

# LENS RL-SWIR 1x 5.6– P/N C0219

## *General Description*

This 1X relay lens is designed for inspection imaging in the Short Wave Infrared Region (0,9 – 3  $\mu\text{m}$ ) and sized to accommodate 320 x 240 pixels in GaAs sensors.

Its long back focal length (154 mm) makes it well-suited to microscope applications.

In this particular design, the 1X magnification value serves to increase the back focal length of the standard Optec NIR lenses (F Bayonet or C-Mount interface) to image through a Liquid Crystal Tunable Filter (LCTF) device.



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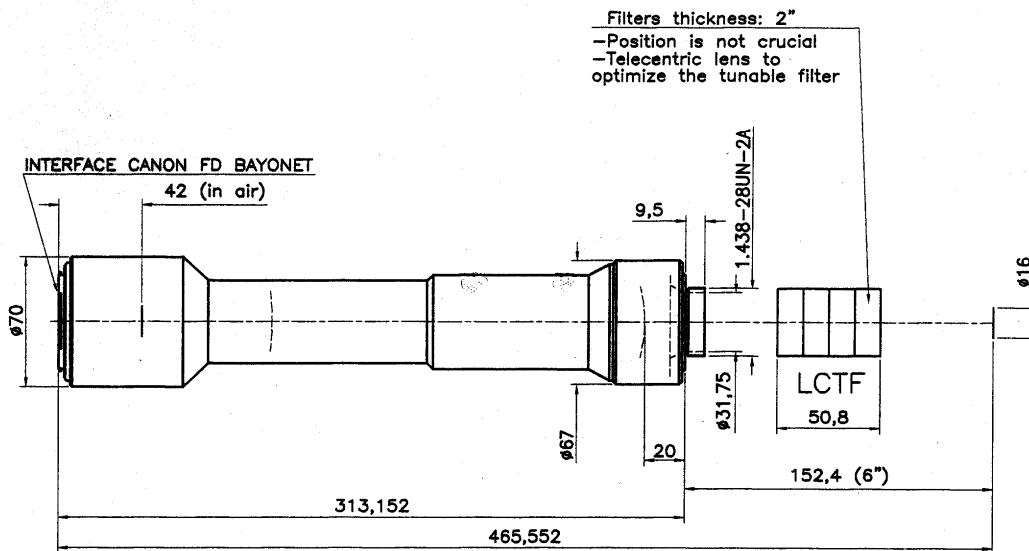
Specification are subject to change without notice

**Optical and mechanical parameters**

Magnification	1 x
Image format (diagonal)	16 mm
F.O.V. (diagonal)	N.A
Max aperture	F/N = 5.6
Object format (diagonal)	16 mm
Min working distance	N.A.
Zoom value	N.A.
Focus	manual
Iris (none, simply removable discs)	Max F/N =5.6 Min F/N = upon request
Back focal length	>150 mm

N. of elements	6
Dimensions	Dia 70x 323 mm
Weight	1 Kg
<b>Options</b>	
Motorized focus	Upon request
Motorized iris	Yes
Motorized zoom	Yes
Other mount type	Upon request
Customization	Upon request

P/N	wavelength range	mount type	note
C0219.001	900-1700 nm	Canon or Nikon Front Interface Customized rear interface	
C0219.011	1700-2300 nm		
C0219.021	900-2300 nm		

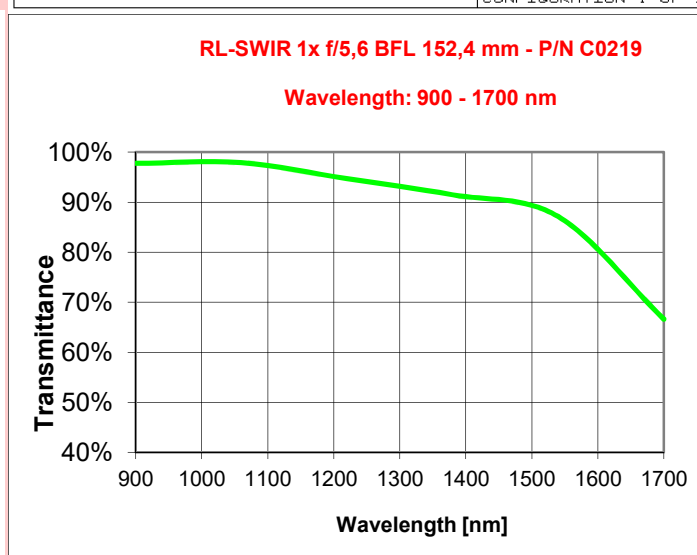
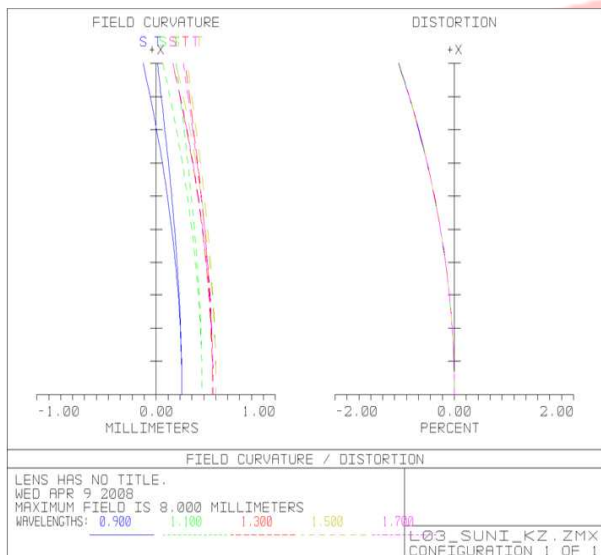
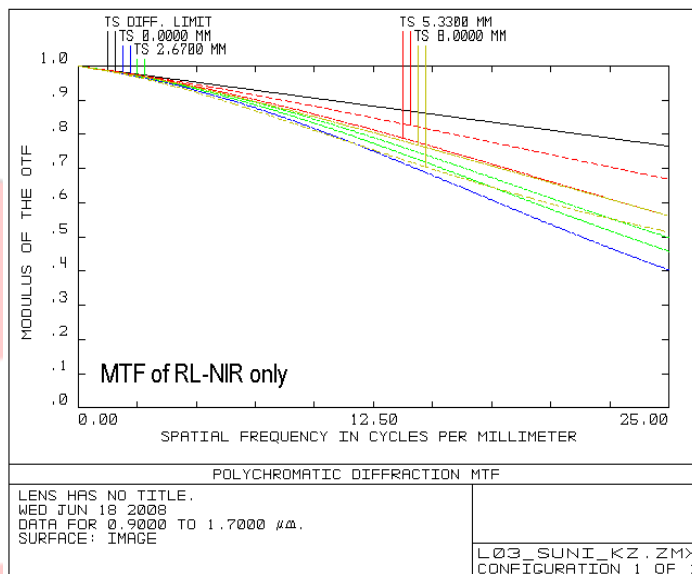


More details are available upon request and technical drawings are open for the customers and their needs.

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**MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm of RL-SWIR only**

The calculated MTF values are displayed below and are verified at the maximum F/N and the best focus plane. The colored lines represent the F.O.V. starting from the center (0%) to the corner (100%).



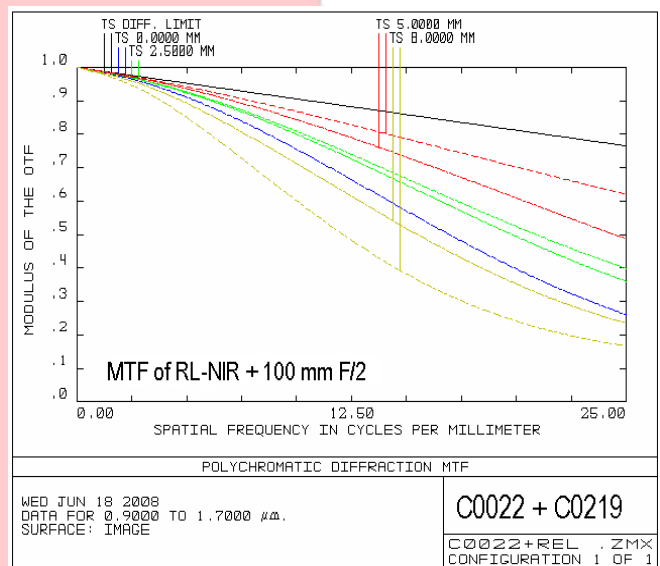
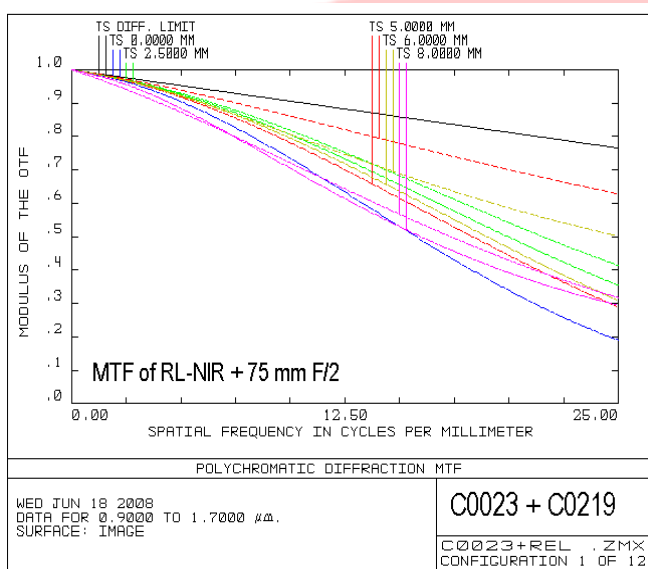
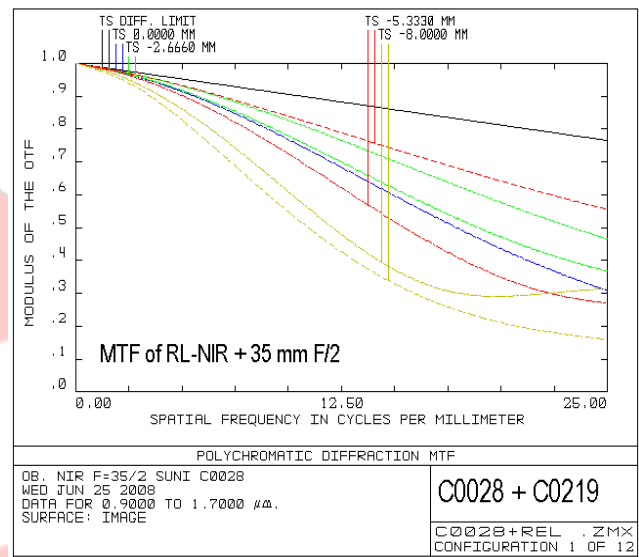
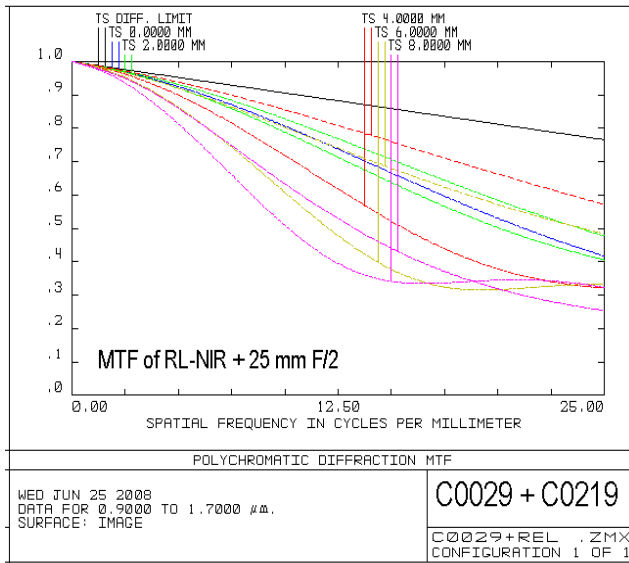
**Optical parameters for wavelength range 0.9 – 1.7 μm**

Resolution	MTF > 40% @ 25lp/mm
Distortion	< 2%
Average axial chromatic aberration	< 0.176 mm

Glass Transmission without coating	> 65%
Antireflection Coating	R ≤ 1%
Vignetting	< 14%

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**MTF from 900 to 1700 nm**

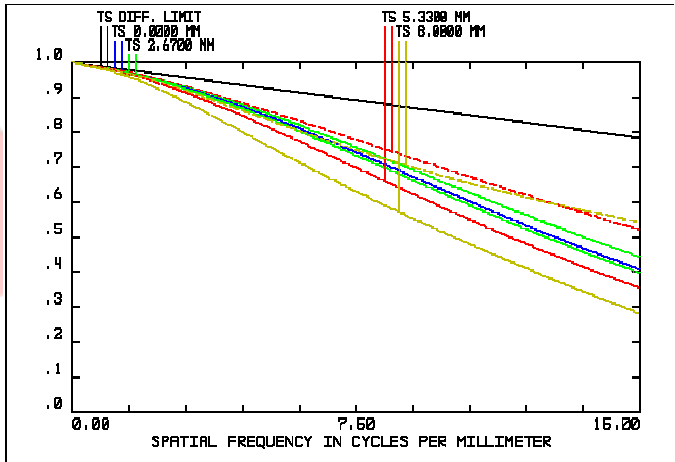


The optimum F/N (vis-à-vis the aperture of the LCTF device) and excellent transmission are obtained using special optical glasses. The added bonus of superior transmission in the visible range (0.4 – 0.7 μm) suits alignment and tracking applications.

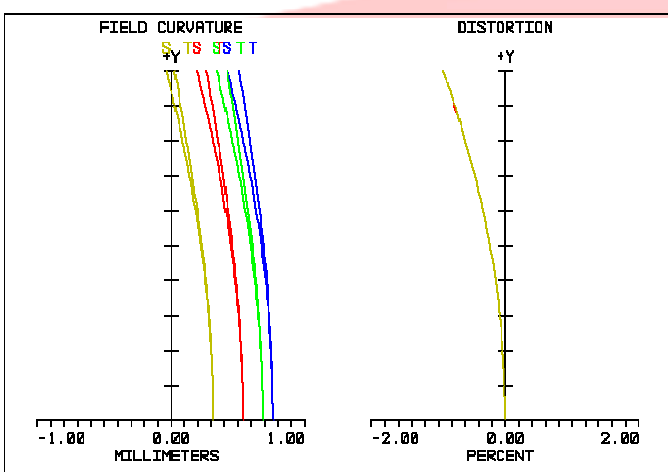
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**MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm of RL-SWIR only**

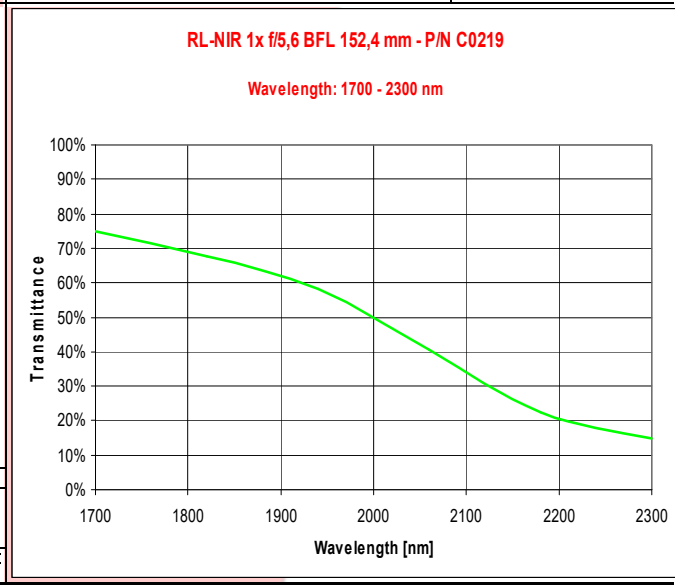
The calculated MTF values are displayed Below and are verified at the maximum F/N and the best focus plane. The colored lines represent the F.O.V. starting from the center (0%) to the corner (100%).



POLYCHROMATIC DIFFRACTION MTF  
 LENS HAS NO TITLE.  
 WED APR 9 2008  
 DATA FOR 1.7000 TO 2.3000 μm.  
 SURFACE: IMAGE  
 L09\_SUNI\_KZ1700-2300.ZMX  
 CONFIGURATION 1 OF 1



FIELD CURVATURE / DISTORTION  
 LENS HAS NO TITLE.  
 WED APR 9 2008  
 MAXIMUM FIELD IS 8.000 MILLIMETERS  
 WAVELENGTHS: 1.700 1.900 2.100 2.300  
 L09\_SUNI\_KZ1700-2300.ZMX  
 CONFIGURATION 1 OF 1



**Optical parameters for wavelength range 1.7 – 2.3 μm**

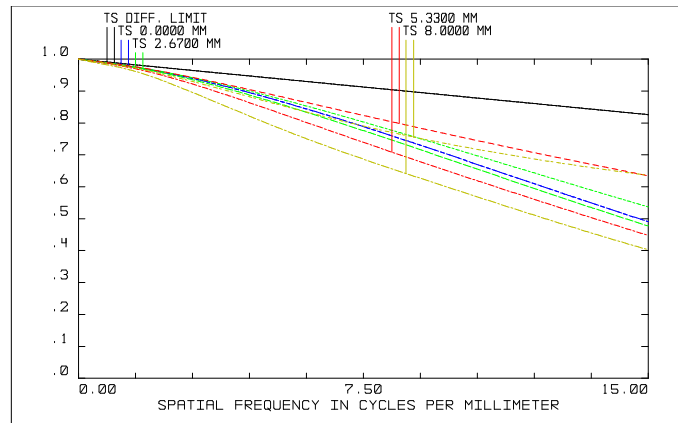
Resolution	MTF > 30%@15lp/mm
Distortion	< 2%

Glass Transmission without coating	> 15%
Antireflection Coating	R ≤ 1%

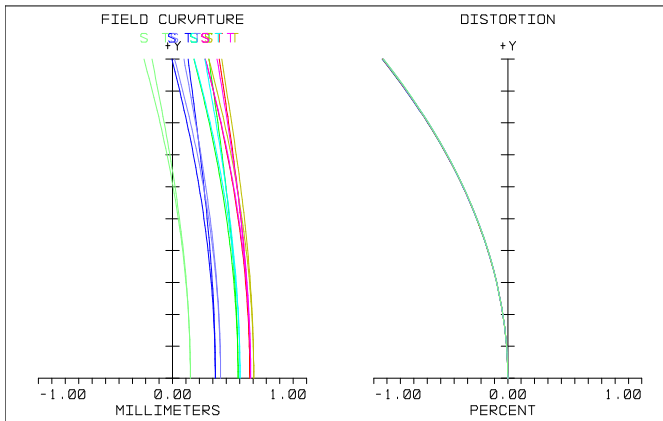
Specification are subject to change without notice

**MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm of RL-SWIR only**

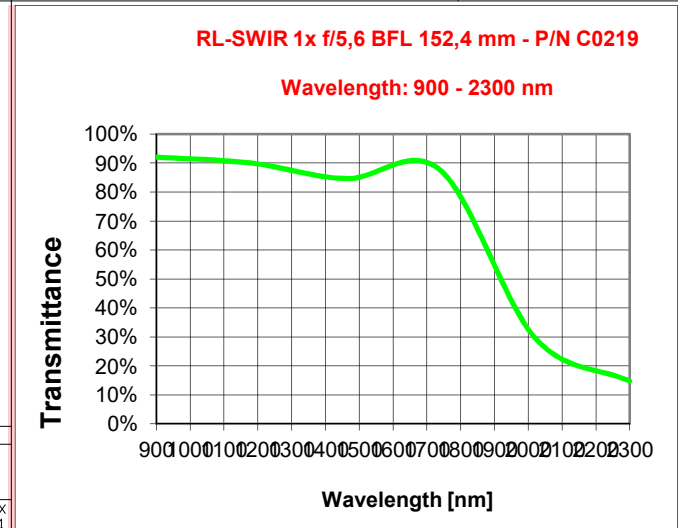
The calculated MTF values are displayed Below and are verified at the maximum F/N and the best focus plane. The colored lines represent the F.O.V. starting from the center (0%) to the corner (100%).



POLYCHROMATIC DIFFRACTION MTF  
LENS HAS NO TITLE.  
MON SEP 7 2009  
DATA FOR 0.9000 TO 2.3000 μm.  
SURFACE: IMAGE  
L03\_SUNI\_K2900-2300\_ZMX  
CONFIGURATION 1 OF 1



FIELD CURVATURE / DISTORTION  
LENS HAS NO TITLE.  
MON SEP 7 2009  
MAXIMUM FIELD IS 8.000 MILLIMETERS  
WAVELENGTHS: 0.900 1.100 1.300 1.500 1.700 1.900 2.100 2.300  
L03\_SUNI\_K2900-2300\_ZMX  
CONFIGURATION 1 OF 1



**Optical parameters for wavelength range 0.9 – 2.3 μm**

Resolution	MTF > 40% @ 15lp/mm
Distortion	< 2%

Glass Transmission without coating	> 15%
Antireflection Coating	R ≤ 1%

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