

The Manual of KL6600

I . Overview of the Panels



Fig. 1.The plan of panel

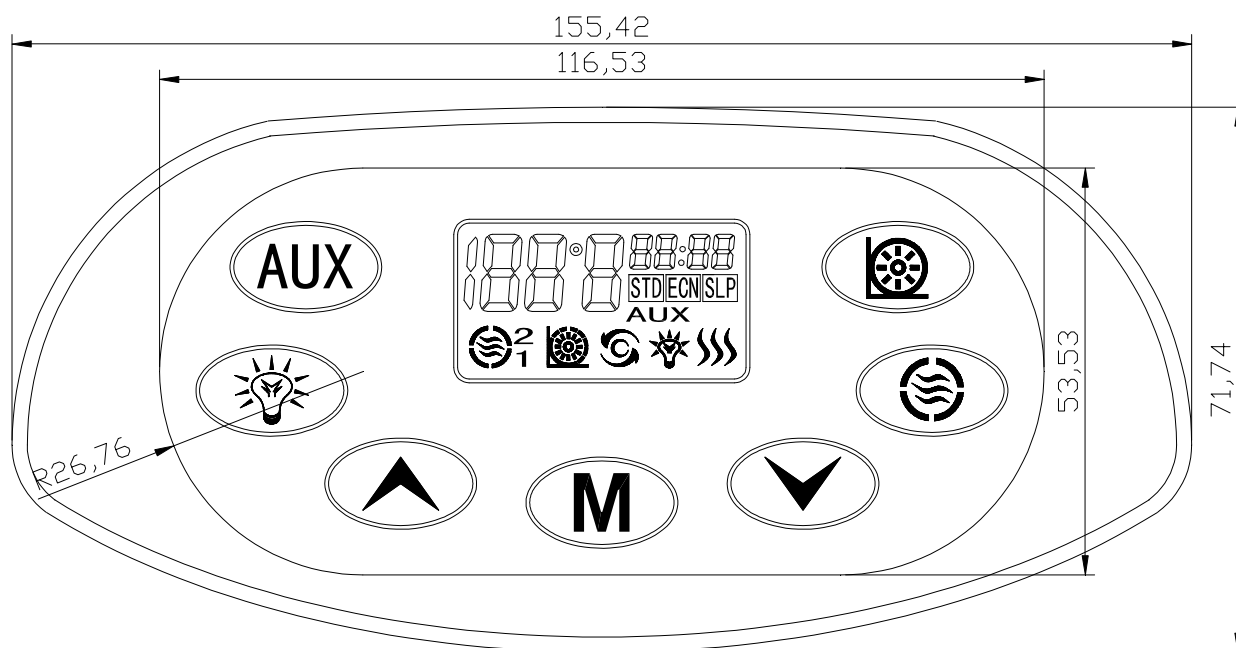


Fig. 2.The installation plan of sever buttons (156*72mm)

II .The function summary

1. Three working modes: Normal Mode, Economy Mode and Filter Mode.
2. Plug-and-play mode is to get easy operation and easy installation.
3. 24 hours clock display and setup of circulation-cleaning
4. Max 3KW of the heater, water temperature display and the setting function.
5. 1 surfing pump and 1 blower and an additional load AUX output
6. 1 impact massage pump, divide into ordinary impact and strong impact.
7. Synchronous changing or fixed color with multiple lights and ozone antivirus system.

8. Automatically anti-freeze
9. Single color button backlighting
10. Low-voltage part (Light and Ozone) overcurrent protection.
11. Overcurrent protection of circulating pump
12. Auto Moisturizing (optional)
13. Switchbank, selecting the different functions.
14. Error code hinting

III. Function Description

I).Initial electrical testing

- 1.Voltage detection (When A8=ON, it would ignore the voltage detection)

When it is initially power on, the system is working at a protecting status. LED shows “**EEA**”

The system is testing the voltage from the input transformer, when input voltage is beyond 280VAC, LED shows “**E HU**”, then the system stops working.

If input voltage is below 280VAC, the system will go into normal power supply.





In a normal power supply, turn off all the loads, and test the input voltage again.

It is normal working voltage if the voltage is below 260VAC, It is the over-voltage if it is beyond 260VAC, then LED shows “**E ou**”. In these two kinds of situation, the system will not go into normal operation.


Under this circumstance that the input voltage is normal, the system would go through the following detections in sequence:

2. The current detection of Ozone
3. The current detection of 12VDC Light
4. The current detection of loads' auto moisturizing. When B3=OFF, it would ignore the detection.
5. The current detection of circulating pump

II). Temperature Setup (77-104°F /25-40°C)

Being without any settings, the first time to press “” or “”, it enters to temperature setup. At this time, the setting temperature is flashing in the LED. Before the temperature stop flashing, press “” or “” again, it can change temperature settings. Within 6 seconds without any pressing, it will exit and save settings temperature, and begin to show the current SPA temperature.

III).The Operation of “”

1. Press and hold “” for more than 5 seconds until it appears a flashing “**r t c**” on the LED, it means that the system enters to the setting mode, and at the same time, it also enters to a “real-time clock” setting.

2. Under the setting mode, click on “**M**” to set “start time of filter cycle”, the LED shows “F5t”.

3. The 3rd time to click on “**M**” to set “continuous working time of filter cycle”, the LED shows “Ft1”.

4. The 4th time to click on “**M**” to set “tuning temperature”, the LED shows “Adj”.

5. The 5th time to click on “**M**” back “real-time clock” setting, the LED shows a flashing “rtC”.

When finish setting, (or being without pressing any setting button within 6 seconds) the data will be saved, and then it exits the setting mode. Any modification must be operated within 6 seconds.

*****Note*****

1. When A1 = ON or A2=ON, press “**M**”, then it skips the 2nd and 3rd steps.

2. Only “**M**” has the operation of “press and hold” and “click pressing”, the other buttons are “click pressing”

3. “Press and hold” means to click the button and hold until it appears some icons or enters to a certain status.

4. “Click pressing” means to click the button and let go right now, within a second.

IV). Working Mode

1. When A1= ON, there is without neither work mode or filter function, “**M**” is to control the heater ON/OFF.

2. The switch of the modes (A1=OFF):

2.1 Three kinds of working modes: Normal Mode, Economy Mode and Filter Mode.

The working mode is just effective for circulation pump, heater, circulation filter and antivirus function.

2.2 When it is power up, the system is working at the “Filter Mode”, and the LED shows “**FiL**”. The system is just working during the filter cycle, but the heater doesn’t work in this mode.

2.3 The 2nd time to press “**M**”, the system enters to “Normal Mode”, and the LED shows “**Nom**”. The system is keeping setting temperature all day.

2.4 The 3rd time to press “**M**”, then the system goes into “Economy Mode”, the LED shows “**EcE**”. The system is just working during the first filter cycle, and it will heat the SPA to the



setting temperature. And it will not start to heat at the second filter cycle.

2.5 The 4th time to press “**M**”, the system enters to “Filter Mode”, the LED shows “**Fi**”.

*****Note*****

When A2=ON, there is without “Economy Mode” and it will auto ignore the fourth step when operation.

V).Clock setting

At clock setting status, (show as Fig. 4), press “” to set the hour (down button), the adjusting range is from “0 to 23”.And to press the “” to set the minute (up button), the adjusting range is from “0 to 59”

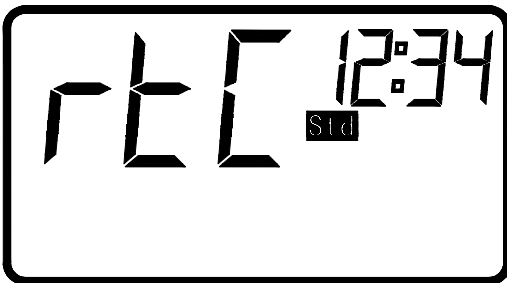


Fig. 3: Current time 12:34

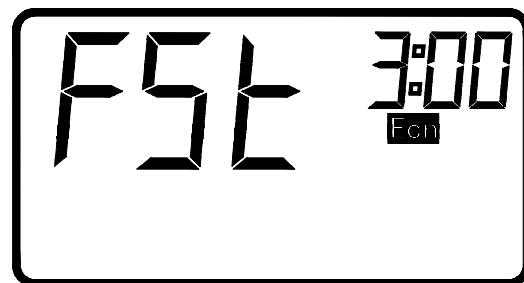




Fig.4: Start time of filtration at 3:00.

VI).Pre-settings filtering antivirus cycle (Valid of A1=off)

1. It has twice filtering antivirus cycle every day. But it is only able to set the start time for the first filtering antivirus cycle. And the second filtering cycle is automatically added, it will starts after 12 hours later. (For example, it starts at 14:00 and the start time of the second filtering is at 2:00)
2. When A3 = ON, the time for filtering antivirus is fixed. It starts to work at 14:00 every day, and it lasts for 3 hours. And the start time of the second filtering is at 2:00.

3. When A3= OFF, at setup status of “start time of filtering cycle” (Fig.4).Press “” to change starting time, and both hour and minute are 00.

4. At setup status of “continuous working time of filtering cycle”, press “” to change the time, the settings are 1-11 hours, and the default time is 3 hours (Fig. 5).

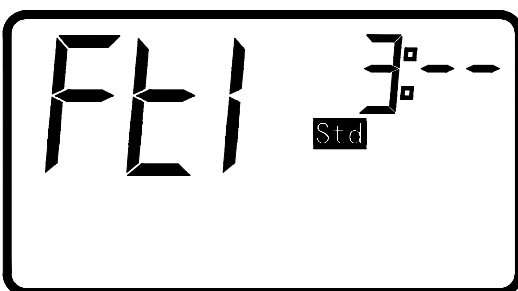


Fig. 5: filtering lasts for 3 hours

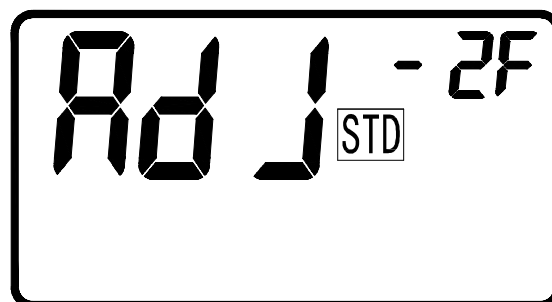


Fig. 6: Temperature Adjust

5. At the initial stage of each filtering cycle, all the devices will run for 15 seconds to purify the pipeline equipment. Ozone starts to work 15 seconds later.

In order to prolong the service life of anti-virus system, every 15 minutes ozone stops working for 15 minutes.

When any surfing pump (or high speed pump) and blower is power on, the anti-virus system will stop working at once.

VII).Temperature Adjust:

Press and hold “**M**” to enter to the setting mode, and continuously pressing “**M**” to enter to Temperature fine-tune mode(Fig.6).At this moment, press “**▼**” and “**▲**” can change the fine tuning number, adjusting range is $-7\sim 7^{\circ}\text{F}$.

If the current water temperature shows 98°F , but the real water temperature is 100°F .At the moment, as long as to adjust the fine-tuning number for 2°F , the showing temperature will turn into 100°F .

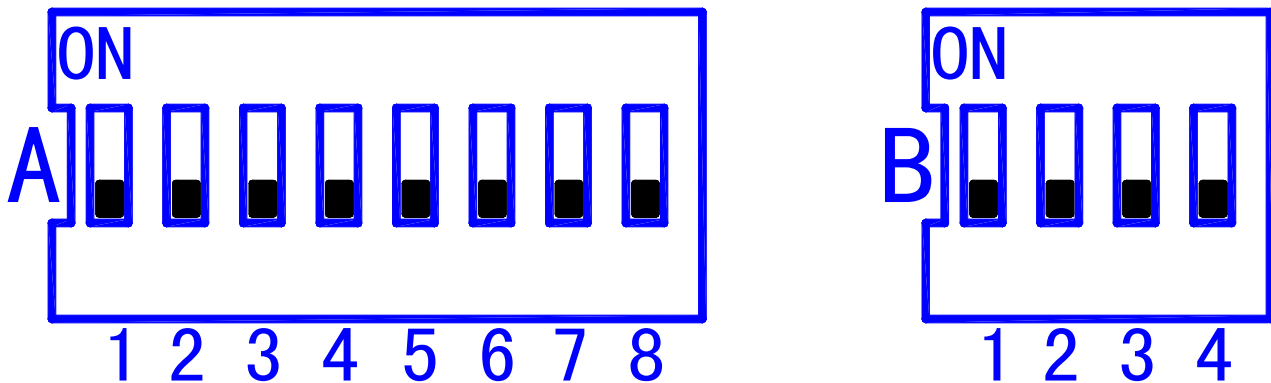


Fig.7.Switchbank A

VIII).The Main Board Specifications and DIP jumpers settings (Fig.7)

A1: OFF: With work mode switch and filter function.

ON: Without filter function, “**M**” is to control the heater ON/OFF.

A2: OFF: With Economy mode.

ON: Without Economy mode.

A3: OFF: With filtering antivirus cycle artificially.

ON: Filtering antivirus cycle built-in is unchanged. It starts to work at 14:00, and it works for 3 hours.

*****Note*****

Only when A1=OFF, A2 and A3 are effective.

A4: OFF: Display Fahrenheit temperature.

ON: Display Celsius temperature.

A5: OFF: Surfing pump 1 for a single-speed pump.

ON: Surfing pump 1 for a double-speed pump.


- A6: OFF: When the temperature appears abnormal, all high-voltage loads will stop working.
ON: All high-voltage loads are not affected by temperature sensor control. At this time, it can choose not to connect with the heater.
- A7: OFF: With a flowing induction sensor, when it is detected to be without flowing, the heater doesn't work.
ON: Without flowing induction sensor.
- A8: OFF: With voltage detecting of inputting and the protection of overvoltage and undervoltage is working.
ON: Without the protection of overvoltage and undervoltage.
- B1: OFF: Normal mode.
ON: Test mode.
- B2: OFF: With current limit control, the maximum working current is 16A.
ON: Without current limit control
- B3: OFF: Without moisturizing function and at this time there is with 12 V power output of LED
ON: With moisturizing function
- B4: OFF: Only with 1 surfing pump.
ON: With 2 surfing pump.

*****note*****


1. The setting of all the jumpers is effective only when it is repowered on. And the spacing interval for re-power on is more than 60 seconds.
2. All the jumpers have been set in the factory. The user had better not change the product setting.
3. When any surfing pump is turned on, the heater stops working.

IV.The operating instructions of high-voltage load


I).The operation of surfing pump

Press “” to control the pump ON/OFF, and the surfing pump will automatically turn off after 15 minutes.

II).The operation of the Blower

“” is to control the blower for turning on/off. The blower will automatically turn off after 15 minutes.

III) The operation of the Light

“” is to control the light for turning on /off. The light will automatically turn off after 120 minutes.

*****note*****

There is a short circuit place "light" to see whether the control lamp hold synchronizer inside or not.

IV).The operation of "AUX"

"AUX" is to control an additional load to be ON/OFF .And the additional load can be used for DVD/TV or others, and its MAX power is 1KW/230V.

V) Automatically anti-freeze (It is effective when working with heater)

When the water temperature is below 44°F/6.7°C or much lower, anti-freeze is automatically starting, all the pumps and blower work for 30 seconds and then turn off. The heater and circulating pumps turn on. The panel shows "ICE"

When the water temperature is reaching 46°F/7.8°C or above, all the heaters and circulating pumps stop working.

VI). The operation of auto moisturizing (B3=ON):

1. When the water level pin detects that there is no water, LCD shows "LLH", then moisturizing function would start auto and at this time, LCD shows "InF".
2. When it doesn't reach the water level pin in 30 minutes, (maybe there is no tap water), the moisturizing solenoid valve would temporary close, then LCD shows "InP"(water flow in pause), after 30 minutes, the moisturizing solenoid valve would start again. In this way, after it repeats to fill the water, the "InF" will disappear.

*****Additional Remarks*****

1. There is a water level detection and a water flow detection inside the heater, which are used for controlling the heater and the pump.
2. Water level pin is only for auto moisturizing.

V. Installation structure

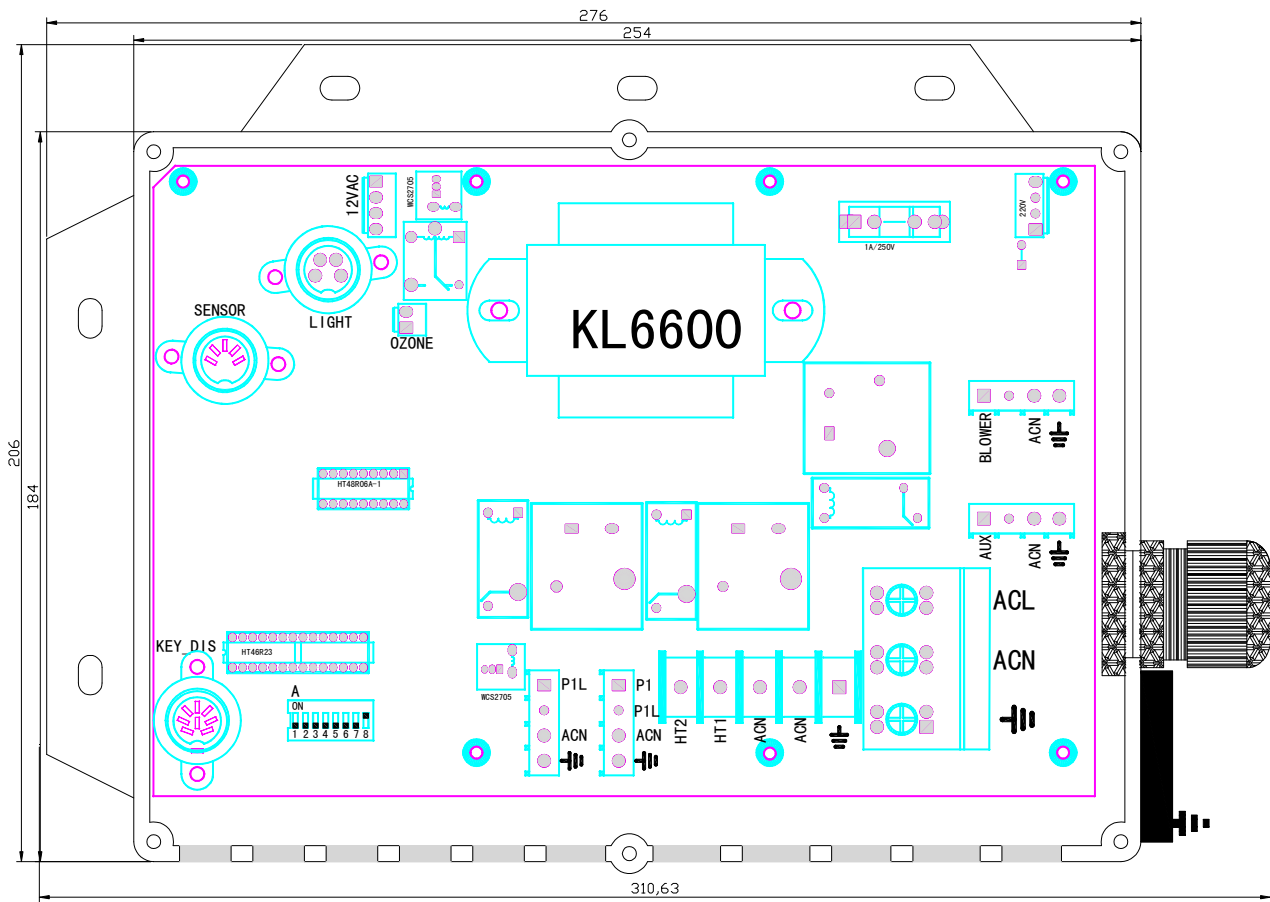


Fig.8. KL6600 Control box structure

VI. System malfunction warning

| Fault indication | Failure cause | Solutions |
|------------------|---|--|
| "E5A" | Temperature sensor open circuit or short circuit | 1. Check whether the plug loose or not and whether cable is damaged or not. 2. If plug and cable are intact, please replace the mainboard. 3. If changing the mainboard is still invalid, please replace heaters. |
| "E5b" | Water flow sensor open circuit /short circuit | |
| "E0b" | It is detected that water flow sensor is over limit | |
| "E4H" | It is detected that inside the heater, the temperature reaches 118 °F / 48 °C or much higher. | 1. Check whether environmental temperature is over high. 2. Check whether filter is blocking or just replaced. 3. Check whether the metering valves and circulating pump are normal or not. |
| "E0H" | It is detected that inside the heater, the temperature reaches 110°F/43.5°C or much higher. | |
| "EPL" | The water flow inside the heater is possibly too low. | 1. Check whether filter is blocking or is just replaced. 2. Check whether the metering valves and circulating pump are normal or not. 3. If the above is normal, please turn off the power supply for 15 seconds, then turn on the power and reset the system. |
| "ECP" | It is sure that the water flow inside the heater is not enough. | |
| "LLL" | It lacks of water or water level is not reaching. | 1. Please check whether the water level is reaching the normal level or not. 2. Please check whether all the cables about the water probe is normal or not. |
| "LLH" | There is no water or not enough water for water level. | |
| "E10" | Working current of light is over limit. | Whether the interface of LED light (12VAC) or Ozone is short-circuit or not. |
| "CP0" | The current of circulating pump is oversize. | Check whether the circulation pump is jammed to cause the flow stream. |

Other operation information

1. "ICE": It detected that it is going to freeze and it is starting to anti-freeze.
2. "Inf": Complement water system is working and other functions can be normal operation.
3. "InP": Complement water system is pause working and other functions can be normal operation.

VII. Electrical parameters

1. Performance index

Working voltage: AC220-240V / 50Hz (or 110-120V/60Hz)

Maximum working current: 30 A/220-240V

Compression strength: 1250V / 1 minute Not being punctured.

Insulation resistance: \gg 200M Ω

Waterproof level: IPX5

Electric shock preventing: 1 class

2. Maximum output load index

Heater: 4KW/220-240VAC
(1.5KW/110-120VAC)

Blower: 10A/220-240VAC

Light : 12W/12VAC
12W/12VDC

Surfing pump: 10A/220-240VAC

Circulating pump: 5A/220-240VAC

AUX : 5A/220-240VAC

Ozone: 8W/12VAC