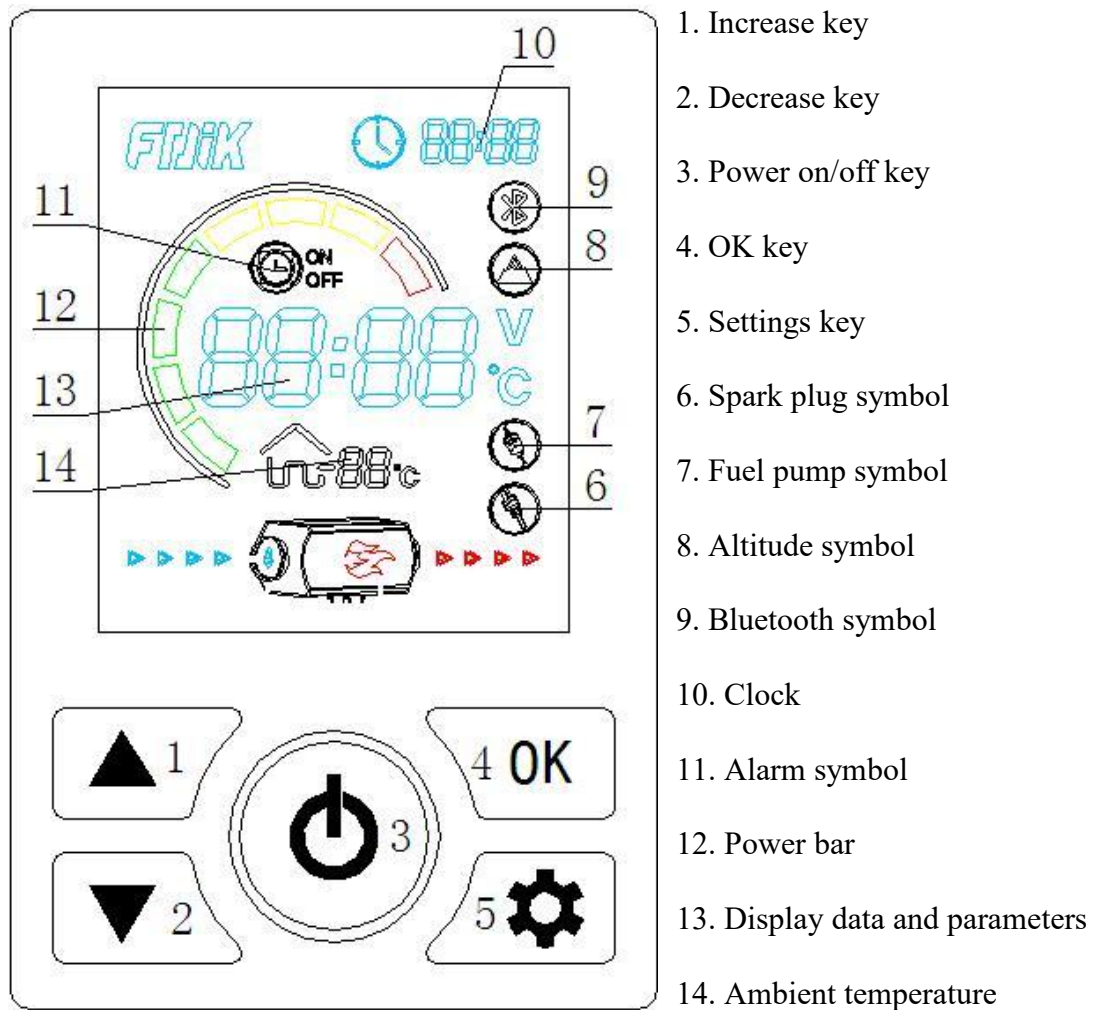


Control Panel User Guide

I. The control panel is shown below.



II. Usage and Operation.

1. Power On/Off Operation



Powered-off state

Power-on State (Manual Mode)

Power-On State (Constant Temperature Mode)

(1) Power-on procedure

When the device is powered off, press and hold the “” button for 2 seconds to turn it on. The display will show the “Powered On” state as shown in the figure above.

(2) Power-off procedure

While the unit is powered on, press and hold the “” key for 2 seconds to initiate the shutdown cooling cycle. The display will show ‘OFF’. After completing the cooling cycle, the unit will shut down, displaying the “Shutdown Status” as shown in the figure above. **DO NOT force a power cut while the display shows “OFF” (powering off prematurely may cause overheating and component damage due to insufficient heat dissipation!). Wait until the machine displays the shutdown status before disconnecting power!**

(3) Manual Mode Operation

Manual mode features 6 gears (H1-H6). H6 indicates maximum power. As shown in the “Power-On State” diagram above, press the “” or “” button to upshift or downshift.

(4) Constant Temperature Mode Operation

Constant Temperature Mode: The image above shows a setting of 18°C. Press the “” or “” key to increase or decrease the temperature value. The setting range is 0–40°C.

Press and hold the “” button for 2 seconds to switch between manual and constant temperature modes.

2. Switch to display startup data

Press the “” key briefly to cycle through the displayed data. Display sequence: Case temperature -> Operating voltage -> Current gear (or current set temperature)

3. Display Bluetooth ID (Bluetooth-enabled)

Press the “OK” button to display the 4-digit Bluetooth name code for this switch. Exit by pressing any button or after 3 seconds.

4. Manual Oil Pumping Operation

While the unit is powered off, simultaneously press and hold the “” and “” keys to manually operate the oil pump. Release the keys to stop pumping. **Use with caution!**

5. High-Altitude Mode Operation

Press and hold the “” and “OK” buttons simultaneously for 2 seconds to enter Altitude Mode.

The “” symbol will appear to indicate Altitude Mode is active. In Altitude Mode, the air-oil ratio is reduced to accommodate lower oxygen concentrations at high altitudes. Press and hold the “” and “OK” buttons simultaneously for 2 seconds again to exit Altitude Mode. **Use with caution!**

6. Scheduled power on/off operations

Press and hold both “” and “” keys for 2 seconds. If the timer function is not active, this will activate it and enter timer settings, with the “” symbol flashing. ON: Indicates power-on time; OFF: Indicates power-off time; If the timer function is already active, this will deactivate it, and the “” symbol will turn off.

10:00

- (1) Press the “” or “” key to adjust the time value. Time adjustment range: 00:00 to 23:59.
- (2) Press the “” key to toggle between digits, causing the corresponding number to flash.
- (3) Press the “OK” button or wait 15 seconds without any button press to save the setting. If you are setting the power-on time, the device will switch to power-off time settings; otherwise, it will exit the timer settings.

(4) Press the “” key to exit the timer settings without saving the current value. If you are setting the power-on time, this will switch to the power-off time settings; otherwise, it will exit the timer settings.

(5) When not in setup mode, press the “” key to cycle through the day's scheduled times.

After enabling the timer function, the device will automatically power on when the scheduled startup time is reached and automatically power off when the scheduled shutdown time is reached. The panel is set to “Daily” in the cycle mode.

7. Clock synchronization operation

Press and hold the “OK” button for 2 seconds to enter the clock adjustment interface.

(1) Press the “” or “” key to adjust the time value. Time adjustment range: 00:00 to 23:59.

(2) Press the “” key to toggle between adjustment digits; the corresponding digit will flash.

(3) Press the “OK” button to confirm the time and proceed to set the day of the week.

(4) Press “” to access the day of week settings.

(5) Exit the clock adjustment interface after 10 seconds of no button operation.

8. Set Weekday Operations

Digital display shows “EE-1”

(1) Press “” or “” to adjust the last digit.

(2) Press the “OK” button to confirm the time and exit the clock adjustment interface.

(3) Press the “” key, or exit the clock adjustment interface after 10 seconds of no button operation.

When the app connects to Bluetooth, it automatically syncs the phone's time.

9. Wireless Remote Control Pairing Procedure

While the device is powered off, simultaneously press and hold the “” and “” buttons for 2 seconds. The display will show HFA1.

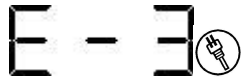
(1) Press “” or “” to adjust the fourth digit, which is the remote control number. The range is 1 to 4, corresponding to four remote controls.

(2) Select the remote control number, then press any button on the remote to pair it. After successful pairing, exit the pairing mode.

(3) Press the “” key to exit remote pairing.

- (4) Remote control requirements: 433 MHz frequency band, 24-bit code.

10. Fault Alarm



As shown in the figure, the corresponding fault symbol flashes, and the icon for the faulty component also flashes. The displayed data is the fault code; refer to the fault table for its meaning.

* Symbols for components such as spark plugs, fuel pumps, fans, sensors, and power supplies indicate a fault in the corresponding component when they flash.

Terms of Use

1. Do not use in environments with high humidity, conductive dust, flammable or explosive gases/dust/materials, corrosive media, intense light exposure, or proximity to strong magnetic fields, high-voltage equipment, or high-current devices.
2. Power supply voltage range: DC24V controllers operate within (18–32)V; DC12V controllers operate within (9–16)V. Controllers with different voltages are not interchangeable. Do not exceed the applicable voltage range.
3. The 5kW controller must only be used on 5kW units; the 2kW controller must only be used on 2kW units.
4. If the controller or external components are damaged, only identical models and parameters may be used for replacement by qualified personnel.
5. Do not open the controller housing without authorization.
6. Equipment must be installed strictly according to requirements and operated under safe conditions.
7. The company assumes no liability for losses or damages resulting from incorrect connections, short circuits, or damage to external components or wiring affecting the controller.

8. When the unit overheats and the fan fails to operate normally, immediately cool the unit. Blow cool air into the combustion air inlet to reduce the unit temperature below 80°C. This prevents component damage from high temperatures or potential fires.

9. During heating operation, ensure all air ducts remain unobstructed (“no kinks, compression, or blockages”) to guarantee efficient heating and normal operation. Restricted airflow causes high-temperature conditions, reduces heating efficiency, shortens equipment lifespan, or causes damage. Use only compliant fuel to ensure proper operation and longevity.

***The company assumes no liability for losses or damages resulting from failure to install or operate in accordance with the above provisions.**

*Cotton and sponge ignite at 150°C (293°F), paper at 130°C (266°F), fabric at 270°C (528°F), and diesel fuel at 220°C (432°F). Hot air outlets may exceed 150°C (293°F), while exhaust pipes may exceed 270°C (528°F).

Fault List

Fault Code	Cause of Failure	Procedure
E-2	Power Supply Voltage Range	Normal range: 24V (18-32V), 12V (9-16V), Check if the battery or alternator is functioning properly; inspect fuses for aging.
E-3	Ignition plug failure	(1) Check whether the spark plug connector is loose or if the wire is shorted to the chassis. (2) Inspect whether the spark plug is damaged.
E-4	Oil pump failure	Inspect the oil pump wiring and connectors for damage, loose connections, oxidation, short circuits, or open circuits.
E-5	High Temperature Alarm	(1) Check whether the heating

Fault Code	Cause of Failure	Procedure
	(Intake >50°C; Chassis >230°C)	duct is unobstructed (2) Check whether the fan is operating normally (3) Check whether the temperature sensor is functioning properly
E-6	Fan failure	(1) Check if the impeller is jammed (2) Check if the connector plug is loose (3) Excessive gap between the magnet on the impeller and the Hall sensor on the controller (4) Check for short circuits or open circuits in the wiring; motor leakage current
E-7	Communication failure	Check the connection cables
E-8	Engine off	(1) Check for oil shortage, low-temperature oil solidification, oil line blockage, or oil pump seizure. (2) Verify that the intake and exhaust air ducts are unobstructed. (3) Ensure the housing temperature sensor makes full contact with the housing and that the pressure spring maintains sufficient force.
E-9	Sensor failure	Check if the temperature sensor connection wires and connectors are damaged or loose, and whether the sensor itself is damaged.
E-10	Startup unsuccessful	(1) Housing temperature is too high; housing fails to cool down after 3 minutes of operation (2) Exhaust emits large amounts of white smoke (2.1) Check if the filter screen near the spark plug is clean; clean or replace if dirty (2.2) Check if the oil pump delivers sufficient fuel pressure

Fault Code	Cause of Failure	Procedure
		(2.3) Inspect the spark plug for wear or damage (3) Exhaust emits slight white smoke or no smoke (3.1) Check for oil shortage, frozen or blocked oil lines (3.2) Inspect the oil pump for jamming or damage causing weak fuel delivery (3.3) Check if combustion air intake and exhaust passages are unobstructed (3.4) Check if spark plug is damaged (3.5) Check if internal fan blade clearance is excessive (4) Ignition functions normally but still reports ignition failure Check if the housing temperature sensor is in full contact with the housing, if the pressure spring is effective, and if the sensor is functioning properly.