



Ortego Technik GmbH

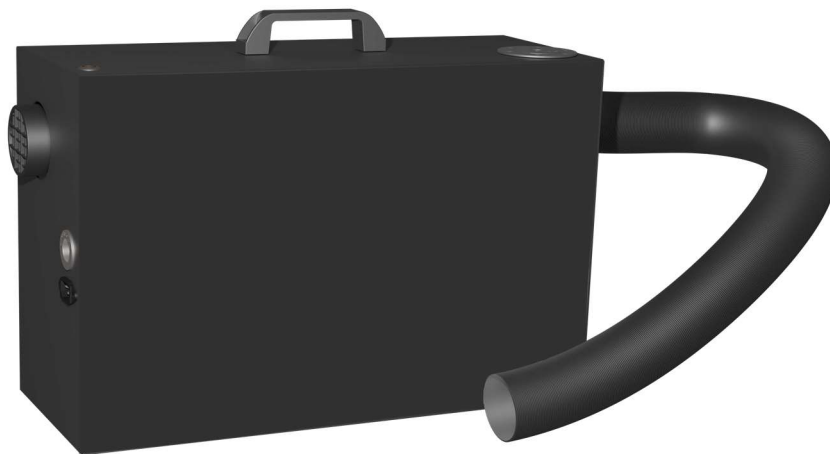
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autoterm

User's manual

for AUTOTERM TravelBOX 2.0



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Introduction

The TravelBOX is a completely self-sustained hot air-delivering unit for outdoor usage only.

It has a fuel tank to ensure a minimum operation time of up to 9 hours (depending on the power level and heating mode used).

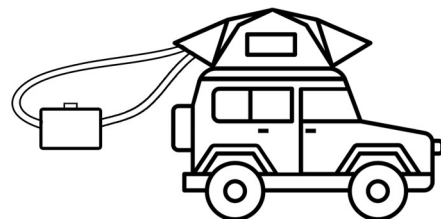
For example, it can be used for camping to heat tents, or for construction shelters or trailers, as well it can be used as emergency heating if the regular heating source had a failure. The TravelBOX can be a lifesaver in situations when you are stuck in the snow or mud, or your vehicle broke down far away from the place where you can go and wait in warm conditions. Suitable for the off-grid environment. Can be used on construction sites to ensure a comfortable work environment for workers.

TravelBOX supports 60mm air ducting hoses, the maximum length of the hot air outlet should not exceed more than 8 meters only in conditions if the air duct is straight. Sharp bends within the first meter from the heater are not allowed, it can result in heater overheating! The air intake for heating maximum length can be 1.5m.

Additionally, the heater can be equipped with an external temperature sensor assy 1458. In this case heater will operate in pre-set temperature modes which can be adjusted with a short press of the button while the heater is operating. The heater will reach a certain temperature of $+1^{\circ}\text{C}$ from the set point and switch off into wait mode till it drops 2°C below the set point. The heater will reduce power evenly when it gets closer to the set point.

NOTE! The temperature mode is not always the best option as it can increase the heater start-stop sequences in a short time period, causing unpleasant heating conditions and faster battery discharge.

In extreme weather conditions, we advise creating a heating loop and reusing the heated air from the heated compartment. The max allowed air intake pipe length is 1,5m and the max air outlet pipe length is 8m. Do not use closable grills!

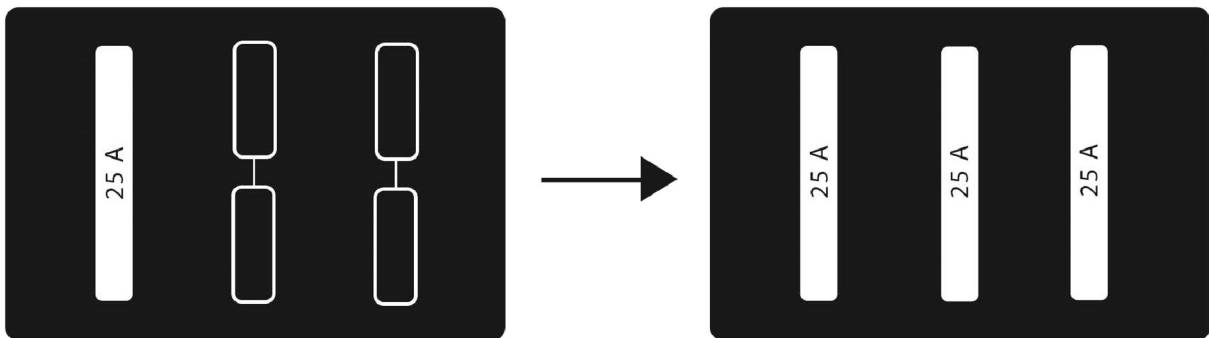


Important Before Usage!

1. Before using the heater, remove the cover by unscrewing 8 bolts with a 2.5mm hex key that comes attached to the handle to insert the fuses which are inside the TravelBOX.



2. Insert two fuses according to the picture bellow and put the cover back to power up the heater!



NOTE! The fuses are removed by following the freight transportation company's requirements for safe transportation of goods.

3. Fully charge the TravelBOX and fill in diesel fuel into the fuel tank and press & hold the button for more than 2 seconds!

Take in mind that there is a possibility that the **heater may not start on the first try** if the fuel hasn't reached the combustion chamber yet. In this case, press the button again.

NOTE! To follow the battery level, use the Victron Bluetooth app (*).



We recommend not overfilling fuel to the top of the cap, fill in 5l into the empty fuel tank. By overfilling the fuel tank there can be a risk of a diesel spill and slight leakages from the cap.

Do not overtighten the fuel cap, it may cause a vacuum.

Accessories included with TravelBOX 2.0



1.8 m 12V power supply with battery cable clamps



1.8 m 220 V power supply cable



45 cm heat insulation for exhaust pipe



Exhaust pipe clamp



1m Exhaust pipe

The exhaust pipe can be mounted directly to the TravelBOX exhaust pipe. Use the exhaust pipe for fresh air when heating to prevent CO2 from getting sucked in or to move fumes away from a specific area.



It is possible to connect a 60 mm air duct to the hot air outlet and air inlet. To connect the 60 mm air duct to the air intake, remove the plastic cover from the



air intake, by screwing it ½ counter clockwise and removing the grill.



NOTE! The heater air intake has fan blades. By removing the grill and even with the grill on, do not insert any objects inside the air intake as it can cut and damage objects and blades inside the heater.



**Do not operate the heater without the battery.
The TravelBOX has a built-in battery of 22Ah.**

Using a heater with a removed battery only with external main power can cause damage to the heater and its components. The same applies with 220v operation with a charger only, it can damage the heater and charger.

Note! If you buy the heater without a battery, use a battery with the following requirements:

- The battery must be **non-spillable**.
- Battery size must be **181x77x167mm**.
- The battery charger must support WET, MF, GEL, AGM, Ca/Ca, and Li-ion battery types.

Usage

IMPORTANT! When using a TravelBOX it is important to follow these points:

- For your safety always have a fire extinguisher nearby;
- Do not operate TravelBOX 2.0 in closed spaces;
- Avoid direct flow of exhaust gases into living areas;
- Make sure that exhaust gases do not flow into the heater air intake;
- Do not touch or put flammable objects in front of the heater exhaust outlet;
- If it is necessary, use an exhaust pipe to deliver gases to a safe distance from the heater and avoid direct flow of exhaust gases into living areas;
- Do not operate the heater without side a cover;
- Do not open the side cover while the heater is connected to an external power supply and do not remove the battery while the heater is operating.



Keep the heater away from children!

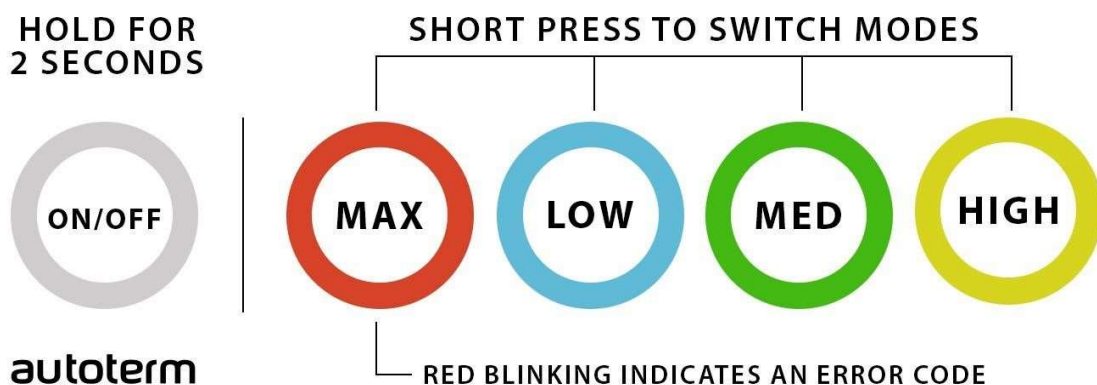
Features

The TravelBOX has a unique characteristic that saves the battery from excessive parasite drain. The TravelBOX has a relay that turns on the heater when needed and runs it on a battery. It uses less power when the heater isn't being used. It consumes only 5mA current when turned off.

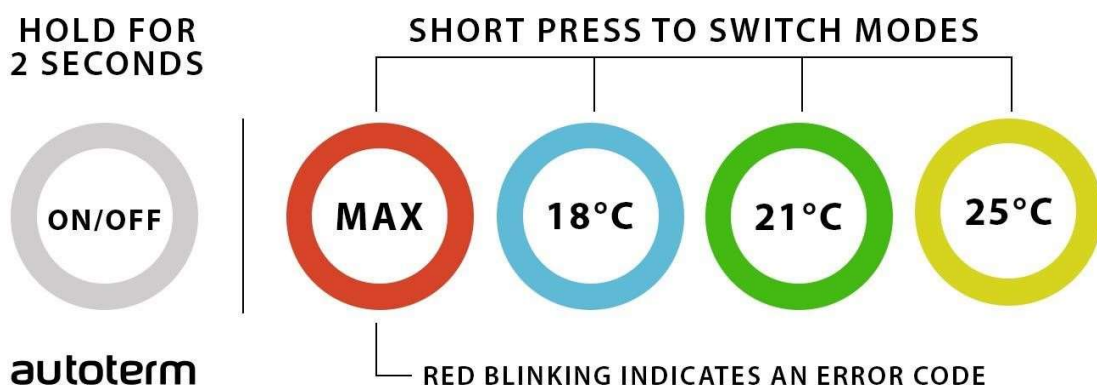
To start the heater, press and hold the button for more than 2 (two) seconds, when it starts to flash between red and yellow that indicates that it is connecting with the heater, after that it will light up in RED which indicates max power. During start up the heater will always turn on in MAX mode, which can be changed afterwards.

While the heater is running it is possible to switch between power modes by doing a short press of a button, there are 4 power presets MIN/MID/ HIGH/MAX or if the external temperature sensor is connected 18/21/25°C/ MAX.

Working modes without external temperature sensor connected



Working modes with external temperature sensor connected (Assy. 1458)



Error Codes

RED LED blinks	Description	Fault Cause	Recommended Solutions
1	Overheating of the heat exchanger	The sensor sends a signal to shut down the heater. Heat exchanger temperature in the sensor zone is over 250°C	Check the intake and outlet of the heating unit for unobstructed entry and exit of heated air. Check the integrity of the fan and its performance. Check the temperature sensor and replace it if necessary. Inspect the heat exchanger. Check and remove carbon deposits from the inside of the heat exchanger, if necessary
12	Possible overheating at the intake temperature sensor. Sensor temperature (control unit) is more than 55 degrees.	Control unit is insufficiently cooled down for 5 min. purging before start up; or overheating of the control unit during operation.	Check the intake and outlet of the heating unit for unobstructed entry and exit of air and re-start the heater to cool it down. Replace the control unit.
5	Faulty temperature sensor (Air 2D) or flame indicator	Short circuit to the casing or open circuit in the wiring of the sensor.	Check sensor, replace if necessary
6	Faulty temperature sensor in the control unit	Temperature sensor out of order (located in the control unit, cannot be replaced)	Replace control unit
	Overheat sensor - open circuit	Faulty sensor. Oxidation of contacts in the terminal block.	Check the overheat sensor circuit for an open. Remove oxidation from the connector contacts.
4	Faulty glow plug	Short circuit, open circuit, faulty control unit.	Check the glow plug, and replace it if necessary. Check the control unit, and replace if necessary.
11	Electric motor of the air blower does not develop the necessary speed.	Increased friction in the bearings or contact between the impeller and fan shroud in the blower. Faulty electric motor.	Check the electric motor, if possible correct the fault; replace the air blower if necessary.
	Faulty air temperature sensor (intake) only for Air 9D.	Mechanical fault. Oxidation of contacts in the block.	Check connecting wires.
9	Shut down, overvoltage more than 30V (for 24V) or more than 16V (for 12V).	Faulty voltage regulator. Faulty battery.	Check battery terminals and wiring. Check the battery, charge it or replace if necessary.
	Shut down, low voltage, less than 20V (for 24V) or less than 10V (for 12V)		
2	The heater does not start - two automatic start attempts failed.	No fuel in the tank	Fill the fuel tank.
		Fuel grade does not match the operating conditions at low temperatures.	Replace fuel, see Operation Manual.
		Insufficient supply of fuel.	Eliminate fuel line leakage or blockage. Check the performance of the fuel pump, replace if necessary
		Clogged exhaust duct or combustion air intake.	Clean air intake or exhaust duct of possible clogging.
		Insufficient pre-heating of the glow plug, faulty control unit.	Check the plug, replace if necessary. Check voltage supplied by control unit, replace if necessary.
		The impeller touches the fan shroud in the blower, and, as a result, flow of air into the combustion chamber is reduced.	Replace blower after determining its malfunction.
		The glow plug housing in CC is clogged. Clogged glow plug screen or it is not installed all the way into housing.	Clean the glow plug hole. Replace the glow plug screen, if needed, and install it in accordance with item 5.2.

RED LED blinks	Description	Fault Cause	Recommended Solutions
10	During the purge time, temperature sensor was not cooled down. Time for ventilation was exceeded.	During 5 min purge before start-up, temperature sensor was not sufficiently cooled.	Check the intake and output of the heater for unobstructed entry and exit of air. Check the integrity of the fan and its operation. Check the sensor, replace if necessary.
7	Faulty fuel pump.	Short circuit or open circuit in the wiring of the fuel pump	Check the wiring of the fuel pump for short circuit and open circuit. Check the wires to overheat sensor, insulation integrity.
8	Heater does not start	Burnt out fuses on the power harness.	Check the fuses and replace them if necessary.
		No communication between the controller and the control unit. Controller receives no data from the control unit.	Check the connectors and the green wire in the connecting harness. Remove oxidation from connectors. Check the controller and the connecting harness, replace if necessary. If the controller is operational, replace the control unit.
11	Motor does not rotate.	Damaged bearing or rotor, foreign objects, etc.	Check connectors and wiring leading to the electric motor board and the control unit. Eliminate the fault, if possible.
	Motor rotates. Speed is not regulated.	Faulty electric motor control board or heater CU.	Replace air blower.
3	Flame failure during operation of the heater.	Insufficient fuel supply. Faulty fuel pump. Faulty flame indicator.	Check for leaks or clogging of fuel lines, tighten the clamps on the fuel lines. Check combustion air intake and exhaust pipe. Check the amount of fuel supplied by the fuel pump, and replace it if necessary. If the heater starts, check flame indicator and replace it if needed.
	Heater does not start.	No communication between the controller and the control unit. Control unit receives no data from the controller.	Check connectors and white wire in the connecting harness. Remove oxidation of connectors. Check controller and connecting harness, replace if necessary. If controller is operational, replace control unit.
13	Flame failure.	Supply voltage drop.	Check the battery, wiring. (Voltage drop may occur due to prolonged use of electric starter) only Air 9D
3	Flame failure during operation.	Air bubbles in fuel system. Faulty fuel pump. Faulty flame indicator.	Check fuel lines for leaks or clogging. Tighten fuel line hose clamps. Check combustion air intake and exhaust duct.

TravelBOX

Technical characteristics	High	Low
Voltage	12 V Air	
Heating medium		
Heating power	2.0 kW	1.0 kW
Heated air volume	86 m ³ /h	42 m ³ /h
Power consumption	29 W	11 W
Operation time with a full battery and fuel tank.	~8 h	~18 h
Battery	Victron AGM 22Ah	
12v Charger	Blue smart charger 12V 5A (*Bluetooth Victron Connect)	
Max. work altitude (MASL)	3000 m	
Fuel	Diesel - EN590	
Fuel consumption	0.24 l/h	0.14 l/h
Control mode	Autoterm Push Control	
Compatible control panels	Simple Control, Comfort Control	
Weight of the TravelBOX	22.5kg with a full fuel tank 18.5 kg gross weight	
Heater dimensions	500x400x200 mm	
Fuel tank capacity	5l	
Water resistance	IP-51	

* Heater standby power consumption 0.06W (when not used)

* For further details about the Victron Connect app refer to the online user manual:

<https://www.victronenergy.com/live/victronconnect:start> Bluetooth active only when mains power connected.