



The Denkmeier Filter Switch™ Manual



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Made In America

The new Filter Switch is Denkmeier Optical's latest innovation. It allows the user's two inch and 1.25" filters to be moved in and out of the light path while offering full protection from dew and dust. The anodized aluminum housings of the Filter Switch, as well as the Delrin carriers and anodization and engraving processes are all *proudly* carried out in The USA. We assemble each Filter Switch System in our Ocean City, Maryland facility and check them for proper motion, fit and finish. Smooth actions and tool-free switching between filters will make your observations of the cosmos instantly more versatile and rewarding.

The Basics

The Filter Switch can carry two filters at a time. Additional two inch carriers are available and include a plastic storage case for convenient storage. Anytime a filter is required, it is simply slid into the Filter Switch where it is retained firmly enough so that it will not fall out unless the user removes it. There is enough resistance to retain the filter carrier within the Filter Switch unless the user applies enough outward pressure to pull the carrier out from the Filter Switch Housing.

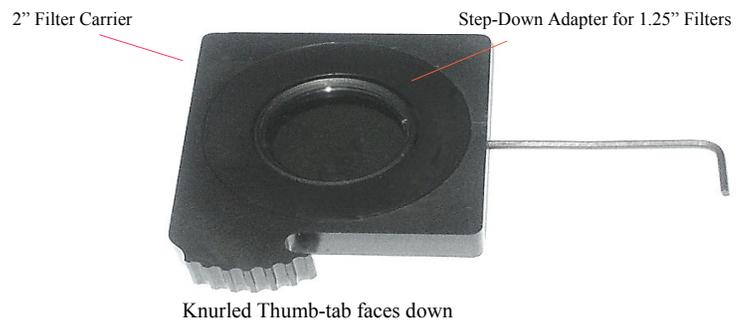


1.25" Filters

Step-down adapters are available so that smaller diameter 1.25" format filters may be used in the Filter Switch. These are available singly and the 1.25" filters may be installed in these adapters and stored that way. The step-down adapter is installed in the 2" Filter carrier much like a 2" filter is. Each 2" Carrier has a set-screw with a hex-head female receptacle. A small hex tool is included so that either a 2" filter or a 1.25" adapter may be installed and retained within the 2" carrier. The 1.25" step-down adapter also has a hex-screw that will retain a 1.25" filter. So, first the 1.25" filter is installed within the 1.25" step-down adapter. Then the 1.25" step-down adapter that now holds the 1.25" filter is installed within the 2" carrier. The carrier may then be loaded into the Filter Switch Housing.



2" Filter loaded into the 2" Format carrier.



After loading a 1.25" Filter into the 1.25" Step-Down Adapter, the step-down adapter has been loaded into the 2" carrier and secured with the hex screw

Installing 2" Filters

Using the supplied hex tool, the hex screw should be turned counter clock-wise a bit so that the filter can be introduced into the 2" Carrier aperture. The 2" Filter Carriers have a lip at the bottom of the inside of the aperture. Your filter threads should face downward and be inserted thread-first into the carrier opening. However, if the filter threads can be seen to extend past the filter carrier underside, then the filter must be inserted with threads facing upward. Since filters differ even among the same brands, a rule for insertion is very hard to establish. Once the filter has been dropped down, use the hex tool and the hex screw can be rotated clock-wise so that it snugs against the filter and prevents the filter from falling out. Only a *small amount* of contact pressure is required. The plastic hex-screw has been designed so that it does not mar the filter cell. However, the plastic screw can become stripped if excessive and unnecessary force is used to tighten the screw against the filter. Metal hex head screws or replacement plastic hex head screws may be obtained from Denkmeier Optical. The knurled thumb-tab must always face downward when inserting the 2" carrier into the Filter Switch Housing. Extra 2" Carriers may be ordered and come with their own plastic protective case. Install all of your 2" Filters in the 2" Filter carriers so that you may insert or remove them easily from the Filter Switch at anytime. Otherwise, your many filters will need to be repeatedly removed and installed in the two included carriers. Ordering enough carriers so that all of your filters may be kept within them is the most viable solution for not having to repeatedly remove and install filters within the carriers.

Installing 1.25" Filters

Optional step-down adapters are available for those who wish to use 1.25" filters in the Filter Switch. These may be purchased individually and all 1.25" step-down adapters install in the 2" Carriers. Purchasing additional 2" Carriers for each 1.25" step-down will make using your 1.25" filters very convenient. With the supplied hex tool, the hex screw should be turned counter clock-wise a bit so that the filter can be introduced into the adapter's aperture. The 1.25" Step Down Adapter has an internal lip and the 1.25" filter should be installed into the adapter with a thread-first orientation (thread facing down as the filter is inserted into the adapter opening). However, make sure that the threads do not extend outside of the 1.25" step-down adapter's underside and if this is the case, re-insert the filter with threads facing the opposite direction. Once again, a hex screw will be threaded in a clock-wise direction until a firm enough contact is established so that the filter will not fall out. Do not over-tighten or the plastic hex screw may be stripped.

Operating The Filter Switch

Once the filters are installed in the Carriers, operation is easy. Simply load the correct Filter Carrier into the designated side of the Filter Switch Housing. The knurled tab has been designed to allow easy no-look control of the Carrier so that the Filter may be introduced or withdrawn from the light path. Note that if both 2" carriers are removed from the Filter Switch Housing, the spring clip that controls smooth motion and friction will hang down into the housing's aperture and become visible. While this is not a point of concern, leaving one carrier in at a given time will prevent this from occurring. In this way, there is no chance that the internal spring clip can fall out of the Filter Switch Housing. While this is unlikely to occur and the spring clip can easily be placed in the slots, keeping at least one 2" carrier in the housing at any time will ensure that the spring clip cannot become dislodged from the internal slots. Example: If both filter carriers are to be changed so that two additional filters can be used, removing and replacing one carrier at a time will keep the internal spring clip in it's proper place. The filter carriers are moved into the light path by pushing the carrier toward the center of the Filter Switch Housing. Push the Carrier toward the center by using the thumb tab until the carrier *completely stops*. The Filter will then be centered. When moving a filter out of the light path, the edge of the filter carrier will be flush with the side of the Filter Switch Housing and a subtle "stop" will be encountered. In this way, you will feel when the filter carrier is in the proper "out-of-light path" position. Only one filter may be introduced at a time. The internal spring clip has been designed to create enough smooth resistance so that carriers will not jiggle and back out of the light path. If the motion becomes too loose, the spring clip may have to be adjusted. It can be removed and re-bent by the user. Please call for technical assistance if the carrier motions become too loose.



Filter Switch System Types

Whether you currently own Denkmeier products and want to add a Filter Switch, or just want a new, great 2" star diagonal with Filter Switch features, Denkmeier Optical offers a variety of filter Switch Systems that will fulfill your astronomy needs. Basically, if you are in the market for a top quality 2" star diagonal and do not want to use a binoviewer, a Filter Switch Diagonal will be the perfect choice. Or, you may be interested in our Power Switch Star Diagonals that allow SCTs to achieve wide-field focal reduction, normal power and high Barlow type of magnifications. These Power Switch Star Diagonals are designed for single eyepiece as well as binoviewer use in a variety of telescopes. The Filter Switch can be added to any of them. Those who presently own a Denkmeier Binoviewer in any form can add a Filter Switch very easily. If a new Denkmeier Binoviewer System of any type is being considered, adding a Filter Switch at the time of ordering is a great idea! The Filter Switch is compatible with anything "Denkmeier". The Filter switch may be added to any two inch William Optics Star Diagonal as well. This is because they are modular.



Two Inch Filter Switch Star Diagonal

This has been designed for all telescopes using a standard 2" star diagonal. When used with refractors, an additional 5/8 inch of in-travel will be required due to the thickness of the Filter Switch Housing. Also great for SCTs, Maksutov-Cassegrains, Classical Cassegrains or any telescope where a 2" star diagonal is used. Includes a 2" star diagonal available with either a 97% Silver Enhanced reflective mirror or a 99% dielectric coated mirror. Includes a 1.25" eyepiece adapter, and the Filter Switch with a right and left 2" carrier. Add an optional engraved aluminum plug and cap shown in photo, additional 2" carrier Pairs, and optional 1.25" step-down adapters.



Filter Switch on Power Switch Star Diagonals

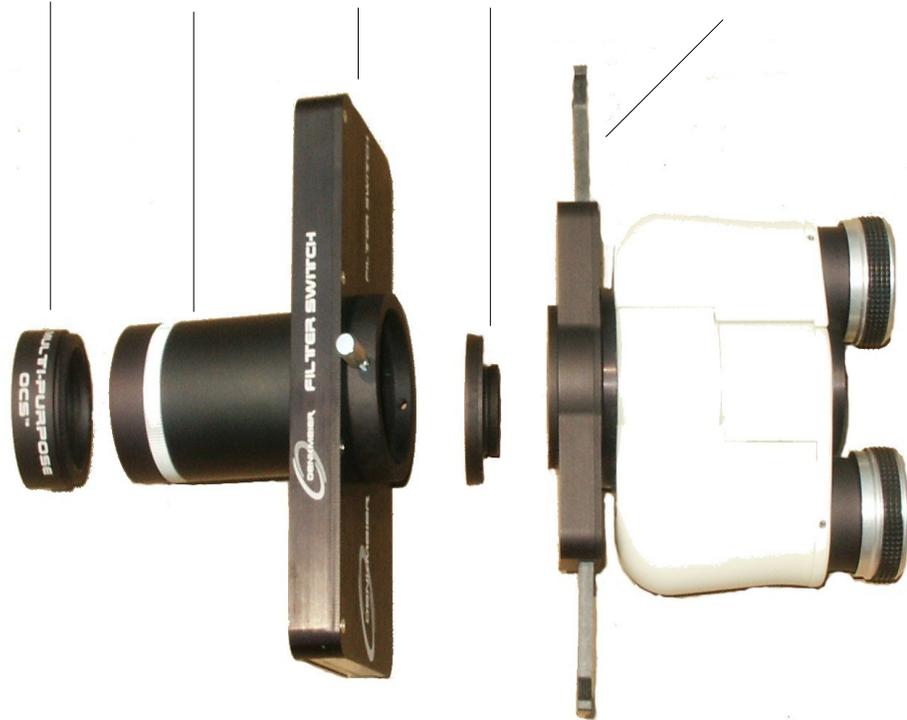
Denkmeier Optical's patent pending Power Switch Star Diagonals come in different varieties. If you thought that Switching between focal reduction, normal and 2X powers was great, try adding Filter Switching to the equation! We can install the Filter Switch on your newly ordered #S1, #S2, #R1, or #R2 Power Switch Star Diagonal. If you currently own a Power switch Star Diagonal and would like to add a Filter Switch, you must return the diagonal to us. This is because the Filter Switch is optically located closest to the star diagonal so the Power Switch must first be removed. Pictured is an #S2 Power Switch Star Diagonal and you will note the Filter switch is closest to the star diagonal main body. Pricing is available online. See the "Filter Switch" webpage at Denkmeier.com.



Adding The Filter Switch to Binoviewers

The filter Switch may be added to any Denkmeier Binoviewer whether it has a Power x Switch or not. A Dovetail Connector is included with the Filter Switch and this threads into any Denkmeier Power x Switch for Binoviewers, or directly into the Denkmeier Binoviewer itself. Once the Dovetail Connector has been threaded into the Binoviewer Power x Switch or the Binoviewer without Power x Switch, the Filter Switch can be docked with no tools and no fuss. The illustration left of this paragraph shows a Denkmeier Binoviewer with an SCT or refractor Power x Switch installed on the binoviewer. The Binoviewer nosepiece has been removed from the Power x Switch and instead, the dovetail Connector has been threaded into the Power x Switch receptacle. Now, the Filter Switch can be docked in seconds to the Power x Switch. The Filter Switch includes a special and permanently attached nosepiece so that the whole assembly can now be loaded into any 2" star diagonal.

2" OCS Optic Filter Switch Spacer Tubes Filter Switch Dovetail Connector Binoviewer Power x Switch



The Filter Switch on Newtonian & Universal Power x Switch Systems

The Filter Switch can be easily added to any Denkmeier Newtonian or Universal Power x Switch System that incorporates the 2" OCS System. In other words, Newtonian or Universal Systems such as The Standard versions that utilize 1.25" format tubes and lenses *must be upgraded* to 2" OCS systems if the Filter Switch is to be added. In the illustration to the left, the Power x Switch has had the existing 2" OCS removed.

Instead, the Dovetail Connector will be threaded into the Power

x Switch of the Binoviewer. It will be tightened and then, the entire Filter Switch and new OCS tubes can be docked to the Dovetail Connector by interfacing squarely, and then tightening the two supplied long silver thumbscrews. In fact, while parallel positioning of the Filter Switch is probably preferred, it can be rotated and secured at any position angle that the user determines is preferential. The large optical OCS Cell from the user's original OCS system (shown at the far left) is then threaded to the new assembly. The 2" OCS and the new 2" Format Spacer tubes will be used in the same manner as the original Newtonian or Universal 2" spacer tubes.



Users Of The 1.25" Newtonian or Universal OCS System

If a Standard System was purchased and an upgrade to the 2" OCS System was not selected, the Filter Switch may be added. The price will be the same for the Filter Switch and the new Spacer Tubes designed especially for use with The Filter switch. However, the 1.25" format OCS Cell included in the Universal and the Newtonian Power x Switch Systems cannot be used. A new 2" format OCS Cell must be ordered. The price is \$149. This optical cell is pictured in the illustration above on the far left. There are two versions. The 1.2X or the 1.4X may be selected. The 1.2X OCS Cell requires 3/4" more in-travel than the 1.4X. Since the 1.25" format OCS Cell that is being replaced is very similar in focus requirements as the 1.4X version, it can be determined by the amount of in-travel currently remaining when using the 1.25" system if the 1.2X version will allow focus. Check the current focus position when using the Standard Newtonian or Universal Package. If more than 3/4" in travel remains, the 1.2X version will allow focus to be obtained. Call us for technical assistance.





Just Dock and Go

In this illustration, the Dovetail Connector has now been threaded into the Power x Switch of the binoviewer. The Filter Switch, the new OCS Spacer tubes and the existing OCS Optical Cell (far left) are ready to be docked to the Dovetail Connector's coupling side. Line up the two opposing ends and simply turn the two silver thumbscrews to secure the assemblies and you have docked the system. The Filter Switch and OCS tubes may be un-docked for storage. The Dovetail Connector can be removed from the binoviewer after it is first loosened. This is accomplished by rotating the Filter Switch counter-clockwise before it is un-docked. This will loosen the Dovetail Connector so that it can then be easily threaded off of the Power x Switch after the Filter Switch assembly has been un-docked. Note: Removal of the Dovetail Connector and/or the Filter Switch is not necessary unless the user wishes to disassemble the system for storage or other purposes.



The Camera Filter Switch

A special Filter Switch For cameras includes a machined Camera Adapter which allows the Filter switch to be mated to any camera T-Ring. Adequate clearance between the camera's body handgrip, and the Filter Switch has been compensated for during design of the Camera Adapter. Now, introducing filters into the camera light path is easily accomplished without threading and unthreading filters from the camera lens. Get as many 2" Carrier Pairs as you want and keep all of your 48mm camera filters on standby. It takes only seconds to load the carriers into the filter switch Housing. The Filter Switch for cameras includes a 2" format tube emerging from the side opposite the camera so that it may be loaded into any 2" telescope focuser, star diagonal or other 2" female receptacle. Works with any Camera that uses a standard T-Ring.



Filter Switch Docked to Camera Adapter After Camera Adapter Has Been Threaded To The Camera's T-Ring

