

**Features/Specifications:**

- Operating Voltage: 12V DC (12.6 - 13.8V DC nominal)
- 4-Channel Heater Ports: each independently programmable.
- User replaceable power cord (we recommend Anderson Power Poles)
- Maximum Amperage Output:
  - Cigarette Lighter (fused) Plug: 7 Amps max.
  - User supplied plug: Up to 15 Amps
- On-Board auto-reset 15 Amp "Poly" Fuse
- Low Voltage Warning (warning @ 11.8V / shut-down @ 11.5V)
- Disable Low Voltage Cut-Off... we don't recommend it, but if you're willing to ruin your battery, you can drain it dry if you wish by turning this feature OFF.
- Dimmable Lights
- Lights Auto Shut-Off (after 20 seconds) Turn any knob to turn on lights again
- DC Accessory Ports (2): 12V, 4 amp
  - 5.5mm X 2.5mm X 9.3mm (barrel length). Switchcraft 760 (DigiKey PN#: SC1051-ND)



**Physical Dimensions:** (including mounting tabs):

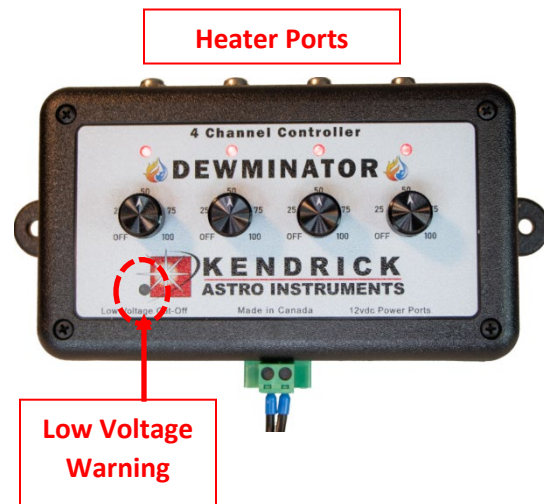
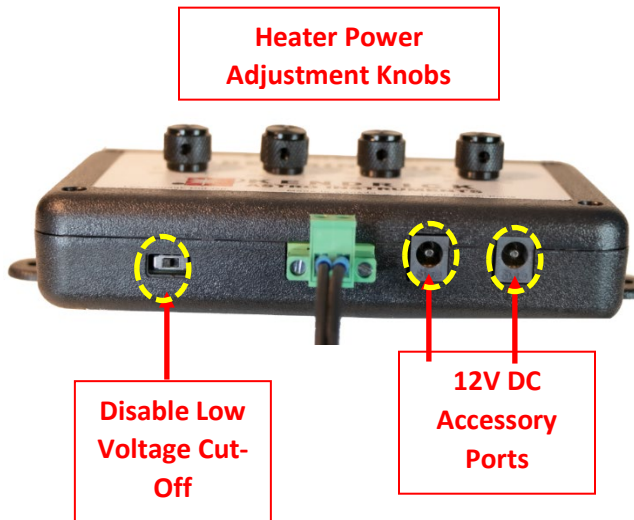
- 3.25" X 6.75" X 1.147" (82.5mm X 171mm X 29mm) weight (excluding power cord and sensors: 5.8oz (164 grams))

**Included with this controller:**

- Power Cord – 70" (180cm) Cigarette Lighter version with replaceable 7 Amp fuse
- Velcro adhesive mounting pad

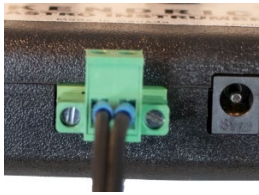


**Optional Accessory:** Spare Power Cord (SKU: 2001-DF812-PWR)



## Operation Instructions

### 1. Attach the Power Cord



The standard power cord uses a cigarette lighter plug at one end and a special “terminal block” plug at the other. The device plug has 2 screws that secure it to the controller. A jewellers (small) slotted screw driver works well.

The controller has an internal 15 Amp auto-reset fuse, but the (any) cigarette lighter plug can only handle 7 Amps and is internally fused with a standard glass 7 Amp fuse. To get the full power capability (15 Amps) we invite you to modify the power cord with a plug that can handle 15 Amps (we like Anderson Power Poles). Read on for more details.

2. **Mount the Controller and Secure Power Cords.** *THE BEST PLACE TO MOUNT THE CONTROLLER IS ON THE TELESCOPE!* Most astronomers use more than 1 heater, and each has a cord. It is much easier to manage a single controller power cord than a bunch of delicate heater cords. Damage caused by snagged wires is not covered by warranty.

3. **Connect to power and Adjust LED Light brightness.** In the first 10 seconds after connecting to power, the brightness of LED Lights can be adjusted. Turn any of the heater port knobs to adjust brightness. The unit will remember the last setting the next time you power-up. FYI, LED Lights automatically turn OFF after approx. 10 seconds. Turning any of the knobs will wake them up again.

4. **Connect heaters and secure power cords.**

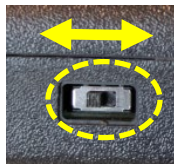
5. **Adjust Duty-Cycle Settings.** *After power-up, wait 10 seconds before turning knobs* (1<sup>st</sup> 10 seconds only adjusts brightness of LED Lights). We suggest starting at a 50% setting and gradually reducing that until you start to see signs of dew forming on lenses/mirrors. Allow plenty of time for the temperature to settle before making another adjustment. Generally, the same setting will work regardless of outside temperature or humidity. Dew will not collect on optics as long as the optics remain 1.5-2.0C° above ambient air temperature. Larger lenses/mirrors need a higher setting because heat needs to travel a longer distance to reach the center.



**Power Requirements:** Most astronomy equipment was designed to run from a conventional car battery. The 2 ingredients required are voltage **AND AMPERAGE**. The controller itself uses almost zero power. It is the heaters that need the power. A healthy power source will have voltage of 12.6V-13.8V and enough current (amps) to supply heaters. Big heaters need more power than small heaters. The most common (by far) reason for heater failure is inadequate power. Some popular “power tanks”, sold under several brand names, are unable to output enough current (amps). Quite often, the “lithium” models are really just a 5V battery with a step-up transformer to boost voltage, but very low current (amps). Refer to the Resources below for additional information.

### Low Voltage Cut-Off Enable/Disable Switch

Enable



Disable

The **Low Voltage Cut-Off** feature is designed to avoid damage to your battery. Draining the battery below 12V will reduce its’ lifespan, below 11.7V will likely result in permanent damage. The unit will flash the **Low Voltage Warning** light at approx..11.8V and will it CUT power to heaters once battery voltage reaches 11.5V (+/- 0.2V). We don’t recommend it, but the feature can be disabled by turning the switch to the “disable position”. Voltage drop can also happen when a large load is drawing power. The computer onboard does attempt to determine if voltage drop is resulting from load vs an actual drained battery and will allow voltage to drop below voltage thresholds, but beware that this is not an exact science and results will vary based on how much electrical load (heaters) is being drawn as well as load from other devices that are connected to the same power source.

## Resources:

- **12V Power Sources:**
  - Portable Power Packs: <https://www.kendrickastro.com/battery.html>
  - 12V AC-DC Power Supplies: [https://www.kendrickastro.com/dew\\_premierheaters.html#PowerRequire](https://www.kendrickastro.com/dew_premierheaters.html#PowerRequire)
- †Heater Power Consumption can be found here: [https://www.kendrickastro.com/dew\\_premierheaters.html#HeaterSpecs](https://www.kendrickastro.com/dew_premierheaters.html#HeaterSpecs)
- Kendrick heater sizes are based on the telescope diameter. In other words, the heater is long enough to wrap around the circumference of the telescope.
- **Placement of heaters:**
  - **Refractors:** Attach to the main optical tube, just behind the dew shield. Do NOT place heaters on the dew shield because heat will escape to outer space without heating the lens.
  - **SCT (or any "corrector plate" style):** Place the heater around the front rim, as close as possible to being directly overtop of the corrector plate.
    - †Kendrick heaters can use more power than other brands because **THEY PRODUCE MORE HEAT** than other brands. The duty-cycle setting will determine how much power (and heat) will be needed.

## Optional Power Cord Customization:

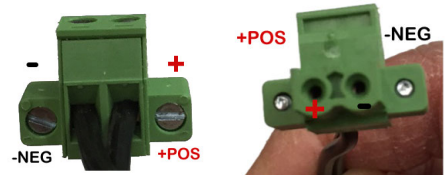
To get the full power capability (15 Amps) that the DEWMINATOR Controller offers, we invite you to customize the power cord to use a plug that can handle 15 Amps. We recommend Anderson Power Poles and offer a "kit" that provides a pair of pre-welded plugs with 30 Amp contacts. Kendrick SKU#: 208-IPP-ACKIT found here: <https://www.kendrickastro.com/usb.html>

There are several options:

- Use the original cord, cut-off the cigarette light plug, and attach your favorite high-amp plug.
- Make your own cord and attach the Device Plug using 16 AWG (gauge) wire. FYI, wire "gauge" is "backwards". I.e: 14-gauge wire is substantially heavier than 18 gauge. The Device Plug has 2 screws that are covered by a rubber "divot" (shock hazard guard). The "divot" is friction fit and can be easily removed with a safety pin.
  - Unscrew the 2 wire-clamp screws and pull out the cord.
  - Strip ¼" of the wire insulation and "Pre-tin" with solder. For better results, use a "ferrule" connector.
  - Insert your cord, tighten the 2 wire-clamp screws and let set for 12-24 hours. Because solder is soft, tightening the screws will squash the solder and the cord might not be firmly attached yet. After 12-24 hours, retighten the cord-clamp screws and replace the rubber "divot"

### WARNINGS:

- You must be certain of the polarity of your cord. A multi-meter meter is the best way to be sure.
- The power cord should be fused at the power supply end. If your cord gets snagged and breaks, you will have a serious shock hazard unless properly fused at the power supply side. For example, Kendrick LINX and Imaging Power Panels, as well as Kendrick Portable Power Packs have built-in circuit breakers.



**Disclaimer:** This product is designed with safeguards that reduce the risk of shock or damaging the device should the owner chose to make modifications. However, the customer assumes the responsibility for consequences that may result by making modifications to the device, which may include voiding the warranty.