



# User's Manual Astro-Cube MDA-3 Family Dew Annihilator



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# User's Manual MDA-3 Dew Annihilator Series

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### A. Overview

**The MDA-3** can be setup with your telescope for trouble-free operation controlled manually by the dialed in heat intensity knob.

Astro-Smart is the innovator of this elegant *solution to your dew problem*. The **Astro-Cube Dew Annihilator (Model: MDA-3)** is designed for Astronomers and Astrophotography's who want a low cost, small compact yet powerful dew heater controller that can be put in your pocket ready to grab and go yet at the same time be able to perform just as well as a observatory grade dew controller. The Astro-Cub dew Annihilator can be used with Astro-Smart's RCA jack type dew straps or compatible RCA type dew straps such as Astro-Zap and Kendrick.

**The Astro-Cube Dew Annihilator (Model: MDA-3)** is designed to be used with any make or model of telescope. Whether you have a refractor, newtonian, schmidt-cassegrain, or a ritchey-chretien, the **MDA-3** will solve your dew problems while informing you every step of the way. It's like having a hired dew specialist posted at your telescope 24/7.

The **Astro-Cube Dew Annihilator (Model: MDA-3)** systems incorporates a 3 independent channel port heater capability controlling upto 3 heat channels controlled using a rotary dial with a visual indicator LED to display the PWM intensity rate applied to the heat channels plus cutoff control to handle when you have a battery on low levels. The **Astro-Cube Dew Annihilator (Model: MDA-3)** is powered by a 12VDC input from car adapter or AC/DC power supply available at Astro-Smart for your dew strap needs.

For instance, one channel CH1 heater may be used for the main imaging telescopes secondary corrector plate for dew control while CH2 heater can be used for the primary mirror, another mounted imaging scope, guider or finder scope or your eyepieces.



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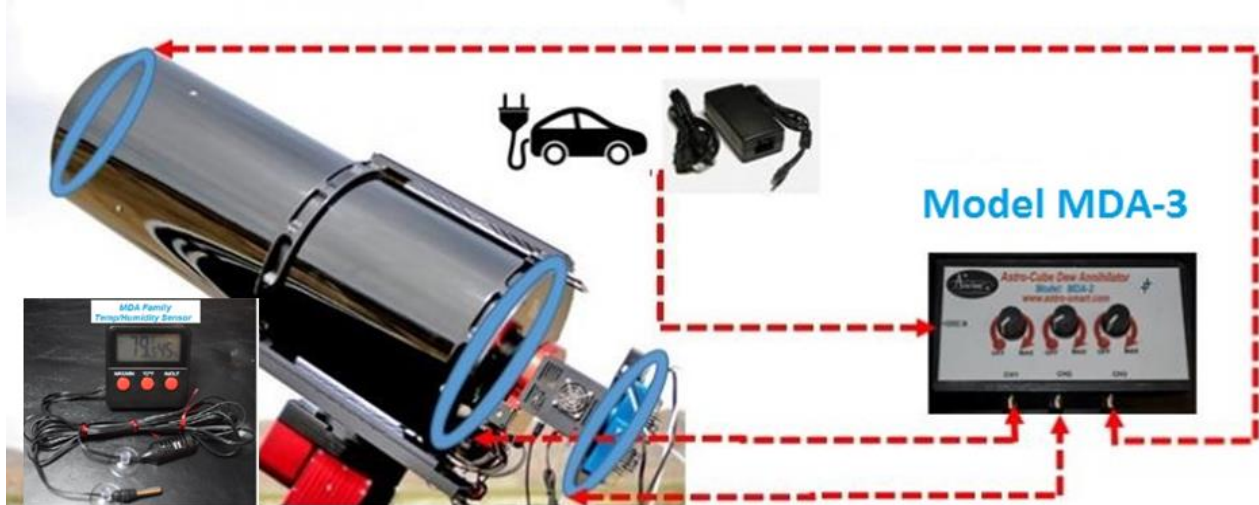
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In the following picture you can see the **MDA-3** family options with common 3 heat channels independently controlled on CH1, CH2 and CH3 plus PWM Led indicators for each channel and option for temperature and humidity monitoring.



## Astro-Cube Dew Annihilator (MDA-3 Family Controllers)

**Typical Configuration for the MDA-3 is shown below on a ritchey-chretien but can be used with any reflector, refractor, newtonian or schmidt-cassegrain telescope and temperature monitoring.**





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### B. Features

Since, the inception of this unique product at Astro-Smart, the **MDA-3** was many years in the making, over long periods in astronomy using existing products on the market to control dew, identifying their weaknesses and limitations making the product you see before you. The **MDA-3** is finally here!!! The Astro-Smart **Astro-Cube Dew Annihilator** (Model **MDA-3**) is designed to be user friendly, serviceable, elegant and reliable and include the following features shown below:

The Astro-Smart Astro-Cube Dew Annihilator (**MDA-3**) was designed with the same Astro-Smart User-Friendly design philosophy as all our other products:

- Usable
  - Serviceable
  - Elegant
  - Reliable
  - Build with burn in time testing before ship.
  - User-Friendly
-



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Features		MDA-3AC	MDA-3A
1	Worry Free Warranty Program For Life Of Product Sale.	X	X
2	3 independent User Controlled Output Port Heat Channels Capable 5 or 10 Amps per Channel.	10 Amps/Channel	10 Amps/Channel
3	Total Output Power Capability With 12VDC Power Source.	360 Watts	360 Watts
4	Variable Power Dial Control PWM Duty Cycle 0-100% @ 50 KHz Power Intesity	X	X
5	3 Channel PWM LED Flash Indicators For Heat PWM Output Ports.	X	X
6	Low Voltage Cut-OFF Circuit And LED Indicator.. Cutoff at 10.5-11VDC.	X	
7	Over Current, Reverse Current and Over Voltage Protection Design with Switchable ON/OFF Power.	X	X
8	Temperature and Humidity Sensor Monitoring Option.	X	X
9	Void of RFI(Radio Frequency Interference) protected to enhance Astro-Imaging .	X	X
10	High quality design employs multi-layer PCB form factor with conformal coating compoents for outdoor use.	X	X
11	Price point set below development cost for such a system while providing more features.	X	X
12	Dimensions (5.2" Long x 3" Wide x 1.9" High)	X	X
13	Works with Astro-Smart RCA type heat strap and other compatible straps such as Astro-Zap, Kendrick, etc.	X	X

MDA-3A



MDA-3AC



MDA Family Temp/Humidity Sensor





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### C. Contents Of Box

The package contents are shown below:

1. *MDA-3 Family Dew Controller System*
2. *12 Volt fused cigarette adapter harness.*

**MDA-3A**



**MDA-3AC**





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## D. Input/output Power Specifications

The **MDA-3** requires the following: At a minimum of 12 Volts DC at 3.3 amps a 2.5mm DC power connector on your AC/DC supply. Based on the 3 channel configuration, the **MDA-3** is rated at 10 amps per channel 360 Watts. A power supply rated at 12 VDC and 10-15 Amps rms is the ideal configuration which Astro-smart recommends and provides as a purchase option.

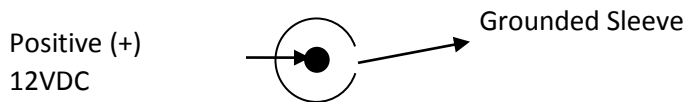
Note: This current drawn through the **MDA-3** is dependent on the resistance of each dew strap being used with the **MDA-3**. The total current for all the dew straps must not exceed the power supply current rating.

The total resistance of all the dew straps used with the iDDHM must follow this equation for SAFE operation:

$$\frac{\text{Current Rating of Power Supply}}{\text{Voltage output of Power Supply}} = \frac{1}{R_{\text{strap } 1}} + \frac{1}{R_{\text{strap } 2}} + \frac{1}{R_{\text{strap } 3}} + \frac{1}{R_{\text{strap } 4}}$$

Astro-Smart assumes no responsibility if this warning is not heeded.

- Center positive voltage, sleeve ground of power connector



### DC power plug

- Uses dew straps manufactured by other astronomical vendors.
- **Note:** Astro-Smart recommends you buy our certified tested power supplies for this product. Users can buy and connect their own power supplies to this product, but they do so at their own risk.





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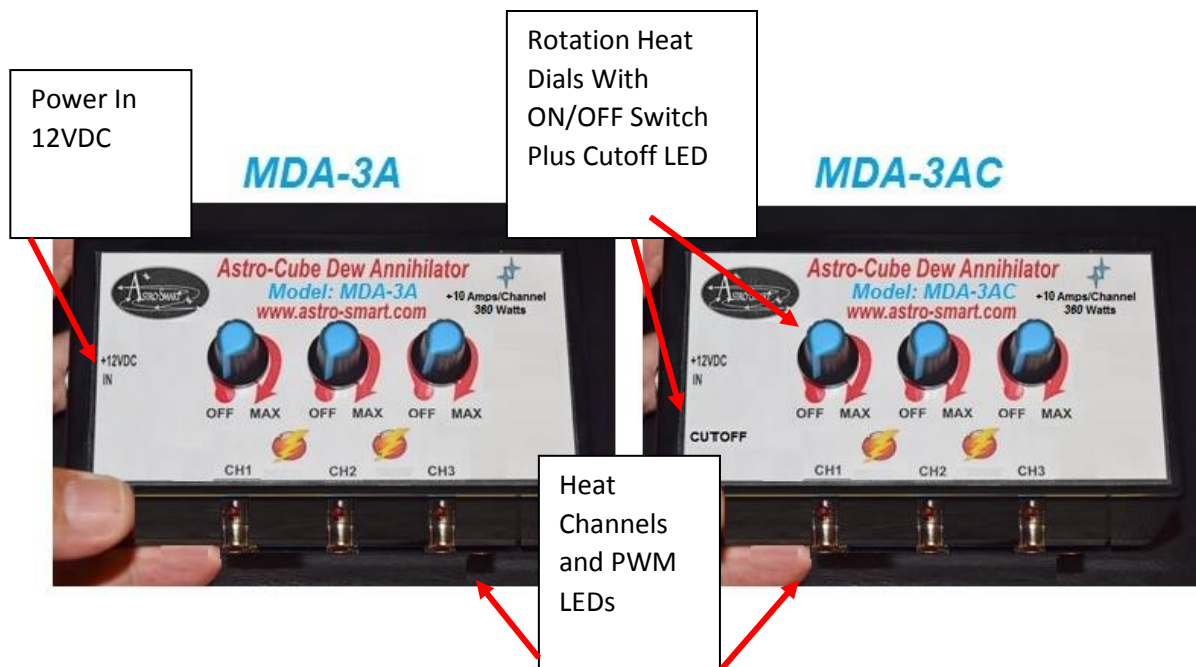
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## E. Front Panel And Connector Diagram

➤ **Astro-Cube Dew Annihilator MDA-3 Family Configuration . See Figure below.**

### MDA-3 Family Overview Model (2020).



## F. Basic Functionality

The user can watch as the **MDA-3** adjusts heat and controls dew on your telescope based on user input on rotary dial for simplicity.

Online video demo's of operation can be found on our website at :

[http://www.astro-smart.com/index.php?p=1\\_24](http://www.astro-smart.com/index.php?p=1_24)



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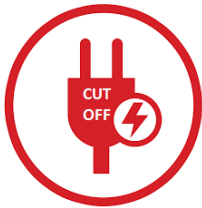
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### G. Standard Model Features

#### Standard Model Features:



Astro-Smart offers for your **MDA-3A** which has 10 Amps per channel or 480 watts of power total. This symbol and feature comes standard with this controller.



Astro-Smart offers for your **MDA-3AC** capability for a cutoff when your 12VDC supply voltage goes below 11 VDC. In this case, power to straps are shut off and a yellow light indicator on the unit will inform the user to charge or change the voltage source above 11 VDC to protect battery source drain. This symbol and feature comes standard with this controller.



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## H. Accessories

### Optional Accessories:



Another convenient accessory that Astro-Smart offers for your **MDA-3** is the **Temperature and Humidity option** which has 4 sensors including internal ambient temperature/humidity to unit and an additional 2 probed temperature and humidity sensors for your optics. This economical solution makes your MDA-3A or MDA-3 have the capability to monitor readings of your optics with large display and three button controls for Celsius/Fahrenheit degree display, Min/Max sensor reading search and IN/OUT button to read internal vs. probed sensor inputs on your optics. Requires a 1.5V AAA battery for simple operation.



Another convenient accessory that Astro-Smart offers for your **MDA-3** is a right angle heater connector ([RAHC-DM](#)). This allows your heater to be connected to the **MDA-3** at a right angle. This may be convenient for you to alleviate any bending that you have of your



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heater connector and wire.



Another convenient accessory for your **MDA-3** that Astro-Smart offers is Two versions of power supplies based on your dew heating needs for 6 Amp or 10Amp 12 VDC supplies([PS12VXAMP-D](#)).



Another product Astro-Smart offers is our Premium Dew Heater Straps. Astro-Smart is proud to announce the offering of our Premium Dew Controller straps that can be used with the Astro-Smart Dew Controller products and compatible with other vendor dew controllers with RCA jack input to control temperature of your telescope optics, cameras, camera lens, telescope eyepieces and sensitive electronics.

The materials used for these Premium Dew Straps include Industrial Velcro, High Quality Insulating Material to project heat toward the optics and away from the atmosphere, 5 foot power cord with male RCA connector and Power Conductor Current capable of 10 Amps.



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### I. Warranty, Policies, Copyright Notice:

# Life Time Warranty

All products are guaranteed to the original purchaser to be free from defects in material and workmanship for the life of the product from the date of original purchase. Simply put, once you buy a Astro-Smart product we make sure it works for as long as you keep the product for free upgrades of software and firmware for the product. Warranty coverage excludes normal wear and tear, or damage caused by improper installation, any modification, abuse, misuse, improper maintenance, and unauthorized repairs or modifications to the original product. Shipper is responsible for proper packaging, shipping and insurance on applicable upgrades or repair items. . Upon receipt of returned product, Astro-Smart will assess the item/s to determine if they comply with the conditions of our warranty. Astro-Smart is not responsible for damage caused by the freight carrier, i.e.: USPS, UPS, FED EX, etc., to our product. A claim to repair or replace the product must be initiated by the recipient. In no event shall Astro-Smart be liable for any claim for incidental or consequential damage arising out of or in connection, manufacture, delivery or use of any product offered on this website or by information received by US mail, E-mail, data files or fax.

# Return Policy

Merchandise must be returned in new (mint) condition within 30 days of receipt for exchange/refund which may be subject to 20% restocking charge (Shipper is responsible for proper packaging, shipping, and insurance.). We must receive the returned merchandise within 30 days of the date you received it. All items must be in new (mint) condition and in full working condition. Returned items cannot show evidence of use or wear, dirt, or blemishes of any kind. Merchandise must be returned in its original packaging and should include all supplied materials, instructions,



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original accessories, hardware, and any CD software disks provided. Software purchases via email or download since released are non-refundable. Astro-Smart is not responsible for lost or damaged packages. Return shipping costs are the responsibility of the customer. Any returned items must be in "as new" condition. We ask that you open and inspect your order upon receipt. No insurance or damage claims will be accepted more than 3 days after delivery. All customers MUST email Astro-Smart before returning products for warranty or repair to get an RMA#(Return Merchandise\_Authorization).

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