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William Optics Corp.

FluoroStar 110

INSTRUCTION MANUAL



Crafting the Earth's Finest Astronomical Instruments

Thank you for choosing a William Optics FLUOROSTAR 110.
William Optics flagship refractor.

This simple step-by-step instruction manual is designed to provide FLT-110 owners with a better understanding of how to operate their new telescope by providing precise, updated information. These instructions will also guide you through how to properly maintain the FLT-110, and how to operate it at its maximum capabilities.

Please carefully familiarize yourself with your telescope's parts and functions before operating it for the first time.

WARNING!

DO NOT USE THIS TELESCOPE UNDER ANY CIRCUMSTANCES TO DIRECTLY VIEW THE SUN.

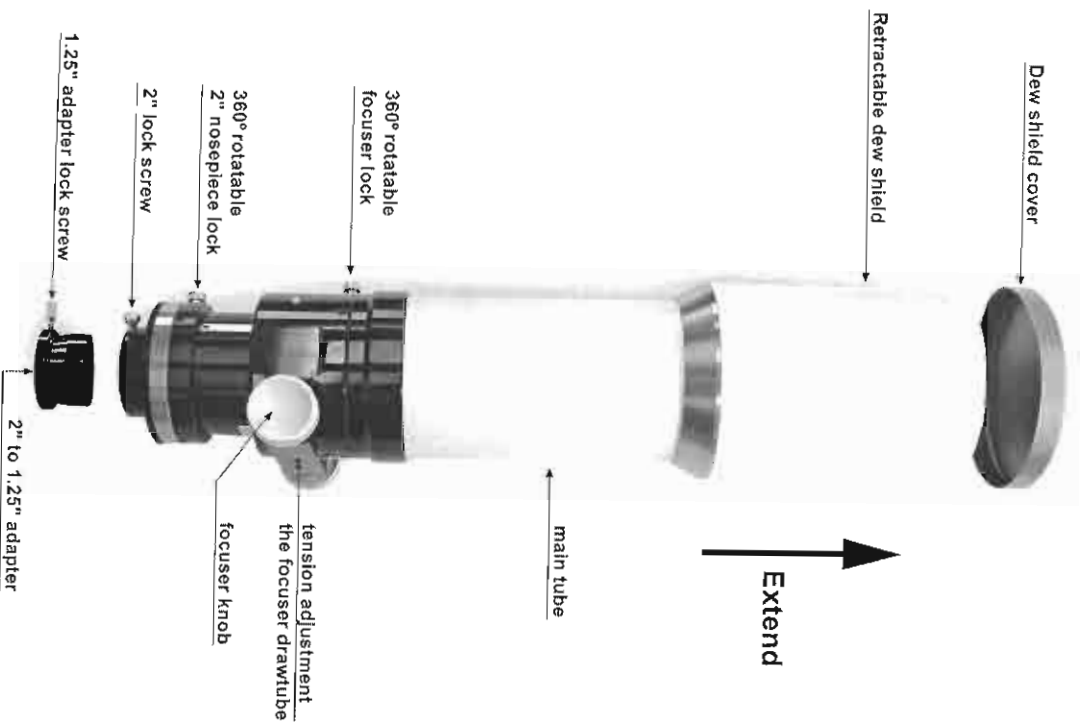
It could easily cause instant blindness or serious damage to your eyes. To view the sun, use only appropriately designed solar filters that will reject 99.96% of the sun light and heat. Educate your family on how to use this telescope properly during day and night time observations. For further information please contact your local dealer.



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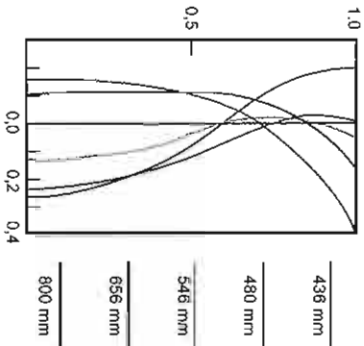
Getting to know your telescope



FluoroStar 110 Triplet APO Specifications

Aperture	110 mm
Focal Ratio	F / 6.5
Focal Length	715 mm
Objective Type	3 elements oil-spaced
Resolving Power	1.05"
Limiting Magnitude	12
Lens Shade	Retractable
Focuser	4" 360° Rotating Camera-angle Adjuster 1.25" Adapter Included
1.25" Adapter	Brass Compression Rings
Tube Diameter	115 mm
Tube Length	625 mm (24.6") Fully Retracted
Tube Weight	6.1 kg (13.5 lbs.)
Case	High Quality Aluminum Case
Case Dimensions (WXHXD)	70 cmx24 cmx22 cm (28" x 9.1" x 8.9")
Case Weight	4.5 kg

Color Correction Graph



Color correction:
Corrected from 436nm to 100nm, color
image shift $\pm 0.025\%$ of F.
Optimized for e-line (546nm), calculated
PV 1/15.

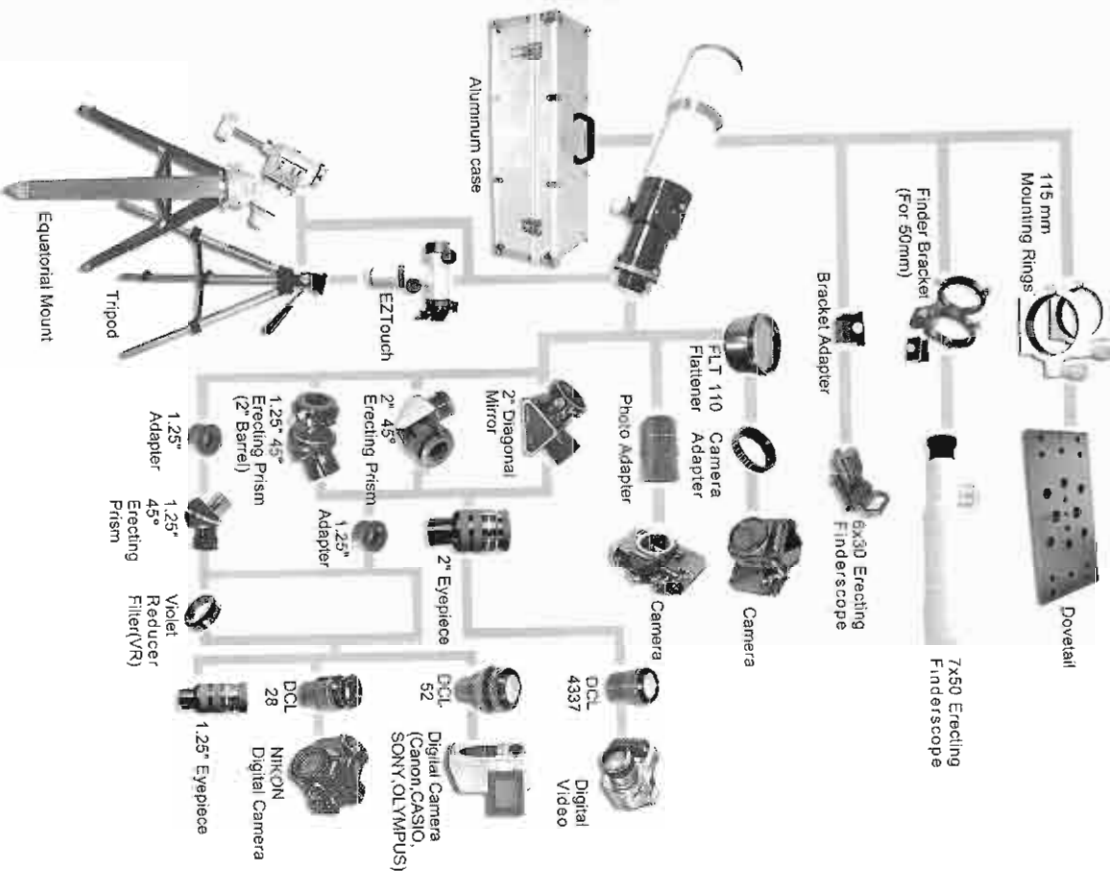


William Optics APO Triplet.
TEC design.
Light dia. 110 mm
Focal length 715 mm
Focal ratio 6.5

▶ In order to achieve the maximum color correction and ultra sharp images, we have selected the best "SD" material to make our objective, designed by TEC. The Fluoro-Star 110 lens is a 3 elements oil-space APO. This design consists of a heart of super low dispersion glass surrounded by 2 elements of crown glass.

▶ Our design reduces any secondary spectrum to an unbelievable degree. The superb color correction allows for the use of extremely high magnification without image breakdown, challenge subjects such as the Moon or Venus.

FluoroStar Accessories Chart



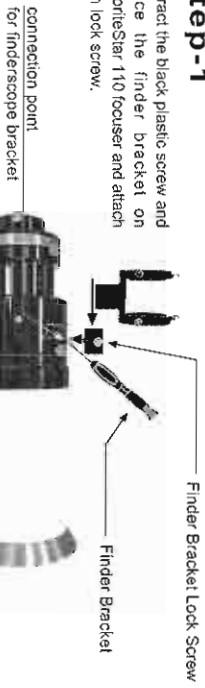
Above diagram is only for future connectivity purposes. Please contact our Authorized Dealers for accessories purchase.

Connection Instructions

(Finderscope)

Step-1

Extract the black plastic screw and place the finder bracket on Fluoristar 110 focuser and attach with lock screw.



Step-2

Insert finderscope into finder bracket.



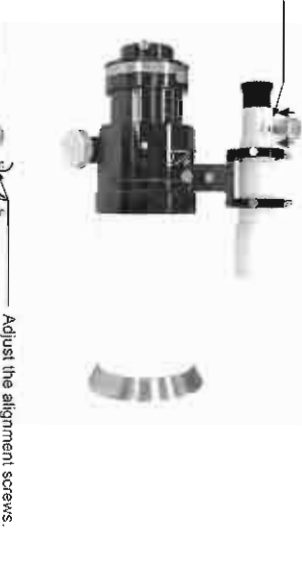
Step-3

Insert illuminator into finderscope.



Step-4

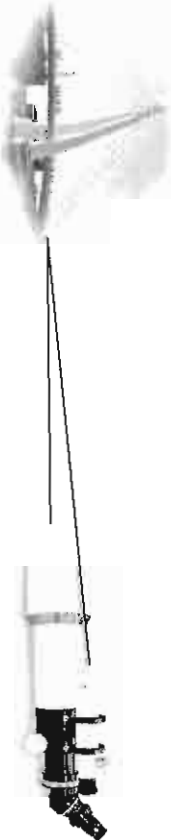
Tighten the knob on finderscope.



Connection Instructions

(Aligning Finderscope)

Align the finderscope pointing at the same object as the telescope.



Step-1

Find a distant object in the telescope with a low power eyepiece.



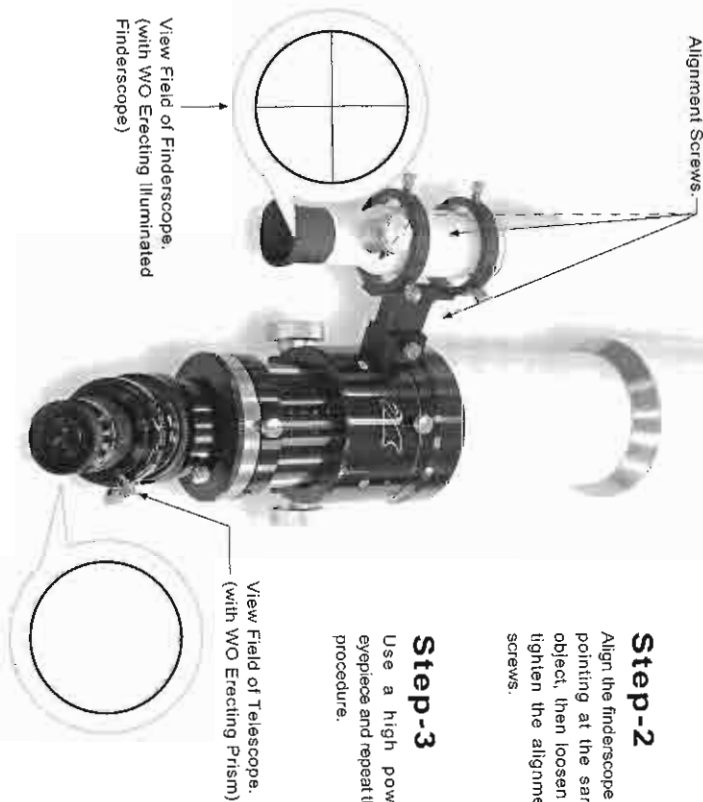
Step-2

Align the finderscope by pointing at the same object, then loosen or tighten the alignment screws.

Alignment Screws

View Field of Telescope. (with WO Erecting Prism)

View Field of Finderscope. (with WO Erecting Illuminated Finderscope)



Step-3

Use a high power eyepiece and repeat this procedure.

Usage

The Fluorostar 110 is designed to work with both 1 1/4 inch and 2 inch diameter eyepieces in various focal lengths, for both daytime and nighttime viewing. Because the Fluorostar is well suited to viewing nebulae, clusters, large galaxies and comets, we recommend the use of high quality wide angle eyepieces. The WO SWAN (72°) and UWMAN (82°) series eyepieces are available in a variety of focal lengths. Viewing the moon and planets is also impressive at magnifications of 120X when seeing conditions permit.

This telescope is also well suited for higher power observations with planetary eyepieces.

To calculate the magnification of your telescope and eyepiece combination, divide the telescope focal length in mm by the eyepiece focal length in mm.

Keep in mind that the atmosphere plays an important role in seeing conditions, and only the best seeing conditions will support high power viewing. Additional power under less than ideal seeing conditions will not result in an increase in viewable details, and lower powered eyepieces should there be used under those conditions. It's easiest to locate objects using low power eyepieces (20X magnification) and then zoom in by switching to higher powered eyepieces. The largest field of view will be seen using a 12X low power-wide field of view eyepiece. Also remember to let the telescope reach thermal stability for optimal results. A triplet lens takes longer than a doublet to cool down. A stable tripod or mount is recommended for optimal viewing. This includes high quality photography tripods, and German Equatorial mounts, which are designed for astronomical use and include precise tracking of celestial objects. William Optics is marketing a very practical Alt-Az mount too, which will perfectly complement any of its refractors.

The Fluorostar has been specifically designed for astrophotography; it will produce excellent results when used with the proper equipment. Being this a high-end astrophotography telescope, it should be mounted on a good mount. Please see our website for examples of photos taken with these telescopes. The Accessories Chart on page 4 provides additional details on photographic accessories for various CCD, digital and film cameras.

Optional accessories from WO include mounting rings and plates, super high-quality 2" Quartz star diagonals, and 2" Erecting Prisms (45° and 90°), all of which provide for superior viewing and high quality images.

Never aim your telescope or finder scope at the Sun without proper Solar filters installed on the front of the telescope. Doing so for even a moment may permanently damage your vision. Proper Solar filters consist of a filters made by reputable manufacturers, designed to fit tightly over the front of the dew shield. Solar eyepiece filters are not considered safe, and should not be used. With proper front mounted Solar filters, the telescope will not be harmed by viewing the Sun. Contact your Authorized WO Dealer for further information on the brands, sizes, and prices of proper solar filters.

Important Notice



William Optics warranty does not cover damage to the focuser due to inappropriate tension setting.

This focuser is designed to hold many pounds without problems. If nonetheless your setup requires additional tension adjustment, please use the tension allen screw under the focuser.

In order to avoid sagging or denting of the focuser steel reinforcement, it is necessary to adjust tension ONLY when the drawtube is FULLY EXTENDED.

Extend the focuser drawtube to its full 93 mm as in the picture here above before performing adjustment.

Storage and Cleaning

- ▶ We suggest placing all accessories inside an airtight container with desiccative control. Secondly, remember to store the telescope in a non-humid environment, never leave it in a hot heated environment. If not properly stored, it may develop mildew growth and other preventable build up. Be particularly careful after a night observation that the lens has no dew on it before storing the telescope away.

- ▶ In case the lens surface becomes dusty, smeared, or gets fingerprints or fungus build-up on it: First of all, remove any surface particle by using an air blower, then carefully proceed to wiping the lens gently with a lint-free proper soft cloth. Use a lens liquid cleaner to get the best cleaning result. Make sure you change your cloth to a new one from time to time. The above-mentioned indications are not necessary if you carefully protect your telescope.

- ▶ The beautiful multi-layer Dupont paint finish of your Fluorostar 110 is not easy to ruin. Nonetheless take care of the exterior body tube by wiping it down with a slightly damp soft cloth from time to time. Water should be enough to do the job. Please do not use any organic solvent on your telescope, for example alcohol, benzene and other hazardous chemical as this might ruin it.

Caution for Safety

- ▶ **Caution! Never directly view the sun light with your telescope.**
Do not aim your Fluorostar 110 at the Sun because this might impair your. Loss of eyesight can occur when your telescope is not properly protected by solar viewing filter. (Solar filters can be easily purchased through your WO Authorized Dealers).
- ▶ Always place the optical telescope assembly (OTA) on a completely flat surface, unstable placement of telescope may cause it to fall, and if handled without caution, it may easily injure yourself and others.
- ▶ Never use your telescope under rainy conditions: this telescope is not designed to be water-proof; if your telescope accidentally gets caught in rain, please wipe down the water with a dry clean cloth, but if the lens gets totally soaked by water, please contact your WO Authorized Dealer right away for details on a service solution.
- ▶ Do not disassemble or attempt repairing your telescope without a written authorization from William Optics Corp. : this violates the warranty terms under the limited product warranty section and invalids any guarantee. Always consult with your local WO Authorized Dealer or with William Optics Corp. for details on how to service your telescope.

Bundle Equipment

1. Aluminum carrying case.
2. Gold plated dew shield cover.
3. 2" to 1.25" adapter.
4. Various accessories depending on the package.

Optional Equipment

A sturdy tripod for astronomical or spotting scope usage, or a telescope tripod and mount (Equatorial or Alt-Az).

A mirror diagonal or erecting prism (The 2" WO Dielectric model is strongly recommended for high quality astronomical viewing. A top quality Dielectric Quartz model is now also available from WO).

At least one or two high quality eyepieces (9mm to 40mm wide-field recommended) depending on the application.

For astrophotography, a photo adapter plus a T-Mount connection are necessary. William Optics offers a field flattener optimized for the Fluorostar 110, together with a 35mm camera adapter or a 6x7 adapter.

Also available from WO:

- WO 2" Star Mirror Diagonals.
- WO 2" and 1.25" 45° Erecting prisms.
- 2.5x Apochromatic Barlow lens.
- 0.8x Reducer/ Field Flattener with CCD camera adapter (will work ok, but we recommend the FLT field flattener instead).
- Super wide angle SWAN / UWAN Eyepieces: 1.25" or 2" versions.
- DCL 52, 28, 4337 series "Digital Camera adapter Lens for Digital Cameras and Digital Video".
- Digiscoping adapter: universal adapter for any type of digital camera.
- WO 2" VR-1 filter improves seeing on bright objects like the Moon.
- WO 115 mm mounting rings, saddle plate, dovetail plate combo for equatorial mounting.
- WO 2" Extension Tube.

FLT-110 APO F/6.5 Features

The 2005 version of Flouro-Star 110mm lens only adds to the original optical and mechanical perfection. Finally available at the lowest price in its class.

This telescope is ultimately designed for astronomers who plan to have the best results in photographic/CCD usage. Only the best and most expensive are on a par with this!



Optically unbeatable

- Features a top-quality triplet oil-spaced objective, made in the USA by renowned Telescope Engineering Company (TEC).
- This scope has an extremely well corrected flat field, ideal for astrophotography. Additional field flattener available.

Crayford Focuser

- Extra-smooth 4" Crayford focuser: a treat to use during astrophotography. No more image shifting!
- 360° rotatable.
- Extra-heavy duty.
- Large aluminium knobs.

Patented Design

- Stainless steel reinforcement inserts on both sides and on the back to allow heavy loading without problems.
- Ball bearings on both sides of the focuser will make your focusing experience the best you ever experienced with a scope!
- Graduated scale for precise camera alignment.



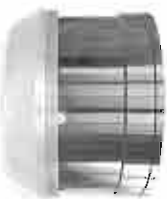
Do-all telescope

- Despite of its 110mm objective, the scope is still very compact and solid.
- The focuser is so strong there is no need for a locking screw.
- Two-speed upgrade under development.



Simply beautiful finish

- Pure William Optics quality fit and finish: powder-painted white CNC-machined aluminium tube, golden finish, retractable dewshield, anodized 360 deg. rotatable crayford focuser, dewshield cap.



Attention to details

- Highly precise CNC machined lens cell.
- Safety ball bearings on the CNC machined lens cell: only from William Optics!

Total Quality Package

- 2" & 1.25" adapters included.
- All with brass anti-rattling compression rings.
- Field flattener and adapters available.
- CCD camera adapter optional (please contact us).
- Attractive packages with WO accessories available.



Aluminum Case

- Stow away your telescope in the practical and safe aluminium case.
- Though you will never need it, you have a 2-year warranty from W.O. and the certainty that we will be there to assist you even beyond that, if you need!



Recommended For This Scope

Reducer / Flattener



Field Flatteners with adapters

Specifically designed to be used with this scope. Choose between a 35mm camera adapter or a 6x7 adapter. Do not forget to submit your best shots to WO!

D i a g o n a l M i r r o r s



2" Quartz

Diagonal Diagonal

High-quality dielectric coating (99% reflectivity), precision-polished quartz flat in our much-admired patented mechanics. Our 2" Diagonals are what you need for your best observing sessions. Only from William Optics.



2" Dielectric

Diagonal Mirror

99% reflectivity with 1/10 lambda high-precision mirror surface, with elegant exterior design, with 1.25" adapter.

S W A N E y e p i e c e s



1.25" Eyepieces

Super Wide Angle (72°).

9 mm, 15 mm, 20 mm focal lengths. 5 elements in 4 groups, fully multi coated. Parfocal.



2" Eyepieces

Super Wide Angle (72°).

25mm 33mm, 40mm focal lengths, FMC. Generous eye-relief.

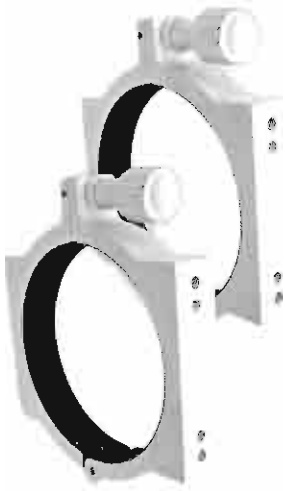
U W A N E y e p i e c e s



Uwan Eyepieces

Ultra Wide Angle (82°), 28mm (2"), 18mm (1.25"), 7mm (1.25"), 4mm (1.25").

M o u n t i n g R i n g s



110 mm Mounting Rings internal diameter

These felt-lined mounting rings are made out of solid aluminum, powder painted. A worthwhile investment if you want the best out of your mount and telescope.

Digital Camera adapter Lenses



DCL-52

This innovative digital adapter lens is designed for large-lens digital camera and digital video camcorders' needs. It can be connected to any 2" diagonal or erecting prism.

E r e c t i n g p r i s m s



2" 45°



**1.25"45°
with 2" Barrel**



1.25" 45°

45° Erecting Prisms

Perfect both for astronomical and terrestrial observations. Revolutionary and sophisticated design, extra-smooth feel.

9 0 ° E r e c t i n g P r i s m



2" 90° Erecting Prism

High quality prism, coating and finish, for good correct-image views of celestial objects. Perfect in daylight too.

P H O T O A D A P T E R



Photo adapter

Anodized 2" camera adapter for prime focus photography. Standard T ring thread.

F i n d e r S c o p e & B r a c k e t



7x50 Finderscope

7x50 erecting illuminated finderscope, with 5.2 FOV. The red illuminated reticle allows a precise alignment.

Quick release bracket

This excellent new quick-release bracket is easy to use and great value. No need to waste time mounting the bracket and finderscope every night!

Z e n i s t h a r 6 6 T r i p l e t E D A P O



ZenithStar 66 Triplet ED APO

Where you looking for a great little scope to piggyback to your scope? Choose one of William Optics ZenithStar 66 scopes!

R e d D o t F i n d e r



Red dot finder (R.D.F.)

This very practical r.d.f. comes with a handy, quick-release bracket included in the price. Centering your objects in the sky has never been easier!



WILLIAM

Crafting the Earth's Finest Astronomical Instruments

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