Display · · · · · ·
Insert card port · · · · · ·

On/Off key · · · · · ·
Water pump key · · · · · ·
Oil pump key · · · · · ·
Set key · · · · · ·

perform operations	Operation process and screen display mode
Power on	When not turned on, long press the "On/Off button" for 3 seconds or short press the "On/Off button", the screen will display "ON", and the gear lights will light up in clockwise order, indicating that the heater is turning on.
Power off	When turned on, long press the "On/Off button" for 3 seconds or short press the "On/Off button", the screen will display "OFF", and the gear lights will light up in counterclockwise order, indicating that the heater is shutting down. After the shutdown is completed, the screen automatically switches to voltage display, indicating that the shutdown cooling has ended. Attention: During the cooling process of shutting down, it is not allowed to restart.
Gear adjustment	When turned on, short press the "up shift" or "down shift" button to adjust the gear position. The screen displays "P-gear", and the gear light displays the same as the set gear position. Every short press of the "up shift" button increases the working gear of the heater by one gear, and every short press of the "down shift" button reduces the working gear of the heater by one gear, with an adjustment range of 1-8 gears. After adjusting the gear, the heater will operate according to the set gear.
Separate pump oil	When the machine is not turned on and there is no fault, long press the "upshift button" for 3 seconds or short press the "setting button" to switch to the pump oil mode selection. Then, long press the "setting button" for 3 seconds to activate the separate fuel supply function. The screen displays "P-E", indicating that the heater has entered separate pumping mode. After the individual oil pumping mode is activated, short press the "upshift button" to stop pumping oil. If the "upshift button" is not pressed continuously, the oil pumping mode will automatically stop after 3 minutes of activation.
Separate air supply	When not turned on and in a fault free state, long press the "downshift button" for 3 seconds or short press the "settings button" to switch to the air supply mode selection. Then, long press the "settings button" for 3 seconds to activate the individual air supply function. The screen displays "P_F", indicating that the heater has entered separate air supply mode. After the individual air supply mode is turned on, short press the "downshift button" to stop the air supply.
Remote control matching	When the device is not turned on and there are no faults, press and hold the "upshift" and "downshift" buttons for 3 seconds at the same time, and the screen will display "A", indicating that the heater has entered the remote control matching state. In the remote control matching state, long press the "power off" button on the remote control to complete the matching. After successful matching, the matching state will automatically exit. After entering the remote control matching state, short press any button to exit the matching state.
Mode selection	In the successful ignition state of the heater, press and hold the "upshift button" for 3 seconds to switch to constant temperature mode, and the screen displays "F+constant temperature". In constant temperature mode, press and hold the "upshift button" for 3 seconds to exit constant temperature mode and switch to gear mode. Attention: In case of malfunction or shutdown of the heater, the heater will automatically exit the constant temperature mode.
Constant temperature regulation	In constant temperature mode, short press the "upshift" or "downshift" button to adjust the constant temperature, and the screen will display "F+constant temperature". Every short press of the "upshift" button increases the set constant temperature by 2 ℃, and every short press of the "downshift" button reduces the set constant temperature by 2 ℃, with an adjustment range of 18 ℃ -30 ℃. After constant temperature adjustment, the heater will operate according to the set temperature.
Display switching	Short press the "Settings" button, and the screen display will switch to the current voltage, ambient temperature, altitude (not available in non high-altitude models), temperature, equipment code (not available in non IoT models), current time, pump oil mode selection (not available in heater on or fault state), air supply mode selection (not available in heater on or fault state), and cycle display.
Phone binding	When the device is not turned on and there are no faults, short press the "Settings" button to switch to the device code display. Long press the "Settings" button for 3 seconds, or long press the "Settings" button for 3 seconds when the device is turned on. The signal symbol on the screen flashes, indicating that the phone has entered the bound state. After entering the phone binding state, scan the platform QR code on the switch, log in to the device binding interface, select input binding, enter the device code displayed on the screen, and click confirm binding. After the heater is successfully bound, it will automatically exit the binding state, and the device code on the screen will flash 4 times, indicating that the heater is successfully bound. Attention: Non IoT models do not have this function, and the phone binding function can only be used normally when the heater network is connected normally.
system time setting	When the machine is not turned on and there is no fault, press and hold the "Settings" button for 3 seconds to enter the settings state. The screen displays "A", the minute icon flashes, and the alarm icon flashes, indicating that the system time setting has been entered. In the system time setting state, short press the "setting button" and the screen will display the system time. The first two digits of the colon will flash, indicating that the system time can be adjusted in hours. Every short press of the "upshift button" increases the system time by 1 hour, and every short press of the "downshift" button reduces the system time by 1 hour, with an adjustment range of 0-23 hours. After adjusting the hour value of the system time, press the "Set" button briefly, and the two digits after the colon will flash, indicating that the system time can be adjusted in minutes. Press the "Up Shift" button briefly to increase the system time by 1 minute, and press the "Down Shift" button briefly to decrease the system time by 1 minute. The adjustment range is from 0 minutes to 59 minutes. Note: If the device code is displayed on the screen, or when selecting the pump oil mode or air supply mode, you need to short press the "Settings" button to switch to other displays, and then long press the "Settings" button for 3 seconds to enter the settings state.
Power on time setting	After adjusting the minute value of the system time, short press the "Settings" button, the screen will display "b", the setting icon will flash, the alarm icon will flash, and the "ON" icon will flash, indicating that the scheduled startup time setting has been entered. In the timed startup time setting state, short press the "Set" button, and the screen will display the timed startup time. The first two digits of the colon will flash, indicating that the hour adjustment of the timed startup time can be performed currently. Every short press of the "upshift button" increases the scheduled startup time by 1 hour, and every short press of the "downshift button" reduces the scheduled startup time by 1 hour, with an adjustment range of 0-23 hours. After adjusting the hourly value of the scheduled startup time, press the "Set" button briefly, and the two digits after the colon will flash, indicating that the minute value of the scheduled startup time can be adjusted. Every short press of the "upshift button" increases the scheduled startup time by 1 minute, and every short press of the "downshift" button reduces the scheduled startup time by 1 minute, with an adjustment range of 0-59 minutes.
Working time settings	After adjusting the minute value of the scheduled startup time, short press the "Settings" button, the screen will display "C", the setting icon will flash, the alarm icon will flash, and the "OFF" icon will flash, indicating that the running time setting has been entered. In the running time setting state, press the "setting button" briefly, and the screen will display the running time. The first two digits of the decimal point will flash, indicating that the current hour adjustment of the running time can be performed. Every short press of the "upshift button" increases the running time by 1 hour, and every short press of the "downshift" button reduces the running time by 1 hour, with an adjustment range of 0-23 hours. After adjusting the running time hour value, press the "Set" button briefly, and the two digits after the decimal point will flash, indicating that the current minute of running time can be adjusted. Every short press of the "upshift" button increases the running time by 10 minutes, and every short press of the "downshift" button reduces the running time by 10 minutes, with an adjustment range of 0-50 minutes. Note: If the running time cannot be set to 0 minutes, the timed on/off function will be invalid.
Timed repetition setting	After adjusting the minute value of the running time, short press the "Settings" button, the screen will display "d", the setting icon will flash, and the alarm icon will flash, indicating that the timed repeated setting has been entered. In the timed repetition setting state, short press the "Set" button, and the screen will display the current timed repetition state. "ON" represents timed repetition, and "OFF" represents timed non repetition. Every short press of the "Shift Up" or "Shift Down" button, the timed repetition state will cycle between the on and off states. The logic of the timing part is as follows: After the scheduled startup, if the system time is the same as the scheduled startup time, the heater will automatically enter the startup state when there are no faults in the heater operation. After the heater is turned on, when the working time of the heater is the same as the set operating time, the heater will automatically enter the shutdown cooling state. If the scheduled repeat state is set to on, after the scheduled shutdown is completed, and the heater is running without any faults, if the system time is the same as the scheduled startup time, the heater will enter the startup state again. If the timed repeat state is set to off, after the heater is turned on, when the working time of the heater is the same as the set running time, the heater will automatically enter the shutdown cooling state, and the timer function will not be repeated. When the heater is turned on, long press the "On/Off button" for 3 seconds or short press the "On/Off button" to turn off the heater for heat dissipation, and the timer function will automatically turn off. In the event of a heater malfunction, the timer function automatically shuts off.
Set Save Exit	After adjusting all settings, press and hold the "Settings" button for 3 seconds to save the current settings and automatically exit the settings state. After exiting the setting state, if the timed on/off function is set effectively, the alarm clock flag will flash slowly, with the "ON" flag will flash slowly, and the "OFF" flag will flash slowly. If voice related functions are enabled, the sound icon will remain on. If voice related functions are disabled, the sound icon will turn off.
Fault indication	When the heater is in a faulty state, the screen displays an "E+fault code". Except for fan related faults, the heater automatically enters the shutdown heat dissipation process. After the heat dissipation of the heater is completed, please refer to the fault code for troubleshooting. After the fault handling is completed, long press the "On/Off button" for 3 seconds or short press the "On/Off button" to restart, and the heater will automatically clear the fault display. Attention: After the heater is turned on, if the fault has not been cleared, the heater will continue to display fault codes and enter the shutdown and cooling process again until the fault is cleared before ignition can proceed normally.

Screen display	Error state troubleshooting method
E01	Voltage too high: Please check the power supply voltage.
E02	Low voltage: Please check if the power supply voltage and battery are low or if the power supply wiring is too thin.
E03	Unable to detect the spark plug: Please check if the spark plug leads are connected incorrectly or replace the spark plug.
E04	Unable to detect oil pump: Please check if the oil pump lead is loose or replace the oil pump.
E05	Unable to detect motor: Please check if the motor leads are poorly connected or replace the motor.
E06	Sensor not detected: Please check if the sensor leads are connected incorrectly or replace the sensor.
E07	Housing overheating: Please check if the air inlet and outlet are blocked or replace the sensor.
E08	Flame extinguished: Please check if the equipment is short of oil or if the oil pump has an intake pipe.
E09	Ignition failure: Please check if the oil pipeline is delivering oil to the equipment or if the power supply wiring is too thin.
E10	High ambient temperature: Please check the air inlet and keep away from heat sources.
E11	Temperature sensor malfunction: Please check if the temperature sensor is damaged.
E12	Switch communication abnormality: Please check if the leads of the switch box are connected incorrectly or replace the switch box.
E13	Abnormal motherboard communication: Please check if the motherboard communication leads are connected incorrectly or replace the motherboard.
E15	Short circuit of spark plug: Please check if the spark plug lead is short circuited or replace the spark plug.
E16	Oil pump short circuit: Please check if the oil pump lead is short circuited or replace the oil pump.
E17	Motor short circuit: Please check if the motor leads are short circuited or replace the motor.
E18	Sensor short circuit: Please check if the sensor lead is short circuited or replace the sensor.