

This high resolution SWIR lens with 25.4mm image circle is designed for the 800 - 1800 nm spectral range. With its robust mechanical design and locking screws for focus and iris it maintains its high optical imaging performance even in harsh environment. A special SWIR coating and internal lacquering reduces stray light, resulting in a high contrast images. The V48-Mount fits to the modular Unifoc system with its large variety of accessories, including focusing mounts, extension tubes and camera adapters.

Key features

- Optimized for 800 - 1800 nm
- For sensor sizes up to 25.4mm
- High resolution optics
- V48-Mount for flexible system integration

Applications

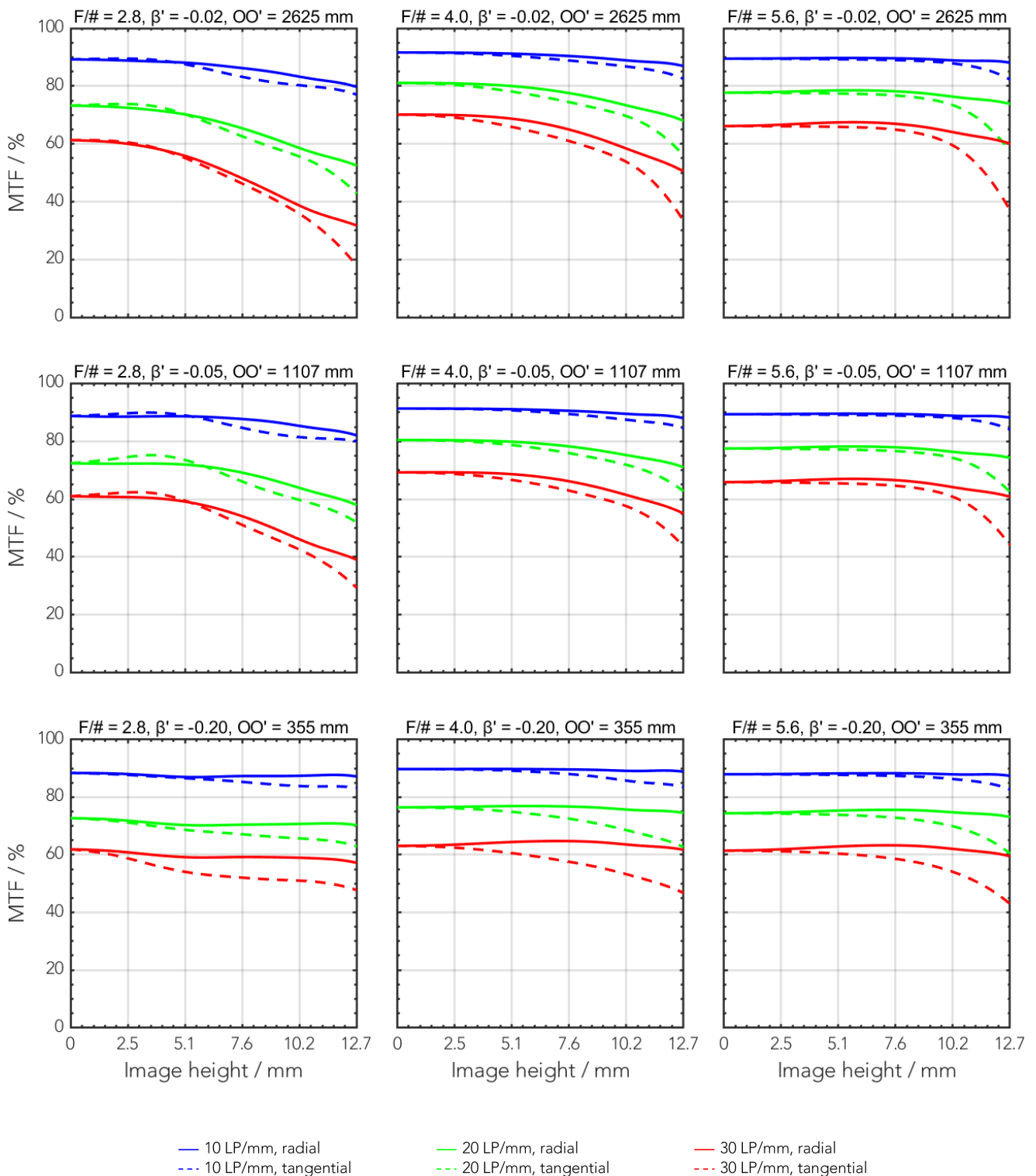
- Solar cell inspection
- Food sorting
- Agriculture observation
- Geology analysis

Technical specifications

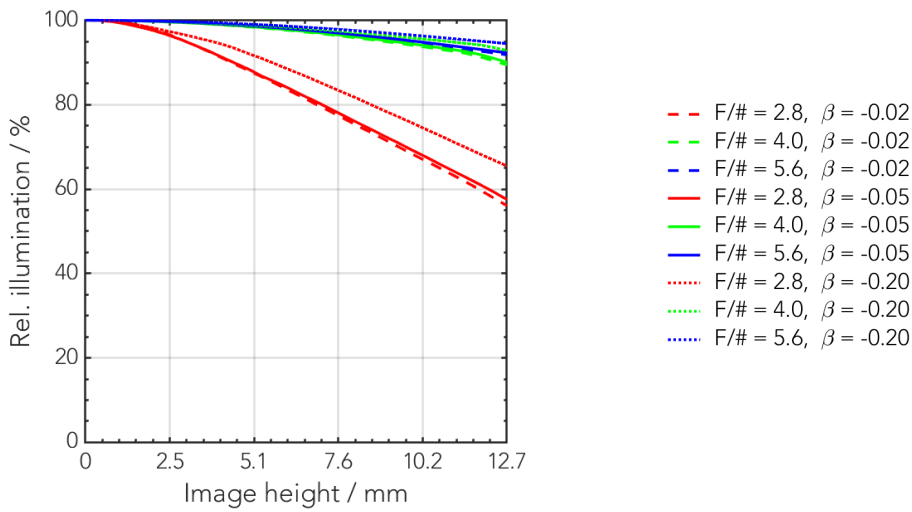
Type [standard]	V48
ID [standard]	1087723
Interface	V48-Mount
Focal length [mm]	50
F/# range	F/2.8 ... F/16
Numerical aperture [object image]	- 0.09
Max. sensor size [mm]	25.4
Max. angle of view [°]	28
Rec. magnification range	-0.2 ... 0
Rec. working distance range [mm]	262 ... ∞
Max. mechanical focus travel	27.5
Filter thread [mm]	M43 x 0.75
Storage temperature [°C]	-25 ... +70
Net. weight [standard] [g]	297
Additional info	-
f'eff [mm]	50.74
SF [mm]	-11.82
S'F' [mm]	33.97
HH' [mm]	-9.94
β'P	1.25
SEP [mm]	28.71
S'AP [mm]	-29.56
Σd [mm]	45.75

MTF charts

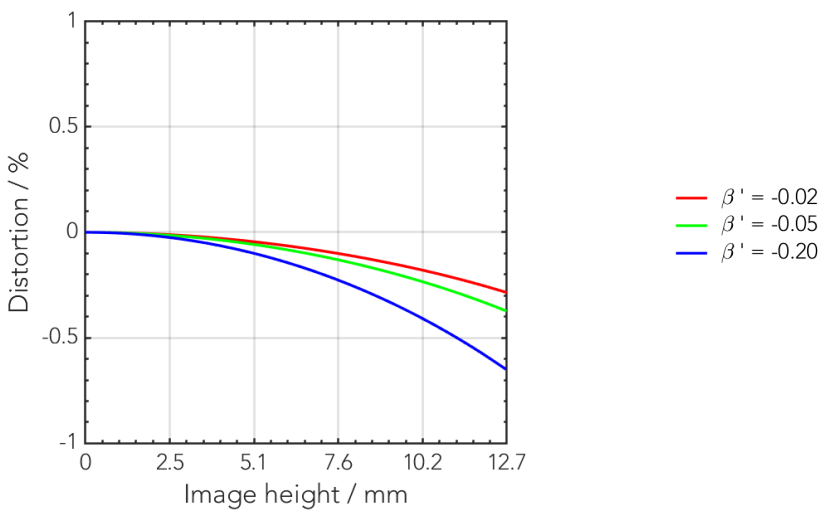
Spectrum name	SWIR					
Wavelengths [nm]	920	1070	1220	1370	1520	1670
Rel. weights [%]	16.9	18.2	17.7	17.1	15.9	14.2



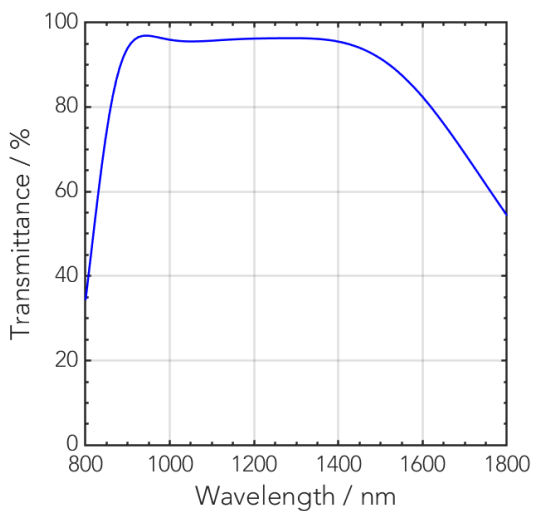
Rel. illumination vs. image height



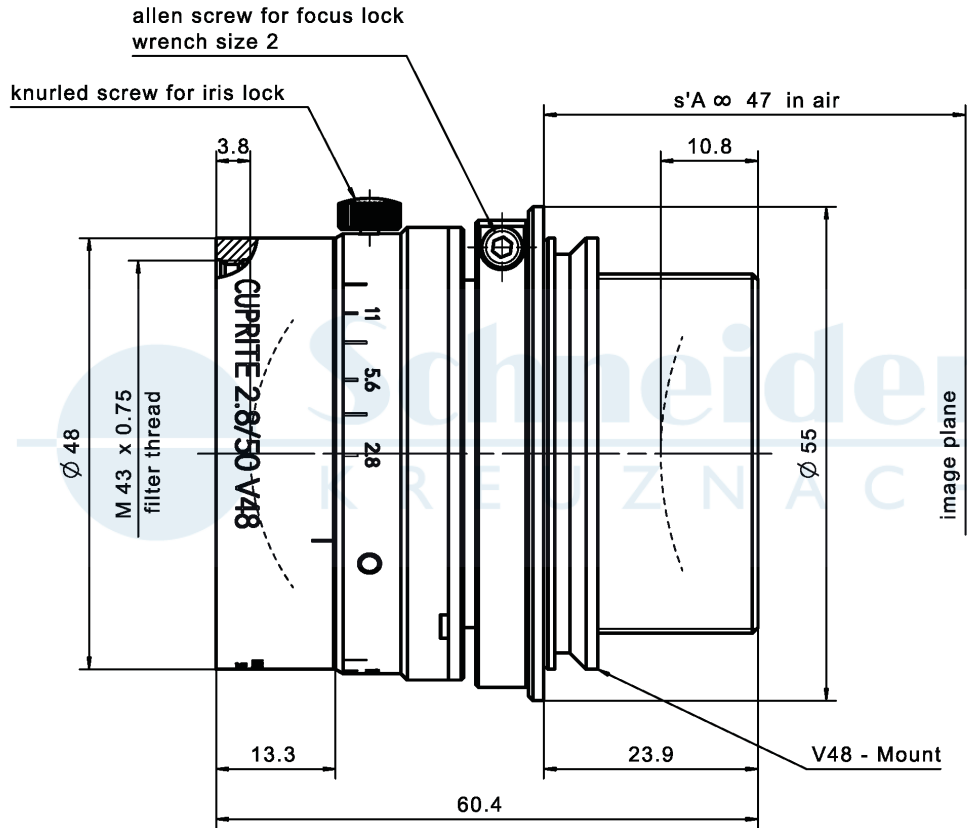
Distortion vs. image height



Transmittance vs. wavelength



Technical drawings



Accessories	Mount	Eff. length	ID
UNIFOC 22	V48 / V70	15.6 – 37.6 mm	1075304
Adapter	V48 / M42 x 0.75	8.5 mm	1072652
	V48 / M42 x 1	8.5 mm	1072660
	V48 / M58 x 0.75	10 mm	1072659
	M58 x 0.75 / M90 x 1	4 mm	1084880
	V70 / M72 x 0.75	10 mm	1072419
	M72 x 0.75 / M42 x 1	6 mm	1079515
	M72 x 0.75 / M58 x 0.75	6 mm	1075556
	M72 x 0.75 / M90 x 1	4 mm	1084879
	M72 x 0.75 / M95 x 1	4 mm	1077013
	Extension Tube	V48	10 mm
V48		25 mm	1072651
V48		50 mm	1072662
M72 x 0,75		5 mm	1072420
M72 x 0,75		10 mm	1072421
M72 x 0,75		25 mm	26406
M72 x 0,75		50 mm	1054733
M72 x 0.75		100 mm	1079483
M90 x 1		10 mm	1084875
M90 x 1		25 mm	1084876
M90 x 1		50 mm	1084877
M90 x 1		100 mm	1084878
M95 x 1		10 mm	1077290
M95 x 1		25 mm	1062892
M95 x 1		50 mm	1062893
M95 x 1		100 mm	1062894

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.