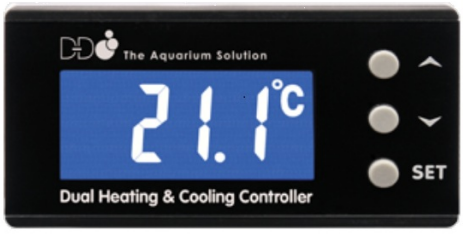

D-D Dual Heating and Cooling Controller Instruction Manual

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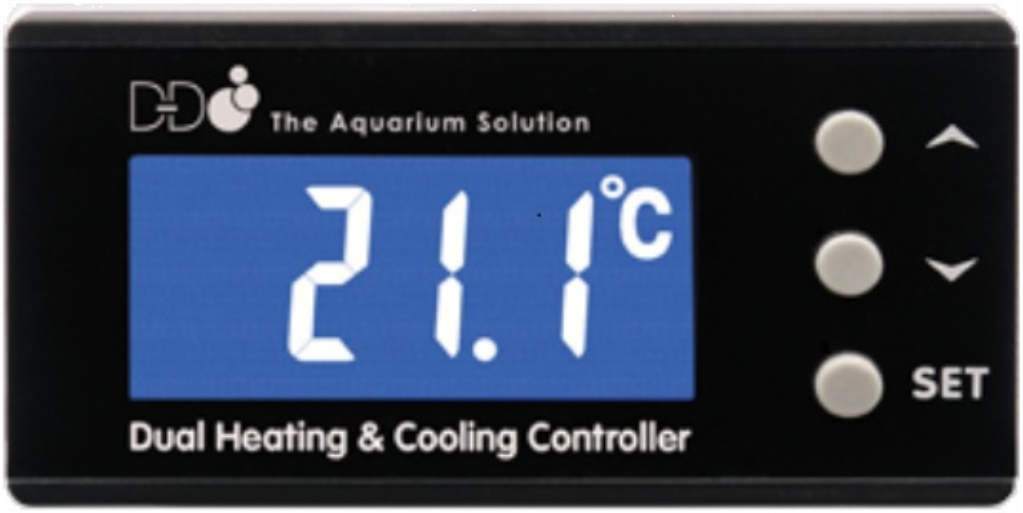

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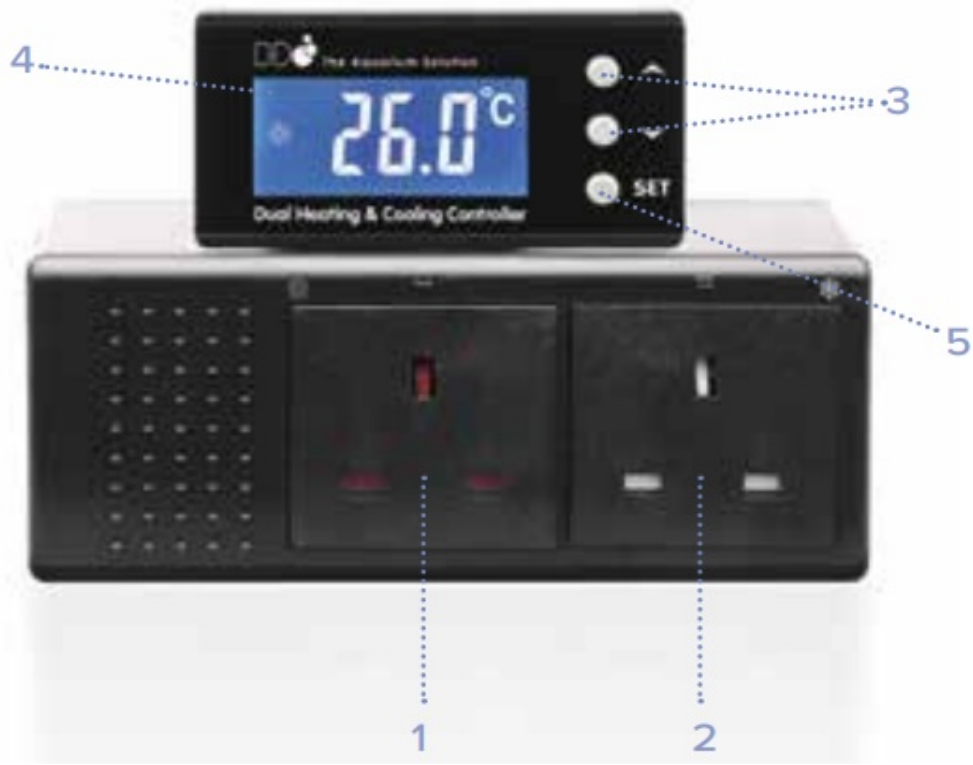

KEY FEATURES

- **Temperature control range:** 10 to 32ºC
- Dedicated cooling socket
- **Standard factory preset out of the box:** 26ºC +/- 0.3ºC
- **Calibration function:** +/- 1.5ºC
- **Temperature differential setting range:** 0.3 to 2.0ºC
- Audible and visual alarm function
  Alarm setting range 0.5 – 5ºC from set point
- Display resolution 0.1ºC
- **Accuracy:** +/- 1ºC
- NTC Sensor with 2m cable
- Heating control (resistive load, e.g heater) max 1600w
- Cooling control (inductive load, e.g refrigerant chiller) max 600w
- Display power consumption <3w
- Permanent back-lit blue LCD screen
- Memory function to retain settings during power loss
- Plug and play, no wiring required
- **Power supply:** 220VAC +/- 15%, 50/60Hz

PRODUCT DESCRIPTION

The Dual Heating and Cooling Controller is designed to allow for the precise control of the temperature in both freshwater and saltwater aquariums.
The programmable controller constantly displays a real time temperature reading for the aquarium and uses a accurate solid state NTC (negative temperature coefficient) sensor, this is encased in a waterproof plastic housing allowing it to be fully submerged in the aquarium or sump.

Operating two independent mains output sockets the controller can power both suitable heating and cooling devices. One socket is dedicated to powering a heating element raising the temperature in the aquarium and the other for operating a cooling device lowering the temperature. The controller will automatically switch power to each socket as needed to maintain the temperature within the users settings.

Aquarium heaters up to a maximum rating of 1600w can be connected to the heating power socket. This socket is marked with an 'I' and a sun symbol. Heating elements without built in thermostats, such a s the D-D Titanium Heaters, and standard glass heaters with thermostats can both be used on this socket. If your heater has a built in thermostat this must be set higher than the temperature set on the controller, otherwise it will fail to operate properly.

The cooling socket, marked with an 'II' and snowflake symbol, can operate a fan for evaporative cooling or a refrigerant chiller. The maximum rating for the socket is 1600w but it is important that if a refrigerant chiller is used its operating power is no more than 600w, otherwise it may damage the control socket. This is due to the initial starting power requirements for chillers as they will greatly exceed their rated operating power during this time.

INSTALLATION

Position the controller and power socket in a suitable location away from open water or splashing. Both of these components are not waterproof and may be damaged if they become wet. The controller can be positioned using the hook and loop self adhesive pads included and the power socket fixed in to place with the built-in screw mounting point. We recommend that the socket is not installed flat on the base of a cabinet near a sump in case water ingress from spills or leaks.

Position the temperature probe in an area of good water movement in the sump or aquarium, ideally in an place of low light to stop excess algae build up on the sensor.
We recommend that the probe is positioned in the same area of the system as the heater, e.g if the heater is in the sump the probe should be upstream of the heater in the sump. It is important that it is kept fully submerged at all times and that it is not to
close to a heater or chiller outlet otherwise the controller will receive false readings and will not operate properly. The probe should not be located where it can be drawn in to a pump inlet or potentially physically damaged by the aquarium inhabitance (e.g. Puffers, Triggerfish or Urchins).

Please note when performing a water change it is best to disconnect the power from the Dual Heating and Cooling Controller as it will be reading the temperature in the probes location only and may cause the heater or cooler to activate and continue running if there is no water flow through the system. We do not recommend putting the probe in a weir as it may come out of water in the event that the return pump stops, this will result in the probe reading the air temperature and may cause the heater to be
switched on and stay on until water flow is restored.

Connect a heater to the socket marked with the 'I' and sun symbol. If the heater has a built in thermostat, be sure to set it higher than the temperature setting on the controller otherwise it will fail to operate when the socket is switched on.
If being used, plug a suitable cooling device into the socket marked with the 'II' and snowflake symbols. If the cooling device has a built in thermostat, be sure to set it lower than the temperature setting on the controller to prevent it from being disabled.
Plug the Dual Heating and Cooling Controller in to suitable mains power outlet socket.

OPERATION

 Controller is displaying snowflake symbol.
ON: The cooling power socket has been activated and will operate a device if plugged in to it.
FLASHING: The cooling socket is in standby mode, when the controller reaches the maximum set temperature it will start a 3 minute delay timer before powering the socket. This is to protect the cooling device from rapid cycling.
OFF: The cooling socket is not being powered and any device that is plugged in will be switched off.

 **Controller is displaying the sun symbol**

ON: The heating power socket has been activated and the heating device will be powered on.
OFF: The heating socket is not being powered and the heating device will be switched off.

 **Controller is displaying the alarm symbol.**
ON: The temperature is outside the set range, an audible alarm will also sound to warn of a potential problem.
OFF: The temperature is within the set range and the unit is in normal operation.

Programming the controller

The controller has a default factory setting of 26ºC with a 0.3ºC differential on the heating and cooling sockets to allow the unit to be used out of the box for most freshwater and saltwater tropical aquariums. The setting can however be customized if required using the steps below.

To start adding a custom control program press the ‘SET’ button. The display will flash to indicate that the settings can be changed. If no buttons are pressed for 15 seconds the display will stop flashing and return to normal operation mode, the last setting shown on the screen will be saved. To return to the desired settings option press the set button to scroll through until the relevant symbol is shown on the left hand side.

1. **Setting the target temperature**
   When the display is flashing and no symbols are shown on the left hand side choose the target temperature for the aquarium. This can be done by pressing the up and down keys until the desired temperature is displayed. Once done confirm by pressing the ‘SET’ button.
2. **Setting the cooling differential**
   The snowflake symbol should be flashing on the top left of the screen to indicate that the cooling differential can be set between 0.3 and 2.0ºC. Using the up and down arrows select how far above the set temperature you want the aquarium to reach before the cooling socket is activated. Press the ‘SET’ button to confirm.
3. **Setting the heating differential**
   The sun symbol will flash on the middle left of the screen to indicate that the heating differential can be set between 0.3 and 2.0ºC. Using the up and down arrows select how far below the set temperature you want the aquarium to be before the heating socket is activated. Press the ‘SET’ button to confirm.
4. **Setting the alarm function**
   The alarm symbol will flash on the bottom left of the screen. Using the up and down arrows set how far from the target temperature the aquarium can be before the unit will alarm. This should be set to a larger number than your heating and cooling differential settings. Press the ‘SET’ button to confirm and exit the settings. The display should stop flashing and will be showing the current tank temperature.
   Example setup: The target temperature is 25.0°C +/- 0.3°C, with an alarm set for 25°C +/- 0.7°C.
   - The target temperature is set to 25.0°C

- The cooling differential is set to 0.3°C
- The heating differential is set to 0.3°C
- The alarm differential is set to 0.7°C

When the temperature in the aquarium rises above 25.3°C, the cooling power socket will be energized and the attached fan/chiller will switch on (after 3 minute short cycle delay). The cooling power socket will remain on until the aquarium temperature reaches 25.0°C.
When the temperature in the aquarium falls below 24.7°C, the heating power socket will be energized and the attached heater will switch on. The heating power socket will remain energized until the aquarium temperature reaches 25.0°C.
If the aquarium temperature falls below 24.3°C or rises above 25.7°C, the alarm will activate displaying the flashing alarm icon and sounding an audible alarm.
Pressing any button will mute the audible alarm, but the visual alarm (alarm icon) will keep flashing until the sensor temperature is within the range 24.3ºC to 25.7ºC.

CALIBRATION

The Dual Heating and Cooling Controller is calibrated at the factory and should need no further adjustment. It is however possible to make change of +/- 1.5ºC to the temperature displayed if desired. To make this adjustment please follow the steps below.
Once the unit is installed, the temperature probe is positioned in its final location and the temperature on the unit is steady decide how much you want to offset the reading by. For example if the Dual Heating and Cooling Controller is reading 26.2ºC and the temperature readout you want it to match is 26ºC then you will need to -0.2ºC from the unit.
With the unit displaying the current temperature, not flashing, press and hold the ‘SET’ and down arrow keys together for 5 seconds. The display will start to flash 0.0ºC, use the up and down arrows to select the offset you would like to program into the unit and then press the ‘SET’ button again to complete the process.
The display will now show the current temperature reading with the included offset

FAULT CODES & TROUBLESHOOTING

Code	**Fault Description**	**Solution**
EEE	Sensor Fault	Sensor requires replacement
HHH	High temp. Alarm	Temp exceeding +99.9°C
LLL	Low temp. Alarm	Temp exceeding -40.0°C

SYMPTOM	CAUSE	SOLUTION
Temperature reading keeps fluctu ating.	Probe is too close to heater or c hiller outlet and getting a false r eading. Probe not fully immersed in wat er. Probe or sensor cable damaged.	Re-position probe so that it is away and upstream fro m the heater or chiller outlet. Re-position probe so it is fully submerged in a suitable location Sensor/unit will need replacing.
Heating and	Probe is positioned to	Re-position probe so that it is away and
cooling sockets are switching quickly.	close to the heater or chiller out let.	upstream of the heater or chiller outlet.
Alarm sounds frequently.	Alarm setting are not correct.	Change alarm settings so that it does not fall within th e set heating and cooling differentials.
	Probe not in a suitable location, causing false readings.	Check probe is in the correct position as per instructio ns and make sure it is submerged.
Temperature reading suddenly ch anges after a water change or when the return pump is powe red back on.	The probe can only measure th e temperature in its location. If t here is no water flow or the pro be has come out of water it can activate the heater or cooler un necessarily.	When performing maintenance disconnect the Heatin g and Cooling Controller from power to prevent incorr ect operation. Reposition the probe in a suitable location in the sump , do not position in a weir. Check operation of the return pump.

WARRANTY

Should any defect in material or workmanship be found within 12 months of the date of purchase D-D The Aquarium Solution Ltd undertakes to repair, or at our discretion, replace the defective part free of charge. Our policy is one of continual technical improvement and we reserve the right to modify and adjust the specification of our products without prior notification.

CUSTOMER SUPPORT

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Documents / Resources

	D-D Dual Heating and Cooling Controller [pdf] Instruction Manual Dual Heating and Cooling Controller, Dual Heating Controller, Heating Controller, Dual Cooling Controller, Cooling Controller

References

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