



Dew Controllers User Manual

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Thank you for purchasing an Astro Essentials dew controller. These controllers have been designed and built in the U.K and are the latest iteration of a proven, reliable design that has provided years of service to many hundreds of astronomers.

Our products are made to a high standard and are compliant with all applicable British, European, RoHS and CE standards. At multiple points during manufacturing and assembly the products are tested to ensure they meet our exact operational and quality standards.

If you experience a fault or defect please contact us.

Warranty

All Astro Essential products come with a 2-year warranty against manufacturing defects. This warranty does not affect your statutory rights. We reserve the right to change the specifications without notice.

Safety Precautions

- The products power input is protected with a fuse as per **Table 1**, if too many Amps are pulled the fuse will blow to protect your equipment.
- Do not exceed the total rated Amps, or individual channel Amp rating.
- Only replace the fuse with a fuse of the same rating and type.
- There are no user serviceable parts. Do not open the case. Opening the case will invalidate the warranty.
- The product must not be used for any purpose other than that specified
- Do not exceed the Voltage rating of this product.
- Do not enclose the product within another box or enclosure or run the cable through conduit.
- Fully uncoil cables whilst in use.
- If the product is damaged (for example, a cut or frayed cable) do not use.
- The product is not waterproof.
- Do not expose to direct heat, flames or submerge in water.
- Do not remove the attached cigarette plug this contains the fuse.
- Ensure care is taken routing cables to and from this product to avoid trip hazards, cord wrap and the potential for the cable to become trapped or damaged.
- Product may become warm in operation, including the lead.
- Ensure all connectors are firmly pushed in (to avoid localised heating due to poor connections and to minimise exposure to the elements).
- The cigarette plug metal contacts will become warm during use. Ensure the power supply is switched off and take care when unplugging.
- Follow the instructions enclosed in this manual.
- This product is regarded as electronic waste, please dispose of correctly.
- Only to be repaired by authorised personnel only - please do not attempt any repairs yourself.
- This product is not a toy. Do not allow children to play or handle it.
- No liability is accepted for damage caused through use of this product.
- Only clean with a damp cloth.
- When not in use, store in a cool, dry, dark location.
- When not in use, to save energy turn power to the product off.

Intended Purpose & Features

Astro Essentials dew controllers are designed to control the heat output of dew heater tapes for telescopes to prevent the formation of dew.

2-Way Dew Controller

- 2x RCA / Phono dew heater outputs
- 1x Heating channel control knob (0-100%) controlling both outputs

4-Way Dew Controller

- 4x RCA / Phono dew heater outputs
- 4x Heating channel control knob (0-100%). Individually controlled outputs.

Specifications

Table 1

Model	2-Way Dew Controller	4-Way Dew Controller
Fuse Rating	3A Quick Blow	8A Quick Blow
Fuse Type	6.3 x 32mm Quick Acting Glass Fuse Rated 30VDC or higher	
Total Maximum Load	3A	8A
Voltage Range	10-15VDC - we recommend 12-13.8VDC	
Max Output per Heater Channel	2.5A Continuous (Max 3A Surge)	
Operating Temperature Range	Designed to be used between -5°C to 25°C Ambient	

Do not exceed any of these specifications, these are absolute maximums.

Power Input

- Supplied with 2 metre silicone flexible cable and cigar plug rated to 15 Amps.
- Fitted with a Cigarette plug with the fuse rating specified in **Table 1** with a red LED power indicator. Requires a DC centre positive power supply.
- Fitted with strain relief to prevent damage.

Dew Heater Outputs

- RCA / Phono style connector, tip positive.
- Suitable for most makes of dew heater tape available for astronomers.
- For maximum output per heater channel see **Table 1** **but be sure not to exceed the total device Amp rating.**
- Only use one heating load per RCA / Phono, do not use splicers or splitters as these may not be rated and may be more prone to risk of short circuits leading to the fuse blowing.
- To reduce the risk of connector damage only plug-in and unplug when the unit is powered off and full insert the connector to ensure a good connection.

Enclosure / Box

- Hard wearing, durable, black ABS enclosure.
- Red LED power indicator for each heating channel - brightness varies depending on power setting.
- Red LED intensities reduced to maintain dark adaptation.
- Velcro backed with matching sticky velcro pad to easily attach the box to your mount / pier / tripod / dovetail as required.
- High quality plastic knobs and good quality potentiometers for durability and smoothness.

Power Supply Requirements

You will need to plug the cigarette plug into a centre positive power supply capable of supplying between 10-15VDC, ideally 12-13.8VDC.

It is very important to check the power supply has the correct centre positive polarity and is capable of supplying the correct Voltage and Amperage required prior to connecting the dew controller.

If you are unsure, please get in touch with details of your power supply and we would be happy to help.

When determining your Amp requirements, it is a good idea to make a note of the Amps required for each item plugged into the dew controller. This total must not exceed the specification in **Table 1**. If you are not sure please check with the manufacturer of your dew heater strap or other devices.

If you exceed the Amp rating or, there is a short or other fault with a piece of equipment you have plugged in then you may blow the fuse fitted to the cigarette socket. Instructions to change the fuse are provided on page 6 of this manual.

Using the Dew Heater Controller

Connecting a Dew Heater

Plug a suitable dew heater tape / strap / pad into one of the heater outputs on your dew controller. It's good practice to connect and disconnect whilst the controller is powered off.

Most dew heater tapes / straps / pads will be compatible but ensure they are rated for 12V operation and come fitted with a centre positive RCA / Phono plug. If in doubt, please get in touch and we can check for you.

Adjusting the Heat Level

The heat level can be adjusted by turning the knob on the device for that particular heater output. The output can be set between 0-100% which varies the duty cycle on the pulse width modulated (PWM) output (essentially the heater turns on and off very quickly and how you set it determines how long it stays on and how long it stays off for). This is a very efficient way of controlling a heating element.

The brighter the LED indicator the higher the heater strip output.

It's a good idea to set the power output level to match the conditions and the equipment you are using. In most circumstances you won't need to leave it 'full on' the entire time but a gentler setting can be used that will help battery life.

Top tip: Start the night with the dew heaters on around 20-30% rather than wait for dew to form which can then take a long time to remove. You may find a higher heat output is needed but this is a reasonable place to start the night. It's good practice to switch these to 0% at the end of a session.

Changing the Fuse

If the Amp rating has been exceeded or there has been a short or fault in one of the connected pieces of equipment then the fuse in the cigarette socket can blow to protect the equipment.

To replace this fuse you will need to first obtain a replacement fuse matching the specification in **Table 1**. These are readily available but please get in touch with us if you are unsure.

To swap the fuse, first turn off the power and then unplug the cigarette plug from the power supply. If the unit has recently been used the plug may be warm so leave to cool first. Carefully unscrew the silver, knurled ring around the tip of the cigarette plug. Be careful not to lose the spring or tip during disassembly.

Once removed the old fuse can be removed and a new fuse fitted.

Ensure you carefully screw the knurled silver ring back on ensuring the spring, fuse and tip are all put back correctly.

When re-assembled you should be able to depress the pin in the tip of the plug and feel some resistance from the spring inside.

If you are unsure, we recommend seeking the advice of a professional before proceeding.

Troubleshooting

The product doesn't turn on.

First check if it is plugged in and the red indicator light on the cigarette plug is lit. If the plug's red indicator light is not lit first check power to the unit is turned on and is present.

If the plug's red indicator light is on, but there are no lights illuminated on the product itself then either:

- you have not turned up any of the knob(s) from zero (full counter clockwise),
- there is a reverse polarity problem
- the voltage to the device is not within the 10-15VDC range
- there is a problem with the strips plugged in
- or finally there is a problem with the device

The heater tapes aren't warming up.

Heater tapes are not designed to get very warm so it may be difficult to tell if they are operating simply by touching them. Try turning the heater power up to full and waiting a few minutes and then testing.

Also check there is no physical damage to the tape that may be causing it to malfunction.

UK / EU Declaration of Conformity

This product carries the CE mark in accordance with the relevant European Directive and the UKCA mark in accordance with UK law.

This product is not designed for use in any “critical applications”. “Critical applications” means life support systems, medical applications, connections to medical devices, commercial transportations, nuclear facilities or systems or any other applications where product failure could lead to injury to persons or loss of life or catastrophic property damage.

This product is not a toy.

For consideration of electromagnetic compatibility this is a class A product. In a domestic environment this product may potentially cause radio interference in which case the user may be required to take adequate measures.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment. Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorised modifications to this equipment. Such modifications could void the user’s authority to operate the equipment.

This product was manufactured in the UK by: First Light Optics Ltd. Unit 7 Budlake

Waste Electrical Product

Units, Budlake Road, Exeter, Devon, EX2 8PY.

This is an electrical product and must not be disposed of with your household waste.

Please recycle where such facilities exist. Check with your local authority for recycling advice.