



Challenger
DIESEL AUTOHEAT



ADVANCED THERMOSTATIC HEATER CONTROLLER & PROGRAMABLE TIMER

Fully controllable from anywhere in the world with an internet connection on your smart phone or other device.

FULL remote control of ALL functions of your Challenger heater from anywhere there is an internet connection.

Fully programmable **14 day timers** both via the Challenger controller and graphically via the WiFi interface.

Stop / Start technology, yes with the Challenger controller you can now set a desired temperature and the heater will shut down on attaining that set point. When the set point temperature drops below this the heater will re ignite and produce heat as required.

Multiple options on temperature control hysteresis including 'Frost control' - Start stop

User Interface



1.3" monochrome graphics OLED display, 128x64 pixels.

Logical layout 5 button keypad.

Stylish case

89 x 64 x 30mm

Rear 50mm keyhole mount

Cabling exits rear of case

Battery backed real time clock.

12 or 24 hour presentation modes

Display can be dimmed or turned off

Timers

14 individual programmable timers:

Start/stop times,

Chosen days,

Repeat or One-shot

Battery backed real

time clock module

ensures the clock

runs when the

heater

unpowered.

Hour meters:

Glow plug

use time

Heater run

time

System

uptime.

Heater Control

Degrees Celsius or Fahrenheit reporting

Fixed pump rate (heat demand)

Thermostat control

Standard

Variable hysteresis

Linear pump speed

External thermostat

via GPIO

Stop/Start mode

Frost Mode: always start heater if temperature drops too low.

Heater start stop

via GPIO inputs

Unique Features

Remotely wired temperature sensing based upon DS18B20 sensor; controller can be placed where practical, sensor where optimum.

Degrees Celsius or Fahrenheit readout

Advanced thermostat controls:

Adjustable hysteresis

Linear pump rate

Over-temp stop/ restart (Cyclic mode)

Temperature probe offset to better match the real world.

Low voltage cutout at sensible, battery protecting, levels.

Estimated fuel consumed and optional shutdown before fuel tank is drained to avoid re priming pump.



Our new Challenger WiFi control centre can be retro fitted to ALL Challenger heaters from the MKII onwards, it is a simple case of removing the power from the Challenger heater, remove the existing controller from the 3 wire wiring loom and replace with the new Challenger WiFi 3 wire wiring loom (Detailed instructions are provided)

Order yours online NOW at <https://www.aclsretail.com>

IMPORTANT; To use remote access (out-with your vehicle) you will need internet access at both ends of the connection. I.E 1 that the Challenger is connected to. 2 An internet connection that your control device, (mobile phone) is connected to (3/4g or Wifi) and a correctly configured MQTT broker.



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Date of installation

Installer

Product: C2 C4 C6

Serial number

Location of positive fuse : AT LEISURE BATTERY

Location of negative/ ground wire:

AT LEISURE BATTERY
ON VEHICLE CHASSIS WHERE HEATER EXITS VEHICLE.



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Your Challenger heater is guaranteed to keep your "four walls on wheels" or boat at a comfortable temperature.

After exciting excursions during the day, you'll experience absolute relaxation in the evening plus peaceful nights filled with warmth for the whole family.

And as mobile home drivers or boat skippers you will know how valuable an intact environment is.

User instructions



ACLS

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Your Challenger heater is fully automatic – initial setup can be as simple as powering-up and pressing the on-off button

There are two principal control modes – Temperature control mode and Heat (Fuel) Pulse control mode.

In Temperature control mode, the device automatically generates the maximum heat until the set temperature is exceeded, after which the heat output will be reduced to maintain the temperature. Similar to how your heating is controlled within the house.

In Heat control mode the user sets the frequency of fuel pump pulses – the higher the number the more fuel is burned, the more heat is generated. The heater will adjust the fan speed automatically to maintain an acceptable outlet temperature

To select between these modes, press the OK and < together.

If you see P- and some numbers than you have selected Heat mode. Press the same two keys again to return to Temperature mode.

In Temperature mode the display will show current temperature, this can be changed using the UP or DOWN buttons.

In Heat Control mode the Target Temperature display will be replaced by P- and a number, which is the pump pulse frequency. (Hz – Hertz, pulses per second) Each pulse delivers a fixed amount of fuel to the burner – more pulses give more fuel of course.

Temperature setting OR Fuel Pulse frequency can be changed using the arrow keys (Up or Down) depending on which mode is currently in use. Changes are actioned immediately.

Settings Button

There are 3 settings that can be set: - 1, Current time. 2, On timer. 3, Off timer.

To set the current time press settings, 1st digit will now be flashing, adjust by pressing < or > button to set, when on correct digit, press OK, digit number 2

will now flash, repeat as per 1st digit until correct time has been set pressing okay to save. **Time only needs to be set f using timers.**

To set an ON-timer press settings button until timer 1 is shown, press < to change to ON, press okay and now set the desired time.

To set an OFF-timer press settings button until timer 2 is shown, press < to change to ON, press okay and now set the desired time.

To set timers, see timer setting section.

OK Button

The okay button can be used to interrogate the heater when the current time is displayed.

- 1 - Press will show current ambient temperature within vehicle,
- 2 - Will show temperature that the thermostat is set to currently.
- 3 - Will show battery voltage.
- 4 - Will show current altitude above sea level (+/- 100m)
- 5 - Press will show any stored error codes. (E00 is not an error)

< Button

Pressing this will increase (up button)



> Button

Pressing this will decrease (down button)

PWR Button

To turn heater on press as single click, display will show ON

To turn heater OFF, press and hold until OFF is displayed.

Remote control (optional)

Requires 2 x AAA batteries.

Use of the remote is self explanatory, 4 buttons
Up, down, PWR and OK.

Working distance is only guaranteed within vehicle 2- 6 meters.

Unattended starting of the heater is NOT recommended nor endorsed by ACLS / Challenger Diesel Auto Heat as it may invalidate your vehicle insurance policy.



Timer setting (setting timers is not necessary to the function of your new heater)

There are 2 timers, timer 1 is an ON TIMER, timer 2 is an OFF TIMER.

Let's say you want the heater to come on at 7am and then off again at 10am.

Assume current time on display is 6pm (18:00 hrs)

Press setting button twice until you see Timer 1, press UP arrow to change to on and press OK button.

Timer will now display 00:00 or similar. 00: is hours :00 is minutes

If you want the heater to come on at 7am and the current time is 6pm you now need to set the delay time. Thus you set the countdown timer to start after 13 hours (13:00) (6pm to 7am = 13 hours) now press OK.

Timer 2 will now appear. If you require heater to turn off again you need to also set timer 2, press up arrow to change to ON and then set delay. To set for 10am delay would be 16 hours, screen should read 16:00, press OK to confirm.

If set correctly and saved heater will start at 7am and switch off again at 10am.

If you do not set an off timer, heater will remain on until you turn it off via the PWR button.

Timers are a single shot and need to be set each time you require to come on / off, they are not repetitive.



Low temperature running

As demonstrated on installation day, your heater uses a conjoined fan to circulate the hot air within your vehicle and also within the sealed combustion chamber. When running at lower temperatures for prolonged periods it is essential that you increase the heater temperature to maximum and let it clear the combustion chamber build up via the exhaust. This should be carried out every few days for approx. 5 minutes. Failure to follow this procedure can lead to an E10 error code, this means combustion error normally associated with a blocked exhaust. This will need to be cleared.

Error Codes

Common user errors

E01 – Low voltage – your heater is not receiving enough power from your connected batteries, recharge battery or use your split charge if available via starting the engine to increase power availability.

E08 – No fuel – place more fuel within your vehicle fuel tank
E10 – Combustion error, see low temperature running.

Actual heater errors

E02 – Over voltage – decrease voltage supply
E03 – Damaged glow plug
E04 – Damage fuel pump
E05 – Overheat sensor tripped, check for blockages
E06 – Fan error, ensure case has not been knocked and nothing is on top of heater

E07 – Data fault, check wiring to controller has not been damaged.
E09 - Onboard sensor warning

Blank screen

Normally indicates a power supply issue, check battery connections, both positive and negative. Check in line fuse on positive wire. Locate and check negative wire, this is normally either connected to your vehicle battery or underneath where the heater exhaust exits the floor of your vehicle. It will be a black single wire which should be connected to your vehicle chassis. (Ground)

Manual re fuelling

After refuelling on receiving an E08 attempt to start your heater 3- 4 times, this should fill the lines with fresh fuel and allow the heater to start.



However, diesel can air lock with the fuel line and will need to be cleared via the following procedure to prevent damage and over fuelling.

Firstly, refuel your vehicle to above quarter tank level.

Disconnect the fuel line from underneath the heater. This is important to ensure that you DO NOT over fuel the heater.

On the controller press the down button and settings button together

Screen will change to H- OFF press up arrow to change to H – ON the pump led will light and pump will pulse fuel. Monitor fuel filter and fuel lines sometimes it is better to disconnect the fuel pipe from the heater, thus it will not over fuel, and this will also assist in expelling any trapped air within the pipework.

Ensure that all the trapped air is expelled from the fuel filter by manipulating it whilst pump is pumping.

Monitor disconnected fuel pipe and stop manual pump mode when clear fuel is being expelled from the pipe.

The pump will time out after approx. 2 minutes, to switch on again press the down arrow and then press the up arrow to switch it back on again.

To stop manual fuel pump either press down arrow or press settings button.

Reconnect fuel line and restart heater.

Standby mode

When your new heater is in standby mode (off and displaying the clock), it will dim the display. To awaken, press any key.

We recommend that if you are not going to use your heater for long periods that you remove the fuse located on or near your battery. In standby by the display draws approx 50ma, the same as your dash clock. However, it is better to have no parasitic draw on your leisure battery over prolonged periods with no charge being applied to combat it.

Normal power usage

On start up and shut down your new heater will draw approx 9 - 10 amps for approx 3 minutes, thereafter dropping to 1- 2 amps during normal use.

Settings password

To access the secure setting area, you will need to enter the password. It is **4682**. Changing any settings can cause damage to your heater. Caution is advised.

Re pair remote control.

If your remote control does not connect, you need to re pair it. To do this press the down arrow on the main controller until HFA is displayed, now press PWR & OK on remote together, remote will now re pair to heater.

