





First solar observations from AO-Belogradchik

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Source: https://weatherspark.com/y/88173/Average-Weather-in-Belogradchik-Bulgaria-Year-Round#Sections-Clouds

Some Weather Considerations



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Up to 20% clouds - clear

The clearer part of the year in Belogradchik begins around June 7 and lasts for 3.5 months, ending around September 23.

Instrumentation: Telescope



Celestron Schmidt-Cassegrain telescope SC 279/2800 C11 OTA

279
2800
10
610
12,5

Mount

Equatorial Advanced VX AVX GoTo

Source: https://www.astroshop.eu/telescopes/celestron-schmidt-cassegrain-telescope-sc-279-2800-c11-ota/p,12232#specifications https://www.astroshop.eu/equatorial-with-goto/celestron-mount-advanced-vx-avx-goto/p,32955#specifications

Instrumentation: Rejection filter



Energy Rejection Filter – ERF Туре DayStar E-325F90 Free transmission (mm) 90 Diameter (mm) 325 Mount off-axis Absorption < 500 nm and IR

Source: https://www.astroshop.eu/mounted-glass-filters/daystar-filters-energy-rejection-filter-e-325f90/p,52642

Instrumentation: H_{α} filter



H-alpha Filter

Hydrogen Alpha Quantum 1.25 DayStar

- (FWHM) < 0.5Å
- filter's wavelength output (accurate to 0.1Å) and red /blue wing shift buttons
- Temperature stabilized

LUNT LS60FHa/B600d1 H-alpha

- Aperture: 60 mm
- Bandwidth: <0.75 Angstrom
- Housing diameter: 95 mm
- Length: 85 mm
- Weight: 0.85 kg

Source: https://www.daystarfilters.com/quantum/ https://www.bresser.com/p/lunt-ls60fha-b600d1-h-alpha-solar-filter-0550252

Instrumentation: Camera



Common Vision Spark Series, SP-12401M-USB

-	Color / Mono	Mono
-	Light Spectrum	Visible + NIR
-	Resolution	12.4 MP
-	Resolution WxH	4112 x 3008 px
-	Frame rate	23 fps
-	Sensors	1x CMOS
-	Cell Size WxH	3.45 x 3.45 μm
-	Weight	130 g
-	Video Output	8/10/12-bit *
-	Operating Temperature	-5° C to $+45^{\circ}$ C

Source https://www.jai.com/products/sp-12401m-usb

Instrumentation: System Adjustments



According to the Rayleigh criterion

 $\theta \approx 1.22 \frac{\lambda}{D}$

For H_{α} = 656.28 nm, we have 1.83". The linear resolution ρ [µm] of the telescope-camera system is: $\rho = 1.22 \times \lambda \times f/D = 1.22 \times 0.65628$ µm × 31.1 = **24.9** µm or **40.2** points/mm, which is about **7.2** times lower than the camera's sensor resolution (289.8 px/mm)

Test observations: 2024-10-14







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approx. easy logistic

enough sunny days

- dust
- manual dome adjustment
- stability of mounting

Creating archive of observations; Training some AI models for good/bad; Comparing with other side observations; International interest;



Bilateral project: Bulgaria-Austria <u>https://astro.bas.bg/project-sun/</u> *'Joint observations and investigations of solar chromospheric and coronal activity'* (2023-2025) Bulgarian National Science Foundation project No. KP-06-Austria/5 (14-08-2023) and Austria's Agency for Education and Internationalisation (OeAD) project No. BG 04/2023



Thank You for Your Attention!

