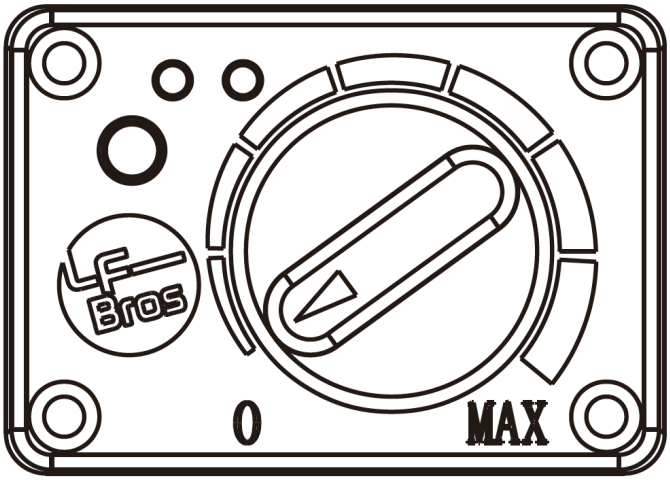
USER MANUAL

# HEATPORT H2 / H4
# Rotary Controller / Rotary Controller EXT




HEATPORT

HEATPORT brand is the ownership of the New Zealand based family owned company LF Bros NZ Pty Limited with its own design, development, testing, assembly, quality check, installation and service facility located in Banks Peninsula.

Our mission is to bring the ultimate premium quality diesel heating system that everyone can afford.

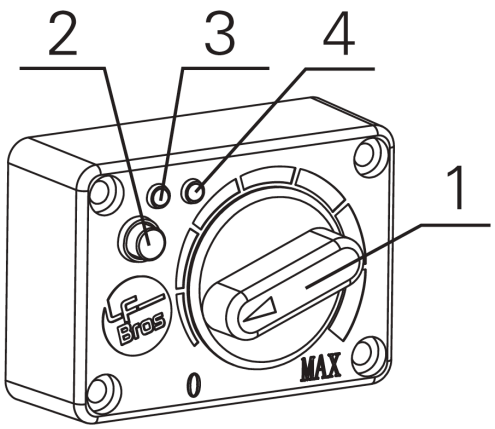
We think about every single detail of the product. These details are mostly invisible for normal people but we know that the continual improvement of all of these bits with no compromise on the selection of the parts and quality is the only way to offer the long lasting, easy to use product, best customer experience, and reach the customers trust.

Version 1.3 - 1/2024

**Made in New Zealand**

# 1. INTRODUCTION

Thank you for purchasing your HEATPORT diesel heater. For a better understanding how to operate your heater efficiently please read this user manual.




The controller contains rotating dial, button and two indicators:

1. Rotatable dial (temperature, power)
2. Mode button (mode switch)
3. Mode indicator (left, green/red)
4. Work indicator (right)

When the rotatable dial is at the **0** position (all the way left), the heater is turned off, otherwise the heater starts working. There are two normal operating modes (thermostatic mode or fixed power mode) and one fuel pumping mode.

# 2. STANDARD OPERATION

### NORMAL START

Turn the rotatable dial in the shutdown state right to turn the heater on. The unit will start pre-heating the glow plug and once it reaches the required temperature, the fuel pump will start pumping fuel. After the successful ignition, the heater will start running in about 5 minutes. The settings of the working modes will not be initiated until completing the startup process which can take a couple of minutes.

*Note: If the pump stops ticking and the indicator starts flashing multiple short pulses and one long (error code E1), it may mean that the fuel did not reach the heater. You may fill the fuel lines using the fuel pumping mode OR repeat this Start-up process again. If the unit continues providing the same error code, please review the placement of the fuel lines, fuel filter and fuel pump. Alternatively if you read any other error code, please review the error code table at the end of this manual.*

### WORKING MODE SELECTION

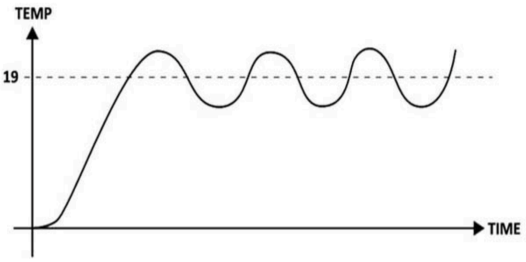
- **Fixed Power Mode:**

  To switch into the Fixed Power Mode, press the mode button so that it is in the released state. Turn the rotatable dial on the Main Controller clockwise to increase or anticlockwise to decrease the heating power.

- **Thermostatic Mode**

  To switch into the Thermostatic mode, press the mode button to the depressed state. Turn the rotatable dial on the Main Controller clockwise to increase or anticlockwise to decrease the preset ambient temperature. You may adjust the temperature from 10°C to 35°C.

The above modes are only available if the unit is in ON state. The thermostatic mode will automatically adjust the heating power within the range of the minimal heating power and maximal heating power. The controller allows full shut-down of the heating process after reaching a couple of degrees above the preset temperature to avoid overheating of the heated space. The unit waits fully off and initiates the next heating cycle again once the room temperature drops a few degrees below preset temperature. The two modes can only be switched and can't coexist. For example, the previous setting of the thermostatic mode would be invalid after switching into power mode.




### CONNECTION TO 3RD PARTY THERMOSTAT / SMART HOME SYSTEM

The Rotary Controller EXT is equipped with the 2 wire contacts that can be connected to the external relay system powered by a 3rd party thermostat, smart home system or any other industrial control device (including mechanical switch). The connection of the wires is an additional condition needed for operation of the heater. The contacts must be connected for ON mode (but the rotatable dial still must be turned into the required settings). Disconnecting these wires will cause the heater to automatically initiate shutdown by initiating the cooling down procedure first. If you are using the external thermostatic system, you should only use the fixed power mode otherwise you may experience the conflict in the regulation. For stand alone operation (without the external actuator), these contacts must be permanently connected.

### SHUTDOWN

To shutdown, turn the rotatable dial all the way left to complete the shutdown command. The heater enters the shutdown process. It can take several minutes until the heat exchanger is fully cooled down and ready to shut down.

***Never turn off the unit by disconnecting the main power supply while the unit is running or before finishing the cooling process as it may cause permanent damage to the internal components. Warranty does not cover damages like this.***

## 3. ADVANCED FUNCTIONS

### FUEL PUMPING MODE

After installation of the heater the fuel line needs to be filled up with diesel. Turn the Rotatable dial to position other than 0 and wait for the work indicator to start flashing. Press the mode button once per second at least 6 times in a row. After the work indicator stops flashing the system is in the emergency start mode. The fuel pump will enter the state of rapid pumping (500 rapid pulses). When the fuel enters the heater pumping frequency will be set to normal and the heater will run automatically.

***This process should not be performed for regular start of the heater, there is risk of flooding the combustion chamber.***

# 4. FAULT CODES / TROUBLESHOOTING

*Note: This fault code book is designed for an easy identification of any issue.* ***Any repairs/replacements of the internal components of the heater unit described below must be consulted and pre-approved first with the supplier of the product.*** *The warranty will be voided if there are any repairs/modifications or unauthorized changes in the hardware or firmware of the product without the approval of the supplier or any replacement of non-original parts or components that are not supplied by the supplier.*

*You can read the error codes from the work indicator by recording the number of slow flashes after the sequence of the fast flashes.*

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| **E0** | **CONTROL UNIT** | • **Fault of the ECU (internal Electronic Control Unit)**<br>  ○ Replace ECU.<br>• **Incorrect ECU / Main Controller**<br>  ○ Replace ECU / Main Controller. |
| **E1** | **FAILED IGNITION** | • **No fuel entering the heater unit**<br>  ○ This can happen when you run out of fuel in the individual fuel tank or the fuel level of the main tank dropped just under the tip of the suction pipe. You must fill the tank and then fulfill the fuel line using the Fuel pumping mode or repeat the start-up process again and again until the successful ignition or until you remove all the bubbles appearing in the fuel line.<br>• **The wrong placement of fuel lines/fuel filter/fuel pump**<br>  ○ Problem especially on the intake side of the fuel line before the fuel pump, which is the most vulnerable for creation of the airlock. Review the placement of the fuel line /filter/ fuel pump exactly as per the provided instructions.<br>  If you are unsure if the problem is caused by the placement of the fuel lines (this can happen on long horizontal fuel line), you may try to place the fuel pump directly under the heater and suck the fuel straight from the jerry can to determine if the problem is caused by the fuel line placement.<br>• **Wrong diameter of the fuel lines**<br>  ○ The fuel lines supplied are a special size with very small internal diameter. Never use any other type of fuel line.<br>• **Blocked or compressed air intake / exhaust pipe**<br>  ○ Check the air intake / exhaust pipe for the blockage, dirt, snow, mud.<br>• **Condensed / rain water staying in the air intake / exhaust pipe**<br>  ○ Reinstall the pipes per instructions to allow water to escape naturally down by gravity.<br>• **Blocked fuel line or fuel filter**<br>  ○ Replace the fuel line or fuel filter.<br>• **Bad quality of fuel**<br>  ○ Replace the diesel for new.<br>• **Carbon deposition inside the burner**<br>  ○ Replace the burner.<br>• **Carbon deposition in heat exchanger / exhaust pipe / exhaust silencer**<br>  ○ Pressure clean with water the heat exchanger/ exhaust pipe / exhaust silencer.<br>• **Dirt on the atomising net of the glow plug**<br>  ○ Replace the atomising glow plug net<br>• **Dirt on the glow plug**<br>  ○ Replace the glow plug<br>• **Faulty blower motor / heat exchanger gasket OR burner / heat exchanger gasket**<br>  ○ Replace the gasket<br>• **Fault of the Fuel Pump**<br>  ○ Replace the Fuel Pump.<br>• **Fault of the ECU** ** please see above* |
| **E2** | **FLAME EXTINCTION** | **Same as E1* |
| **E3** | **UNDERVOLTAGE OR OVERVOLTAGE** | • **Undervoltage**<br>  ○ System minimum voltage is 10.5 volts (22.5V for 24V unit). Verify battery voltage. Connect the multimeter to the positive and negative terminals of the wiring harness and set to volts DC. If the wiring harness has been extended for a longer distance, check the voltage at the main ECU connector.<br>  ○ Record the voltage. If the voltage is less than 12.6 (flooded cell) 12.8 (AGM), connect the battery charger and log off the job until the batteries are fully charged. Otherwise, |

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| | | turn on the unit while watching the multimeter.<br>• **Overvoltage**<br>  ○ System maximum allowed voltage is 15 volts for the 12V version and 30 volts for the 24V version. The possible causes of this code are: 1) Battery charger in boost mode 2) Alternator overcharging 3) Solar panel controller overcharging<br>• **Wrong connection in connectors**<br>  ○ Check the connector of the main ECU board for any dirt or corrosion or the positive and negative terminal at the wiring harness.<br>• **Fault of wiring harness**<br>  ○ Inspect wiring for damage or short circuiting with the chassis of the vehicle. Check continuity from the ECU board to the connector of the Main Controller. In case of wrong connection, replace a wiring harness.<br>• **Fault of the ECU** * *please see above* |
| **E4** | **PREMATURE IGNITION IDENTIFICATION** | • **Residual fuel in the heater**<br>  ○ If the heater did not finish the shutdown procedure (eg. caused by voltage drop) there might be some residual fuel left. Leave the heater on a warm and well vented place to evaporate fuel leftovers. |
| **E5** | **THERMAL EFFICIENCY FAILURE** | • **Bad quality of fuel**<br>  ○ Replace the diesel for new.<br>• **Fuel filter is blocked**<br>  ○ Clean or replace fuel filter.<br>• **Fuel inlet is blocked**<br>  ○ Clean fuel inlet and fuel tank<br>• **Carbon deposits inside the burner**<br>  ○ Replace the burner.<br>• **Temperature sensor fault**<br>  ○ Replace the Pt1000 temperature sensor.<br>• **Fault of the Fuel Pump**<br>  ○ Replace the Fuel Pump.<br>• |
| **E6** | **TEMPERATURE SENSOR** | • **Temperature sensor on controller is damaged**<br>  ○ Replace the controller |
| **E7** | **FUEL PUMP** | • **Wrong connection in connectors**<br>  ○ Check the connectors of the fuel pump or main ECU board for any dirt or corrosion.<br>• **Fault of the wiring harness** * *please see above*<br>• **Fault of the Fuel Pump** * *please see above*<br>• **Fault of the ECU** * *please see above* |
| **E8** | **BLOWER MOTOR** | • **Blower motor interrupted**<br>  ○ Check heating air intake for obstructions, ensuring the blower turns freely. Run the unit and listen if there is any suspicious sound or rubbing. Turn the blower by hand checking for hard spots.<br>• **Damage of the propeller**<br>  ○ Possible causes: 1) Physical obstruction 2) Ducting clamp over-torqued 3) Floor mat or debris under the heater when mounted. Replace the blower motor.<br>• **Blower motor short circuit**<br>  ○ Connect the multimeter to the positive and negative terminals of the fan and check the resistance. Check if the wiring to the fan is not damaged.<br>• **Blower motor speed failure**<br>  ○ This motor speed varies from specification by more than 10% for longer than 30 seconds.<br>• **A loose ECU casing**<br>  ○ Wrongly positioned ECU or magnetic sensor on ECU can cause inaccurate readings. Fix the position of the ECU. If the ECU is loose, tighten the screw.<br>• **Fault of the ECU** * *please see above* |
| **E9** | **GLOW PLUG** | • **Short circuit of the wiring of glow plug**<br>  ○ Replace the glow plug.<br>• **Fault of glow plug**<br>  ○ Replace the glow plug.<br>• **Fault of the ECU** * *please see above* |
| **E10** | **OVERHEAT** | • **Excess temperature is measured at the overheat sensor**<br>  ○ Check if the fan is not blocked/damaged and is spinning without any suspicious noise.<br>  ○ Check airflow ensuring the ducting is free from obstructions. |

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| | | • **Wrong connection of the temperature sensor**<br>  ○ Remove the PT1000 sensor, check connections, wiring and reinstall.<br>  ○ If the wiring is damaged or the connection is corroded, replace the temperature sensor.<br>• **Faulty temperature sensor**<br>  ○ Replace the PT1000 sensor<br>• **Fault of the ECU** * *please see above* |
| **E11** | **PT1000 TEMPERATURE SENSOR** | • **Temperature sensor connection malfunction**<br>  ○ Check the connection of PT1000 temperature sensor to ECU.<br>• **Temperature sensor is damaged**<br>  ○ Replace the PT1000 temperature sensor.<br>• **Short circuit of the wiring of temperature sensor** * *please see above*<br>• **Wrong connection of the temperature sensor** * *please see above*<br>• **Faulty temperature sensor** * *please see above*<br>• **Fault of the ECU** * *please see above* |
| **E12** | **GLOW PLUG** | • **Disconnection of the glow plug**<br>  ○ Connect the glow plug to the ECU.<br>• **Fault of glow plug*** *please see above*<br>• **Fault of the ECU** * *please see above* |
| **E14** | **PT1000 TEMPERATURE SENSOR** | • **Temperature sensor is not positioned correctly**<br>  ○ Install the PT1000 temperature sensor correctly |

# 1. NOTES

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