

Alcor-System has optically designed, developed and manufactured a 4" field corrector for newton telescope (or for parabolic mirrors). It uses special glasses to get the best performance from 300 mm to 700 mm diameter telescope with low F/ (down to F/2.8). This corrector can offer a 36x36 mm corrected field to near diffraction limit. This document presents the performance of this corrector with different optical diameter and F/.



Recalled below, the distances from optical center with 24x36 and 36x36 mm sensor, at top, left and diagonal corner locations.

	Top distance from center	Left/right distance from center	Diagonal center distance
24x36 mm sensor	12 mm	18 mm	22 mm
36x36 mm sensor	18 mm	18 mm	~26 mm

A 36x36 mm sensor has a most distant corner distance from center of 26 mm.

The next picture shows the size of the corrector and the optical distance with and without the corrector (all units are mm).



Front plate attachment consists of 6 M3 threaded holes at Ø96 mm:



The next section shows spot diagram for different optical diameter and F/. The main mirror is a parabolic mirror with conic constant equal to -1.

For customized optical simulations, please contact us.

Ø300 F/3.5



From center field distance	Total field
5 mm	0.6 x 0.6 °
12 mm	1.3 x 1.3 °
18 mm	2 x 2 °
22 mm	2.4 x 2.4 °
26 mm	2.8 x 2.8 °



Ø400 F/3



From center field distance	Total field
5 mm	0.5 x 0.5 °
12 mm	1.1 x 1.1 °
18 mm	1.7 x 1.7 °
22 mm	2.1 x 2.1 °
26 mm	2.5 x 2.5 °



Ø400 F/4



From center field distance	Total field
5 mm	0.4 x 0.4 °
12 mm	0.9 x 0.9 °
18 mm	1.3 x 1.3 °
22 mm	1.6 x 1.6 °
26 mm	1.9 x 1.9 °



Ø500 F/3



From center field distance	Total field
5 mm	0.4 x 0.4 °
12 mm	0.9 x 0.9 °
18 mm	1.4 x 1.4 °
22 mm	1.7 x 1.7 °
26 mm	2.0 x 2.0 °



Ø500 F/4



From center field distance	Total field
5 mm	0.3 x 0.3 °
12 mm	0.7 x 0.7 °
18 mm	1.0 x 1.0 °
22 mm	1.3 x 1.3 °
26 mm	1.5 x 1.5 °



Ø600 F/3



From center field distance	Total field
5 mm	0.3 x 0.3 °
12 mm	0.8 x 0.8 °
18 mm	1.1 x 1.1 °
22 mm	1.4 x 1.4 °
26 mm	1.7 x 1.7 °



Ø600 F/4



From center field distance	Total field
5 mm	0.2 x 0.2 °
12 mm	0.6 x 0.6 °
18 mm	0.9 x 0.9 °
22 mm	1.1 x 1.1 °
26 mm	1.2 x 1.2 °



Ø700 F/2.8

Spot diagram (black circle is airy disk)

This is a special edition of the corrector with slight mechanical changes



From center field distance	Total field
5 mm	0.3 x 0.3 °
12 mm	0.7 x 0.7 °
18 mm	1.1 x 1.1 °
22 mm	1.3 x 1.3 °
26 mm	1.5 x 1.5 °



Image sample

This section shows some images sample, this was acquired with ASI ZWO 6200 MM camera (pixel 3.8µ) and binning 1x1.

The telescope is a Ø500 mm F/3 parabolic mirror (conic = -1), for all images.

This is the first light image, of 10 sec exposure and 75% Moon. The image has been **reduced to show corners and edges (RCI image)** of the full 9576x6388 pixel image. This shows the sharpness of the image and 1.4 arsec FHWM was achieved over the whole 24x36 mm field of view.



The second image, of 300 sec guided exposure with no Moon visible. The image has been reduced to show corners and edges. This shows the sharpness of the image and 1.8 arcsec FHWM was achieved over the whole 24x36 mm field of view.



The third image is a processed and stacked SHO image (500, 656 and 672 nm)



The full res image can be found here

https://www.alcor-system.com/common/4pcorrector/IC410-SHO-SHO.jpg

This is a 63 Megabyte image, recorded with S2, Halpha and O3 filtres.

It uses the same 500 mm F3 telescope as above, and the



FITS raw image samples can be provided on request for deeper inspection and assessment.

Compliant focusers to this 4" corrector from third party suppliers:

Since this is a $\emptyset 4''$ (\emptyset 102.2 mm) barrel field corrector, it can be difficult to find suitable focusers. The market was explored to find some focuser available in the market. If other is available and not in this list, please let us know.

1. ESSATO from Primaluce

https://eu.primalucelab.com/esatto-4/esatto-4-robotic-microfocuser.html



2. GTD focuser (http://www.geminitelescope.com/)

GTD Primis manual EN.pdf (geminitelescope.com)

This focuser is optimized to be installed in telescope prime focus.



3. **Optec**

Optec :: Gemini Focusing Rotator (optecinc.com)

This company has designed a special version of his focuser rotator. Bore diameter is \emptyset 4.75" that is more than \emptyset 4"



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