Return of the king:

# KOWA TSN-883 PROMINAR


For Finnish birders, Kowa is perhaps the telescope brand with the longest and strongest traditions. The old grey TS-1 initiated many of us into the wonderful world of birding with telescopes. Long into the eighties, it was by far the most common birding scope here, and you see it in use in the field to this day. In 1986, Kowa introduced models TSN-3 /4 which were the first spotting scopes to utilise a fluorite objective; they provided unprecedented image quality even at a whopping 30x magnification. For the next decade or so, the TSN-3 Prominar was the dream scope of discriminating birders in Finland, until Swarovski's AT 80 HD superseded it and began the era of the zoom telescopes. The TSN-823 – Kowa's answer to the Swarovski and Leica's Apo-Televid – never managed to secure the popularity of the earlier models even though it is a perfectly fine scope. One probable reason for this is that for these models Kowa adopted a body made of composites instead of metal alloys, and Finnish birders accustomed to casually tossing their scopes into the boots of their cars considered the new scopes more injury-prone, whether this was warranted or not.

In fall of 2006, 20 years after the first Prominar telescopes, Kowa introduced a new series of telescopes which are clearly intended to regain lost ground. As is usual nowadays, the range consists of two objective sizes which share the same rear body and eyepieces. The chosen objective sizes are unusual and ambitious, however, with even the smaller size 77mm in diameter and the larger series a full 88mm. Both the 770 and the 880 series are offered in four configurations: straight or angled viewing prism housings and standard achromat or special-dispersion objectives. The 77mm Prominars feature an ED-doublet while the 883/4 incorporates a fluorite crystal element. We tested the TSN-883, the angled version of the top model, as we wanted to see whether Kowa now has the birding scope with the highest optical performance. I also had the 773 briefly on loan for measurements and a quick field trial, but we did not include the smaller scope in our field comparison.

Kowa's engineers have evidently been given a few of their competitors' scopes to pick apart, as the new models bear a striking resemblance both to Swarovski's but especially to Zeiss' present models. The angled models follow the recent trend of adopting a Schmidt-type monoblock prism in place of the formerly common porroprism-semipentaprism cluster, resulting in reduced light loss and a more compact body. The body of the new Kowa is made of magnesium alloy, and the focus mechanism is a Zeiss-like double knob moving a lens element between the objective and the prism.

This time it was not possible for me to try to minimise unit-to-unit quality variations by screening several scopes, but fortunately a test with an artificial star and comparisons with my reference scope showed that the only available specimen was relatively aberration-free and easily good enough to be tested. Spherical aberration was corrected unusually well for a birding scope, there was only a tiny trace of misalignment of optical elements evident, and the Schmidt prism was also precise enough not to produce any of the typical prism artefacts one sometimes sees in scopes with poorly cut or polished prisms. The only factor perhaps compromising the performance of the tested unit was a barely detectable amount of astigmatism. The 773 I briefly tried was unfortunately not an equally good sample as it manifested some optical flaws that rather visibly compromised its image quality. I tested the Kowa TSN-883 with an artificial star, real stars and test targets against my current reference, the Nikon Fieldscope ED 82 A with an MC II 25-75x zoom, and for the field tests the Kowa and Nikon were joined by a Zeiss Diascope 85 and a Swarovski ATS 80 HD. Of these two, the Zeiss belongs to a member of the test team and is a very high quality specimen, but the Swarovski was an unfamiliar unit and had not been tested under my standard conditions. While briefly looking at a test target and a glitter point, the Swarovski did appear to be a rather good, low-aberration specimen, but it is nevertheless possible that it was not as close to an optimum sample as were the other two yardsticks in our field test.

The weather conditions in the field test were good, with bright winter sun and scarcely any heat haze. The Kowa was tested only with the zoom eyepiece, and the other three scopes were also equipped with their zooms.

## Technical properties and usability

Despite its large objective lens, the TSN-883 is compact and surprisingly lightweight. With the eyepiece mounted, it is even a tad shorter than the 85mm Zeiss, and weighs only about 100g more, handily managing to stay below the critical 2kg threshold. The body feels solid and did not ring or sound thin when I rapped it with my knuckles. The pull-out sunshade is rubber-armoured, but the rest of the scope body has a matte green metallic surface. Both the scope body and the eyepieces are waterproof and nitrogen-purged. As is customary with angled scopes, the scope body can be twisted into the tripod foot and locked into the desired angle. The foot is placed at the centre of gravity of the scope when the zoom is mounted, and there is very little play between the foot collar and the body even when the locking nut is opened.

The dual focus wheel sits atop the scope body. The wheels are rubber-covered and the larger fast-focus wheel moves easily enough to be focused with gloves on. The ratio between the two focus wheels is 1 to 3.25. I found the fast-focus to work better on the Kowa than on the Zeiss, where the wheel is stiffer and offers less surface to grab. The fine-focus wheel can be held between the thumb and forefinger, but we felt its gear ratio was a bit too fast for precise control so that we ended up racking the wheel back and forth at times to arrive at the best focus. Since the Zeiss felt easier to focus precisely but also slower to reach focus, I measured the focus wheel travel of these two scopes, testing how many rotations of the fine-focus wheel were needed to focus from 10 meters to a target close to a kilometre away. This took about 2.5 full rotations with the Kowa and almost seven rotations with the Zeiss.

The eyepiece sits on the scope's centre line but extends quite high above the objective rim. This means that aiming along the scope is relatively easy in the horizontal plane, but vertical alignment takes more practice. The sunshade has an aiming groove in it, but aiming devices like this are of more use to salespeople than birders. Without the optional stay-on case the sunshade slides in and out too easily if the scope is tilted, but the case tames this behaviour handily. The press-on eyepiece cover is not tethered and will therefore easily get lost. The objective cover mounts with a bayonet and stays in place well (also holding the sunshade in place), but as it is made of hard plastic its durability in cold weather is questionable. The eyepiece mounting bayonet is very solid, and can be operated easily and quickly. There is a locking button on the scope body that needs to be pressed while unmounting an eyepiece, so accidental removal is prevented. Around the eyepiece mount, concealed under a smooth plastic ring, there are

threads for a camera adapter. The rubberised zoom adjustment ring on the eyepiece is wide and easy to grasp and adjust. Markings on the zoom are clear enough, and when I measured them, I found that the intermediate dots really did accurately give 30x, 40x and 50x magnifications. The eyecup twists in and out about 7mm, with two intermediate notched settings. It is pretty solid and retains its setting well. I measured the eye-relief for the zoom to be 16mm at 20x; 12mm at 30x; 10mm at 40x; 11mm at 50x and 13mm at 60x. These figures correspond closely to those for the Zeiss zoom and are a clear improvement over Kowa's previous zoom, and probably suffice for most spectacle wearers. For those who need it, however, the Swarovski zoom provides even more eye-relief. At 20x magnification, the Kowa zoom has the second widest field of view after the Zeiss, but at 60x the field is somewhat narrower than in the Leica, Swarovski and Zeiss zooms. Available accessories include a digiscoping adapter and adapters that allow using eyepieces from Kowa's TSN-820 or TSN-660 series scopes. The optional stay-on scope case was not on the scope in the field tests, but I tried it out later. It is a very well-designed padded green cordura case that fits snugly and protects the scope body from scratches and minor bumps. A flap that can be velcroed open from either side or removed completely covers the focus wheels, but since it is not tethered to the case it could get lost. The eyepiece hood is held in place with snaps and for storage while viewing it can be snapped to either side of the scope (so you can use it as a screen in front of your idle eye) or pointing down at the back. It is tethered to the bag via two removable and adjustable straps to prevent it from getting lost. The objective end cap opens and closes with a zipper and is permanently tethered to the case, but also has a snap for fastening it open below the body while viewing. It also features a strap inside for holding the objective cover while viewing. All in all, I liked the case and found that it did not compromise the scope's usability like poorly designed cases often do.

## Optical performance

The resolution of the new Kowa, both as measured with test targets and tested in the field, was slightly but nevertheless clearly better than that of the best birding telescopes I have ever tested (Zeiss Diascope 85, Nikon Fieldscope ED 82 A and Opticron ES 100 ED). Since the Kowa's magnification range ends at 60x, however, the Nikon and Opticron scopes can in some situations use their higher magnifications to provide as much or even slightly more detail to the eye. In our field test when we compared the three scopes mentioned in the introduction to the Kowa and limited the Nikon to 60x, we unanimously considered the Kowa to have the best resolution, the Nikon to come second, the Zeiss to be third and the Swarovski fourth. For example, when looking at a street sign on the wall of a building three kilometres away, the Kowa easily and clearly showed the letters. The Nikon and the Zeiss showed them rather well, whereas with the Swarovski we could read the word but all the individual letters could no longer be discerned. When looking at a Goshawk sitting on the ice about 1.5km away, the order of the scopes was the same, the Kowa showing the facial features of the bird and the mottling on its back feathers the best. Using a booster behind the Kowa eyepiece to achieve 180x magnification also provided a better image than I have seen with other birding scopes. Contrast in the Kowa is almost as good as in the Nikon and a hair better than in the Swarovski. Compared to the Kowa, Nikon's contrast is a bit more pronounced and black and white are rendered a bit more naturally. In this group, the Zeiss quite clearly had the lowest contrast. Viewing stars at night the Kowa maintained its good contrast. There was no spurious stray light or spiking around stars bright or dim, and the sky background was nice and black. I evaluated brightness differences indoors against the Nikon, and found as I had expected that at high magnifications and in low light the Kowa was slightly brighter, although the difference was small. Outdoors during our field test there was so much light that brightness differences were not easy to detect, but even here the Kowa seemed the brightest of the lot. At no point during my testing did anything come up that would lead me to doubt the Kowa's ability to use the small advantage brought by its slightly larger objective lens also under more demanding conditions. Another sign of the scope's brightness and overall image quality was that during my solo field tests when I was alternately viewing with my binoculars and the Kowa, I found myself several times being fooled into

adjusting up the magnification only to find that I already had it at 60x. The colour balance of the Kowa is nearly neutral. Whites have a slight warm yellowish-reddish bias and colours are clear and vivid. Different colour shadings are very well revealed also at the highest magnification. When we switched quickly from scope to scope, the markedly yellow colour cast of the Zeiss Diascope stood out while we felt that the other three scopes' colour balance was close enough to neutral. Chromatic aberration is extremely well corrected in the TSN-823. Tests with real as well as with artificial stars revealed virtually no longitudinal chromatic aberration. The Zeiss and Nikon show small amounts, while in the Swarovski it can be seen rather clearly. I was a little surprised by Kowa's performance here, since in principle the triplet ED-objectives used in the other three should correct chromatic aberration at least as well as Kowa's air-spaced fluorite doublet. Lateral chromatic aberration, i.e., colour fringing which is absent in the middle of the field but increases towards the edges, arises chiefly in the eyepiece and is visible in all of the scopes. Flare and backlight properties were not evaluated in the group test, but the Kowa fared well when I tried it separately by viewing tree tops with the sun shining through them. When I looked as close to the sun as I dared, there were very few reflections in the image at 20x, but when I increased the magnification, reflections began to appear from a greased barrel surface inside the zoom eyepiece. Ease of viewing was good, with no obvious problems. When panning, there is some "rolling ball effect" as Kowa has opted to design the eyepiece with very little linear distortion. There is barely detectable barrel distortion visible at under 40x magnifications, but at high magnifications straight lines remain essentially straight to the edge. Edge resolution at 20-30x magnifications is excellent but at high magnifications it is only average. The sweet spot is relatively large and eye placement did not seem finicky. As mentioned above, we felt focusing was a bit too fast, so it was easy to overshoot the best focus. However, once we found it, there was no question about it. I also found that when zooming from 60x to 20x, the focus shifted 4 diopters. Although this does not matter much in practice and virtually all zoom eyepieces require some refocusing between the extremes, this much change is unusual. The field of view of the Kowa zoom at 20x is not as wide as in the Zeiss but wider than in the other top zooms. At 60x the Kowa has a somewhat narrower field than the Zeiss, Leica or Swarovski zooms, but not enough to notice unless you compare them directly. The Nikon zoom pays for its higher magnifications by having a much narrower field and shorter eye-relief throughout the magnification range than any of the others. I very briefly tried the new Kowa 30x wide eyepiece on the 883 before writing up this test report. It gave a very impressive view, being sharp, bright and easy to view with. The sweet spot was wide, but the edges of the field had their focus quite a bit closer than the centre. Thus the edge resolution was not nearly as good as in the Swarovski 30x eyepiece.

## Summary

The Kowa TSN-883 is a truly successful entry in the high-level scope market. Kowa has put a lot of effort into its design, with impressive results. The large objective lens gives the telescope more resolving power and a brighter image both in theory and in practice, and Kowa has managed to fit it into a scope whose weight, size and usability are fully competitive with the 77-85mm scopes by other makes. All areas of optical performance either represent the state of the art or are very close to it, and in other respects not very much remains on my wish list either. Our test team's unanimous conclusion was therefore that the Kowa TSN-883 takes top honours among premium birding scopes for now, and if we were on the market for a new scope today, this would be it. The difference between the Kowa and its best rivals is quite small, however, and those considering an upgrade should take their present scope along to the store for a side-by-side comparison to determine whether they feel the upgrade is worth the cost. In my view, the most noteworthy shortcoming of the new Kowa is that with the present eyepieces the available magnification ends at 60x, since the unit we tested would have enabled a viewer with normal eyesight to get useful added detail at least up to 80x magnification. Rather, Kowa has obviously thought it better to limit the magnifications to a range where image contrast and brightness are not yet markedly compromised. Likewise, when it comes to the zoom eyepiece, Kowa has chosen a compromise between field of view and

edge sharpness that, when compared with rival zooms, gives on the average a very good performance but breaks no new ground. The lack of rubber armouring on the body is regrettable, but of course armouring would have either added significant weight or forced Kowa to reduce the weight of the metal parts of the body, thus compromising durability. Now it is up to the user to decide whether to handle the scope with a bit more care or to use the optional padded stay-on case.

Overall, I'm always happy to see the performance envelope pushed a bit closer to what is theoretically attainable, and the Kowa TSN-883 does just that. Kowa has thrown a tough challenge to the other players in the field, and it will be interesting to see how they respond. Meanwhile, Kowa could go ahead and design a wideangle 25-75x zoom for the new scope…

## Specifications

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| Length (measured with zoom eyepiece) | 39.5 cm |
| Weight (measured with zoom eyepiece) | 1870 g |
| Closest focusing distance | 5.2 m |

**Eyepiece fields of view**:

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| 20 - 60x TE 10Z zoom | 2.18-1.09° |
| 30x wide TE 17 | 2.4° |
| 25x LER TE 20 H | 2.1° |

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