



# Single-Channel Dew Controller

## User Instructions

### Introduction

To manage the heating of R-Sky heaters effectively, a controller is essential. The controller is a compact electronic device that smoothly adjusts heating power using PWM (Pulse Width Modulation). This design helps conserve battery life—crucial in field conditions.

The Single-Channel Dew Controller is a simple, affordable, and reliable solution for controlling R-Sky dew heaters. It is particularly suitable for setups that require simultaneous heating of two devices at the same power level, such as eyepieces, a telescope and guide scope, finders, or camera lenses.

The controller is extremely easy to use. Simply connect the dew heaters to the controller, connect the controller to a 12V power source, and switch it on using the button on the cigarette lighter plug. Adjust the desired heating power with the control knob.

No glowing screens, complicated menus, or external apps. Just switch it on and start observing.

### General Information

The Single-Channel Dew Controller operates from a 12V DC power source. This can be any suitable 12V battery or an AC adapter (120V/240V input) capable of providing a regulated 12V DC output.

- **Battery selection:** We recommend a battery capacity of at least 7 Ah (7000 mAh). Larger batteries provide longer operating times.
- **Power adapter selection:** The current output should be at least 5A (5000 mA), ideally 6A or more. It is highly recommended that the adapter includes modern protection features against short circuits, overheating, and overloads.

### Specifications

- **Two Outputs:** Connect up to two dew heaters simultaneously.
- **Single Control Channel:** Both outputs are controlled together by one adjustment knob.
- **Power Connector:** Cigarette lighter plug with an ON/OFF button, LED indicator, and replaceable fuse.
- **Power Cord Length:** 4 feet (1.2 meters).
- **Power Supply:** 12V DC.
- **Maximum Total Current:** 4A (combined load of both outputs).
- **Heater Connectors:** Two RCA outputs.
- **Reverse Polarity Protection:** Helps protect the controller from incorrect power connections.
- **Field Effect Transistors:** Provide efficient power control with minimal voltage loss.
- **Low-Frequency Modulation:** Helps minimize interference with sensitive astronomical equipment, including CCD cameras.

- **Durable Connectors:** Unlike many other manufacturers, our dew heater connectors are mounted directly on the housing, significantly increasing their lifespan. Connectors mounted on circuit boards can loosen over time and require more careful handling.
- **Power Adjustment Range:** From 5% to 100% (5% power effectively disables heating).
- **Extremely Easy to Use:** Simple manual operation without displays, menus, or external applications.



# Usage

## 1) Connecting Heaters

The controller has two RCA outputs and one control channel.

**Both outputs receive the same heating power setting**, adjusted using a single control knob.

Connect one or two R-Sky dew heaters to the outputs.

Since both outputs are controlled together, we recommend connecting heaters with similar heating requirements whenever possible.

### Examples of typical setups:

#### Eyepieces only

- Output 1: Dew Heater Strip for 2" eyepieces.
- Output 2: Dew Heater Strip for 1.25" eyepieces.

Both heaters can be adjusted simultaneously.

#### Small Astrograph

- Output 1: Dew Heater Strip for the main telescope.
- Output 2: Dew Heater Strip for a small guide scope.

This arrangement allows you to protect both optical systems from dew using a single control knob.

#### Finder and Eyepiece

- Output 1: Optical Finder Heater.
- Output 2: Eyepiece Dew Heater Strip.

A convenient solution for visual observing.

#### Camera Lenses

- Output 1: Dew Heater Strip for a camera lens.
- Output 2: An additional heater for another optical accessory, if needed.

**Important:** The combined current consumption of both connected heaters must not exceed 4A.

If your setup requires significantly different heating levels for different optical components, we recommend using the R-Sky Dual Channel Dew Controller, which provides independent power adjustment for two groups of heaters.

## 2) Power Connection

After connecting the heaters, plug the controller into a suitable 12V DC power source using the cigarette lighter connector.

The cigarette lighter plug is equipped with a built-in **ON/OFF button**, allowing you to switch the controller on and off without disconnecting it from the power source.

To start heating:

1. Connect the cigarette lighter plug to the 12V power source.
2. Press the ON/OFF button on the plug to switch the controller on.
3. Check that the red LED indicator is illuminated.
4. Adjust the desired heating level using the control knob.

To turn off the controller, press the ON/OFF button again.

### If the LED does not light up:

- Check that the ON/OFF button is in the ON position.
- Make sure the 12V DC power source is functioning and switched on.
- Check the power source polarity.
- Check whether the fuse inside the cigarette lighter plug has blown.

### Replacing the Fuse

Unscrew the tip of the cigarette lighter plug to access the fuse. If the thin wire inside the fuse is broken, the fuse has blown and must be replaced.

Before replacing the fuse, try to determine why it blew. A short circuit or faulty heater may cause the replacement fuse to blow again.

**Warning:** The cigarette lighter plug uses a  $5 \times 20$  mm fuse rated at **5A maximum**. Always replace it with a fuse of the specified type and rating. Never install a higher-rated fuse or bypass the fuse.

## 3) Adjusting Heating Power

Set the desired heating level using the control knob.

Both outputs are adjusted simultaneously, from approximately 5% to 100% power.

**On most nights, a setting of 40–70% is sufficient.** However, the optimal setting depends on temperature, humidity, wind, and the type of optical equipment.

Start with a moderate setting and increase the power only if necessary to prevent dew formation.

**Important:** Telescope optics (mirrors and correctors) are sensitive to excess heat. Too much heat can create thermal disturbances and degrade image quality.

Use only as much heating power as necessary to prevent condensation.

Eyepieces and finders can generally tolerate more generous heating than primary optical surfaces.

## **Tips**

### **What if my power source doesn't have a cigarette lighter socket?**

You can use one of our adapters:

- Adapter for Power Supply
- Adapter with Alligator Clips to Female Car Cigarette Lighter Socket

Make sure the power source provides 12V DC with correct polarity and sufficient current capacity.

### **Can I control two heaters independently?**

No. The Single-Channel Dew Controller uses one adjustment knob for both outputs.

Both connected heaters operate at the same percentage of their individual rated power. Their actual power consumption may differ depending on their electrical characteristics.

If you need independent heating control, consider the R-Sky Dual Channel Dew Controller.

### **How do I mount the controller to my telescope?**

The controller comes with silicone-based Velcro strips. These allow you to attach it to the telescope or mount and easily remove it when needed.

The silicone adhesive layer helps ensure that the Velcro can be removed without damaging the surface.

The set also includes a clip for securing the power cable to your telescope.

### **How can I extend battery life?**

Use the lowest heating power that effectively prevents dew formation.

PWM technology allows the controller to reduce average power consumption by switching the heater output on and off rapidly rather than wasting energy in a resistive regulator.

Lower heating settings can significantly extend battery operating time during long observing sessions.