SET RUN TIME 1

```
SET TEMPERATURE
* SET PUMP SPEED
```

Figure-18 Select SET RUN TIME 2

Running AS-21P

After setting the **TEMPERATURE** and **PUMP** parameters:
- At the Main Menu as Figure-7 shows, push **ENTER** key to run AS-21P (Figure-19)
- Push the Red button—the Sample Input Start/Pause Control Button on the Flowcell Controller (Figure-4) to start and stop the Pump
- To stop the AS-21P, just push **EXIT** key

```
TEMP(S): 26.6        03:18
TEMP(C):26:10        05/60
```

Figure-19 Run the AS-21P

Notes:
TEMP(S) shows the TEMPERATURE set
TEMP(C) indicates the current temperature
03:18 is the time for adjusting the temperature
05 is the pump speed set, 60 is the pump running time

Working Environment

AS-21P should be used at the following Working Environment:
- Room temperature: 22 ± 2 °C
- Relative humidity < 85%
- Far away with strong Magnetic field
- Grounded

Specification

Temperature Control: 15~40°C
Temperature Accuracy: ± 0.5°C
Temperature Control Accuracy: 0.5°C
Temperature Display Accuracy: 0.1°C

Trouble Shooting

The following are the quick trouble shooting steps:
- The unit can not power on: check the connection to power source; check whether Power Switch is on or not; Turn the unit upside down, open the black rubber cap to turn the voltage switch to the right position for the local power setting (125 V for 110 V or 230V for 220 V)
- The unit display "CONNECTION ERROR CHECK IT". Turn off the power, check the connection between the RS232C Cable Connector and the AS-21P