USER MANUAL

HEATPORT H2S / H2000 / H4S / H55 / W5S / W90
DiGiCon

HEATPORT

HEATPORT is the brand name 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 Cheviot / North Canterbury.

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

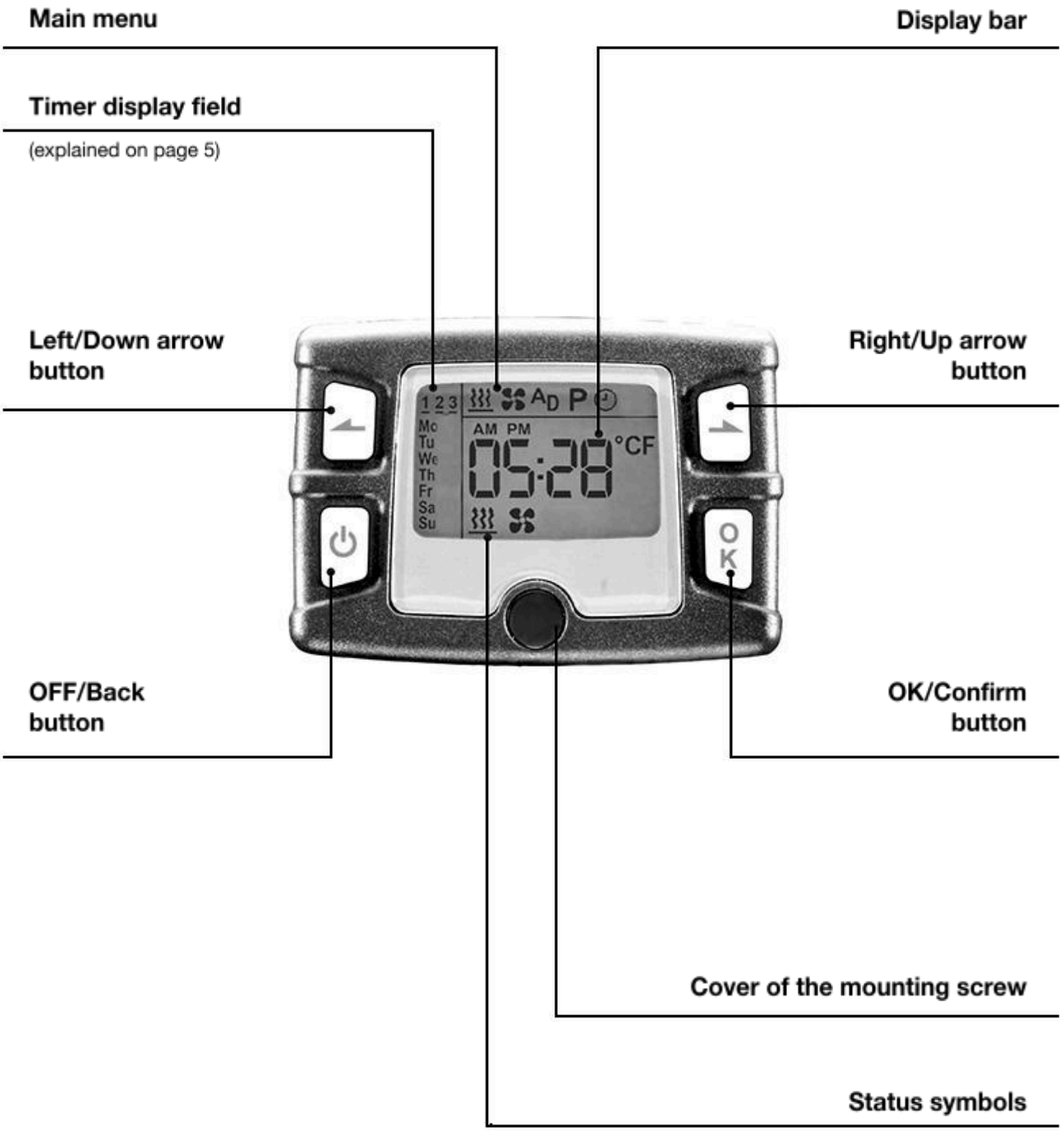
We think about every single detail of the product. These details are mostly hidden from people but we know that the continual improvement of all of these components with no compromise on the selection of the parts and quality is the only way to offer the long lasting, easy to use product, best customer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

Version 1.5 - 01/2024

1. INTRODUCTION

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

Note: Not all the functions may be available for each model of the heating systems.



MAIN MENU SYMBOLS

Simple Heating - Heating in 2 optional modes - fixed power / thermostatic

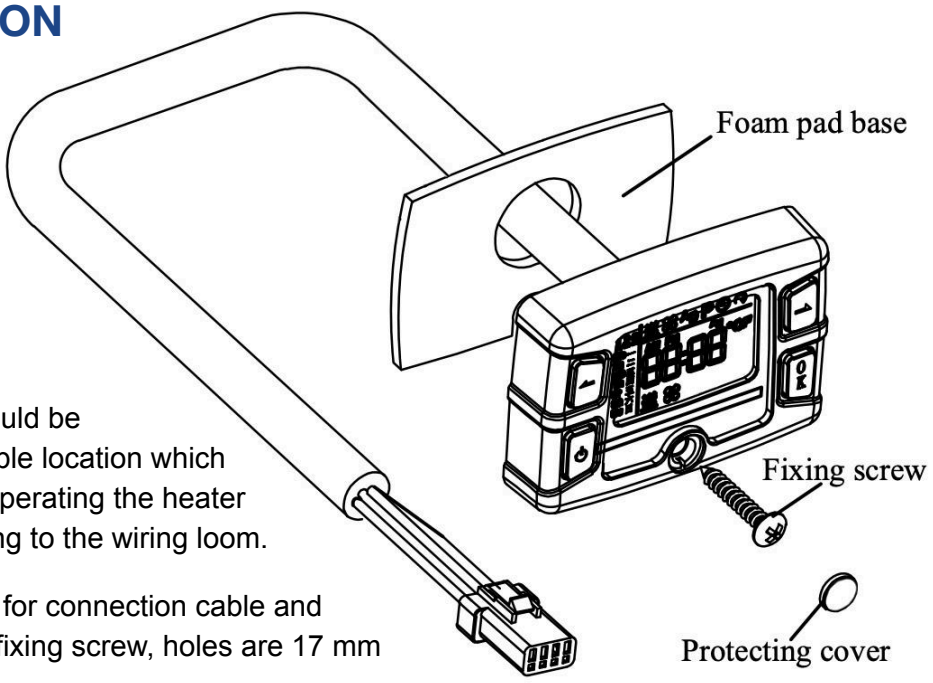
Ventilation mode - only the fan is spinning and blowing cold air

Ambient measurement - shows actual temperature and pressure

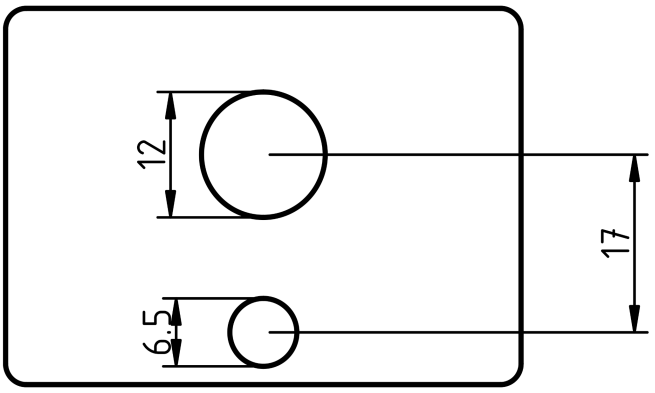
7 day programmable timer - set when you want to start your next heating cycle

Time - set date, time and advanced settings

2. INSTALLATION

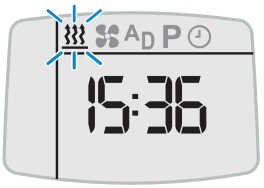


- This controller should be installed in a suitable location which is convenient for operating the heater and also connecting to the wiring loom.
- Drill Ø12 mm hole for connection cable and Ø6.5 mm hole for fixing screw, holes are 17 mm apart.
- Stick the foam sticker to the mounting surface, push the cable through a Ø12 mm hole. Remove the other side of the sticker and stick the controller to it. Expansion plugs of the controller are now in the Ø6.5 mm hole. Insert the fixing screw and place the protective cover over it.

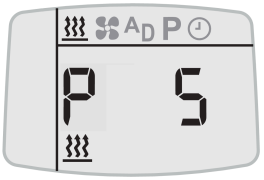


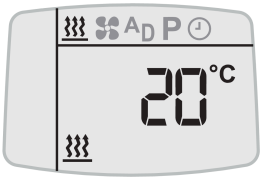
3. OPERATION

IMMEDIATE HEATING



- This mode is used for manual ON and OFF switching of heating with preset power or at designated temperature.
- Select using and and confirm with .
- You can adjust heating power between 1 to 7 with arrows.
- To switch into thermostatic mode press and hold for three seconds. Heater will start automatically after a few seconds.
- To terminate the heating cycle press . The heating unit will initiate the cooling down process that can run a couple of minutes until the heat exchanger is fully cooled down.



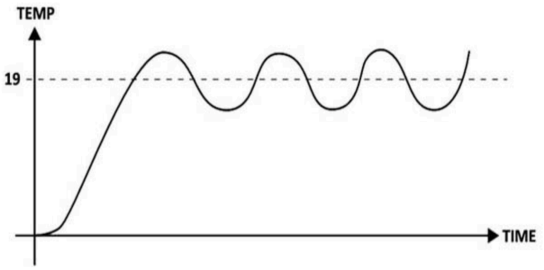


- **Fixed Power Mode:**

  The display will show values between P1-P7, with P7 as the highest heating power. The heater will be running on the same until switched off or changed.

- **Thermostatic Mode**

  The display will show values in degrees celsius. You may adjust the temperature from 5°C to 35°C. It automatically adjusts the heating power within the range of the minimum and maximum heating power and also allows full shut down of the heating process after reaching a few degrees above the preset temperature. This is to avoid overheating of the heated space. The unit then waits fully off and initiates the next heating cycle again once the room temperature drops a few degrees below preset temperature. The controller allows cycling to maintain a relatively stable room temperature.



Note: The ambient temperature sensor is located inside the heating unit. It measures the temperature of air entering the unit. You may experience incorrect functionality of thermostatic mode in case the air for the unit is sucked from a different area than the one you are heating.

VENTILATION MODE

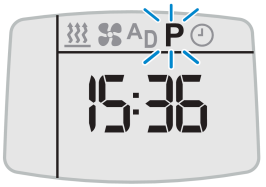
- This mode is used for regulated flow of cold air through the heating unit without the heating process.
- Select using and arrows and confirm with .
- You can adjust the speed of the fan between 1 to 7 with arrows.
- To switch off the fan press .

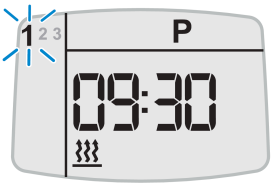
AMBIENT TEMPERATURE AND PRESSURE

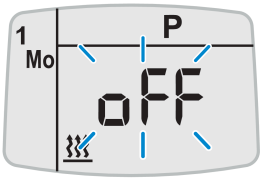
- This will show you the temperature of air coming through the heater and air pressure.
- Select AD using ◄ and ► arrows and confirm with OK.
- Air temperature will display on the display, for air pressure press ◄ or ►.
- To get back to the main menu press ⏻.

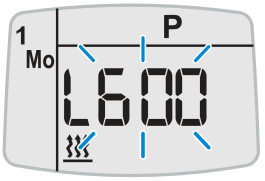
Note: For quicker selection and changes in the menu you can just hold the arrow instead of pressing it multiple times.

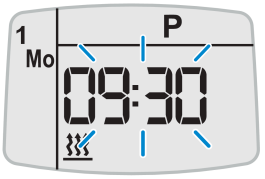
7 DAY PROGRAMMABLE TIMER

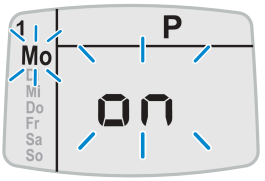








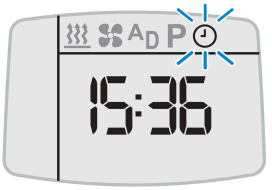




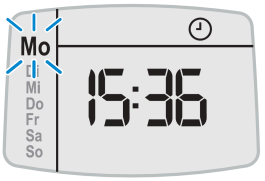
- You can preset the heater to be operating on selected days. For each day of the week you can select the starting time and duration of the heating cycle. **Heating mode and power/temperature depends on settings set in the IMMEDIATE HEATING menu.** Controller can save 3 different weekly programs. For the correct operation of a programmable timer you have to set the correct day and time.
- Select P using ◄ and ► arrows and confirm with OK.
- In the first step you are selecting the program you would like to set. Select the number of the program with arrows and confirm with OK.
- Now you can set this program to be “ON” or “OFF”. Use arrows and confirm with OK.
- In the next step you can set the duration of the heating cycle in minutes from 50 to 990. Use arrows and confirm with OK.
- In the next step you can set the starting time. Use arrows and confirm with OK
- Now you have to go through each day and set if you want the heater to be running that day. With the day flashing, use arrows to choose between on and oFF and confirm with OK.
- Days with a heating cycle ON will appear in the list on the left. Days with a heating cycle OFF will not appear there.
- Once you confirm the ON or OFF cycle for Sunday, you will be back on the main screen.
- You can skip back to main menu anytime by pressing ⏻. All changes done will remain saved.

Example: You want the heater to be running every working day between 6am and 1pm and every Wednesday and Saturday between 5pm and 9 pm. You first set up the program number 1, switch it on. You set the duration of the heating for 420 minutes (7hours) and the start of the heating will be at 6:00. You set it ON for Monday-Friday and OFF for Saturday and Sunday. Now you have to set the program number 2 with a duration of 240 minutes (4 hours), with starting time at 5pm and only for Wednesday and Saturday.
You will see the day of the next heating cycle in the Timer display field.

TIME AND ADVANCED SETTINGS



- Here you can set time and day or enter advanced settings.
- Select ⏱ using ◀ and ▶ arrows and confirm with OK.
- First you have to select the current day. Use arrows and confirm with OK.



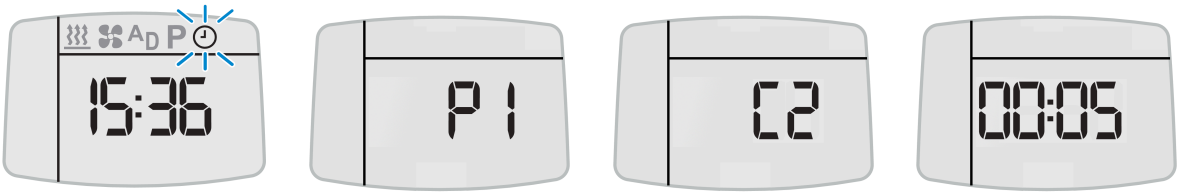
- Now you can adjust the time, set hours first, confirm with OK and set minutes. Once you confirm it with OK, you will be back on the main screen.
- For Advanced settings select ⏱ using arrows and press ◀ and ▶ together. You will be in the settings menu, you can use arrows to list through, press OK to confirm or ⏻ to retreat. Menu structure is shown in the table, in first layer you can choose from P1/P2/P3, confirming with OK will get you to the next layer (C1/C2) and so on.

ADVANCED SETTINGS OR MODES

P1	C1	00	On	–
			Off	RESERVED: Must remain in this settings
		01	On	°F
			Off	°C
		02	On	English
			Off	Chinese
		03	On	–
			Off	RESERVED: Must remain in this settings
		04	On	–
			Off	RESERVED: Must remain in this settings
		05	On	–
			Off	RESERVED: Must remain in this settings
		06	35-95°C	Temperature of the water (W5S & W90 only) * You must confirm by OK button and than immediately start the heating mode, otherwise the settings will not be stored in the memory
	C2	00	0-10	Brightness of the display
		01	5-15	Time to turn off the display with no activity in seconds

P2		F 90		Priming the fuel line, automatically exits after 90s or after pressing any key
P3	C	UP	–	
	H	UP	–	
Firmware version				(Shows version of the firmware)

Example: You want to set the brightness of the display to half of maximum power. You select settings, press both arrows together. Now you are in the P1 menu, confirm with OK, with an arrow select C2 menu, confirm with OK and select 00 menu to get into the brightness settings. Adjust using arrows, confirm with OK.



Note: Priming the fuel line can only be done while the fuel line is physically disconnected from the heating unit as otherwise the burner could be filled with fuel and the next startup will be unsuccessful with a lot of smoke. If the fuel line is connected to the heater unit, never use this mode. Not following this rule can cause excessive overfilling of the burner that may require service of the unit that can not be covered by warranty.

Never turn off the unit by disconnecting the 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 such damages.

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.*

00	**NO FAULT**	

10	**IGNITION FAILURE**	• **Run out of fuel**
		  ○ This can happen anytime after you run out of fuel in the individual fuel tank or the fuel level of the main tank has dropped under the tip of the suction pipe. You must fill the tank and then fill the fuel lines using the Pump Oil Start or Remote Pump Oil mode or repeat the start-up process again until successful ignition or until you remove all the bubbles sitting on the fuel line.
		• **Closed / blocked breathing vent of the tank**
		  ○ Implosion of the tank prevents pumping the fuel. Open the breathing vent of the tank.
		• **The wrong placement of fuel lines/fuel filter/fuel pump**
		  ○ A problem especially on the intake side of the fuel line before the fuel pump, which is most vulnerable for creation of an airlock. Review the placement of the fuel line /filter/ fuel pump exactly as per the provided instructions. If you are unsure if the problem is due to the placement of the fuel lines (this can occur if you run longer distance in horizontal level), you may try placing 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.
		• **Wrong diameter of the fuel lines**
		  ○ The fuel lines supplied are a special size with very small internal diameter. Never use any other type of fuel line.
		• **Blocked or compressed air intake / exhaust pipe**
		  ○ Check the air intake / exhaust pipe for the blockage, dirt, snow, mud.
		• **Condensed / rain water staying in the air intake / exhaust pipe**
		  ○ Reinstall the pipes as per instructions to allow water to escape naturally.
		• **Blocked fuel line or fuel filter**
		  ○ Replace the fuel line or fuel filter.
		• **Bad quality of fuel**
		  ○ Replace the diesel.
		• **Carbon deposition inside the burner**
		  ○ Replace the burner.
		• **Carbon deposition in heat exchanger / exhaust pipe / exhaust silencer**
		  ○ Pressure clean with water the heat exchanger/ exhaust pipe / exhaust silencer.
		• **Dirt on the atomising net of the glow plug**
		  ○ Replace the atomising glow plug net
		• **Dirt on the glow plug**
		  ○ Replace the glow plug
		• **Faulty blower motor / heat exchanger gasket OR burner / heat exchanger gasket**
		  ○ Replace the gasket
		• **Fault of the Fuel Pump**
		  ○ Replace the Fuel Pump.
		• **Fault of the ECU** ** please see above*

20	**FLAME EXTINCTION**	*Extinction over time, same as 10*
21	**FLAME EXTINCTION**	*Extinction over time, shell and inlet temperature too low, same as 10*

30	**UNDERVOLTAGE**	• **Undervoltage**
		  ○ System minimum voltage is 10.5 volts. 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.
		  ○ 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, turn on the unit while watching the multimeter.
		• **Wrong connection in connectors**
		  ○ Check the connector of the main ECU board for any dirt or corrosion on the

		positive and negative terminal at the wiring harness. • **Fault of wiring harness** ○ 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. • **Fault of the ECU** * *please see above*
31	**OVERVOLTAGE**	• **Overvoltage** ○ 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 • **Fault of the ECU** * *please see above*

41	**OVERHEAT**	• **Excess temperature is measured at the temperature sensor**
		  ○ Check if the fan is not blocked/damaged and is spinning without any suspicious noise.
		  ○ Check airflow ensuring the ducting is free from obstructions.
		• **Wrong connection of the temperature sensor**
		  ○ Remove the temperature sensor, check connections, wiring and reinstall. If the wiring is damaged or the connection is corroded, replace the temperature sensor.
		• **Faulty temperature sensor**
		  ○ Disconnect the overheating sensor from ECU and check its resistance. The correct resistance is 50kOhm for the NTC sensor or 1kOhm for the PT sensor at 25°C.
		• **Fault of the ECU** * *please see above*

48	**FUEL PUMP**	• **Fuel pump broken circuit** • **Wrong connection in connectors** ○ Check the connectors of the fuel pump or main ECU board for any dirt or corrosion. • **Fault of the wiring harness** * *please see above* • **Fault of the Fuel Pump** * *please see above* • **Fault of the ECU** * *please see above*
50	**TEMPERATURE SENSOR**	• **Open circuit of the wiring of temperature sensor** ○ Replace the temperature sensor. • **Wrong connection of the temperature sensor** * *please see above* • **Faulty temperature sensor** * *please see above* • **Fault of the ECU** * *please see above*
51	**TEMPERATURE SENSOR**	• **Short circuit of the wiring of temperature sensor** ○ Replace the temperature sensor. • **Wrong connection of the temperature sensor** * *please see above* • **Faulty temperature sensor** * *please see above* • **Fault of the ECU** * *please see above*
52	**TEMPERATURE SENSOR**	• **Open circuit of the wiring of temperature sensor** ○ Replace the temperature sensor. • **Wrong connection of the temperature sensor** * *please see above* • **Faulty temperature sensor** * *please see above* • **Fault of the ECU** * *please see above*
53	**TEMPERATURE SENSOR**	• **Short circuit of the wiring of temperature sensor** ○ Replace the temperature sensor. • **Wrong connection of the temperature sensor** * *please see above* • **Faulty temperature sensor** * *please see above* • **Fault of the ECU** * *please see above*
54	**TEMPERATURE SENSOR**	• **Temperature sensor overheat** ○ Same as 41
65	**TEMPERATURE SENSOR**	• **Broken circuit of the inside temperature sensor** ○ Most likely refers to faulty ECU
66	**TEMPERATURE SENSOR**	• **Short circuit of the inside temperature sensor** ○ Most likely refers to faulty ECU
68	**TEMPERATURE SENSOR**	• **Broken circuit of the outside temperature sensor** ○ Replace the temperature sensor. • **Wrong connection of the temperature sensor** * *please see above*

69	**TEMPERATURE SENSOR**	• **Short circuit of the outside temperature sensor** ○ Replace the temperature sensor. • **Wrong connection of the temperature sensor** * *please see above*
70	**FUEL PUMP**	• **Fuel pump short circuit** • **Wrong connection in connectors** ○ Check the connectors of the fuel pump or main ECU board for any dirt or corrosion. • **Fault of the wiring harness** * *please see above* • **Fault of the Fuel Pump** * *please see above* • **Fault of the ECU** * *please see above*
71	**FUEL PUMP**	• **Fuel pump broken circuit** • **Wrong connection in connectors** ○ Check the connectors of the fuel pump or main ECU board for any dirt or corrosion. • **Fault of the wiring harness** * *please see above* • **Fault of the Fuel Pump** * *please see above* • **Fault of the ECU** * *please see above*
80	**BLOWER MOTOR**	• **Blower motor broken circuit** ○ Check connection of the blower motor. • **Fault of the ECU** * *please see above*
81	**BLOWER MOTOR**	• **Blower motor short circuit** ○ Connect the multimeter to the positive and negative terminals of the fan and check the resistance. Check if the wiring to the fan is damaged. • **Fault of the ECU** * *please see above*

82	**BLOWER MOTOR**	• **Blower motor speed too low**
		  ○ This occurs when motor speed varies from specification by more than 10% for longer than 30 seconds.
		• **Blower motor interrupted**
		  ○ 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.
		• **Damage of the impeller**
		  ○ Possible causes: 1) Physical obstruction 2) Ducting clamp over-torqued 3) Floor mat or debris under the heater when mounted. Replace the blower motor.
		• **Fault of the ECU** * *please see above*

83	**BLOWER MOTOR**	• **Blower motor speed too high** ○ This occurs when motor speed varies from specification by more than 10% for longer than 30 seconds. • **Fault of the ECU** * *please see above*
84	**BLOWER MOTOR**	• **Blower motor speed measurement failure** ○ This occurs when ECU is not able to measure motor speed • **Fault of the ECU** * *please see above*
85	**BLOWER MOTOR**	• **Blower motor disconnected** ○ Check connection of the blower motor. • **Fault of the ECU** * *please see above*

90	**GLOW PLUG**	• **Broken circuit of the wiring of glow plug**
		  ○ Check the glow plug connection.
		• **Fault of glow plug**
		  ○ Replace the glow plug.
		• **Fault of the ECU** * *please see above*

91	**GLOW PLUG**	• **Short circuit of the wiring of glow plug**
		  ○ Replace the glow plug.
		• **Fault of glow plug**
		  ○ Replace the glow plug.
		• **Fault of the ECU** * *please see above*

92	**GLOW PLUG**	• **Glow plug resistance failure** ○ Replace the glow plug. • **Fault of the ECU** * *please see above*

93	**GLOW PLUG**	• **Glow plug drive open circuit** ○ Replace the ECU

a2	**TEMPERATURE SENSOR**	• **Excess temperature is measured at the cold air intake sensor**
		  ○ The indoor temperature is too high
		  ○ Installation space is too narrow or the suction vent of the installation enclosure is blocked which causes accumulation of residual heat around the heating unit.

d0	**ELECTRONIC CONTROL UNIT**	• **Fault of the crystal oscillator in the ECU** • **Incorrect ECU / Main Controller** ○ Replace ECU / Main Con
d1	**ELECTRONIC CONTROL UNIT**	• **Fault of the memory in the ECU** • **Incorrect ECU / Main Controller** ○ Replace ECU / Main Con
d3	**MAINTENANCE REMINDER**	

HEATPORT
297A Brophys Road Road
Lowry Hills Range, 7382
Cheviot, Canterbury
New Zealand

hello@heatport.co.nz

www.heatport.com