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Eye-piece with a focal length of 5 mm and an extremely wide field of view equal to 110°. Unparalleled quality and affordable price. Only from William Optics! " binding standard: 2 "and 1.25" (fits both sizes of hoists) " extremely wide field of view (AFOV equal to 110 degrees) " Fully Multi Coated optics (fully coated) for superb transmission " reduced chromatic aberration " great contrast thanks to great blackening, without sprites and glare, beans, etc. artifacts " parfocal with the other two glasses in the series " beautifully finished housing, anodized, with 1.25 "and 2" filter threads (allows the use of both 1.25 "and 2" filters) Warranty 2 years Warranty 2 years OPINION OF AN INDEPENDENT TESTER SHORT FOCUS GLASSES WILLIAM OPTICS XWA 3.5 mm and 5.0 mm A dozen or so years ago, the peak of the Polish astro-amateur's dream was to have wide-angle glasses with a huge, 82-degree field of view. At that time, Tele Vue's Naglers were in the lead; other wide-angle constructions were also appreciated - such as the UWAN series by WO. Over the last decade, a lot has changed in the world of wide-angle eyepieces available to astronomical observers. Glasses with extreme fields of view from 100° to even 120° have appeared. Interestingly, the prices of some of them are not cosmic, they can cost 2/3 the price of Naglers or even 1/3 the price of TV Ethos. My attention was drawn to the WO XWA eyepiece family, especially its two short focus representatives with focal lengths: 3.5 mm and 5.0 mm. I was very curious how these multi-lens constructions would work in the observations of the Moon, planets and DS objects. I decided to test them in my telescopes: the fast 4 "APO f / 6 refractor and the immortal 8" f / 5 Newtonian. Both glasses are of considerable size and very tall. The attached photos show their dimensions compared to the following glasses: Nagler 5 mm, UWAN 7 mm and ESa 30 mm. However, for their dimensions, they are not overly massive. The 5mm XWA weighs 665 grams and its 3.5 millimeter brother weighs 650 grams. Both glasses are made very carefully in the style of the older series - UWAN. They start with the mounting in two standards 1.25 "and 2" (reduction 1.25 " / 2" is included in the set), thanks to this they can be used in any eyepiece or angle. The inside of the glasses are two rubber rings ensuring a firm grip. Above, there are engraved in a delicate font the name and parameters of each of the glasses. The glasses are finished with large eye lenses with smoothly sliding eyecups along the screw line, ensuring proper cut-off of the side lights during observation. The first thing that literally stands out when you put them against the XWA series glasses is the huge, inconspicuous field of view. The view of the Moon filling almost the entire field of view of the short focal length refractor with magnification up to 171x is unforgettable! Obviously, such a wide field of view requires "taming" during observation. The eyesight automatically moves sideways in search of a diaphragm, which is not so easy to find. The distance of acute vision (ER) declared by the manufacturer is 15 mm. In my opinion, this is the shortest useful distance that ensures observation without excessive eye gymnastics and without fluttering the eyelashes on the eyeglass lens. One of the first measurements I made was of course checking the size of the apparent field of view given by the manufacturer. I made the measurement by measuring the time it takes for Jupiter's face to pass through the field of view of the glasses. It turns out that the 5 mm eyepiece has the measured field of view equal to 110.7°, and the 3.5 mm eyepiece: 113.2°! Remember the inaccuracies of measurements and distortions of the field of view at the diaphragm, you can clearly see that the fields of view are in line with the declared ones. The transmission of WO XWA glasses is at a high level, despite the multi-lens construction. The colors of the stars with a characteristic hue are faithfully reproduced without a marked warming or cooling of the image. With such a gigantic field, the distortion of eyepieces is significant, but not too bothersome during daytime observations. Of course, during night observations, this optical aberration is practically imperceptible. Interestingly, the curvature of the field is minimal. Planet images sharpened in the center remain sharp up to 90% of the field of view radius. And only with the diaphragm they are minimally out of focus. The edge blur, tested in light-strong telescopes taking into account the field of view of the eyepieces, turned out to be controlled in a better way than expected. Jupiter's Galilean moons were point-like up to 95%, the craters on "our", Earth's Moon were sharp almost to the diaphragm. Only point light sources, eg double stars, lost their sharpness a little earlier, after exceeding 85-90% of the field of view radius. However, if we remember that by focusing our eyesight on the center of the field of view, we are able to look at about 2/3 of the gigantic field of view of WO XWA glasses, we practically always have the entire field of view sharp. Astigmatism and coma do not appear with both glasses until the last 15% of the field of view. The stars sparkle noticeably, but in no way resemble comets or cauliflower. It should be written here about the limitations of using such short-focal eyepieces in typical telescopes. On the strength of things, they give extremely high magnifications, often at the limit acceptable for a given telescope aperture. That is why XWA glasses are very well suited for observing details on the face of the Moon, planets or separating double stars. Their great field of view will also be appreciated by users of azimuth mounts without drives. With such a gigantic field, it is possible to keep the observed object much longer between successive corrections of micromovements. And these are not intervals of a few seconds. Observing the disc of Jupiter with a telescope placed on a photographic tripod with a gear head, I made corrections every 60-90 seconds, enjoying the clearly visible details on the planet's face. Photographs of the Moon in spectacle projection - taking photos with a smartphone placed against the eyepiece is simple and gives interesting effects. Even the several-kilometer-wide craters on the Silver Globe are clearly visible. Both tested glasses made a very positive impression on me. They have an unforgettable huge field of view that is really well corrected. An observer who learns a slightly specific handling of them will surely be satisfied with the images they give. In my opinion, they are a very interesting proposition for lovers of wide frames and at an affordable price. Tomasz Miazgowicz - optics lover