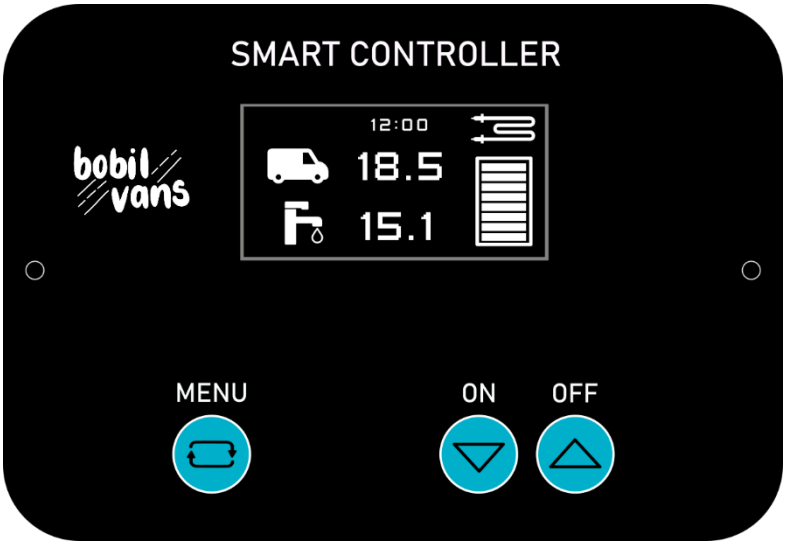
BOBIL VANS SMART CONTROLLER

USER GUIDE



Important Safety Instructions! Please save these instructions!

This manual contains important safety, installation, and operating instructions for the Bobil Vans Smart Controller.

The manufacturer accepts no liability for damage by:

- Incorrect assembly.
- Damage resulting from mechanical influences or excess voltage.
- Modification or tampering with the unit without expressed permission from the manufacturer.
- Used for purposes other than described in this manual.

General safety

- In the event of product failure, do not attempt to repair the controller. Contact us for support.
- Electrical devices are not toys - keep away from children.
- This product is for 12V circuits only. Make sure your voltage specification is within the input voltage range expressed. Do not connect to a 24v circuit.
- Install and store the product in a dry and cool place.
- Keep electronics away from liquids!
- Do not use the product if physically damaged.
- Over-current protection devices should be on the positive line.

If you have any questions about your installation, please email us at info@bobilvans.co.uk

Thank you for buying our products!

Small businesses like ours only exist because of the support of our customers. We appreciate you purchasing from us, and hope that you have a great experience.

If you have any installation questions or queries then just get in touch, we're here to help.
Contact us at info@bobilvans.co.uk or on the phone at +44 1275 261074

Box contents

1. Bobil Smart Controller Screen	5. Fresh water level sensor (If ordered)
2. Slave Board	6. Waste water level sensor (if ordered)
3. Connection cable	7. Servo extension cable (3 core cable)
4. Duct temperature sensor	

Basic Information

The Bobil Smart Controller offers a host of features for controlling the Bobil Water System. The key features are:

- Control of both Chinese, Autoterm and other heaters.
- Automatic diverter control.
- Accurate temperature feedback for cabin temperature and water temperature as well as the temperature outside of the vehicle.
- Routines for both air heating, water heating and both air and water heating, which can be set with a timer.
- Operation of the 12v element based on the system voltage.
- 9 point water level display with a 'tank full' reading for the waste tank.
- Remote operation from a phone via Wi-Fi.
- Significantly simpler wiring and installation

These instructions go through each screen of this controller, along with how to change parameters of each setting.

They do not show the wiring on the controller, for this please refer to the main instruction manual for your specific kit to show the wiring on the controller, as each is slightly different depending on your kit.

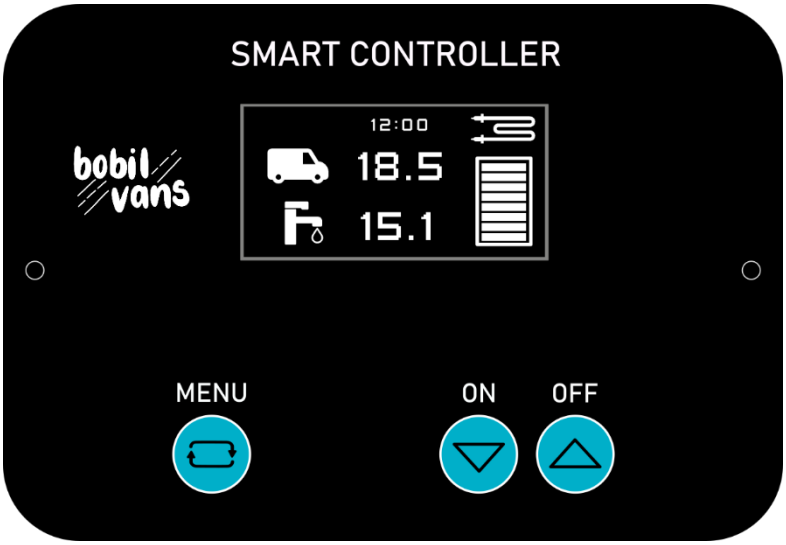
We also have a video explanation/tutorial as well, which you can watch by clicking the QR code below.

https://www.youtube.com/watch?v=AoHyYec-9ko

Controller Overview

The controller has three button inputs.

- The left-hand button is a menu scroll button. Press this button to scroll through the different screens.
- The other two buttons are used to turn the routines on and off and alter the time and temperature.



Controller Menu Screens

1. Main Status
2. Secondary Status
3. Air Heating Routine
4. Water Heating Routine
5. Air and Water Heating Routine
6. Set Time for Air/Water Heating
7. Enable Air and Water Heating Timer
8. Air Target Set Point
9. DC Heating Element Control
10. Time Setting
11. Settings
12. WI-FI Connection

Leaving the controller for 60 seconds will default back to the main status screen.

Ensure you set up the controller correct for your battery setup BEFORE powering on.

Please see the following pages for a breakdown of each status page and how to change each setting.

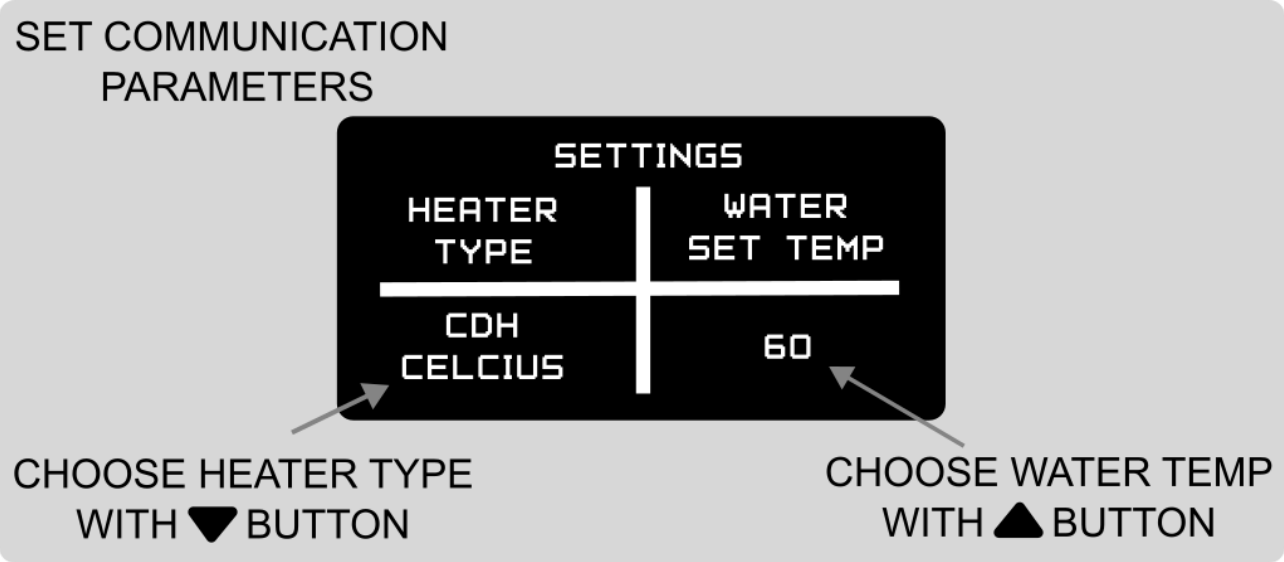
Setting up the controller for your brand of heater

The Smart controller has several different modes of operation, and before your controller can be used, you must ensure that it is set up for your brand of heater.

This should be the first step you do once you have the wiring complete and turn the controller on for the first time, so that it is properly set up for your brand of heater.

Once the controller is installed, scroll through the menus to the settings screen. This screen allows you to tell the Smart Controller which heater you have connected to the controller. Use the DOWN button to select the type of heater you have, along with Celsius/Fahrenheit, and the UP button to select the temperature to heat the water too.

Once the parameters are set, you should turn the controller off and on to allow it to boot up with the correct settings.



Heater Type

There are various heaters directly supported by the Smart Controller, which are:

Autoterm - This is used for any heater which is directly connected to the brown and white wires of the smart controller. It also covers Eberspacher heaters and any other heaters operated via a 12v signal from the external control box.
CDH - This is the standard Chinese diesel heater controller.
MAX1/MAX2/MAX3 – There are three different protocols of the Maxspeedingrods remote, you may need to try all of them to see which one connects.
Hcalory - The standard Hcalory heater.
Lavaner - This is the radio version of the Lavaner and Lavaner Pro heaters.
'UNCONT' - These are for heaters which don't offer any kind of connection to the smart controller (explained later in this manual).

When changing the heater type there is also the option of Celsius or Fahrenheit available so you can choose which option is right for your region.

Water Set Temp

The UP button allows you to change temperature the diesel heater will heat water to before turning itself off. It is configurable in 5-degree increments from 55 to 75 degrees.

Please note: This setting does not affect the electric element(s) heating point, this is done either via the DC heating element screen, or the knob on the tank.

Chinese Diesel Heater Types

As you will notice, most of the heater type modes on the Smart Controller are for various makes/brands of the generic "Chinese Diesel Heaters". Whilst we are updating our software continuously, we cannot guarantee 100% compatibility for any heater with our controller, due to the constant changing nature of these heaters software.

The Smart Controller connects to the Chinese heater by mimicking the radio signals produced by the key fob and turning the power level up/down. Do not physically wire the Chinese Heater to the Bobil Controller - doing so could damage the Chinese diesel heater and the Smart Controller.

Hz Mode

For the radio commands to be successful, you need to put the diesel heater controller into pump frequency (Hz) mode. To put the standard Chinese heater controller into Hz mode, press and hold the 'Settings' button (top left) and the up arrow (top right) together, and you will either see a temperature, or a frequency in the form 'P 1.4Hz'.

To pair the diesel heater controller, hold down the up arrow on the diesel heater controller until the display reads 'HFA-'.

If you now start the water heating routine the controller will listen out for the radio signal, and when it receives it that will pair the two devices.

Note: Not all controllers are the same, and some don't have Hz mode at all, so please research your specific heater through YouTube, general internet search or your heater instructional manual. You may find that your particular heater works without any pairing needed, as some heaters come already paired,

Chinese heater controllers are constantly evolving with newer models being produced. It is possible that the controller that you have is not supported, in that case it is better to use the 'UNCONT' mode, especially if the controller is thermostatic and has Bluetooth.

This is explained on the following page.

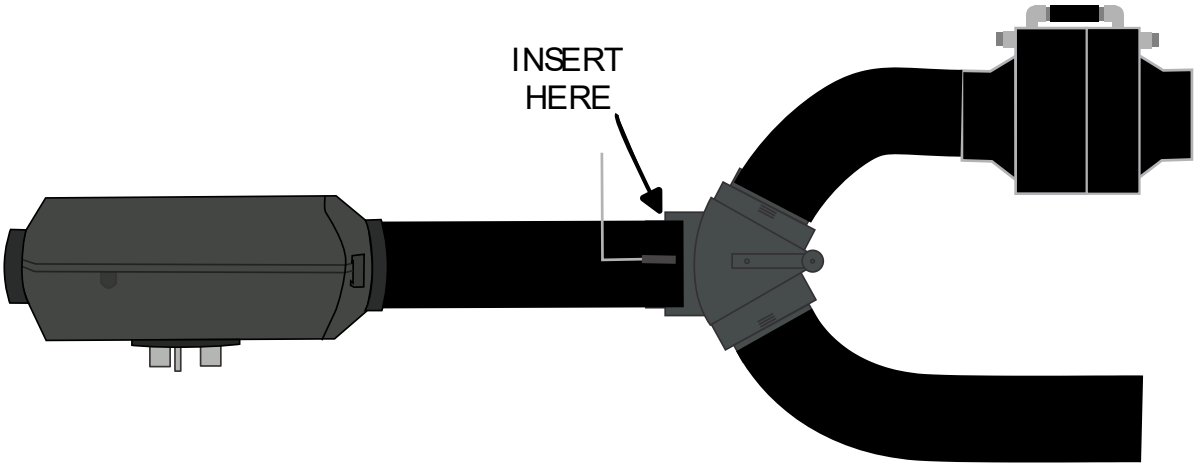
UNCONT – Uncontrolled Heater Mode

If your diesel heater cannot be paired with the Smart Controller, then you can still use it with our system, but you will need to put the controller into UNCONT mode.

'UNCONT' mode allows the Smart Controller to be used in 'Slave' mode with a heater which is uncontrollable. This means that the Smart Controller will respond to the heater turning on and automatically start the 'Air and Water' routine.

The controller will switch the diverter to heat water when the air temperature setpoint is reached, balancing the demands of the air and water. This is recommended for use when there is no way of interfacing the controller with a heater, such a Webasto heaters, certain types of Chinese heaters and Propex heaters.

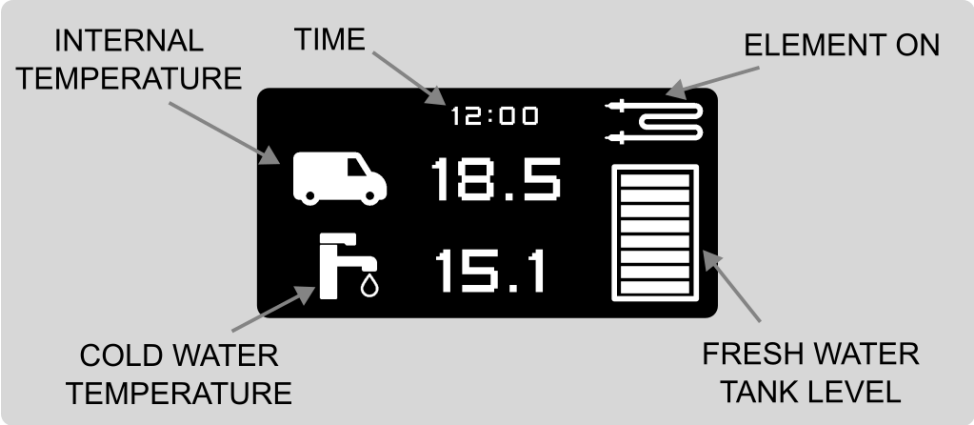
To use the controller in this mode, you need to reposition the duct sensor at the entrance of the diverter. Pull the ducting away from the diverter and insert the sensor before replacing the ducting and gently tightening the jubilee clip. Ensure that the sensor only protrudes into the airflow and does not impede the movement of the flap.



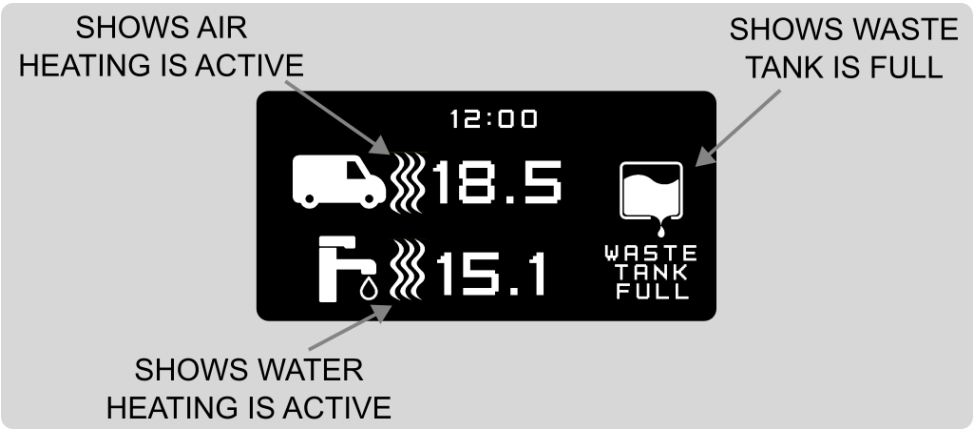
UNCONT Mode flow chart

1. Turn on your diesel heater via the diesel heater controller.
2. When the duct sensor senses hot air (after the heater is on and warmed up), this will enable 'Air and Water' mode on the Smart Controller.
3. Flap in the diverter moves to heat up AIR first.
4. AIR is heated to Air Temp Set Point, set on the Smart Controller.
5. Once this is reached, diverter flap moves to heat WATER.
6. WATER is heated to Water Temp Set Point, set on the Smart Controller.
7. Once this is reached, the diverter flap moves back to AIR.
8. At this point, you need to manually turn the diesel heater off. If you don't the air temperature in the van will keep climbing.

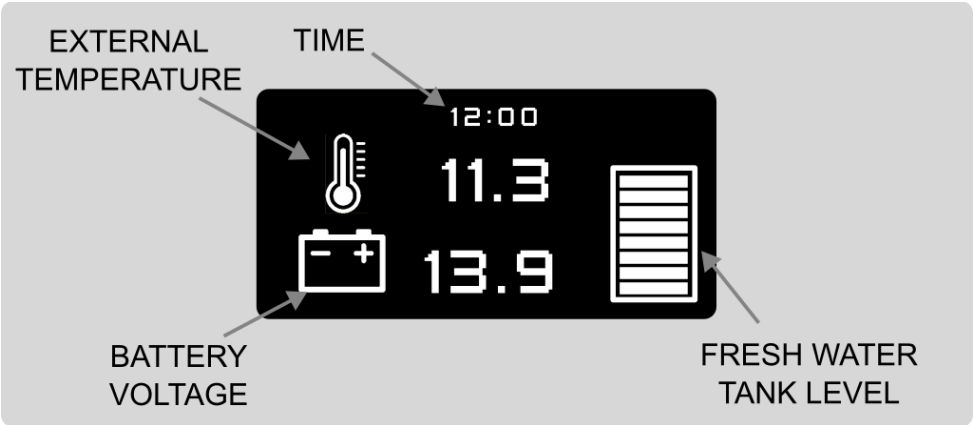
Main Status Screen



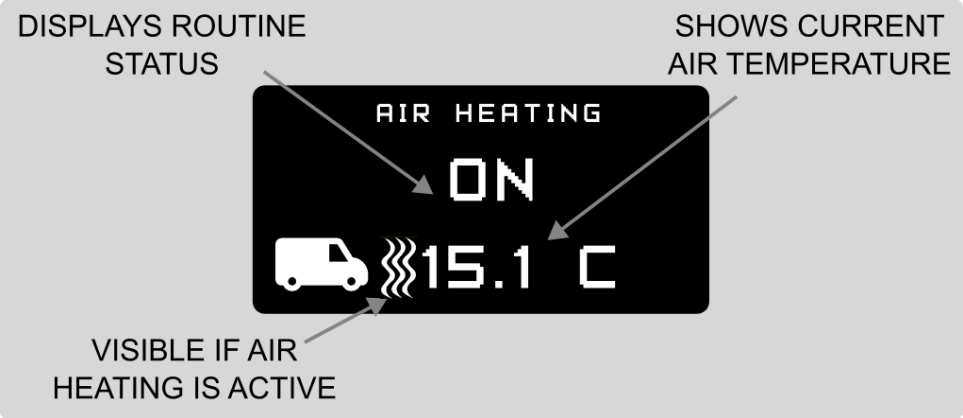
- The fresh water tank level is only displayed if the sensor is connected.
- If the waste tank sensor is triggered, you will see “waste tank full”. As this replaces the fresh level, the level is then displayed on the second status screen.
- If a heating routine is running, then additional icons will be displayed.



Secondary Status Screen



Air Heating Routine

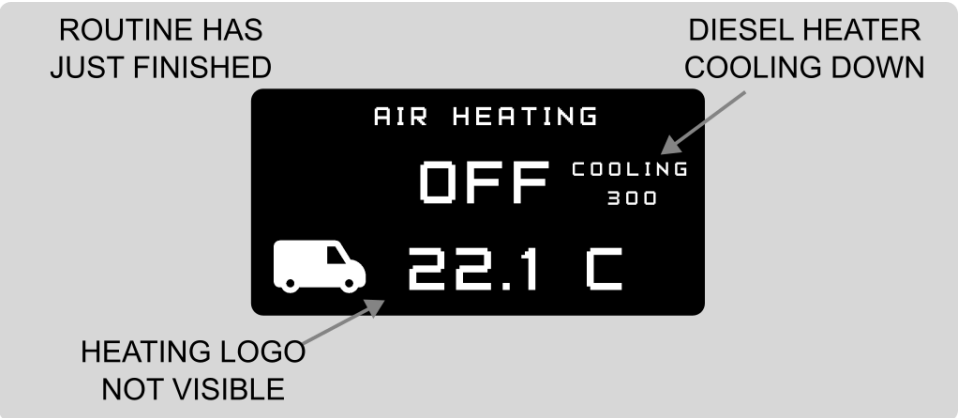


- This routine heats the cabin up to the set temperature then attempts to maintain it.
- Use the ON/OFF buttons to enable/disable this routine.
- Air set point can be changed (explained later)

If the temperature goes over the set point by 2 degrees and the heater is on its lowest setting, the heater will be turned off. However, the routine will stay on and when the temperature drops to 3 degrees below the set point, the heater will be turned on again.

When the heater is switched off, you will see a cooling timer. This is because diesel heaters need a few minutes to shut down so no further commands are allowed at this time.

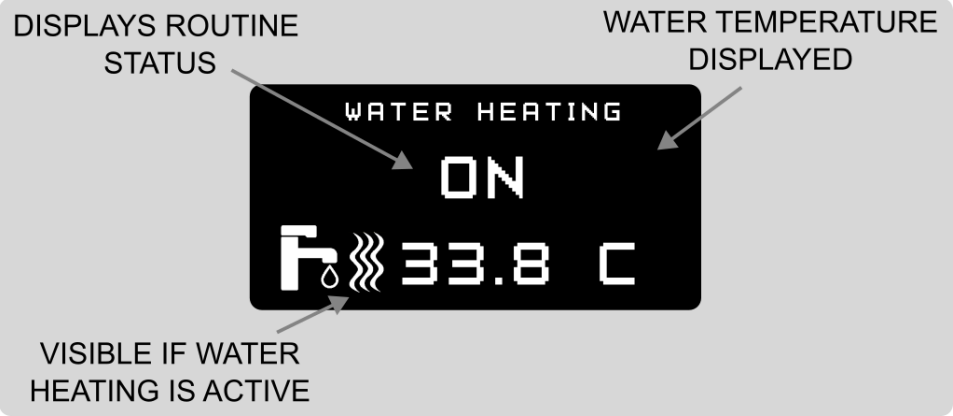
For Autoterm heaters we recommend that the Autoterm controller is used for air only routines.



DO NOT try to bypass the cooling period as this can damage the diesel heater.

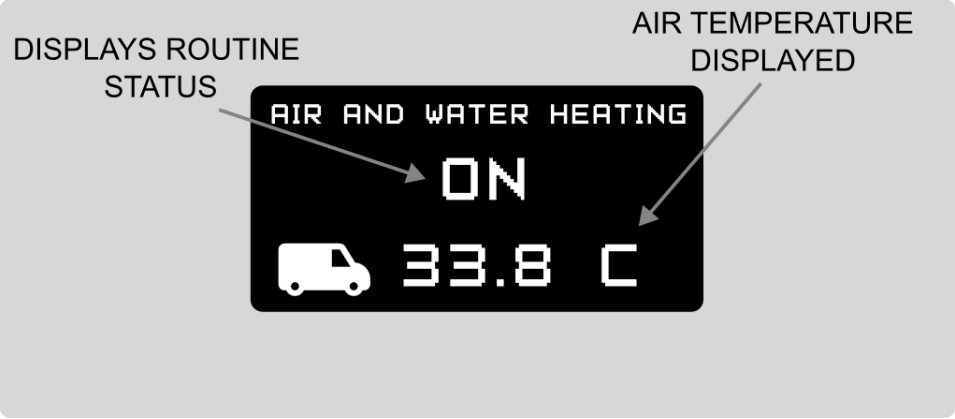
The air temperature reading come from the Bobil Controller internal temperature sensor, so you can position this sensor as you see fit in your van. If your diesel heater has its own air temperature sensor, the Bobil Smart Controller cannot read this input and instead still relies on its own sensor.

Water Heating Routine



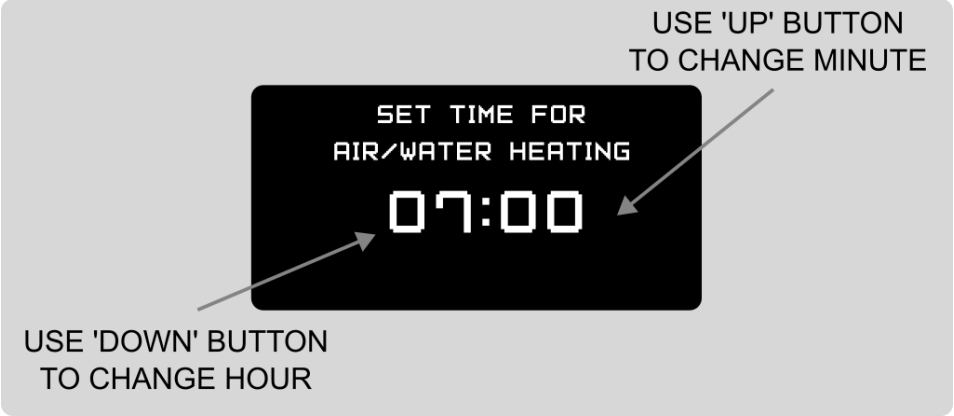
- This routine starts the diesel heater, swings the diverter towards the heat exchanger and heats the water to the water set point (60C by default).
- Use the ON/OFF buttons to enable/disable this routine.
- The heater and routine are turned OFF when the water temperature is reached.
- The water temperature set be changed on the settings page (explained on page 5).

Air and Water Heating Routine

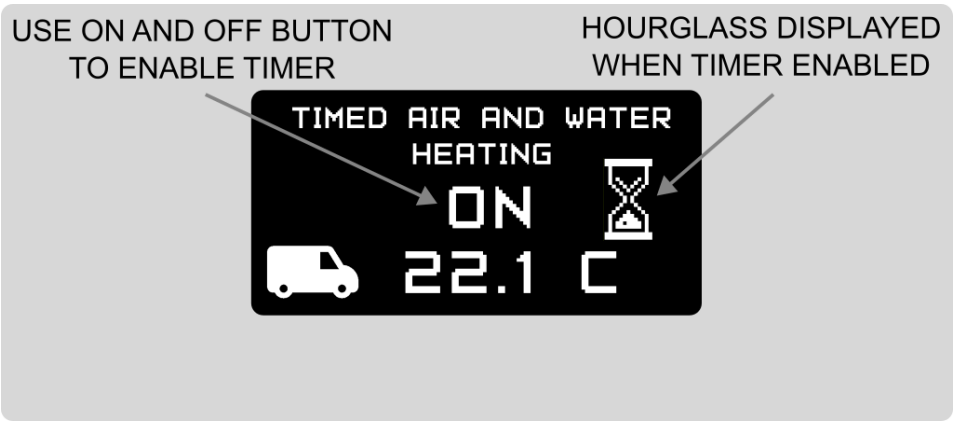


- This routine heats the water and the air to their required setpoints and attempts to balance the demand by switching the diverter valve. When the air and water are at temperature it will turn the heater off and end the routine.
- Use the ON/OFF buttons to enable/disable this routine.
- This routine will not run continuously, once the diesel heater has been shut down it will finish and not turn back on unless you re-enable to routine. If you wish for continuous air heating, we suggesting using the Air Heating Routine.

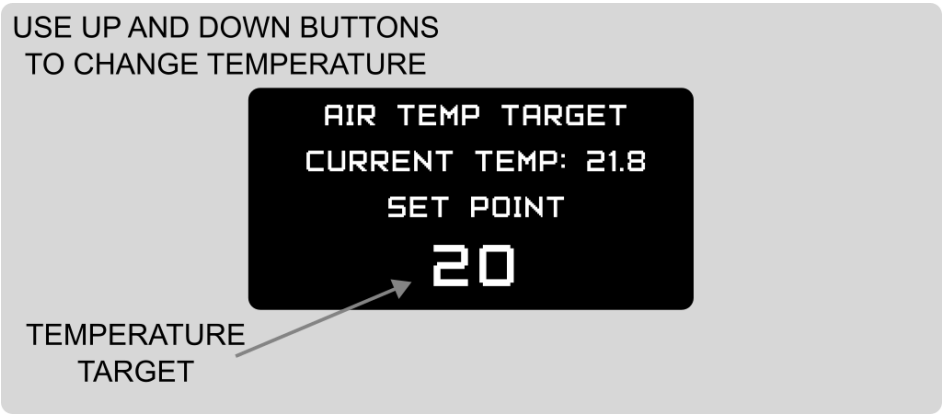
Timer Screen



- This screen allows you to set a time to start the air and water heating routine. This does not enable the routine, only set the time. Press MENU once time is set, and then use the ON/OFF buttons to enable/disable this routine.
- When enabled, the hourglass will also be displayed on the main status screen.

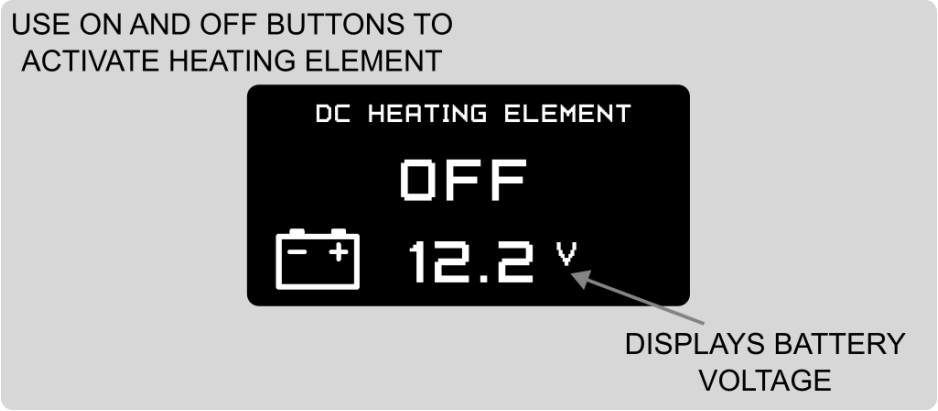


Air Temperature Setpoint



- Use the ON/OFF button to set the temperature. If you hold down the menu scroll button for 2 seconds then you can shortcut to this screen.

DC Heating Element Control



- Displays current battery voltage as read by the Smart Controller.
- This routine controls the 12V 200W DC heating element (if you have one).
- When the target of 13.4V is reached, a countdown from 300 seconds starts on the home screen. When '0' is reached the element comes on and the element symbol is displayed.
- If the voltage drops below 12.8V, then the element is switched off straight away and the countdown is reset.

Change Voltage Parameters

To change the voltages at which the element is turned on and off, do the following:

1. Navigate to the DC Heating Element Screen
2. Hold down 'OFF' for 5 seconds.
3. Press 'ON' to modify the 'Turn on voltage'.
4. Press 'OFF' to modify the 'Turn off voltage'.
5. Press 'MENU' to navigate back to the settings screen.

Uncontrolled Voltage Mode

You can also use the controller in 'uncontrolled voltage' mode, allowing you turn the 12V element on and off manually at will, disregarding battery voltage completely.

This setting is useful for testing purposes but can damage your batteries if left on as it can drain your batteries below the recommended safe voltage as there is no voltage protection.

If you wish to enable uncontrolled voltage:

1. Navigate to the DC Heating Element Screen
2. Hold down 'OFF' for 5 seconds.
3. When the voltage select screen is displayed, hold down the 'ON' button for five seconds. This will put the controller into manual/uncontrolled mode.
4. Press 'MENU' to navigate back to the settings screen

You can now use 'ON' and 'OFF' on the DC element screen to switch the element on and off manually. To switch back to voltage control, hold down the 'OFF' button for five seconds on the voltage select screen.

Voltage Drop

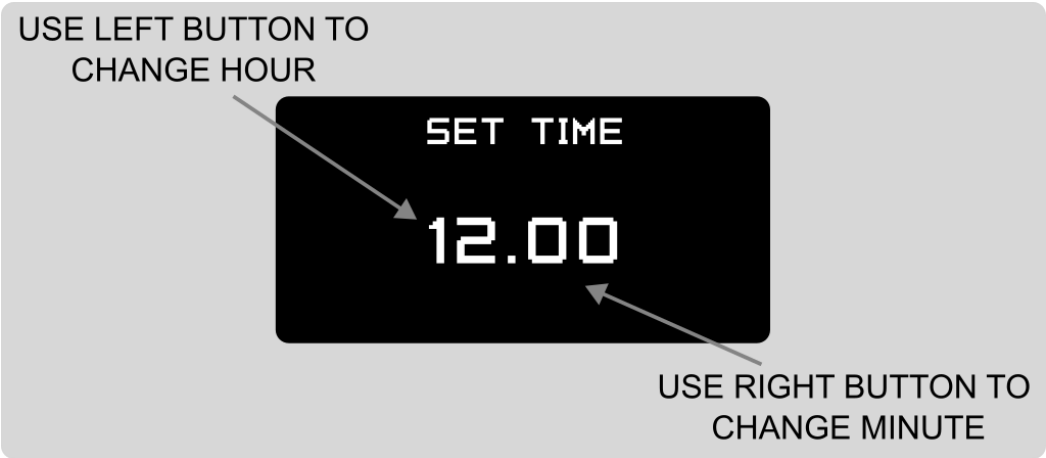
The voltage displayed on this screen is the voltage the Smart Controller is reading from your batteries. This voltage may be different from any battery monitor or battery Bluetooth app you may have. This is most likely down the voltage drop.

If you have a very thin, or particularly long cable powering your Smart Controller, the voltage being received by the Smart Controller could be lower than your actual batteries voltage.

To solve this issue, we recommend using thicker gauge cable to power the smart controller. Total length refers to the cable length from your fusebox/battery, to your smart controller and back.

TOTAL Length	1-2M	3M	4-6M	7-8M
Controller & Signal Wire	1mm 17 AWG	1.5mm 16 AWG	2.5mm 14 AWG	2.5mm 14 AWG

Time Setting



- Enables you to change the time on the smart controller.

Wi-Fi Connection

The Bobil Smart Controller can be remotely controlled from your phone via WI-FI.

To connect to the unit, go to the WI-FI connection on your phone and enter the password as shown on the screen.

Then go to your browser and type the address as shown on the screen.

A page will come up like this:

A few points to note whilst using the phone app:

- If you have started a routine using the controller, the phone app will not 'know'. To stop a routine, you would have to 'start' it using it using the app, then stop it.

- The Smart Controller cannot be connected to any other WI-FI hub, it must have a direct connection to a device.

- Depending on your device, you may find that the phone will try and use the Bobil controller as a WI-FI hotspot. If this is the case then we suggest disconnecting from the Bobil controller after you have finished using it as this may cause problems with data.

Troubleshooting

We hope you don't encounter any issues during your use of our system. If there are any issues however, the Smart Controller will display an error message.

You can refer to the table below to troubleshoot these issues. If you have tried the solution(s) below and the issue persists, please contact us via email and state which error message you are getting and what you have tried and we will do our best to help.

Error message	Solution
Sensor error	Check that the two temperature sensors plugged into the master (top) board are pushed all the way in. Pull them out and push back in again fully.
No sensor no likey	Check that the two temperature sensors plugged into the master (top) board are pushed all the way in. Pull them out and push back in again fully.
Comms error	Ensure the ship on the slave board in fully pressed down. Check for a flashing light on the slave board chip.
Controller seems unresponsive	Sending Chinese heater commands can slow down the heater, so if you have just started a routine then please be patient!
Controller not turning routines on	The temperatures may have already been reached, so check the set temperatures and Celsius/Fahrenheit, and air/water temp on the Smart Controller

If there are any issues, then please do get in touch! E-mail us at info@bobilvans.co.uk or call us on 01275 261074

We would love to know what you think!

Please let us know by leaving a review through the link sent through when you made your purchase, or email us at info@bobilvans.co.uk!

You can also share photos of your installation on the 'Bobil Water Heater Users', Facebook page, we'd love to see them!

www.bobilvans.co.uk

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