DAYSTAR

World Leader in Solar Filter Manufacturing for over 40 years

DAYSTAR FILTERS LLC 149 NW OO HIGHWAY WARRENSBURG, MO 64093 - USA
WWW.DAYSTARFILTERS.COM • 866.680.6563

DAYSTAR

Features of the Sun in Hydrogen Alpha

By observing the sun with a narrow bandpass filter of ~0.6Å or less, we can observe the behavior of the Sun's Chromosphere. The chromosphere is like a shell of gas around the Sun's photosphere, always moving and changing. The chromosphere's structure behaves differently in active regions than quiet areas, where magnetic field lines are stronger.

- *Chromosphere model QUARKS and Quantums of 0.6Å and lower will see good Chromosphere.*
- *QUARK Prominence model and Wider Quantum filters will see faint Chromosphere*

On the limb, even a rather wide filter of 1Å or more will show prominences, a detail of the chromosphere projected against the dark black contrast of space. Prominences often wing shift because they are moving so quickly. A wider filter will pass more wing shifted light and prominences will be broad stroke (like a magic marker vs a pencil stroke)

- *Prominence model QUARKS and Quantums wider than .6Å will see broad stroke prominences*
- *QUARK Chromosphere model and narrower Quantum filters will see prominences, but finer lined.*

Spicules dominate the chromosphere in non-active regions and have been studied exhaustively. They are barely visible, last only about 15 minutes, and resemble a "burning prarie". Some jets can be seen shooting 10,000 km up from the Sun's limb at velocities of about 30km/sec. Studied exhaustively, they present observing challenges, as they require large aperture to resolve

- *Spicule can be observed with all QUARK and Quantum filters when applied to large aperture.*

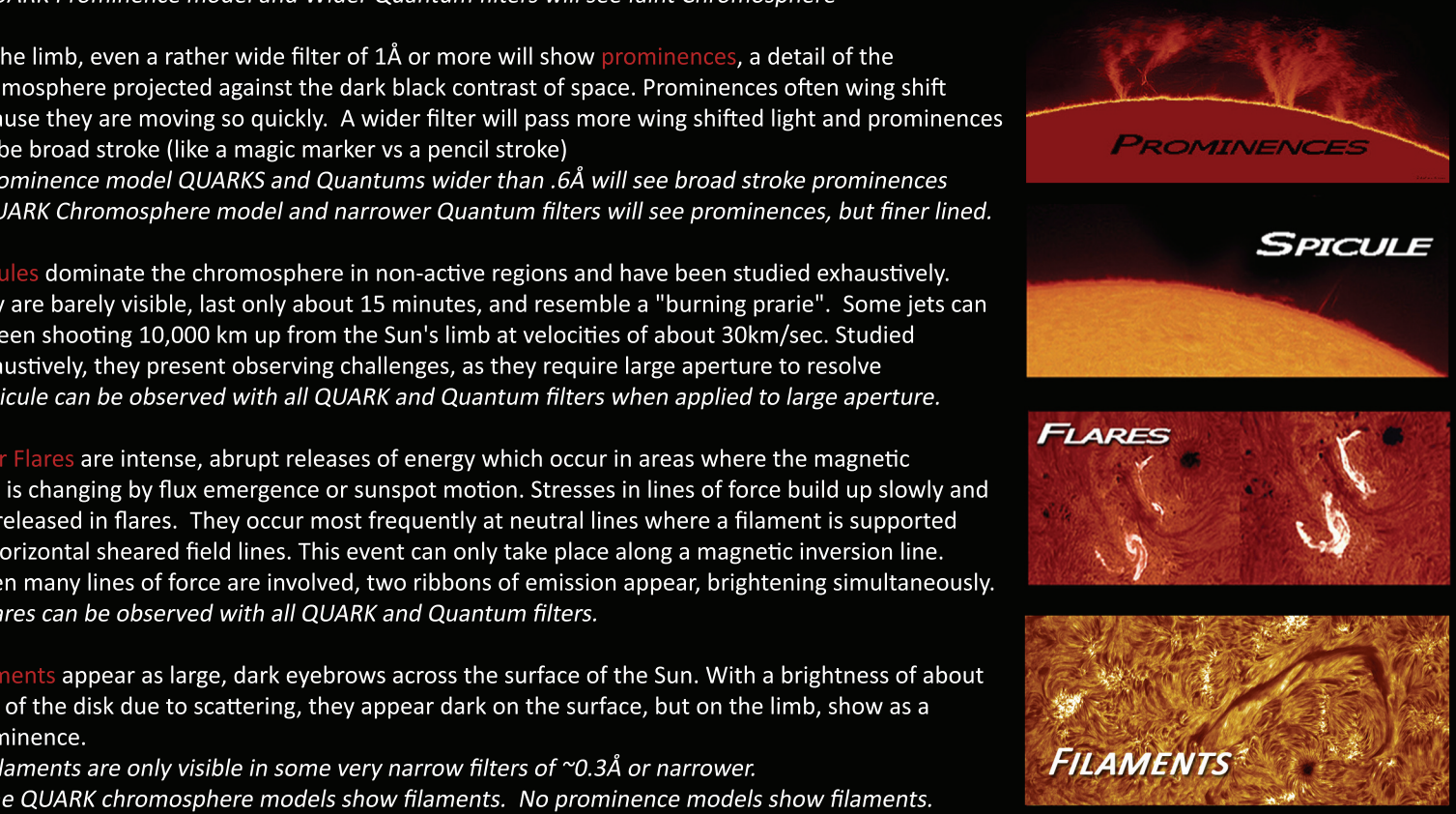
Solar Flares are intense, abrupt releases of energy which occur in areas where the magnetic field is changing by flux emergence or sunspot motion. Stresses in lines of force build up slowly and are released in flares. They occur most frequently at neutral lines where a filament is supported by horizontal sheared field lines. This event can only take place along a magnetic inversion line. When many lines of force are involved, two ribbons of emission appear, brightening simultaneously.

- *Flares can be observed with all QUARK and Quantum filters.*

Filaments appear as large, dark eyebrows across the surface of the Sun. With a brightness of about 10% of the disk due to scattering, they appear dark on the surface, but on the limb, show as a prominence.

- *Filaments are only visible in some very narrow filters of ~0.3Å or narrower.*

Some QUARK chromosphere models show filaments. No prominence models show filaments.



Daystar QUARK Family

QUARK Original:
Prominence model:
Prominences as shown above and Chromosphere similar to "Spicule" photo.
Chromosphere Model
Similar view to "Chromosphere" photo.

QUARK Combo:
Prominence model:
Prominences as shown above and Chromosphere similar to "Spicule" photo.
Chromosphere Model
Similar view to "Chromosphere" photo.

QUARK for Questar:
Prominence model:
Prominences as shown above and Chromosphere similar to "Spicule" photo.
Chromosphere Model
Similar view to "Chromosphere" photo.

CALCIUM II H-Line Quark:
5Å Visual and Photograpic

DAYSTAR

SR-127mm

Hydrogen Alpha Telescope

0.7Å	SR-127 Solar Telescope:	$4995
0.6Å	SR-127 Solar Telescope:	$6000
0.5Å	SR-127 Solar Telescope:	$7400
0.4Å	SR-127 Solar Telescope:	$8600
0.3Å	SR-127 Solar Telescope:	$10200

View Full disk with 55mm Plossl.

Image full disk on 2/3” or larger CCD chips with FR2DT focal reducer.

SR-127 Hydrogen Alpha Solar Telescope
NOW IN CARBON FIBER! - NO EXTRA COST

Complete fully controlled tunable
127mm Hydrogen Alpha Solar Telescope
Objective by ISTAR Optical
4064mm Focal Length
Truly telecentric negative lens

Robust 2" dual speed Crayford/R&P style focuser

Fully integrated Daystar Quantum Filter
Digital readout and precision tuning control
Accurate to 0.01Å tuning.
12VDC power can run off batteries

Mounting rings with Vixen dovetail
Daystar universal solar finder
2” x 1.25” drawtube reduction adapter
Custom fabricated hardwood case.

Made in USA

**FOR BEST RESULTS, DAYSTAR RECOMMENDS IMAGING HYDROGEN ALPHA WITH A B&W CAMERA RATHER THAN A DSLR OR ANY COLOR CCD CAMERA FOR BEST RESULTS.*

DAYSTAR

SolaREDi 66 mm

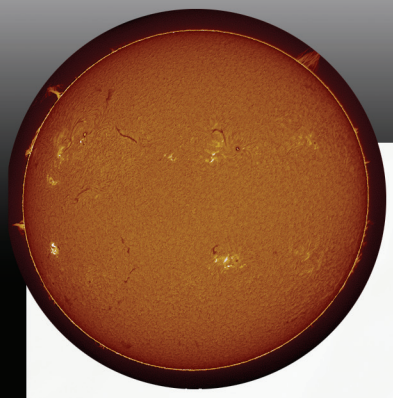
Hydrogen Alpha Solar Telescope

66mm H Alpha Telescope
Prominence Model: $1295

66mm H Alpha Telescope
Chromosphere Model: $1295

Dedicated, Simple, All-In-One Solar Instrument

Includes:
Complete fully controlled tunable
66mm Hydrogen Alpha Solar Telescope
EFL: 943mm - F/14.3
1.25” Dual speed Crayford style focuser
Mounting foot with Vixen dovetail
Solar Finder
Hard Aluminum Storage Case
1.25” drawtube and SCT adapter
USB Power



FOR BEST RESULTS, DAYSTAR DOES NOT RECOMMEND IMAGING WITH DSLR OR ANY COLOR CCD CAMERA FOR BEST RESULTS, IMAGE HYDROGEN ALPHA WITH A B&W CAMERA.

DAYSTAR FILTERS
80MM QUARK BUNDLE

NIGHT TIME OBSERVING!
SOLAR OBSERVING!
SAME TELESCOPE!

QUARK's are offered in Chromosphere or Prominence models for the same price.

INCLUDES:

- Quality Doublet 80mm F/6 refractor
  with dual speed Crayford focuser with rack & pinion assist
- Aluminum Hard Case
- Daystar Quark - in either Chromosphere or Prominence model
- 2" Dielectric Mirror Diagonal

FEATURES:

- **Best Price In Class for 80mm Solar Telescope!**
  Prominence or Chromosphere model no extra cost
- Full 22mm Clear Aperture.
- Maximum aperture and focal length which can pass full disk
- Maximum aperture with no ERF required
- Quality Night time and Solar telescope all-in-one
- Quark can be moved to other instruments for different magnifications
- Swap filter(s) for different bandpass views
- Removable diagonal for straight-through imaging
- Always on-band with USB power, 5v 1.5amp
- 110-240VAC wall adapter (Optional 24mAh battery available)
- Tuning knob allows wing shifting +/- 0.5Å
- LED indicator for power, warming, ready, fault
- 5 year warranty

The 80mm Quark bundle is available in "Prominence" or "Chromosphere"
~ Choose either for the same, low price of $1495.00 ~

DAYSTAR QUARK

Daystar Instruments QUARK is the first Hydrogen Alpha "Eyepiece"

This new, All-In-One design is as easy as 1 - 2 - 3.

1 - Insert it in the diagonal of your favorite refractor.

2 - Plug in the Quark and warm it up about 10 minutes.

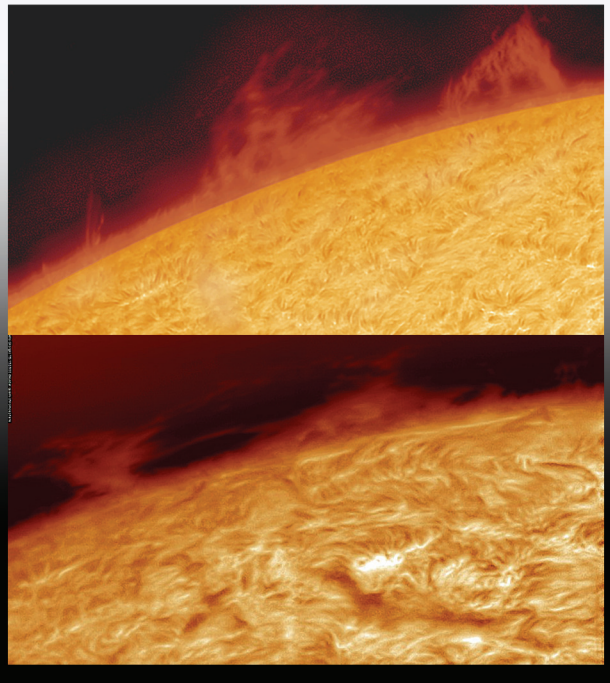
3 - Enjoy high powered views of proms and chromosphere.

PROMS & CHROMOSPHERE: SAME PRICE!
Using Daystar's superior etalon technology, double- stacking is not required to reach narrow bandpass for chromosphere or prominences.
If you really love big, broad stroke prominences then choose that model. If you want surface and some proms, then choose the chromosphere model.

Either way, you'll be able to see amazing, high powered views of the sun in H alpha in the scope you already own.

Parallel light at the etalon is required to achieve narrow bandpass. Daystar embeded telecentric 4.3X barlow inside the Quark to optimize your contrast on fast scopes.

Quark is available in a choice of "Prominence" or "Chromosphere"
~ Choose either for the same, low price of $995.00 ~



Prominence model
Shows big, broad proms
Shows some surface

Chromosphere model
Shows some proms
Shows highest contrast surface

QUARK's are qualified in a choice of Prominence or Chromosphere.

QUARKS etalons of 0.8 - 0.6Å are classified as PROMINENCE
and
QUARK etalons of 0.5 - 0.3Å are classified as CHROMOSPHERE

Due to variation in the end user application, we cannot specify the precise FWHM of the filter.

Original style QUARK performs best on F/4-F/8 refractors

Longer focal ratio refractors can use Quark, but image may be dim.

For other telescopes, try our Combo Quark shown on page 8.

UV/IR Cut filters may be used on most refractors.

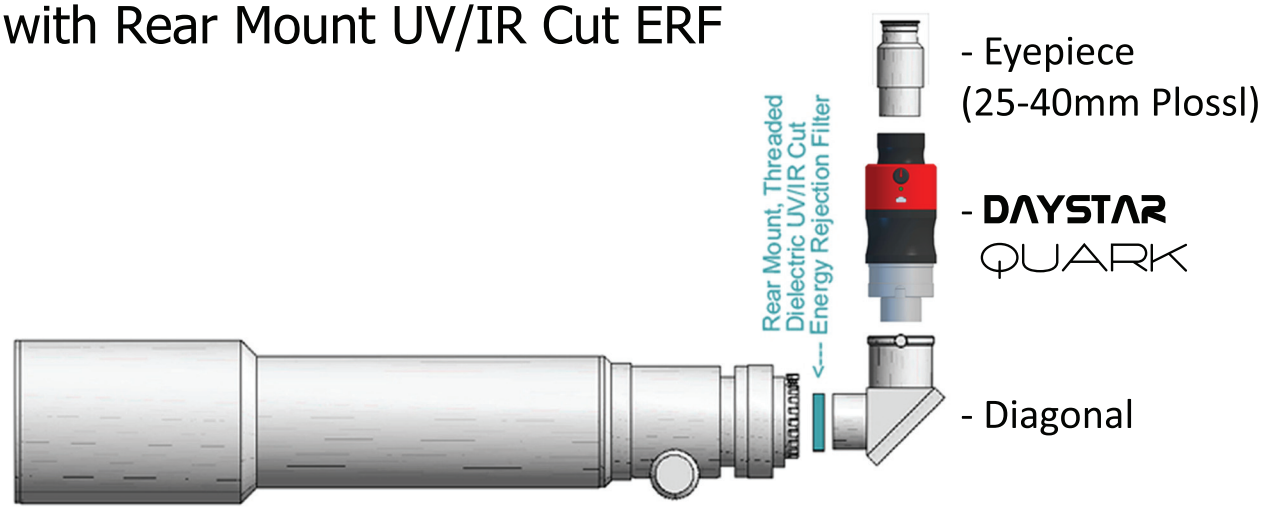
Apertures of 80mm and under have insufficent thermal load to require any ERF.
UV/IR cut filters may be used safely on refractors unless noted below.
Clients should consider front mount ERF filters with the following:

- *SCT or Maktsutov Telescopes must use front mount ERF.*
- *Petzval Refractors should consider front mount ERF.*
- *Top end APO refractors sold under wait-listed conditions.*
- *150+mm instruments which might track the sun for >6 hours.*

Quark can be applied on Larger Apertures

Apertures up to ~125mm can usually resolve most seeing conditions.
Daytime solar radiation negatively impacts seeing for 150mm and up.
Those who wish to exceed 150mm must consider local seeing.

Daystar Quark Configuration on Refractor with Rear Mount UV/IR Cut ERF



DAYSTAR FILTERS
COMBO QUARK

COMBO QUARK

Hydrogen Alpha "Eyepiece"
For SCT telescopes and >F/15 refractors and Mak's

The Combo Quark brings quick, easy fun of the Original Quark to SCT, Maktsutov and ~F/15 refractor owners.

For use on SCTs, Maks, or refractors of F/15 to F/30. The user needn't worry about configurations. Just insert Quark in your diagonal, add an eyepiece and view.

- Refractors over F/15 may use either front-mount energy rejection or rear mount UV/IR filter energy rejection.
- SCT owners must employ a front mount, off-axis, aperture reduced Energy Rejection Filter (ERF) in order to achieve optimum performance. This front mount ERF will generate a slower focal ratio through aperture reduction while preventing heat build-up in the optical tube assembly. A wedged snout is included to counteract the angle of light entering off-axis through the ERF
- Maktsutov owners who operate at a native ~F/15 focal ratio do not need to reduce the aperture of the telescope, but must use front mount energy rejection to prevent overheating of the optical tube assembly.

Combo Quark and Questar QUARK
available in "Prominence" or "Chromosphere"
~ Choose either for only $995.00 ~

QUESTAR QUARK

Hydrogen Alpha "Eyepiece"

Custom designed to thread directly on a choice of either Questar port. Either using the flip-mirror or straight-through, Questar Quark threads securely to fit.

Questar Quark owners also require a front mount ERF filter. We have designed Questar ERF caps to nest over the front of the OTA, allowing the Questar brand Sun Shield to fit compactly atop the ERF filter.

Available in Chromosphere and Prominence Models

DAYSTAR
CALCIUM H-LINE QUARK

- At last a Calcium line you can see visually!
- Calcium H Line (3968.5Å)
- Visual for Outreach
- Photographic for Imaging
- 5Å FWHM
- Use on your existing refractor.
- Works on F/7 or longer focal ratios.
- 21mm clear aperture
- Uses common accessories as other QUARK's

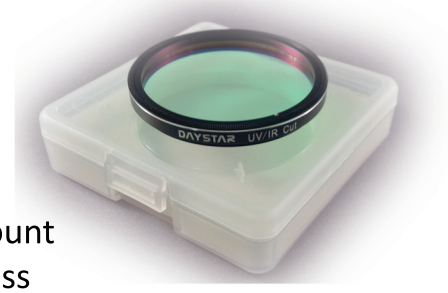
Calcium II H-Line QUARK

Only $995.00

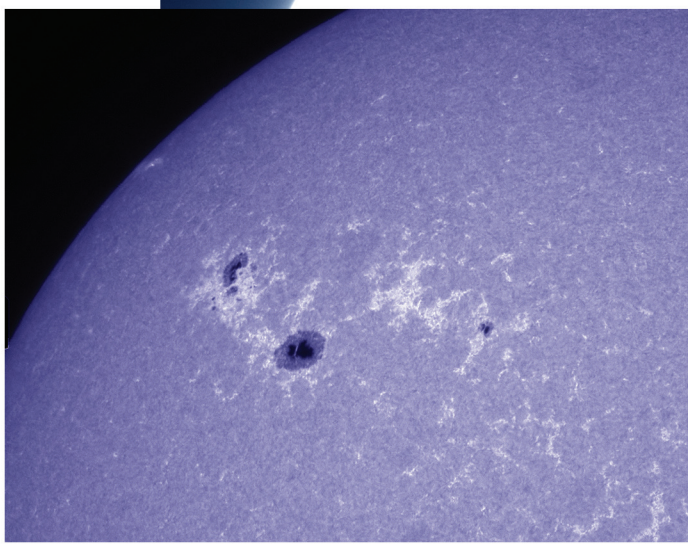
For use on F/7 or longer refractors.
Just insert the Calcium QUARK in your diagonal, and an eyepiece and view. Shorter focal ratio refracotors can use a 2X or 2.5X barlow. Daystar recommends Powermate barlows for best results.

Longer focal ratio applications will show a higher contrast view. Shorter focal ratio applications will show a brighter overall view. Each user may explore variations in focal ratio.

The Calcium H-Line and K-line yield virtually identical views of the Sun. We offer QUARK in H-Line not K-Line so that more of our clients can share in the fun. Almost all observers can see the higher 397nm H-Line wavelength we offer.



Not compatible with front mount ERF filters. Red and Yellow glass does not pass Calcium. Daystar recommends UV/IR cut filters with Ca II H-Line.



DAYSTAR 480E

80MM ACHROMAT DOUBLET

Already have a QUARK filter?
Try our hand-selected, ideal refractor.

- High grade Achromat
- Portable for outreach.
- Max aperture safe w/o ERF
- Passes full disk
- Top end focuser

FEATURES:

Quality Achromat Doublet 80mm F/6 refractor with dual speed Crayford focuser with rack & pinion assist and aluminum hard case

Only observe the Sun with a safe solar filter (optional)

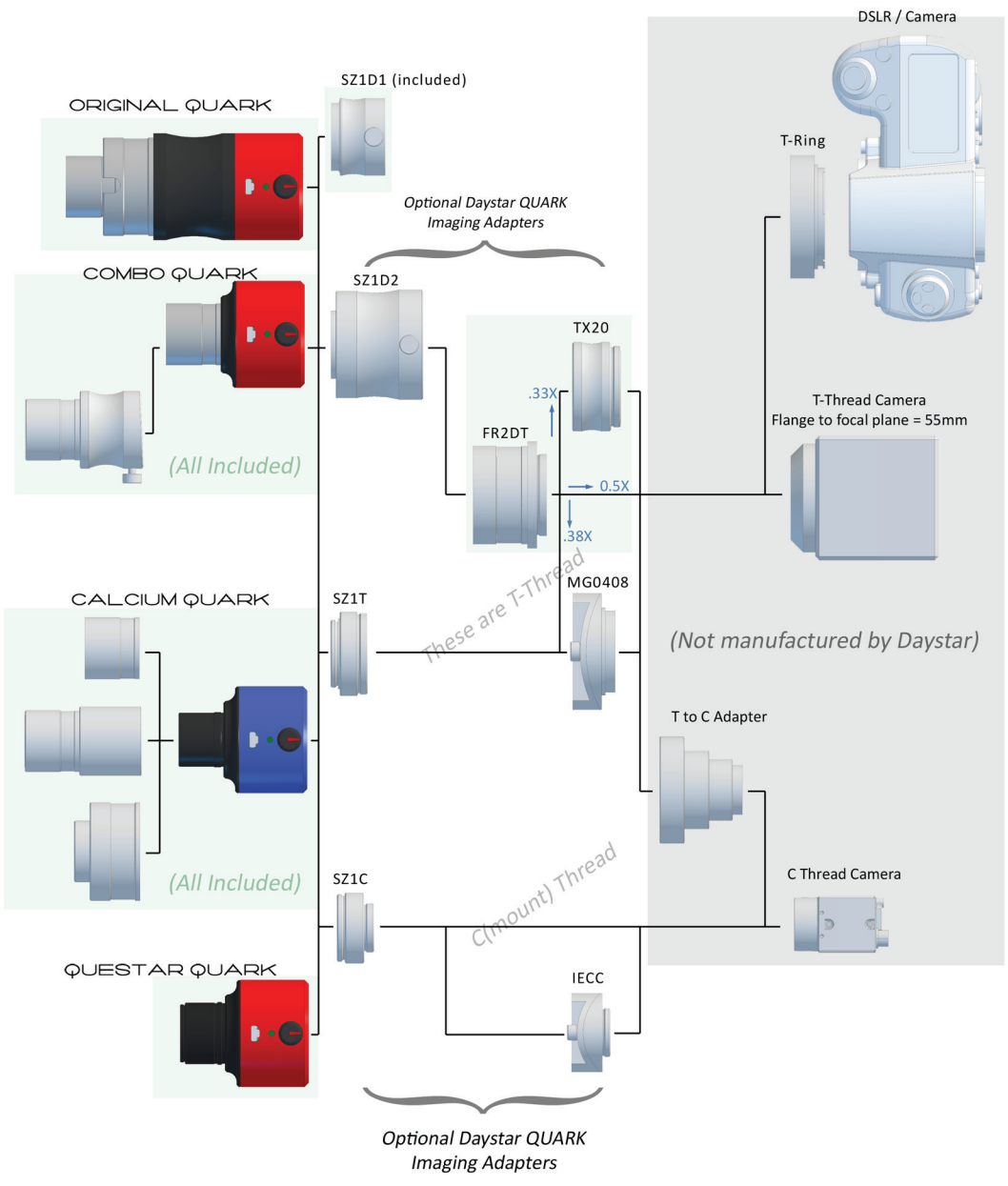
Description:

* High quality 2-element objective lens system.
* Fully multi-coated optics ensures utmost light transmission
* Finely CNC machined aluminum body and focuser
* Deluxe high-gloss anodizing finish
* Retractable sunshade
* Accepts all 2” universal telescope eyepieces

Specifications:
Optical design: Refractor
Aperture: 80mm
Focal Length: 480mm,
Focal Ratio : f/6
Lens: Achromat doublet, fully multi-coated
Attachments: 2" rack & pinion hybrid drive focuser
Aluminum Carrying Case

480mm Refractor Telescope 80mm F/6: $595.00
Optional 2” Dielectric coated mirror diagonal: $169.00

QUARK Imaging Adapters



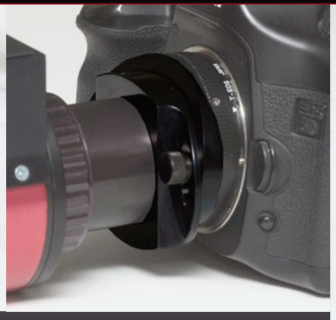
QUARK ADAPTER FAMILY
All Adapters Fit ALL Quarks

- SZ1D1 - Included
- SZ1D2 - $45.00
  2” female drawtube
  For 2” eyepieces & acc.
  $45
- FR2DT (Includes TX 20)
  .5X / .33X Focal reducer
  $249.95
- SZ1T
  Quark - T-thread adapter
  $40
- MG0408 T-Thread
  Inteference Eliminator
  (Kills banding, Newton’s rings)
  $149.95
- SZ1C
  Quark - C-mount adapter
  $40
- IECC C-Mount
  Interference Eliminator
  (Kills banding, Newton’s rings)
  $149.95

2” UV/IR cut Filter: $109
22 AmpHour Li-Ion Battery $89
5VDC Cig. Lighter USB $20

SZ1C - QUARK -> C-mount


SZ1T - QUARK -> T-Thread


MG0408 T-Thread

DAYSTAR

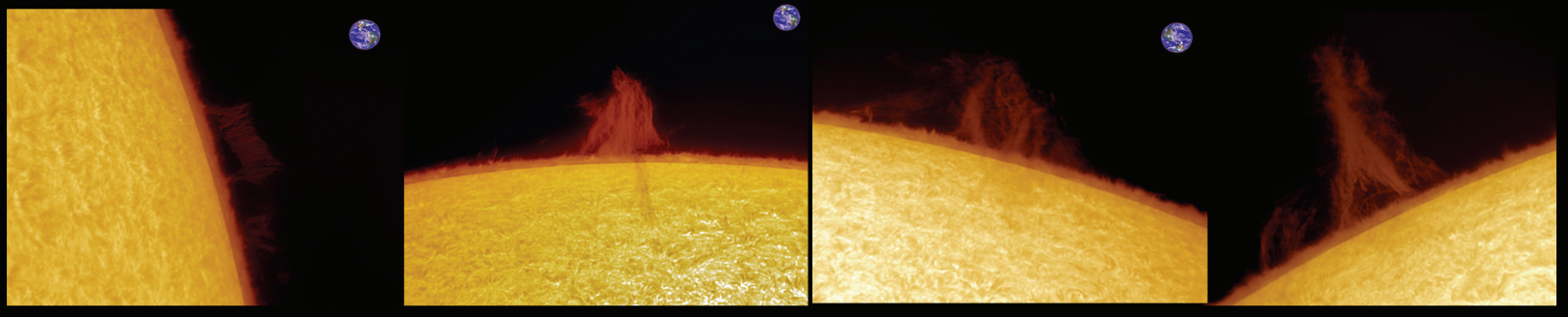
Hydrogen Alpha ION Filter

- ION 0.7 Hydrogen Alpha Filter : $2100
- ION 0.6 Hydrogen Alpha Filter : $2700
- ION 0.5 Hydrogen Alpha Filter : $3350
- ION 0.4 Hydrogen Alpha Filter : $4000
- ION 0.3 Hydrogen Alpha Filter : $4950

Control / Configuratoin / Certification

- Have your choice of certified FWHM as desired.
- Telescope compatibility: ALL
- Always on band, ovenized filter housing to maintain etalon center wavelength regardless of ambient temperature.
- Same wing shift controls and digital readout as Quantum filters.
- Status LED indicates when filter is on band or settling to temperature.
- Clear and usable exit aperture: 21mm.
- Provides non-vignetted full disk views on telescopes up to 80 mm aperture.
- May be used on large aperture telescopes; subject to limited field of view.
- Accepts standard Quantum plates, providing mounting to T-thread, SCT thread, or 2" drawtube, for use with eyepieces or cameras.
- Compatible with Quantum (3”) plates

photos by Michael OConnell



DAYSTAR

QUANTUM SE
Hydrogen Alpha Filter

Hydrogen Alpha Filter Assembly

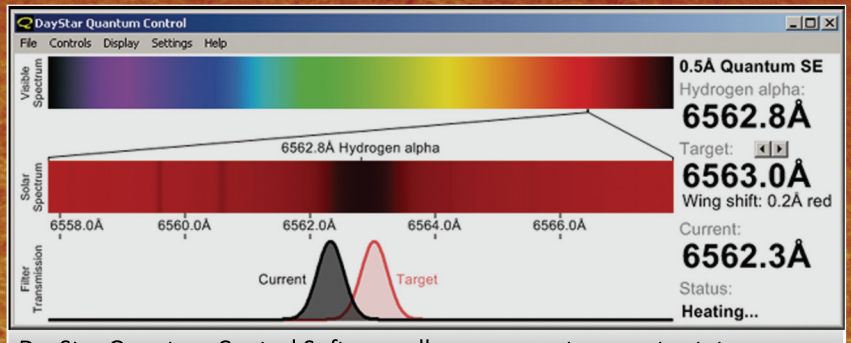
- Fully blocked Optical Filter from X-Ray to beyond 2.0 microns
- Precision Electronically tuned housing maintains Center Wave Length tuning accurate to 0.01Å
- Yellow/Green On/Ready indication light
- May be used on any aperture telescope 50mm - 1000mm
- Digital wavelength readout display
- Offers precision wavelength wing shift tuning of +/- 1.0Å
- Serial Port offers remote operation via Windows control software
- Operates on 12VDC with included 110-240VAC wall adapter
- Includes 6 ft. power extension cord
- Can operate off battery power or even solar panel.
- 10 year warranty

0.7Å Quantum SE: $3500
0.6Å Quantum SE: $4800
0.5Å Quantum SE: $6000
0.4Å Quantum SE: $7400
0.3Å Quantum SE: $9000

- Superior solid-state etalon technology
- Adaptability in a choice of platforms
- Unlimited Resolution

The Quantum SE grade series are designed for most amateur and some academic applications. These filters meet the critical DayStar quality control criteria applicable in all visual and some photographic environments

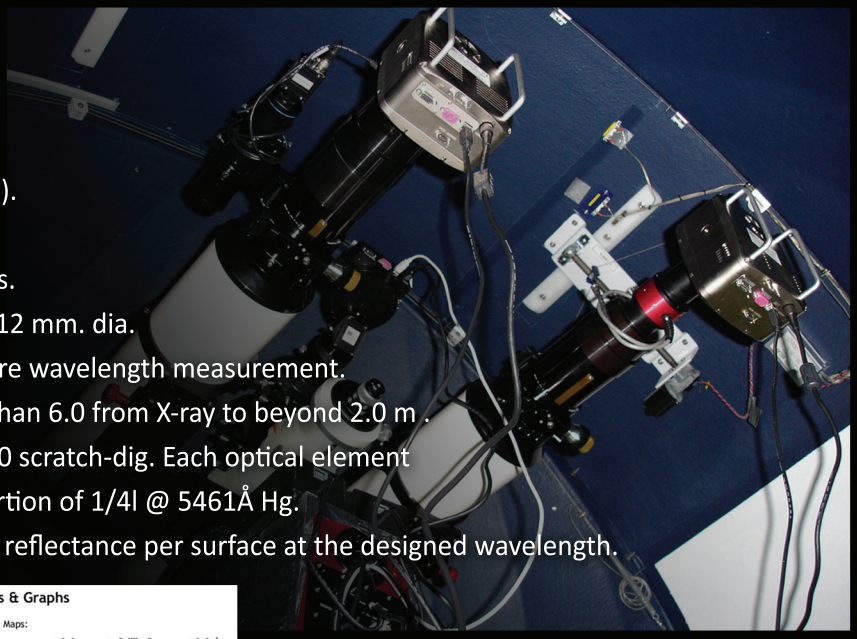
Each Quantum filter is loaded with 38 years of DayStar quality experience. Our proven optical design has stood the test of time; with many filters still in service after more than 30 years.



DayStar Quantum Control Software allows owners to operate status, ON/OFF and wing shift of up to 4 filters remotely via serial cable.

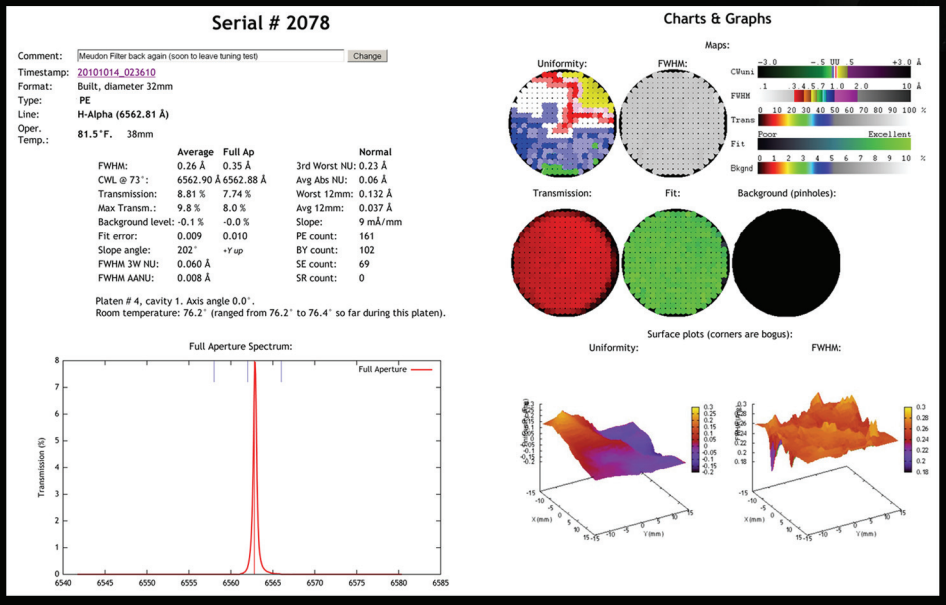
Hydrogen Alpha Quantum PE Grade Filters

Our Quantum PE grade series is designed for professional research studies and applications in which precision homogeneity and onband transmittance values across the substrate surface are required. These filters require additional quality control steps and additional fabrication and testing time.



Specifications:

- Clear and usable aperture: Standard: 32 mm. (1.25")
  Also available in 45mm and 71mm clear aperture.
- Bandwidth measurement: Full aperture 32 mm. (1.25").
- Fully blocked transmittance: 4%-10% of polarized light.
  Lower values correspond to narrower bandwidth filters.
- Spectral uniformity: The mean peak wavelength of all 12 mm. dia. areas shall be within ± 0.05 ångström of the full aperture wavelength measurement.
- Off-band rejection: Average optical density is greater than 6.0 from X-ray to beyond 2.0 m .
- Optical components: BK-7 grade A, fine annealed 60-40 scratch-dig. Each optical element other than the etalon has a maximum wave front distortion of 1/4l @ 5461Å Hg.
- Air-glass interfaces are V-coated for a maximum of 0.2% reflectance per surface at the designed wavelength.



Quantum PE Pricing:

Quantum PE 0.8 =	$ 4625.00
Quantum PE 0.7 =	$ 6000.00
Quantum PE 0.6 =	$ 7000.00
Quantum PE 0.5 =	$ 9000.00
Quantum PE 0.4 =	$11000.00
Quantum PE 0.3 =	$14000.00

Note: Filters for use in Pupil-plane applications require custom quotation.

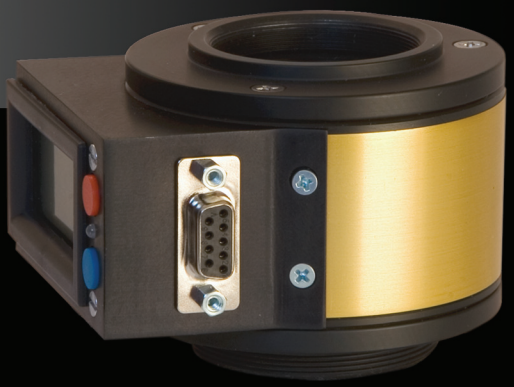
Daystar is pleased to offer new, high resolution spectrographic scanning services for all our Quantum PE clients. Our new, specially engineered spectroscopic testing equipment provides high resolution mapping of all new DayStar Filters we manufacture.

PE grade filters are manufactured and qualified to a spectral uniformity in CWL (Central Wavelength) accuracy of ± 0.05 ångström*. Our high resolution etalon mapping equipment offers qualification certified accurate by independent testing with etalon transmission sample sizes of 5mm, 2mm or 1mm sample sizes with certification printouts available on new PE filter purchases.

SODIUM D LINE FILTERS

0.4Å SE GRADE QUANTUM: $4500.00
0.4Å PE GRADE QUANTUM: $7200.00

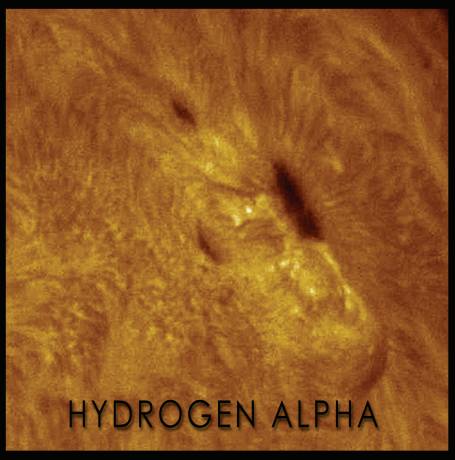
Sodium D Line filters are used at Mt. Wilson for doppler shift studies. Sodium D line filters are also used to observe emission lines of Io and long period comets. Amateur observers use sodium line filters for advanced sunspot detail studies in high resolution.

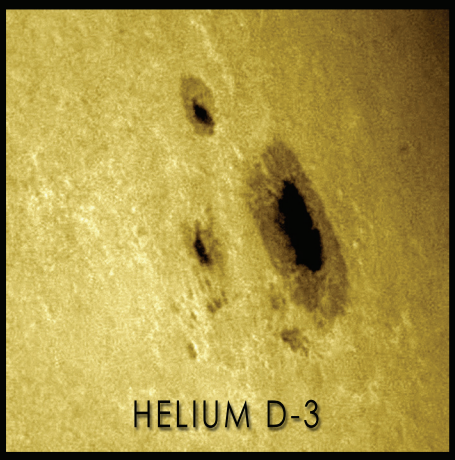


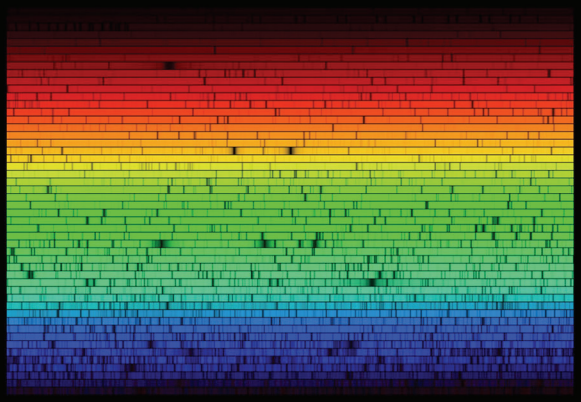
HELIUM D3 LINE FILTERS

0.3Å He D3 PE GRADE: $15500.00

Only from Daystar; He D3 filters reveal a different view of prominences, plages, very fine granulation and sunspot penumbral detail as Helium and Hydrogen react in active regions on the Sun. He D3 line reveals fine detail in super-granulation and studies also reveal flare footprint emissions. Isolating He D3 requires extremely high precision uniformity and tuning.







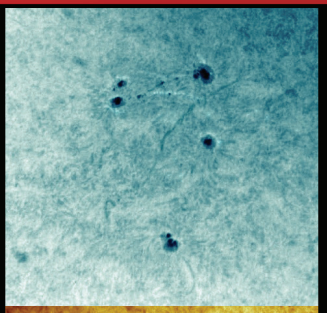
CUSTOM WAVELENGTHS:

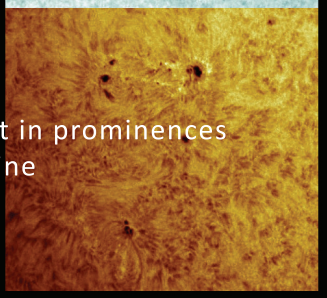
DayStar Filters manufactures custom wavelength or bandpass filters for research applications from time to time.

DayStar Filters manufactures filters from 375 - 750nm wavelength in bandpasses from 0.2Å to 10Å

DAYSTAR

HYDROGEN BETA FILTERS





0.6Å CWL: 4861.34Å - $4800
0.5Å CWL: 4861.34Å - $6000
0.4Å CWL: 4861.34Å - $7400
0.3Å CWL: 4861.34Å - $9000

Another interesting line to observe the sun: Hydrogen Beta line of 4861.34Å.
The human eye is twice as efficient at the 4861Å line than at Hydrogen Alpha's 6563Å.
This makes a large perceived difference for visual only observers, offering impressive contrast in prominences
At a lower energy level, the H beta line also shows different surface detail than the H alpha line

H beta filters require F/30 light. Daystar recommends use on refractors with UV/IR cut filter

CALCIUM II H VISUAL FILTERS

5.0Å CWL: 3968.5Å - $4000

Designed for the amateur visual observer, the Calcium II H-line wavelength is significantly easier to see than K-line. It is 30Å higher into the visual spectrum. the H-line offers the same view and features as K-Line

Ca II filters are designed for use at F/15 - F/20
Daystar Recommends use on Refractors only with UV/IR cut filter

CALCIUM II K LINE FILTERS

2.0Å CWL: 3933.7Å - $5800

Research grade Ca II K-Line filters are used primarily for academic studies of altitude of the solar atmosphere.

Quantum control is ideal for tuning within the K-Line to subordinate lines of Calcium for photographic studies. CCD sensors have high sensitivity in this wavelength and image well.

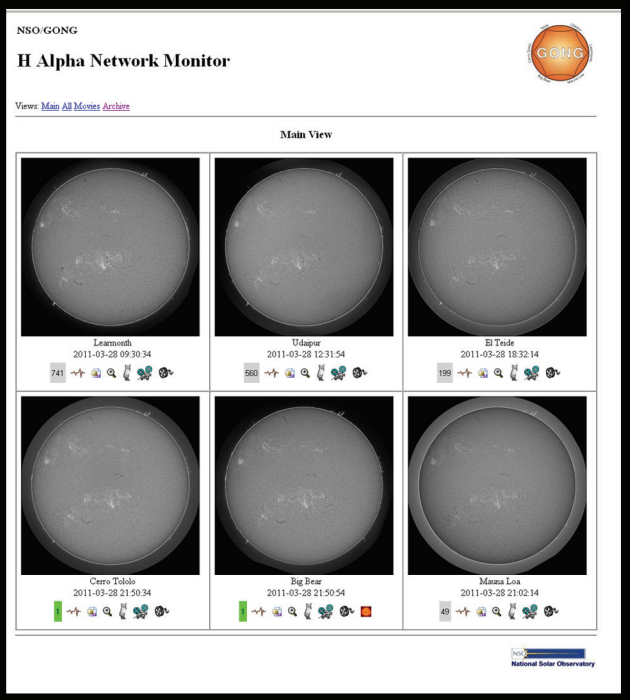
Ca II filters are designed for use at F/15 - F/20
Daystar Recommends use on Refractors only with UV/IR cut filter

DAYSTAR

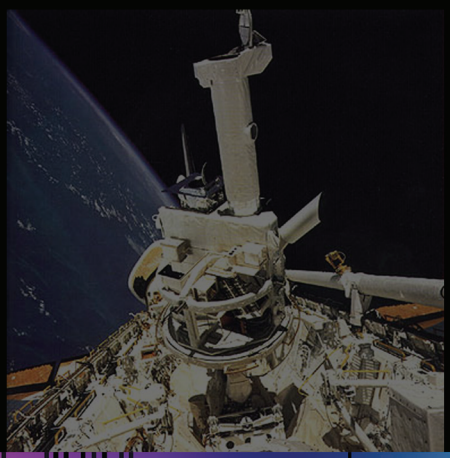
RESEARCH CLIENTS

Daystar is proud to support academic research clients around the world through:

- Space flown instrument heritage
- Custom wavelengths
- Integrated optical designs
- Vacuum solar telescopes
- Very large aperture applications
- Clean sheet optical design and fabrication



DAYSTAR FILTERS on NSO GONG project



DAYSTAR FILTER aboard Space Shuttle challenger MISSION: STS -51F

RESTORATION SERVICES

BLOCKERS AND TRIMMERS REPLACED (QUARK): $100
BLOCKERS AND TRIMMERS REPLACED (QUANTUM): $750
QUANTUM HOUSING UPGRADE: $750
T-SCANNER - ION HOUSING UPGRADE: $900
CLEAN AND CHECK SERVICE: $250

HALLE (LYOT STYLE) FILTER POWER CONTROL UPGRADE: $1150.00

Many Daystar filters have been in operation for over 25 years. All new products carry a 5 or 10 year transferrable factory warranty. Older filters which may experience aging can be fully restored to like-new condition. After 10-15 years, filters may darken and require new blockers and trimmers. Etalons may be upgraded to narrower bandpass. Heaters may also be upgraded to new body styles of Quantum and ION.

Repairs come with a limited 10 year factory warranty*.

** Blocker and Trimmer warranty not available on filters still in older ATM style housings.*

DAYSTAR

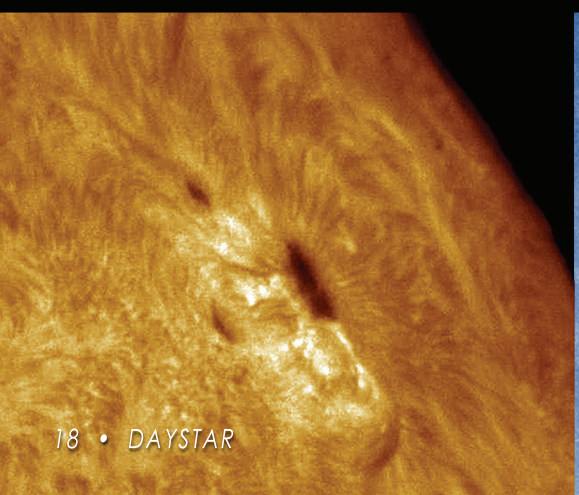
SOLAR SYSTEM FILTER WHEEL

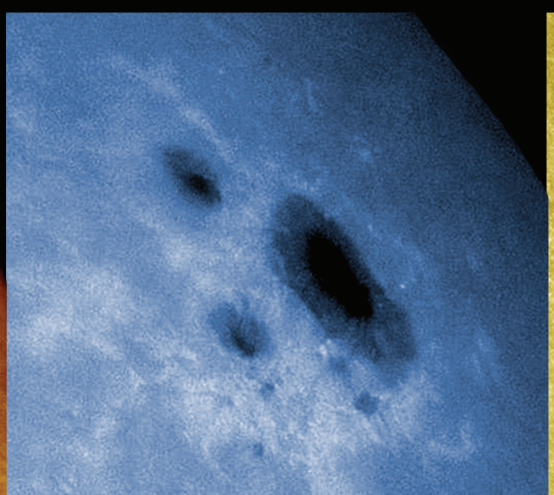
Compare and Contrast at the Push of a Button

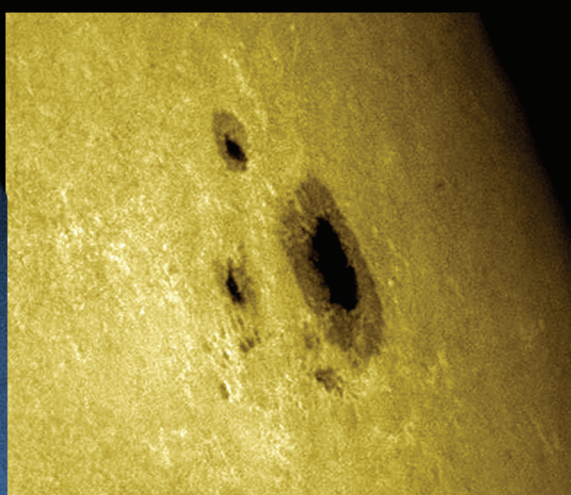
- Employ up to 4 separate Optical Filters in one streamlined filter wheel unit
- Push Button fliter switch
- Push Button wing shift tuning.
- Same precision Quantum Control as single filter units.
- Package Ha, Ca II, Na or He D3
- Fully remotely operable, no compromises.
- Old filters may be moved into the *Solar System Filter Wheel.*
- Start with 2 or 3 filters and add more later.
- Custom configured to your project needs.

Sample Packages:

Move your existing filters into the Filter Wheel:	$ 4950.00
Your existing filter plus an additional 0.7Å SE Ha:	$ 8450.00
.5Å SE Ha / .7Å SE Ha:	$14450.00
.5Å SE Ha / .7Å SE Ha / 5.0Å Ca II H Line:	$18450.00
.5Å SE Ha / .4Å SE NaD Line / 2Å Ca II K Line:	$19000.00
.7Å SE Ha / .5Å SE Ha / .4Å SE Ha:	$21850.00
.7Å SE Ha / .5Å SE Ha / 5.0Å Ca II H / 2.0Å Ca II K Line:	$24250.00
.7Å SE Ha / .6Å SE Ha / .5Å SE Ha / .4Å SE Ha:	$26650.00
.7Å PE Ha / .5Å PE Ha / 5.0Å Ca II H / 2.0Å Ca II K Line:	$29750.00
.7Å SE Ha / .4Å PE Ha / 5.0Å Ca II K Line / 0.3Å PE He D3:	$40750.00







DAYSTAR

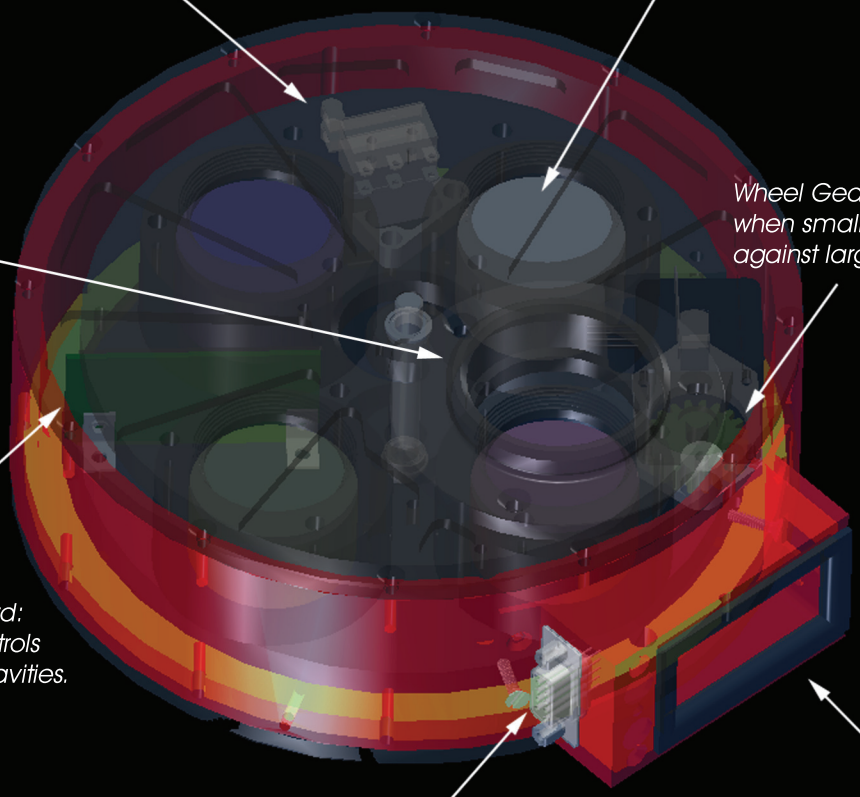
SOLAR SYSTEM FILTER WHEEL

Limit Switch: used for positional accuracy The Solar System always knows what position it is in.

Up to 4 cavities in each filter wheel: Wheels with less than 4 ful cavities are loaded with blanks for safety.

Q3GFTF: Same DayStar mounting plates mate to T-thread or SCT.

Wheel Gears: Assembly rotates when smaller gear rotates against larger gear



Heater control board: Simultaneously controls heat tuning of all cavities. ALL FILTERS ARE ALWAYS ON-BAND

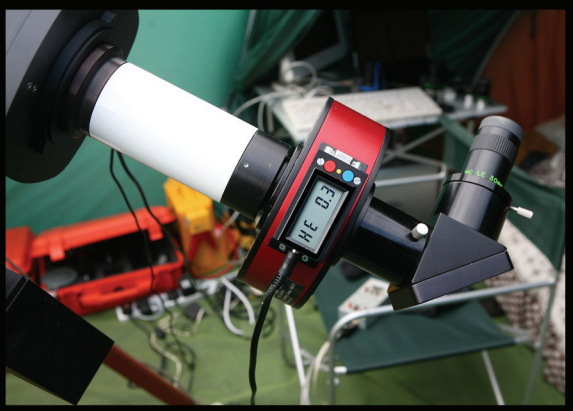
Quantum Control Faceplate: Control functions of position, wing shift from buttons with LCD readout.

Serial Port: Offers remote operation of wheel functions from remote computer. Change position, Wing shift. Sleep. Button Lockout.

Fully Computerized Solar Filter System of the future:

Perfect for researchers who need instant comparison of one wavelength or bandpass vs. another.

Great for outreach to demonstrate differences between wavelengths or bandpasses and various features not possible with one filter.



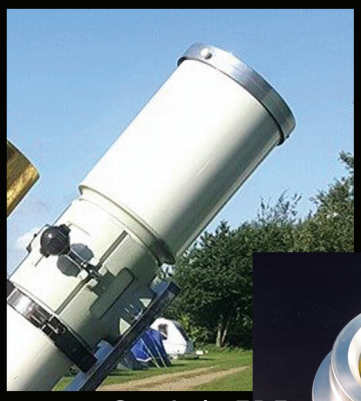
Energy Rejection Filters

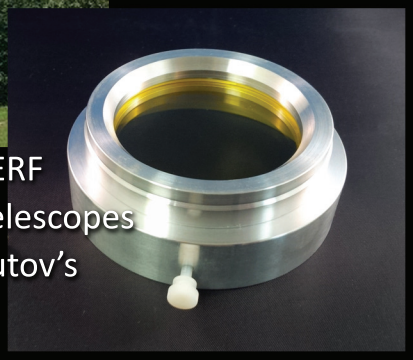
An Energy Rejection Filter is used over the front objective of telescopes using rear mounted ION and Quantum filters. All Energy Rejection Filters are priced by clear aperture.

Includes: glass, cell, telescope end cap, felt & Nylon Set Screws.

DayStar SKU#	Instrument	Clear Ap in mm	Tube OD in mm	Price
E-160N125	Astro Physics 130mm	130	160	$ 750.00
E-190N150	Astro Physics 155mm	155	190	$ 900.00
E-105N90	Astro Physics 92mm	92	100	$ 450.00
E-150N100	Astro Tech 111mm	111	149	$ 600.00
E-120N100	Borg 100ED/101ED	100	115	$ 505.00
E-140N125	Borg 125mm	125	140	$ 750.00
E-150N100	Celestron Advanced 100mm	100	146	$ 505.00
E-190N150	Celestron Advanced 150mm	150	181	$ 900.00
E-320F100	Celestron C-11	90	317	$ 450.00
E-405F120	Celestron C-14	114	400	$ 600.00
E-150N125	Celestron C-5	125	152	$ 750.00
E-233F63	Celestron C-8	63	233	$ 350.00
E-273F80	Celestron C-9.25	80	273	$ 400.00
E-150N100	Celestron Omni 102mm	100	145	$ 505.00
E-305F80	Meade LX200 - 10"	80	305	$ 400.00
E-347F100	Meade LX200 - 12"	100	349	$ 505.00
E-405F120	Meade LX200 - 14"	114	406	$ 600.00
E-445F120	Meade LX200 - 16"	125	447	$ 750.00
E-233F63	Meade LX200 - 8"	63	233	$ 350.00
E-290F90P	Mewlon 250	90	290	$ 450.00
E-160N125	Orion 130mm Spaceprobe	130	167	$ 750.00
E-95N70	Orion 60mm Observer	60	94	$ 350.00
E-105N70	Orion 70 Refractor	70	110	$ 350.00
E-120N100	Orion ED 102mm	100	116	$ 505.00
E-105N80	Orion ED 80mm	80	104	$ 400.00
E-150N125	Orion EON 120mm	125	147	$ 750.00
E-105N80	Orion Short tube 80mm	80	104	$ 400.00
E-140N100	StellarVue 102mm	102	123	$ 505.00
E-140N100	StellarVue 105mm	100	135	$ 505.00
E-140N100	StellarVue 110mm	110	140	$ 505.00
E-140N100	StellarVue 115mm	115	140	$ 600.00
E-160N125	StellarVue 130mm	130	157	$ 750.00
E-95N70	StellarVue 70mm	70	93	$ 350.00
E-105N80	StellarVue 80mm ED	80	103	$ 400.00
E-120N90	StellarVue 90mm	90	114	$ 450.00
E-150N100	Takahashi FS 102mm	100	146	$ 505.00
E-85N60	Takahashi FS-60mm	60	82	$ 350.00
E-120N80	Takahashi FSQ-85mm	80	114	$ 400.00
E-120N90	Takahashi Sky 90mm	90	114	$ 450.00
E-190N150	Takahashi TOA 130mm	130	181	$ 750.00
E-215N150	Takahashi TOA 150mm	150	212	$ 900.00
E-150N125	Takahashi TSA 120mm	120	145	$ 750.00
E-140N100	Tele Vue 102mm	100	127	$ 505.00
E-95N70	Tele Vue 76mm	75	95	$ 350.00
E-120N80	Tele Vue 85mm	85	114	$ 400.00
E-140N100	Tele Vue NP 102mm	100	127	$ 505.00
E-160N125	Tele Vue NP 127mm	127	160	$ 750.00
E-140N100	Vixen AX103mm	100	140	$ 505.00
E-120N100	Vixen ED 100mm	100	116	$ 505.00
E-140N100	Vixen ED 115mm	115	140	$ 600.00
E-120N80	Vixen ED 80mm	80	116	$ 400.00
E-105N80	Vixen ED 81mm	80	101	$ 400.00
E-120N100	WO FLT 110mm	110	115	$ 505.00
E-140N125	WO FLT 132mm	125	141	$ 750.00
E-120N90	WO Megrez 90mm	90	120	$ 450.00

Off-Axis ERF
for SCT Telescopes





On-Axis ERF
for Refractor Telescopes
and Maktsutov's

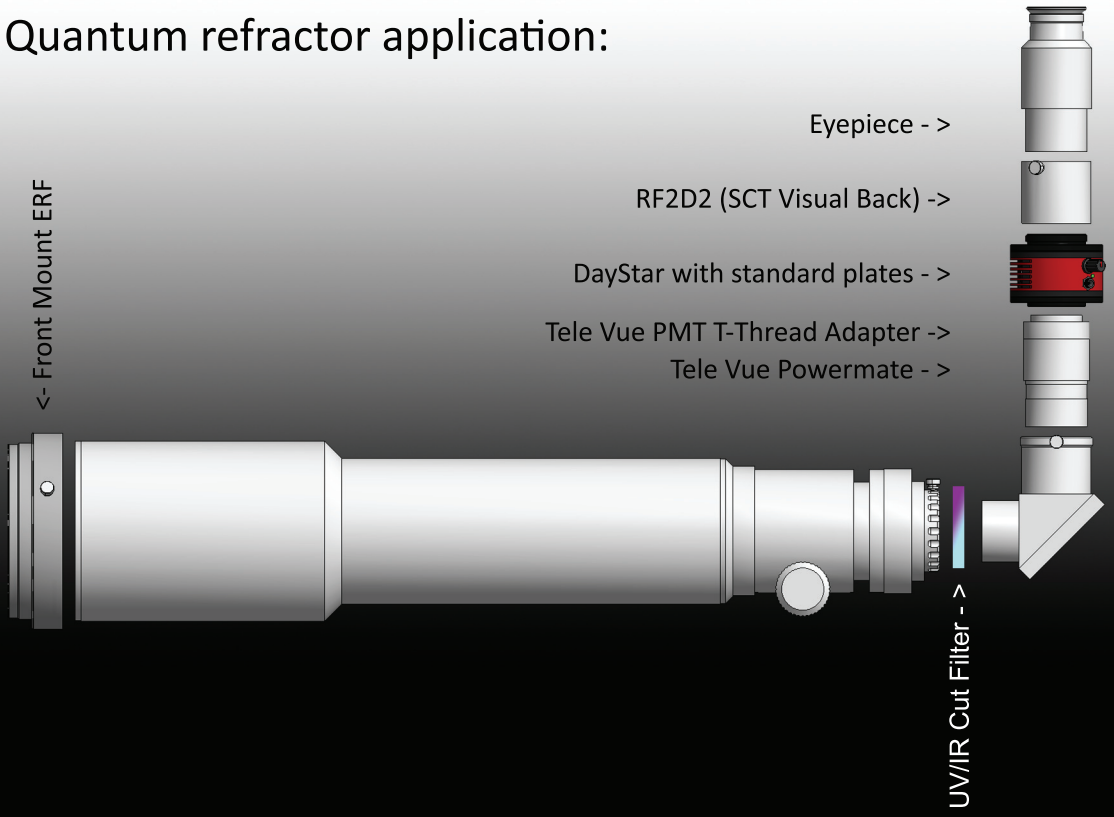
UV/IR Cut Filter Energy Rejection for Refractors:

In Refractor applications, a rear-mounted UV/IR cut filter may sometimes be used for energy rejection instead of or in conjunction with front mount ERF filters.When UV/IR Cut Filter is used for energy reflection, it must be threaded onto the element which first encounters concentrated light. If the telescope has near-focus elements which prohibit introduction of the UV/IR Cut Filter before them, then a UV/IR ERF cannot be used.

UV/IR Cut Filter ERF's are not suggested for reflector telescopes.

2" UV/IR cut filter: $109.00 US *1.25" UV/IR cut filter: $59.00*

Quantum refractor application:



Refractor Configuration
On-Axis -w/ Barlow lens
Full Aperture

- Energy rejection pre-filter blocks UV light to protect telescope from overheating.
- UV/IR Cut filter can be used on many refractors.
- Rear mounted requires ~ F/30 parallel light
- F/30 is reached with the appropriate barlow
- Tele Vue Powermate barlows offer true telecentric results. Other barlows will give a hot spot and vignetting.
- PMT adapters are suggested with Powermates
- DayStar comes with SCT male threaded back plate.
- RF2D2 visual back provides a drawtube
- We recommend Tele Vue Plossl eyepieces like the 55mm

Quantum SCT application:

SCT Configuration
Off-Axis
Reduced Aperture

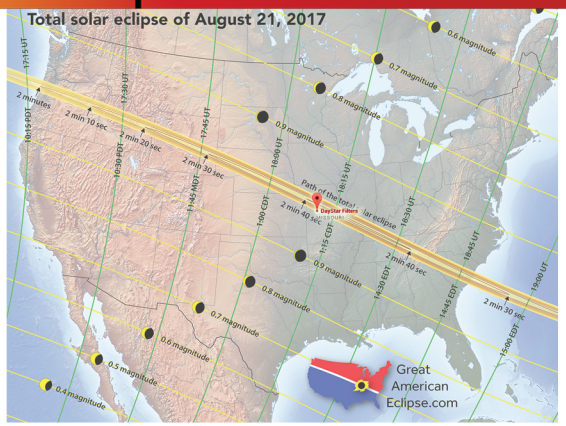
Add the front mount, off-axis ERF
Afix the Daystar Quantum to the rear.
Align the Faceplate and ERF hole
Plug in the Quantum, add eyepieces, and view.

DayStar QUANTUM Filter Accessories:

Filter Drawtubes and Snouts				Extra Daystar Filter End Plates			
Part No.	Description	Thread size	Price	Part No.	Description	Thread size	Price
GM-1D1	Front Male 1.25" OD drawtube -1.375	1.375x24	$ 40.00	Q3GF1F	Quantum/ION Front flat plate	1.375x24	$ 40.00
GM-2DT	Front Male 2" OD drawtube - T-thread	2 x 24	$ 50.00	Q3GFTF	Quantum/ION Front flat plate	T-thread	$ 40.00
GF-2SCT1	Front Female 2" SCT ring - T-thread mount	1.375x24	$ 50.00	Q3GF2F	Quantum/ION Front flat plate	2 x 24	$ 40.00
RF-1D1	Rear Female 1.25" ID drawtube - 1.375	1.375x24	$ 40.00	Q3GW2F	Quantum/ION Front WEDGE plate	2 x 24	$ 40.00
RF-2D2	Rear Female 2"ID drawtube - SCT	2 x 24	$ 50.00	Q3RFCTM	Quantum/ION Rear Combo Plate	T-thead & 2x24	$ 40.00
Viewing Aids				**End Dust Caps**			
Part No.	Description	Size	Price	Part No.	Description	Size	Price
DM FR5	Focal Reducing diagonal .5X power	1.25"	$ 245.00	1FCAP	1.25" female plastic cap	1.25 OD	$ 4.00
Q34XGF	Tele Vue 4X Adapter Plate Female	fits Tele Vue	$ 40.00	1MPLUG	1.25" male plastic plug	1.25 ID	$ 4.00
Q34X2D2	Tele Vue 4X Adapter Plate Male	fits Tele Vue	$ 40.00	TMPLUG:	T-thread Male Quantum Cap	T-Thread	$ 12.00
Q3G25GF	Tele Vue 2.5X / 2" drawtube adapter plate	fits Tele Vue	$ 40.00	2FCAP	SCT/2" female rubber cap	2"	$ 12.00

DAYSTAR is proud to host:

SOLARFEST 2016



Aug 22 - 27, 2016

FREE Solar Star Party hosted by Daystar in Warrensburg, Missouri • Aug 22-27, 2016

- Solar imaging workshops
- Connect with professional solar researchers.
- Daystar's Manufacturing facility tours.
- Variety of other amateur solar observers from all over the world.
- Plan for 2017
- Demonstrations of solar observing with hands-on activities for all levels.
- See special one-off solar equipment and unique solar devices.
- Vendors will be present to talk about current offerings.

Session A: Mon-Wed; Pro-Am & Imaging workshop: Aug 22-24, 2016

- Imaging sessions & Workshops featuring Randy Shivak, John O Neal
- National Solar Observatory guests, Matt Penn, David Elmore
- Researchers & College level educators, Dr Alan Kiplinger and more.

Session B: Total Eclipse 2017 Forum: Aug 24, 2016

- Let's Get Ready For 2017!
- Authors, Michael Bakich, Fred Espenak and others are on-hand to discuss current publications on the topic.
- Noted Astro-photographers will discuss imaging techniques in time to plan for the event.
- Hands-on workshops offer demonstrations on equipment, safe viewing methods and tools available for the general public.

Session C: Observing and Outreach Solar Star Party: Aug 24-27, 2016

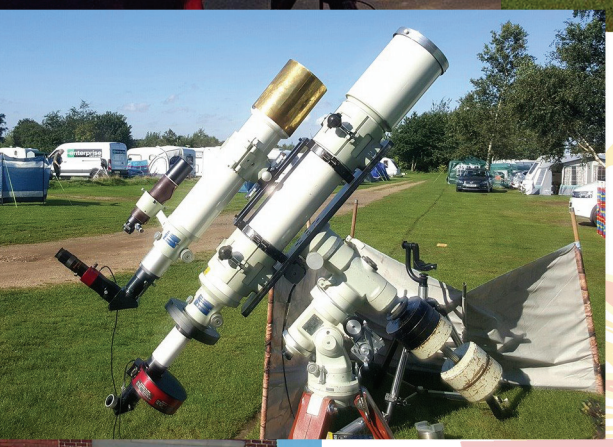
- Some of the country's best outreach astronomers will participate in the first "Solar Star Party".
- Enjoy equipment demonstrations from a broad variety of varied solar telescopes and filters.
- Hear how individuals are finding ways to succeed in solar astronomy outreach.
- Hands-on workshops offer demonstrations on safe tools and viewing methods for the general public and the classroom

SolarFest will be held at the Daystar 35 acre ranch, home to:
Daystar Instruments optical labs, manufacturing facility and a number of observatories.
The location is a rural Missouri dark-sky site about 1 hour east of Kansas City.
The address is 149 Northwest OO Highway, Warrensburg, MO 64093 (USA)

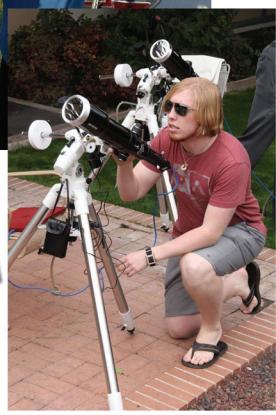
There is currently NO COST ($0.00) for admission to SolarFest 2016 for pre-registered guests.
At-the-door entry will have a fee of $20.00 per adult per day.

For more information visit www.SolarFestUSA.com

Solar
Star Party
(Night time too)

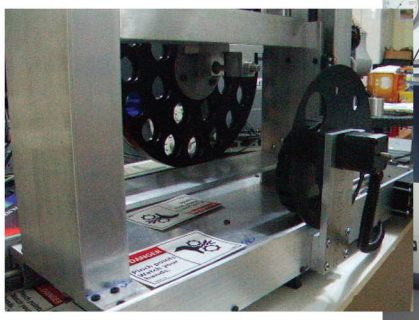


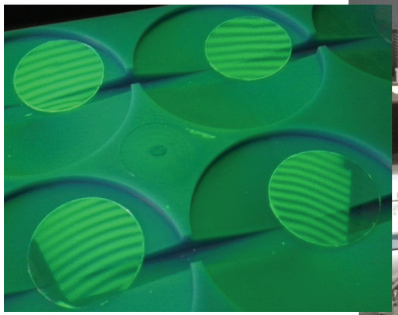
2017 Eclipse
& Outreach
Planning

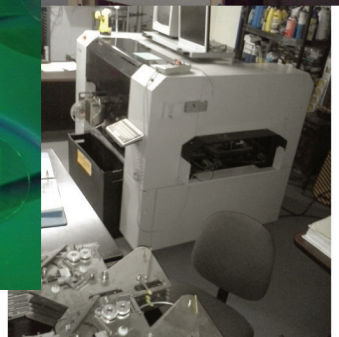


Unique
Solar Equipment

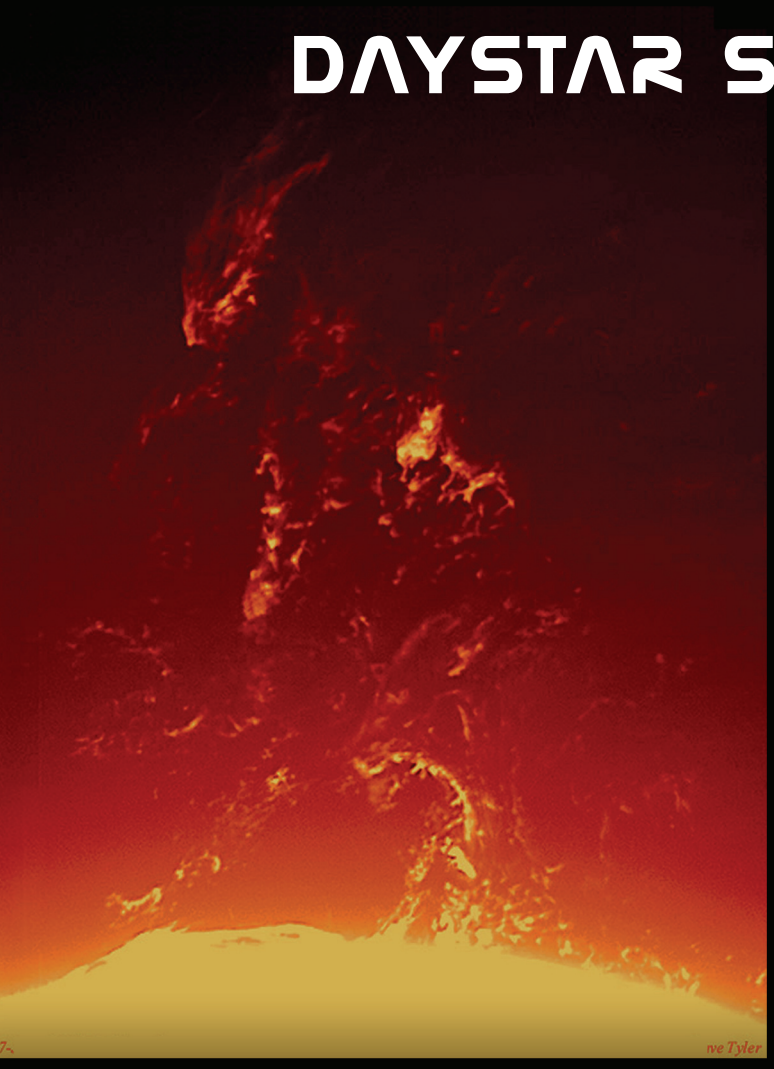
Daystar
Factory Tours







DAYSTAR SOLAR FILTERS



QUARK Filter 'Prominence' : $995
QUARK Filter 'Chromosphere' : $995
Combo QUARK: $995
Questar QUARK: $995
Calcium H-Line QUARK: $995

66mm SolaREDi telescopes: $1295
80mm Solar telescope bundle: $1495
127mm Solar Telescope from $5995

.7Å ION Solar filters from $2100
.5Å ION Solar Filters from $3350

7Å Quantum Filters from $3200
.5Å Quantum Filters from $6000

4-cavity Solar Filter Wheel
Ca II K Line, Ca II H Line,
Na D Line, He D3 Line, H Beta

DAYSTAR
149 Northwest OO Highway
Warrensburg, MO 64093 - USA

World Leader in Solar Filter Manufacturing for over 40 years