

Micro & Micro-D Controller - User Guide



Included:

- 1 x Micro Controller
- 1 x 6' Power cable with fused (7 amp) cigarette lighter plug.
- 1 x Velcro strip (not pictured)

Mechanical Specifications:

- Weight: 1.6 oz (30 grams)
- Dimensions (excluding tabs): 65mm x 36mm x 25mm (2.56" x 1.4" x 1.0")
- (including tabs): 80mm x 36mm x 25mm (3.15" x 1.4" x 1.0")

FEATURES

- RFI free.
- 2 Ports:
 - **Micro:** 2 x RCA Connector Heater outputs.
 - **Micro-D** 1 X RCA Heater + 1 X 8Vdc DSLR Camera Power Supply (a Kendrick DSLR Battery Adapter required)
- Digital Pulse Width Modulation heater output control (0 to 100%)
- User definable power plug input.
- LED power on indication.
- LED Low voltage warning and cut-off indications.

Electrical Specifications:

- Input Voltage: 12 vdc.
- Output Voltage: 12 vdc.
- Amperage: 5 amps maximum
- Low voltage cut-off: 11.6 volts. (see NOTE at end of manual)
- On board auto-reset fuse protection (7 amps).
- Over current protection
- Over voltage protection.
- Reverse Polarity Protection.

OPERATION

- Plug power lead into green terminal block on controller.
- Plug power lead into 12Vdc power source (see ****WARNING**** on next page).
- Plug heaters into the RCA outputs.
- Adjust the power setting (duty cycle) of your heaters (duty cycle) by rotating the knob. The LED will turn red to indicate power ON.
- Digital Pulse Width Modulation heater output control (0 to 100%)

- User definable power plug input.
- LED power on indication.
- LED Low voltage warning and cut-off indications.

Recommended power settings*:

Summer....40 to 50% setting.

Spring and Fall....50 to 75% setting.

Winter....75 to 100% setting.

** Heater settings are only suggestions. You must take into consideration temperature, humidity and size of the optics or devices you are heating.*

LED INDICATORS

- **Solid Green:** ON, Normal Operation, Dew Heater(s) OFF
- **Solid Red** = ON, Normal Operation, Dew Heater(s) ON
- ○ ● **Blinking Red** = Over current protection (remove shorting device or device that is putting controller over limit)
- ○ ● **Blinking Red/Green** = Over voltage protection (power with 12 volt battery or 12 volt regulated power supply)
- ○ ● **Blinking Yellow** = Low Voltage Cut-off imminent. (Controller is in danger of shutting down) Starts at 11.8 volts.

CHANGING THE FUSE IN PLUG.

If your controller does not light up, the fuse



may be blown. There is a 7 amp fuse in the tip of the cigarette lighter plug. To access it. Unscrew the front tip of the plug, tip out the fuse and replace with another 7 amp fuse. Do not use fuses larger than 7 amps as cigarette plugs can be damaged due to overheating.

If you are using your own cabling and connector without a built in fuse, no worries. The controller has an on board fuse that resets itself once the shorting heater is removed.

NOTE: There are 2 versions of the Kendrick Micro Controller:



- 1) **Micro** (2 heater ports)
- 2) **Micro-D**: 1-heater port plus 8V Barrel Connector for use with Kendrick DSLR Camera Battery Adapters.

HOW TO MODIFY THE POWER CORD



Many users of our controllers want a different connector than the standard cigarette lighter plug. You can now change this and use a power cable with the type of connector you want to use. The Micro Controller is internally fused with auto reset and is reverse polarity protected, there is no danger of ruining the controller if you make a mistake.

We recommend a 2-conductor wire with a gauge of 18 AWG. This is standard lamp cord.

With a small slotted screw driver, back out () the screws that hold the wires in place in the green terminal block. Remove the original cable and replace with cable and connector you prefer to use. Tighten the screws () in the terminal block back down hard enough to securely hold the wire in place.

NOTE:

Low voltage cut-off is important for the life of your battery, regardless of whether it is Deep Cycle, Sealed Lead Acid, AGM, etc. Discharging ANY lead acid battery below 11.6 volts will result in damage to your battery.

****WARNING****

IMPORTANT: Do not attempt to run this controller with a 240/120 VAC to 12 VDC unregulated power supply. The controller can be ruined due to fluctuating input voltages. Power Supplies usually state "Regulated" on their labels. If your does not say Regulated, do not use it with this controller.

Also, make sure your power supply has enough amperage for the heaters you are using. This spec will be stated on your power supply as well. To determine your heater amperage please visit our web site. We state the amperages of our heaters on the heater pages.

TROUBLESHOOTING:

1. The LED will not light up:

- You may have a blown fuse. Inspect the fuse found in the tip of the cigarette lighter plug. It can be accessed by unscrewing the tip of the plug. If you have a blown fuse it indicates a problem somewhere else in your system and the source of that problem will need to be determined in order to prevent the fuse from being blown again.
- Power cord may be loose or disconnected. Inspect cord and terminal block connections.
- Your battery or power supply may be under voltage, require charging or may need replacing.
- You may have short in one of the heaters and this is turning the controller off.

2. Heaters not warming up:

- Sometimes it is hard to tell if the heater is working just by touching the outside of the heat strip. Kendrick Brand heaters are designed to direct heat towards your optics and use a reflective strip to reduce heat escaping to the outdoors. Your OTA is also a good heat-sink. To test your heater, take heater off the device being heated, hold it in your hand and then set the controller to 100% for a couple of minutes. If they still do not warm up, the heater/s may be defective.
- You may be using too low a setting for your heater and/or for your conditions. Adjust the setting on the controller to compensate.
- You may have short in one of the heaters and this is turning the controller off.

3. Led is on but my scope or device is dewing up.

- You may have too low a setting on the controller for the size of the optic you are using or your conditions demand a higher setting. If you have dewed up, you will have to dry your optics off, cover them with a lens cap and turn the heater onto 100% for 10 to 20 minutes. Then remove the lens cap and adjust your controller setting to a higher setting than you were previously using. If you still have problems, contact info@kendrickastro.com
- Add a Dew-Cap (Dew-Shield). Often, the heater alone is not enough. This is especially true with larger aperture optics where the outside area is dew-free, but the center shows signs of dew.
- Use a higher watt heater. Kendrick Premier heaters are the best choice as they can put-out more heat than Kendrick Firefly heaters or competitor's brands.

WARRANTY

One year parts and labor. Tampering and misuse voids warranty.



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