

Accessories for the ST-7/8/9/10/2000 Series Cameras



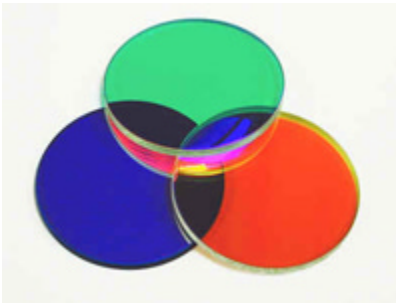
CFW9 Five Position Filter Wheel

Seen here attached to an ST camera body. The CFW9 makes it possible to automatically take color images with LRGB filters. Add an H-alpha filter for emission nebula, or perform photometric measurements with UBVRI filters. Add an extra carousel and do both by switching entire filter sets. The CFW9 is available with or without filters. The CFW9 gets its power and control commands from the camera is designed to match the ST-7/8/9/10/2000 body style in size and shape.



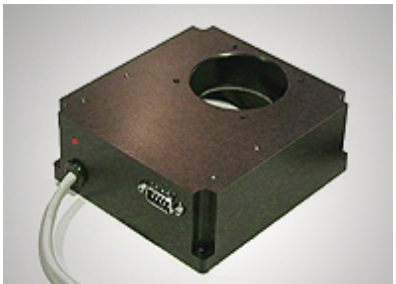
CFW10 Ten Position Filter Wheel

Also seen here attached to an ST camera for comparison. The CFW10 allows you to carry a large array of filters in one filter wheel without having to change carousels. LRGB+Clear filters for color imaging can be installed along with several narrow band filters such as H-alpha, O[III] and S[II], or a complete color plus photometric set. The CFW10 adds only 0.56" of backfocus to SBIG cameras and can be used with camera lens adapters. A stand alone model is available for other cameras.



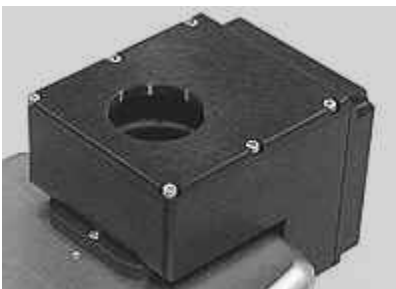
LRGBC, UBVRI and Narrowband Filters

Red, Green, Blue, plus Clear and Luminance filters for color imaging are available in several varieties. Our standard set suppresses light pollution while giving an excellent balance for all ST cameras. Astrodon filters are parfocal with other Astrodon narrowband filters and offer 1:1:1 exposure ratios. H-alpha, O[III] and S[II] filters are available for narrow band imaging of emission nebula. UBVRI filters are available for photometric studies.



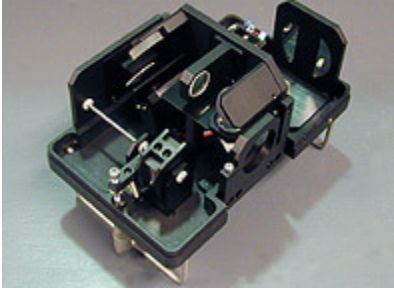
AO-8 Adaptive Optics

Get the last bit of resolution from your system. The AO-8 uses the built-in tracking CCD of an ST-7/8/9/10/2000 dual sensor camera to monitor the jitter of a guide star and make appropriate tilt-tip corrections to the image using a moveable optical element. Local and low order atmospheric effects, telescope vibration and drive error are reduced or eliminated resulting in a sharper image.



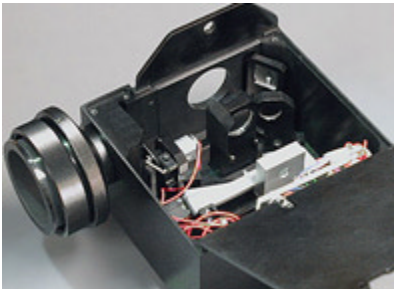
AO-L Adaptive Optics

The AO-L was designed for the larger CCDs used in the Research Series cameras, however it will also work on the ST-7/8/9/10/2000 cameras. The AO-L uses a transmissive correcting element instead of a reflecting element. The full scale correction rate is slower than the AO-7 at about 5 - 10 Hz, but individual moves are actually made quicker. An accessory element is planned for the AO-L that will also correct for atmospheric extinction when imaging away from the zenith.



SGS Self-Guiding Spectrograph

The SGS utilizes the guiding CCD in the ST-7/8/9/10/2000 cameras to hold the object being measured on the narrow entrance slit for an extended period of time. The full bandwidth is displayed on an ST-7 sized CCD. For convenience, other self-guiding ST series cameras can also be used although there is no benefit to using a larger camera than the ST-7XME. Dispersion with the high resolution grating is approximately 1 Angstrom per pixel at 9u.



DSS-7 Deep Space Spectrograph

The DSS-7 is a lower cost alternative to the SGS. The DSS-7 is actually more sensitive than the SGS making it excellent for Deep Space objects. It does not self-guide and it has slightly lower resolution than the SGS. It is optimised for popular Schmidt-Cassegrain telescopes but can be used on any system with an F/10 focal ratio. It is ideal for deep space objects such as galaxies and nebula.



Port Splitter

The port splitter attaches to the accessory port on the bottom of an ST-7/8/9/10/2000 camera and gives you three 9 pin ports for attaching a variety of accessories such as a CFW8A, AO-7 and Relay Adapter at the same time. An additional RJ11 relay output port is also provided and four red LEDs indicate relay activity. The port splitter should be used to replace the temporary ribbon type dual relay cable for more robust connections.



Extra Nosepiece: 1.25" and 2"

These T-thread nosepieces screw into the female t-threads on ST cameras. All ST cameras include at least one nosepiece. Each nosepiece is threaded to accept filters and notched for extra security in the event the retaining screw comes loose slightly during the night. For a more solid connection to Schmidt-Cassegrain scopes, we also offer the SCT to T-thread Visual Back (see below).



SCT to T-thread Visual Back

For a more secure attachment of your camera to a Schmidt-Cassegrain telescope (or any scope using typical SCT threads) replace your nosepiece with this adapter. One end screws into the female t-threads on the front of the camera or filter wheel, and the other end screws onto the rear cell threads typically found on most commercial Schmidt-Cassegrain telescopes. A matching hard plastic dust cap screws over the t-thread end if the camera is removed for any period of time.



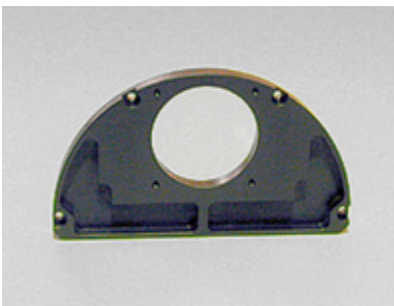
Precision Rotating Nosepiece

This nosepiece replaces the D-block on the ST-7/8/9/10/2000 camera. It allows a small but precise rotation of the camera for aligning the CCD with the direction of drift of stars when setting up for TDI (Time Delay Integration) imaging - also called drift scan imaging. During TDI imaging, the telescope drive is turned off and the image scrolls out of the CCD at the same rate as the stars drift across the image plane. Thus there is no drive error, no tracking and the image can be quite large.



Quick Disconnect

The Quick Disconnect accessory lets you quickly remove the camera from the telescope, replace it with an eyepiece, and then return the camera to the telescope all without losing focus or position. It also lets you easily rotate the camera without losing focus. It is designed for use with an SCT.



CFW8A to AO-7 Adapter Plate

This adapter provides a solid direct connection of the AO-7 Adaptive Optics Device to the CFW8A filter wheel when the filter wheel is also hard mounted to the camera. The entire train of Camera-CFW-AO becomes one unit. Previously the AO-7 had to be attached using a male-to-male thread adapter that screwed into the CFW8A and AO-7, but could also add flexure or unwanted rotation if the parts became loose for any reason.



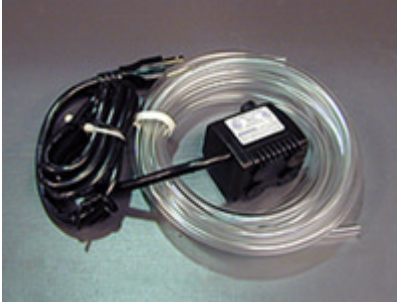
Replacement "D" Block and T-thread Ring

This block with adjustable inner t-thread ring is a standard part on ST-7/8/9/10/2000 cameras. It can be removed for direct connection of the CFW8A or CFW10 filter wheel.



Male-to-Male T-thread adapter

This adapter is also threaded internally for 1/25" filter cells, so it can be used to hold a single filter when attached to the front of the camera.



Water Pump and Tubing (110VAC)

This 110VAC (only) submersible water pump may be used with any ST-7/8/9/10/2000 camera equipped with the water circulation heat exchanger. Most models have this feature, except for some of the "I" models where it is an option. Water circulation results in a greater cooling delta from ambient and is desirable in areas where it stays very warm at night.



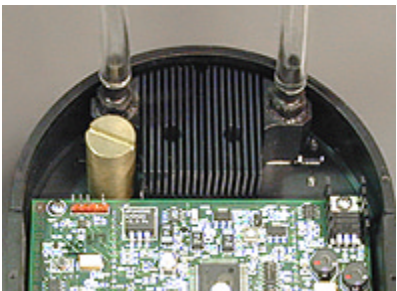
Water Pump and Tubing (12VDC)

This 12VDC submersible water pump was added as an accessory for the larger STL series cameras. However, if you are operating an ST-7/8/9/10/2000 camera in the field or any place where there is no convenient 110VAC supply, then it may be adapted for use with an ST series camera by using two pieces of step down tubing from the camera to the smaller tubing supplied with the 12VDC pump. A 110VAC adapter (below) can be added for dual use.



110VAC to 12VDC power supply for 12V Water Pump

This 110VAC to 12VDC supply is may be used to power the 12VDC pump when 110VAC is available. It is the same power supply that we use with the ST-402ME camera.



ST-7/8/9/10/2000 Water Circulation Heat Exchanger

Some "I" model ST-7/8/9/10/2000 cameras do not include the water circulation heat exchanger. If you have an "I" camera and wish to increase the cooling performance with water circulation this part may be added at time of purchase or later. Adding water circulation improves the cooling delta by approximately 6 - 9 degrees C. Note: If you have a self-guiding (dual CCD) version of the ST-7/8/9/10/2000 camera with USB electronics, this feature is already installed. It is also included in all upgrades to USB.



90-240VAC Universal Power Supply

The universal power supply provides the required 5VDC and 12VDC to the camera from typical line voltages found around the world. It has an on/off switch and green LED showing power is on to the camera. A separate cord is available with regional plug for N. America and Europe / Asia. This is the supply that is included with all current models of ST-7/8/9/10/2000 cameras. It is compatible with all all past models as well.



12VDC Power Supply

This optional power supply converts 12VDC from a battery to the 5VDC and 12VDC required by the camera. It is for operating your ST-7/8/9/10/2000 camera from a battery in the field, or anywhere there is no convenient AC power.



Power Supply Extension Cable

This cable extends the cord from the power "brick" to the camera by approximately 6 feet (~1.8m). The standard power cable that is attached to the power brick is about 6 feet long so this heavy duty extension cable will double that length. It is custom made with heavy gauge conductor for minimum voltage loss (current versions may appear slightly different from the photo).



Accessory Test Lens

This inexpensive test lens allows the user to become familiar with CCD camera operation and software in the daytime. The lens is a modest double convex plastic lens with a focal length of 25 mm and an aperture of 1.5 mm (F/16), in a metal housing with a T-thread on the outside. It is very handy for capturing images during daytime when testing the camera or learning the software. Simply unscrew the nosepiece and screw this lens in place.



Camera Lens Adapter

This adapter mates the ST-7/8/9/10/2000 cameras with popular 35mm camera lenses for wide field imaging. Adapters are available for Pentax bayonet, Olympus, Canon FD, or Nikon. Note: Canon FD lenses are manual only. The CLA-7 cannot be used with a filter wheel, but it can be used with the male-to-male t-thread adapter in place of the threaded barrel to hold a 1.25" filter behind the camera lens. This can be useful for taking wide field H-alpha images, for example.



Relay Adapter

The relay adapter box converts the ST-7/8/9/10/2000 electronic relays to mechanical relays. Most commercially available mounts such as those from Software Bisque, AP, Meade and Celestron do not require mechanical relays, but others, such as the classic Losmandy G-11 do require some other form of electrical isolation between the camera and the mount. If you are not sure, check with your mount manufacturer.



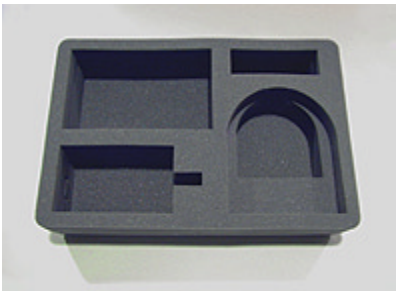
Ethernet to Parallel Adapter

The E2P adapter converts a parallel ST-7/8/9/10 camera to Ethernet. A server utility is provided with the adapter box that allows you to operate your parallel camera remotely over a local area network.



SCSI to Parallel Adapter

This adapter converts older Mac SCSI ports to parallel for controlling parallel version of the ST-7/8/9/10 cameras with a Macintosh computer. Note: Our newer USB cameras can be operated from a Mac running OS-X and Equinox software without the need for any adapter so long as the Mac has a USB port.



Replacement Foam Insert for CFW10 and Pelican Cases

A new foam insert is now available for the standard Pelican case that lets you store and transport an ST-7/8/9/10/2000 camera with the larger CFW10 attached. Cut-outs include provisions for the camera with or without the CFW10, power supply and other accessories. The large rectangular compartment can hold an ST camera with CFW8A and AO-7 hard mounted together. This foam insert fits the Pelican case originally supplied with the ST-7/8/9/10/2000 cameras (see below).



Pelican Carrying Case with Custom Cut Foam

This case includes the custom cut foam (above) for your ST series camera and accessories. It will hold an ST-7/8/9/10/2000 camera with or without a CFW10 filter wheel attached. The case is waterproof, dustproof, and crushproof and comes with a lifetime guarantee from Pelican. It is included as a standard accessory for current ST series cameras except for some "I" models. It can be ordered separately for "I" cameras and older ST-7/8/9/10/2000 models.