



# MC4K200X-N | DATASHEET

## Macro lens for 4k line scan cameras, magnification 2.000x, M42x1 FD 10.56 mount



### KEY ADVANTAGES

#### Macro design

Achieve unmatched resolution in critical applications: these objectives consistently deliver superior image quality than standard fixed focal length lenses used with extension tubes.

#### Exceptional low distortion

Perform measurement tasks with a high degree of accuracy and reliability.

#### Optimized aperture

For each magnification, the F/# is optimized to ensure the best field depth and image resolution.

#### Easy front filter insertion

Thanks to the front M30.5x0.5 thread

**MC4K series** is a collection of macro lenses fitting both 4 K line scan cameras and matrix detector cameras over 4/3". These lenses are specifically designed for macro imaging, as opposed to infinite conjugate lenses with added spacers, a common alternative unable to deliver the same optical performance.

### SPECIFICATIONS

#### Optical specifications

Magnification	(x)	2.000
Magnification Range	(x)	1.955 - 2.042
Image circle	(mm)	28.7
Max sensor size		4k, APS-C
Working distance <sup>1</sup>	(mm)	78.1
Focal length	(mm)	80
f/N		6.8
wf/N <sup>2</sup>		20
Distortion typical (max) <sup>3</sup>	(%)	< 0.01 (0.03)
Field depth <sup>4</sup>	(mm)	0.5
Resolution (max) <sup>5</sup>	(µm)	6.0

#### Mechanical specifications

Mount <sup>6</sup>		M42x1 FD 10.56
Filter thread		M30.5 x 0.5
Phase adjustments <sup>7</sup>		Yes
Length <sup>8</sup>	(mm)	254.4
Outer diameter	(mm)	52.0
Mass	(g)	684

<sup>1</sup> Working distance: distance between the front end of the mechanics and the object. Set this distance within ±3% of the nominal value for maximum resolution and minimum distortion.

<sup>2</sup> working f/N: the real f/N of a lens in operating conditions.

### FIELD OF VIEW

Sensors	(mm)
Line - 2k x 5µm (10.24 mm)	5.12
Line - 2k x 5µm (14.34 mm)	7.17
APS-C IMX342 (23.36 x 16.77 mm x mm)	11.68 x 8.38
Line - 2k x 5µm (20.48 mm)	10.24
Line - 2k x 5µm (28.67 mm)	14.34

<sup>3</sup> Percent deviation of the real image compared to an ideal, undistorted image. Typical (average production) values and maximum (guaranteed) values are listed.

<sup>4</sup> At the borders of the field depth the image can be still used for measurement but, to get a very sharp image, only half of the nominal field depth should be considered. Pixel size used for calculation is 7 µm.

<sup>5</sup> Object side, calculated with the Rayleigh criterion with λ= 520 nm

<sup>6</sup> FD stands for Flange Distance (in mm), defined as the distance from the mounting flange to the camera detector plane.

<sup>7</sup> Indicates the availability of an integrated camera phase adjustment feature.

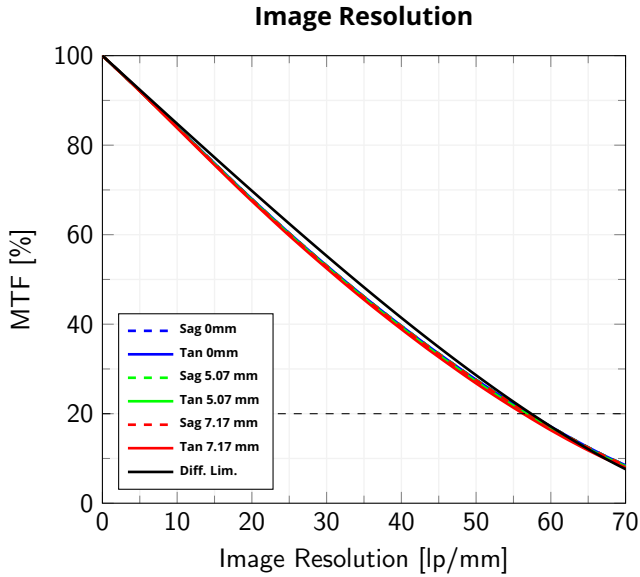
<sup>8</sup> Measured from the front end of the mechanics to the camera flange.

### COMPATIBLE PRODUCTS

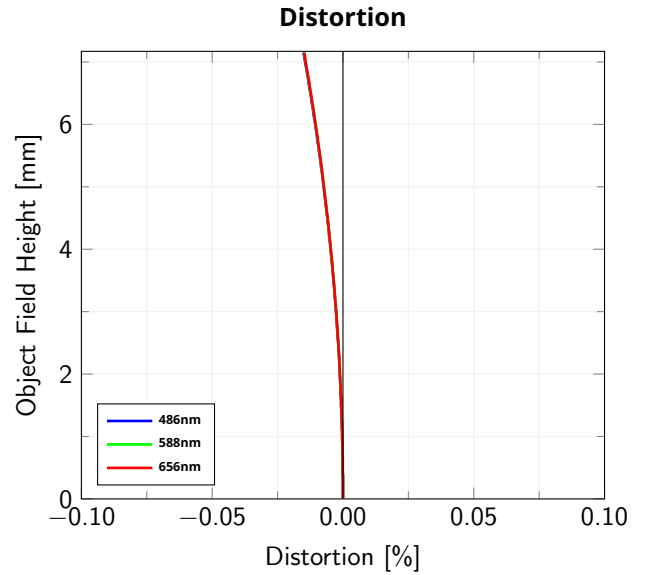
Full list of compatible products available [here](#).



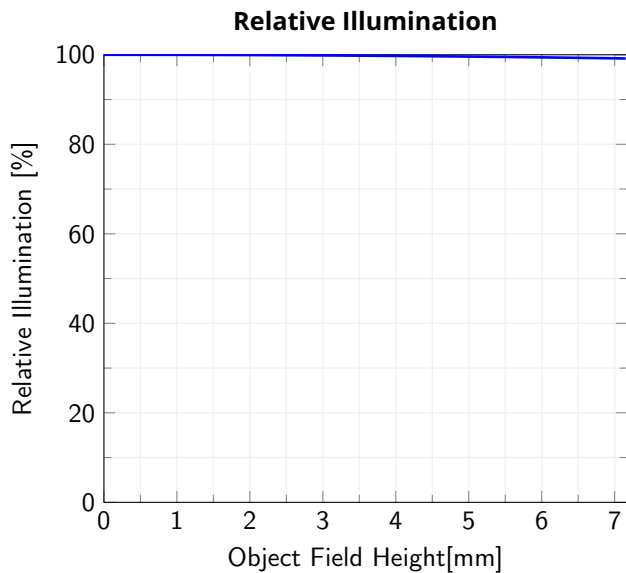
A wide selection of innovative machine vision components.



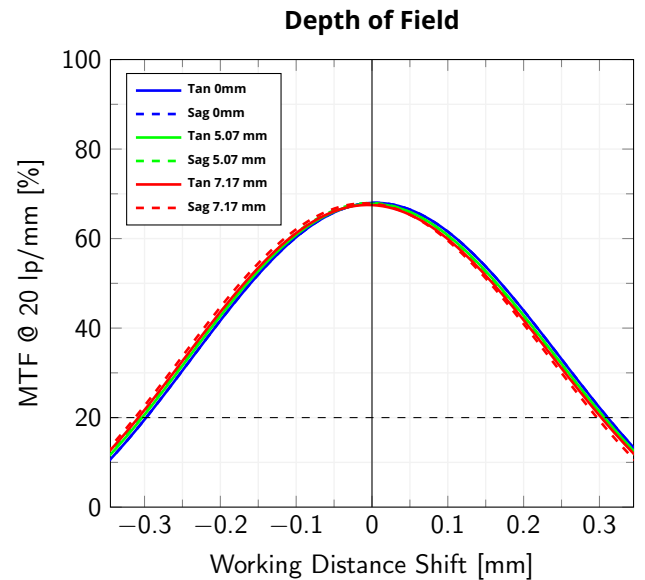
Modulation Transfer Function (MTF) vs. Image Resolution, wavelength range 486 nm - 656 nm. Fields in legend are represented as distance from the optical axis to the corner of the field of view



Object Field Height vs. Distortion, from the optical axis to the corner of the field of view



Relative illumination vs. Object Field Height, from the optical axis to the corner of the field of view



Modulation Transfer Function (MTF) @ 20 lp/mm vs. Working Distance Shift from the best focus Working Distance, wavelength range 486 nm - 656 nm. Fields in legend are represented as distance from the optical axis to the corner of the field of view

All product specifications and data are subject to change without notice to improve reliability, functionality, design or other. Photos and pictures are for illustration purposes only. Data are reported by design, actual lens performance may vary due to manufacturing tolerances.