

# The William Optics FLT-110

(redesigned Summer 2005)

Tom Trusock - 10/05



This scope is incredible. The 4" rotating focuser is an astrophotographers dream. It's got beautiful mechanics, excellent construction, and wonderful optics, all as befitting a flagship telescope. I found it a worthy competitor to any other designer optic on the market today. If you're lucky enough to see one in person, I'd wager you'll be immediately smitten.

If you're looking at 4" (plus) apos do yourself a favor and check this one out.

<eof>

Huh - Whazzat? - You want more?

Well... Ok.

When William Yang asked me if I'd be willing to review this scope this last summer I jumped at the chance. I'd heard a lot about the FLT in its previous incarnation – excellent build quality and top of the line TEC optics. Then William Optics decided to redesign the scope and add a dual rotating 4" focuser. While this is of limited use for visual astronomers, just the announcement was enough to make many of my astro-photographically inclined friends drool. Suddenly, I was the most popular guy on my particular astroblook. I even had friends from Colorado come to see this scope – not to mention several other locations in Michigan. (Well, ok, Randy SAYS he wanted to visit me, but it sure seemed like he spent more time with the scope...)

## **William Optics FLT-110**

Aperture - 110mm  
Focal Length - 715mm  
Focal Ratio – f6.5  
Objective – TEC Oil Spaced Triplet  
Focuser – 4" Rotating Crayford  
Retractable dew shield  
Compression ring adapters included  
Case and Rings included  
Base Price - \$3295

But I'm getting ahead of myself here, so lets back up a bit.

## **First impressions**

What you get depends on the package you choose, but William shipped me (direct from Taiwan) the f6.5 WO 110mm triplet OTA, a first class aluminum case for the above scope, a set of white 115mm tube rings (power coated white, these are MUCH nicer than the Parallax

rings I use on my FS102NSV and are a bit more expensive too, but hey), and their top of the line quartz diagonal. Finally WO sent an extension tube and .8x reducer/field flattener with their big box o' goodies.



Now, I've seen, owned and used a fair amount of telescopes of all brands, and I thought I was somewhat immune – but frankly, my heart beat a little faster as I opened the box.

Having seen several William Optics telescopes I was ready for first rate mechanics and a gorgeous presentation. Yet, even so, my first peek took my breath away. WO's telescopes are gorgeous – and this is their flagship. Befittingly, it's a step above. As compared to any other scope I've had opportunity to use – well, the fit and finish is as good as anything I've seen.

William Yang shot high when he built this one – and it shows. Opening the shipping container, I was shocked to see just small the included case is – a mere 28 x 8.9 x 9.1 inches. I must confess I was expecting something more in line with my TV102 or

FS102 case. This is significantly shorter and more compact – ergo, much easier to travel with. It's only down side is that there is no room for either diagonal or eyepieces. Opening the case, your senses are assaulted with one impressive telescope. The OTA is a white crinkle finish with black anodizing and gold trim – very similar to that found on the Megrez line of telescopes. The white powder coat is both durable and easy to clean. The giant 4" focuser is anodized black, and impressive as all get out. The sheer size of the focuser makes you forget this isn't an 80mm scope – at least until you pick it up and get it out of the case. I rather expected it to be a beast, weight wise, but surprisingly it turned out to be rather light. At 13.5 lbs, it's only a little heavier than my other, smaller, 4" apos. Mount wise, it tended to ride easier than either the Tak or the TV – undoubtedly due to its shorter body. The focal length is 715mm, making it an f6.5, and the lens is a 110mm oil spaced triplet manufactured for WO by TEC.

Sliding out the dew shield, we're treated to a first. It literally pops into place. Some investigation (and a letter from William) reveals that WO has used recessed spring loaded ball bearings to lock the dew shield. You never have to worry about it sagging or sliding down when the felt gets crushed. If anyone has ever done this before, please let me know, as I'm completely unaware of it on any other telescope. The lens cap is an all metal press fit style with the WO logo emblazoned on the front, similar to what's found on their other offerings.

The focuser also looks like their standard focuser – but all grown up. The knobs are a hefty 1.8” in diameter, and they are a joy to use. The tension is adjusted by the use of an allen screw located on the bottom of the focuser. That said, the default factory tension was just about perfect. There’s no focuser lock, but there didn’t appear to be a need. At the factory set tension, it easily held my heaviest eyepieces and accessories as well as a buddies ST2000 CCD camera with no sign of slippage. Focus travel is 93mm, and the drawtube is calibrated – another feature my astrophotographer buddies raved over. A two speed focuser should be available shortly after this article is posted, but wasn’t available at the time of the review.



### An extended look

While the FLT-110 was a little to much for my Gibraltar, it rode quite nicely both on the DM-4 Tom Peters sent in for review (that one’s coming shortly folks), and an LXD75 that seems to have somehow wandered into my garage. Giving the OTA a rap on the side, I found that dampening times on both mounts were similar (the DM-4 was slightly better) at around ½ to 1 second each. For visual use, this should give you an idea of what class of mount works well with this particular scope.

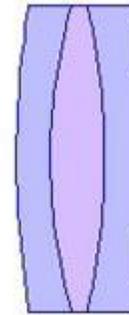
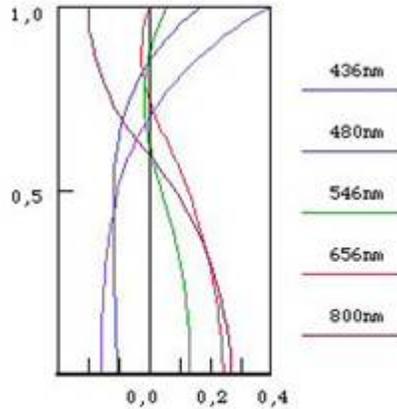


While I’m a fan of unity finders, I found that I didn’t bother with one while using the FLT-110. When mounted on the LXD75, the fast focal ratio of the scope made it fairly easy to find the alignment stars, and I’ve always found the goto to be pretty much dead accurate. When on the DM-4, I found I simply spent lots of time scanning the night sky, and honestly, frequently found I didn’t care if I got to where I was going or not – this scope was just that much fun to scan with. If I did get concerned, I just turned on the DSC’s. With a 40mm TV Widefield the 110 yielded nearly a 4 deg true FOV. This was enough to frame the Veil perfectly – and a gorgeous sight it made from dark skies. At the GLSG, I setup next to a buddy with a 20” Obsession and we pointed these two at the veil.

Both views were equally amazing – abet in different ways. Few scopes are capable of delivering larger TFOV’s at this aperture.

Comparison to the TV102 and FS102NSV was natural. I found there was a very slight but noticeable gain over a 4" telescope in light gathering ability – but for most targets the difference was not readily apparent. I typically found the color correction to be slightly superior in the FLT, and contrast and resolution were on a par.

Visually, the optics are impressive. The scope yields a wide, flat, well corrected field – the only aberrations I noted had nothing to do with the telescope. Only noticeable at low power, they were due to the excessive size of the exit pupil and the defects inherent in my own eyes (or in the eyepiece). In terms of secondary spectrum (false color) – visually - there



Color correction:  
Corrected from 436nm to 1000nm,  
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. 110mm  
Focal length 715mm  
Focal ratio 6.5

Courtesy William Optics

was a negligible amount. The critical test in the summer / early fall is Vega. Not much is worse (excepting Venus). The very first night I turned the scope toward Vega, I saw nothing but the pure blue white of the star. Turning the scope on the Double Double yielded a clean split at only 73x, with the diffraction rings running unbroken around each airy disk. Picking a random semi-bright star, I defocused and found the fresnel patterns to be remarkably similar both in and out of focus, and the optic had an excellent snap to focus. The zone of confusion was for practical purposes non-existent. I didn't have an opportunity to take this scope through much of a temperature change, so I can't say how the cell and optic handled extended cool downs but for the minor deltas I was dealing with (10 deg) there were absolutely no issues.

The scope was well baffled (knife edged) and delivered images that were extremely contrasty with very little scatter. Stars were pinpoints across the field. Although it's a mere 110mm this refractor treated me to the hands down best full face view I've ever had of M33. Both its spiral arms and largest HII region (NGC 604) were obvious in that slap you in the face sort of way.

Luna is a prime target for a 4-5 inch telescope – especially one with choice optics – and one too often ignored. Astronomers tend to gather at new moon, so next summer I think I'll propose a lunar party to let the small scopes shine. In the FLT, Luna was a treat - the range, depth, transition of color and contrast was simply wonderful. While we're on the

moon, I'll note that the scope took magnification very well, and maintained that snap to focus at near stupid high levels.

Let me stress just how nice the rotate able focuser is when the scope is mounted on a GEM. No contortions needed. Just loosen, twist and tighten and it's at a comfortable position. For many, this feature alone will be worth the price of admission.

Overall, how would I rate the optics? Simple. Excellent. This scope is a gem.

While I'm not a photographer, I've got a lot of friends who are. At GLSG, I loaned the OTA to Jeff Thrush for a night of imaging. He mounted it on his Paramount and was thrilled with the result. Here, take a look for yourself:



*Courtesy Jeff Thrush*

Saying he's smitten with the scope is an understatement. Heck, everyone who has seen it has been taken with it.

## Perfection?

Pretty close. I had a couple of extremely minor issues with the scope. Frankly, neither was really a problem, but they did cause some head scratching.

The focuser has TWO rotation points – one that turns the entire focuser, knobs and all, and another that just turns the camera back. When we loosed the one for the camera back (as a photographer would for framing), we found there to be a small amount of non-orthogonal shift / tilt. A consultation with William Yang confirmed this is by design – evidently to square up the image plane to the telescope if need be - an unexpected feature.

The other was discovered by a friend of mine. If you look down the throat of the OTA in the daylight, you can see that the focuser isn't quite sealed to the OTA. What do I mean? Well, in daytime, you can see there's a very thin sliver of light where the drawtube slides in and out. Now to be fair, this isn't unique to this scope – there are other high end scopes with similar construction. But knowing this, I kept a careful eye out for any hints of stray light in the system. In practice I saw absolutely nothing that gave me cause for



concern. I also wondered if this increased the possibility of stray light being exposed to the film/sensor plane when imaging, but both astrophotographers I asked felt it was a non-issue.

The only real downside is the limited availability of this scope – if you want one you may find yourself waiting or calling around. But even so, you won't have to wait years.

Oh, there is one other thing – probably the most significant concern I had. My personal finances didn't allow me to keep it and it had to

move on. Sigh – to be independently wealthy.

## Summary

William Yang and company have a scope to be proud of in the FLT-110.

For the astrophotographer this scope must seem like a dream. Plenty of aperture, fast focal ratio, good correction, 4" focuser, rotating back, a reasonable price, and compared to many other scopes in its class it's available without a multi-year wait. For the visual astronomer, it's – every inch – a world class telescope that held it's own with the best I've seen.

If you're in the market for a top of the line apo in this class do yourself a favor and give this one a good, long, look.



**Available from**

William Optics –  
<http://www.william-optics.com>

Astronomics –  
<http://www.astronomics.com>

And other WO dealers world wide

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