

SOLAR SPECTRUM

OPERATIONAL INSTRUCTIONS: SO series, Advanced Solar Observer and Research Grade H-alpha filter

1. SAFETY FIRST!! Cover all other telescopes on the mount that are not going to be used. This will eliminate any chance of being burned. Place the Energy Reduction Filter on the telescope that will be using the solar filter.
2. Place the filter on the telescope with the reflective side towards the sun... REVERSING MAY DAMAGE THE FILTER. Using the filter on a telescope with a focal ratio faster than f-25*** will damage the filter and VOID YOUR WARRANTY
3. Plug filter into the control box. Also, plug the power supply into the control box. Plug the power supply into a power outlet. The power supply will accept any voltage from 85 to 265 volts A.C.
4. How TO OPERATE THE TEMPERATURE CONTROLLER: The filter may need to be fine-tuned. To do this, the temperature of the filter needs to be changed. To change the temperature, press the SEL button, the SV light will come on. Use the arrow to raise or lower the set value. Then press the SEL button to enter the change. A change of 9C will change the bandpass wavelength approximately 1 ang. By moving the set value to a higher temperature, the filter's bandpass will move to a longer wavelength, or red of the H-alpha line. By moving the temperature to a lower set value, the bandpass will move to a shorter wavelength or blue of the H-alpha line. The maximum set value for the temperature controller is 65C.
5. TO CALIBRATE THE FILTER FOR YOUR TELESCOPE/FILTER COMBINATION: Adjust the temperature to a setpoint of 5 deg below the operating temperature on the label. Observing the sun with the clock drive keeping the solar image in the center of the filter, allow the filter temperature to become stabilized (3 to 5 minutes). Observe the solar disc. You should be in the blue wing of H-alpha. Increase the setpoint 1 degree and allow the filter to stabilize once again. Keep repeating until you have achieved maximum contrast on the disk. At this point you are at the center of H-alpha line. Moving to higher setpoints will put the filter's bandpass in the red wing. Lower setpoints will put it in the blue wing.

NOTE: Since the controller is balancing the setpoint with the extra energy from the sun, the Ultra-narrow filters may drift to the blue wing when the solar energy is not going through them. Once the telescope is placed back on the sun, the filter will return to the same wavelength in 30 to 60 seconds .

6. If the filter is not achieving the desired contrast or uniformity, you may have an alignment problem between the telescope and the filter. This will be the most common problem associated with the filter. A .5 deg tilt along the optical axis will cause the filter to not operate correctly. Increasing the temperature can compensate for small angles, but the bandpass will be broaden slightly.
7. The heat sink fan is on whenever the filter has power. This will not interfere with the view through the filter.
8. IT IS A GOOD IDEA TO KEEP THE TEMPERATURE CONTROLLER AND POWER SUPPLY OUT OF DIRECT SUNLIGHT TO ELIMINATE EXCESS HEATING.
9. Off-axis telescopes, such as the Schmidt-Cassegrain, require special attention in lining the filter with the optical axis. Align the off-axis cover with the line on the wedge plate. If the mounting wedge plate does not have a line for the thick part of the plate then, place the off axis cover at 12:00 looking towards the front of the telescope. Mount the front plate so that the thin side is facing towards the power cord. Align the thick part of the mounting plate with the off-axis cover. Let the filter come to its operating temperature and observe the sun. You may have to move either the filter or the cover to achieve fine alignment. If the filter is not aligned with the off-axis cover, the image will be non-uniform, one edge will be brighter and off-band relative with the other edge.

*** Filters can be used at F/24 if the aperture is 60mm or less. The filter will broaden out and will not have the same contrast as F/30.