



Makro-Planar T* 2/50 ZF



Features

- A fast f/2 aperture is useful under low-light conditions
- A floating elements design ensures performance virtually unchanged from close distance to infinity
- The lens design produces nearly distortion-free images over the entire frame
- Robust full-metal construction
- Identical color reproduction of all models assures the quality of products measured by hue difference
- For industrial cameras with F-Mount up to sensor sizes of 24x36 mm.
- Mounts and optical coatings can be modified on request

ZF-I: Industrial Edition

Features special screws to fix focus and aperture settings also in rough situations.

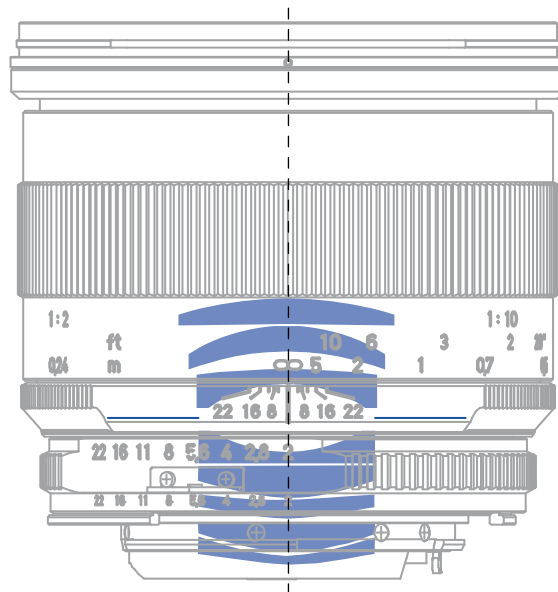
Camera Mounts

Available for other camera mounts such as EF or K bayonet mount.



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Technical Specifications



Focal length	50 mm
Aperture range	f/2 – f/22 (1/ 2 stop intervals)
Number of elements / groups	8 / 6
Working distance (object to sensor)	9.8 cm (0.32 ft) – ∞
Angular field* (diag. / horiz. / vert.)	45 / 38 / 26 °
Max. diameter of image field	43 mm (1.7")
Flange focal length	46.5 mm (1.8")
Coverage at close range	48 x 72 mm (1.9 x 2.8")
Image ratio at close range	1: 2
Filter-thread	M 67 x 0.75
Length (without caps)**	67.9 mm (2.7")
Diameter	72 mm (2.8")
Weight	530 g (19 oz.)
Camera mount***	ZF (F bayonet)

* referring to 35 mm format

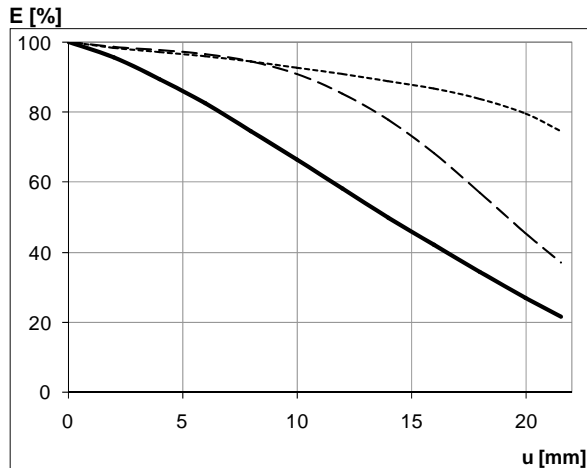
** from bayonet mount to filter thread when lens focused to infinity

*** other mounts available on request



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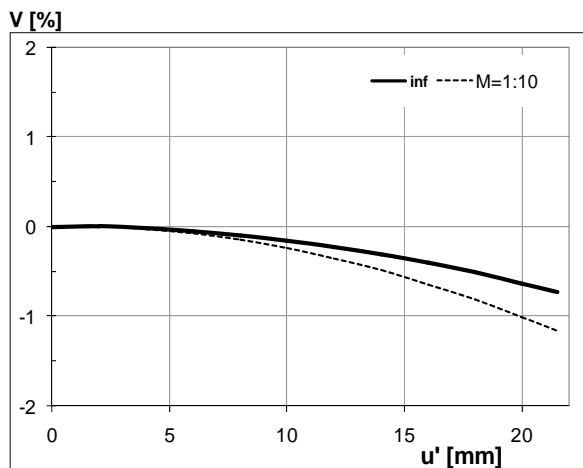
Relative Illuminance



The relative illuminance shows in percent the decrease in image brightness from the image center to edge.

- f-number 2
- ... f-number 5.6
- f-number 2.8

Relative Distortion

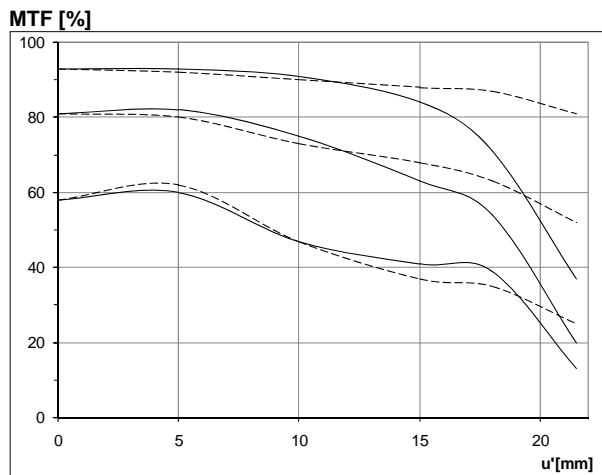


The relative distortion shows in percent the deviation of the actual from the ideal image height.



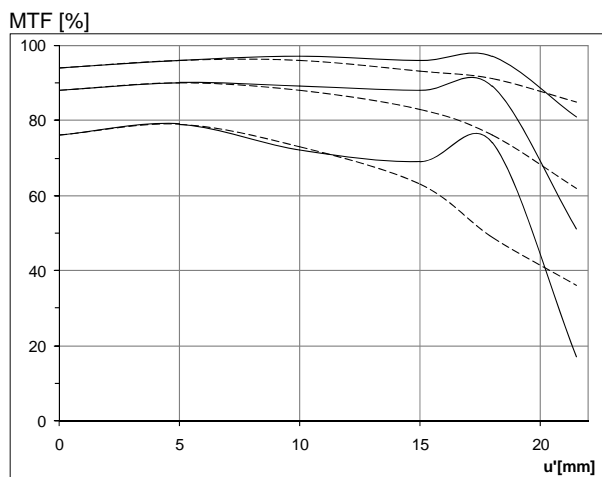
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MTF Charts



The Modulation Transfer (MTF) as a function of image height (u) and slit orientation (sagittal, tangential) has been measured with white light at spatial frequencies of $R = 10, 20$ and 40 cycles/mm.

f-number 2
— Sagittal
... Tangential



f-number 5.6
— Sagittal
... Tangential



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Depth of Field

Aperture	Field range		
	Object distance 1.00 m (3.28 ft)	Object distance 0.50 m (1.64 ft)	Object distance 0.24 m (0.79 ft)
f / 2	0.98 – 1.02 m (3.21 – 3.35 ft)	0.496 – 0.504 m (1.63 – 1.65 ft)	0.240 – 0.240 m (0.79 – 0.79 ft)
f / 2.8	0.97 – 1.03 m (3.18 – 3.38 ft)	0.495 – 0.505 m (1.62 – 1.66 ft)	0.239 – 0.241 m (0.78 – 0.79 ft)
f / 4	0.96 – 1.04 m (3.15 – 3.41 ft)	0.492 – 0.508 m (1.61 – 1.67 ft)	0.239 – 0.241 m (0.78 – 0.79 ft)
f / 5.6	0.95 – 1.06 m (3.12 – 3.48 ft)	0.490 – 0.511 m (1.61 – 1.68 ft)	0.239 – 0.241 m (0.78 – 0.79 ft)
f / 8	0.93 – 1.08 m (3.05 – 3.54 ft)	0.485 – 0.516 m (1.59 – 1.69 ft)	0.239 – 0.241 m (0.78 – 0.79 ft)
f / 11	0.91 – 1.12 m (2.98 – 3.67 ft)	0.480 – 0.522 m (1.57 – 1.71 ft)	0.238 – 0.242 m (0.78 – 0.79 ft)
f / 16	0.87 – 1.18 m (2.85 – 3.87 ft)	0.472 – 0.533 m (1.55 – 1.75 ft)	0.237 – 0.243 m (0.78 – 0.80 ft)
f / 22	0.83 – 1.27 m (2.72 – 4.17 ft)	0.462 – 0.547 m (1.52 – 1.79 ft)	0.236 – 0.244 m (0.77 – 0.80 ft)

Defined circle of confusion: 0.03 mm (0.0012")