



Concept: Barlow lenses, built on the basis of a negative optical element have some limitations as to the scope of applications as well as introduce some changes to the characteristics of the entire optical system. For example, a single negative lens lengthens the significant output of the eyepiece. With short-focal eyepieces, the effect is negligible, but with the focal length, the pupil can move away much longer than was intended for the design of the glasses, which in many cases results in vignetting and degradation of the image quality. The new 4-element optical design allows you to go where classic Barlow usually becomes useless. Powermate, which from the application side is the equivalent of a

Barlow, is a universal construction, built with the use of focusing lenses. Its use does not affect the distance of the exit pupil. "- Al Nagler The new 4-element construction developed by Al. Nagler perfectly matches the concept that TeleVue is faithful to. By using uncompromising solutions, you get perfectly sharp images free from aberration in the whole field of view. In contrast to standard Barlowów, such a structure does not change the distance of the exit pupil and does not cause vignetting. This opens up completely new possibilities. Suffice it to imagine the sharpness and comfort of the 32mm Plossl which, thanks to the use of the Powermate 5x lens behaves like a planetary eyepiece with a focal length close to 6mm Powermate and Barlow lens To understand the operation of Powermate lenses we need to understand the operation of classic Barlowów. Barlow is an element increasing the magnification of the telescope. It can be considered as the focus reducer of the eyepiece or by treating the problem inversely as the focal element of the telescope's focal length. Contemporary baroque lenses, dedicated to specific series of glasses, not only do not degrade the resulting image but also complement each other optically with these glasses. A high-quality Barlow lens must be properly and thoughtfully designed. Otherwise, it may introduce additional chromatic and spherical aberration to the telescope optics. Tele Vue Barrel Lenses belong to the best ones - it is enough to mention that astronomical magazine readers have described them as "invisible" lenses. The negative element of the heart-shaped bar lens, however, not only changes the scale of the image, but also a few other optical effects. The most perceptible property of negative barle lenses is their effect on the location of the exit eye of the mounted eyepiece. At short and medium focal lengths, the extension of the distance is hardly perceptible. The situation becomes a bit uncomfortable when it comes to us to connect the barlow with the focal length eyepiece. The radius then moves away from the eyepiece, observation becomes inconvenient and vignetting becomes a serious problem. By introducing the Powermate lenses to the market, we have reached beyond the existing limitations. A compact and well-corrected zoom converter was created. From the optical side it is a system of 4 elements gathered in two doublets. The first doublet consists of two negative lenses, the second doublet which has the task of correcting the effect of diffusing lenses on the original pupil consists of two focusing lenses. Benefits of using Powermates lenses - Vignetting, edge aberrations and off-axis aberrations characteristic of classic Barlows are minimized - The Powermate optical system gives a flat image in the focus. The direction of the light rays is independent of the distance from the optical axis and mutually parallel. This has a positive effect on the observations of spectral bands (eg H-Alpha) - High optical quality sufficient for astrophotography - Powermate fits all types of telescopes. It does not affect the focal point, it is parafoal. Except for the 5x model, the scale of the image is independent of the distance between the lens and the light detector. Thanks to greater optical perfection, we can obtain higher maximum magnification than in the case of spectacles connected with traditional Barlow lenses - Except 2 "2x model all Powermate lenses work well with diagonals. Photographing solar system bodies with Powermates lenses. Many great pictures of solar system bodies were made using the Powermates lenses. Without larger quality losses, the focal length of the telescope can be extended to the level required for planetary observations. Powermates lenses can be combined into sets, whereas the resultant enlargement of the system is a product of component enlargements. This is sufficient to achieve a scale at which it is unnecessary to use an eyepiece spectacle. Technical parameters lenses: 1,25 " frame: 1,25 " magnification: 5x

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