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# The Denkmeier II: Evolution of the Species

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Cloudy Nights Telescope Reviews



*The Denk II – Denkmeiers Next Step*

Denk II Hots	Denk II Nots
<ul style="list-style-type: none"> <li>• Top performance</li> <li>• Chosen by Coronado for solar viewing</li> <li>• Excellent Construction</li> <li>• Improved sharpness and throughput</li> </ul>	<ul style="list-style-type: none"> <li>• Evolutionary, not revolutionary</li> <li>• Anyway you cut it, binoviewing is expensive.</li> </ul>

**Available from:** [Denkmeier Optical](#) and dealers

**Price:** Denk II w/ case – Base Price \$799, SCD's add \$120 for two. Additional accessories extra.

**WARNING!** If and when the bino bug really hits, your pocketbook is done for. I can almost guarantee that you will do nearly anything to

feed the habit - including selling all those expensive 2" Naglers. I know. I've been there. Heck, I bought a 15" scope as a "binoviewer accessory" just last summer.

For the last 6 months, I've been using the Denkmeier Optical upgrades to their original top notch unit. First out of the gate was the Denk FMC (Fully Multi-Coated) unit. While this never actually

headed into standard production, it was manufactured as a test run at what was to become the final Denk II unit. The prisms were the same as the standards, but the coating process had been improved by the use of dielectric coatings. In side by sides on several occasions, I noted that throughput on this unit was noticeably higher than on the Standard. Some may still be available from Denkmeier as you read this, but they were never manufactured in quantity, and never really intended for mass resale. Most folks would probably tell you that if you are really looking for an upgrade to the Denk Standard, you don't need to look any further than the Denk II. I received a set of Denk II's for testing in August of 2003.

For an introduction to the Denk Standards and corrector system (OCS), you may wish to read my previous article - [A Binoviewer Journey](#). That should help bring you up to speed on my experiences with the Denkmeier system so far, as well as provide a comparison to the vaunted TeleVue BinoVue. Given the Denk Standards did so well in my previous comparison, I'll bet you find yourself asking: What's new with the Denk II's?

First off, with the Denk II, Denkmeier Optical now touts the fact that their optical components are made and coated entirely in the USA, and that the coatings on the beam splitter were formulated specifically for the Denk II with peak transmission in the 656.33nm range. (This bodes very well for you Hydrogen Alpha lovers.) The Denk II is also fully multi-coated using dielectric materials. Denkmeier claims 99.75% throughput for the prisms, and I can attest there is a noticeable difference in throughput between the Standard and the II (more on that later). Second, they now guarantee a minimum of 1/8 wave accuracy on the 26mm (clear aperture) prisms, while holding their tolerances on the construction of the prisms to a mere two arc minutes.

Third, Denkmeier optical is now offering self-centering eyepiece holders with individual focus adjustments (they refer to them as SCD - self centering diopter - holders). While you can retrofit any of their products with these items, they were initially offered only on the Denk II's.



*Origin of the Species – The Denk Standard  
(You had to know that was coming...)*

So what does all this mean to the person looking to decide between the Denk Standard and the Denk II? I'll get there, but first let me bring you up to date a bit.

### **The Story So Far:**

The spring of 2003 found me greatly enjoying my Denk Standards.

I'd developed a bit of a system - DSO's in my 10" f7.5, and the moon and planets in my 4" f8.6 apo. While the brighter objects looked decent in 4" of aperture, I was slowly finding that there was just too much light loss (about .2 - .3 mag) on too many DSO's for me to completely abandon my monocular viewing habits. Please note: this number is not hard and fast. In fact, I sincerely doubt that it can be made hard and fast due to the unique differences in individual biology. Some light is going to be lost with binoviewers - it's unavoidable, and there are several

different formulas floating around out there to tell you just how much. One key ingredient that these formulas lack, is a variable that describes the ability of the human brain to reintegrate the light cone. If you talk to 10 people who are serious about binoviewing and ask them how severe the light loss is through a binoviewer, you are apt to get 8 different answers. Some folks don't see a light loss at all, some see a large one, and many see a small loss, one that they consider insignificant most of the time. How much this bothers you I believe depends partly on your individual biology and partly on the size of the scope. For me, this number is about .2 to .3 magnitudes of light loss - and it's far more noticeable on a smaller scope than a larger one. I'd been using 26mm plossls with my 4" to look at bright star clusters, and decided to upgrade to something a little better. I considered several different choices, and enroute to the 24 Pans, wound up with the 30 Ultimas. It was here I ran into something interesting.

In my 4" with the refractor OCS, the 30 Ultimas showed a fair amount of vignetting but in the 10" f7.5 with the 2" OCS, none whatsoever. Since I didn't use the 4" at low powers often, I didn't immediately pursue the matter.



*The Denk FMC and Refractor OCS*

By July (2003), I'd seen enough through the 10" to convince me I needed to move up a step in aperture. I acquired a 15" f5 StarSplitter, and can attest that while the moon and planets are spectacular through any size scope, the more light you throw at a binoviewer the more impressive your results are. I'm tempted to weld the binoviewer into my 15" except that would preclude me from using it in my other scopes. There is still the .2 (or so) magnitude of light loss, but unless I was going for objects that would push the limits for my scope and my site, I found I preferred the view with both eyes.

By late August I'd been shipped a Denk II and had begun comparing the individual units. At the end of September (2003), I attended the Great Lakes StarGaze, and had a blast merely carrying the Denk II and a couple of sets of eyepieces from scope to scope, inserting the binoviewer and standing back while I watching my peers react. The reaction was *\*overwhelmingly\** positive. When offered a chance to use both eyes, no matter the target, no matter the scope (from 4" to 18") everyone preferred the view through both eyes.

In October of 2003, I acquired a 101mm f5.4 APO and a set of 24 Panoptics, figuring that this combination would yield superb wide field views. Indeed, the 24's were stunning in the 15", but when it came time to use them in the 101mm f5.4 I ran into a problem. There was severe vignetting - bad enough I initially thought of reacquiring a set of 26mm plossls, nearly bad enough to steer me away from this combination entirely. Distressed, I shot an e-mail off to Denkmeyer optical. In typical Denkmeyer fashion, I got a reply within the hour. After some discussion of the problem, I was told they were already working on a solution - a replacement optic for their refractor OCS, and promised to ship me out a unit ASAP. The new refractor OCS Cell worked beautifully, providing me with stunning low power views that showed absolutely no sign of vignetting in the 24 Panoptics. Ahhhhh - wide field nirvana!

## Back to the Present: The Denk II

I have a confession to make. I honestly wasn't expecting that much of an improvement in the Denk II versus the standard. I mean; How much better could it possibly get?

The Standard had already shown itself to be in the same league as the TeleVue BinoVue, and has won acclaim as one of the best units on the market. Indeed, depending on who you talk to it seems as if Denkmeier has spawned a surge of interest in binoviewing like none previously, and lets face it, the Standard was the unit that did it. So, what was there to gain? Well, the new Denk II's promised around a 9% gain in throughput, sharper prisms, and individual eyepiece focus. Studies have shown that it takes around a 10% gain in throughput for the average observer to even notice, I'd had my socks already knocked off by how sharp the images were on the Denk Standards, and my eyes are extremely close to each other in correction.

Needless to say, I didn't think there would be much difference.

I was wrong.

I was wrong on all three points. The brightness gain *is* noticeable, the image is sharper, and my eyes do have minor differences in correction (which are admirably compensated for by the SCD holders). While none of these items by themselves are major, taken together I found them to be a fairly significant upgrade.

While my limiting magnitude testing wasn't as rigorous as in my earlier write-up, I could quickly see the difference in throughput on deep sky. Although there wasn't a huge disparity between the units, it was certainly noticeable. On a few items, it made the difference between seeing and not seeing the objects. On DSO's that were previously observable, I found them taking on a new layer of definition. I quickly found that I was leaving the binoviewer in the scope for more and more objects - including ones that were beginning to push my scope, my site and my skills, ones that I had previously removed the binoviewer for. Although aperture does make a rather large difference, I can say that I noticed the improved throughput on all my scopes.

When I first started using the Denk II's, I didn't use the SCD's much. As I stated above my eyes are very close in correction, and I figured for me they wouldn't be necessary. I had heard many reports of the Denk II's being significantly sharper than the Standards, and, I wanted to see if the Denk II's were really sharper or if it was simply that the SCD's were allowing users to compensate for their individual changes in correction, and thus most folks simply perceived the Denk II's as sharper. I think it turned out to be a little bit of both. While viewing Mars, the Moon and other various and sundry targets, I began to notice that the images seemed sharper even when I didn't use the SCD's to compensate for variations between my eyes, and when I did use them - I was rewarded with some truly exceptional lunar and planetary images. Prolonged testing showed that when seeing was good, I was able to consistently see more and finer detail



*The OCS and StarSweeper*

on demanding targets through the Denk II's. As is typical of when you are pushing a system to its limit, the differences weren't always obvious. As expected, I found that the overall quality of all the equipment in the optical chain to have a significant effect on what you see or what you don't see.

### Complaint's Anyone?



The only irritating thing I have uncovered about the Denk II, really is more of an issue with the SCD's. They make using the winged eye guards many binoviewer users favor a little harder. This is a by product of the helical focus method used to adjust each eyepiece holder, and once you become used to it it's not overly onerous by any means. I found that I was leaving the eye guards off the eyepiece until I had the exact focus locked in. Then I would attach the eye guards and commence viewing. This system (while slightly fiddly) worked well.

### So: What's the bottom line?

*The custom Denk II case*

Technically, as good as the original Denks are the Denk II equals or beats them in nearly every way. Greater throughput gives you superior performance on DSO's, while lower scatter, an enhanced optical figure and individual eyepiece focusers improve performance on lunar and planetary targets. Additionally, if you are an Ha observer, Denkmeier states that the Denk II's have been optimized for excellent performance at 656.33nm, but unfortunately I can't attest to the differences between the units in Ha. The one area in which the Standards might win lies in the price/performance ratio, and admittedly - for many that's the most important question.

Is it worth the price difference? Do the Denk II's manage to get across that line of diminishing returns – slightly higher performance for lots more money?

That's a significantly harder question, and additionally it's something of a personal issue. If you are a novice, an occasional binoviewer user, or your site typically suffers from poor seeing conditions – I'd have to say that the Denk Standards are probably all you really need. The Standards are certainly no pushover – my testing showed them to be on a par with higher priced TeleVue units, and in some cases (particularly in the areas of flexibility and use in different scopes) superior. Personally, after extended use of both units, I found preferred the Denk Standards to the TeleVue BinoVue. If you want the sharpest view you can get with the Standards, I'd definitely recommend upgrading to the dual SCD's. I found much (but not all) of the increased sharpness reputed to the Denk II to be due to the ability to individually fine focus for each eye.

And yet... and yet...

It's just not quite that simple. Adding SCD's to the Standard, while a significant improvement, do not a Denk II make. The difference in throughput is (to me anyway) fairly obvious on DSO's. The difference in sharpness was subtle, and often visible only on the better nights. If your main interest is in DSO's, you will definitely want a set of Denk II's. Additionally, if



*Denk II w/ Case*

you are a discerning amateur, there is slightly less scatter with the II's thus giving an small edge in lunar and planetary performance.

In short - if money is not an issue, if you want the absolute best equipment you can buy, then you will be happier with the Denk II.

This is a wonderful time for an amateur to get into binoviewing. There are a ton of good units out there, across many different price points. But it appears that at least one company has taken upon itself to ensure they have a versatile solution for every scope and price point on the market.

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*Tom is a longtime amateur and fond of watching the heavens with both eyes open...*