

INSTRUCTION MANUAL

Orion® StarShoot™ 2" Motorized Filter Wheel

#5548



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Figure 1 Starshoot 2" Motorized Filter Wheel and included accessories

Congratulations on your purchase of the Orion StarShoot 2" Motorized Filter Wheel. This useful astro-imaging accessory can use four 2" filters. Through your computer, you can toggle the different filters without touching the telescope, and automatically change the filters during an exposure sequence, saving you significant time. With its innovative design and compatibility with Orion filters, the Orion StarShoot Filter Wheel provides the best way to take images with LRGB or narrowband filters.

Parts List

- Filter wheel assembly
- 2" nosepiece (installed on filter wheel)
- T-thread ring with rotation lock ring (installed on filter wheel)
- USB cable

System Requirements

- PC running Windows 10
- Camera equipped with T-threads
- Telescope Setup for Imaging
 - Focuser with T-threads, or focuser that fits a 2" nosepiece

Software and Driver Installation

Before using the filter wheel, you must install the software and drivers, available from our website. Please do not plug the wheel into your computer's USB port until you have completed the software installation.

www.telescope.com/StarshootFilterWheel

Please navigate a web browser to the above link to find all the relevant software and drivers. It is recommended to download and install all files, including the ASCOM platform



Figure 2.



Figure 3. Remove the front panel from the Filter Wheel to access the filter carousel.

in order to use the Filter Wheel with any ASCOM compatible software from other vendors.

1. Download and unzip the StarShoot Installation file, saving it to a preferred directory on your computer.
2. Next open the downloaded directory and click on the StarShootFW_Setup.exe file to open the installer application.
3. In the installer application (**figure 2**), place a check in the box for the Windows Driver and the Quantum Controller Software. NOTE: it is HIGHLY recommended to also install ASCOM and the corresponding drivers/software as this allows you to use the Filter Wheel with any ASCOM compatible control programs from other vendors.
4. After checking all the boxes, click install and let the application install all relevant software. Once this is fully complete, you can plug the Filter Wheel into an available USB port.

Filter Installation

To install your filters into the Wheel you will need to partially disassemble the filter wheel.

1. Use the supplied hex key to unthread the five socket-head screws of the front (labeled) panel of the filter wheel assembly (**Figure 3**).
2. Gently separate the front plate from the filter wheel

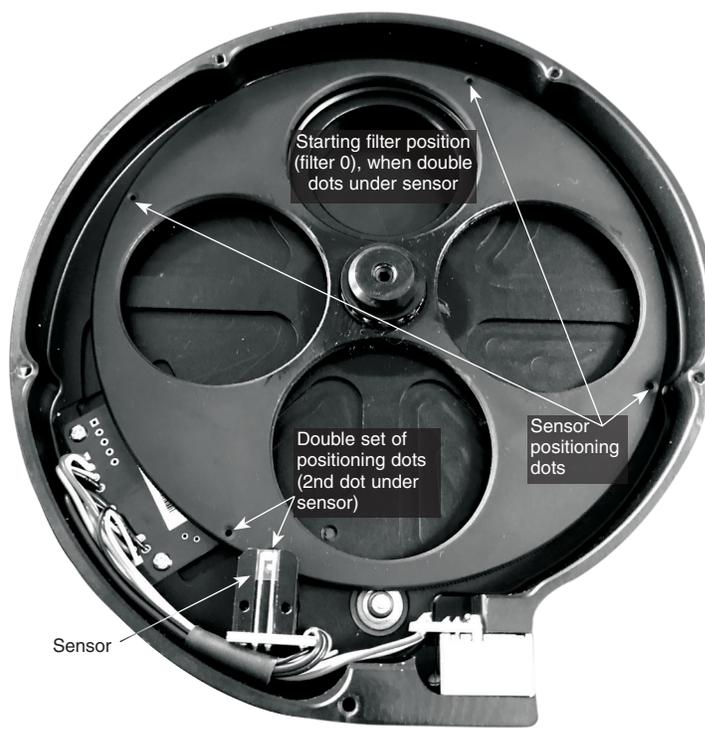


Figure 4. The carousel in the starting position (position: filter 0 in software), when the double set of dots is under the sensor.



Figure 5. Thread the filters into the filter carousel.

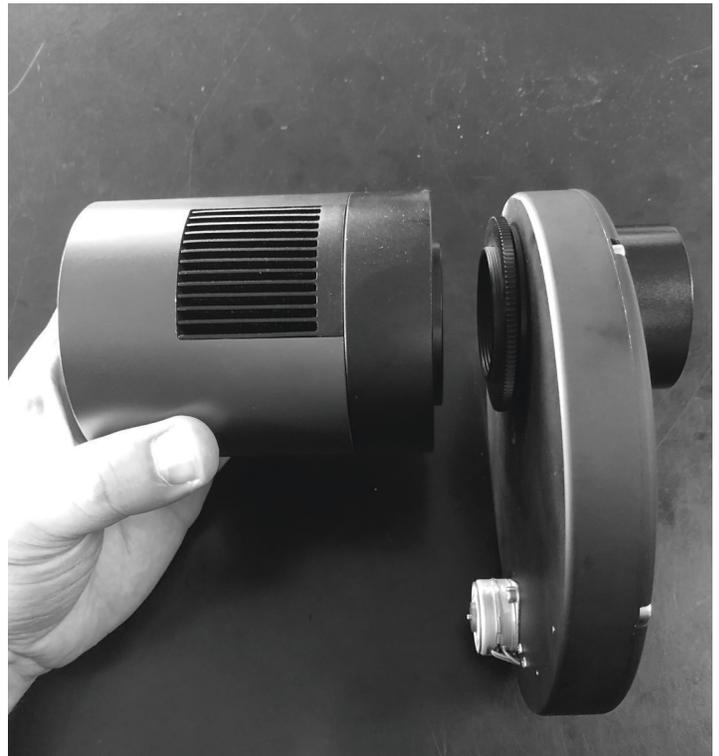


Figure 6. Thread the camera to the T-thread adapter and Filter Wheel. Use the rotation lock ring to lock the camera into the desired orientation.

3. Locate the dots on the outer perimeter of the carousel, as well as the sensor that reads these dots. The starting filter (filter 0) is in position when the “double dots” are sitting under the sensor (**Figure 4**). Put your first filter into Filter 0 position
4. Install the filters by threading them into the filter carousel (**Figure 5**). When facing the filter carousel with the front panel open, the filter position sequence moves counter-clockwise. For example, if you are installing luminance, red, green, and blue filters, red would be placed to the left/ counterclockwise of, luminance, green would be placed to the left/ counterclockwise of red, and so on.
5. Complete the installation by reattaching the front plate of the filter wheel assembly with the socket-head screws.

Keep in mind that use of the Filter Wheel requires 25mm of inward focus travel. This will not be a problem for most telescope designs.

Attaching a Camera to the Filter Wheel

The Filter Wheel is intended for use with an astro-imaging camera such as a dedicated CCD camera or DSLR. Attaching a camera with female T-threads (**Figure 6**):

1. Thread the imaging camera onto the back of the Filter Wheel.



Figure 7. Insert the filter wheel into your telescope's focuser and secure it in place with the focuser thumbscrew.

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2. Before the imaging camera has threaded on all the way, use the rotation lock ring to lock the desired camera orientation in place by turning the ring counterclockwise back until it is tight against the camera body.

If you are using a DSLR camera, follow the same steps with the T-ring (specific to the make and model) attached to your camera body. Software Installation

Attaching the Filter Wheel to a Telescope

Now that you have installed your filters and attached the imaging camera to the filter wheel, it is time to attach the filter wheel to your telescope.

With the nosepiece attached to the Filter Wheel, insert the wheel into your telescope's focuser and secure it in place with the focuser thumbscrew (**Figure 7**). With the weight of the filter wheel and camera, we advise you to double check connection to make sure it's firmly in place. If your focuser has male 48mm wide t-threads, you can instead remove the 2" nosepiece to reveal female 48mm wide t-threads for a direct threaded connection.

Using the Filter Wheel Controller

You can use the StarShoot Filter Wheel Controller separately from any other imaging program using the direct Windows drivers. This is the simplest way to switch through different filters. However, to integrate the Filter Wheel into a full imaging setup, we recommend using the ASCOM driver, and controlling the Filter Wheel from any 3rd party ASCOM program that can control all aspects of the imaging setup. To use the separate Filter Wheel Controller:

1. Plug the Filter Wheel to your computer's USB port.
2. Run the Filter Wheel controller app.
3. Select the left or right arrow buttons in the Controller app to change filters.
 - a. Note there is an ASCOM version of the Controller app as well.

Using the Filter Wheel with ASCOM

You can use the ASCOM Controller app separately from any other imaging program, or you may use ASCOM in any

imaging program that supports it. Some imaging programs such as Sequence Generator Pro and SharpCap enable you to change filters automatically after each exposure. This is very useful when doing an exposure sequence that can last several hours, allowing you to change filters while you are away from the computer and telescope.

Care and Storage

Do not allow anything to touch the external motor when the Filter Wheel is in use. Feel free to leave your filters installed in the Wheel during storage. If excessive dew accumulates on the surface of the filter wheel or the filters themselves, leave the Filter Wheel open after use until it has dried. The foam-lined box your Filter Wheel and accessories arrive in also acts as a convenient storage container.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver. Connect the equipment into an output on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help. A shielded cable must be used when connecting a peripheral to the serial ports.

One-Year Limited Warranty

This Orion product is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid. Proof of purchase (such as a copy of the original receipt) is required. This warranty is only valid in the country of purchase.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights. It is not intended to remove or restrict your other legal rights under applicable local consumer law; your state or national statutory consumer rights governing the sale of consumer goods remain fully applicable.

For further warranty information, please visit www.OrionTelescopes.com/warranty.

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