User Manual
ADC-Compact 2016

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Content

1 Optical Concept

The goal of the atmospheric dispersive corrector (ADC) is to compensate the dispersive impact of the earth atmosphere on the optical path of the light. The ADC should be especially used to compensate the loss of the contrast caused by the atmospheric dispersion.
All components have been designed to keep the full optical performance of the telescope.
Since the correction power of the ADC grows with his distance to the focus, distance tubes (about 40 - 100mm) should be inserted between ADC and the 1.25“ eyepiece holder when observing objects with zenith distances greater than 60°.

For telescopes with F-numbers smaller then F10 a barlow lens should be used to reduce the beam divergence for minimizing the transversal color error.

In general atmospheric dispersive correctors have two optical elements with dispersive power. Simple correctors have two single prisms which have to be turned contrary to find the optimal correction. These simple prisms introduce an asymmetry into the optical system which is responsible for a dramatic reduction of the image quality. This setup leads to a non-diffraction limited optical performance.

Consequently we have designed our ADC to keep the diffraction limited performance by using plane plates as dispersive elements. These plan plates consists of two complementary prisms of different glasses. The glasses are selected to have the identical refraction index but different dispersions.
Both interfaces have identical dove tails where the added T2 male and T2 female adapters fits in. This allows by more flexibility a fast change of the equipment.

2 Product components

- ADC-Compact unit with:

- T2-Interface eyepiece side:
  - M42x0.75 male thread
  - 56mm dove tail connection to the ADC unit

- T2-Interface telescope side:
  - M42x0.75 female thread
  - 56mm dove tail connection to the ADC unit

The T2-Interface male and the T2 Interface female fits in both dove tail interfaces of the ADC allowing more flexibility by integrating the ADC into the telescope system.

3 Modes of observation

3.1 General observation hints

The correction power of the ADC depends strongly on the distance between ADC and focus. Normally the dispersion can be corrected for all objects with zenith distances smaller than 60° without using the extension tube. An extension tube of at least 40mm length should be used for objects with distances bigger than 60° zenith distances.

Using binocular viewer there might be necessary using additive a glass corrector to achieve the necessary back focal length.

3.2 Options to adapt the ADC onto telescopes

3.2.1 Focus units with M68 threads:

The ADC can be adapted by following components:

- 2“- Eyepiece Holder (Baader 245 8196)
- 2“- Interface with T2-thread (Baader 240 8190)
- Optional Barlow Lens:
    - VIP Barlow Lens (Baader 240 8200)
    - FCC Converter (Baader 240 6101)

3.2.2 Focus unit with 2“ eyepiece holder

Following components are sufficient to adapt the ADC Compact:

- Reducer 2“ to T2-thread (Baader 240 8190)
- Optional barlow lens :
    - VIP barlow lens (Baader 240 8200)
    - FCC converter (Baader 240 6101)

3.2.3 Focus unit with 1.25“ eyepiece holder:

This configuration needs less parts:

- Nose piece 1.25“ / T2-thread (Baader 245 8105)
- Optional barlow lens :
    - VIP Barlow Lens (Baader 240 8200)
    - FCC Converter (Baader 240 6101)

3.3 Straight view set up for observation with 1.25“ eyepieces

Following components can be mounted on the T2 adapter of the ADC:

- optional T2 - Extension Tube 40mm (Baader 150 8153)
- 1.25“/T2 – Eyepiece Holder (Baader 245 8125)

3.4 Observation with 1.25“ diagonal

The diagonal should be mounted direct onto the T2 – adapter of the ADC, since the dove tail allows to turn the diagonal onto a comfortable observation position.

- T2-Maxbright-Mirror Diagonal (Baader 245 6100)
- 1.25“/T2 – Eyepiece Holder (Baader 245 8125)

3.5 Observation with 1.25“ diagonal and binocular viewer

The diagonal should be mounted direct onto the T2 – adapter of the ADC, since the dove tail allows to turn the diagonal onto a comfortable observation position.

- T2-Maxbright-Mirror Diagonal (Baader 245 6100)
- Baader (TCR) Hardened Steel T2 Change Ring (Baader 245 6313A)
- optional Glas Path Corrector 1.25x (Baader 245 6314) or 1.7x (Baader 245 6316)
- Binocular Viewer (Baader 245 6450)

3.6 Astro Photography

Using the ADC when taking films or photos from sun, moon, planets and close binary stars will show the advantages by higher contrast.
The optional barlow lens should be mounted always between telescope lens and the ADC. An optional filter wheel should be mounted after the ADC.

In case of ghost images by using a barlow lens system, there might help a stop of about 15mm – 20mm in front of the barlow lens.

In case of using mono chrome camera's in combination with an ADC and a filter wheel the most advantage can be seen in the luminescence channel. Here the contrast by correcting the atmospheric dispersion is enhanced. This allows real LRGB images with very short integration time of the L-channel compared to the red channel.
Using a absorption filter where the blue and red light can pass e.g. Schott BG3, BG25 or BG37 enables a simple and easy adjustment of the ADC by optimizing the contrast of the image.

4 Adjustment of the ADC

The adjustment of the ADC system needs two steps for telescopes types as Refractors or Cassegrains:

1a. Turn the ADC System along the optical axis until the adjustment button is in vertical position:

For Newton's with azimuth mount:

1b. Move the telescope in vertical direction up
And down and observe in which directions the
Stars or object are moving in the eyepiece.
Turn ADC System along the optical axis until
the adjustment button looks in the same direction as the objects move in the eyepiece

2. Turn the adjustment button until the color contours disappear:
   - In case of under correction and observing without diagonal the upper edges of the object have red contours and the lower edges have blue ones. In case the upper edges of the object have blue contours and the lower edges have red ones, the dispersion is overcorrected.
   - When using a diagonal the edges will other colored contours:
     In case of under correction the upper edges will have blue ones and the lower edges will have red contours.
     In case of over correction the upper structures will have red and the lower edges have blue contours.
   - After 1.5 turns the maximal correction effect will be achieved. After another 1.5 turns the correction power is zero. Further 1.5 turn the correction will maximal enhance the dispersion. Turns the user the adjustment button another 1.5 times the ADC is again at his starting point
   - When the user observes objects with low altitude above horizon and can’t compensate the atmospheric dispersion, he should use a 2“-extension tube with at least 40mm length.

5 Technical Data

Dispersive Optics	2 plan plates each having 2 complementary prism with the same refracting index but different dispersion
Coating	Multilayer antireflex coating
Prism drive	Gear box turning the prism against each other in oppositional directions
Adjustment unit	Only one adjustment button
Free optical diameter	28 mm
Prism angle	2°24‘
Optical accuracy (Wellenfront)	1/30 λ rms
Mechanical / optical length	51mm / 48 mm
Interface	**Side in telescope direction:** T2 female thread **Side in eyepiece direction:** T2 male thread **Side in ADC direction:** dove tail with diameter 56mm
Weight	505 g

6 Cleaning and maintenance:

Always close the optics with the dust lids.

In the need to clean optical surfaces first remove the dust. Then clean the surfaces carefully with Isopropanol. Use for this a fresh washed cotton textile. Then remove dust particles with a micro fiber textile.

The housing can be cleaned also with Isopropanol or spirit.

Attention: The colored markings may be removed by chemicals.