

This vibration insensitive lens is designed for use with large area and line scan sensors in harsh conditions such as many industrial applications. With a wide range of accessories such as focus mounts, extension tubes and adapters, the lens can be combined with a wide variety of industrial cameras. Very low chromatic aberrations plus low geometric distortion provide a very high image quality from edge to edge over a wide magnification range.

Key features

- Modular system
- Low distortion
- Low chromatic aberrations
- Large image circle

Applications

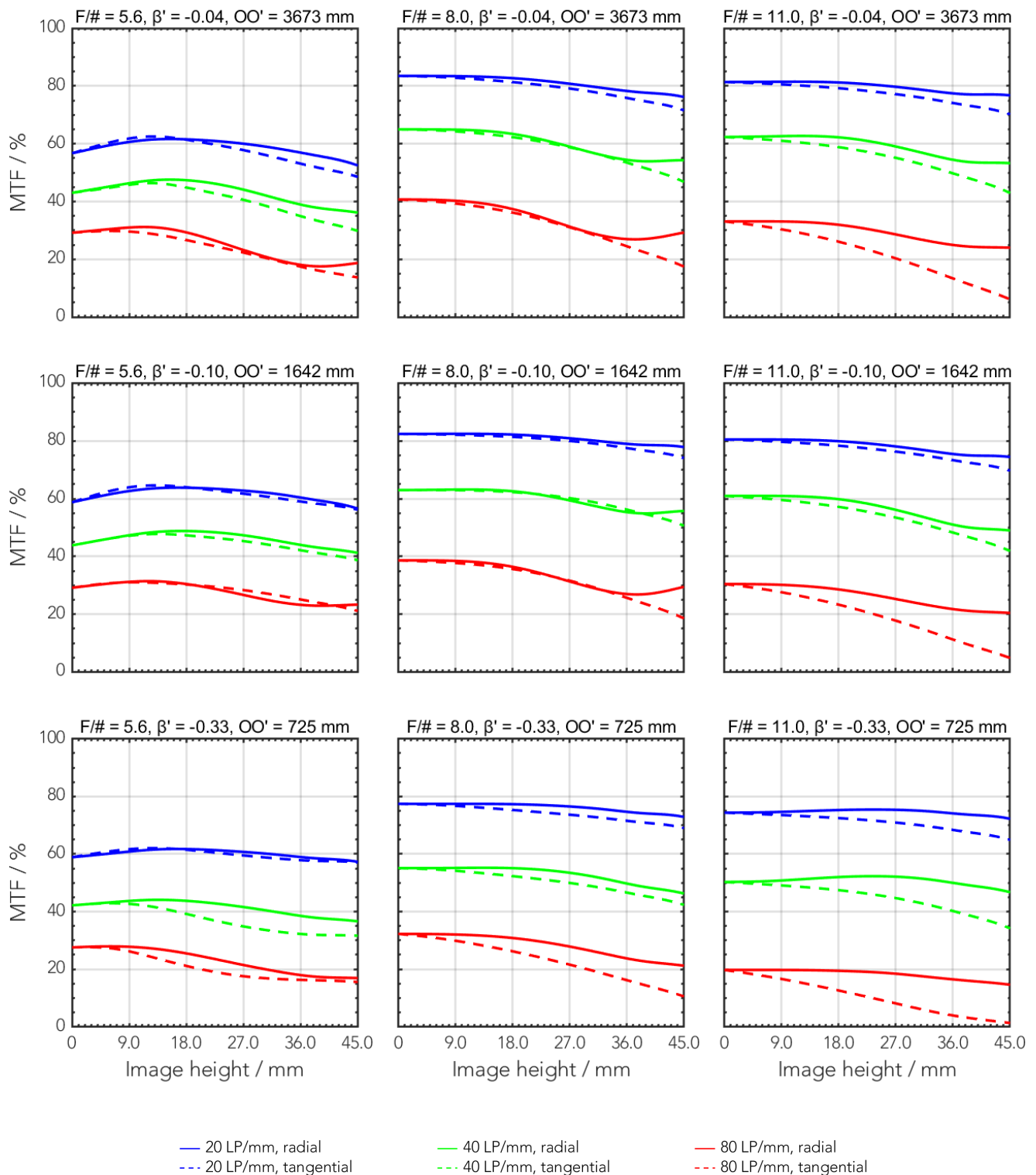
- Machine Vision
- AOI (Automated Optical Inspection)
- FPD/PCB inspection
- Logistics

Technical specifications

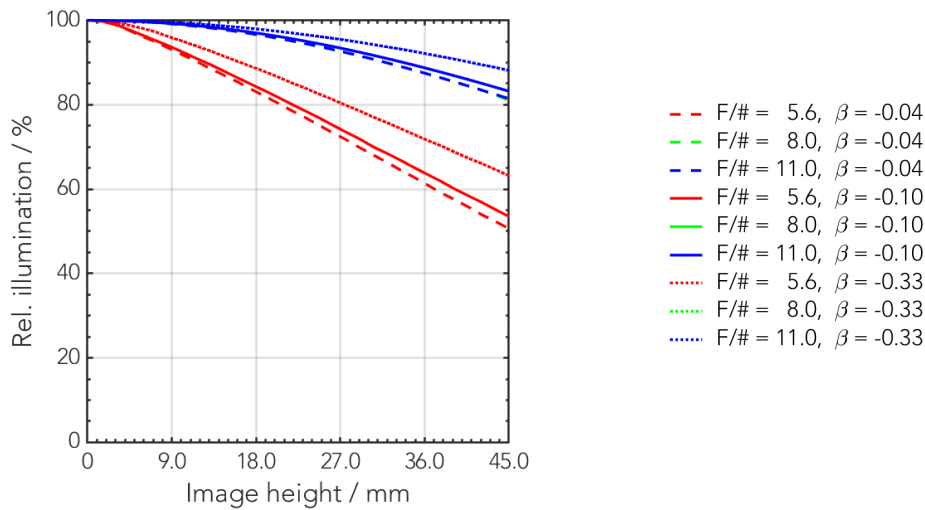
Type [standard]	M50
ID [standard]	39569
Interface	M50x0,75
Focal length [mm]	135
F/# range	F/5.6 ... F/45
Numerical aperture [object image]	- 0.09
Max. sensor size [mm]	90
Max. angle of view [°]	58
Rec. magnification range	-0.5 ... 0
Rec. working distance range [mm]	380 ... ∞
Max. mechanical focus travel [mm]	-
Filter thread [mm]	M49 x 0.75
Storage temperature [°C]	-25 ... +70
Net. weight [standard] [g]	197
Additional info	-
f'eff [mm]	135.97
SF [mm]	-109.31
S'F' [mm]	112.81
HH' [mm]	-3.04
β'P	0.99
SEP [mm]	28.38
S'AP [mm]	-21.24
Σd [mm]	46.56

MTF charts

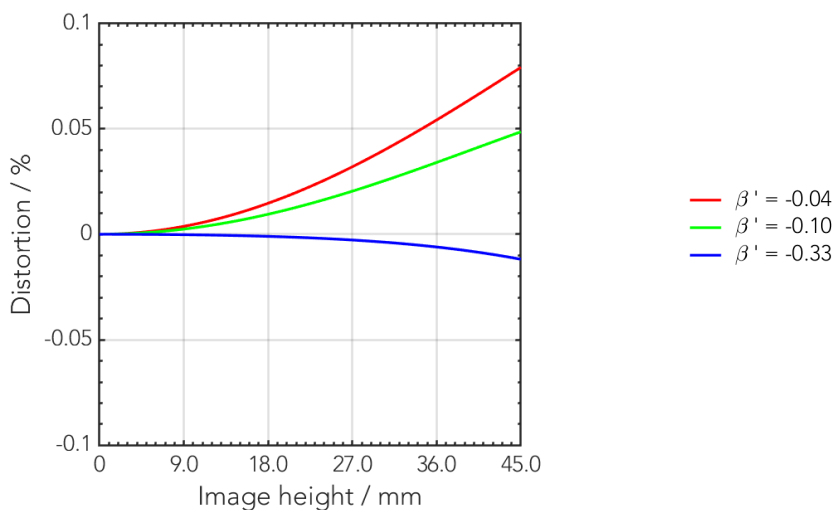
Spectrum name	VIS					
Wavelengths [nm]	425	475	525	575	625	675
Rel. weights [%]	8	16	23	22	19	13



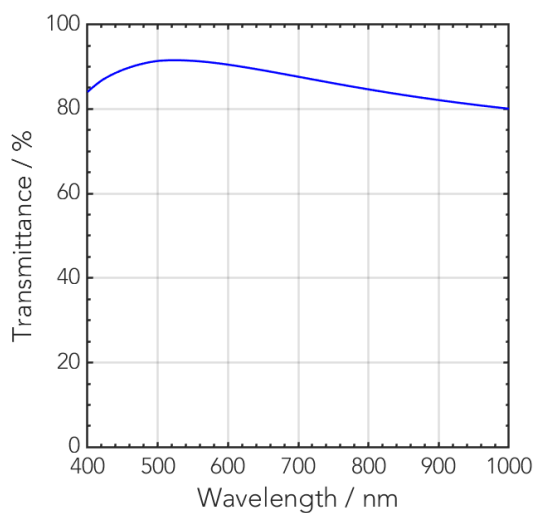
Rel. illumination vs. image height



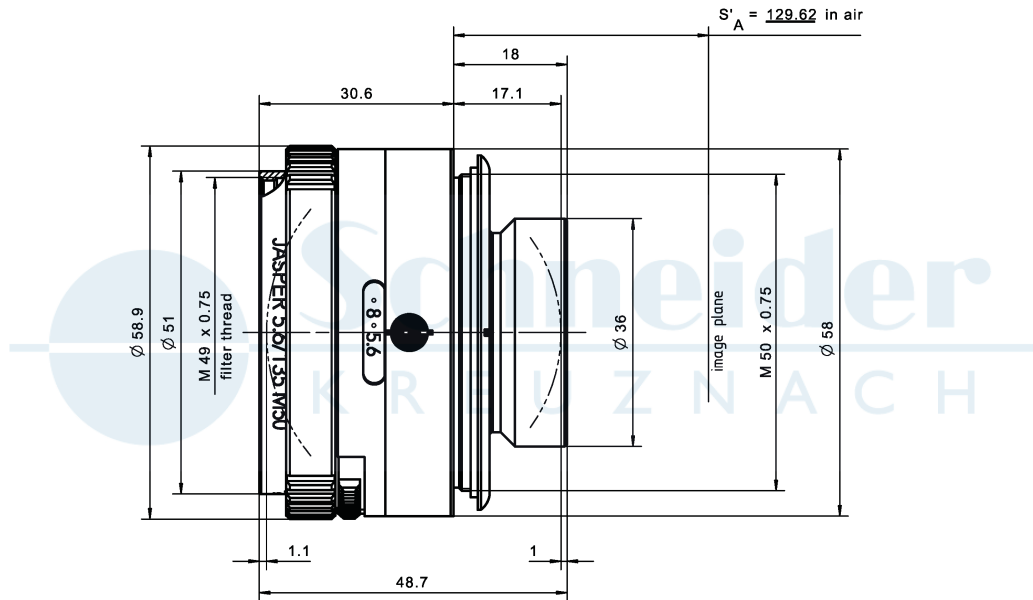
Distortion vs. image height



Transmittance vs. wavelength



Technical drawings



Accessories	Mount	Eff. length	ID
Unifoc 58	L / M42 x 0.75	18.8 – 44.5 mm	39549
Unifoc 76	L / M58 x 0.75	18.8 – 44.5 mm	13048
Adapter	M42 x 0.75 / C-Mount	5.5 mm	41629
	M42 x 0.75 / F-Mount	9.3 mm	21591
	M42 x 0.75 / M42 x 1	9.5 mm	21592
	M50 x 0.75 / Leica	31.5mm	17231
	M58 x 0.75 / M72 x 0.75	2.0 mm	13052
	M58 x 0.75 / M95 x 1	4.0 mm	1062891
	M95 x 1 / M90 x 1	6.6 mm	1084889
	Extension tube	M42 x 0.75 / M42 x 0.75	6 mm
M58 x 0.75 / M58 x 0.75		10 mm	13051
M58 x 0.75 / M58 x 0.75		25 mm	13050
M72 x 0.75 / M72 x 0.75		5 mm	1072420
M72 x 0.75 / M72 x 0.75		10 mm	1072421
M72 x 0.75 / M72 x 0.75		25 mm	26406
M72 x 0.75 / M72 x 0.75		50 mm	1054733
M72 x 0.75 / M72 x 0.75		100 mm	1079483
M90 x 1 / M90 x 1		10 mm	1084875
M90 x 1 / M90 x 1		25 mm	1084876
M90 x 1 / M90 x 1		50 mm	1084877
M90 x 1 / M90 x 1		100 mm	1084878
M95 x 1 / M95 x 1		10 mm	1077290
M95 x 1 / M95 x 1		25 mm	1062892
M95 x 1 / M95 x 1		50 mm	1062893
M95 x 1 / M95 x 1		100 mm	1062894
M95 x 1 / M95 x 1		200 mm	1077291

Annotation	
Focal length	Nominal focal length
F/# range	Image space F-number range for infinity focus position
Numerical aperture	Maximum real numerical aperture (depending on recommended magnification range either for infinity or respective fixed magnification)
Max. sensor size	Image circle diameter
Max. angle of view	Angle of view associated with maximum sensor size (depending on recommended magnification range either for infinity or respective fixed magnification)
Rec. magnification range	Magnification range as recommended by Schneider-Kreuznach
Rec. working distance range	Working distance, i.e. distance between object and first mechanical element, associated with recommended magnification range
Max. mechanical focus travel	Maximum possible movement of the lens from infinity position (depending on recommended magnification range either for infinity or respective fixed magnification)
Net weight	weight of unpacked lens without lens cap
f'_{eff}	Effective focal length
SF	Distance between vertex of first lens surface and object space focal point
S'F'	Distance between vertex of last lens surface and image space focal point (back focal distance at infinity)
HH'	Distance between principal planes
$\beta'P$	Pupil magnification (= exit pupil diameter / entrance pupil diameter)
SEP	Distance between vertex of first lens surface and entrance pupil
S'AP	Distance between vertex of last lens surface and exit pupil
Σd	Distance between vertices of first and last lens surface
s'A	Flange focal distance (in air) for infinite object distance (depending on recommended magnification range either for infinity or respective fixed magnification)
β'	Magnification (= image size / object size), negative value because image is inverted
OO'	Distance between object and image

Unless otherwise stated all dimensions in this data sheet are in mm.

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