

## Manual Heating-Module for Lunt Solar Systems Blocking-Filter

The heating module is for use with blocking filters in 90° star-diagonal housing from Lunt Solar Systems. It cannot be used at blocking filters in straight extension tube.

At very cold temperatures, blocking filters may no longer work centrally in the H-alpha wavelength, which means that the details on the sun become less visible. With this Heating-Module you can counteract this effect and observe the sun in the H-Alpha line optimally even at cold temperatures.



### Installation the Heating-Module at Blocking-Filter:

Start by removing only 2 screws of opposite corners at the rear side of the blocking-filter, using the included hex key. Retain the removed screws for potential future use without the Heating-Module. After removing the screws, place the blocking filter on the heating assembly, orientating the bare holes to the location of the two protruding screws at the Heating-Module. Using the hex key, and while holding the blocking filter in place, tighten each screw a few turns until engaged. Alternate between opposing screws, turning each screw a few rotations before switching to the other, until the screws are both completely tightened. This will ensure that the blocking filter will seat firmly and will be level against the heating plate. Once completed, confirm that the blocking filter is flush against the heating plate and proceed.



### Charging the internal battery:

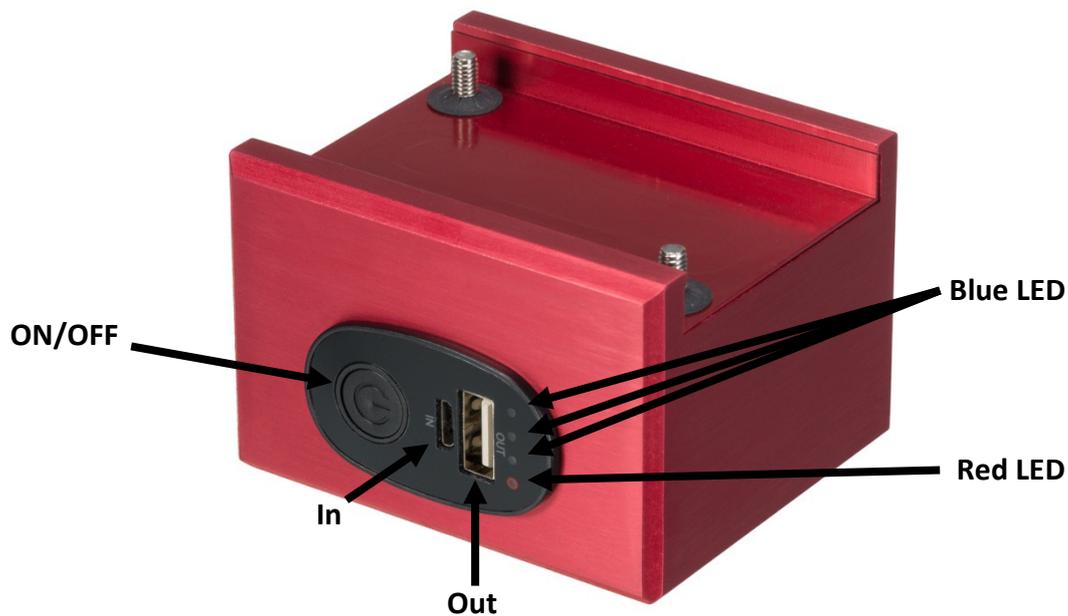
1) Connect the Micro USB cable to the IN-port at the Heating module and connect the other end of the cable to a USB port at a computer, power bank, or something similar.

2) Charging starts with the blinking of the blue LED. When the battery is fully charged, all three blue LED will be on.

The indication of the blue LEDs means:

- 1) 1 blinking blue LED - Battery between 0-33% charged
- 2) 1 on and 1 blinking blue LED - Battery between 34-66% charged
- 3) 2 on and 1 blinking blue LED - Battery between 67-99% charged
- 4) 3 on blue LEDs - Battery 100% charged

**Please note:** When charging starts, heating capabilities and portable charger functions will be shut off. The heating module can therefore not be charged simultaneously during operation!



### Using the Heating-Module:

To start the heating cycle, hold the ON/OFF button down for a few seconds until the red LED lights up.

Heating from an extreme temperature will take considerable time. In order to prolong the usage time available with the Heating-Module, it is advised that the blocking filter be kept in moderate temperature conditions (normal room temperature) before observing or imaging the sun. The Heating-Module will also heat the blocking filter from a sub-zero temperature, however doing so will limit the battery power available and will ultimately diminish the time it will be able to provide adequate temperature acclimation.

To turn off the Heating-Module, simply hold the ON/OFF button down for a few seconds until the red LED is extinguished.

Description of LED light status while using as heater:

When using the Heating-Module you will see a red LED on, or blinking.

1) When the red LED is on and solid, this indicates the heater is on and between 100 - 10 % Battery.

2) When the red LED is blinking, this indicates the heater is on, with remaining battery less 10 %.

Run Time:

From moderate temperatures, expected run time within adequate viewing temperature is around 1 to 1.5 hours.

### **Using as a Portable Charger:**

If the Heating-Module is not used as a heater, it can also be used as a portable charger to power small electronic devices. To do so, connect the appropriate device to the OUT socket of the heating module using a USB cable. Press and hold the ON/OFF button for one second and the charging process is activated. The blue LEDs indicate the remaining charge on the heating module:

1) 1 blinking blue LED - Battery less than 10%

2) 1 solid blue LED - Battery between 11-33%

3) 2 solid blue LEDs - Battery between 34-66%

4) 3 solid blue LEDs - Battery between 67-100%

### **Specifications:**

-Input (IN): 5V 2A

-Output (OUT): 5V 2A

- Capacity: 5000mAh

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