

## The Megrez II ED 80mm Triplet Apochromat

*A new watermark in the price/performance ratio?*

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**Y**ou better be careful what you wish for...

I'm a small refractor junkie. Seriously, I've got a problem. I'm hooked, addicted, obsessed. No matter how many large scopes I own, I've always found there's just something about a small refractor that's irresistible. I've owned and reviewed scopes across all price points. I've been around enough that I \*know\* a



small scope is just a small scope – it can't break the laws of physics, show me those 14<sup>th</sup> magnitude galaxies, or make me coffee in the morning. It's simply blown away bigger telescopes. APO's aren't magic. Really.

So why do I keep coming back? Well, they're convenient, portable, give good views with minimal cool down times, yield fantastic wide fields, deliver good lunar and planetary performance – heck, they're just plain cool.

This time, it's William Optics who has lured me in.

<b>MII ED Triplet Hots</b>	<b>MII ED Triplet Nots</b>
<ul style="list-style-type: none"><li>• Excellent Value</li><li>• Excellent color correction</li><li>• Included Case</li><li>• Deal of the Year!</li></ul>	<ul style="list-style-type: none"><li>• Not collimatible</li><li>• Lengthy cool down</li><li>• Extension Tube required for focus</li><li>• No easy way to mount a red dot finder</li></ul>

When I first heard about their \$800 ED Triplet last fall I fell out of my chair. After the introduction of the Synta ED80 (reviewed extensively on this website, by myself and others), I bemoaned the fact that the ED80 had no adjustable lens cell, and that it was inferior in terms of fit and finish to premium Apo's like the TMB 80 and TV 85. Optically, however, it held up

extremely well, delivering at least 90-95% (if not more) of the performance in side by side testing at a fraction of the price. I closed the ED80 review by saying:

**“I ideally, it would be nice to see some enterprising company source the ED80 lens and place it in a truly (1) first class OTA, with (2) an adjustable cell, (3) retracting dew shield, and (4) high quality focuser. If such a scope could be brought to market for a (5) reasonable price (say around \$850), demand would be fantastic.”**

Four out of five ain't bad.

William Optics gives you everything but the adjustable lens cell, and actually beats my retail price! Now consider that you are getting a case in the deal as well, and it becomes clear that the WO ED Triplet is a scope to be reckoned with.

<b>Megrez II ED Triplet at a glance</b>	
<b>Manufacturer</b>	William Optics
<b>Type</b>	Apochromatic Refractor (ED Triplet)
<b>Focuser</b>	Rotating Crayford
<b>Retracting Dew Shield</b>	Yes
<b>Size</b>	80mm (80mm + Clear Aperture Measured)
<b>Focal Length / Ratio</b>	560mm / F7
<b>Weight</b>	Appx 6 lbs (OTA only)
<b>Length</b>	15" (lens shade retracted)
<b>Included accessories</b>	Case, 2" Extension Tube
<b>Price</b>	\$795
<b>Available from</b>	Astronomics (and others)



The folks at Astronomics were kind enough to loan CloudyNights.com this sample of the William Optics ED Triplet for review.

### **First Looks**

Simply put, the scope is a beauty. WO has a history of excellent craftsmanship and superb mechanics, and this scope is no exception. You'd think I'd have become jaded after seeing so many small scopes, but this one elicits appreciation. As soon as I got it, I took it out of the case, and just played with it for an hour. I slid the dew shield back and forth, toyed with the focuser... My hands couldn't resist. The OTA is, for the most part, truly first class, the dew shield - retracting, and the focuser – the focuser? The focuser is simply wonderful. While it's not a two speed (and in my opinion a two speed focuser is not a necessity for an f7 scope) it is a high quality Crayford with adjustable

tension, and what's more – it rotates and allows you to quickly and easily change the orientation of the eyepiece or (more to the point) attached camera.

Further, WO's backpack case is included, and has cutouts for a diagonal, three 1.25" eyepieces, two 2" eyepieces, and a 30mm optical finder (not included). In addition to the case, they also include a press fit lens cap, and a 2" compression fitting extension tube. I should note the extension tube is required to bring the scope to focus in all positions / uses – even with a binoviewer – but more on that later.

The scope is supplied with a removable L-bracket which provides a ¼ - 20 mounting block to use the scope with a camera tripod, but I found it a little heavy for all but the sturdiest units. The ¼ -20 bracket did come in handy when mounting the scope to my Gibraltar tripod, although not without one minor complication which I'll detail later. Unfortunately, there is only one threaded hole, so if you intend on mounting the scope on a GEM, I'd strongly recommend tapping out another hole or popping for the WO tube rings. You might want to purchase the tube rings anyway. Although the scope balanced amazingly well with eyepieces up to a pound in weight, I found that anything larger was a bit too heavy for use with the L-bracket. The rings allow you to adjust the balance point of the scope – something one might find handy, especially if you plan on using it for astrophotography. One last comment about the mounting block – be aware the hole for the tripod goes all the way through the block – be careful of what length screw you are using – go too far and you could hit the OTA.

The lens is touted as fully multi-coated, and nearly vanishes when looking down the throat of the OTA.

The scope uses ridged foam for baffling. It does a decent job, and I found it does not impinge on the light cone. I measured a clear aperture of slightly over 80mm.

## Optics



Branches against a bright sky are an excellent test of chromatic aberration

The first ED triplet I was sent for review failed its star test. While it gave acceptable low and moderate power views, higher powers showed it clearly out of optical alignment.

I contacted David Yang, the North American William Optics representative, and arranged for the scope to be returned. Ironically, since the lens cell is not collimatible, there was little they could do except replace the

optics. This they did, and the scope was back in my hands 4-5 weeks later, acceptably collimated.

Optically, the scope performed well. Views through my 133lpi ronchi eyepiece showed the objective to be fairly well figured and free of any obvious significant defects, a result confirmed by the star test. There was that "snap" to focus you expect out of a good optic, and when the opportunity presented itself, it took magnification quite well. Routinely I was able to use 150x to 160x on Saturn, and over 200x on the moon. One night, graced with excellent seeing, the scope easily took over 300x on Luna. While this didn't reveal any more detail than I could see with lower powers, the views remained sharp and well defined – and more to the point, it was just plain fun!



Full zoom of previous shot

There was very little in-focus false color, comparable to or less than in most ED doublets I've used, with just a hint of green or yellow appearing on the lunar limb. Luna's shadows were a gorgeous pure black, and the scope showed a plethora of subtle shades across the lunar face. On stars, only Sirius revealed the slightest traces of in-focus false color – a rather extreme test for any scope. For an intents and purposes, chromatic aberration is simply not an issue with this telescope.

There was less false color in the ED triplet than both samples of the TV85 I've had opportunity to test, or than in the TV102. Comparing it to other premium 80mm's, I found the optics lagged very slightly behind, but it was certainly as good or better optically than the ED80's I've used.

The scope cleanly split Rigel at 80x, and I suspect I could have easily done it a fair amount lower, but I lacked the appropriate eyepiece.



Initially there was some visible astigmatism, but after I turned the cell 45 degrees in the OTA (loosening it slightly), it vanished. I believe this put less pressure on the cell and thus relieved the major problem.

There were also some cool down issues – nothing major, but prior to equilibrium the star test still showed a minor amount of astigmatism (I interpreted this as pinched optics due to the contraction of the lens cell). Depending on the temperature delta, it took anywhere from 20 mins to over an hour for the scope to cool down and give its best high power

performance. During the cool down process, low and moderate power views were unaffected. Once the scope cooled, the minor residual astigmatism pretty much vanished. I've seen this in many of the small scopes I've owned and tested over the years, especially the triplets, some costing two or three times the price of the Megrez.

In short, I'd rate its optical performance as good to excellent, and the scope compares quite well to its competition – scopes like the TV85, ED80 and TMB 80.

## Gotcha's

But like most things in life, it's not quite perfect. There are a few very minor quibbles.

The dew shield retaining ring is unblackened, and a potential source of reflections (although I would like to note, that I never actually saw this to be a problem, even in prolonged use on Luna).

I'd like to have seen some cork on the bottom of the L-bracket. While the bracket allowed me to attach the scope to my Gibraltar, because it was only attached at one point, it was prone to twisting. I've recently been shipped a ZenithStar 80 for review, and although it uses a similar system, they are now putting cork on the bottom of the bracket, and it completely eliminates this issue. It would alternately have been nice to see the L-bracket tapped for two screw holes to help secure the scope on other mounts.



Note the lack of blackening on the dew shield retaining ring

While WO offers an illuminated 30mm stalk mounted finder for this scope (the case even has a slot for it), there is seemingly no provision to mount a unity finder (also called a reflex finder) like a Red Dot Finder (RDF). I found this rather irritating, as a unity finder makes more sense to me on a small scope like this than a 30mm optical unit. In practice however, the scope is its own finder. A 40mm TV Widefield (65 deg



AFOV) yields a magnification of 14x, and a 4 degree 39 minute TFOV, while the 20mm Nagler t5, yields 28x and nearly 3 degrees. The lack of an actual finder is not nearly as big of a drawback as you might first think. Still, I suspect most folks will want an RDF.

I've already mentioned what may be biggest gotcha - the lack of an adjustable lens cell. In essence, this means that the scope is not

going to be collimatible by the (typical) user, and will have to be sent back to William Optics for replacement or adjustment. In this respect, the scope is closer to the ED80 than the high end units. But even so, remember this is a triplet not a doublet, and that there are three elements to adjust for proper collimation. Even with a premium unit, personally, I'd probably want to send it in for factory adjustment myself so I'm not certain how big of an issue this will be for many people.

The final gotcha is actually more of an oddity than a drawback. From an end user standpoint, there appears to be very little reason to have designed this scope to need a two inch extension to come to focus. I've heard at least one person claim it allows you to directly attach a camera or a binoviewer, but in practice, I found this was not the case.

Let me expound that a bit, since I've seen at least one internet review with an allusion to the contrary. I spent some time with two different binoviewers, and several different types of eyepieces (9-10 different types). None of them, not one achieved focus without the aid of the Denkmeier Optical Corrector System (OCS). With the extension removed, I'd have needed an additional 1/4" or so in-travel to bring the eyepieces to focus. Whatever WO's reason for the shortened tube, low power binoviewing does not appear to be it.

Other than the fact the scope becomes 2" shorter and thus fits into the backpack, I see no compelling design reason for William Optics to require use of the extension tube for the scope to come to focus.

Given the price point of this scope, however, these are trivial issues.



## Other Considerations

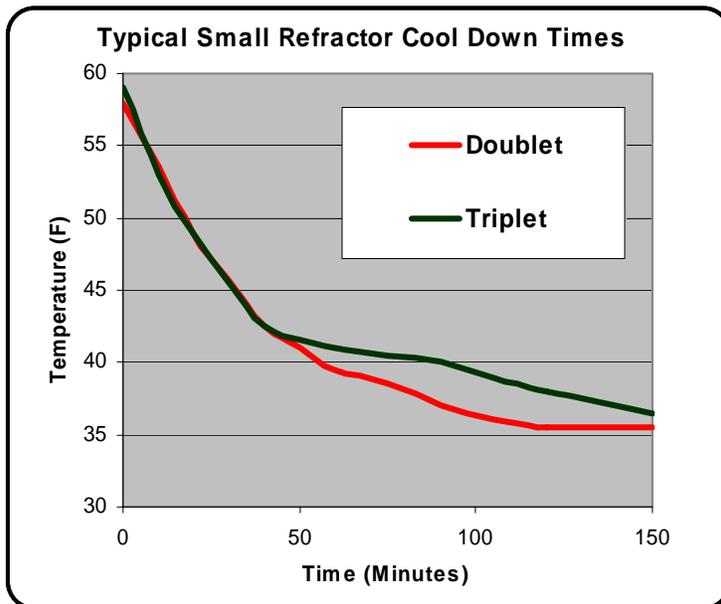
Although no one wants to have to resort to company service, I can say first hand that David Yang and William Optics make the experience about as painless as it can

be. David was fairly prompt in answering my e-mails, very courteous on the phone, and facilitated service of the scope. While they don't have the presence I've seen with a couple of other companies, they are about as nice and helpful as you could want. Outside of talking to David directly, you can also post questions and seek support in their Yahoo e-Group - search for William-Optics.

## The Competition

So, if you've gotten this far, you're probably asking: *How does this scope compare to its competitors?* Well, let's take a minute look at a couple; the TV85 on the high end and the ED80 on the low end.

Compared to the ED80, you are getting **vastly** improved mechanics, slightly better color correction and optics that are as good if not better. The WO is a shorter scope, and in my opinion, a little easier to mount and travel with. You also get to talk to an actual company service representative as needed, and the knowledge that your product is backed by a warranty.



NOTE: The above graph is based on average data from author's database, and is not specific for these individual telescopes.

As compared to the Tele Vue 85, I felt the attention to detail wasn't "quite" as good on the WO, and TV does offer a longer warranty. The color correction is perhaps slightly better on the ED Triplet, but there's more to an APO than color correction. Optically, the TV 85 samples I've used tend to have been as good or slightly better than the ED Triplet, with none of the lens cell (cool down) issues I've seen in this and other triplets. It's also important to note that the TV doublets can be easily user

collimated, an important advantage in my opinion. TeleVue also offers other

services for their products (cleaning and maintenance) and are rather famous for their support. Finally, there's a certain segment of the populace that will be interested in Tele Vue because of the "Made in America" sticker. WO does not currently have the presence in North America that AI Nagler does, so along with everything else, resale on the TV equipment will probably be a bit higher.

What you buy will depend on your experience, the particular things you look for when buying a telescope, your budget, and the role you intend the scope to play in your hobby. Whatever you say, and however you say it, there's no denying that the ED Triplet is a **heck** of a buy, even considering its mostly minor flaws.

## Summary

For those looking for the bottom line, the William Optics Megrez II ED Triplet is an exceptional deal and well worth your consideration if you are shopping for an affordable 80mm APO. I found it's only real flaws centered on the non-adjustable lens cell, but those may or may not be of concern to you. Although it's not quite perfect, William Optics deserves kudos for showing the innovation required to bring such an outstandingly affordable triplet apochromatic telescope to market. They've set a new watermark for the price / performance ratio.

**Available From:** *Astronomics / Christophers, Ltd.*  
*Norman, OK*  
*1-800-422-7876*  
<http://www.astronomics.com>

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