

LUNT

Ultimate Solar Telescope Buyers Guide



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INTRODUCTION

Welcome to your Lunt Solar Systems Ultimate Telescope Buyers Guide

Whether you are just starting your solar viewing journey, or you are an experienced astronomer, we have a scope that's right for you.

The excitement of viewing our Star through a dedicated solar telescope is sure to provide many hours of visual enjoyment and educational insights. Our telescope packages are fully upgradeable at any time without ever having to go back to the factory. As the Sun becomes increasingly more active, you will have that an instrument can grow right along with it.

Observing the sun is an amazing way to study our solar system. Our sun is full of fascinating and massive storms, ejections, spots, filaments and other phenomena that can provide lifelong study and enjoyment for the amateur astronomer.

There are many options for purchasing a solar telescope. So which setup is the best for you?

INTRODUCTION

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INTRODUCTION

Some questions that will help you decide:

What size telescope is right for me?

What level of experience do you have with solar telescopes?

Are you going to be using it primarily for viewing or imaging?

Do you plan to travel with your scope?

What Will You See With A Solar Telescope?

Our scopes all offer a full disk H-alpha view of the sun. From the LS50THa to the LS152THa you will be able to see surface and edge detail. As you go up in aperture you will also increase your resolution. The details that can be seen will get finer with each scope. The LS152THa will give you the most detail as it can resolve spiculae on the edge of the disk.

Solar Observing is similar to a photography dark room. Up until the point that you put your eye to the eyepiece, the Hydrogen-alpha line is only 0.01% of the total light that your eye sees on a daily basis.

However, what a magical 0.01% that can be.

Ionized Hydrogen-alpha. By far the most interesting and entertaining emission line from the Sun. It is amazing that the human eye can even resolve this very narrow bandwidth at all.

To answer the questions; “What can I see?”

First and foremost. Everyone's eyes are different. Please do not walk up to a scope and assume it has been focused to your eye. Take the focus knob, defocus the image, and bring it back to focus. The features you are looking at are narrowly contrasted and a sharp clean focus is essential. As features become apparent, refocus the scope. You will be amazed at the view once the focus is sharp.

What Will You See?

What will you see with a Solar Telescope?

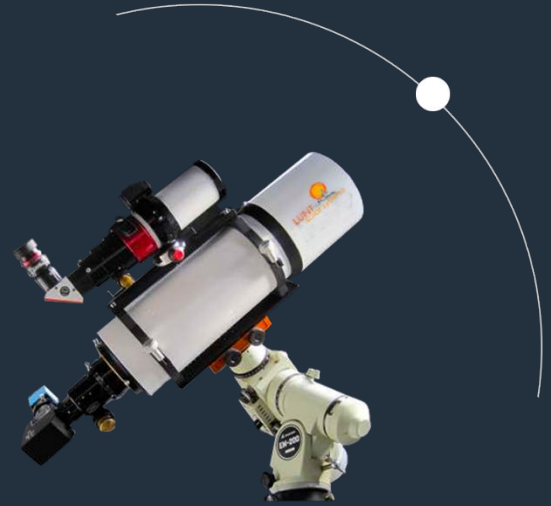
To focus on the Sun, simply look at the edge. Focus is achieved when the edge of the ball is sharp against a black background.

At first you will see a red ball. Your eye is basically saying, “yep, that’s red against black, and that’s what I will show you”.

Why?

During the day your eye’s pupil is very small. It is reducing the light into the eye to a comfortable level. When you put your eye to a telescope your pupil will typically dilate quickly (open) to compensate. The image is basically red against black, and the eye has learnt to show that information quickly.

However, after 10-20 seconds your eye is adjusting to the reduced light.



The more light outside the scope you can block, the better the adaptation. As you look around the edge of the disk, start at 12 o'clock and work around, you will come across what look like flames protruding from the rim. Small flame-like structures are Spicules and Prominences. Large flame-like structures can be large Prominences, Flares, and even Mass Ejections. Obviously, the larger the structure, the easier it is to see.

As you study these things, your eye will quickly perceive the lighter and darker contrast of the narrow bandwidth. The features become very apparent and the flame-like details are fully visualized. This is generally followed by a “Wow!” from the observer.

If I don’t hear the “Wow!” I know they haven’t SEEN the Sun yet.

Building Your Telescope

There are eight components to consider when building your telescope. The size of the Optical Telescope Assemble (OTA), the etalon filter system, type of tuning, the type of focuser, blocking filter size, if you'd like to keep it single or double stacked, what kind of eyepieces, and what size mount you want to use.



Selecting Your Hydrogen- Alpha OTA Model

Lunt solar offers a wide range of sizes for your Hydrogen-Alpha OTA. Starting at 50mm aperture and going up to 152mm.



Building Your Telescope

When choosing an OTA your seeing conditions will definitely come into play. If you are in an area that has smog, high humidity, or even on the coastline, it's important that a larger aperture scope can give you good views on a clear day, but you may be able to use it few and further between depending on those seeing conditions.

If you go with the mid-range to lower range scopes in terms of aperture, meaning 80mm or below, your generally open for all conditions as that aperture will allow great detail to come through without a lot of interference from conditions.

All of our scopes will offer great edge and surface detail. When choosing an OTA size you will need to consider what you want to see through our scopes. With our smaller aperture scopes are going to see nice granulation on the surface of the sun he also see nice prominence is coming off the edge. As you go up in aperture size, you'll actually be able to resolve more spicules and the finer features that some people are looking for.



An etalon refers to an interference type filter. typically used in Solar Telescopes because of the desire for an ultra narrow bandpass.

Etalon Filter System

Building Your Telescope

An etalon is probably one of the simplest designs for an optical filter utilizing some of the most precise optical specifications. Due to it both being simple and the need for precision, there are many compromises that can influence the quality of an etalon filter.

Lunt manufactures our own etalons in a process that is a mix of both art and science. We designed and built our own equipment to carefully grind and polish our etalon components to the point that just by simple contact together, the elements become bound together.



Etalon Filter System

An etalon is comprised of 2 flat and parallel optical surface that have been optically coated with a high reflective dielectric layer with the high reflector layer peaking at the desired bandpass point for best results. These optical surfaces are separated by a gap. This gap can be either air or a solid material.

The light resonates in the gap by internal reflection off the highly reflective layers on the surfaces. Thru interference at this gap, only light meeting the correct angle of incidence to the surface and is not “interfered with” can pass, all other light is lost.

Building Your Telescope

The main parameters that define an etalon are:

Bandpass:

This is the width of the curve that defines the transmittance of the filter at 50% of the total transmission of the filter. An etalon's transmission has a broad base and a sharp peak. Typically the peak transmission should be between 80-90%, so the bandpass of the etalon will be measured between the 40-45% points. For Solar applications it is generally accepted that the lower this number, the better. Typical Solar Etalons have a bandpass of <1.0 . Bandpass is a function of the gap size between the high reflector plates. The larger the gap size, the narrower the bandpass. Bandpass is also a function of the reflectivity of the etalon high reflector plates. The higher the reflectivity, the narrower the bandpass.

Peak Transmission:

In order to obtain good contrast it is important to maximize the peak transmission while minimizing the "out of band" transmission. To explain this statement, a surface that had zero reflectivity would have 100% peak transmission. However, because there is no reflectivity in the cavity, there is no interference, and thus, no filter (bandpass). A surface with 100% R would reflect all light before it entered the cavity, thus having zero T. The compromise is somewhere in between.. Peak transmission is a function of the reflectivity of the surfaces. The higher the R, the lower the peak transmission. (in reality it isn't quite that simple)

Building Your Telescope

The main parameters that define an etalon are:

Free Spectral Range:

The free spectral range is defined as the gap between the peaks of transmission plotted against wavelength. Huh?? An etalon produces a "comb" of peak transmission across a broad range of the visible spectrum. This would be like a hair comb. One tooth of the comb would represent a peak transmission. This comb would then be missing about 12-14 teeth before the next peak transmission, or tooth. In our case the FSR is more than 10 Angstroms. This becomes important to our ability to block the unwanted peak transmissions utilizing simpler filters. The narrower the FSR, the harder it is to block the transmissions you don't want. Letting another leak transmission thru will wash out the details. FSR is a function of gap size. The narrower the gap, the wider the FSR.

Optical Flatness and Parallelism:

Probably the most critical aspects of the etalon performance. To put it simply, the better the flatness and the parallelism, the better the etalon. The quality of an etalon is very much the function of precision polishing and gap maintenance.

Building Your Telescope

When it comes to Etalons there are typically a few things to look at.. The bandpass, is of course, of very high concern as long as all other aspects of the optical system have been addressed. An FSR of greater than 10A is required in order to prevent out of band leaks. (the camel peaking it's nose under the tent) a phrase I liked when I heard it. Peak T is also important as long as it comes with a zero baseline. Signal to noise ratio is critical because it is what makes the brights bright, and the darks dark. No-one want to see a significant orange glow in the space around the Sun's image, this simply washes out the edge details. Contrast is just as important as bandpass in my opinion. However, there really isn't any specification for contrast ratio.

Two Types of Tuning

Pressure Tuning

Pressure or True Doppler Tuning allows for a shift into and away from the user. Adding a 3D like component to the viewing experience. While it has minimal effect on proms due to their location at the edge of the disk, it does have an effect on filaments and active regions on the surface. While looking at a filament at the center of the Sun, the user has the ability to Doppler shift from the base of the filament to the tip, following the filament through it's structure toward you and away from you, allowing for enhanced visual and imaging capability for the observer as well as a research tool for the avid hobbyist. The pressure tuning system provides an order of magnitude more precision to the tuning of the desired features. Changing altitudes can change the pressure levels on your scope. Our pressure tuner gives you the ability to reset the tuner to your viewing elevation. Simply unthread the black knob on your pressure tuner to vent the system. Once the knob is reattached you are ready to start tuning! This allows for the widest range of tuning ability at your location.

Building Your Telescope

Two Types of Tuning

Tilt Tuning

Our tilt tuning option is currently only available for our LS60THa model.

Our tilt-tuning scopes use a tilt tuning knob on the side of the scope. It tilts the etalon inside and onto the band and it actually takes a very small degree to actually bring the scope onto band. Our pressure tuning method is still our most popular option, but there is still a strong following for LS60 Tilt-tuned scope.

Tilt Tuning has historically been a popular etalon tuning method throughout solar viewing history. While tilt tuning works well, it has an increasing loss of resolution. If you want higher resolution and a sharper image you have to tune more than just the etalon. You must tune the density of the air. That is only possible with Lunt pressure tuning systems.

Building Your Telescope

Focusers



Lunt 1.25" Mini Helical
Focuser

This is the smallest focuser we carry. The focuser has 10 mm of precision travel, a brass compression ring for protection of eyepieces, and a locking collar. The T2 thread design is ideal for fine camera/eyepiece focus. The LS50 comes standard with this filter.

This focuser is an ideal upgrade to the LS50T. Any other telescope product that currently uses a helical designed focuser. This focuser fits the exact envelope as the current helical design. It is still an absolute must for CCD imaging and astro-photography, in addition to making visual use a joy. **Standard Features:** Ultra-smooth coarse focus knob (no 10:1 fine focus), adjustable tension and lock, rotatable, glare resistant black internal baffling, and ultra-low backlash system for accurate control.



1.25 Feather Touch
Focuser

Building Your Telescope

Focusers

LS60 and LS80 Models come standard with this option. It has a 10:1 coarse to fine focus and the draw tube is etched with a focusing scale for repeatable results.. You can attach the focuser via the provided locking screw. It is a good standard focuser that can handle most applications.

Lunt 2" Crayford-Style 10:1 Focuser



Starlight 2" Feather Touch Focusers

If you would like something more heavy duty, we offer the Starlight Feather Touch which has a smoother travel and more of a heavy duty design, which can be helpful when using heavier equipment. It also has a great 10:1 coarse to fine focus. The LS100 and the LS152 come joy. standard with the Starlight Feather Touch Focusers. The new The new design will virtually not wear out and moves with even greater smoothness and precision than the original model. It is still an absolute must for CCD imaging and astro-photography, in addition to making visual use a .

Building Your Telescope

Blocking Filters

When choosing a blocking filter it's important to consider how you plan to use the telescope. If you are primarily a visual user you can opt for the smaller blocking filter option on the scope you are looking at. See our recommendations below:



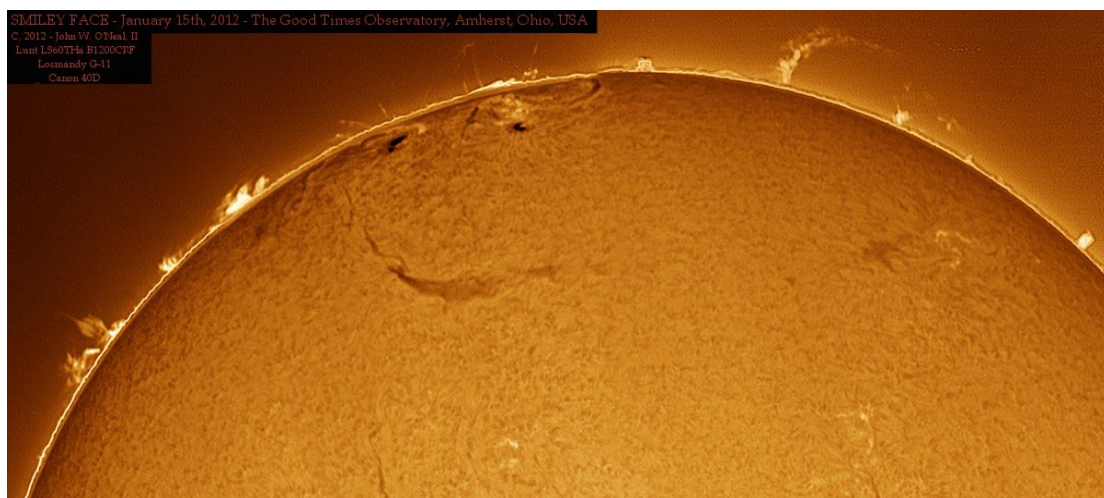
OTA	Visual Use Blocking Filter	Imaging Blocking Filter
LS50	4mm	6mm
LS60 Tilt Tuned	6mm	12mm
LS60 Pressure Tuned	6mm	12mm
LS80	12mm	18mm
LS100	12mm	18mm, 34mm for large format cameras and eyepieces
LS152	12mm	18mm, 34mm for large format cameras and eyepieces

Building Your Telescope

Should You Double Stack Your Filter?

DSII is a double stack filter that offers, second pressure tuner knob on the system, taking primary angstrom bandpass from 0.75 to 0.5.

You narrow your bandpass to increase your details. This is mainly noticeable on the surface but you can see it in the prominences as well.



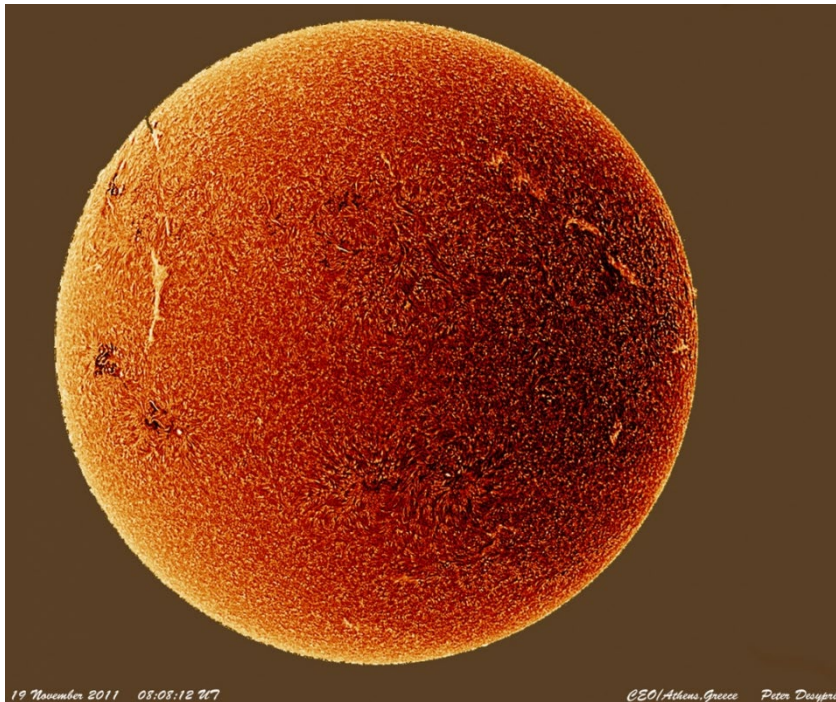
LS60 Single Stack

Building Your Telescope

Should You Double Stack Your Filter?

The addition of a secondary front-mounted interference filter and the upgrade of the rear trimming filter transforms the Lunt LS60THa into a superb visually-enhanced instrument with the ability to also image the Sun utilizing basic camera equipment.

Adding the front filter provides a view of the Sun in virtual 3D. An active ball of churning boiling gasses that spew from the surface in what can be violent eruptions. Cause and effect can be viewed and imaged in real time.



LS60 Double Stack

Building Your Telescope

Eyepieces



Lunt recommends our Zoom Eyepiece for visual use. It has a range of 7-21mm of magnification and is optimized with anti-reflective coatings. We actually use the Lunt Zoom Eyepiece for factory testing!

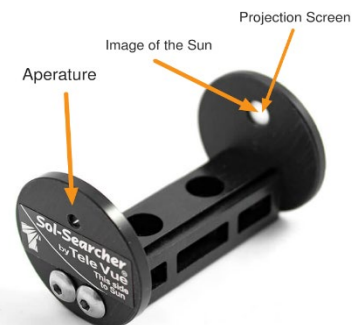
We also carry a number of fixed eyepieces from 8mm-27mm. The size of your OTA will determine what size of fixed eyepiece you will want to choose. This is why we recommend starting with the Zoom eyepiece.

How to Find the Sun- The most useful accessory for your solar viewing experience - Tele Vue Sol- Searcher

"I can't find the Sun!" Sounds funny. However, the Sun is tricky to find in a properly filtered telescope, and you don't ever want to risk a direct gaze, let alone a magnified image of it. This Sun Finder is the solution.

The Tele Vue Sol-Searcher is the safe and easy way to find the Sun. It is absolutely safe since you are not looking through the Sol-Searcher, you look at it. The aperture acts as a "pinhole" which projects an image of the Sun on to the 1/4" translucent "screen." This screen can be viewed from either side. Simply move your scope until the Sun's image is centered on the screen and the Sun will be in the eyepiece's field of view.

- Find the Sun safely with the Tele Vue Sol-Searcher.
- Attaches to Lunt clamshells.
- The LS152THa requires an additional adapter.



Building Your Telescope

Mounts

How to Find the Sun- The most useful accessory for your solar viewing experience - Tele Vue Sol-Searcher

Selecting the best mount for your scope

There are many mounts out there at varying weight capacities and price points. When selecting a mount consider the weight of your scope and how you plan to use it. If imaging, it's a good idea to use a heavier duty mount to ensure you don't have any issues with slight movement or flexure that can cause interference in your images.

If using visually you can opt for a mount with a weight capacity more near the actual weight of the scope. The reason being that the human eye will not pick up on slight movements or flexure the way a camera will.

Below is a table of the mounts we recommend for our H-Alpha OTAs

OTA	Mount Size
50mm	CG-4
60mm	AVX
80mm	CGEMII
100mm	CGX
152mm	CGX-L

Building Your Telescope

Mounts



CGX-L EQUATORIAL MOUNT AND TRIPOD



CGX EQUATORIAL MOUNT AND TRIPOD



OMNI CG-4 MANUAL TELESCOPE MOUNT

Meet Our Hydrogen Alpha Telescopes

Our Hydrogen-Alpha Solar Telescopes are the premier solar telescopes in their class. Notable, all of our scopes are 100% safe for viewing the Sun. Additionally, they will give you the sharpest view of the amazing ever changing features of the Sun. They are made with precision and quality craftsmanship in the USA.



50mm H-Alpha



60mm H-Alpha Tilt-Tuned



60mm H-Alpha



80mm H-Alpha



100mm H-Alpha



152mm H-Alpha

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 50mm H-alpha Pressure Tuned Telescope

Great introductory telescope for Solar Viewing



A Sky & Telescope 2015 Hot Product!

The LS50THa from Lunt Solar Systems is a 50mm H-alpha, unobstructed, pressure-tuned, dedicated Hydrogen-alpha telescope with a bandpass of $<0.75 \text{ \AA}$.

The Lunt LS50THa Solar Telescope, complete with a Pressure Tuner, provides the basic essentials perfect for a first time introduction to solar observing. Also it including the newest technology for fine tuning, allowing basic research of the Sun's disk and some surface details.

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 50mm H-alpha Pressure Tuned Telescope



LS50THa Package Features:

A Narrow Band Hydrogen-alpha Dedicated System.

A refractor-based system with a 50 mm front objective.

An internal Etalon with a pressure tuner allows for <0.75 Angstrom bandpass.

The system includes the clamshell with threaded holes for mounting and dust caps.

Specifications: (single stacked)

Type: Single Interference Etalon

Tuning: Internal Pressure Tune (Doppler True Tuning)

Aperture: 50 mm

Focal Length: 350 mm

F Ratio: F7

Bandpass: <0.75 Angstroms @ 656 nm

Focuser: Helical Focuser

Blocking Filter: B400 Diagonal or B600 Diagonal (Choose from Options drop-down)

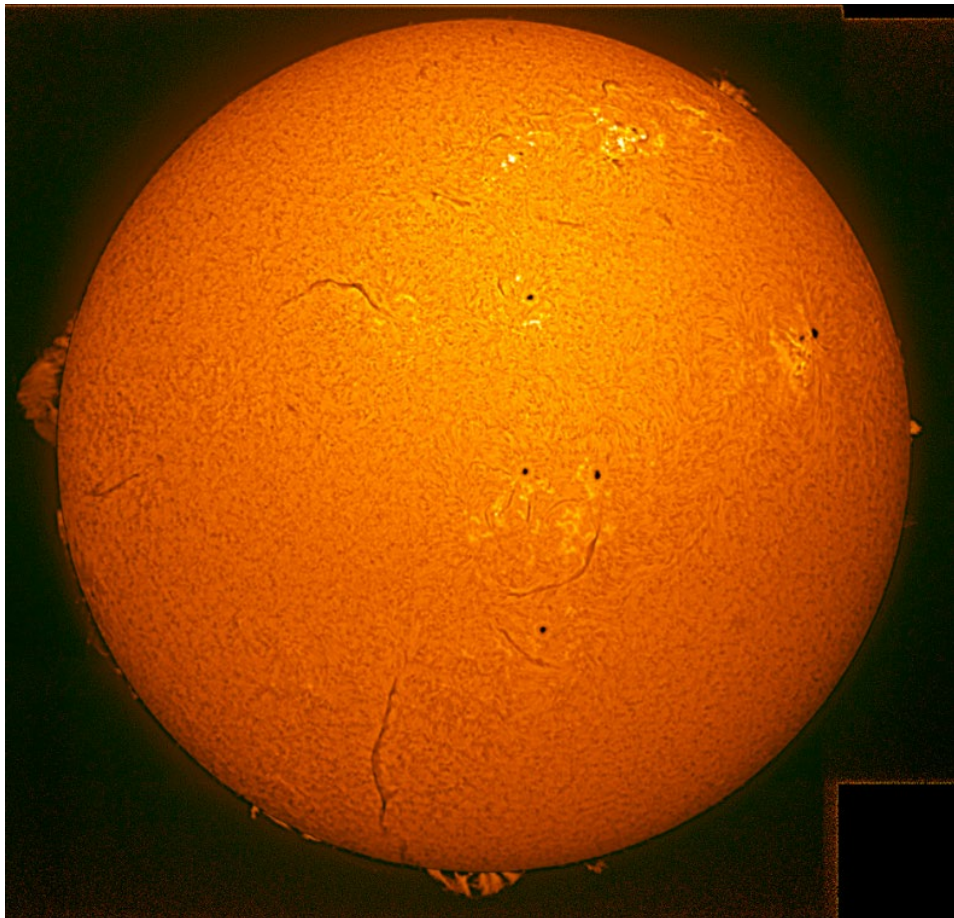
Mounting: Integrated clamshell style with 1/4-20 tapped base

Color: Pearl White with Black and Red accents

Meet Our Hydrogen Alpha Telescopes

LS60 Series

Lunt Solar 60mm H-alpha Tilt Tuned Telescope - Compact design, great views.
Prominences and surface detail using mechanical tilt tuning.



Meet Our Hydrogen Alpha Telescopes

Lunt Solar 60mm H-alpha Tilt - Tuned Telescope



The Lunt LS60THa tilt-tuned solar telescope is a complete h-alpha solar telescope. The refractor-based system has a precision-aligned singlet chromatic lens with a 60 mm aperture. The front singlet lens reduces half the stray light of an achromat, fully eliminating the possibility of on-axis coma, astigmatism, de-centering aberrations, and provides, with the matched collimation lens set, a full spherical corrected flat-field solar telescope.

The focal length is 500 mm, providing a ~4.5 mm image through a 6 mm blocking filter. Fine adjustment is achieved with a 2" Crayford-style focuser or Feather Touch focuser with 10:1 reduction. An internal etalon with tilt-tune adjustment allows for a <0.8 Angstrom bandpass.

Lunt LS60THa Specifications: (single stacked)

Optical Aperture: 60 mm

Etalon: Internal <0.75 Angstrom

Tuning: Tilt-tuned

Focal Length: 500 mm

F Ratio: 8.3

Focuser: 2" Crayford with 10:1 fine adjustment or 2" Feather Touch with 10:1

Blocking Filter: B600 or B1200 (Choose from Options drop-down)

Mounting: Integrated clamshell style with 1/4-20 tapped base

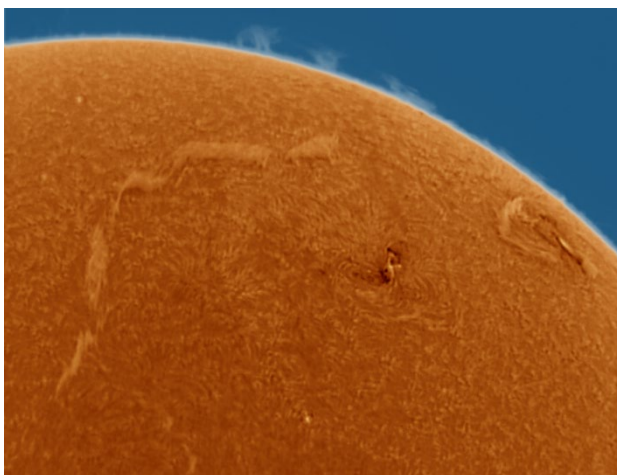
Storage: Aluminum finished hard case with fitted foam

Weight: 6 lb

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 60mm H-alpha Pressure Tuned Telescope - Precision tuning for viewing and imaging

Best travel scope for imaging- Capture excellent surface detail and prominences



The Lunt LS60THa Pressure Tuned Solar Telescope, provides the basic essentials perfect for a first time introduction to solar observing, while also including the newest technology for fine tuning, allowing basic research of the Sun's disk and some surface details.

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 60mm H-alpha Pressure Tuned Telescope



LS60THa/PT Package Features:

- **Narrow Band Hydrogen-alpha (656.28 nm) Dedicated System.**
- **A refractor-based system with a 60 mm front objective.**
- **An internal Etalon with a pressure tuner allows for <0.70**
- **Angstrom bandpass, providing a perfect blend of edge and surface detail.**
- **The system includes the clamshell with threaded holes for mounting, dust caps, and is delivered in an Aluminum re-enforced case.**

Specifications: (single stacked)

Type: Single Interference Etalon

Tuning: Internal Pressure Tune (Doppler True Tuning)

Aperture: 60 mm

Focal Length: 500 mm

F Ratio: F8.3

Bandpass: <0.70 Angstroms @ 656 nm

Focuser: 2" Crayford with 10:1 fine adjustment or 2" Feather Touch with 10:1 The

Blocking Filter: B600 Diagonal or B1200 Diagonal (Choose from Options drop-down)

Mounting: Integrated clamshell style with 1/4-20 tapped base

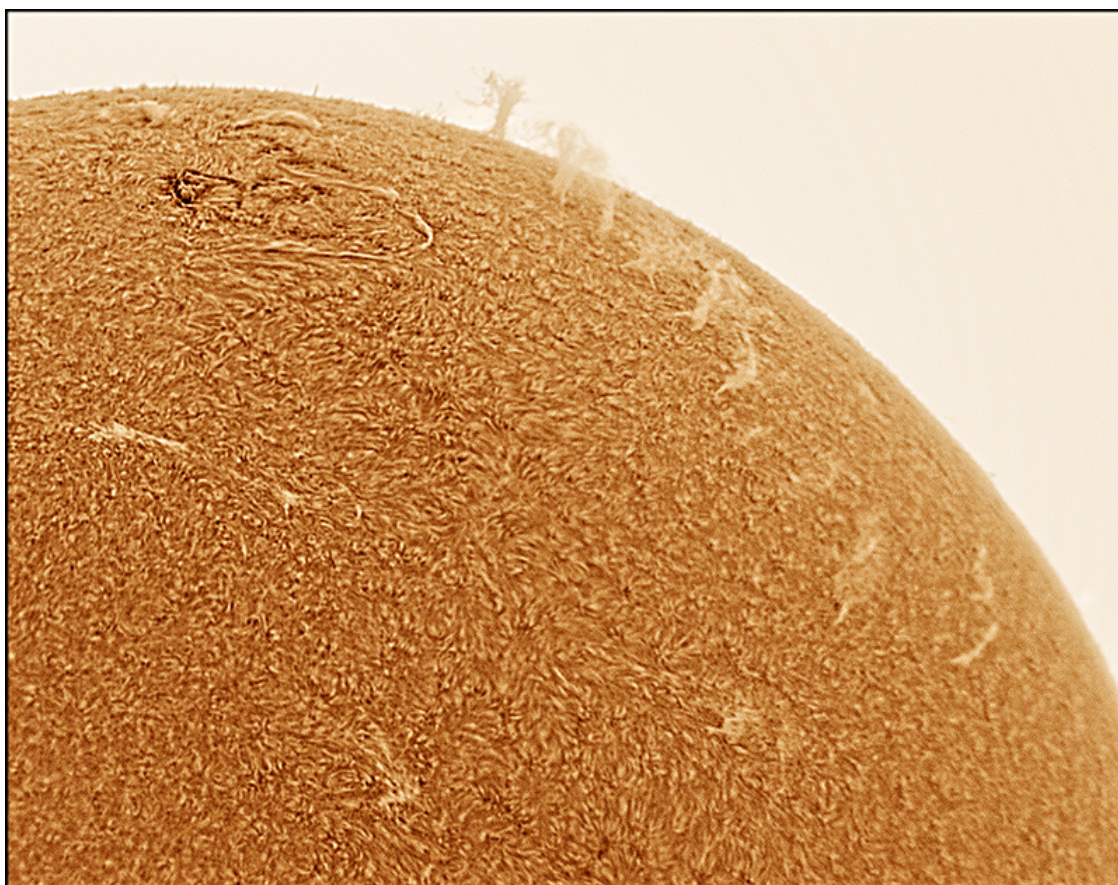
Color: Pearl White with Black and Red accents

Storage: Aluminum finished hard case with fitted foam

Weight: 8.8 lb (4 kg)

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 80mm H-alpha Pressure Tuned Telescope - Excellent detail, larger field of view



Our most popular scope for its versatility for visual use and imaging

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 80mm H-alpha Pressure Tuned Telescope - Excellent detail, larger field of view



The Lunt Solar Systems LS80THa/PT is a complete and dedicated solar telescope. A precision aligned ED refractor with a fully unobstructed 80 mm optical aperture, this package provides a significant step up into the intermediate category of solar observing. The LS80THa/PT (PT = Pressure-Tuned) maintains the most advanced technology of Doppler True Tuning for fine adjustment of the center wavelength, allowing research of the Sun's disk and surface details at increased image scale. Prominences, flares, super granulation, filaments, and active regions will be observed. The LS80THa package is fully upgradeable with several options, including the evolutionary Dual Internal Stack Etalon System (DSII). The DSII eliminates the need for an external double stack etalon, reducing cost and eliminating obstructions. The system is 100% un-obstructed. The bandpass is reduced to <0.5 Angstroms, allowing you to see the Sun's weather in stunning high definition.

LS80THa/PT Specifications: (single stacked)

Optical Aperture: 80 mm (Unobstructed)

Etalon: Internal Tuning: Internal Pressure Tune (Doppler True Tuning)

Focal Length: 560 mm

F Ratio: 7

Focuser: 2" Crayford or Feather Touch (choose from Options drop-down)

Mounting: Integrated clamshell style with 1/4-20 tapped base

Storage: Aluminum finished hard case with fitted foam

Weight: 8.8 lb

Weight: 8.8 lb (4 kg)

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 80mm H-alpha Pressure Tuned Telescope - Excellent detail, larger field of view

Included Accessories:

Sun Finder: Tele Vue Sol Searcher

Mounting: Lunt 6" Dovetail

Eyepiece: Lunt Zoom Eyepiece

Blocking Filter: B1200 or 1800 (choose from Options drop-down

Case: Aluminum Finished Hard Case with Custom Foam

Choose an LS80THa with the blocking filter that is right for you:

B1200 – for visual use

B1800 – for larger field of view and imaging applications

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 100mm H-alpha Pressure Tuned Telescope - Large Aperture Finest Details



See and image finer granulation on the surface of the sun

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 100mm H-alpha Pressure Tuned Telescope - Large Aperture Fine Details



The Lunt LS100THa solar telescope is a complete solar telescope. This refractor-based system has a precision-aligned doublet ED lens with a 102 mm aperture. Furthermore, the focal length is 714 mm, for an f/ratio of 7. Additionally, the coarse focus adjustment is made via a slide tube. While focusing is achieved with a high precision 2" Starlight Feather Touch focuser with 10:1 reduction as standard equipment. Most importantly, an internal etalon with tune adjustment allows for a <0.7 Angstrom bandpass.

Included Accessories:

Sun Finder: Tele Vue Sol Searcher

Mounting: Lunt 6" Dovetail

Eyepiece: Lunt Zoom Eyepiece

Blocking Filter: B1200 or 1800 (choose from Options drop-down)

Case: Aluminum Finished Hard Case with Custom Foam

Meet Our Hydrogen Alpha Telescopes

LS100THa Solar Telescope Specifications: (single stacked)

Optical Aperture: 102 mm

Etalon: Internal <0.7 Angstrom

Tuning: Internal Pressure Tune (Doppler True Tuning)

Focal Length: 714 mm

F Ratio: F/7

Focuser: 2" Feather-Touch focuser with 10:1 reduction

Tube diameter: 121 mm

Tube length with blocking filter: 634 mm

Storage: Aluminum finished hard case with fitted foam

Weight: 12.2 lb

Included Accessories

Optical tube with 2" Feather Touch focuser with 1.5" travel

B1200, B1800 or B 3400 Blocking Filter

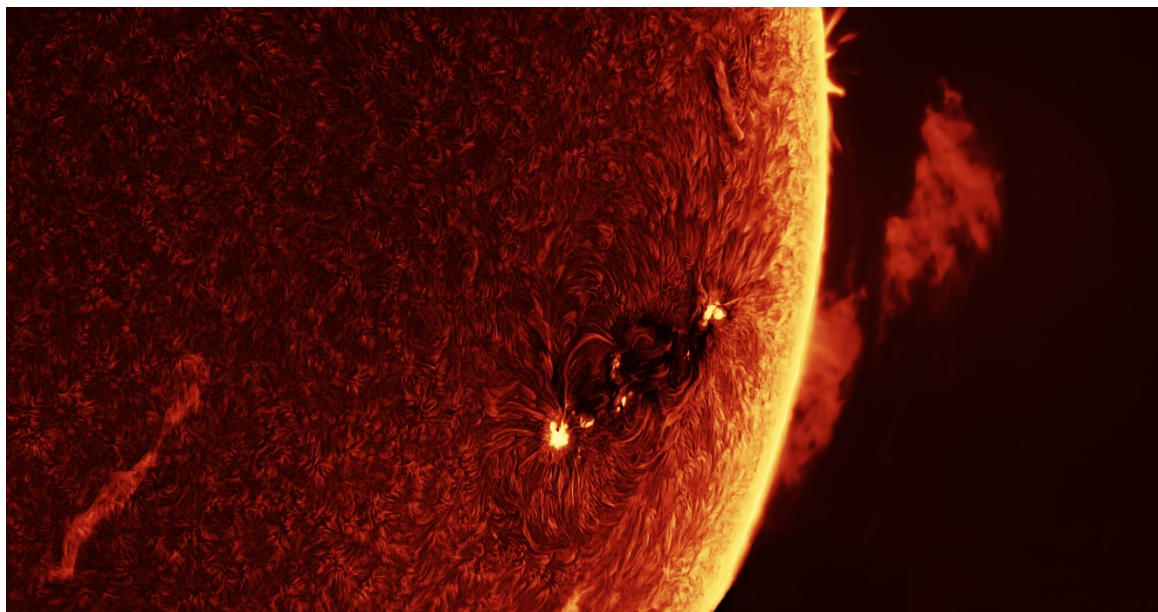
Sun Finder: Televue Sol Searcher

Mounting: Lunt 12" Dovetail

Case: Aluminum Finished Hard Case with Custom Foam

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 152mm H-alpha Pressure Tuned Telescope - Largest aperture Finest Details



See and image finer granulation on the surface of the sun

Meet Our Hydrogen Alpha Telescopes

Lunt Solar 152mm H-alpha Pressure Tuned Telescope - Largest aperture



Our most advance scope for solar imaging. Resolve surface detail, prominences and spiculae

The Lunt LS152THa is currently the largest solar telescope available, and is sure to provide the most stunning balance of resolution and performance. The 100% unobstructed system will perform to the highest level at both low and high magnifications. Utilizing both advanced high-contrast coatings, and the new Doppler True Pressure Tuning system, the user will be able to experience crisp, sharp, high magnification visual images, as well as utilize this system for high end digital processes.

This system has an optional, interchangeable, CaK module allowing for the research of multiple wave lengths thru the same platform. You can also convert the LS152THa for nighttime viewing with a special backing plate & focuser kit.

The Lunt Solar Systems LS152THa Solar Telescope is perfect for the Intermediate to Advanced User.

Meet Our Hydrogen Alpha Telescopes

Package Features

Advanced Narrow Band Hydrogen-alpha dedicated system.

A refractor-based system with a 152 mm front objective.

An unobstructed internal HD Etalon with the Pressure Tuner allows for <0.65 Angstrom bandpass, providing slightly higher surface detail without the loss of edge detail.

The system includes the mounting rings and dovetail, a Lunt Zoom Eyepiece, dust caps, and is delivered in an aluminum reinforced case.

LS152THa Specifications: (single stacked)

Type: Single Interference HD Etalon

Optical Aperture: 152 mm

Etalon: Internal <0.65 Angstrom @ 656 nm

Tuning: Internal Pressure Tune (Doppler True Tuning)

Focal Length: 900 mm

F Ratio: f/6

Focuser: 2" Starlight Feather Touch Focuser

Blocking Filter: B1200 Diagonal, B1800 Diagonal, or B3400 Straight-Thru (choose from packages listed below)

Color: Pearl White with Black and Red accents

Storage: Aluminum finished hard case with fitted foam

Weight: 30 lb

Dual etalons with pressure tuning allows for <0.5 Angstrom bandpass, providing 3D-like enhanced surface detail.

Want a more customizable option? Check out our Custom Telescope Builder.

The Lunt Difference

Lunt Solar Systems is a manufacturing and sales facility located in Tucson, Arizona that designs, fabricates, assembles, and tests solar telescopes and solar filters. Due to our location here in Tucson, we have the opportunity to witness some amazing astronomical phenomena. Tucson has about 300 clear days per year. Being in the Solar Telescope market we feel that it is important that we have access to these clear skies as often as possible.

We personally test every Telescope and Filter that ships from Lunt Solar. We do this in order to maintain the best quality control possible. Which removes any doubt as to what issues may be present and helps us promote the best solutions to each problem. Whether it be alignment, off-band, astigmatism, pinching, pin holes, banding, etc.— none of these issues are overlooked. We feel that if the customer receives the product in the same condition that it left the factory, they will be very pleased. As we all know, there are times when issues arise due to the shipping gauntlet. That is why we handle all our products with the care and efficiency our customers desire.

Quality & Safety

The public often asks if it is safe to look through a Lunt Solar product. We've been testing these products for almost 20 years. Safety is our number one priority in this hobby. Lunt takes safety very seriously, and the testing of any filter or scope should be done by a person with complete understanding of the product, from design to function to safety. The person testing products should have the experience necessary to determine whether a unit actually passes or fails the quality control criteria.

NO OTHER ASTRONOMICAL PRODUCT REQUIRES A HIGHER LEVEL OF QUALITY CONTROL THAN A SOLAR INSTRUMENT.

The Lunt Difference

Lunt purchases raw glass materials from a company on the east coast. We grind, edge, bevel, and polish all the glass needed for the etalon and filter systems in-house. Most coatings are outsourced to a coating facility that maintains a coating chamber specific to our requirements. Our coating facility has the required ability to produce AR coatings at less than 0.1% R, and typically in the 0.06% R range. They also hold the high reflectivity coatings to better than $\pm 1\%$. The ability to control the coating processes to such high accuracy has allowed us to make precision modifications to the coating formulas, which have proven to improve contrast by reducing background noise.

Lunt purchases mechanical parts from numerous locations. We have a local, family-owned, CNC machine shop in our industrial complex that fabricates many of the unique parts specific to adapting existing scopes for Solar use. Adapter plates, prototype parts, and some mechanical parts are also made in-house.

We do our very best to provide a quality product at an affordable price. We are also very proud to put “Made in the USA” on all our Telescopes and Filter products. Whether you are looking for a dedicated Solar Telescope or a Solar Filter for your own astronomy telescope, we can help. — Andy Lunt

5 Year Warranty

Lunt Solar Systems warrants its products to be free of manufacturing and workmanship defects under normal use for a period of 5 years from the date of purchase. LUNT Solar Systems will repair or replace such product or part, of which upon inspection by LUNT Solar Systems, is found to be defective in materials or workmanship.

Andrew Lunt

With 25 years of optical design, testing, and manufacturing of ultra precision flats, mirrors, filters, and etalon assemblies, and 18 years direct experience with solar related systems, I take great pride in having every Filter personally tested.

I do this in order to assure the best quality control possible. This process removes any doubt as to what any issue might be and whether or not they should be addressed. Whether it be alignment, off-band, astigmatism, pinching, pin holes, banding, etc.— none of these issues are overlooked. I feel that if the customer receives the product in the same condition that it left the factory, they will be very 100% satisfied.



Additional Resources

<https://www.skyandtelescope.com/observing/guide-to-observing-the-sun-in-h-alpha092321050923/>

<https://luntsolarsystems.com/whats-an-etalon-and-how-do-i-make-one/>

<https://luntsolarsystems.com/etalons-external-and-internal/>

<https://luntsolarsystems.com/choosing-the-right-focuser-for-your-solar-telescope/>

<https://luntsolarsystems.com/choosing-the-right-eyepiece-for-your-solar-telescope/>