…you have never seen
the invisible so clearly

SWIR CATALOG
2018

optec S.p.A.
OPTICAL & OPTOELECTRONIC SYSTEMS

optec S.p.A.

OPTICAL & OPTOELECTRONIC SYSTEMS

Company Profile

Optec is the world leading optical, optoelectronic and optomechanical Italian company. Founded in 1985, **Optec** works in the field of process control and monitoring, analysis and scanning of paper documents, robotics, color analysis, on line and/or automated inspections, imaging (medical and scientific), X-ray equipment, analysis and aerial reconnaissance and photographic processes.

Optec uses an experienced team of mechanical, optical and electronic engineers, and a CAOD (Computer Aided Optical Design) named Horus, which was developed in-house, capable of performing computing functions, optimization, simulation and analysis specifically dedicated to optical systems. With significant experience accumulated by its researchers over the years, **Optec** is able to meet any of the optical and optoelectronic industry requirements, combining research and productivity at maximum levels. **Optec** is a **TUV certified ISO 9001** company.

Our customized development for many of Industry sectors represents the engine of our high standard solutions, and, for our customers, the correct answer to each problem that tumble in **Optec**'s action area.

Studies carried out inside **Optec**, are often present in several technical publications, such as the **"Collana di Ottica e Fotonica"**, a technical Italian publications that contains different and interesting articles, and that published the 8th volume (**Winter School on Optoelectronics and Photonics**); **Optec** has given a contribute with the 4th volume **"Element of Optical design"**, written by our professional engaging in private Industry and research area. For index of all volumes you can visit the SIOF publications page at http://siof.ifac.cnr.it/pubblica.htm.

Optec is more than a manufacturer. It is a service organization with a proven record of successful performance. Optec is always driven by its dedication to serving customer needs and by its commitment to produce quality products with high performance, with particular reference to optical sector.

Optec's standard and custom products are a result of experience in imaging application. **Optec** has a particular attention to research field, which has conduct us to collaborate with most of important Industry in Aerospace and Imaging sector.

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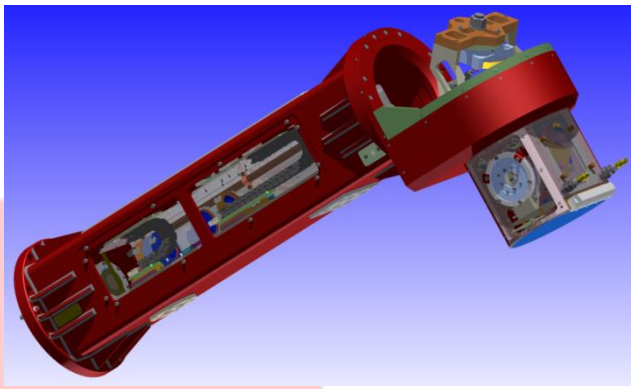
System

To satisfy all the customer request and to improve the performances, **Optec** can provide the complete system to the customer taking into account all the specification and integration requirements.

Imaging system, laser application, spectral analysis, integrated system and so on are the main examples of what **Optec** can provide or cooperate with the customer for high quality result!

Optec can integrate the proper developed subsystem or can integrate parts coming from the customer or available off-the-shelf.



Optec uses the most important software that operate in the optical, mechanical and electronic fields and it is constantly investing in research and development to provide a range of new solutions in step with the times and technologies.

Optics, illumination devices, camera electronics, motion controller and specific software are the main important area of work where **Optec** can optimize performances, dimensions and cost. In few words we can manage the “photons”….to handle “bits”.

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Swir Lenses

Opto-mechanical design of lenses requires the integration of optical design with good mechanical practices and system considerations.

The correct approach to the design is a comprehensive specification encompassing all the important parameters for the specific application.

The performance specification defines the application and how the lens will operate, while the constraints must be detailed and include the following:

- Performance requirements
  - F/N
  - Magnification
  - Wavelength range
  - Focal length
  - Iris requirement
  - Focus requirement
  - Distortion
  - Resolution
  - Vignetting
  - Working distance
  - Object size
  - Sensor size
- Size, shape and weight limitations
- Special optical thin film coating needs
- Interfaces (optical, mechanical, electronic, etc.)
- Operating environment (temperature, pressure, humidity, vibration, etc.)
- Loads (static and dynamic)
- Center of gravity
- Material selection limitations
- Finish/color requirements
- Special marketing or identification
- Storage, packing and shipping requirements

In the **SWIR** application a special attention has been devoted to the following aspect :

- Optical transmission: more than 85%
- Aperture (F/N): not less than F/N=4
- Glass types: no toxics glasses
- Resolution: more than 20 lp/mm at 50% contrast
- Antireflection: coating: R<1% over the wavelength range
- Wavelength range: 0.9 ÷1.7 μm and 1.7 ÷ 2.3 μm
- Large spectrum: one large range from 0.9 ÷ 2.3 μm

Optec is a **TUV certified ISO 9001** company

Fare clic per visualizzare una pagina alla volta

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFIC

TUV SÜD Italia

CERTIFICATO

Nr 50 100 7338

Si attesta che / *This is to certify that*

IL SISTEMA QUALITÀ DI
THE QUALITY SYSTEM OF

optec S.p.A.
OPTICAL & OPTOELECTRONIC SYSTEM

SEDE OPERATIVA:
VIA MANTEGNA 34
I-20015 PARABIAGO (MI)

SEDE LEGALE:
VIA SCAVINI 2/A
I-28100 NOVARA (NO)

È CONFORME AI REQUISITI DELLA NORMA
HAS BEEN FOUND TO COMPLY WITH THE REQUIREMENTS OF

UNI EN ISO 9001:2000

Riferirsi al manuale della qualità per i dettagli delle esclusioni ai requisiti della norma ISO 9001:2000
Refer to quality manual for details of exclusions of requirements of the norm ISO 9001:2000

Questo certificato è valido per il seguente campo di applicazione
This certificate is valid for the following product or service range

Progettazione, fabbricazione ed assistenza tecnica di sistemi ottici ed optoelettronici (EA 19)

Design, manufacture and technical assistance of optical and optoelectronic systems *(EA 19)*

Data di emissione / *Issue date*
2007-12-21

SINCERT

Membro degli Accordi di Mutuo Riconoscimento EA e IAF
Signatory of EA and IAF Mutual Recognition Agreements

Per l'Organismo di Certificazione
For the Certification Body
TÜV Italia S.r.l.

Alessio Galiazzo
Technical Responsible

TÜV SÜD

"La validità del presente certificato è subordinata a sorveglianza periodica a 12 mesi e al riesame completo del sistema di gestione aziendale con periodicità triennale"

"The validity of the present certificate depends on the annual surveillance every 12 months and on the complete review of company's management system after three-years."

TÜV Italia • Gruppo TÜV SÜD • Viale Carducci 125, Pal. 23 • 20099 Sesto San Giovanni (MI) • Italia • www.tuv.it

OB-SWIR 16

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C1015	16	1,7	20,5	65,29	MTF > 30% @ 25 lp/mm	14

OB-SWIR 25

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C0808	25	1,4	20,5	44,6	MTF > 45% @ 25 lp/mm	19
C0838		2,0	20,5	44,6	MTF > 45% @ 25 lp/mm	26
C0413		4,0	20,5	44,6	MTF > 45% @ 40 lp/mm	32

OB-SWIR 35

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	Pag
C0809	35	1,4	20,5	32,6	MTF > 45% @ 25 lp/mm	36
C0839		2,0	20,5	32,6	MTF > 50% @ 25 lp/mm	43
C0414		4,0	20,5	32,6	MTF > 45% @ 25 lp/mm	49

OB-SWIR 35 Large Format

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C0411	35	1,4	32,8	50,2	MTF > 15% @ 20 lp/mm	53

OB-SWIR 44

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C0417	44	1,4	20,5	26,2	MTF > 40% @ 25 lp/mm	58

OB-SWIR 50

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C0810	50	1,4	20,5	23	MTF > 35% @ 40 lp/mm	63
C0024		2,0	16	18	MTF > 40% @ 25 lp/mm	70
C0840		2,0	20,5	23	MTF > 45% @ 35 lp/mm	72
C0410		4,0	20,5	23	MTF > 40% @ 30 lp/mm	79

OB-SWIR 75

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C0811	75	1,4	20,5	15,5	MTF > 25% @ 30 lp/mm	83
C0841		2,0	20,5	15,5	MTF > 45% @ 25 lp/mm	92
C0415		4,0	20,5	15,5	MTF > 50% @ 35 lp/mm	99

OB-SWIR 100

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C0812	100	1,4	20,5	11,7	MTF > 40% @ 25 lp/mm	103
C0842		2,0	20,5	11,7	MTF > 40% @ 25 lp/mm	112
C0416		4,0	20,5	11,7	MTF > 50% @ 50 lp/mm	119

OB-SWIR 200

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	Pag
C1116	200	2,4	20,5	5,87	MTF > 45% @ 25 lp/mm	125

OB-SWIR 300

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	Pag
C0245	300	3,5	20,5	3,9	MTF > 60% @ 40 lp/mm	134

OB-SWIR 500

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C0615	500	7,0	20,5	2,35	MTF > 60% @ 25 lp/mm	142

Special Swir

OB-SWIR 1000

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	pag
C0912	1000	10,0	20,5	1,18	MTF > 30% @ 30 lp/mm	149

SWIR ZOOM

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	Pag
C0628	75-500	6,0	20,5	15,6-2,35	MTF > 40% @ 25 lp/mm	155
C1319	24-141	4.5	16,4	18,85-3,35	MTF > 20% @ 50 lp/mm	163

RL-SWIR1X-5,6

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	Pag
C0219	1x	5,6	16	N.A.	Related to the coupled lens	166

OB V-SWIR

V-SWIR

P/N	Focal [mm]	F/N	Image [mm]	FOV [deg]	Resolution	Pag
C1326	16	1,4	12,3	42	MTF > 45% @ 35 lp/mm	172
C1038	16	4,0	12,3	42	MTF > 40% @ 35 lp/mm	174
C0952	25	2,0	20,5	44.6	MTF > 45% @ 50 lp/mm	177
C1602	100	2,0	16,6	9.43	Mtf > 40% @ 50lp/mm	180

SWIR ACCESSORIES

P/N	Type	Description	Remarks	Pag
C0435	SWIR Magnifier	Adapter LENS SWIR 2X Magnifier	For all lenses	183
C0997_050_000	Canon Eos Adapter	Adapter from M42 Screw to Canon EOS	For all lenses	185
C0998_040_000	C-Mt Adapter	Adapter from Nikon to C-mount for 1" Filter	For all lenses	186
C0998_050_000		Adapter from Nikon to C-mount	For all lenses	
C0999_040_000		Adapter from Canon to C-mount for 1" x 2 mm Filter	N.A C0811, C0812, C0841 and C0842	187
C0999_041_000		Adapter from Canon to C-mount for 1" x 2 mm Filter	For all lenses	
C0999_050_000		Adapter from Canon FD to C-mount	N.A C0811, C0812, C0841 and C0842	
C0999_051_000		Adapter from Canon FD to C-mount	For all lenses	
C0999_052_000	C-Mt Adapter Macro	Adapter from Canon FD to C-mount with macro	For all lenses	191
C0245_060_000	Optical Fiber Adapter	Adapter to couple Canon FD with Optical Fiber	For all lenses	
C0999_070_003	Filter Wheel	Selector of specific filters and wavelengths	For all lenses	
C0024.105 C0245.150 C0410.150 C0411.150 C0413.150 C0414.150 C0415.150 C0416.150 C0417.150 C0808.150 C0809.150 C0810.150 C0811.150 C0812.150 C0628.055		All the Filter Holders are specifically designed for each specific lens. The P/N of the filter holder is composed of the first 5 digit who defines the specific lens where the filter holder can be mounted. Price reported on this area are representing the cost for the mechanical holder only: price of the specific filter in the bottom part of this table		
P/N to be defined	Filter	Low or High Pass Band Filter		
		Pass Band Filter (30nm width at 50%)		

SWIR ACCESSORIES FOR MOTORIZED VERSION

P/N	Type	Remarks	pag
C1115.001.001	Motion Controller 5V (USB)	Required for all motorized lenses except C0628 lenses	192
C1115.002.000	Motion Controller 5V	Required for all motorized lenses except C0628 lenses	194
C0628.020.000	Motion Controller 24Vcc	Only for C0628 SWIR Zoom Lens	196
	Cable for connection between PC and Motion Controller		
EL010043	Cable 0.6 m	Required for all motorized lenses	
EL010034	Cable 1.8 m		
EL010035	Cable 3.0 m		
EL010036	Cable 4.5 m		
EL010032	Cable 7.5 m		
	Cable for connection between Motion Controller and Lens		
C1115.153.000	Cable 1.0 m	Required for all motorized lenses except C0628 lenses	
C1115.150.000	Cable 1.8 m		
C1115.151.000	Cable 3.0 m		
C1115.152.000	Cable 4.5 m		
C1115.154.000	Cable 7.5 m		
C0615.180.000	Cable 1.8 m	Required only for C0615 motorized lenses	

SOFTWARE

P/N	Type	Remarks	pag
SW010021	Swir Control	Required for all motorized lenses except C0628 lenses	
SW010020	Cam Zoom DMC	Only for C0628 SWIR Zoom Lens	

LENS OB-SWIR16/1.7 – P/N C1015

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

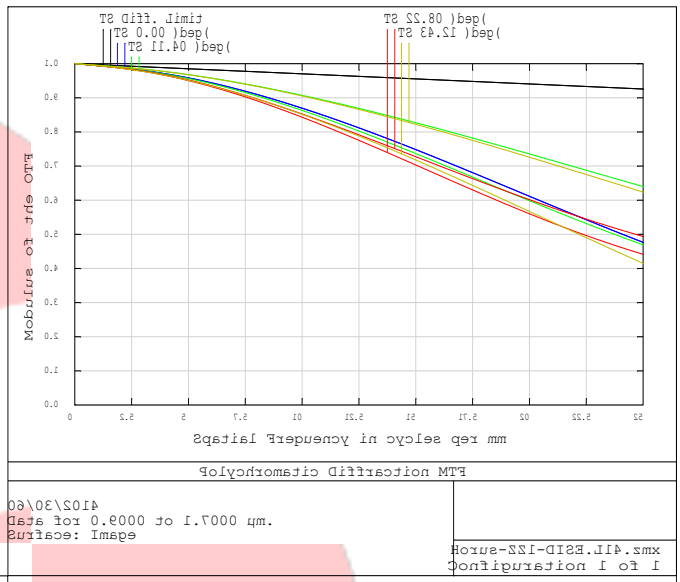
Focal length	16 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	65.29 degrees
Max aperture	F/N = 1.7
Object format	N.A.
Min working distance	2 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.7 Min F/N = 11

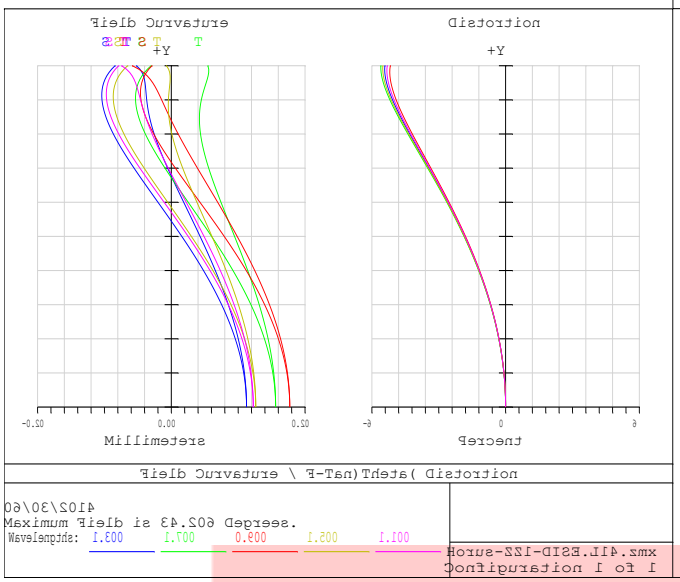
N. of elements	10
Dimensions	Dia 64 x 65 mm
Weight	300 gr
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

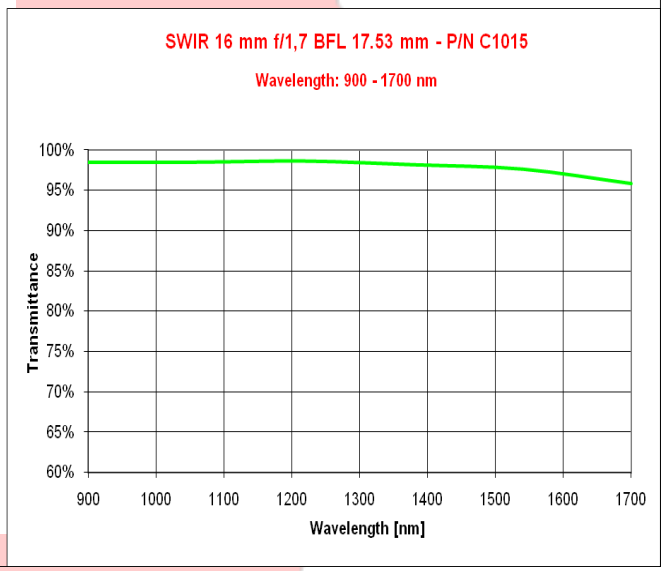
P/N	*wavelength range*	*mount type*	*note*
C1015.001	900-1700 nm	C-Mount	With iris diaphragm
C1015.005	1700-2300 nm		
C1015.010	900-2300 nm		
C1015.002	900-1700 nm	C-Mount	Without iris diaphragm
C1015.006	1700-2300 nm		
C1015.011	900-2300 nm		

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







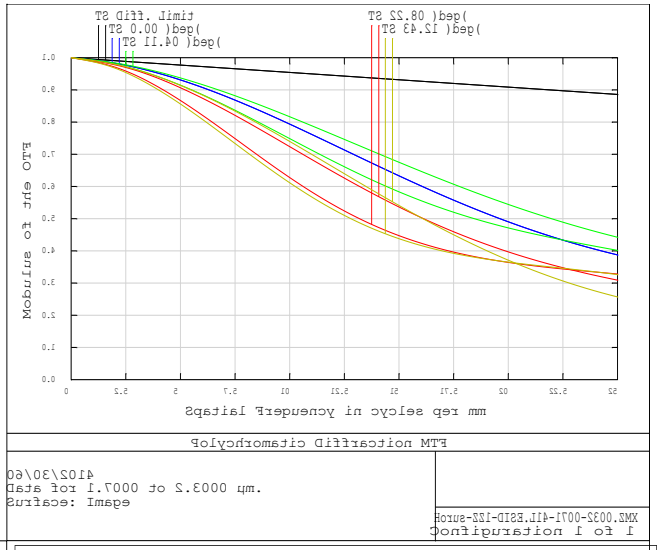
Optical parameters for wavelength range 0.9 – 1.7 μm

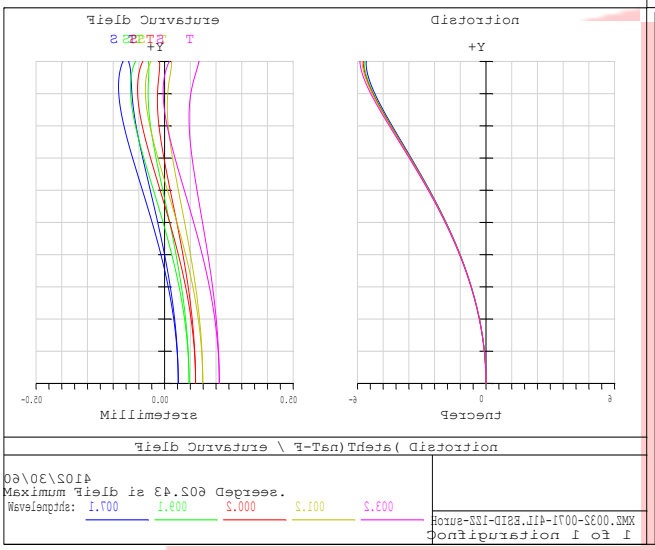
Resolution	MTF > 40%@25lp/mm
Distortion	< 6%
Average axial chromatic aberration	0.027mm

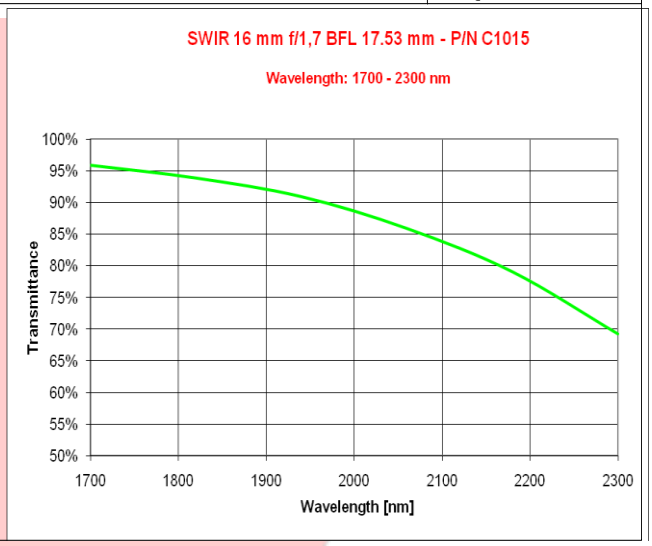
Glass transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	<15%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







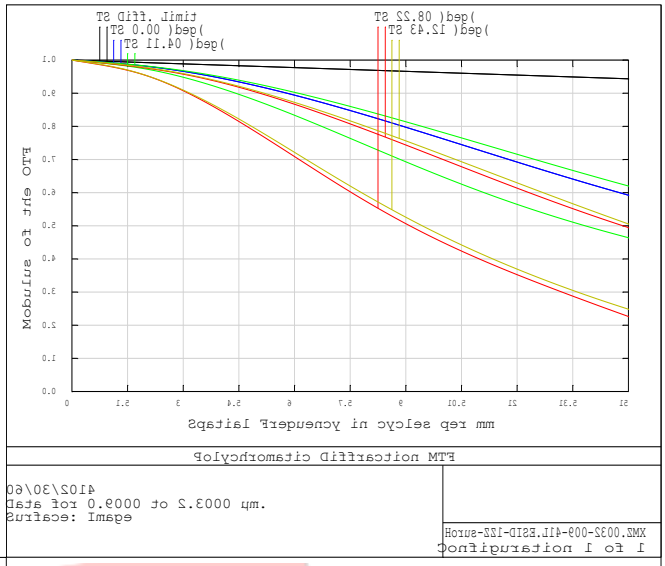
Optical parameters for wavelength range 1.7 – 2.3 μm	

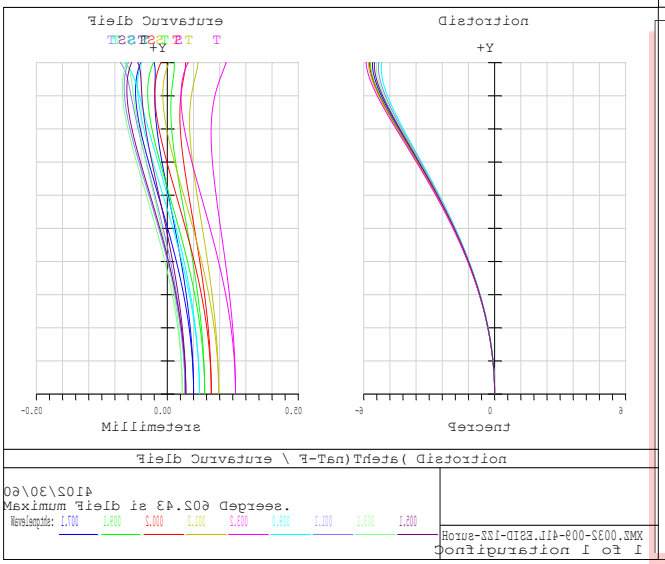
Resolution	MTF > 30%@25lp/mm
Distortion	< 6%

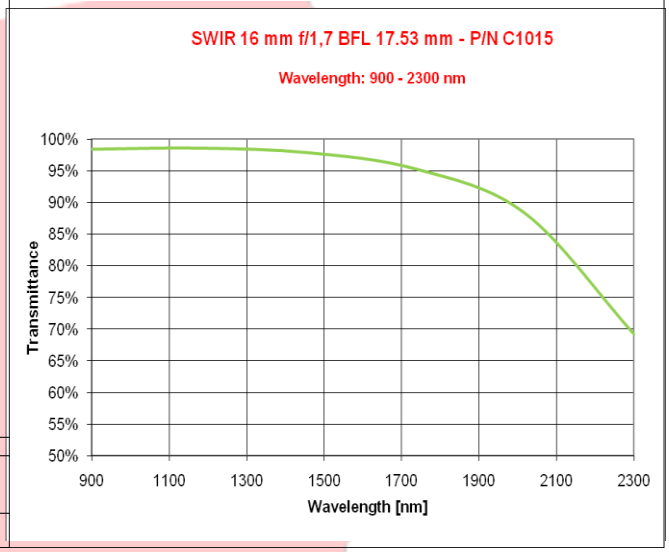
Glass transmission without coating	> 68%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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%).



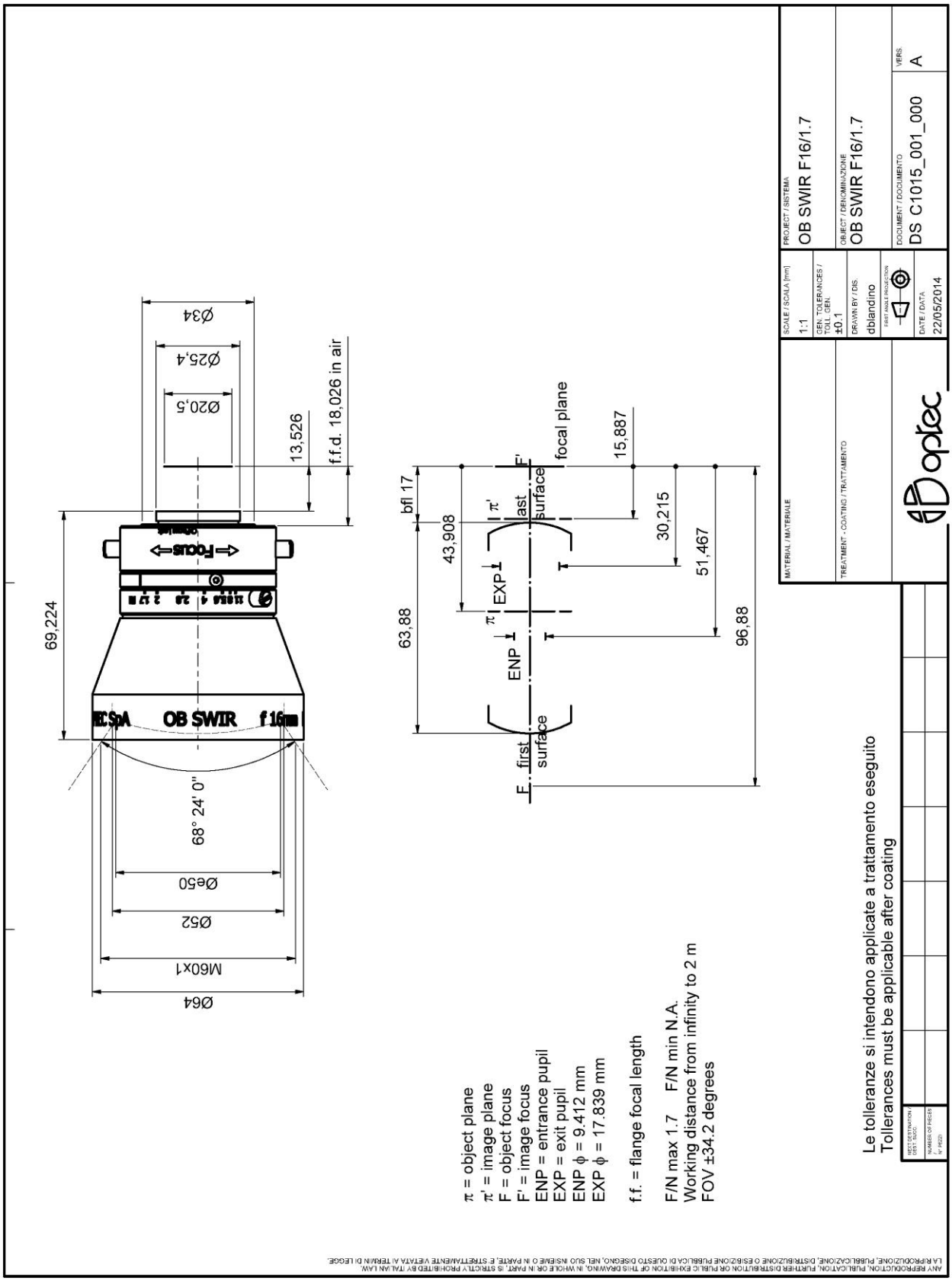




Optical parameters for wavelength range 0.9 – 2.3 μm

Resolution	MTF > 20%@15lp/mm
Distortion	< 6%

Glass transmission without coating	> 68%
Antireflection Coating	R ≤ 1%



LENS OB-SWIR25/1.4 – P/N C0808

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	25 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	44.6 degrees
Max aperture	F/N = 1.4
Object format	N.A.
Min working distance	1000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.4 Min F/N = 22

N. of elements	10
Dimensions	Dia 80 x 95 mm
Weight	0.7 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

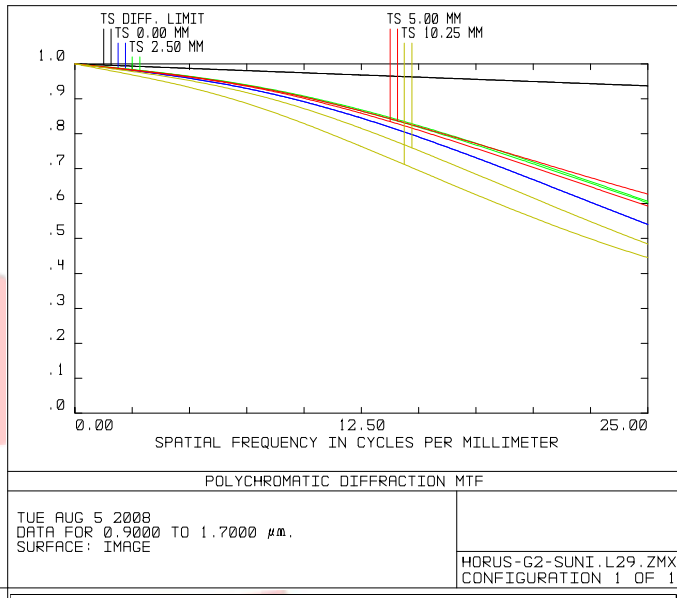
P/N	*wavelength range*	*mount type*	*note*
C0808.001	900-1700 nm	Canon FD	With iris diaphragm
C0808.002		Nikon	
C0808.003		M42 Screw	
C0808.005	1700-2300 nm	Canon FD	
C0808.006		Nikon	
C0808.007		M42 Screw	
C0808.010	900-2300 nm	Canon FD	
C0808.011		Nikon	
C0808.012		M42 Screw	

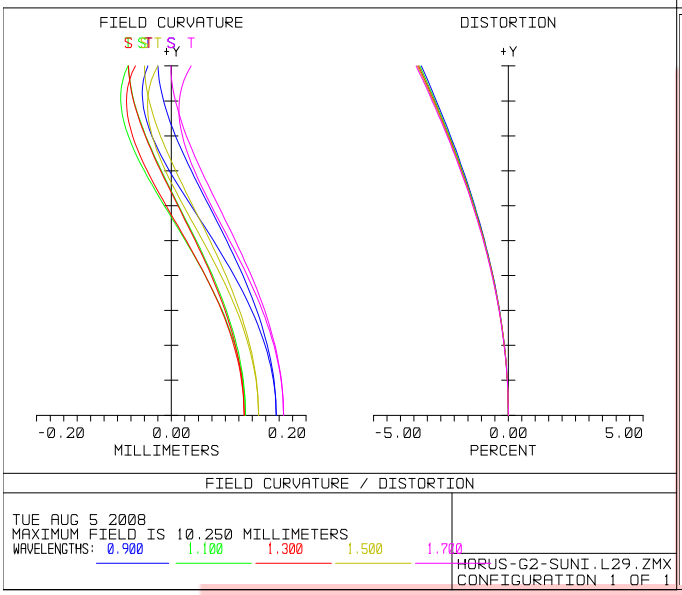
P/N	wavelength range	mount type	note
C0808.071	900-1700 nm	Canon FD	With motorized iris
C0808.072		Nikon	
C0808.073		M42 Screw	
C0808.081	1700-2300 nm	Canon FD	
C0808.082		Nikon	
C0808.083		M42 Screw	
C0808.091	900-2300 nm	Canon FD	
C0808.092		Nikon	
C0808.093		M42 Screw	
C0808.074	900-1700 nm	Canon FD	With motorized focus
C0808.075		Nikon	
C0808.076		M42 Screw	
C0808.084	1700-2300 nm	Canon FD	
C0808.085		Nikon	
C0808.086		M42 Screw	
C0808.094	900-2300 nm	Canon FD	
C0808.095		Nikon	
C0808.096		M42 Screw	
C0808.077	900-1700 nm	Canon FD	With motorized iris and focus
C0808.078		Nikon	
C0808.079		M42 Screw	
C0808.087	1700-2300 nm	Canon FD	
C0808.088		Nikon	
C0808.089		M42 Screw	
C0808.097	900-2300 nm	Canon FD	
C0808.098		Nikon	
C0808.099		M42 Screw	

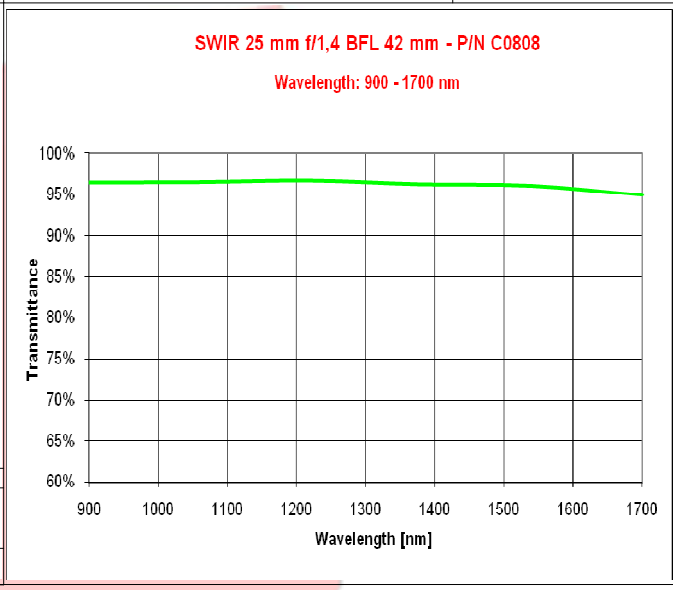
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







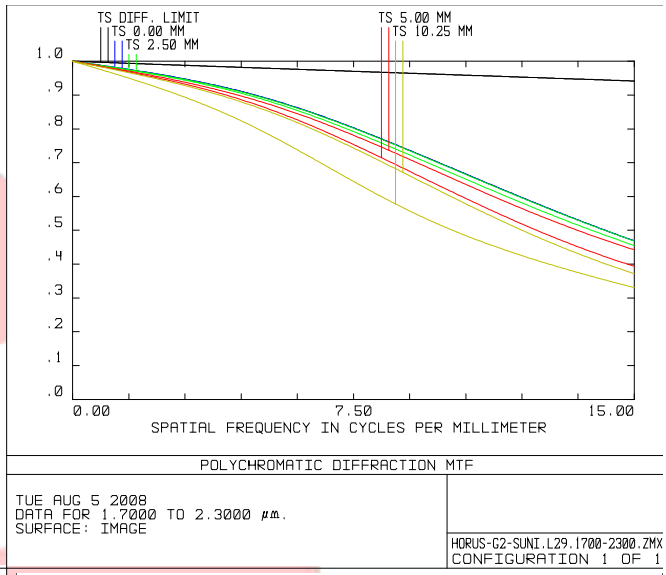
Optical parameters for wavelength range 0.9 – 1.7 µm

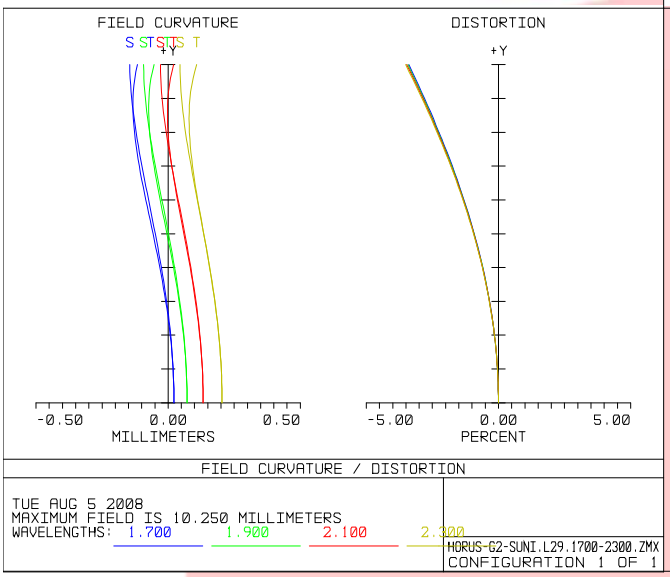
Resolution	MTF > 45%@25lp/mm
Distortion	< 3.5%
Average axial chromatic aberration	<0.0278 mm

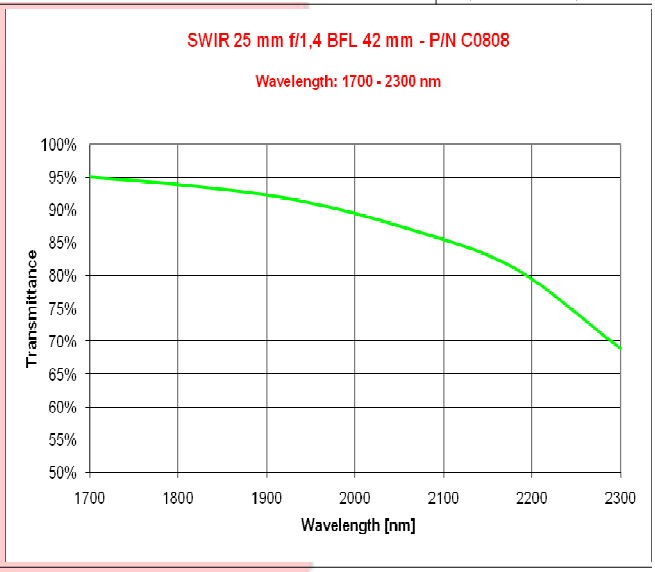
Glass Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	0%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







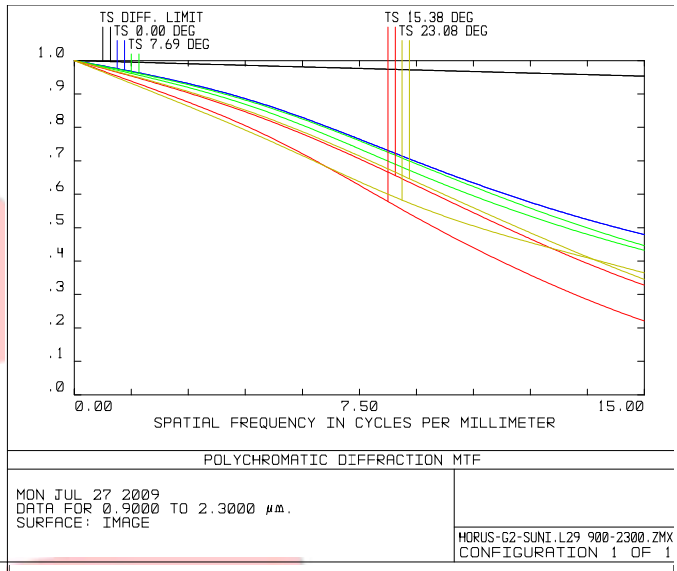
Optical parameters for wavelength range 1.7 – 2.3 μm

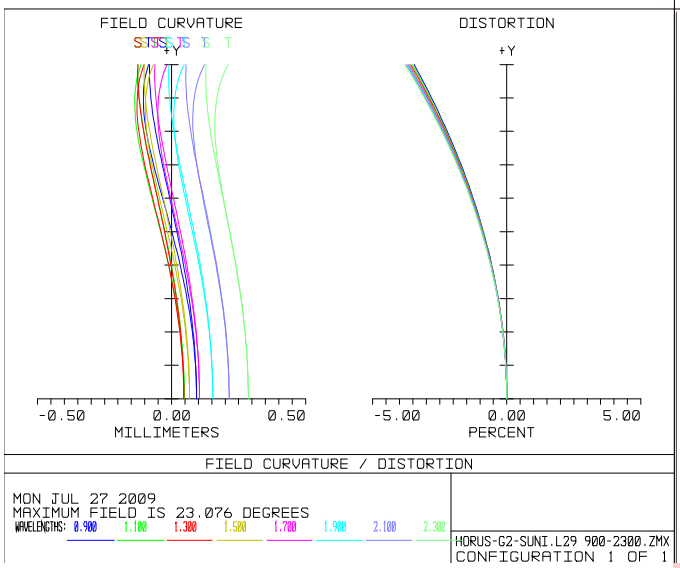
Resolution	MTF > 35%@15lp/mm
Distortion	< 3.5%

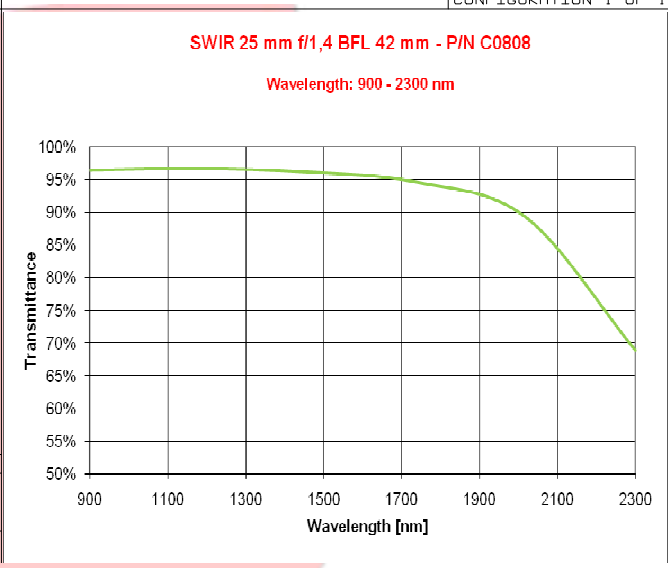
Glass Transmission without coating	> 68%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm

Resolution	MTF > 25%@15lp/mm
Distortion	< 3.5%

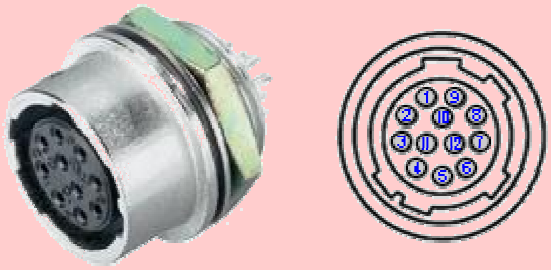
Glass Transmission without coating	> 68%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces	

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

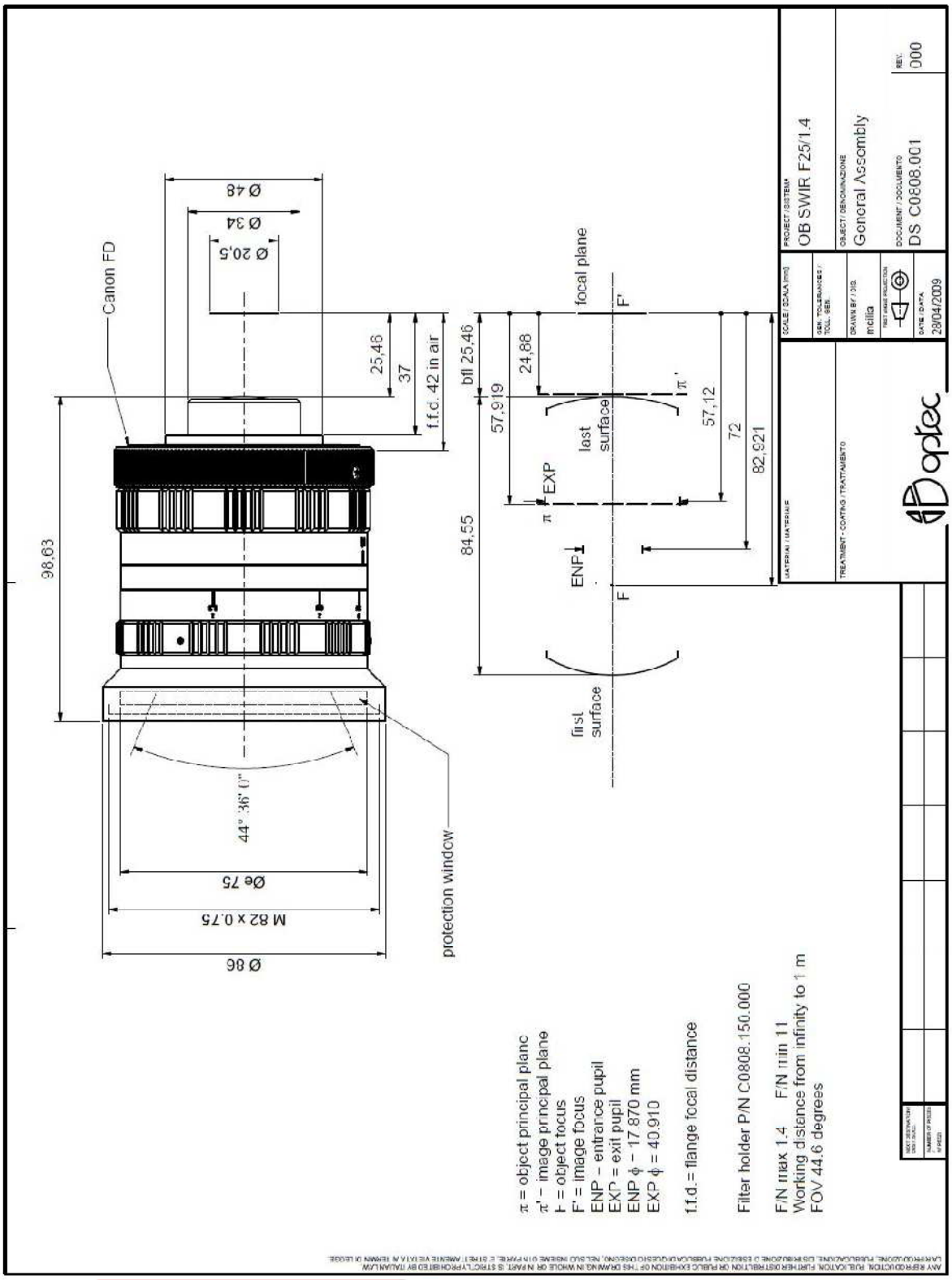
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor



LENS OB-SWIR25/2 – P/N C0838

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters	
Focal length	25 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	44.6 degrees
Max aperture	F/N = 2
Object format	N.A.
Min working distance	1000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2 Min F/N = 22

N. of elements	10
Dimensions	Dia 80 x 95 mm
Weight	0.7 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

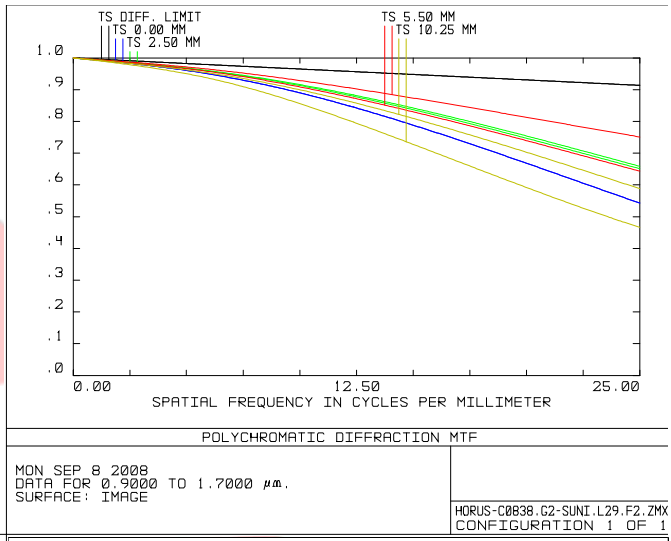
P/N	*wavelength range*	*mount type*	*note*
C0838.001	900-1700 nm	Canon FD	With iris diaphragm
C0838.002		Nikon	
C0838.003		M42 Screw	
C0838.005	1700-2300 nm	Canon FD	
C0838.006		Nikon	
C0838.007		M42 Screw	
C0838.010	900-2300 nm	Canon FD	
C0838.011		Nikon	
C0838.012		M42 Screw	

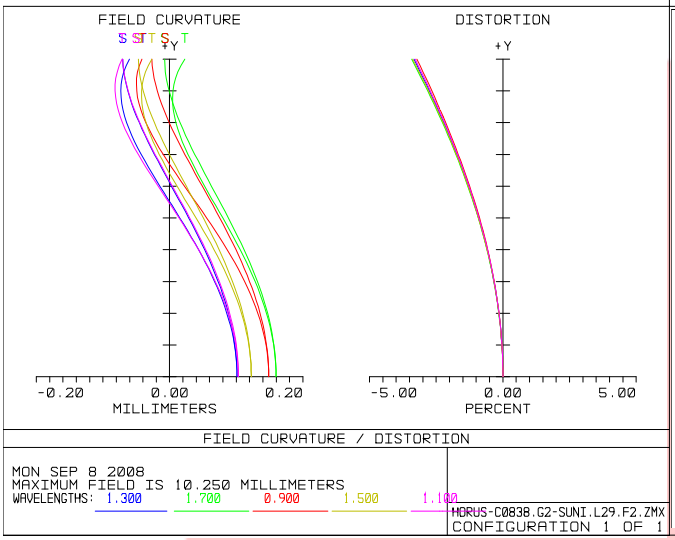
P/N	wavelength range	mount type	note
C0838.071	900-1700 nm	Canon FD	With motorized iris
C0838.072		Nikon	
C0838.073		M42 Screw	
C0838.081	1700-2300 nm	Canon FD	
C0838.082		Nikon	
C0838.083		M42 Screw	
C0838.091	900-2300 nm	Canon FD	
C0838.092		Nikon	
C0838.093		M42 Screw	
C0838.074	900-1700 nm	Canon FD	With motorized focus
C0838.075		Nikon	
C0838.076		M42 Screw	
C0838.084	1700-2300 nm	Canon FD	
C0838.085		Nikon	
C0838.086		M42 Screw	
C0838.094	900-2300 nm	Canon FD	
C0838.095		Nikon	
C0838.096		M42 Screw	
C0838.077	900-1700 nm	Canon FD	With motorized iris and focus
C0838.078		Nikon	
C0838.079		M42 Screw	
C0838.087	1700-2300 nm	Canon FD	
C0838.088		Nikon	
C0838.089		M42 Screw	
C0838.097	900-2300 nm	Canon FD	
C0838.098		Nikon	
C0838.099		M42 Screw	

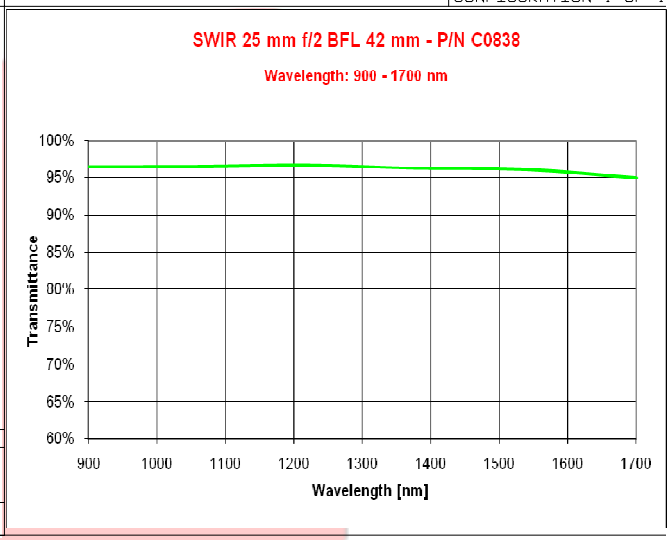
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







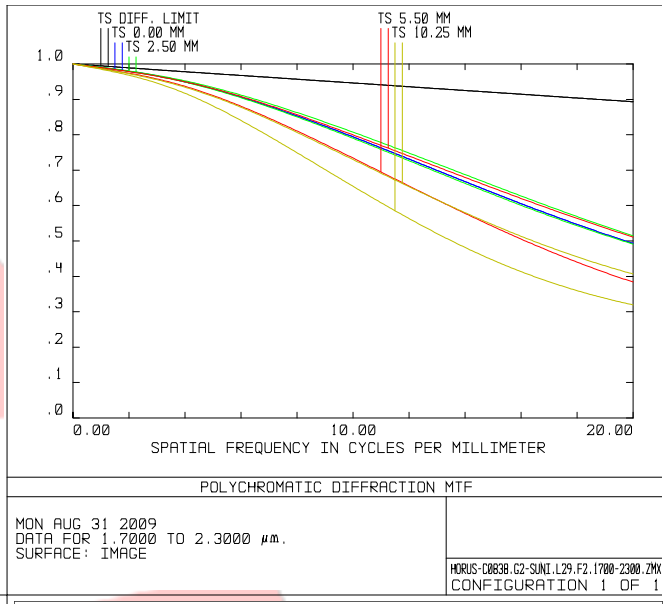
Optical parameters for wavelength range 0.9 – 1.7 μm

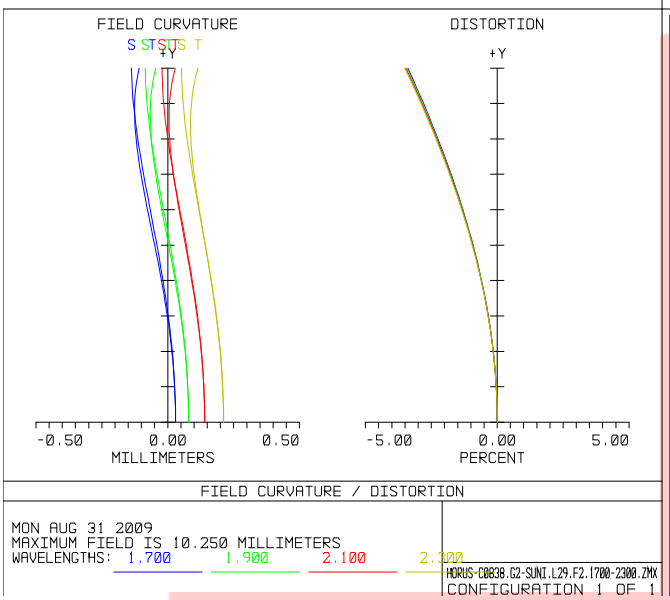
Resolution	MTF > 45%@25lp/mm
Distortion	< 3.5%
Average axial chromatic aberration	<0.0278 mm

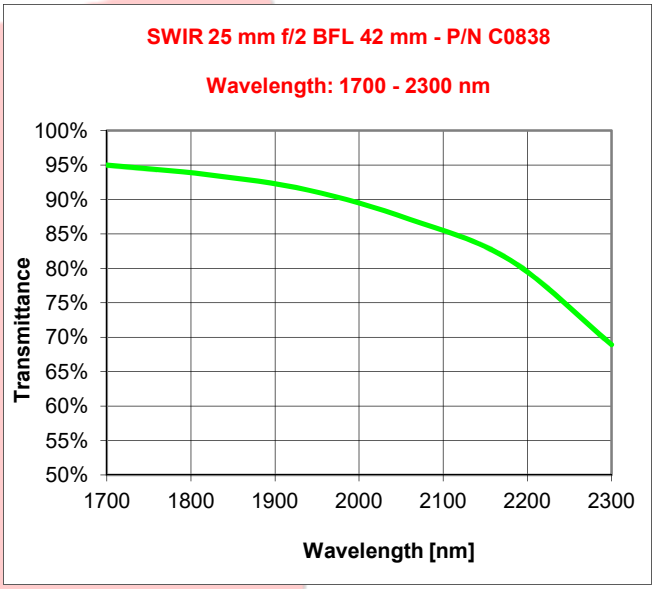
Glass Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	0%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







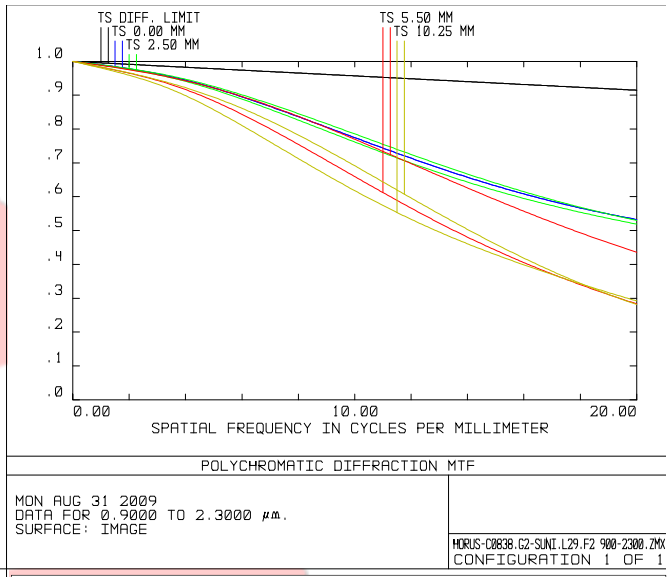
Optical parameters for wavelength range 1.7 – 2.3 µm

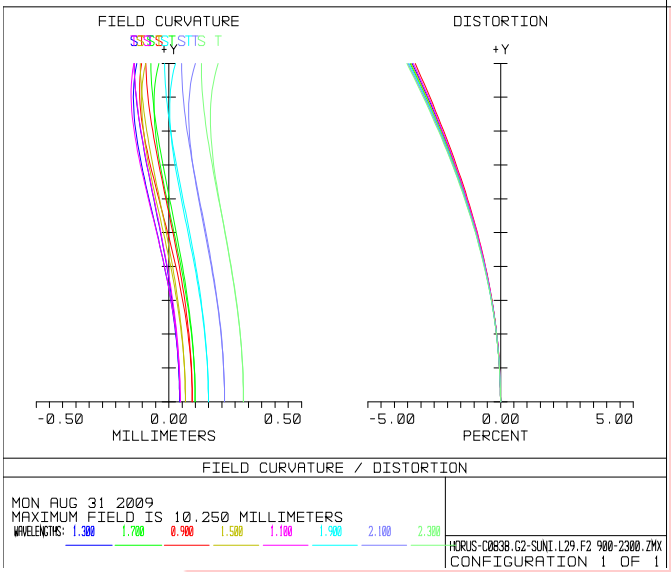
Resolution	MTF > 35%@20lp/mm
Distortion	< 2.5%

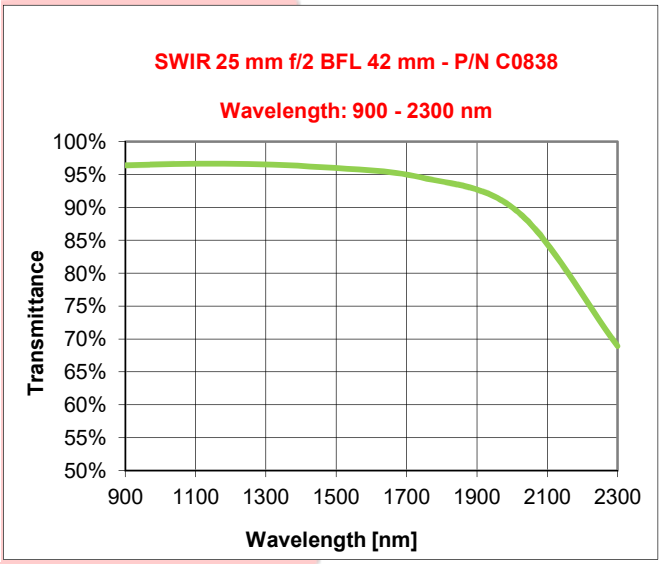
Glass Transmission without coating	> 68%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm	
Resolution	MTF > 30%@20lp/mm
Distortion	< 3.5%

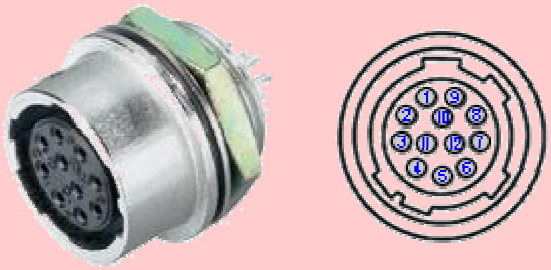
Glass Transmission without coating	> 68%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor

LENS OB-SWIR25/4 – P/N C0413

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

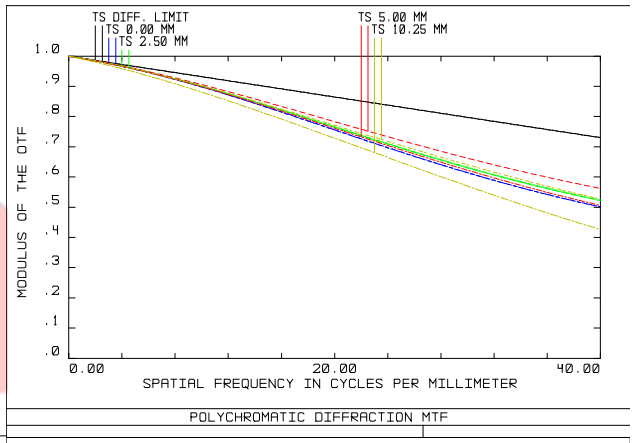
Focal length	25 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	44.6 degrees
Max aperture	F/N = 4
Object format	N.A.
Min working distance	750 mm
Zoom value	N.A.
Focus	Manual
Iris	Optional / If iris Min F/N = 16

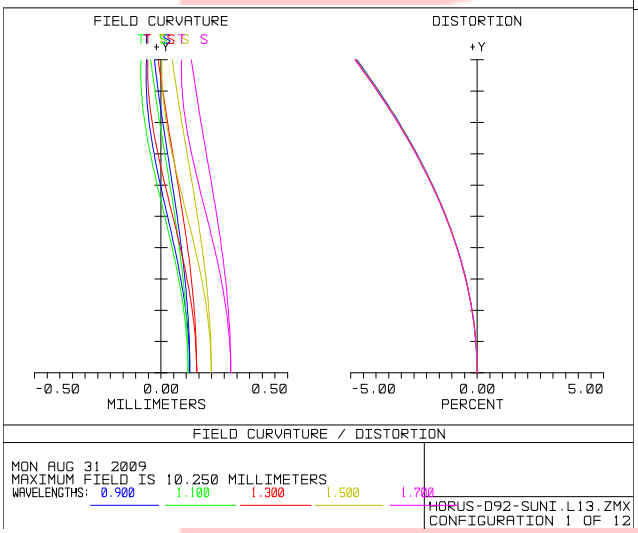
N. of elements	5
Dimensions	Dia 60 x 50 mm
Weight	0.6 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

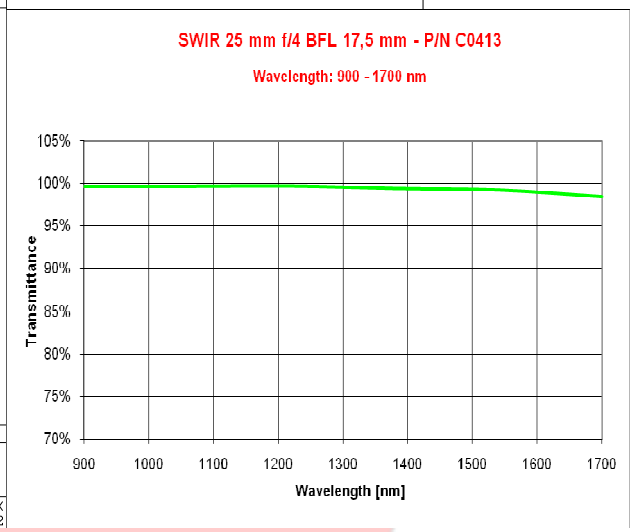
P/N	*wavelength range*	*mount type*	*note*
C0413.004	900-1700 nm	C-Mount	Without iris diaphragm
C0413.008	1700-2300 nm	C-Mount	Without iris diaphragm
C0413.013	900-2300 nm	C-Mount	Without iris diaphragm

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







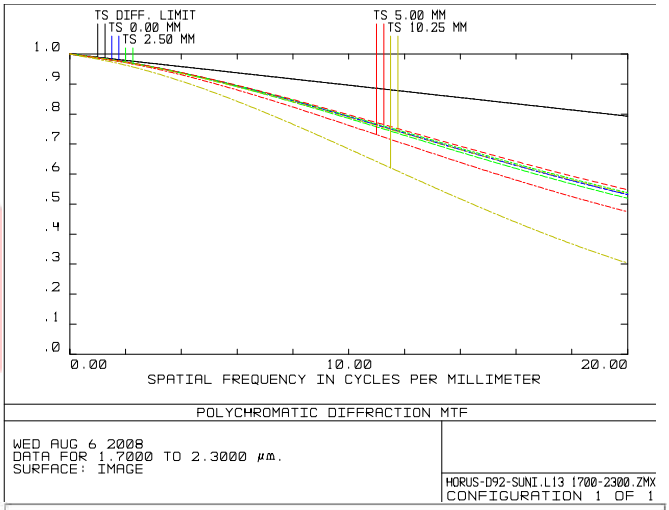
Optical parameters for wavelength range 0.9 – 1.7 μm

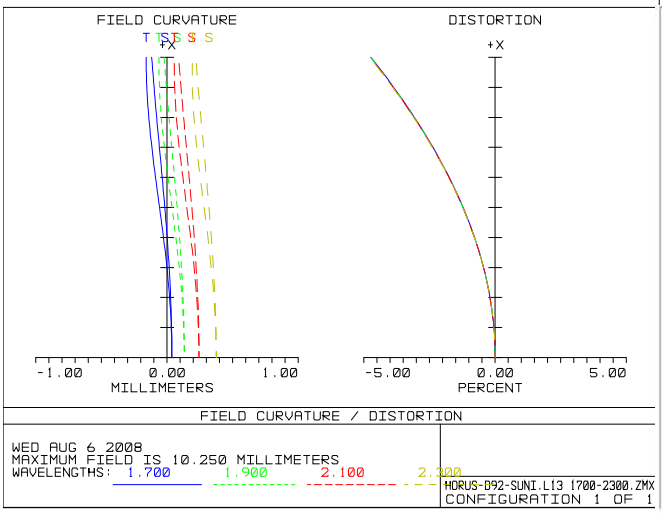
Resolution	MTF > 45%@40lp/mm
Distortion	< 5%
Average axial chromatic aberration	<0.0439 mm

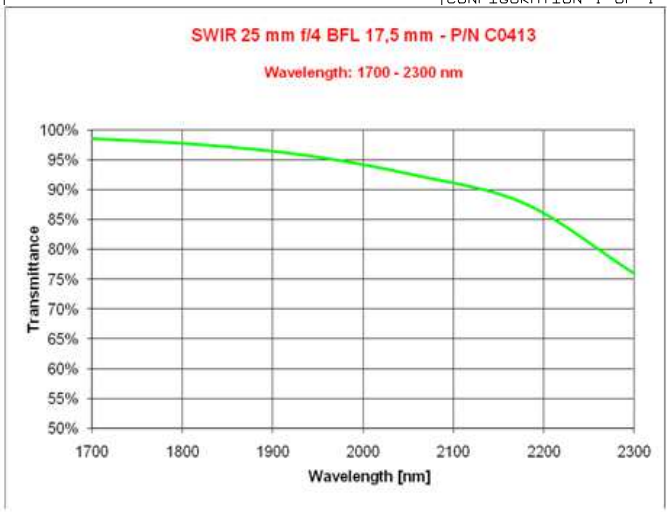
Glass Transmission without coating	> 98%
Antireflection Coating	R ≤ 1%
Vignetting	< 17%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







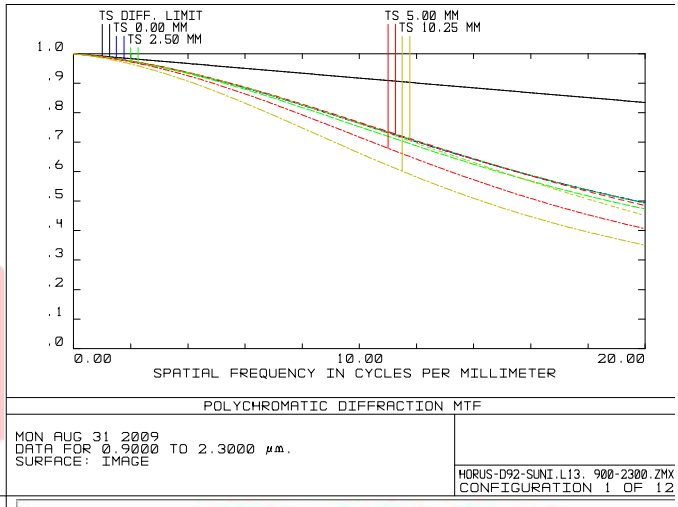
Optical parameters for wavelength range 1.7 – 2.3 μm	

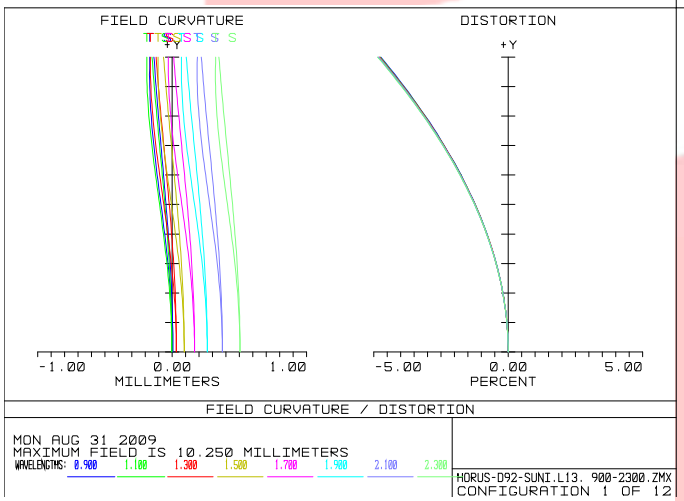
Resolution	MTF > 30%@20lp/mm	Glass Transmission without coating	> 75%
Distortion	< 5%	Antireflection Coating	R ≤ 1%

OB – SWIR 25

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm

Resolution	MTF > 35%@20lp/mm
Distortion	< 5%

Glass Transmission without coating	> 75%
Antireflection Coating	R ≤ 1%

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

LENS OB-SWIR35/1.4 – P/N C0809

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	35 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	32.6 degrees
Max aperture	F/N = 1.4
Object format	N.A.
Min working distance	2000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.4 Min F/N =8

N. of elements	9
Dimensions	Dia 107 x 123 mm
Weight	1.64 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

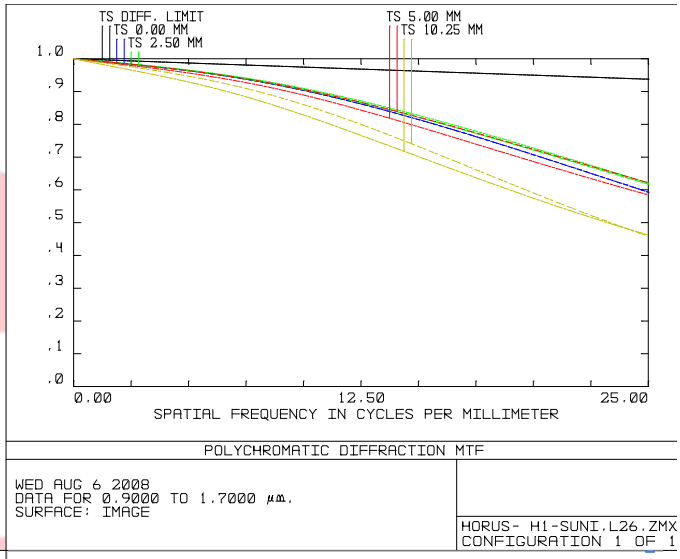
P/N	*wavelength range*	*mount type*	*note*
C0809.001	900-1700 nm	Canon FD	With iris diaphragm
C0809.002		Nikon	
C0809.003		M42 Screw	
C0809.005	1700-2300 nm	Canon FD	
C0809.006		Nikon	
C0809.007		M42 Screw	
C0809.010	900-2300 nm	Canon FD	
C0809.011		Nikon	
C0809.012		M42 Screw	

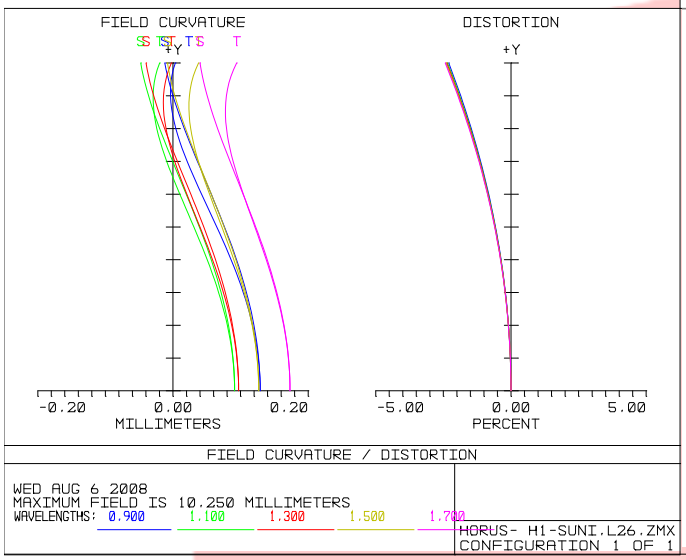
P/N	wavelength range	mount type	note
C0809.071	900-1700 nm	Canon FD	With motorized iris
C0809.072		Nikon	
C0809.073		M42 Screw	
C0809.081	1700-2300 nm	Canon FD	
C0809.082		Nikon	
C0809.083		M42 Screw	
C0809.091	900-2300 nm	Canon FD	
C0809.092		Nikon	
C0809.093		M42 Screw	
C0809.074	900-1700 nm	Canon FD	With motorized focus
C0809.075		Nikon	
C0809.076		M42 Screw	
C0809.084	1700-2300 nm	Canon FD	
C0809.085		Nikon	
C0809.086		M42 Screw	
C0809.094	900-2300 nm	Canon FD	
C0809.095		Nikon	
C0809.096		M42 Screw	
C0809.077	900-1700 nm	Canon FD	With motorized iris and focus
C0809.078		Nikon	
C0809.079		M42 Screw	
C0809.087	1700-2300 nm	Canon FD	
C0809.088		Nikon	
C0809.089		M42 Screw	
C0809.097	900-2300 nm	Canon FD	
C0809.098		Nikon	
C0809.099		M42 Screw	

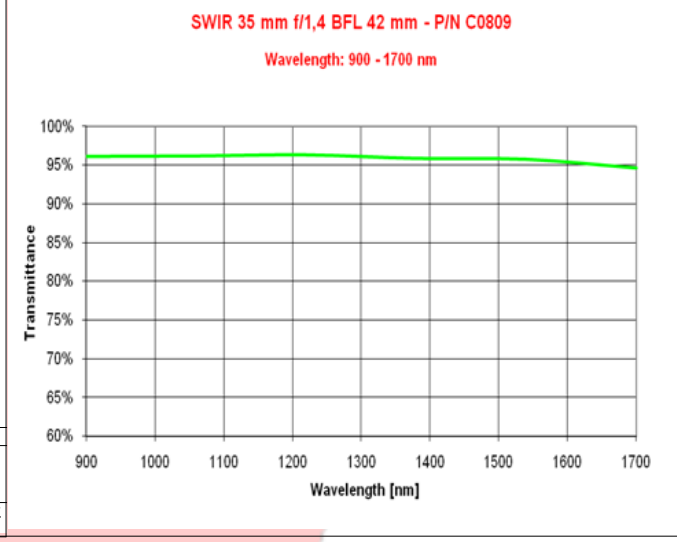
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







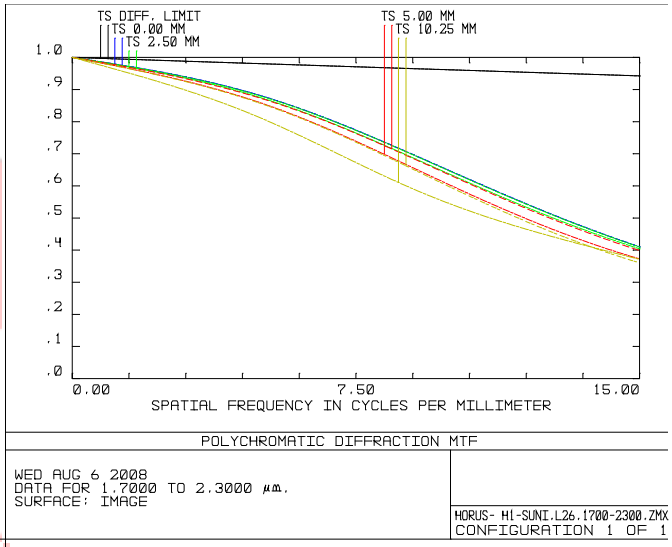
Optical parameters for wavelength range 0.9 – 1.7 µm

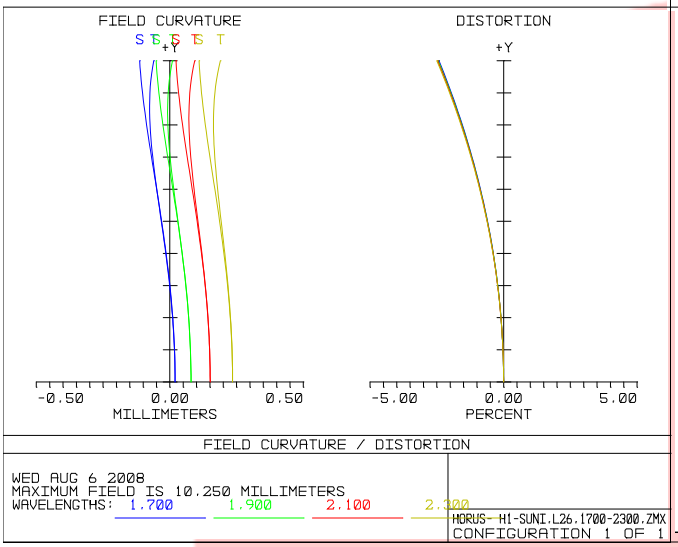
Resolution	MTF > 45%@25lp/mm
Distortion	< 3.5%
Average axial chromatic aberration	<0.0278 mm

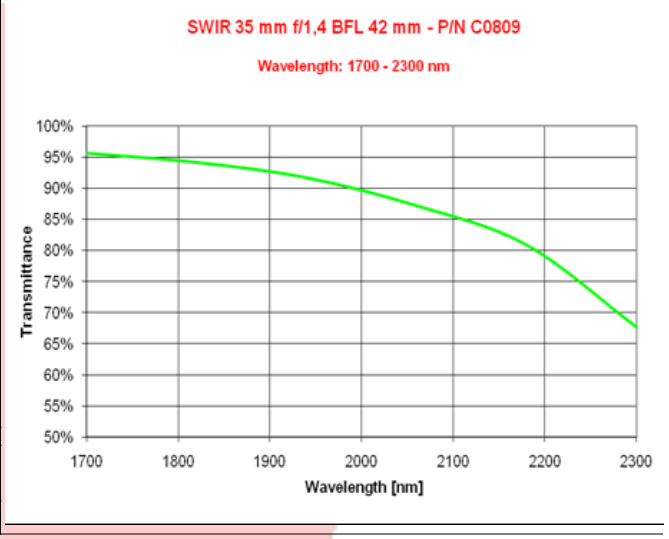
Glass Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	0%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







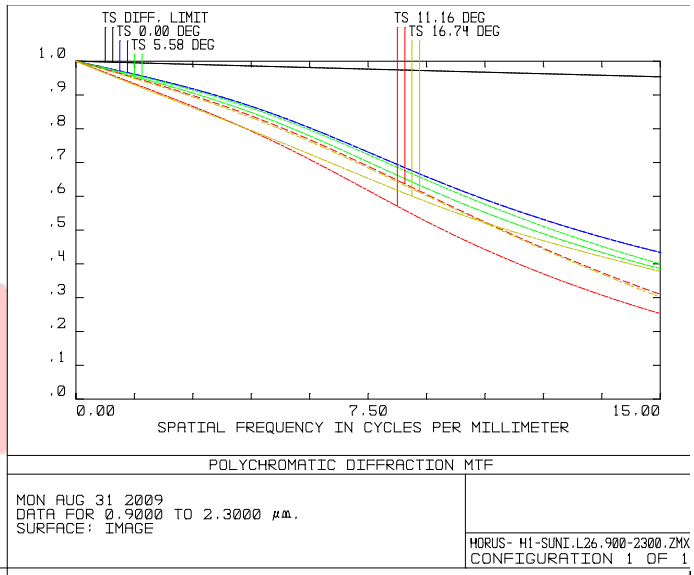
Optical parameters for wavelength range 1.7 – 2.3 µm	

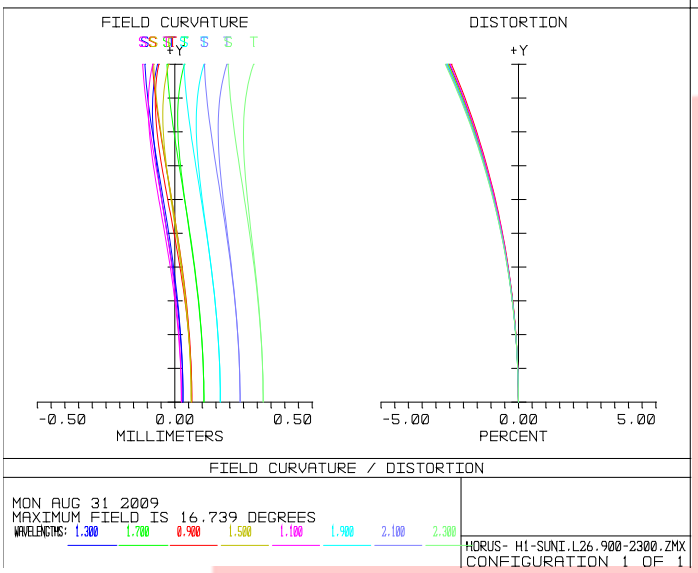
Resolution	MTF > 35%@15lp/mm
Distortion	< 3.5%

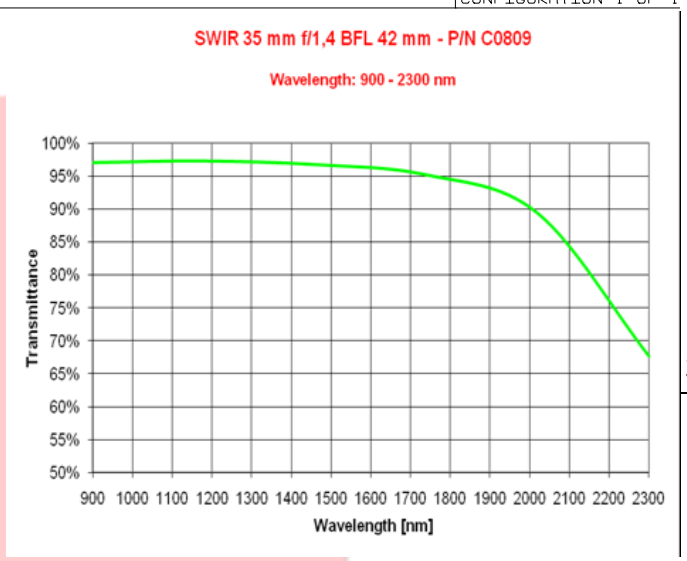
Glass Transmission without coating	> 68%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm

Resolution	MTF > 25%@15lp/mm
Distortion	< 3.5%

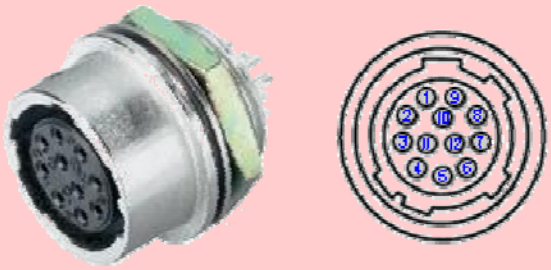
Glass Transmission without coating	> 68%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

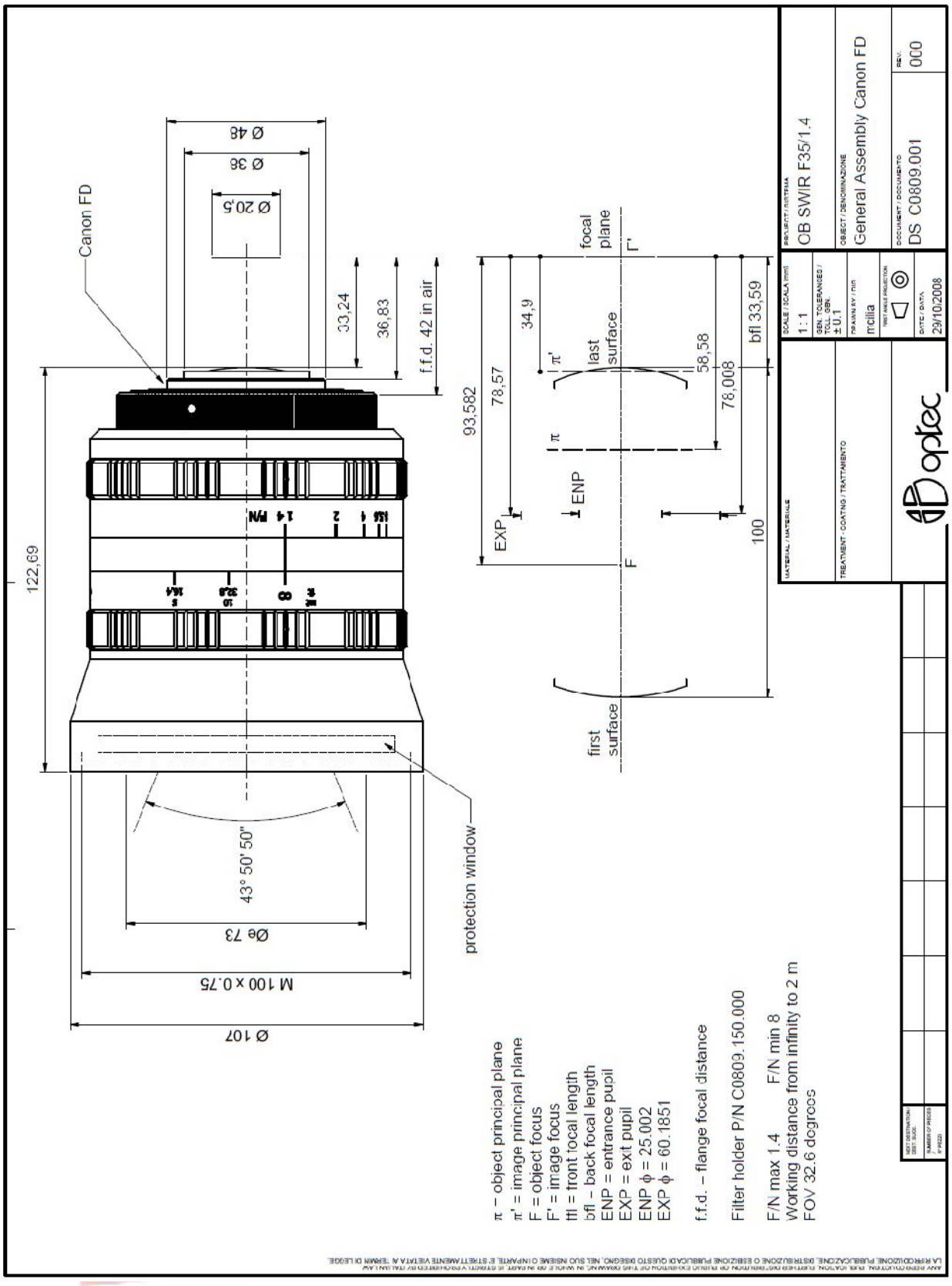
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor



LENS OB-SWIR35/2 – P/N C0839

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	35 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	32.6 degrees
Max aperture	F/N = 2
Object format	N.A.
Min working distance	2000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2 Min F/N = N.A

N. of elements	9
Dimensions	Dia 107 x 123 mm
Weight	N.A
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

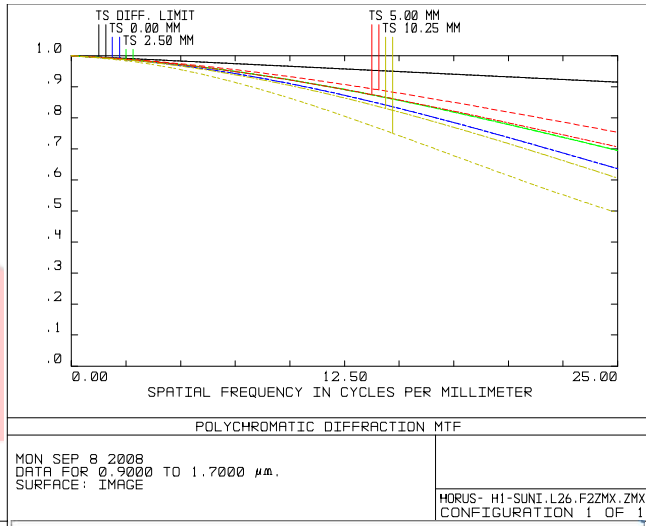
P/N	*wavelength range*	*mount type*	*note*
C0839.001	900-1700 nm	Canon FD	With iris diaphragm
C0839.002		Nikon	
C0839.003		M42 Screw	
C0839.005	1700-2300 nm	Canon FD	
C0839.006		Nikon	
C0839.007		M42 Screw	
C0839.010	900-2300 nm	Canon FD	
C0839.011		Nikon	
C0839.012		M42 Screw	

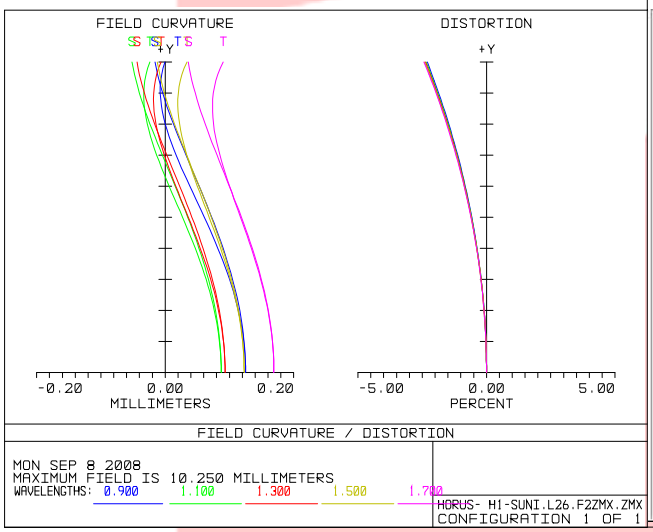
P/N	wavelength range	mount type	note
C0839.071	900-1700 nm	Canon FD	With motorized iris
C0839.072		Nikon	
C0839.073		M42 Screw	
C0839.081	1700-2300 nm	Canon FD	
C0839.082		Nikon	
C0839.083		M42 Screw	
C0839.091	900-2300 nm	Canon FD	
C0839.092		Nikon	
C0839.093		M42 Screw	
C0839.074	900-1700 nm	Canon FD	With motorized focus
C0839.075		Nikon	
C0839.076		M42 Screw	
C0839.084	1700-2300 nm	Canon FD	
C0839.085		Nikon	
C0839.086		M42 Screw	
C0839.094	900-2300 nm	Canon FD	
C0839.095		Nikon	
C0839.096		M42 Screw	
C0839.077	900-1700 nm	Canon FD	With motorized iris and focus
C0839.078		Nikon	
C0839.079		M42 Screw	
C0839.087	1700-2300 nm	Canon FD	
C0839.088		Nikon	
C0839.089		M42 Screw	
C0839.097	900-2300 nm	Canon FD	
C0839.098		Nikon	
C0839.099		M42 Screw	

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

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).





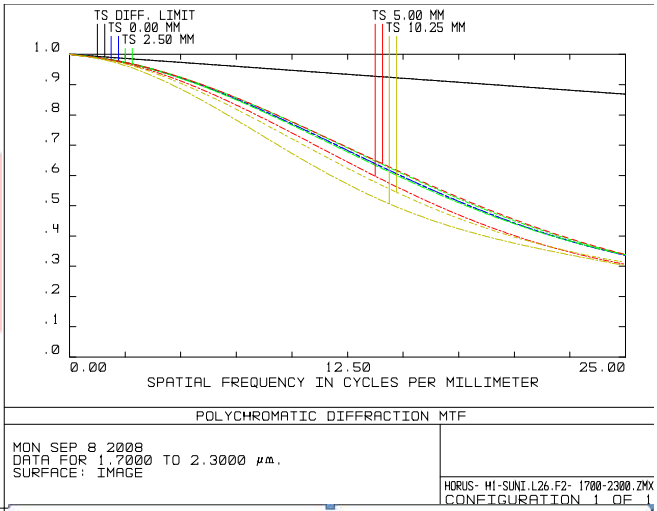
Optical parameters for wavelength range 0.9 – 1.7 µm

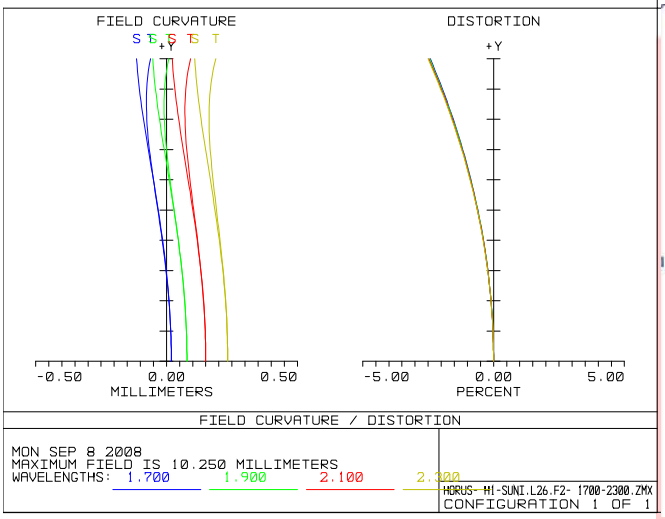
Resolution	MTF >50%@25lp/mm
Distortion	< 2.5%
Average axial chromatic aberration	<0.0285 mm

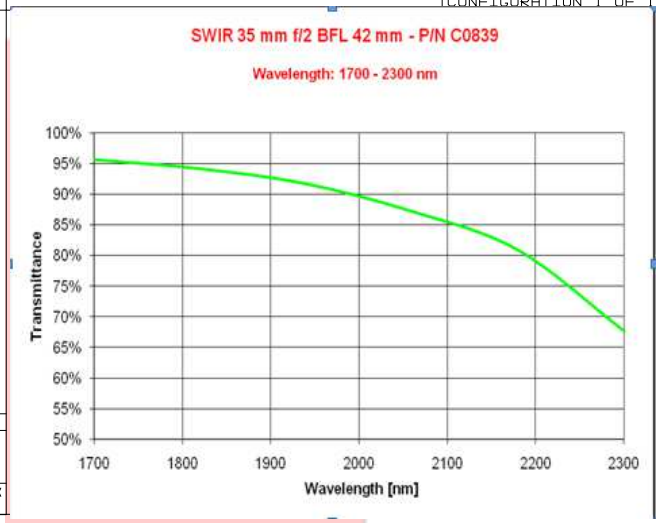
Glass Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	0%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







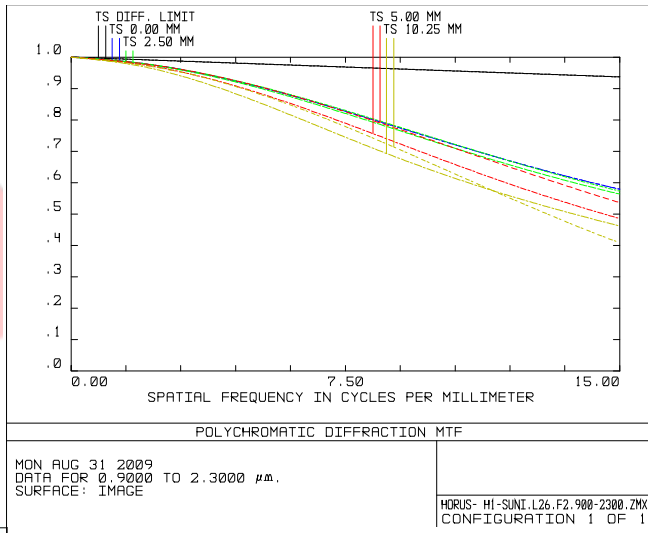
Optical parameters for wavelength range 1.7 – 2.3 µm	

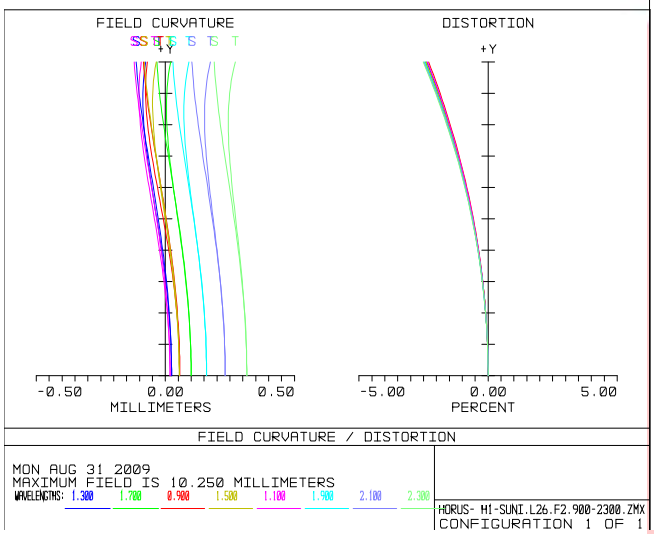
Resolution	MTF > 30%@25lp/mm
Distortion	< 3.5%

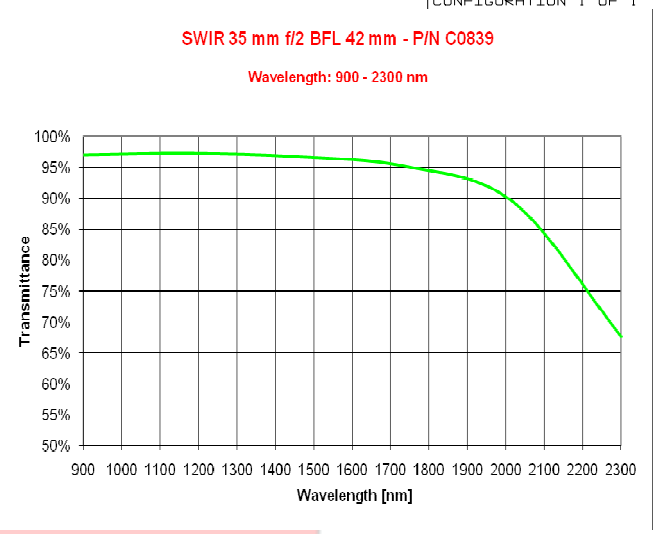
Glass Transmission without coating	> 68%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm	
Resolution	MTF > 40%@15lp/mm
Distortion	< 2.5%

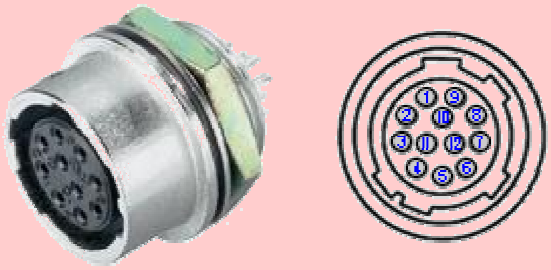
Glass Transmission without coating	> 67%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces	

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor

LENS OB-SWIR35/4 – P/N C0414

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

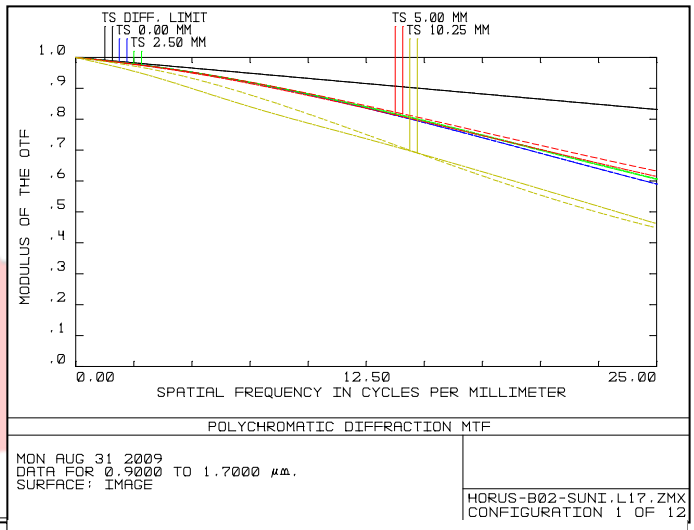
Focal length	35 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	32.6 degrees
Max aperture	F/N = 4 (fixed)
Object format	N.A.
Min working distance	750 mm
Zoom value	N.A.
Focus	Manual
Iris	Optional / If iris Min F/N = 22

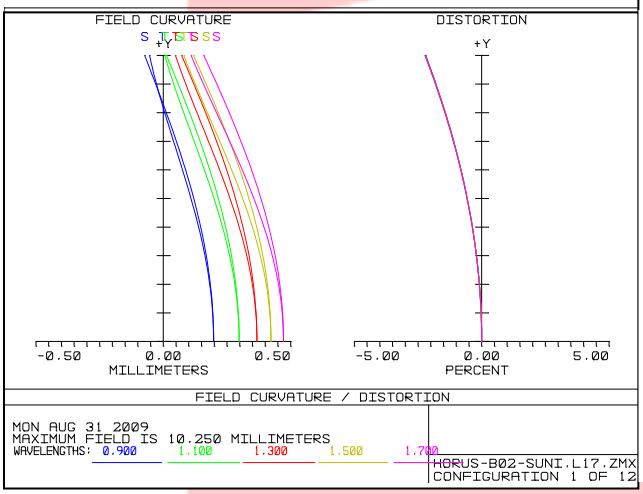
N. of elements	4
Dimensions	Dia 80 x 50 mm
Weight	0.5 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

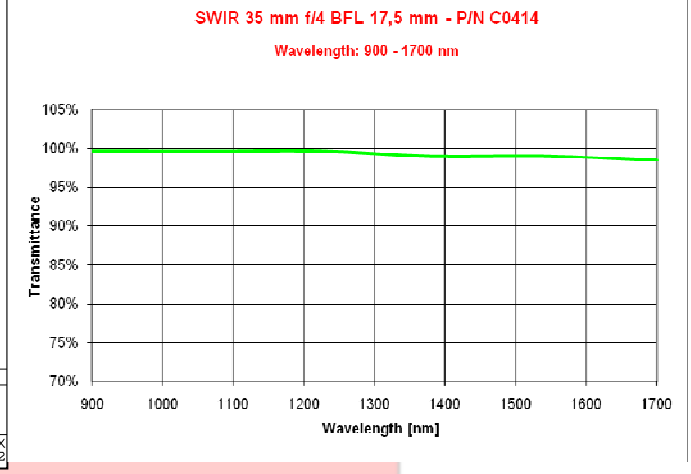
P/N	*wavelength range*	*mount type*	*note*
C0414.004	900-1700 nm	C-Mount	Without iris diaphragm
C0414.008	1700-2300 nm	C-Mount	Without iris diaphragm
C0414.013	900-2300 nm	C-Mount	Without iris diaphragm

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







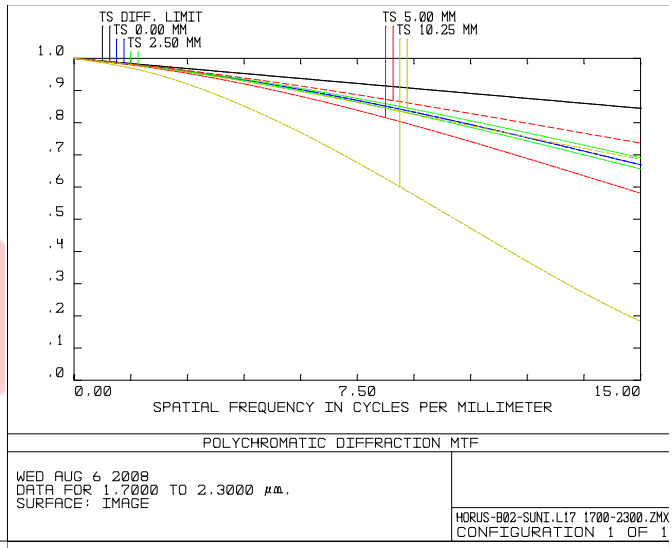
Optical parameters for wavelength range 0.9 – 1.7 µm

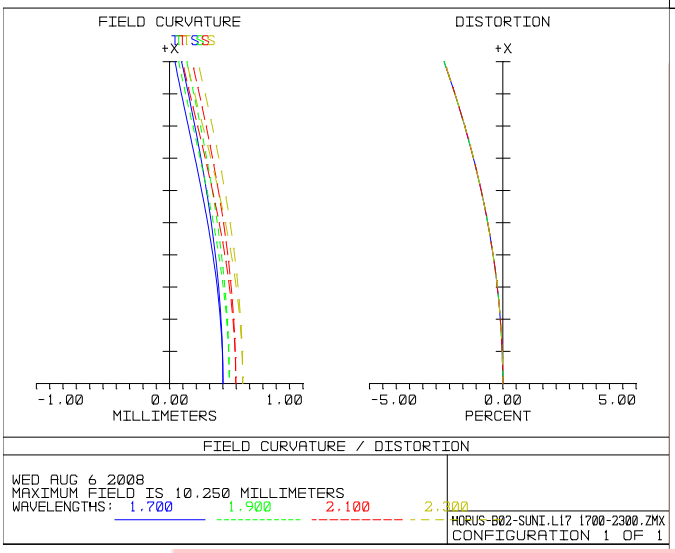
Resolution	MTF >45 %@25lp/mm
Distortion	< 3%
Average axial chromatic aberration	<0.0328 mm

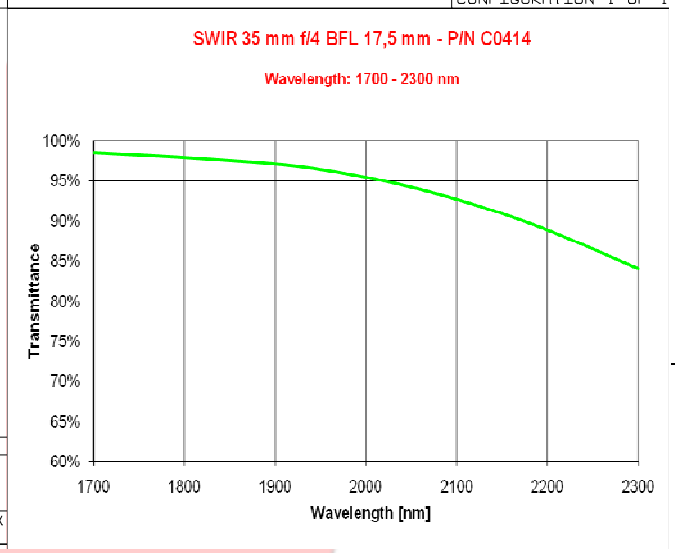
Glass Transmission without coating	> 98%
Antireflection Coating	R ≤ 1%
Vignetting	0%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







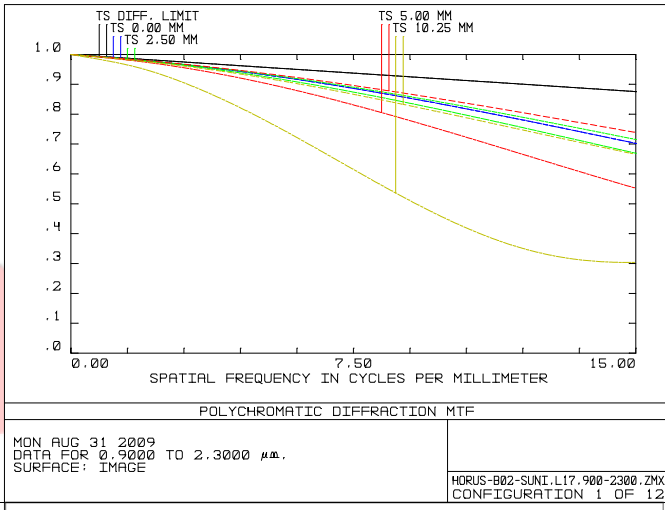
Optical parameters for wavelength range 1.7 – 2.3 µm

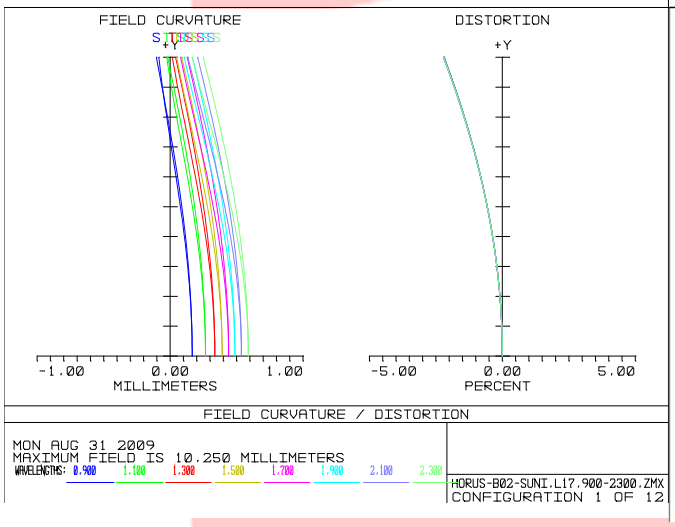
Resolution	MTF > 20%@15lp/mm
Distortion	< 3%

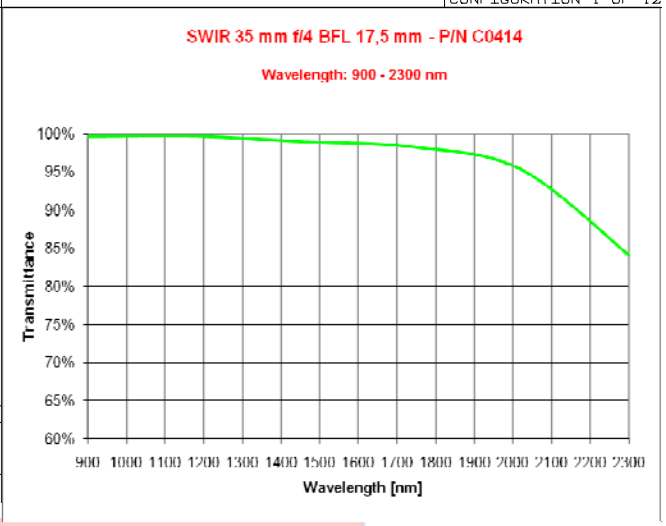
Glass Transmission without coating	> 84%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm

Resolution	MTF > 30%@15lp/mm
Distortion	< 3%

Glass Transmission without coating	> 84%
Antireflection Coating	R ≤ 1%

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

LENS OB-SWIR35/1.4 – P/N C0411

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	35 mm
Image format (diagonal)	32.8 mm
F.O.V. (diagonal)	50.2 degrees
Max aperture	F/N = 1.4
Object format	N.A.
Min working distance	8 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.4 Min F/N =22

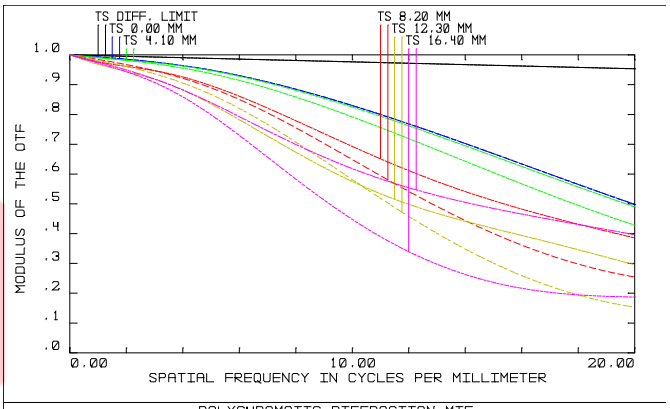
N. of elements	10
Dimensions	Dia 100 x 135 mm
Weight	1.2 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

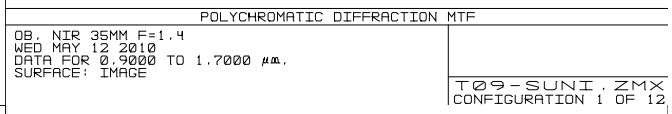
P/N	*wavelength range*	*mount type*	*note*
C0411.001	900-1700 nm	Canon FD	Without iris diaphragm
C0411.051		Canon FD	With iris diaphragm

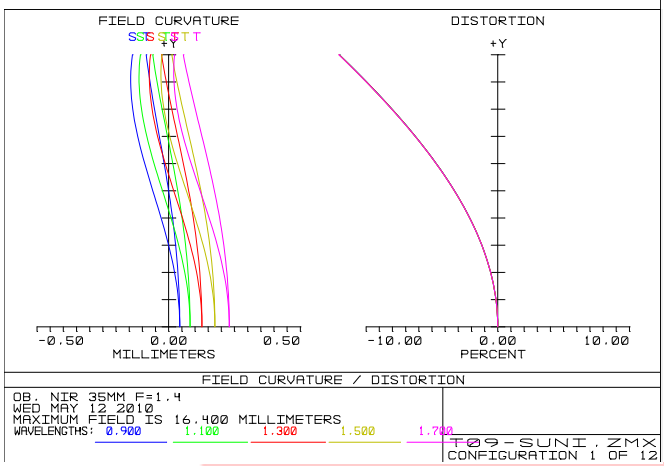
The lenses can be used with C-Mount Adapter C0999_050_000 but the image will be vignetted.

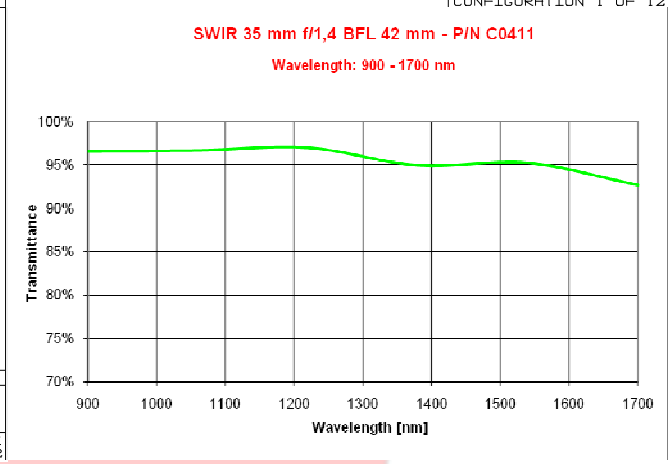
MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).





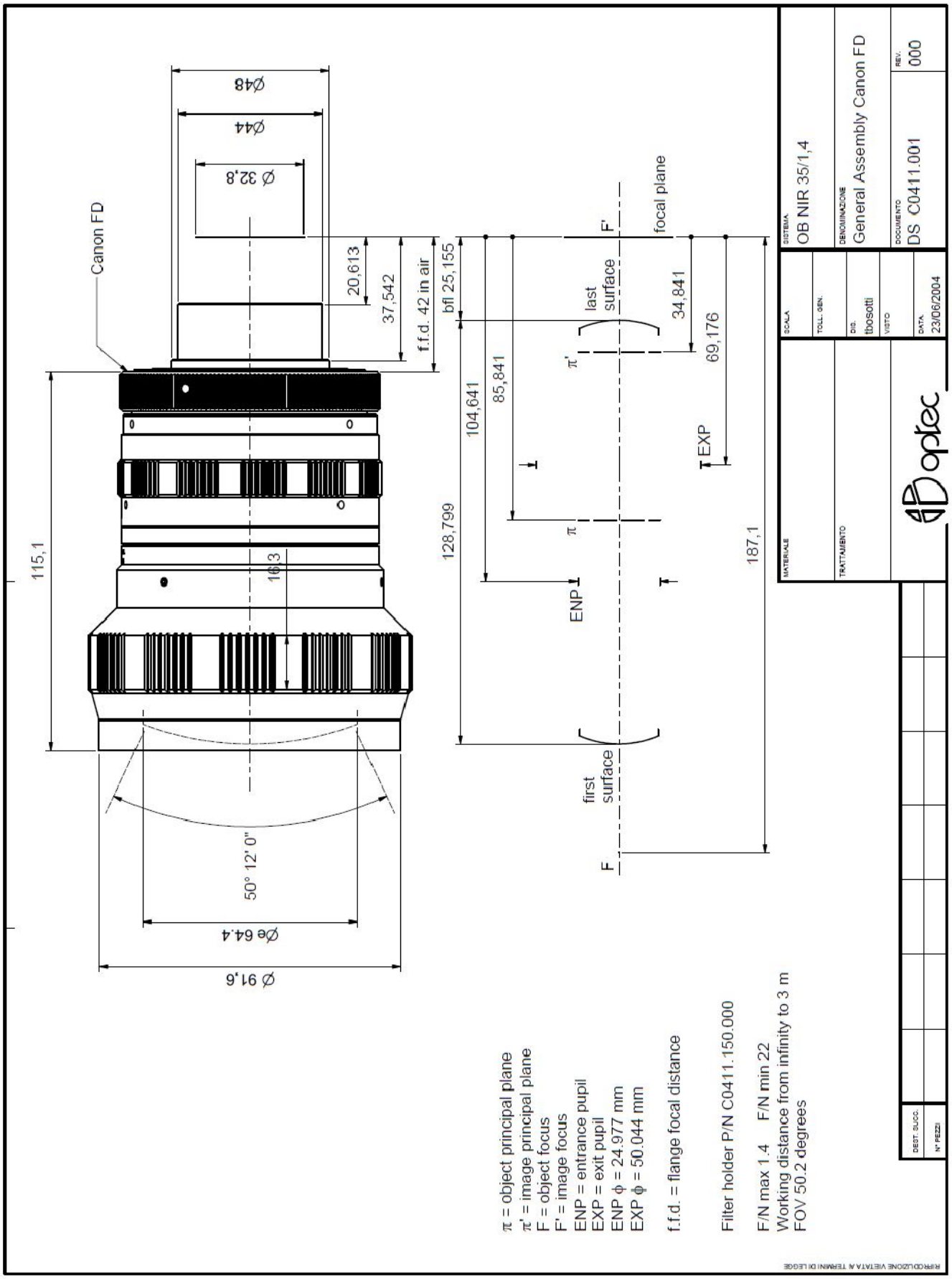




Optical parameters for wavelength range 0.9 – 1.7 μm

Resolution	MTF > 15%@20lp/mm
Distortion	< 12%
Average axial chromatic aberration	<0.05 mm

Glass Transmission without coating	> 92%
Antireflection Coating	R ≤ 0.5%
Vignetting	<22%



LENS OB-SWIR44/1.4 – P/N C0417

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	44 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	26.2 degrees
Max aperture	F/N = 1.4
Object format	N.A.
Min working distance	4 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.4 Min F/N =22

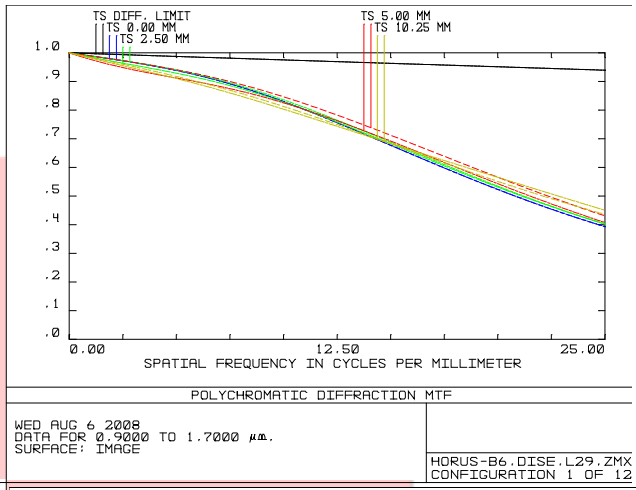
N. of elements	9
Dimensions	Dia 78 x 100 mm
Weight	0.75 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

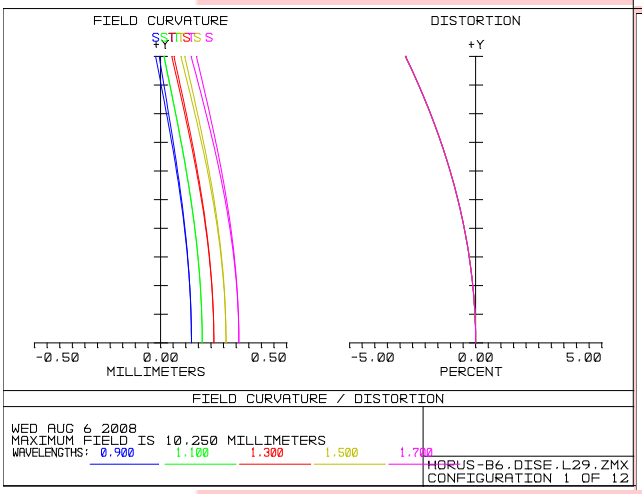
P/N	*wavelength range*	*mount type*	*note*
C0417.001	900-1700 nm	Canon FD	Without iris diaphragm
C0417.002		Nikon	
C0417.003		M42 Screw	
C0417.051		Canon FD	With iris diaphragm
C0417.052		Nikon	
C0417.053		M42 Screw	
C0417.005	1700-2300 nm	Canon FD	Without iris diaphragm
C0417.006		Nikon	
C0417.007		M42 Screw	

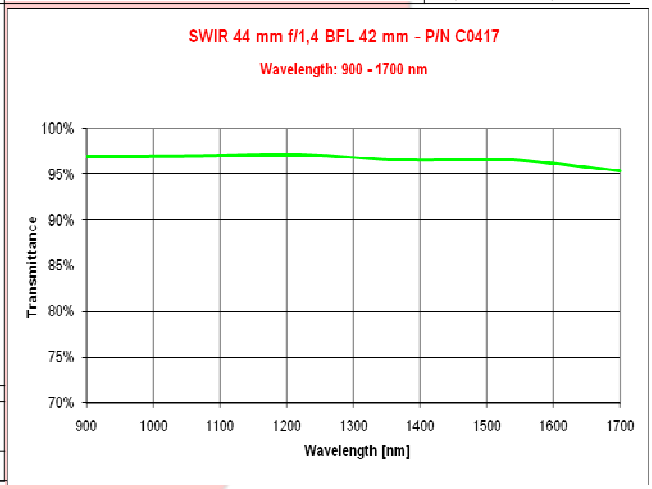
P/N	wavelength range	mount type	note
C0417.055	1700-2300 nm	Canon FD	With iris diaphragm
C0417.056		Nikon	
C0417.057		M42 Screw	
C0417.010	900-2300 nm	Canon FD	Without iris diaphragm
C0417.011		Nikon	
C0417.012		M42 Screw	
C0417.060	900-2300 nm	Canon FD	With iris diaphragm
C0417.061		Nikon	
C0417.062		M42 Screw	

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







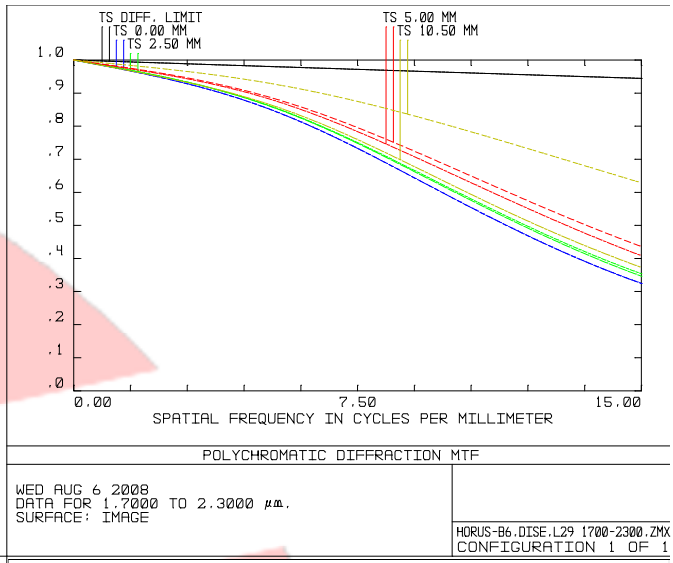
Optical parameters for wavelength range 0.9 – 1.7 µm

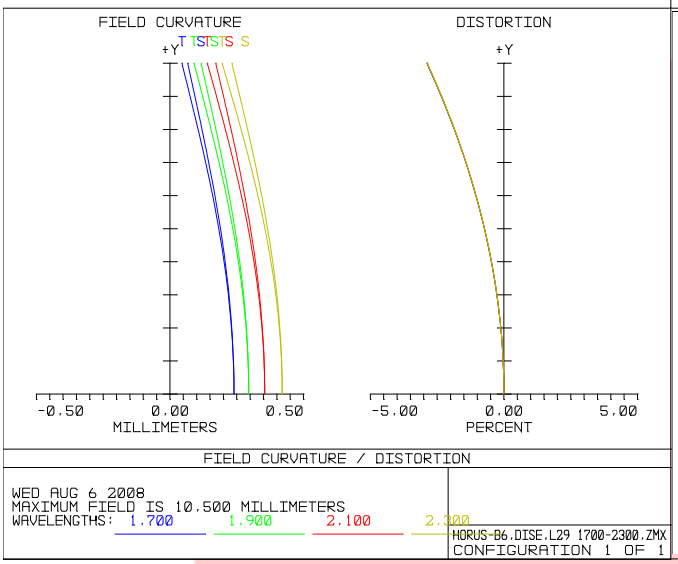
Resolution	MTF > 40%@25lp/mm
Distortion	< 3%
Average axial chromatic aberration	<0.0144 mm

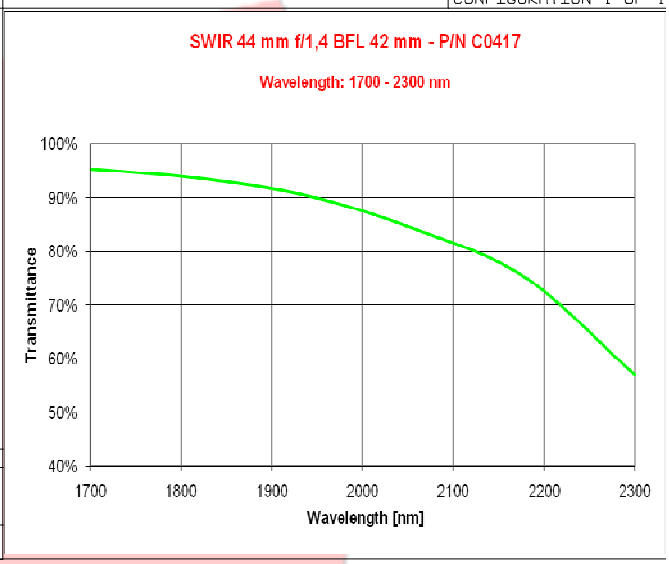
Glass Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	<12%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







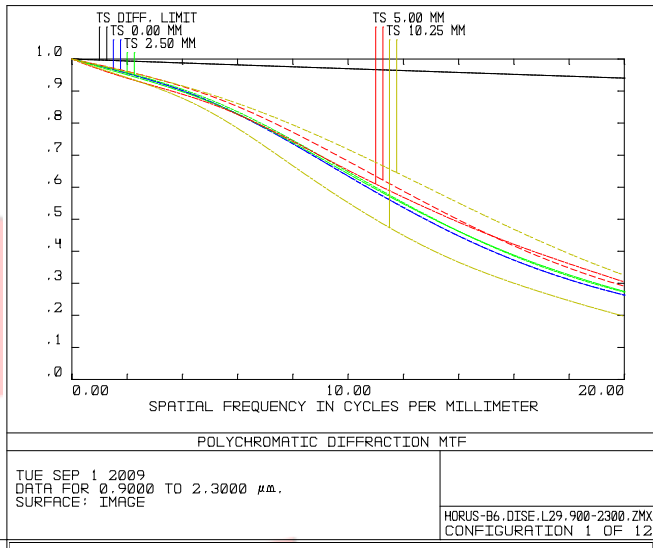
Optical parameters for wavelength range 1.7 – 2.3 μm

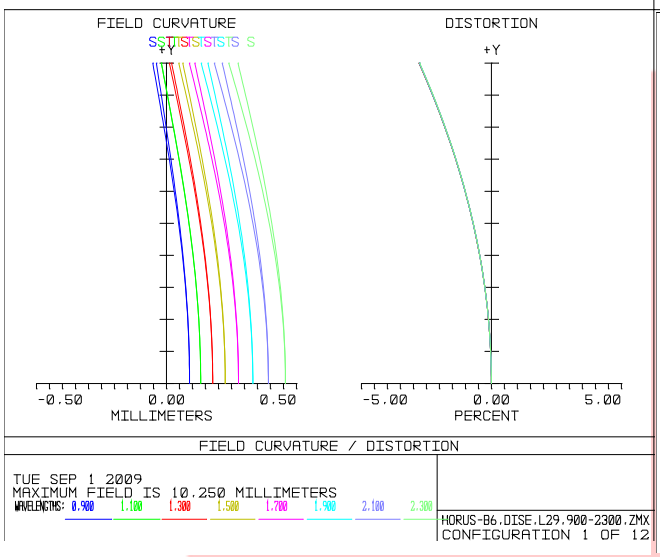
Resolution	MTF > 30%@15lp/mm
Distortion	< 3%

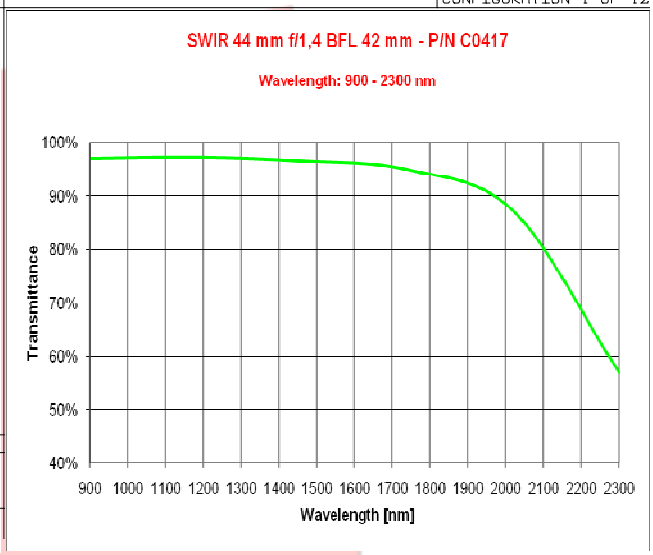
Glass Transmission without coating	> 56%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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%).





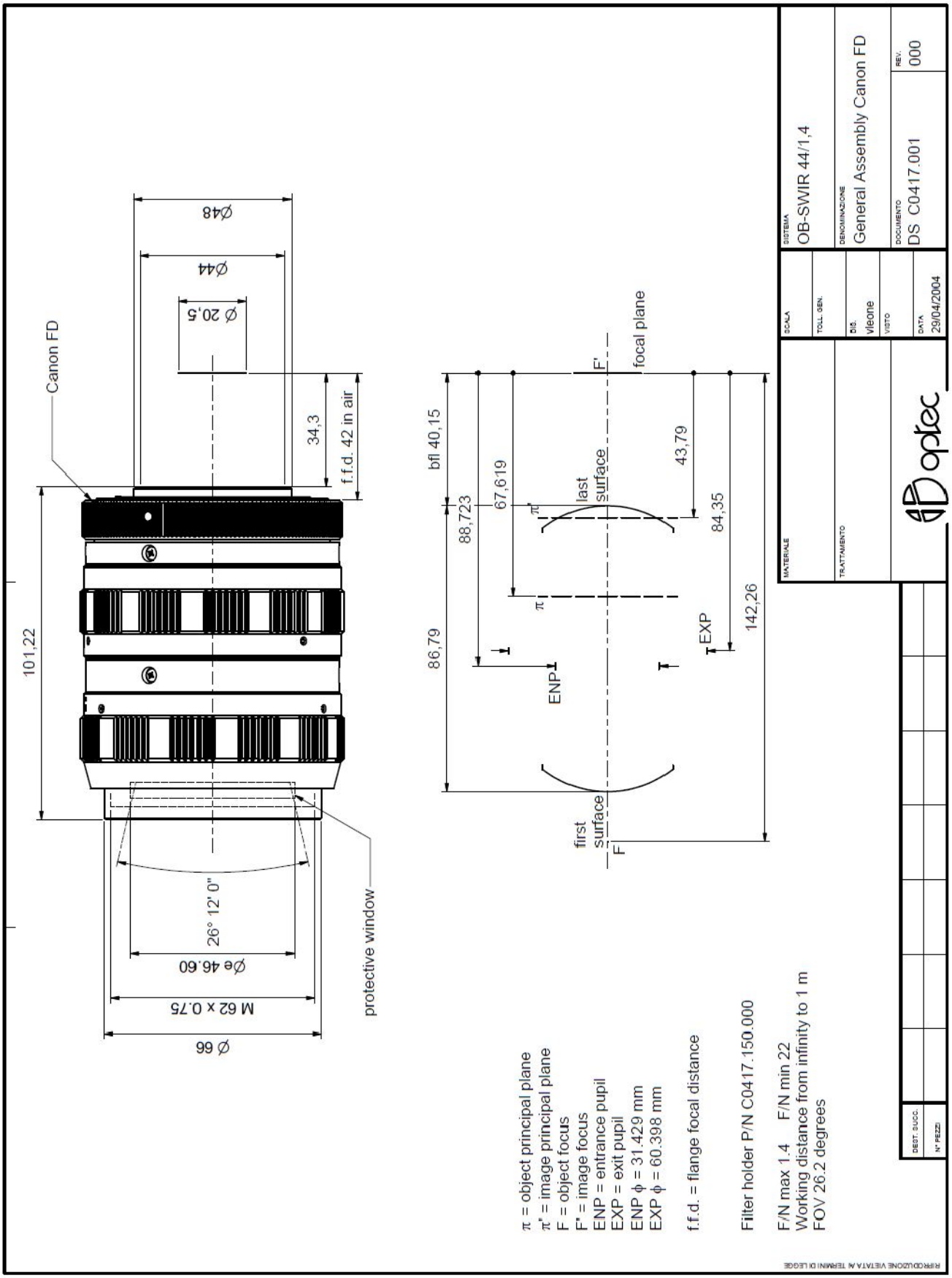


Optical parameters for wavelength range 0.9 – 2.3 µm

Resolution	MTF > 20%@20lp/mm
Distortion	< 3%

Glass Transmission without coating	> 56%
Antireflection Coating	R ≤ 1%

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



LENS OB-SWIR50/1.4 – P/N C0810

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	50 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	23 degrees
Max aperture	F/N = 1.4
Object format	N.A.
Min working distance	10 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.4 Min F/N = 11

N. of elements	8
Dimensions	Dia 107 x 122 mm
Weight	1.67 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

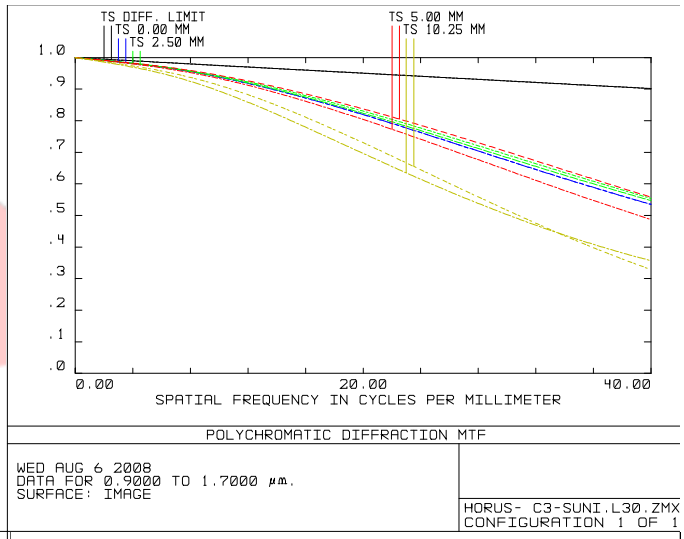
P/N	*wavelength range*	*mount type*	*note*
C0810.001	900-1700 nm	Canon FD	With iris diaphragm
C0810.002		Nikon	
C0810.003		M42 Screw	
C0810.005	1700-2300 nm	Canon FD	
C0810.006		Nikon	
C0810.007		M42 Screw	
C0810.010	900-2300 nm	Canon FD	
C0810.011		Nikon	
C0810.012		M42 Screw	

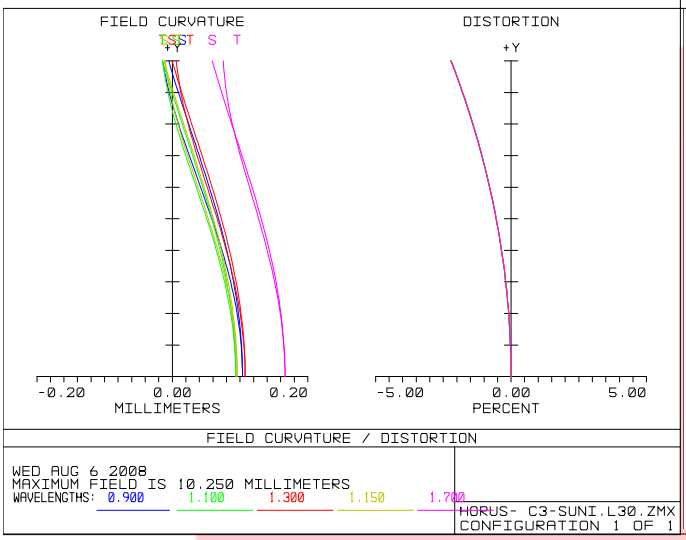
P/N	wavelength range	mount type	note
C0810.071	900-1700 nm	Canon FD	With motorized iris
C0810.072		Nikon	
C0810.073		M42 Screw	
C0810.081	1700-2300 nm	Canon FD	
C0810.082		Nikon	
C0810.083		M42 Screw	
C0810.091	900-2300 nm	Canon FD	
C0810.092		Nikon	
C0810.093		M42 Screw	
C0810.074	900-1700 nm	Canon FD	With motorized focus
C0810.075		Nikon	
C0810.076		M42 Screw	
C0810.084	1700-2300 nm	Canon FD	
C0810.085		Nikon	
C0810.086		M42 Screw	
C0810.094	900-2300 nm	Canon FD	
C0810.095		Nikon	
C0810.096		M42 Screw	
C0810.077	900-1700 nm	Canon FD	With motorized iris and focus
C0810.078		Nikon	
C0810.079		M42 Screw	
C0810.087	1700-2300 nm	Canon FD	
C0810.088		Nikon	
C0810.089		M42 Screw	
C0810.097	900-2300 nm	Canon FD	
C0810.098		Nikon	
C0810.099		M42 Screw	

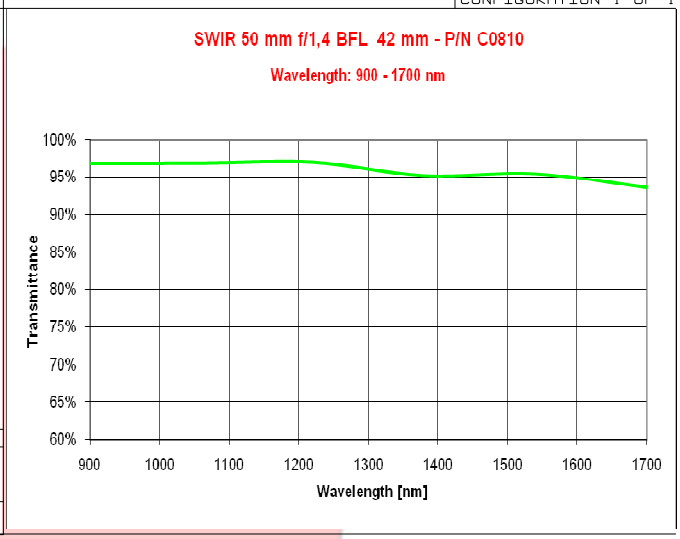
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







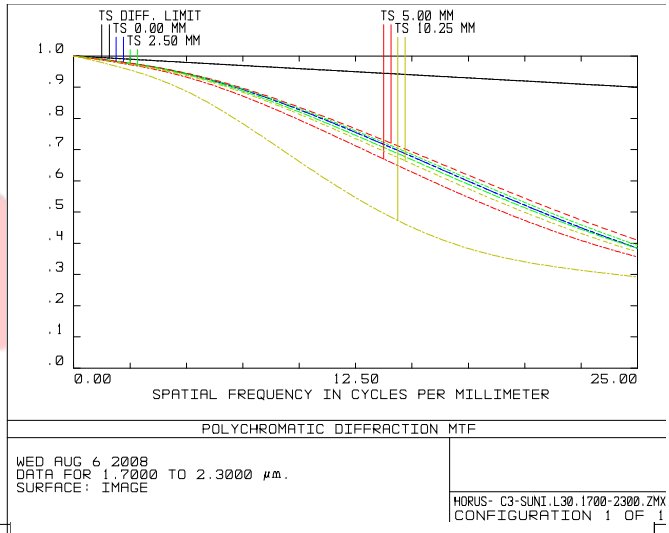
Optical parameters for wavelength range 0.9 – 1.7 µm

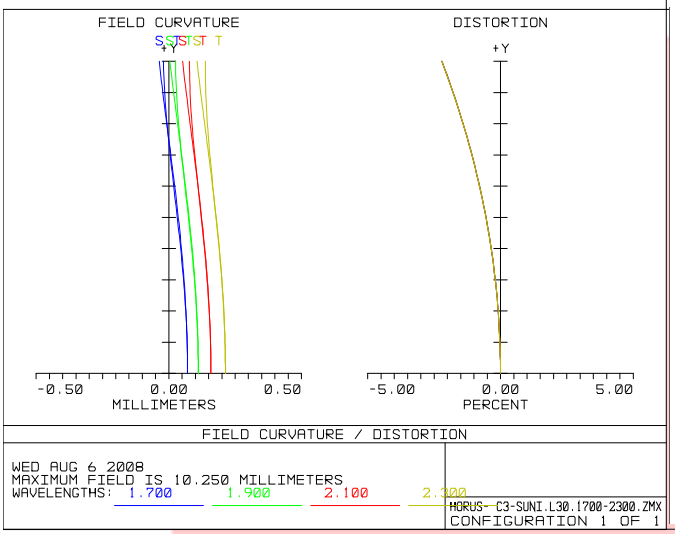
Resolution	MTF > 35%@40lp/mm
Distortion	< 2.5%
Average axial chromatic aberration	<0.0163 mm

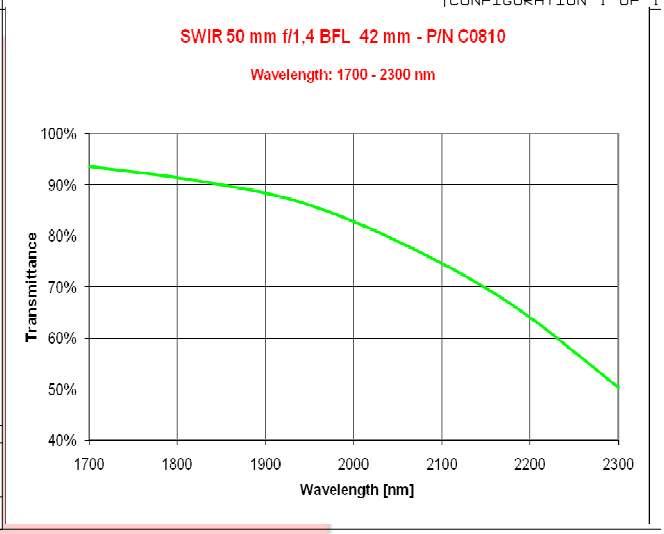
Lens Transmission without coating	> 93%
Antireflection Coating	R ≤ 1%
Vignetting	<2%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







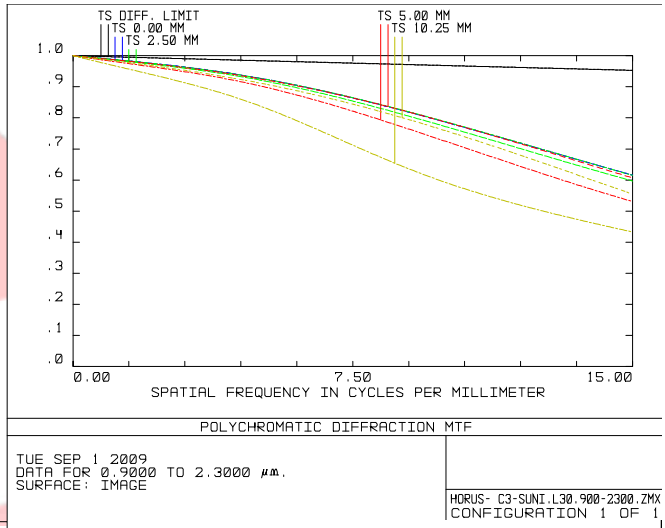
Optical parameters for wavelength range 1.7 – 2.3 µm

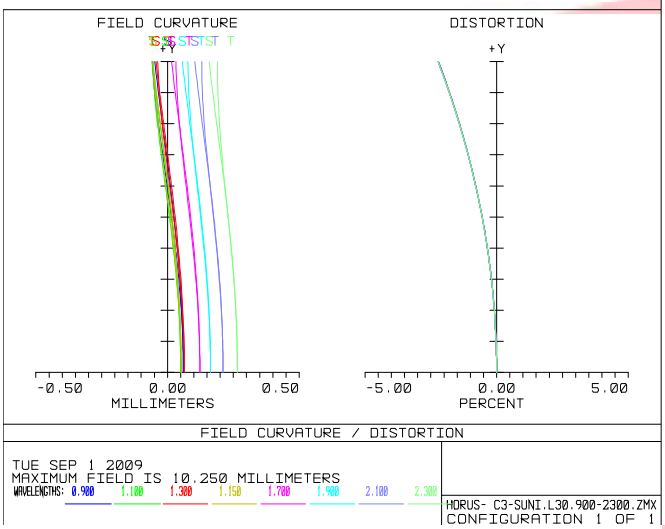
Resolution	MTF > 30%@25lp/mm
Distortion	< 2.5%

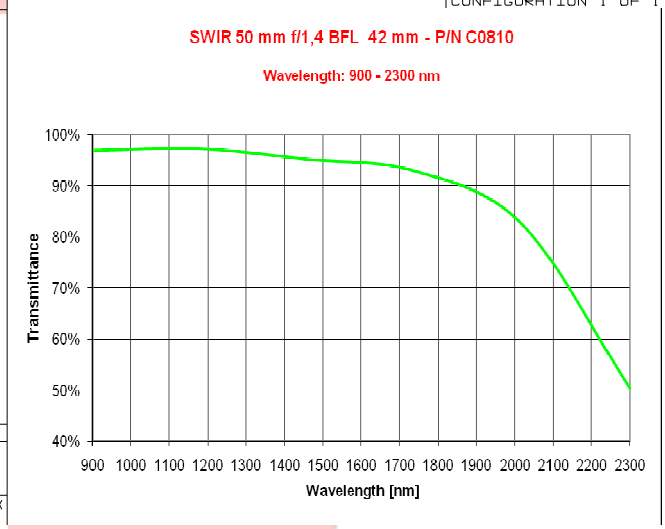
Lens Transmission without coating	> 50%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm

Resolution	MTF > 45%@15lp/mm
Distortion	< 2.5%

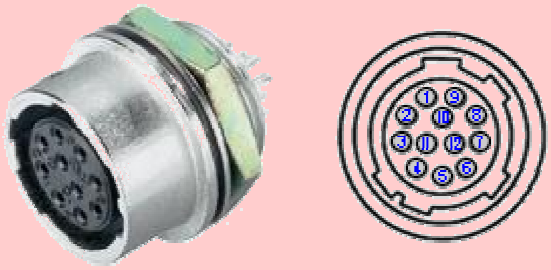
Lens Transmission without coating	> 50%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

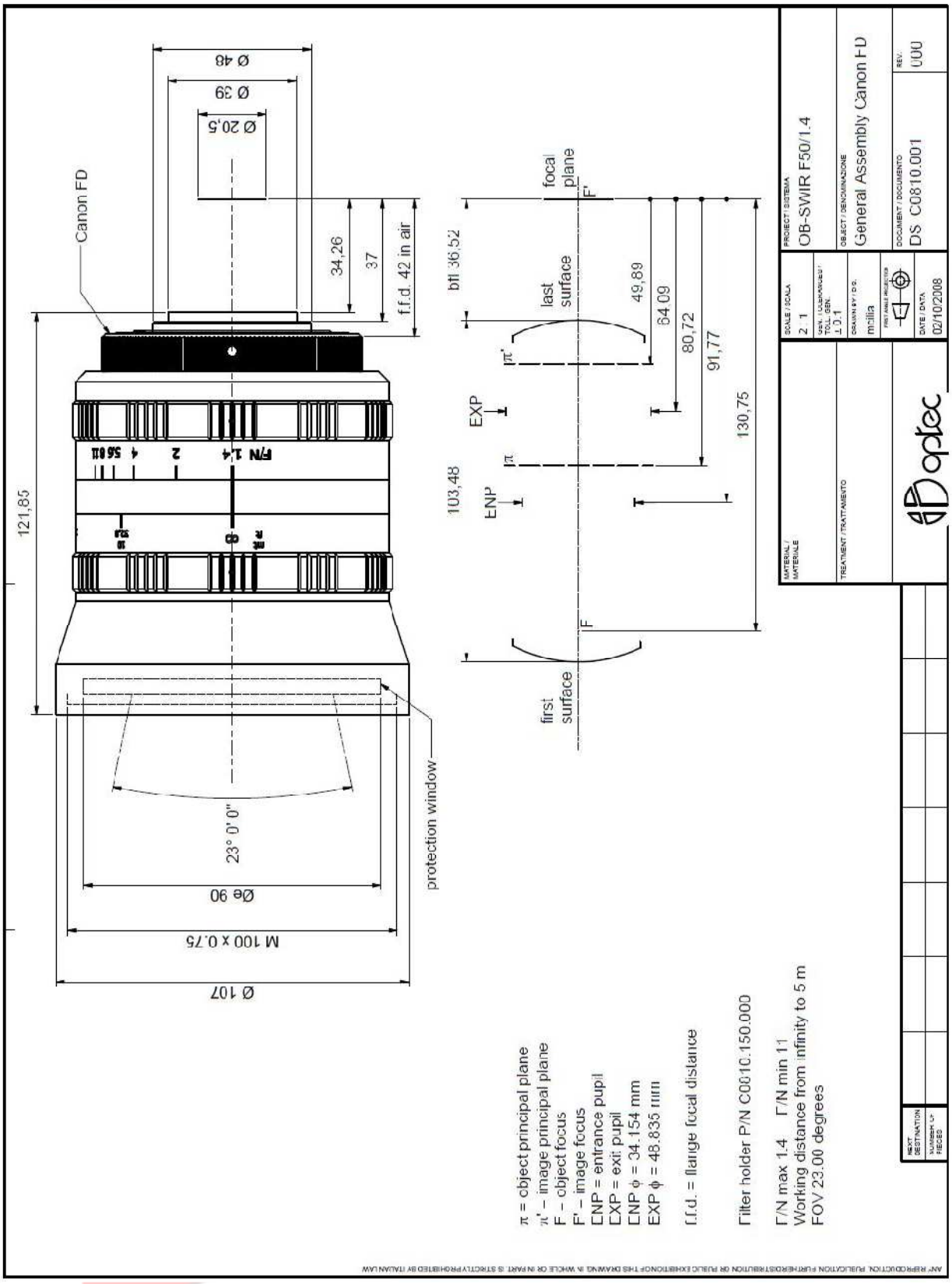
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor



LENS OB-SWIR50/2 – P/N C0024

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

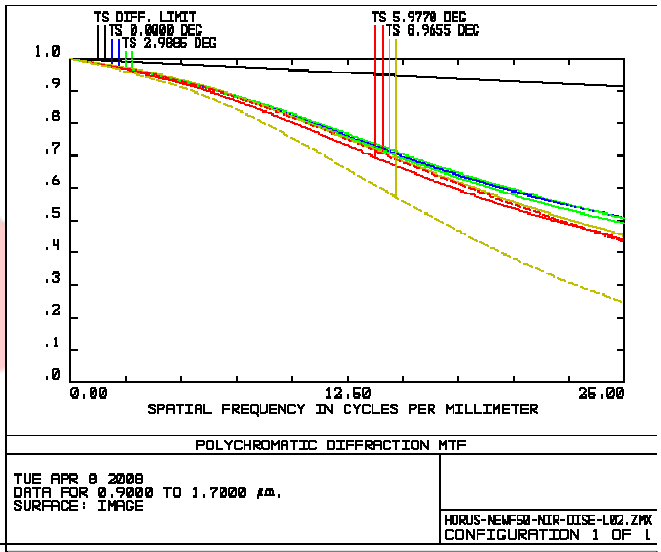
Focal length	50 mm
Image format (diagonal)	16 mm
F.O.V. (diagonal)	18 degrees
Max aperture	F/N = 2
Object format	N.A.
Min working distance	3 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2 Min F/N = 16

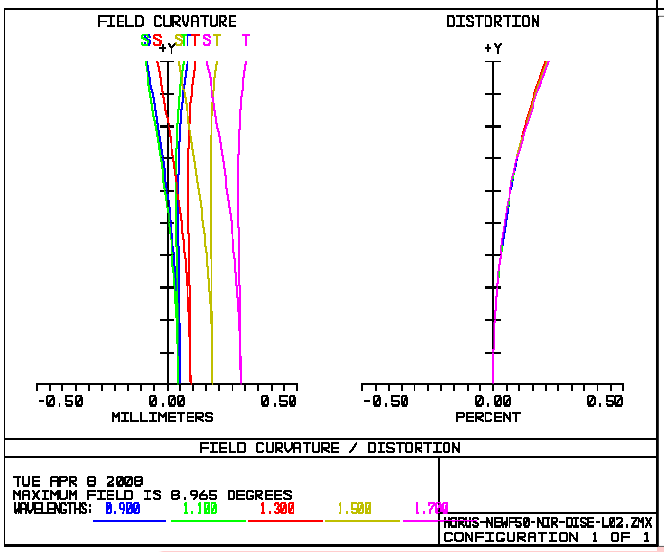
N. of elements	6
Dimensions	Dia 79 x 76 mm
Weight	1 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

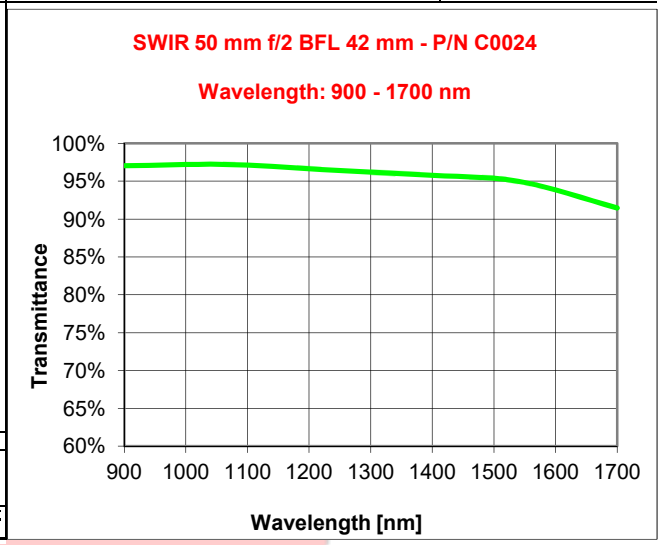
P/N	*wavelength range*	*mount type*	*note*
C0024.001	900-1700 nm	Canon FD	With iris diaphragm
C0024.002		Nikon	
C0024.003		M42 Screw	

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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	< 0.3%
Average axial chromatic aberration	<0.0868 mm

Lens Transmission without coating	> 91%
Antireflection Coating	R ≤ 1%
Vignetting	< 3%

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

LENS OB-SWIR50/2 – P/N C0840

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	50 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	23 degrees
Max aperture	F/N = 2
Object format	N.A.
Min working distance	7 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2 Min F/N = 11

N. of elements	8
Dimensions	Dia 107 x 122 mm
Weight	2 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

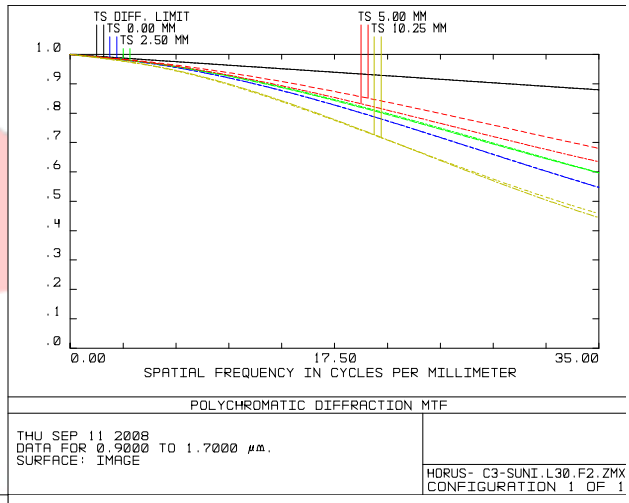
P/N	*wavelength range*	*mount type*	*note*
C0840.001	900-1700 nm	Canon FD	With iris diaphragm
C0840.002		Nikon	
C0840.003		M42 Screw	
C0840.005	1700-2300 nm	Canon FD	
C0840.006		Nikon	
C0840.007		M42 Screw	
C0840.010	900-2300 nm	Canon FD	
C0840.011		Nikon	
C0840.012		M42 Screw	

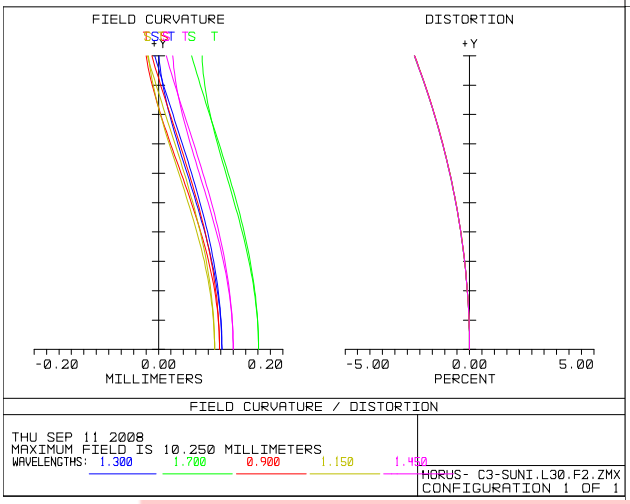
P/N	wavelength range	mount type	note
C0840.071	900-1700 nm	Canon FD	With motorized iris
C0840.072		Nikon	
C0840.073		M42 Screw	
C0840.081	1700-2300 nm	Canon FD	
C0840.082		Nikon	
C0840.083		M42 Screw	
C0840.091	900-2300 nm	Canon FD	
C0840.092		Nikon	
C0840.093		M42 Screw	
C0840.074	900-1700 nm	Canon FD	With motorized focus
C0840.075		Nikon	
C0840.076		M42 Screw	
C0840.084	1700-2300 nm	Canon FD	
C0840.085		Nikon	
C0840.086		M42 Screw	
C0840.094	900-2300 nm	Canon FD	
C0840.095		Nikon	
C0840.096		M42 Screw	
C0840.077	900-1700 nm	Canon FD	With motorized iris and focus
C0840.078		Nikon	
C0840.079		M42 Screw	
C0840.087	1700-2300 nm	Canon FD	
C0840.088		Nikon	
C0840.089		M42 Screw	
C0840.097	900-2300 nm	Canon FD	
C0840.098		Nikon	
C0840.099		M42 Screw	

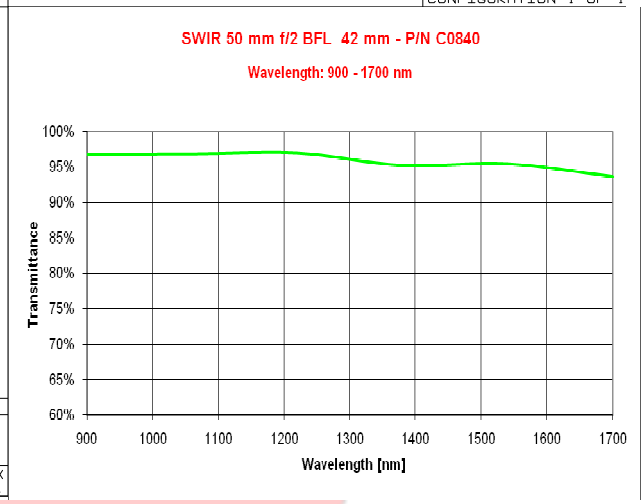
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







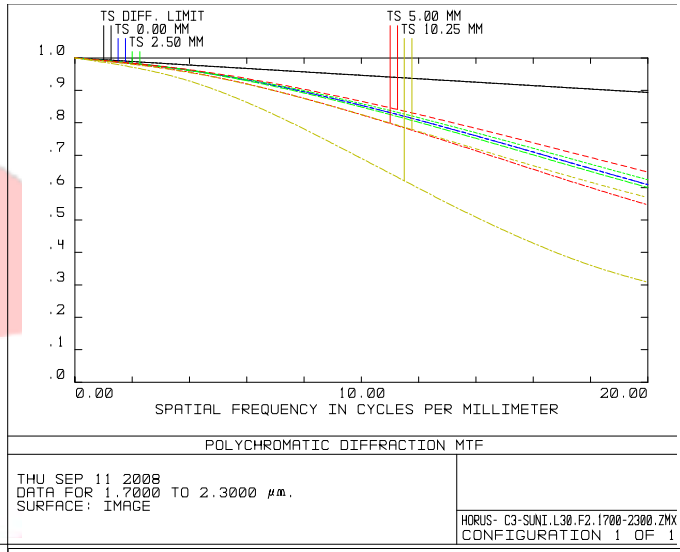
Optical parameters for wavelength range 0.9 – 1.7 µm

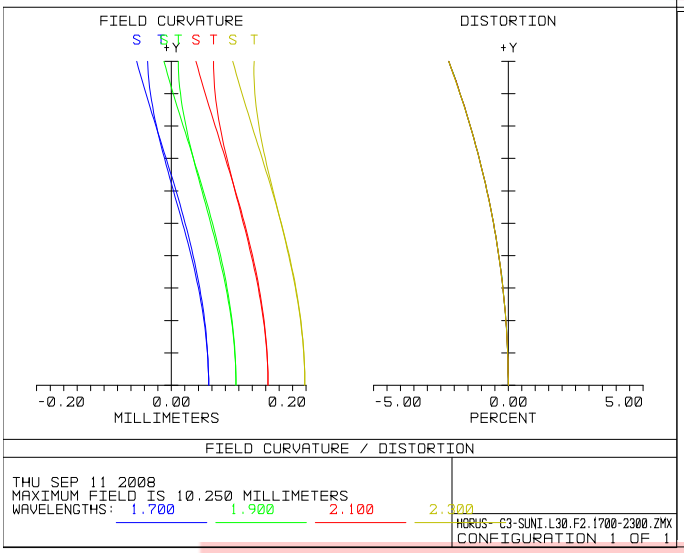
Resolution	MTF > 45%@35lp/mm
Distortion	< 2.5%
Average axial chromatic aberration	<0.0163 mm

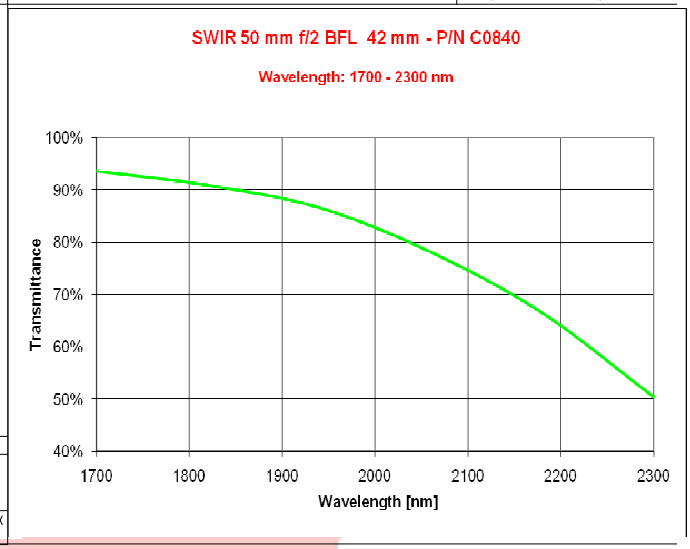
Lens Transmission without coating	> 93%
Antireflection Coating	R ≤ 1%
Vignetting	<2%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







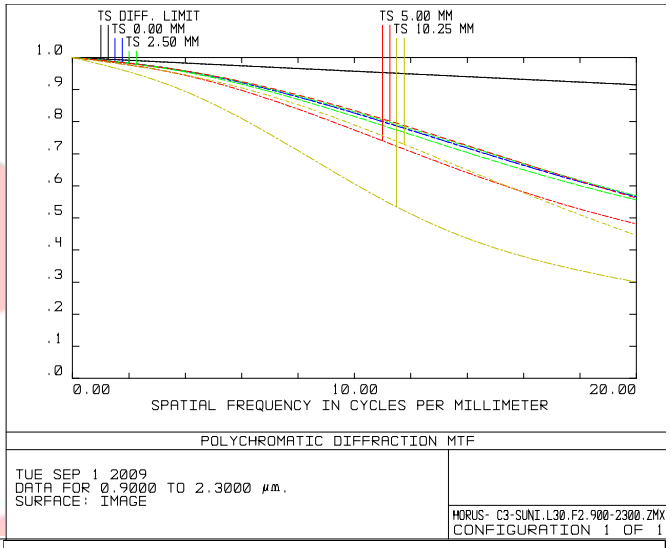
Optical parameters for wavelength range 1.7 – 2.3 μm

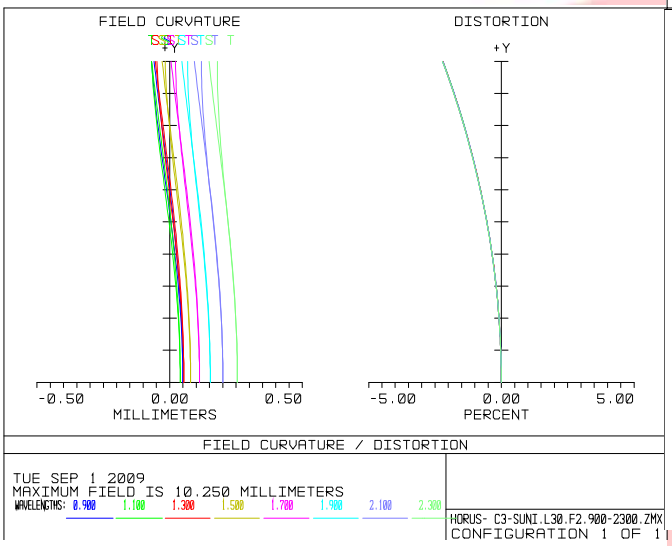
Resolution	MTF > 30%@20lp/mm
Distortion	< 2.5%

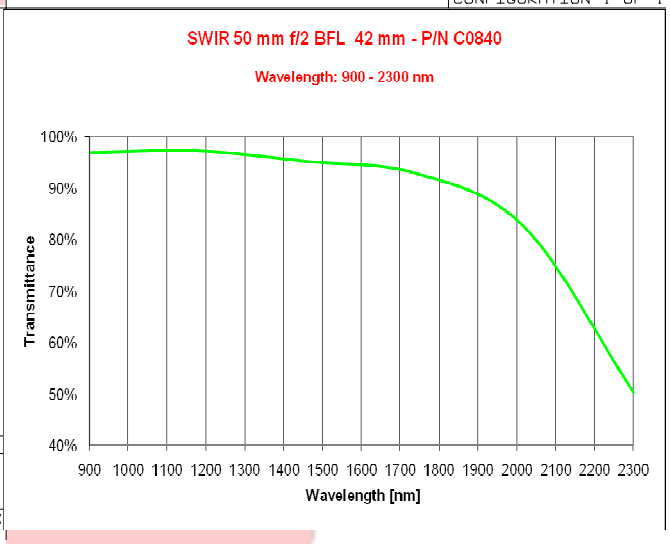
Lens Transmission without coating	> 50%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm

Resolution	MTF > 30%@20lp/mm
Distortion	< 2.5%

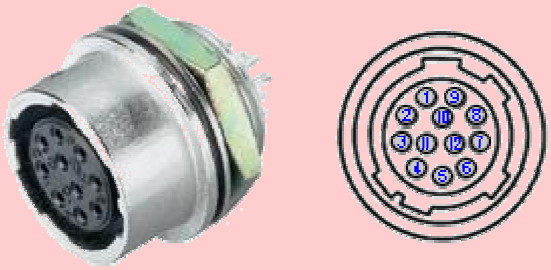
Lens Transmission without coating	> 50%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces	

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

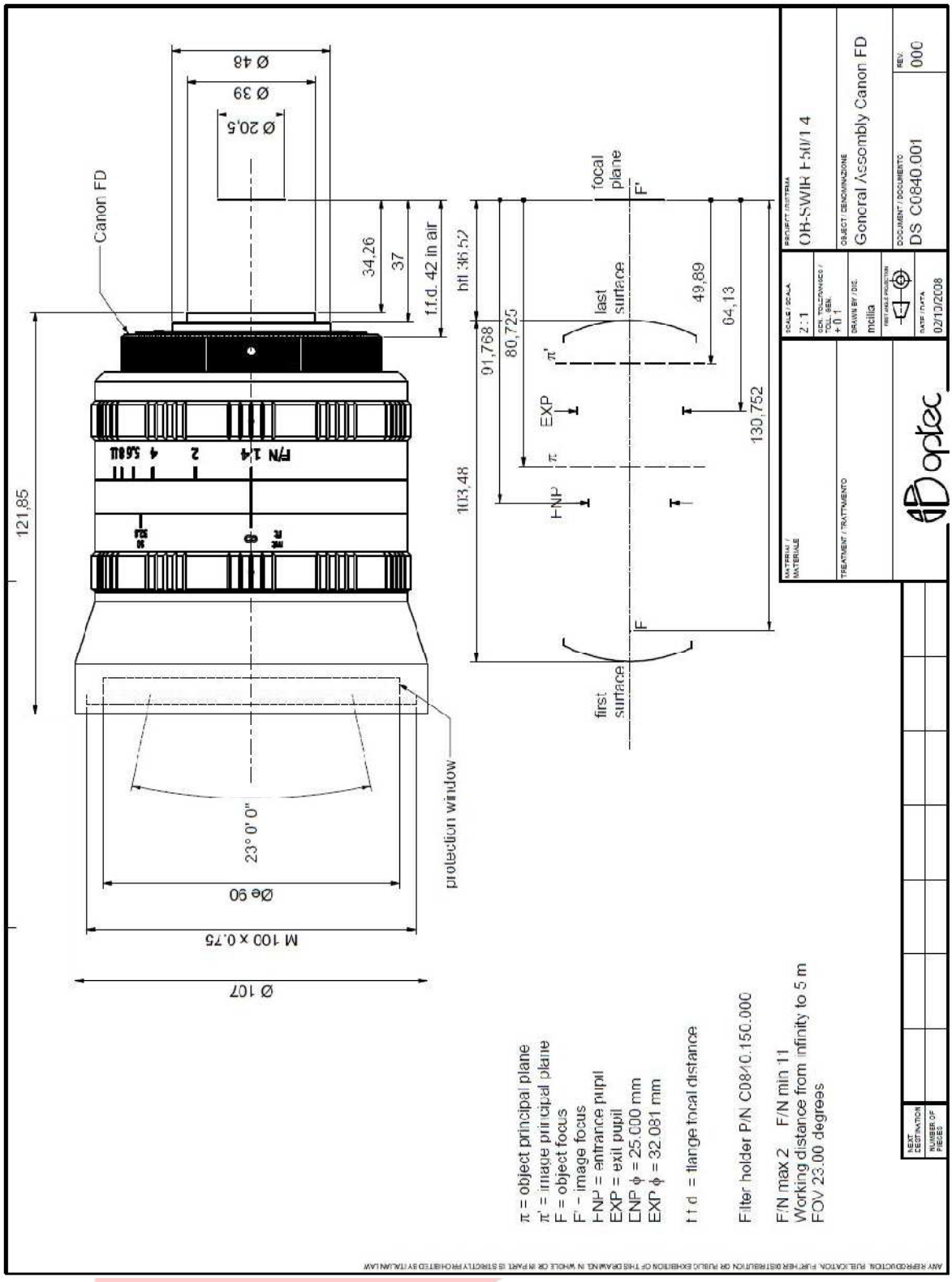
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor



LENS OB-SWIR50/4 – P/N C0410

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

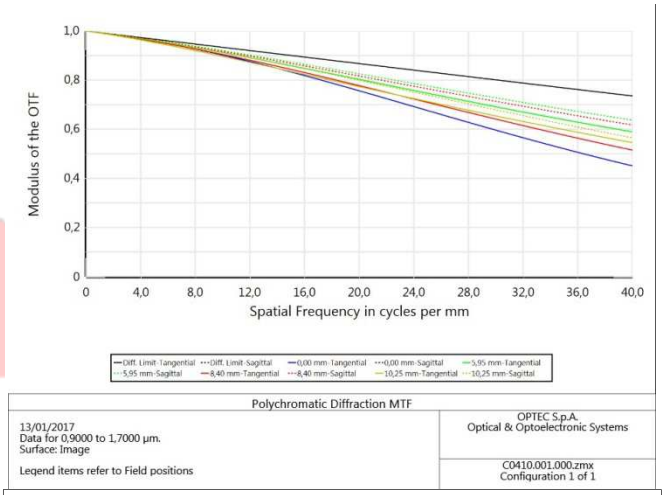
Optical and mechanical parameters	
Focal length	50 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	23 degrees
Max aperture	F/N = 4 (fixed)
Object format	N.A.
Min working distance	1.5 m
Zoom value	N.A.
Focus	Manual
Iris	Optional / If iris Min F/N = 22

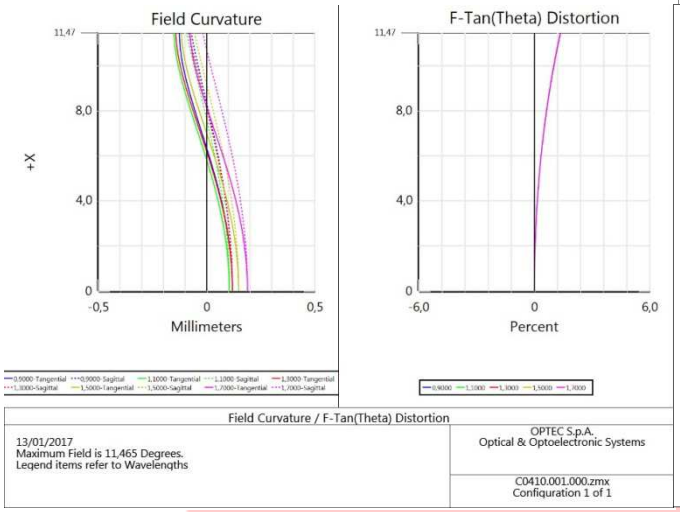
N. of elements	4
Dimensions	Dia 50 x 60 mm
Weight	155 gr
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

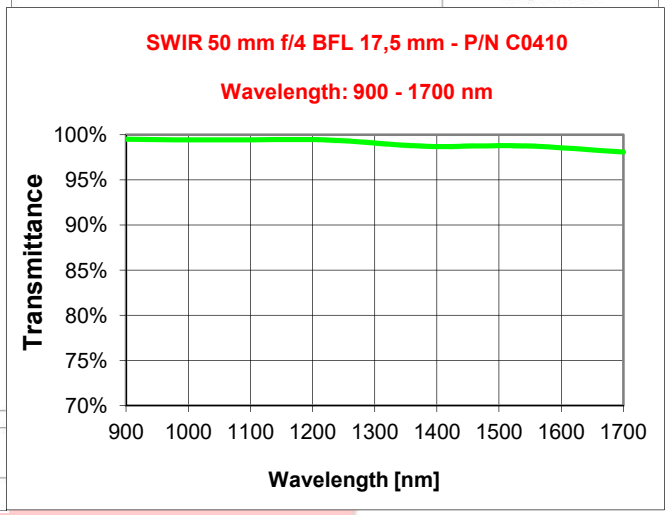
P/N	***wavelength range***	***mount type***	***note***
C0410.001	900-1700 nm	C-Mount	Without iris diaphragm
C0410.005	1700-2300 nm	C-Mount	Without iris diaphragm
C0410.010	900-2300 nm	C-Mount	Without iris diaphragm

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







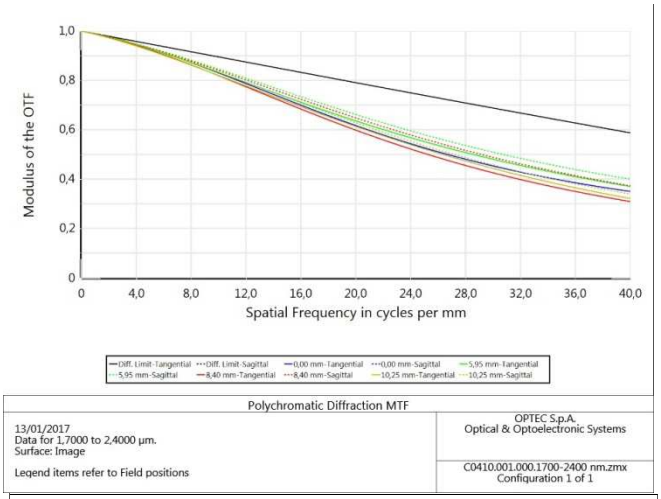
Optical parameters for wavelength range 0.9 – 1.7 µm

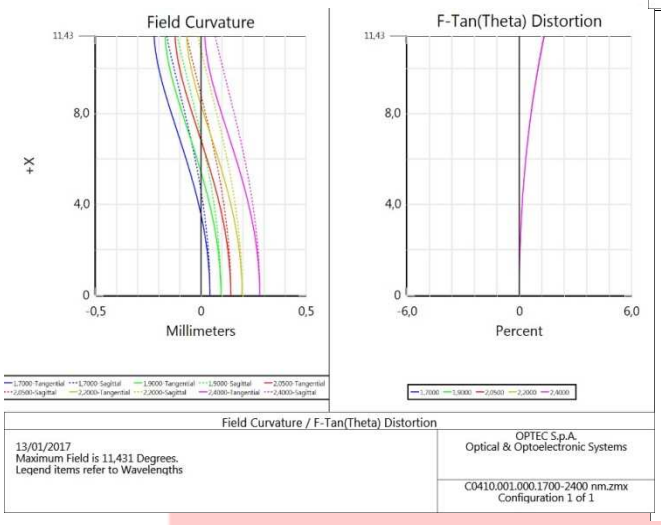
Resolution	MTF >40%@40lp/mm
Distortion	< 2%
Average axial chromatic aberration	<0.016 mm

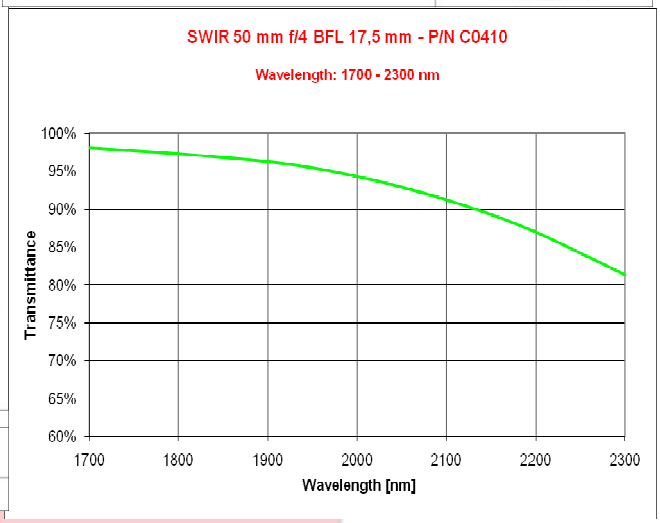
Lens Transmission without coating	> 98%
Antireflection Coating	R ≤ 1%
Vignetting	0%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







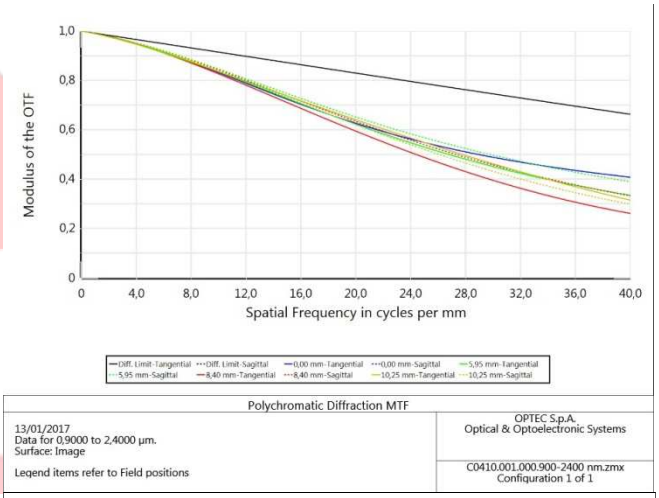
Optical parameters for wavelength range 1.7 – 2.3 µm

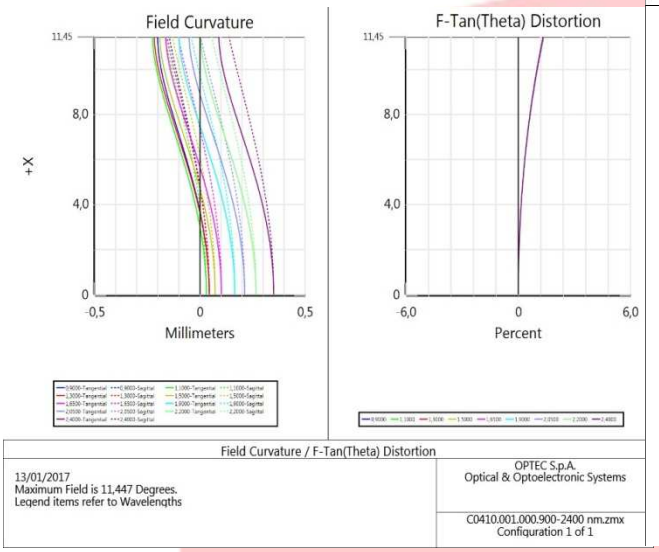
Resolution	MTF > 30%@40lp/mm
Distortion	< 2%

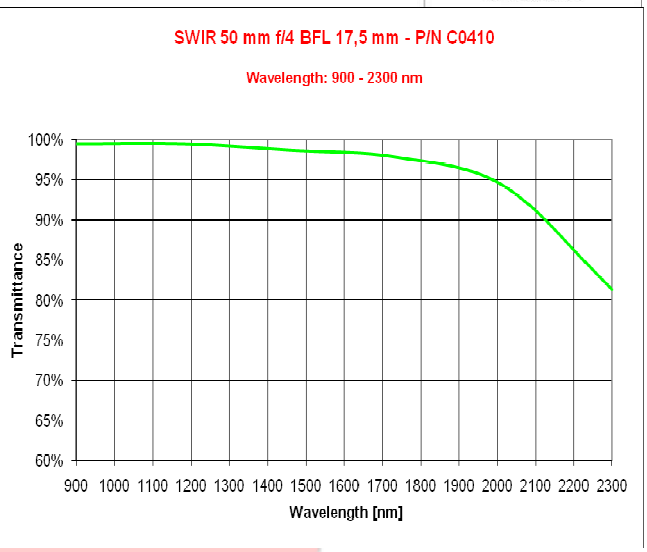
Lens Transmission without coating	> 81%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm

Resolution	MTF > 20%@40lp/mm
Distortion	< 2%

Lens Transmission without coating	> 81%
Antireflection Coating	R ≤ 1%

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

LENS OB-SWIR75/1.4 – P/N C0811

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	75 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	15.5 degrees
Max aperture	F/N = 1.4
Object format	N.A.
Min working distance	5000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.4 Min F/N = N.A

N. of elements	6
Dimensions	Dia 100 x 112 mm
Weight	1.16 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

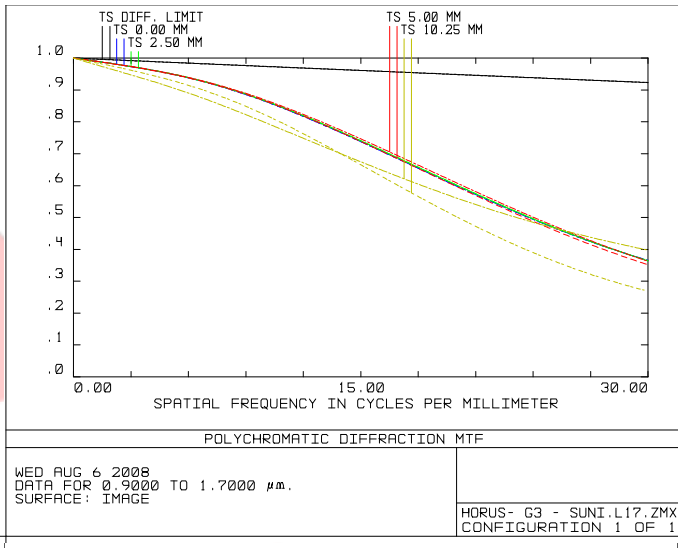
P/N	*wavelength range*	*mount type*	*note*
C0811.001	900-1700 nm	Canon FD	With iris diaphragm
C0811.002		Nikon	
C0811.003		M42 Screw	
C0811.005	1700-2300 nm	Canon FD	
C0811.006		Nikon	
C0811.007		M42 Screw	
C0811.010	900-2300 nm	Canon FD	
C0811.011		Nikon	
C0811.012		M42 Screw	

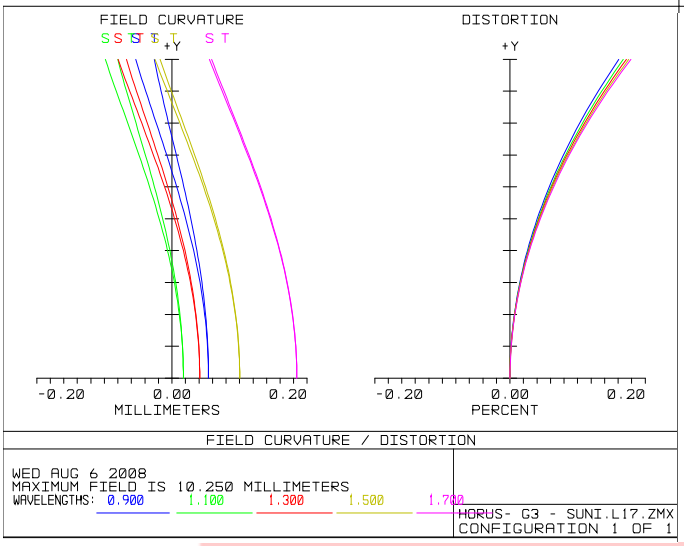
P/N	wavelength range	mount type	note
C0811.071	900-1700 nm	Canon FD	With motorized iris
C0811.072		Nikon	
C0811.073		M42 Screw	
C0811.081	1700-2300 nm	Canon FD	
C0811.082		Nikon	
C0811.083		M42 Screw	
C0811.091	900-2300 nm	Canon FD	
C0811.092		Nikon	
C0811.093		M42 Screw	
C0811.074	900-1700 nm	Canon FD	With motorized focus
C0811.075		Nikon	
C0811.076		M42 Screw	
C0811.084	1700-2300 nm	Canon FD	
C0811.085		Nikon	
C0811.086		M42 Screw	
C0811.094	900-2300 nm	Canon FD	
C0811.095		Nikon	
C0811.096		M42 Screw	
C0811.077	900-1700 nm	Canon FD	With motorized iris and focus
C0811.078		Nikon	
C0811.079		M42 Screw	
C0811.087	1700-2300 nm	Canon FD	
C0811.088		Nikon	
C0811.089		M42 Screw	
C0811.097	900-2300 nm	Canon FD	
C0811.098		Nikon	
C0811.099		M42 Screw	

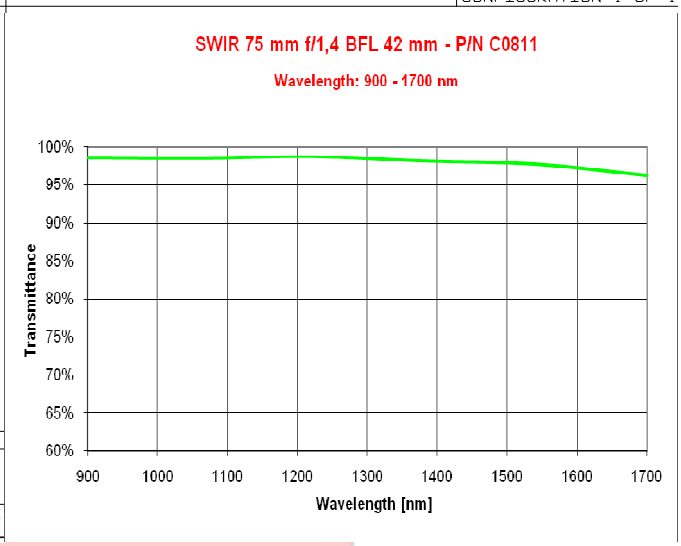
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







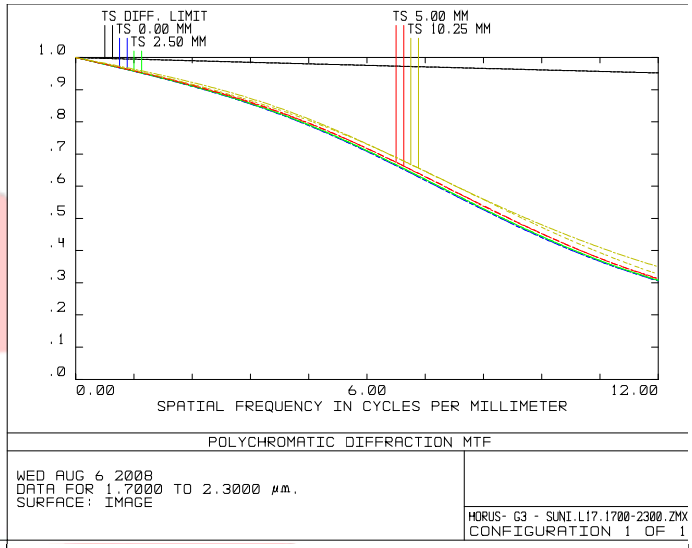
Optical parameters for wavelength range 0.9 – 1.7 µm

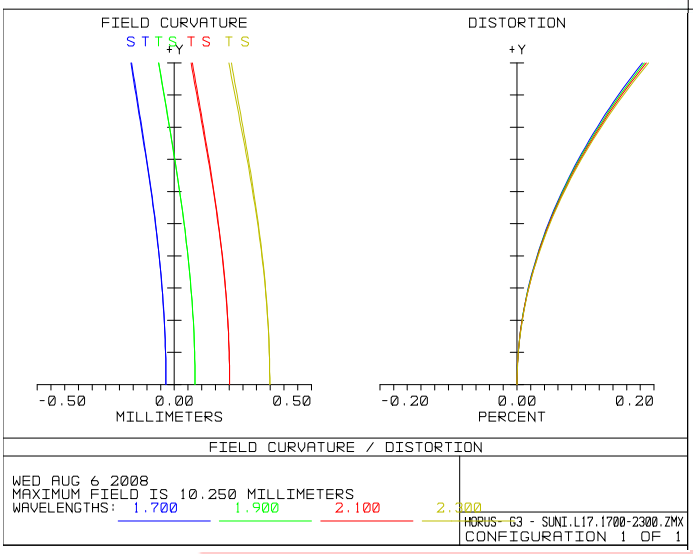
Resolution	MTF > 25%@30lp/mm
Distortion	< 0.2%
Average axial chromatic aberration	<0.0392 mm

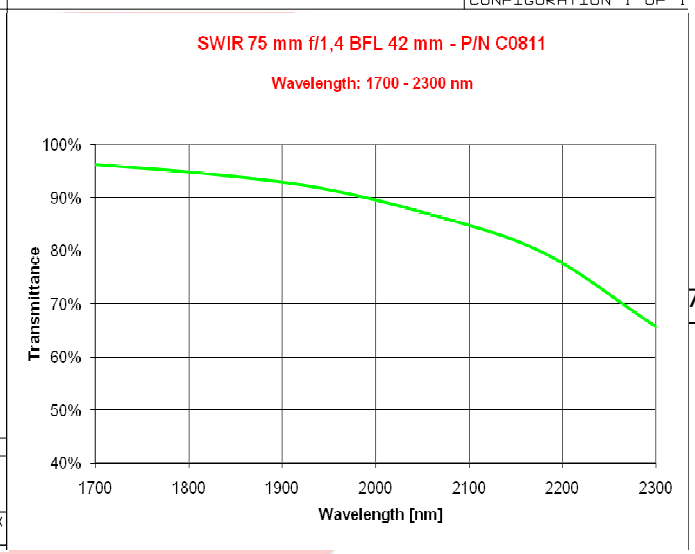
Lens Transmission without coating	> 96%
Antireflection Coating	R ≤ 1%
Vignetting	<1%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







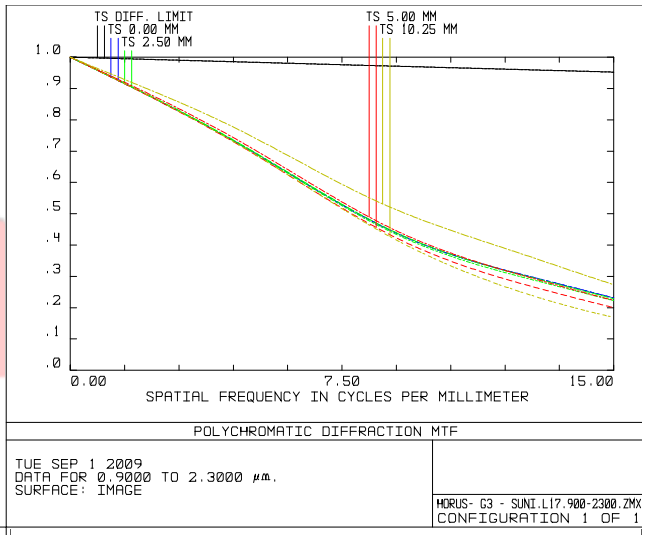
Optical parameters for wavelength range 1.7 – 2.3 µm

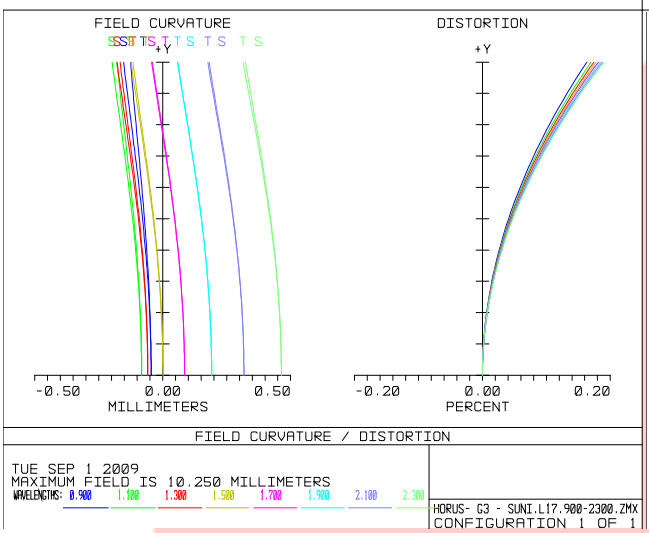
Resolution	MTF > 30%@12lp/mm
Distortion	< 0.2%

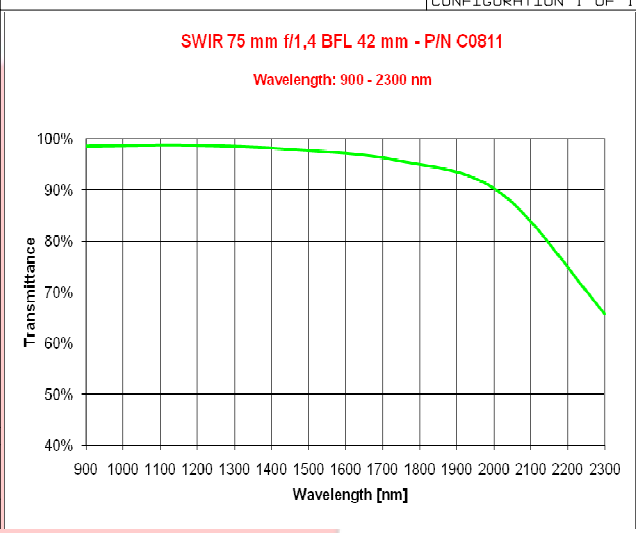
Lens Transmission without coating	> 65%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm

Resolution	MTF > 20%@15lp/mm
Distortion	< 0.2%

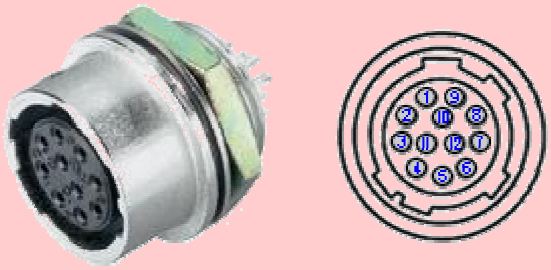
Lens Transmission without coating	> 65%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

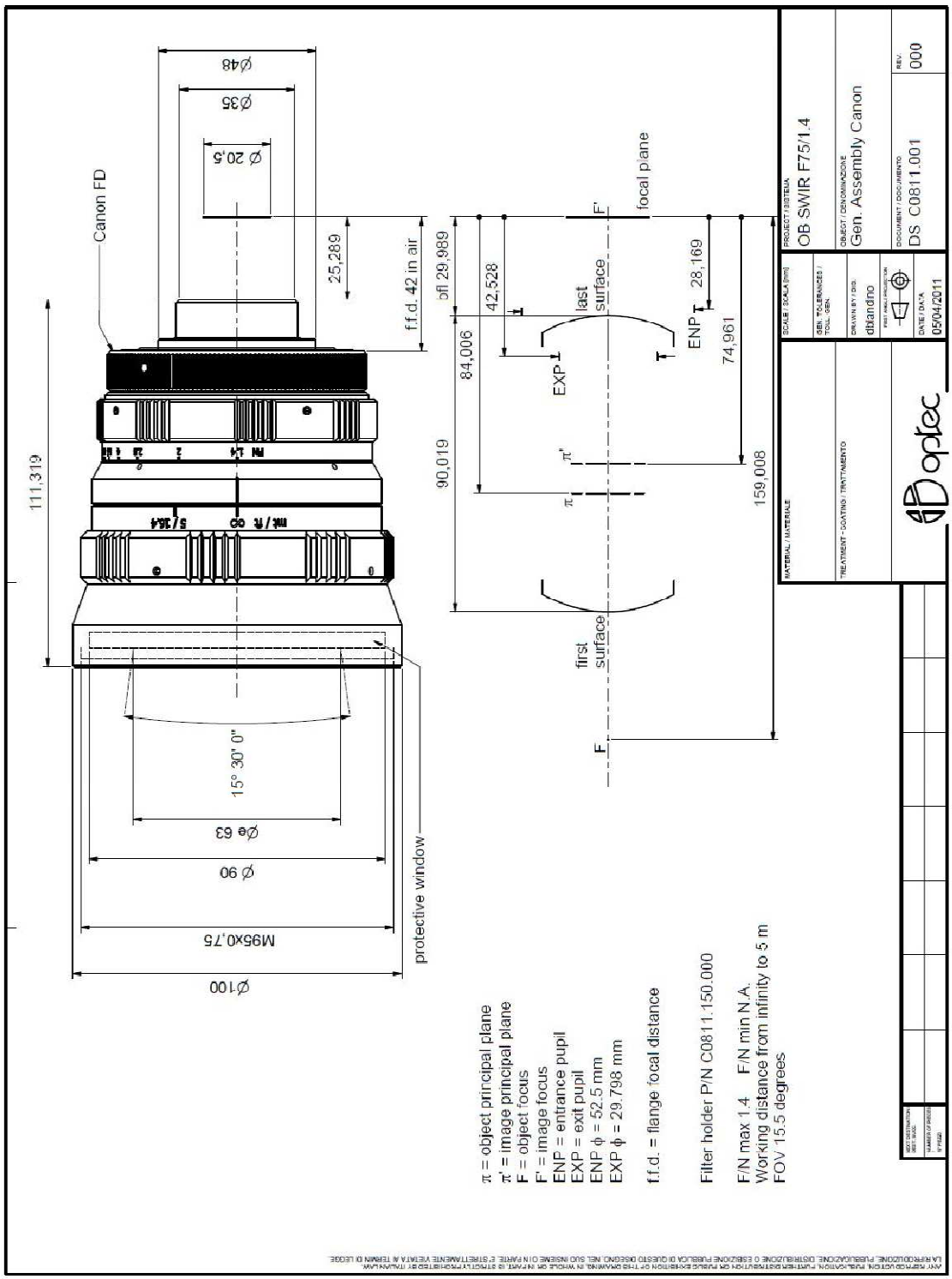
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

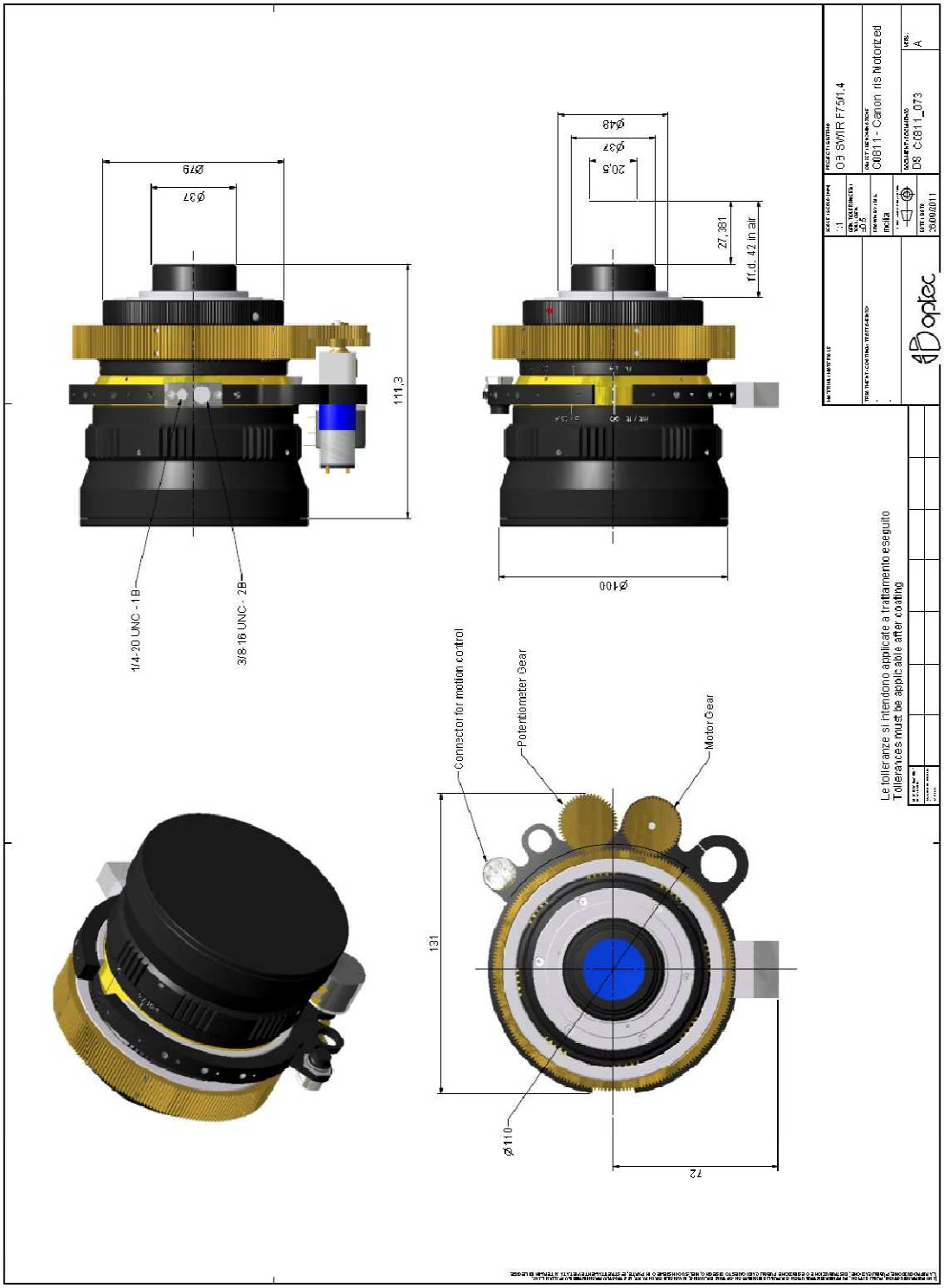
Hirose HR10A-10P-12P connector Pin list

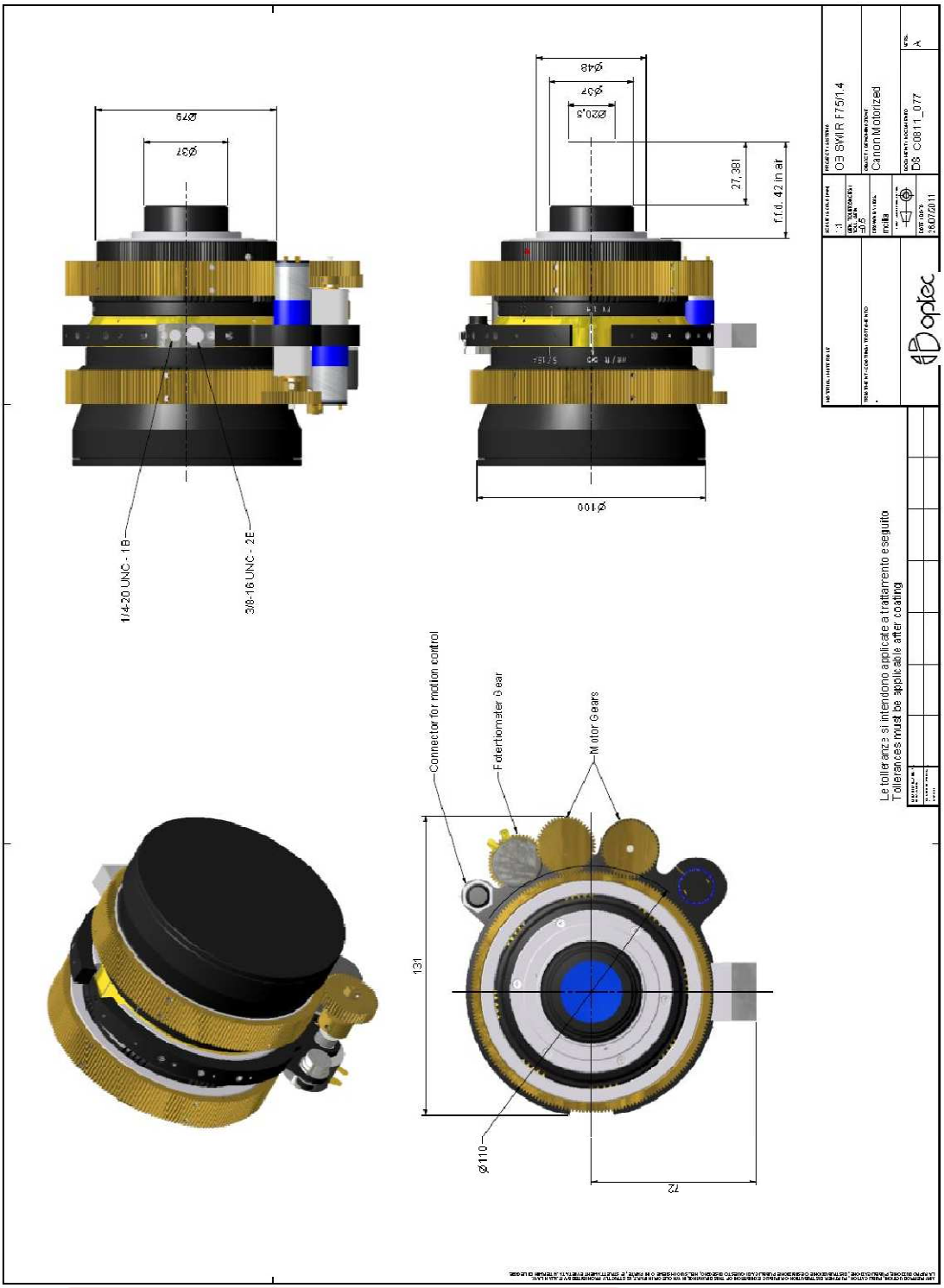


PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor







LENS OB-SWIR75/2 – P/N C0841

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	75 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	15.5 degrees
Max aperture	F/N = 2
Object format	N.A.
Min working distance	5000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2 Min F/N = N.A

N. of elements	6
Dimensions	Dia 100 x 112 mm
Weight	1.15 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

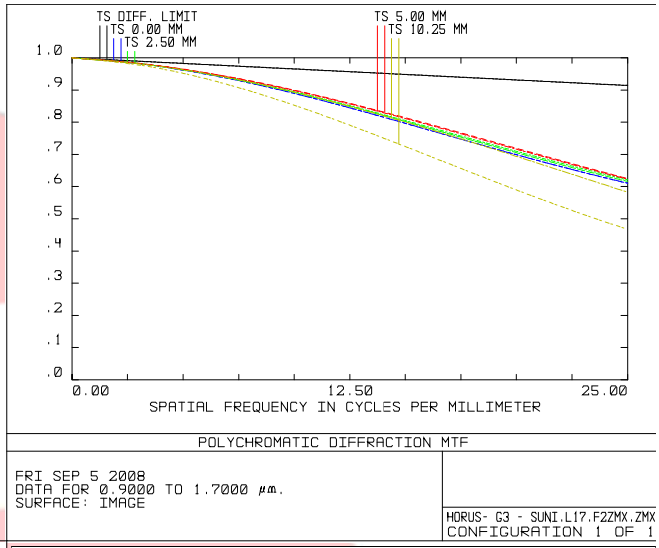
P/N	*wavelength range*	*mount type*	*note*
C0841.001	900-1700 nm	Canon FD	With iris diaphragm
C0841.002		Nikon	
C0841.003		M42 Screw	
C0841.005	1700-2300 nm	Canon FD	
C0841.006		Nikon	
C0841.007		M42 Screw	
C0841.010	900-2300 nm	Canon FD	
C0841.011		Nikon	
C0841.012		M42 Screw	

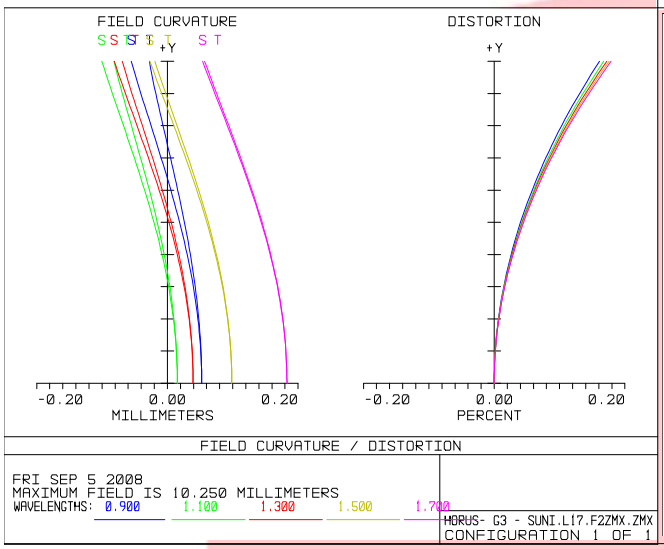
P/N	wavelength range	mount type	note
C0841.071	900-1700 nm	Canon FD	With motorized iris
C0841.072		Nikon	
C0841.073		M42 Screw	
C0841.081	1700-2300 nm	Canon FD	
C0841.082		Nikon	
C0841.083		M42 Screw	
C0841.091	900-2300 nm	Canon FD	
C0841.092		Nikon	
C0841.093		M42 Screw	
C0841.074	900-1700 nm	Canon FD	With motorized focus
C0841.075		Nikon	
C0841.076		M42 Screw	
C0841.084	1700-2300 nm	Canon FD	
C0841.085		Nikon	
C0841.086		M42 Screw	
C0841.094	900-2300 nm	Canon FD	
C0841.095		Nikon	
C0841.096		M42 Screw	
C0841.077	900-1700 nm	Canon FD	With motorized iris and focus
C0841.078		Nikon	
C0841.079		M42 Screw	
C0841.087	1700-2300 nm	Canon FD	
C0841.088		Nikon	
C0841.089		M42 Screw	
C0841.097	900-2300 nm	Canon FD	
C0841.098		Nikon	
C0841.099		M42 Screw	

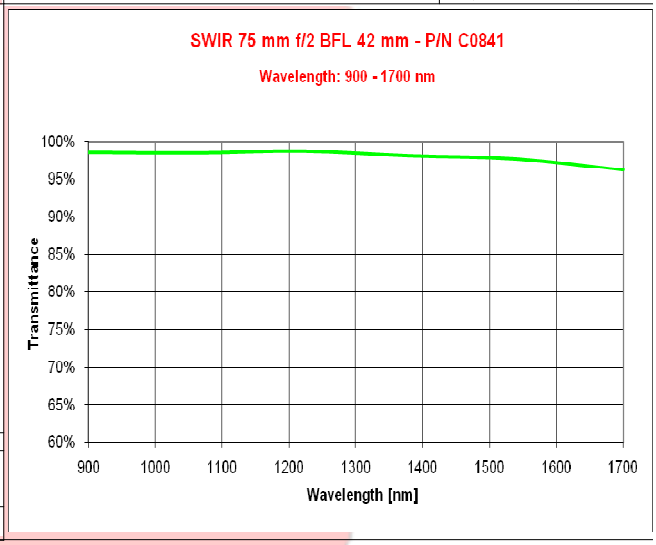
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







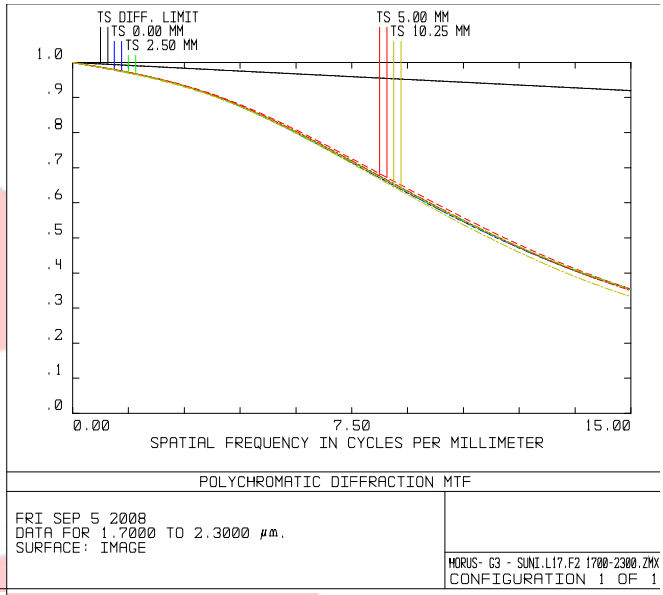
Optical parameters for wavelength range 0.9 – 1.7 μm

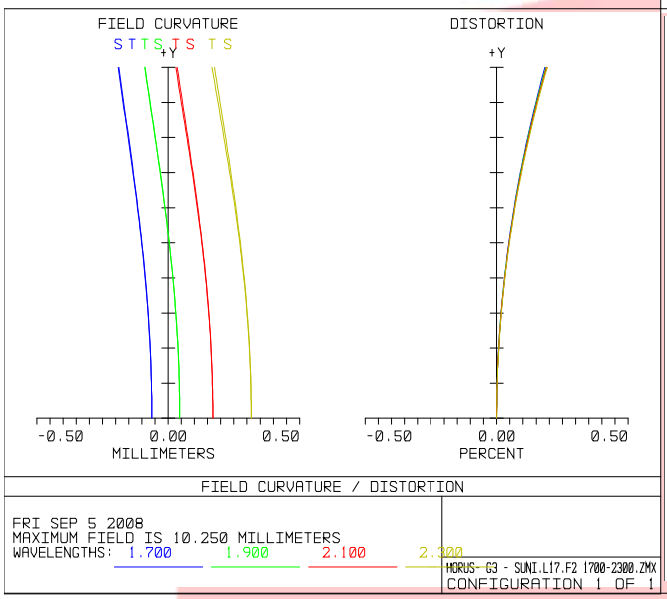
Resolution	MTF > 45%@25lp/mm
Distortion	< 0.2%
Average axial chromatic aberration	<0.0392 mm

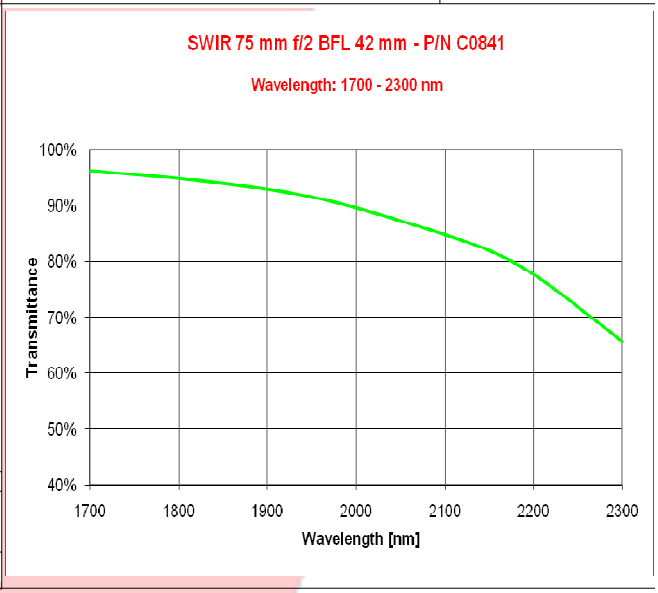
Lens Transmission without coating	> 96%
Antireflection Coating	R ≤ 1%
Vignetting	<1%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







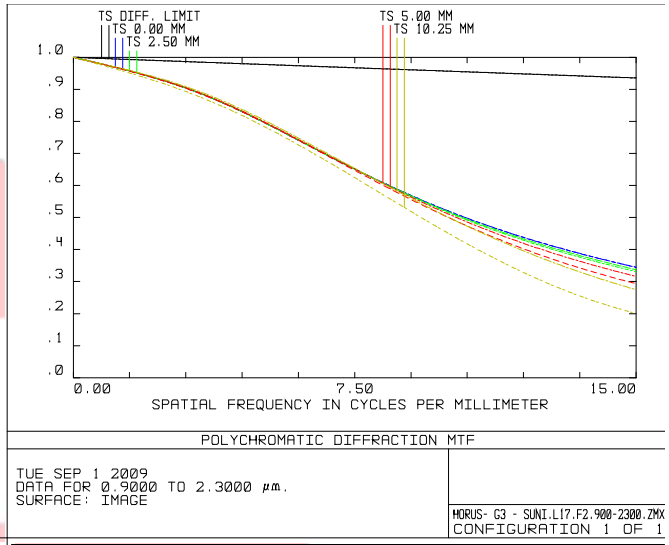
Optical parameters for wavelength range 1.7 – 2.3 μm

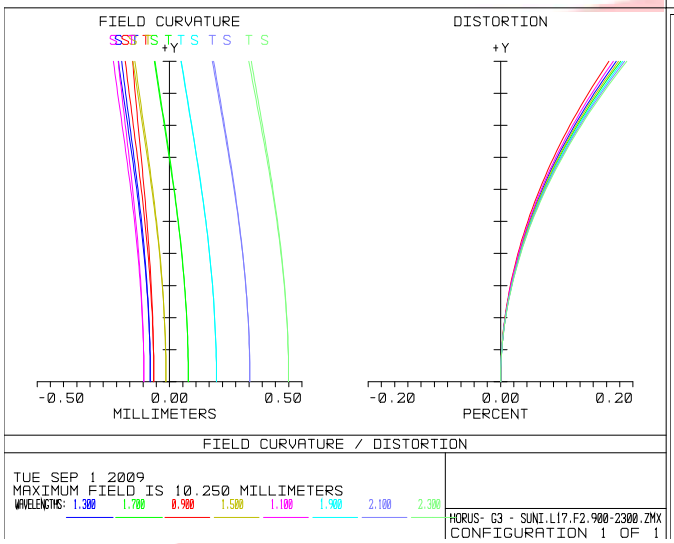
Resolution	MTF > 30%@15lp/mm
Distortion	< 0.5%

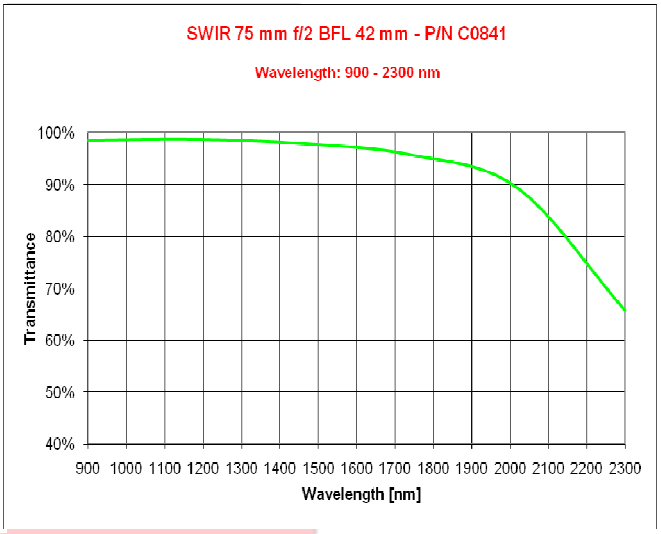
Lens Transmission without coating	> 65%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm

Resolution	MTF > 20%@15lp/mm
Distortion	< 0.5%

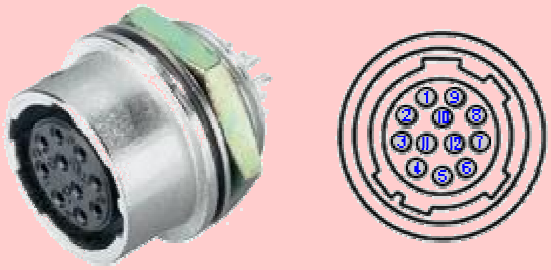
Lens Transmission without coating	> 65%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces	

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

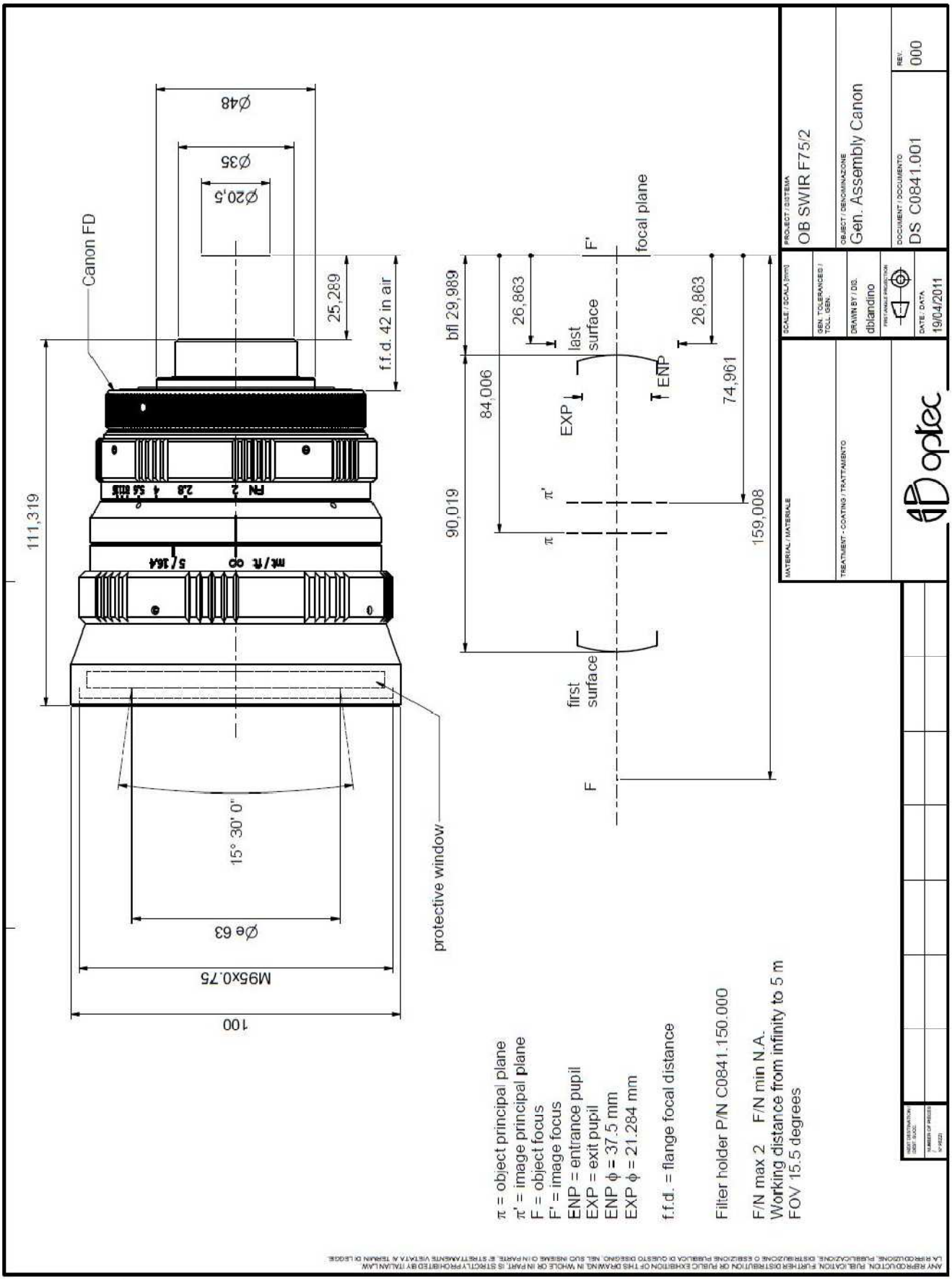
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor



LENS OB-SWIR75/4 – P/N C0415

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

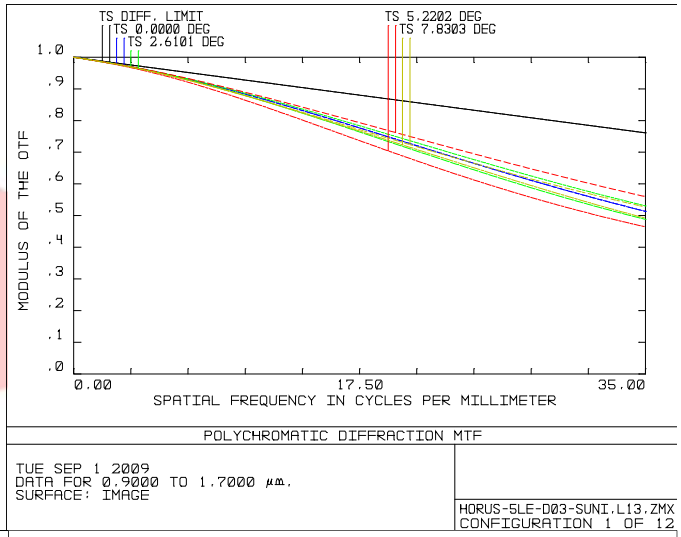
Focal length	75 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	15.5 degrees
Max aperture	F/N = 4 (fixed)
Object format	N.A.
Min working distance	2000 mm
Zoom value	N.A.
Focus	Manual
Iris	Optional / If iris Min F/N = 22

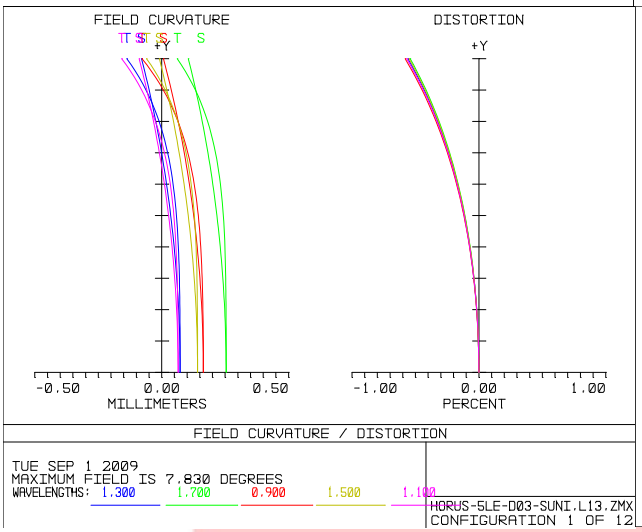
N. of elements	5
Dimensions	Dia 80 x 60 mm
Weight	0.7 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

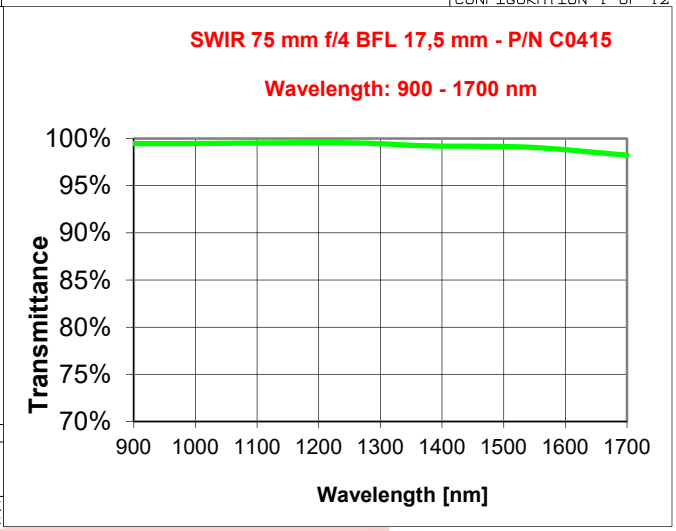
P/N	*wavelength range*	*mount type*	*note*
C0415.004	900-1700 nm	C-Mount	Without iris diaphragm
C0415.008	1700-2300 nm	C-Mount	Without iris diaphragm
C0415.013	900-2300 nm	C-Mount	Without iris diaphragm

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







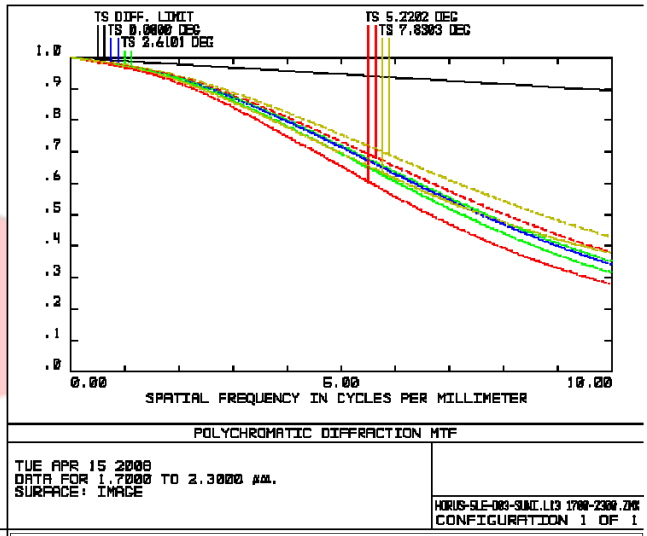
Optical parameters for wavelength range 0.9 – 1.7 µm

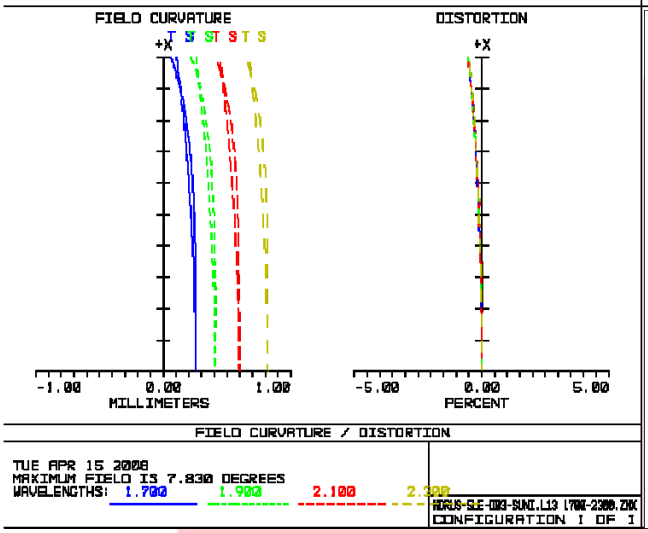
Resolution	MTF >50%@35lp/mm
Distortion	< 2%
Average axial chromatic aberration	<0.0614 mm

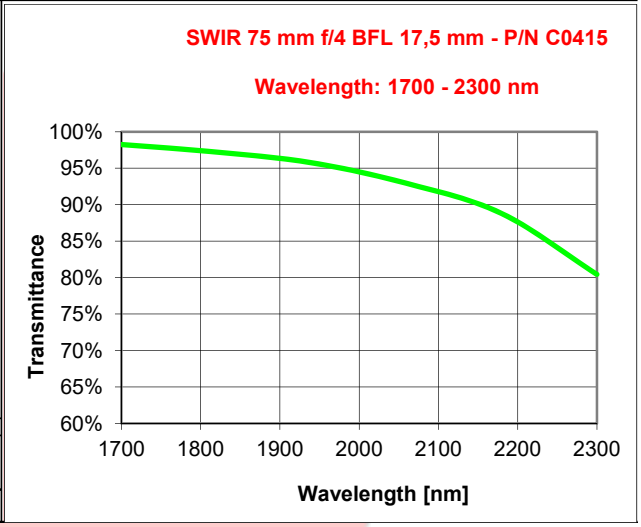
Lens Transmission without coating	> 98%
Antireflection Coating	R ≤ 1%
Vignetting	0%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







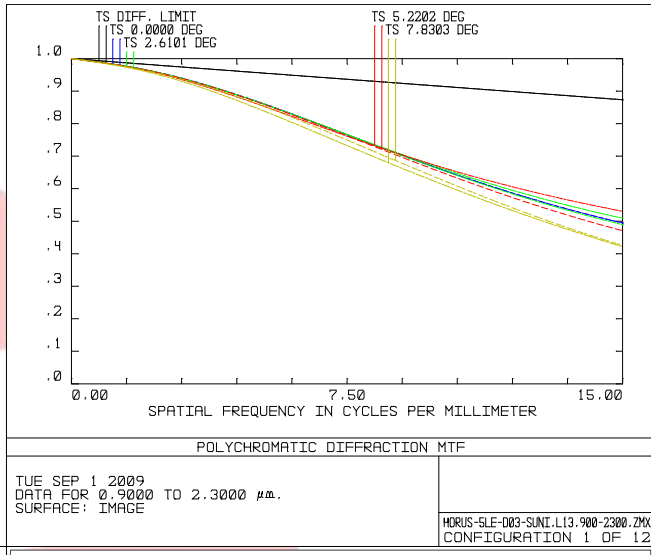
Optical parameters for wavelength range 1.7 – 2.3 µm

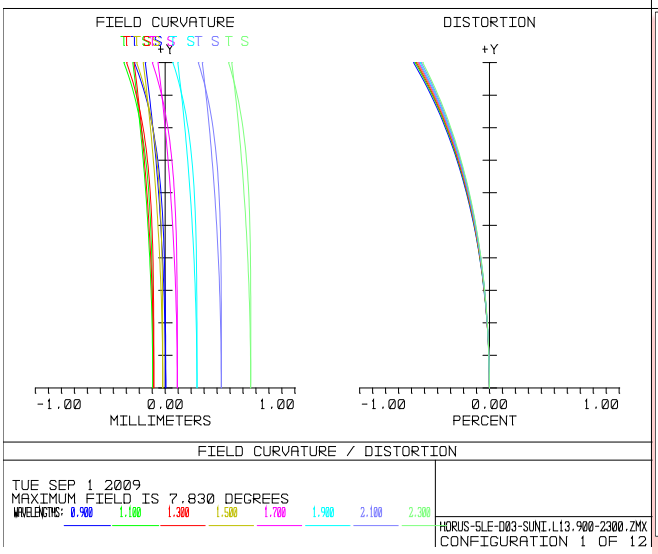
Resolution	MTF > 30%@10lp/mm
Distortion	< 2%

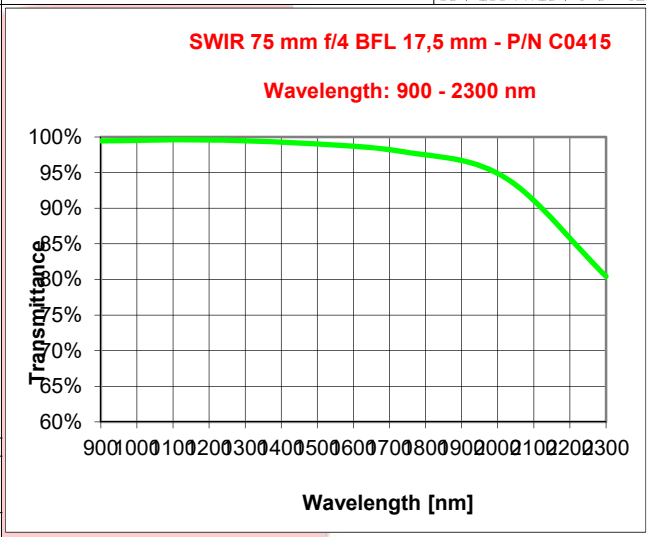
Lens Transmission without coating	> 80%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm

Resolution	MTF > 45%@15lp/mm
Distortion	< 2%

Lens Transmission without coating	> 80%
Antireflection Coating	R ≤ 1%

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

LENS OB-SWIR100/1.4 – P/N C0812

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	100 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	11.7 degrees
Max aperture	F/N = 1.4
Object format	N.A.
Min working distance	6.5 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.4 Min F/N = 11

N. of elements	6
Dimensions	Dia 107 x 150 mm
Weight	1.6 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

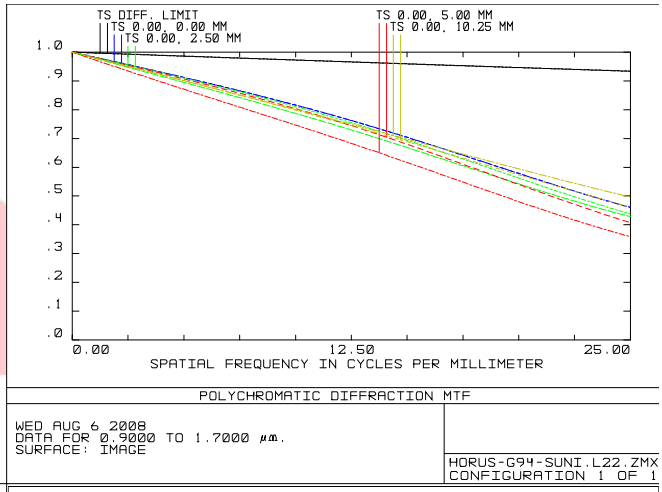
P/N	*wavelength range*	*mount type*	*note*
C0812.001	900-1700 nm	Canon FD	With iris diaphragm
C0812.002		Nikon	
C0812.003		M42 Screw	
C0812.005	1700-2300 nm	Canon FD	
C0812.006		Nikon	
C0812.007		M42 Screw	
C0812.010	900-2300 nm	Canon FD	
C0812.011		Nikon	
C0812.012		M42 Screw	

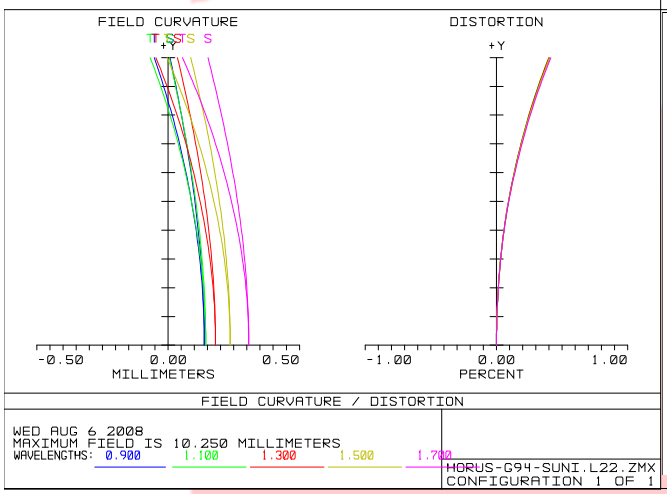
P/N	wavelength range	mount type	note
C0812.071	900-1700 nm	Canon FD	With motorized iris
C0812.072		Nikon	
C0812.073		M42 Screw	
C0812.081	1700-2300 nm	Canon FD	
C0812.082		Nikon	
C0812.083		M42 Screw	
C0812.091	900-2300 nm	Canon FD	
C0812.092		Nikon	
C0812.093		M42 Screw	
C0812.074	900-1700 nm	Canon FD	With motorized focus
C0812.075		Nikon	
C0812.076		M42 Screw	
C0812.084	1700-2300 nm	Canon FD	
C0812.085		Nikon	
C0812.086		M42 Screw	
C0812.094	900-2300 nm	Canon FD	
C0812.095		Nikon	
C0812.096		M42 Screw	
C0812.077	900-1700 nm	Canon FD	With motorized iris and focus
C0812.078		Nikon	
C0812.079		M42 Screw	
C0812.087	1700-2300 nm	Canon FD	
C0812.088		Nikon	
C0812.089		M42 Screw	
C0812.097	900-2300 nm	Canon FD	
C0812.098		Nikon	
C0812.099		M42 Screw	

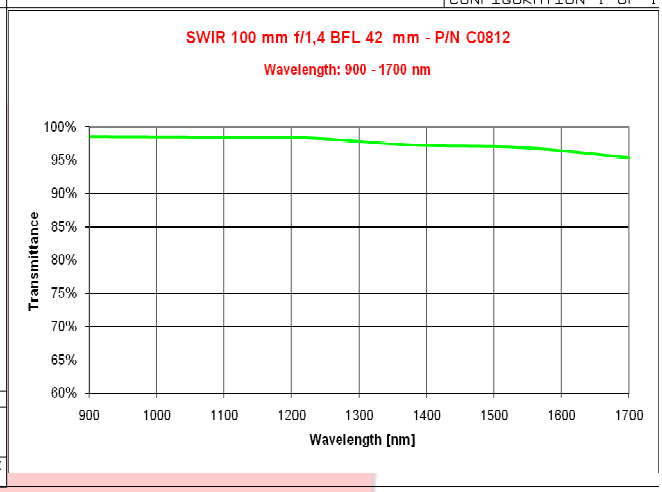
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







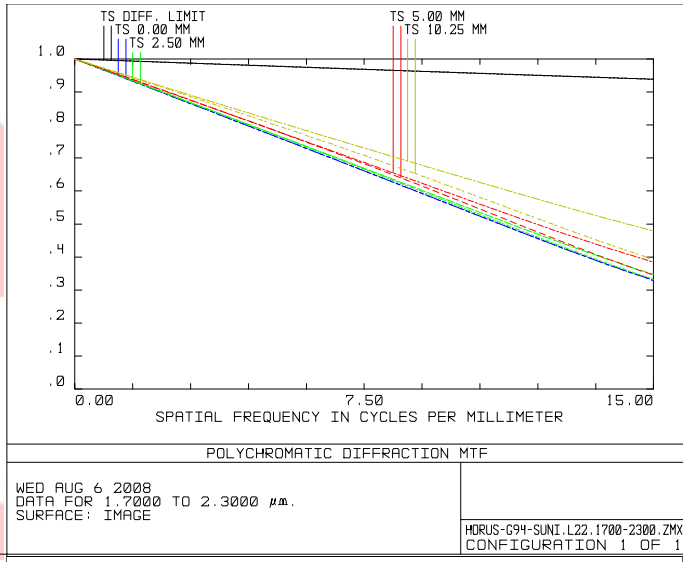
Optical parameters for wavelength range 0.9 – 1.7 μm

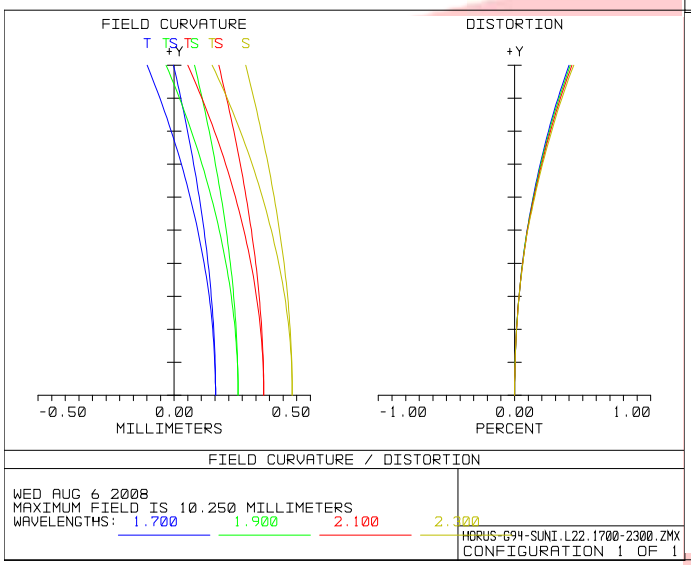
Resolution	MTF > 40%@25lp/mm
Distortion	< 0.5%
Average axial chromatic aberration	<0.0243 mm

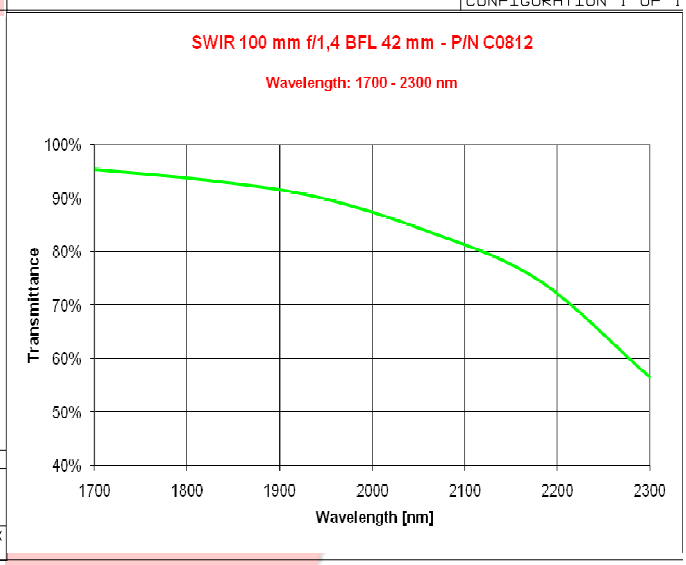
Lens Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	<3%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







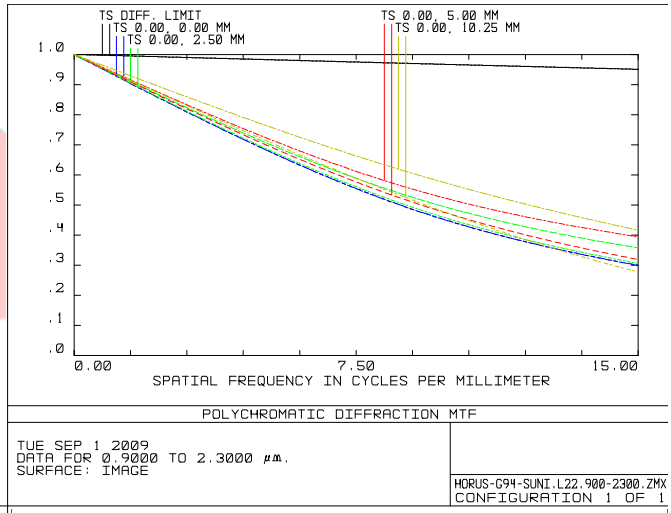
Optical parameters for wavelength range 1.7 – 2.3 µm

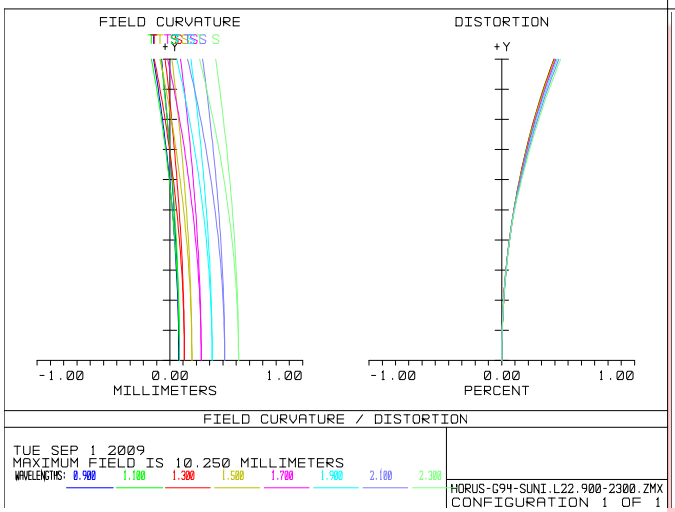
Resolution	MTF > 35%@15lp/mm
Distortion	< 0.5%

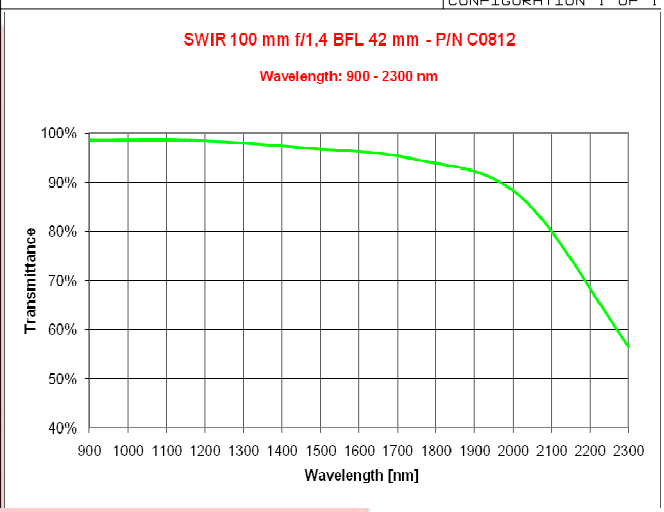
Lens Transmission without coating	> 56%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm

Resolution	MTF > 30%@15lp/mm
Distortion	< 0.5%

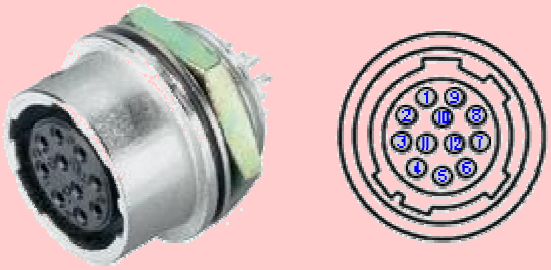
Lens Transmission without coating	> 56%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces	

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

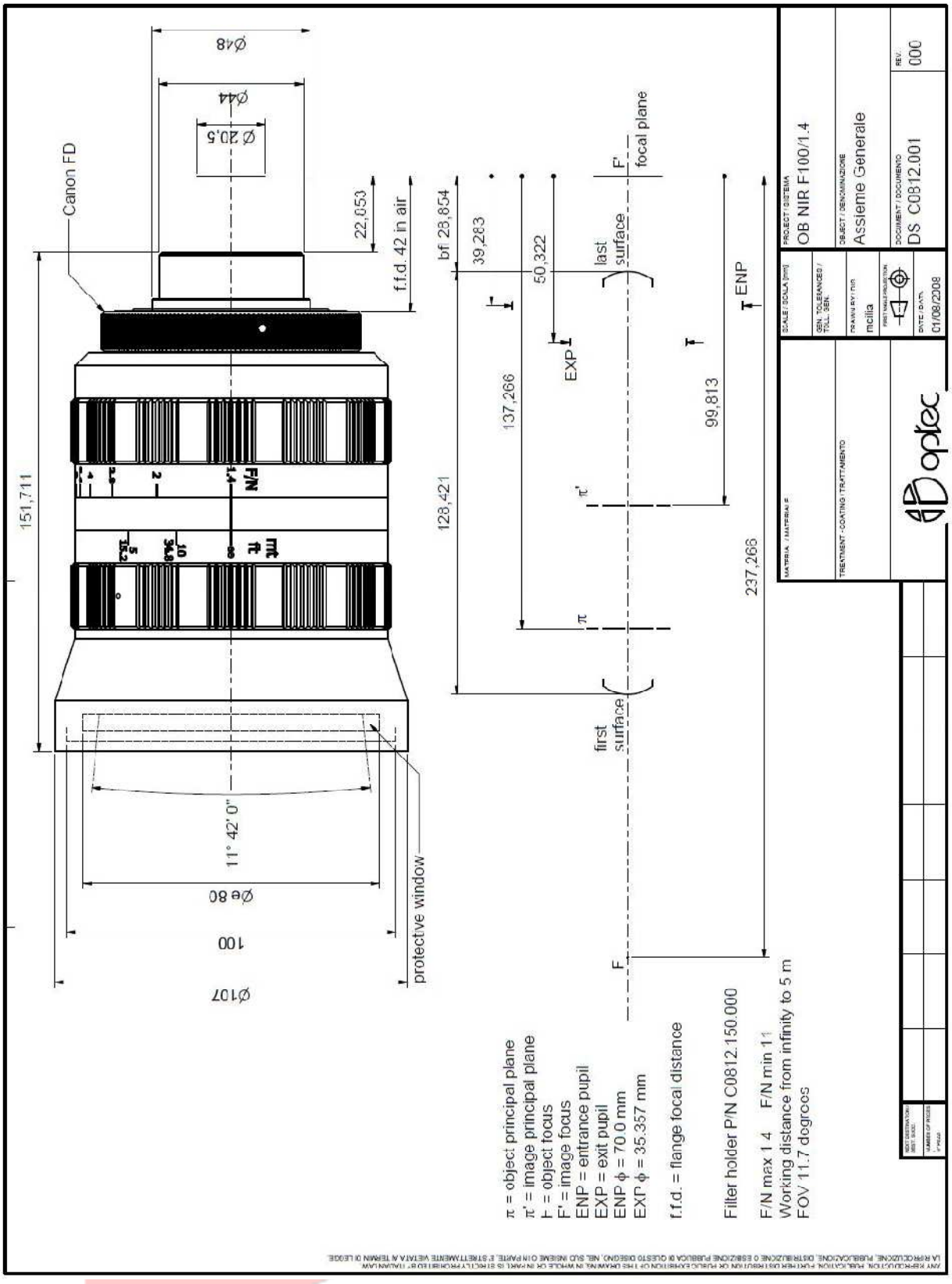
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

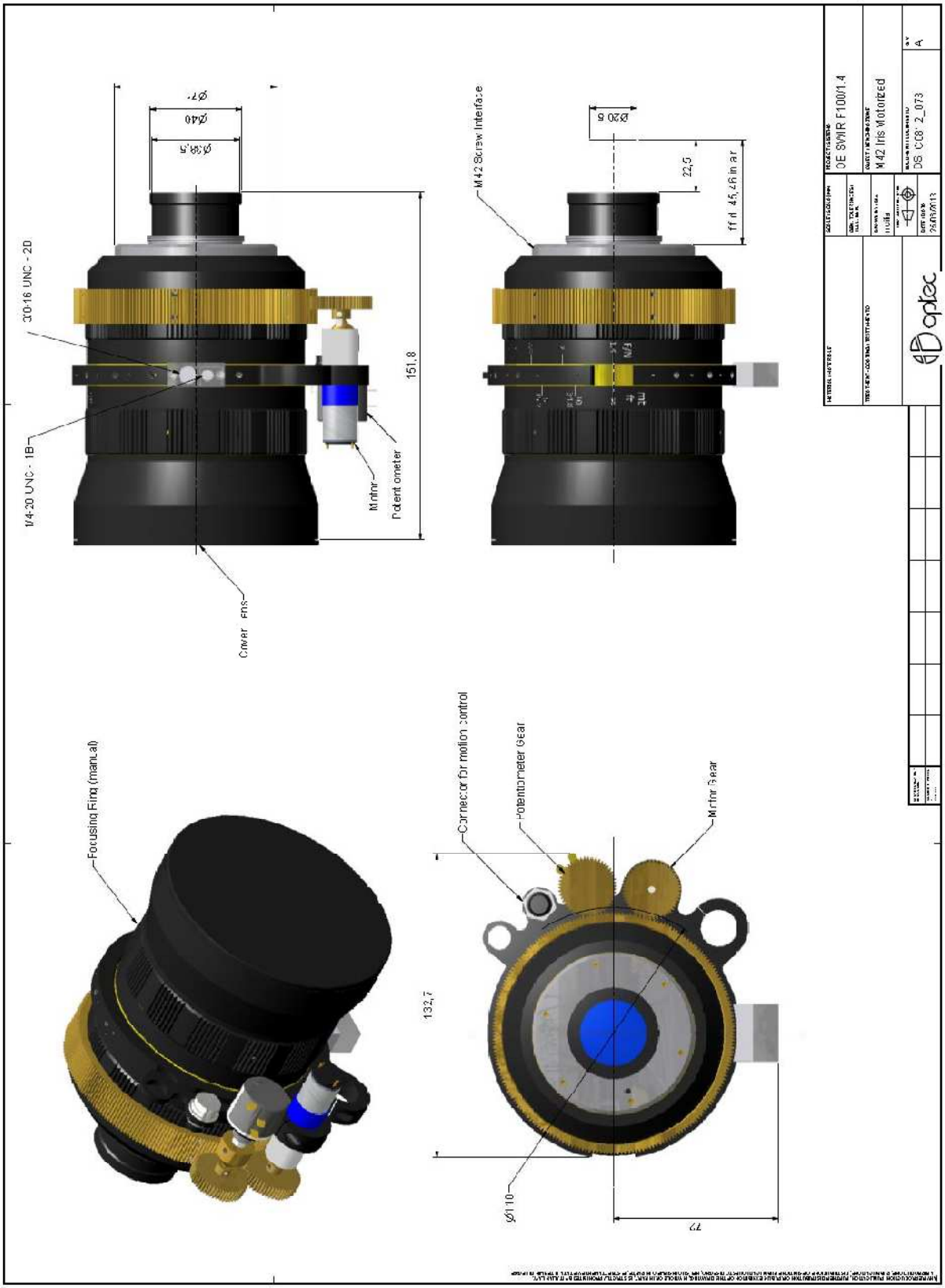
Hirose HR10A-10P-12P connector Pin list

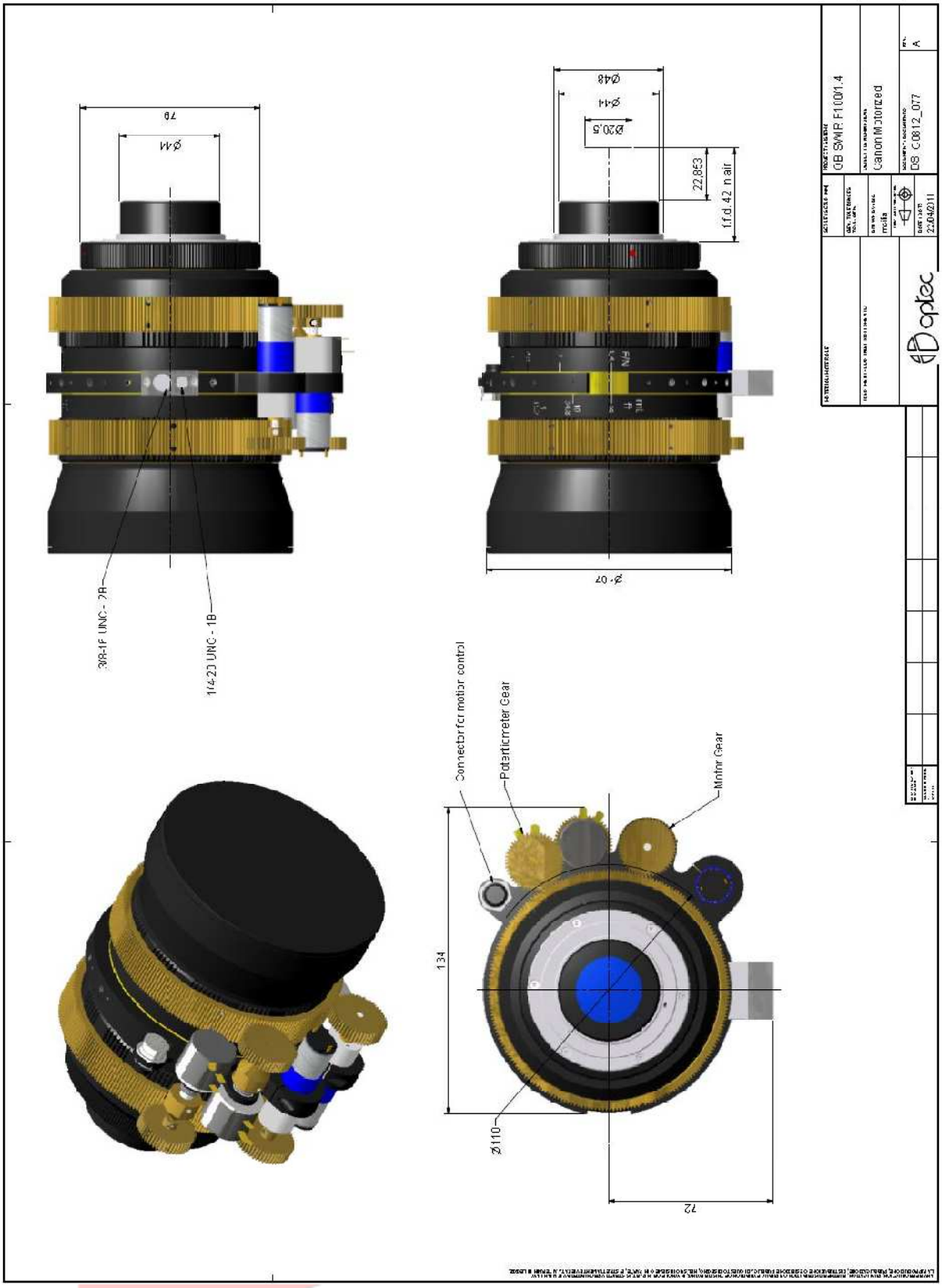


PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor







LENS OB-SWIR100/2 – P/N C0842

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	100 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	11.7 degrees
Max aperture	F/N = 2
Object format	N.A.
Min working distance	6 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2 Min F/N = 11

N. of elements	6
Dimensions	Dia 107 x 150 mm
Weight	1.4 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

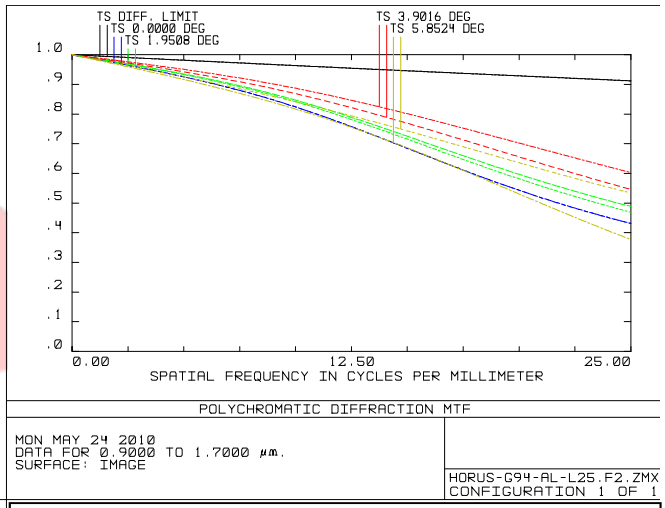
P/N	*wavelength range*	*mount type*	*note*
C0842.001	900-1700 nm	Canon FD	With iris diaphragm
C0842.002		Nikon	
C0842.003		M42 Screw	
C0842.005	1700-2300 nm	Canon FD	
C0842.006		Nikon	
C0842.007		M42 Screw	
C0842.010	900-2300 nm	Canon FD	
C0842.011		Nikon	
C0842.012		M42 Screw	

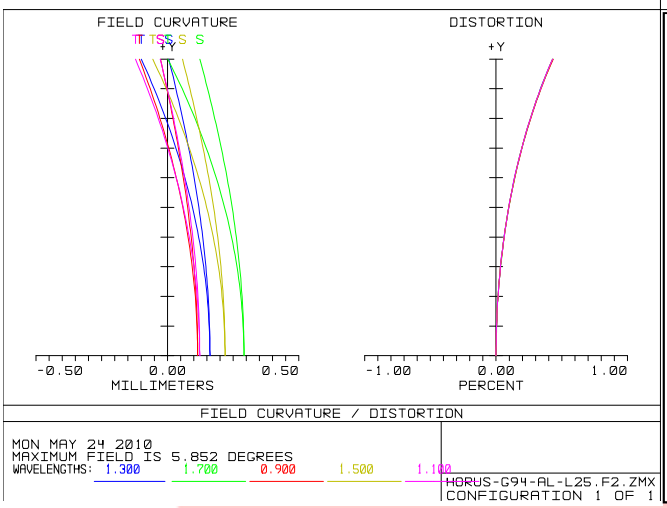
P/N	wavelength range	mount type	note
C0842.071	900-1700 nm	Canon FD	With motorized iris
C0842.072		Nikon	
C0842.073		M42 Screw	
C0842.081	1700-2300 nm	Canon FD	
C0842.082		Nikon	
C0842.083		M42 Screw	
C0842.091	900-2300 nm	Canon FD	
C0842.092		Nikon	
C0842.093		M42 Screw	
C0842.074	900-1700 nm	Canon FD	With motorized focus
C0842.075		Nikon	
C0842.076		M42 Screw	
C0842.084	1700-2300 nm	Canon FD	
C0842.085		Nikon	
C0842.086		M42 Screw	
C0842.094	900-2300 nm	Canon FD	
C0842.095		Nikon	
C0842.096		M42 Screw	
C0842.077	900-1700 nm	Canon FD	With motorized iris and focus
C0842.078		Nikon	
C0842.079		M42 Screw	
C0842.087	1700-2300 nm	Canon FD	
C0842.088		Nikon	
C0842.089		M42 Screw	
C0842.097	900-2300 nm	Canon FD	
C0842.098		Nikon	
C0842.099		M42 Screw	

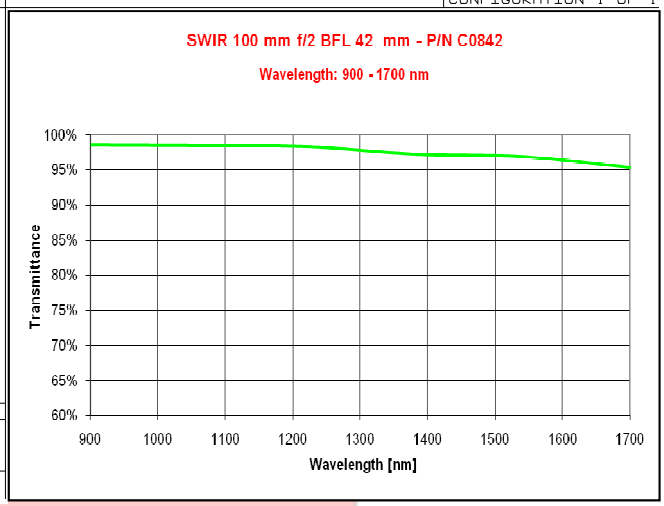
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







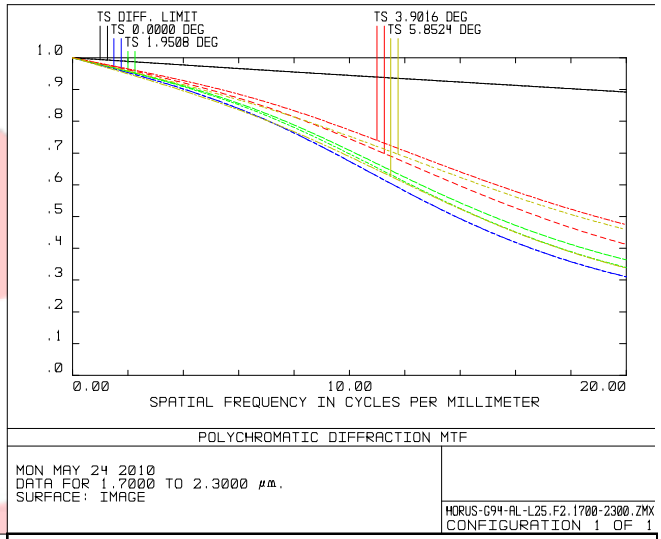
Optical parameters for wavelength range 0.9 – 1.7 μm

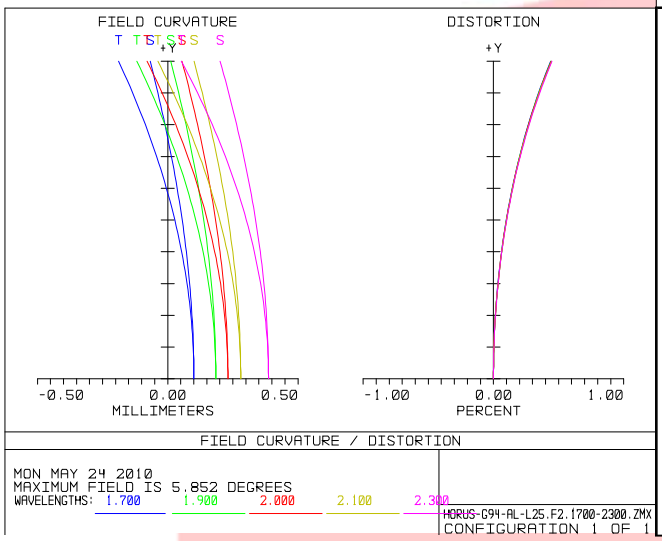
Resolution	MTF > 40%@25lp/mm
Distortion	< 0.5%
Average axial chromatic aberration	<0.0243 mm

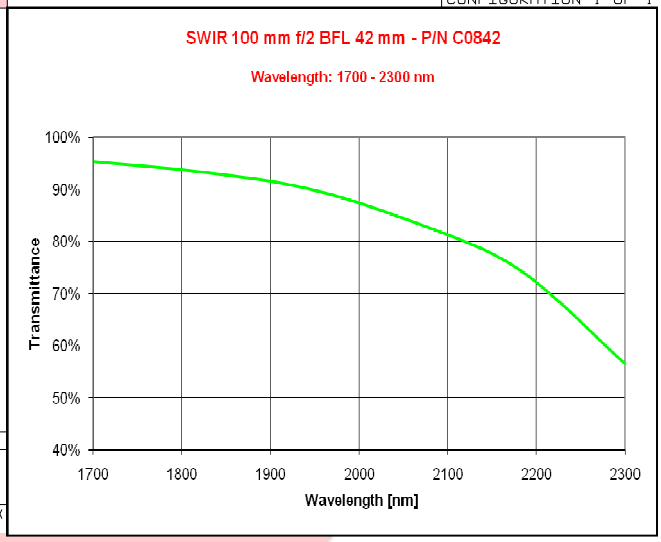
Lens Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	<3%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







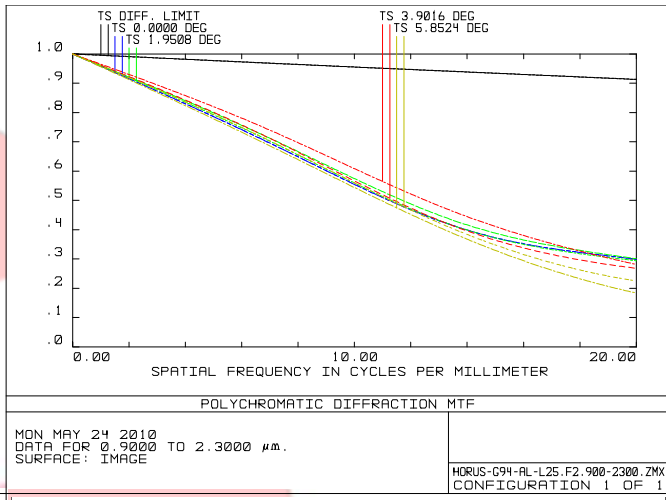
Optical parameters for wavelength range 1.7 – 2.3 μm

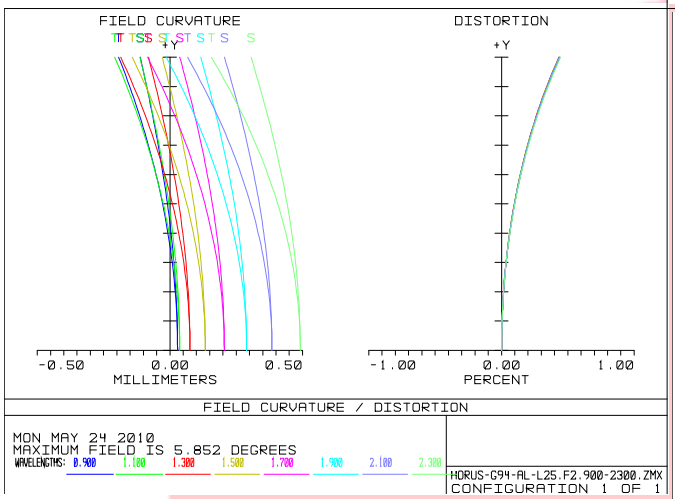
Resolution	MTF > 30%@20lp/mm
Distortion	< 0.5%

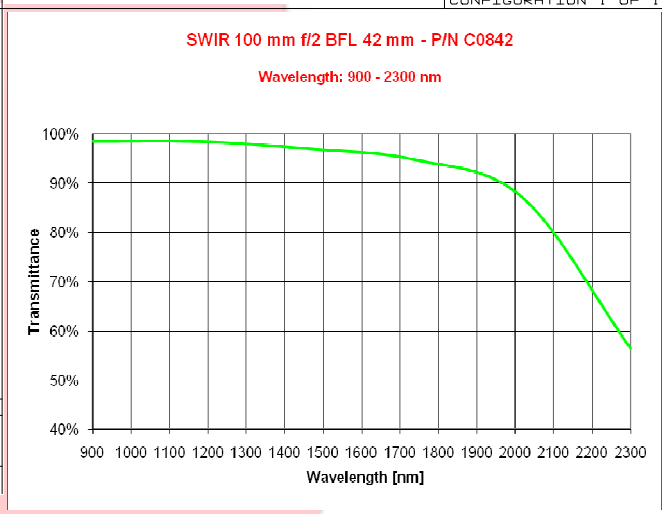
Lens Transmission without coating	> 56%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm

Resolution	MTF > 15%@20lp/mm
Distortion	< 0.5%

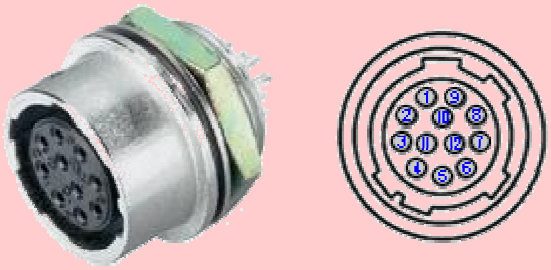
Lens Transmission without coating	> 56%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

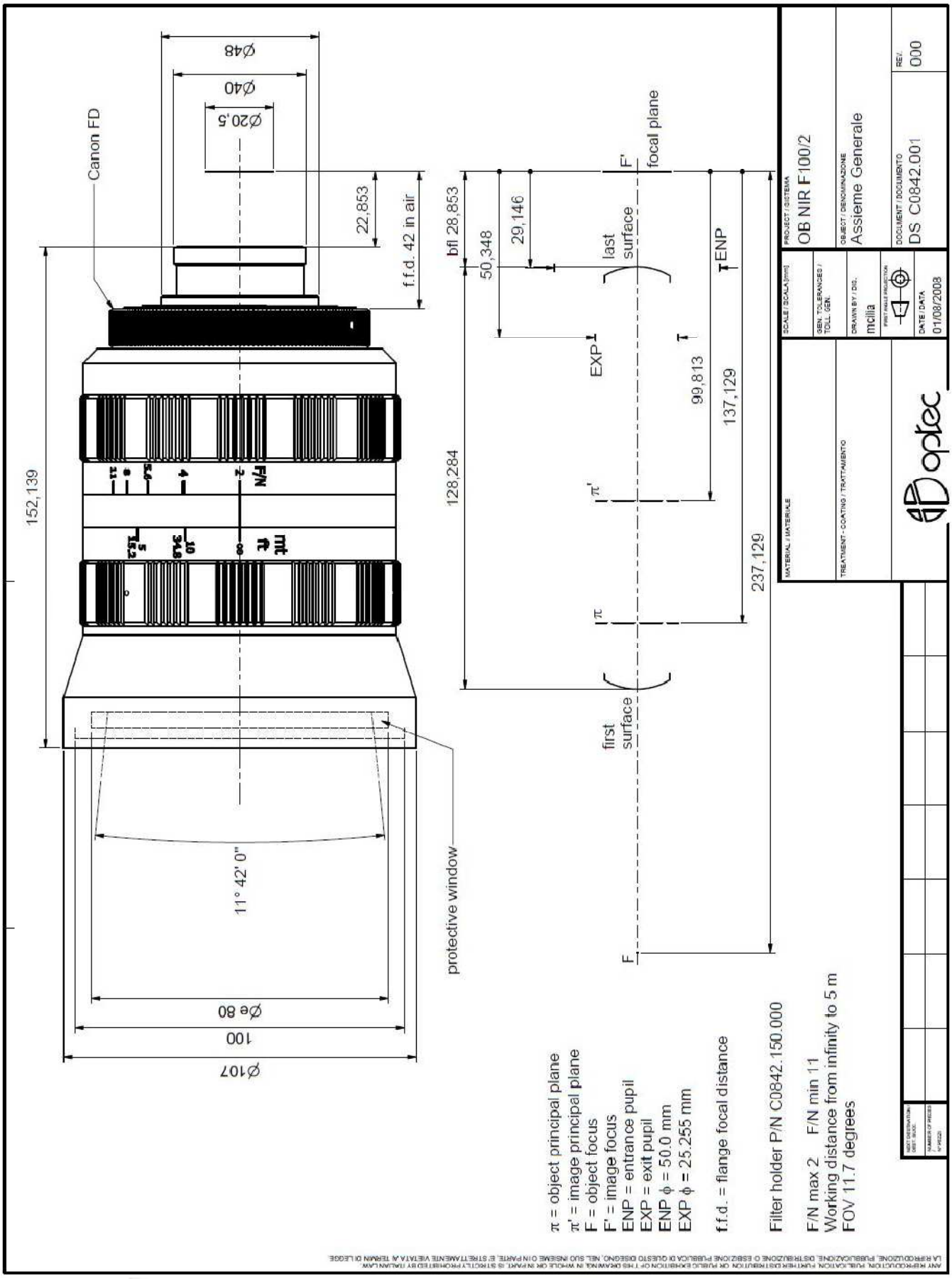
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor



LENS OB-SWIR100/4 – P/N C0416

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	100 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	11.7 degrees
Max aperture	F/N = 4 (fixed)
Object format	N.A.
Min working distance	3 m
Zoom value	N.A.
Focus	Manual
Iris	Optional / If iris Min F/N = 22

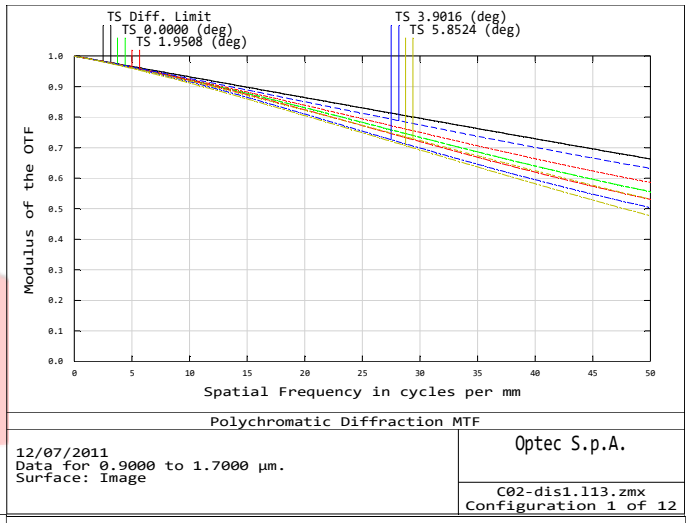
N. of elements	5
Dimensions	Dia 80 x 100 mm
Weight	0.9 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

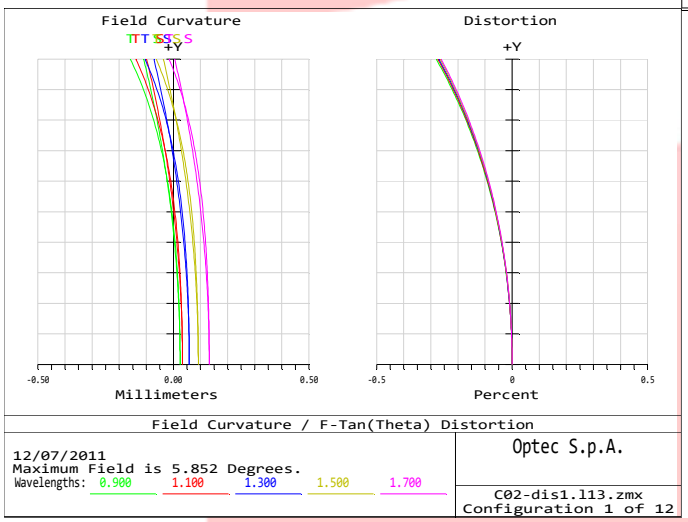
P/N	wavelength range	mount type	note
C0416.001	900-1700 nm	Canon FD	Without iris diaphragm
C0416.002		Nikon	
C0416.003		M42 Screw	
C0416.051		Canon FD	With iris diaphragm
C0416.052		Nikon	
C0416.053		M42 Screw	
C0416.005	1700-2300 nm	Canon FD	Without iris diaphragm
C0416.006		Nikon	
C0416.007		M42 Screw	
C0416.055		Canon FD	With iris diaphragm
C0416.056		Nikon	
C0416.057		M42 Screw	
C0416.010	900-2300 nm	Canon FD	Without iris diaphragm
C0416.011		Nikon	
C0416.012		M42 Screw	
C0416.060		Canon FD	With iris diaphragm
C0416.061		Nikon	
C0416.062		M42 Screw	

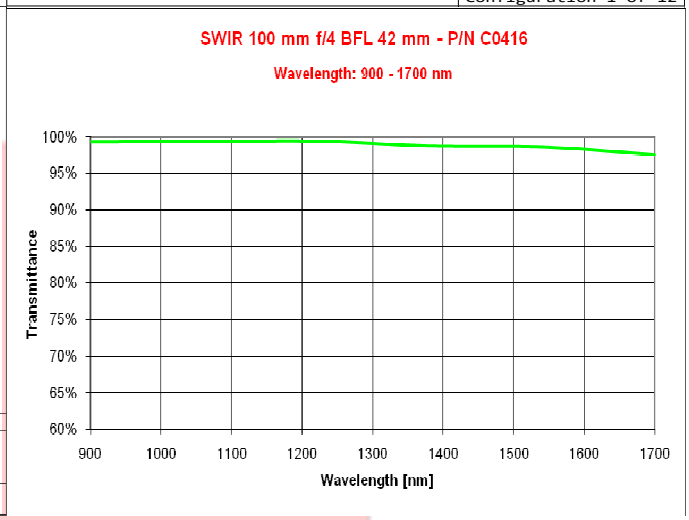
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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

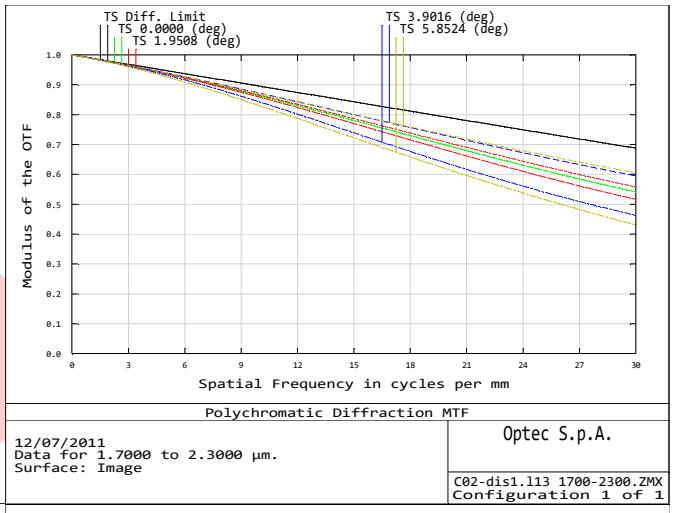
Resolution	MTF >50%@50lp/mm
Distortion	< 0.3%
Average axial chromatic aberration	<0.0102 mm

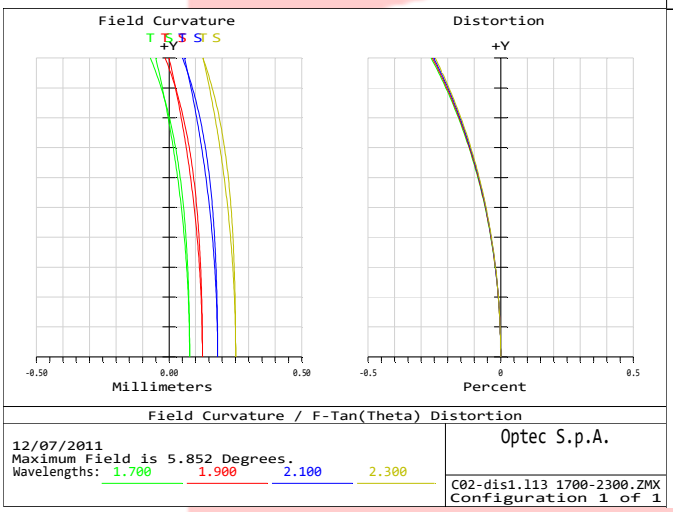
Lens Transmission without coating	> 97%
Antireflection Coating	R ≤ 1%
Vignetting	< 6%

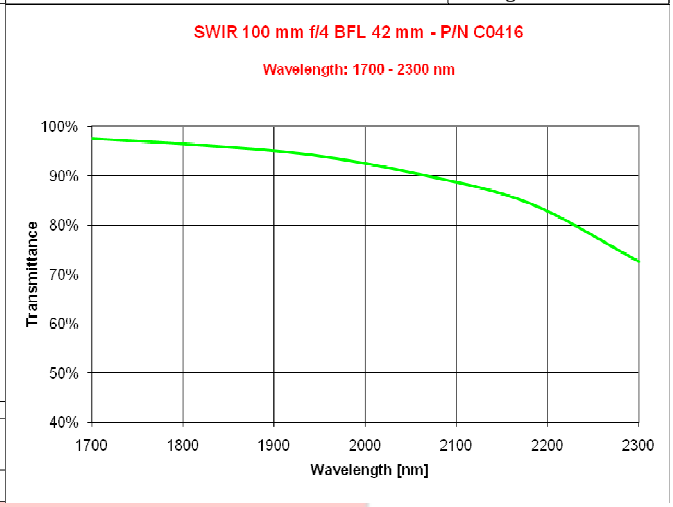
OB – SWIR 100

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







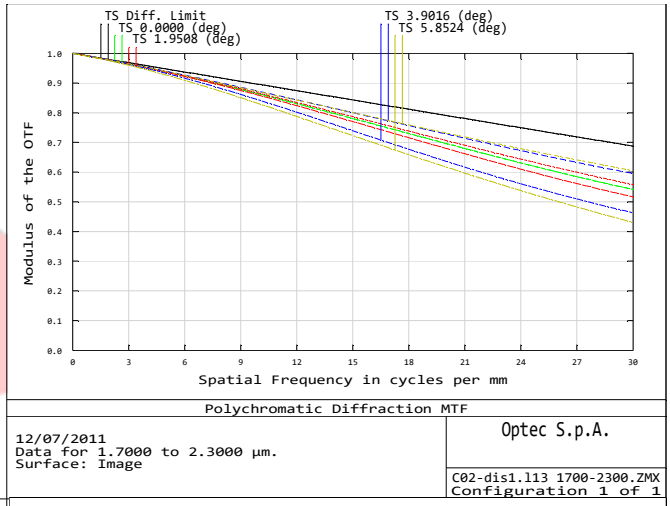
Optical parameters for wavelength range 1.7 – 2.3 µm

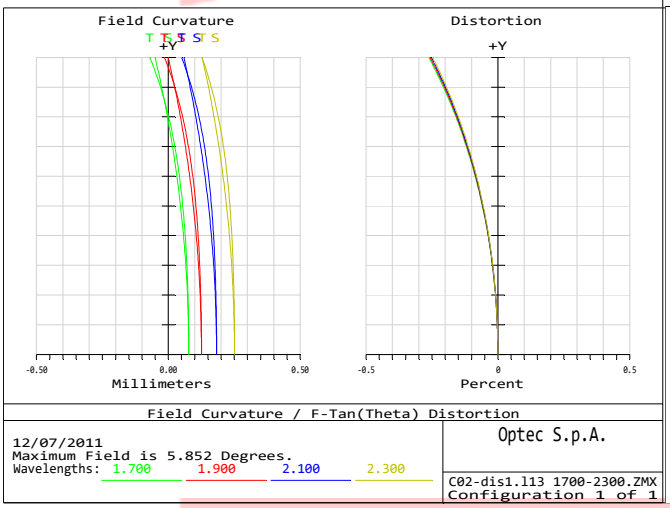
Resolution	MTF > 40%@30lp/mm
Distortion	< 0.3%

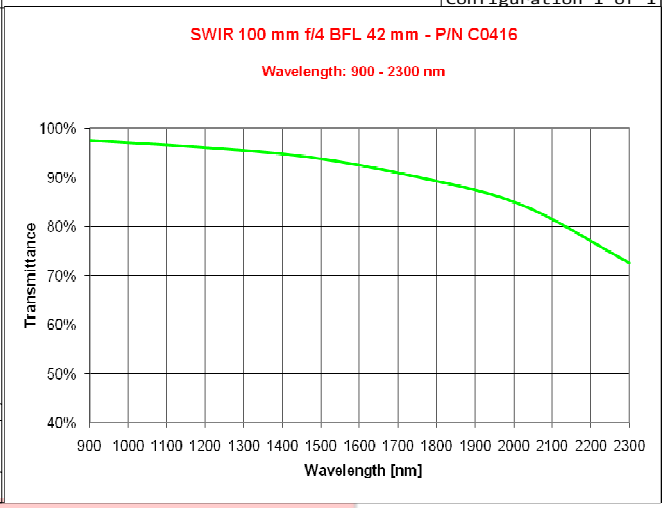
Lens Transmission without coating	> 75%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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%).





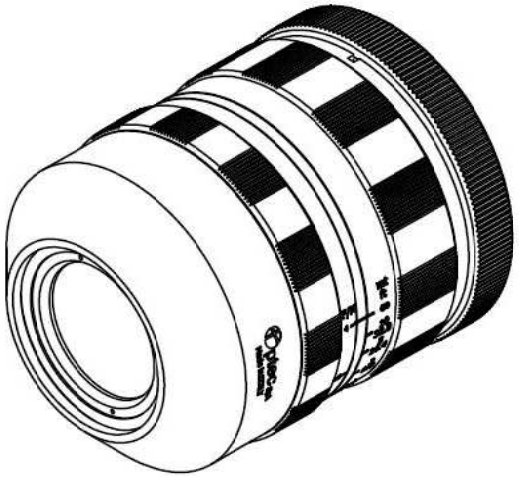


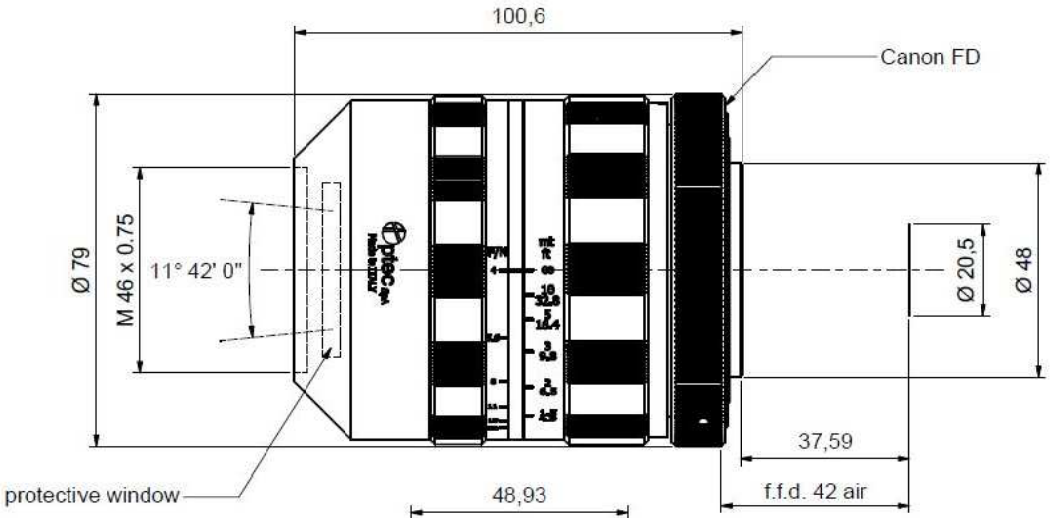
Optical parameters for wavelength range 0.9 – 2.3 µm

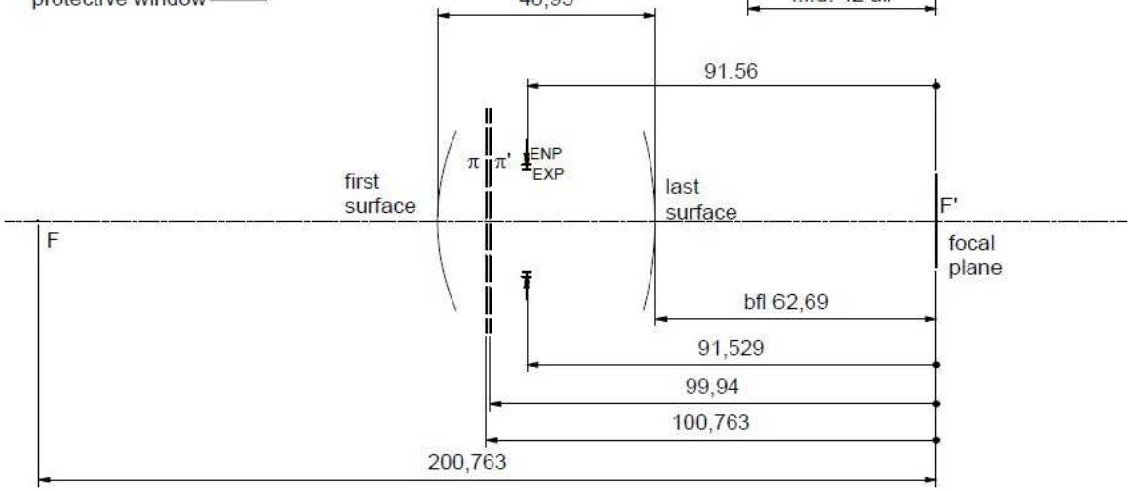
Resolution	MTF > 40%@30lp/mm
Distortion	< 0.3%

Lens Transmission without coating	> 70%
Antireflection Coating	R ≤ 1%

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







π = object principal plane
π' = image principal plane
F = object focus
F' = image focus
ffl = front focal length
bfl = back focal length
ENP = entrance pupil
EXP = exit pupil
ENP ϕ = 25.00 mm
EXP ϕ = 22.90 mm

f.f.d. = flange focal lenght

Reference P/N C0416.051.000

F/N max 4 F/N min 22
Working distance from infinity to 1.5 m
FFOV 11.70 degrees

MATERIAL / MATERIALE	
TREATMENT - COATING / TRATTAMENTO	
SCALE / SCALA [mm]	1 : 1
GEN. TOLERANCES / TOLL. GEN.	
DRAWN BY / DIS.	mcilia
FIRST ANGLE PROJECTION	
DATE / DATA	09/04/2008
PROJECT / SISTEMA	OB NIR F100/4
OBJECT / DENOMINAZIONE	Layout C0416 Canon FD
DOCUMENT / DOCUMENTO	DS C0416.051
REV.	000

NEXT DESTINATION / DEST. SUCC.							
NUMBER OF PIECES / N° PEZZI							

LENS OB-SWIR200/2.4 – P/N C1116

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	200 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	5.87 degrees
Max aperture	F/N = 2.4
Object format	N.A.
Min working distance	5 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2.4 Min F/N = 16

N. of elements	6
Dimensions	Dia 104 x 186mm
Weight	2.4 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A.
Other mount type	Upon request
Customization	Upon request

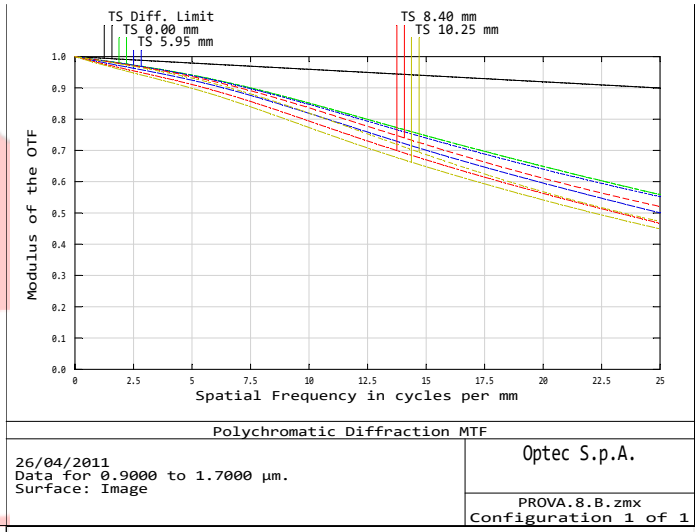
P/N	*wavelength range*	*mount type*	*note*
C1116.001	900-1700 nm	Canon FD	With iris diaphragm
C1116.002		Nikon	
C1116.003		M42 Screw	
C1116.005	1700-2300 nm	Canon FD	
C1116.006		Nikon	
C1116.007		M42 Screw	
C1116.010	900-2300 nm	Canon FD	
C1116.011		Nikon	
C1116.012		M42 Screw	

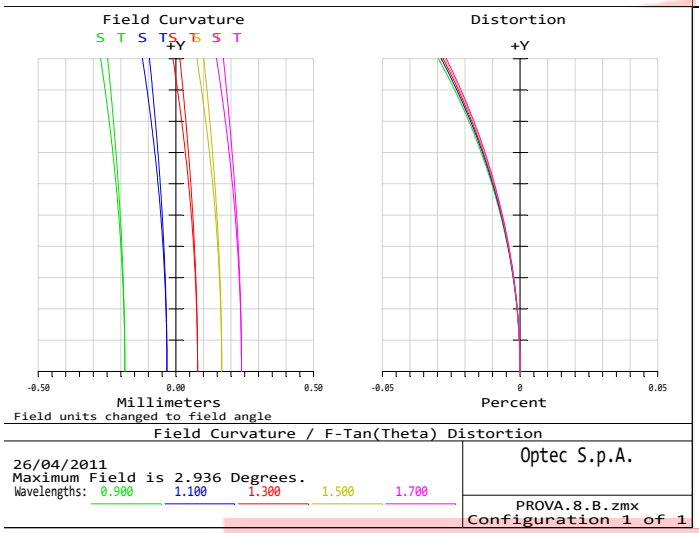
P/N	wavelength range	mount type	note
C1116.071	900-1700 nm	Canon FD	With motorized iris
C1116.072		Nikon	
C1116.073		M42 Screw	
C1116.081	1700-2300 nm	Canon FD	
C1116.082		Nikon	
C1116.083		M42 Screw	
C1116.091	900-2300 nm	Canon FD	
C1116.092		Nikon	
C1116.093		M42 Screw	
C1116.074	900-1700 nm	Canon FD	With motorized focus
C1116.075		Nikon	
C1116.076		M42 Screw	
C1116.084	1700-2300 nm	Canon FD	
C1116.085		Nikon	
C1116.086		M42 Screw	
C1116.094	900-2300 nm	Canon FD	
C1116.095		Nikon	
C1116.096		M42 Screw	
C1116.077	900-1700 nm	Canon FD	With motorized iris and focus
C1116.078		Nikon	
C1116.079		M42 Screw	
C1116.087	1700-2300 nm	Canon FD	
C1116.088		Nikon	
C1116.089		M42 Screw	
C1116.097	900-2300 nm	Canon FD	
C1116.098		Nikon	
C1116.099		M42 Screw	

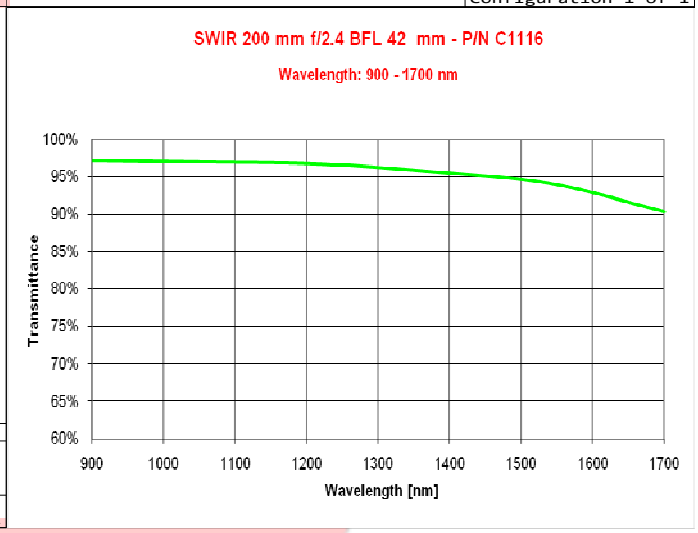
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







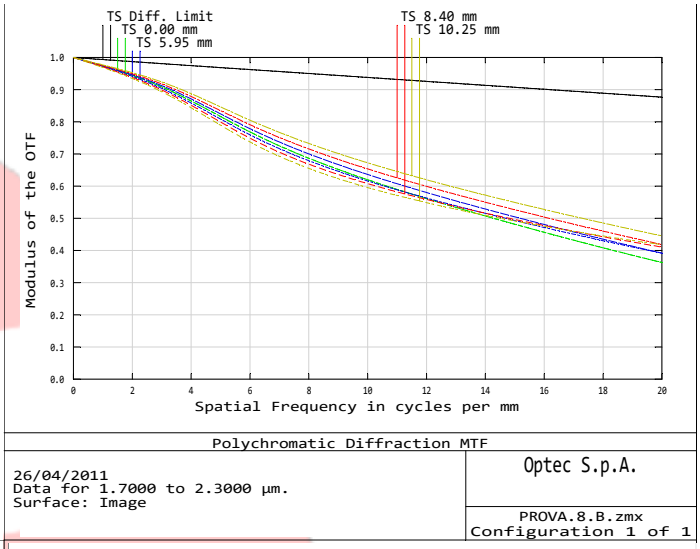
Optical parameters for wavelength range 0.9 – 1.7 µm

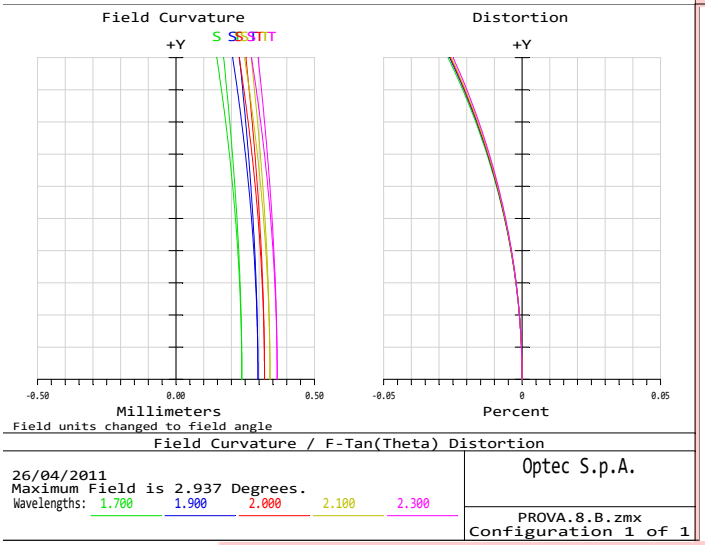
Resolution	MTF > 45%@25lp/mm
Distortion	< 0.05%
Average axial chromatic aberration	

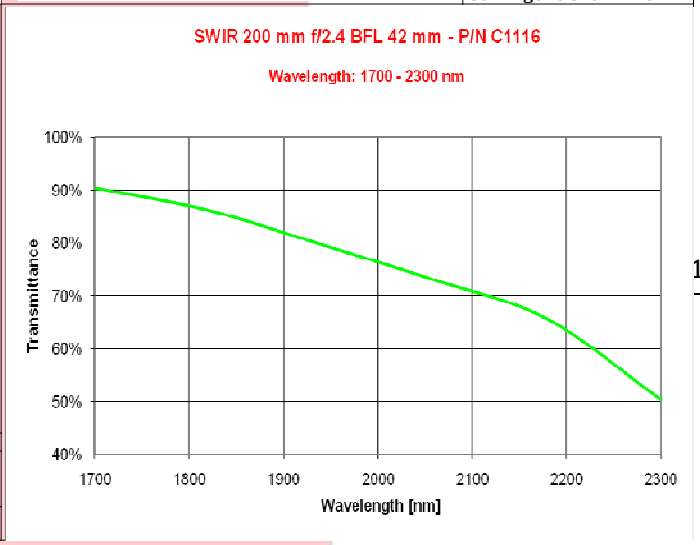
Lens Transmission without coating	> 90%
Antireflection Coating	R ≤ 1%
Vignetting	< 2%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







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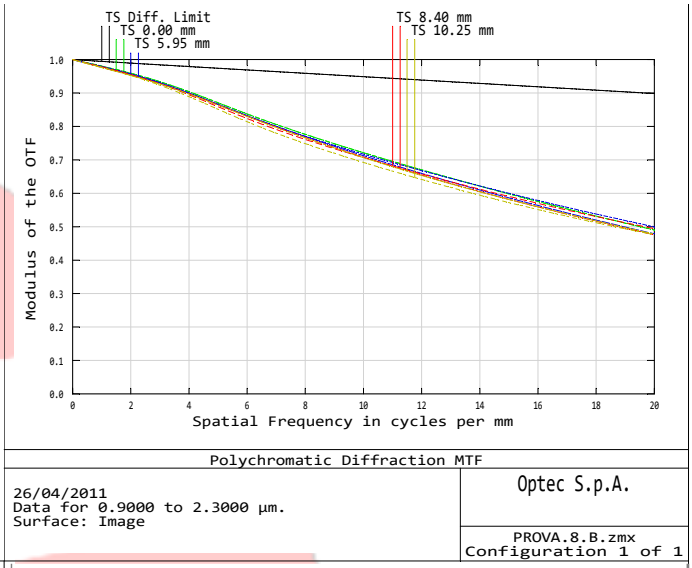
Optical parameters for wavelength range 1.7 – 2.3 µm	

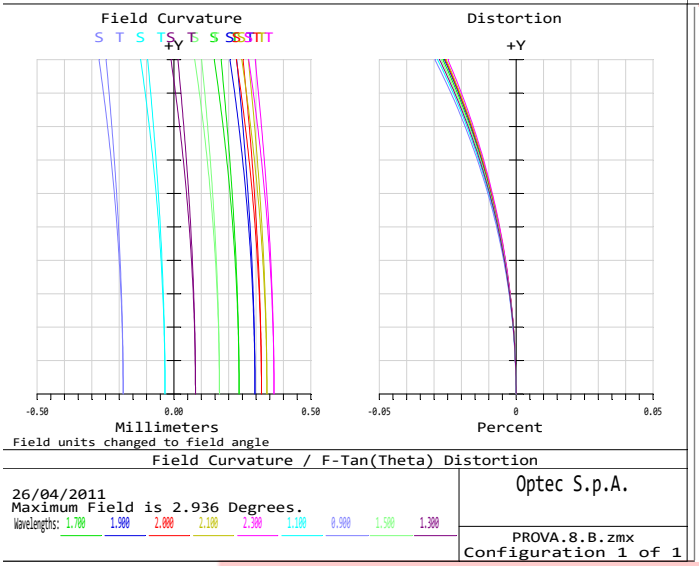
Resolution	MTF > 30%@20lp/mm
Distortion	< 0.05%

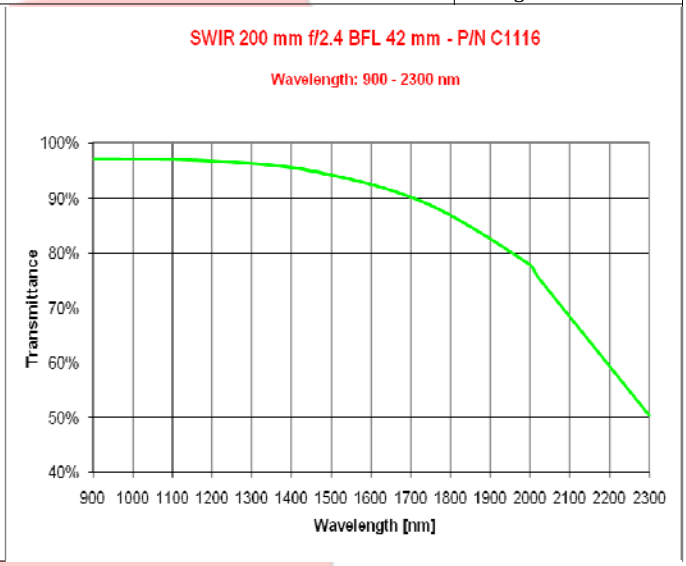
Lens Transmission without coating	> 50%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm

Resolution	MTF > 45%@20lp/mm
Distortion	< 0.05%

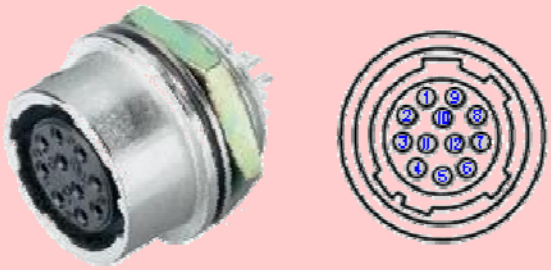
Lens Transmission without coating	> 50%
Antireflection Coating	R ≤ 1%

Electrical data & Interfaces

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

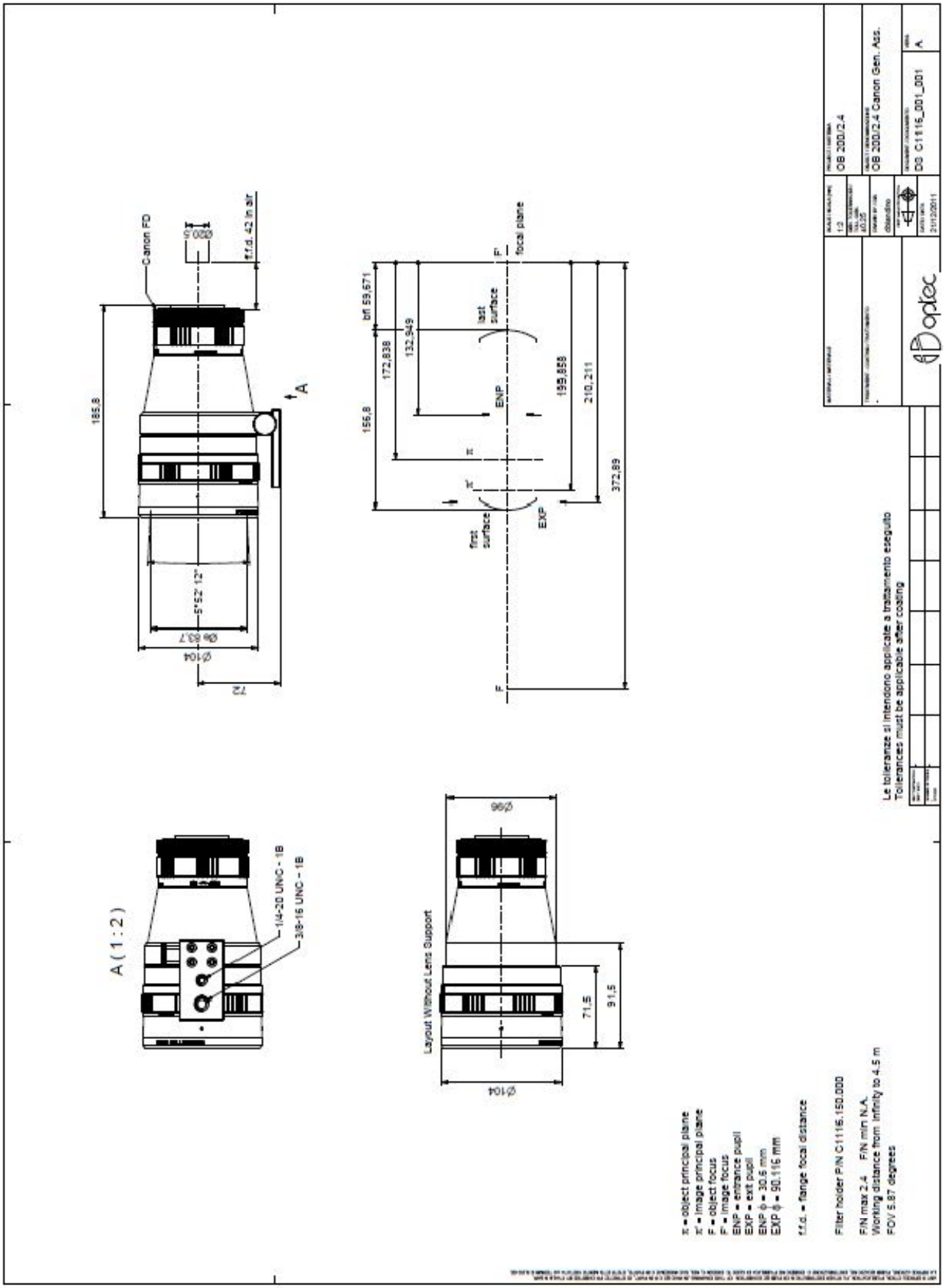
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

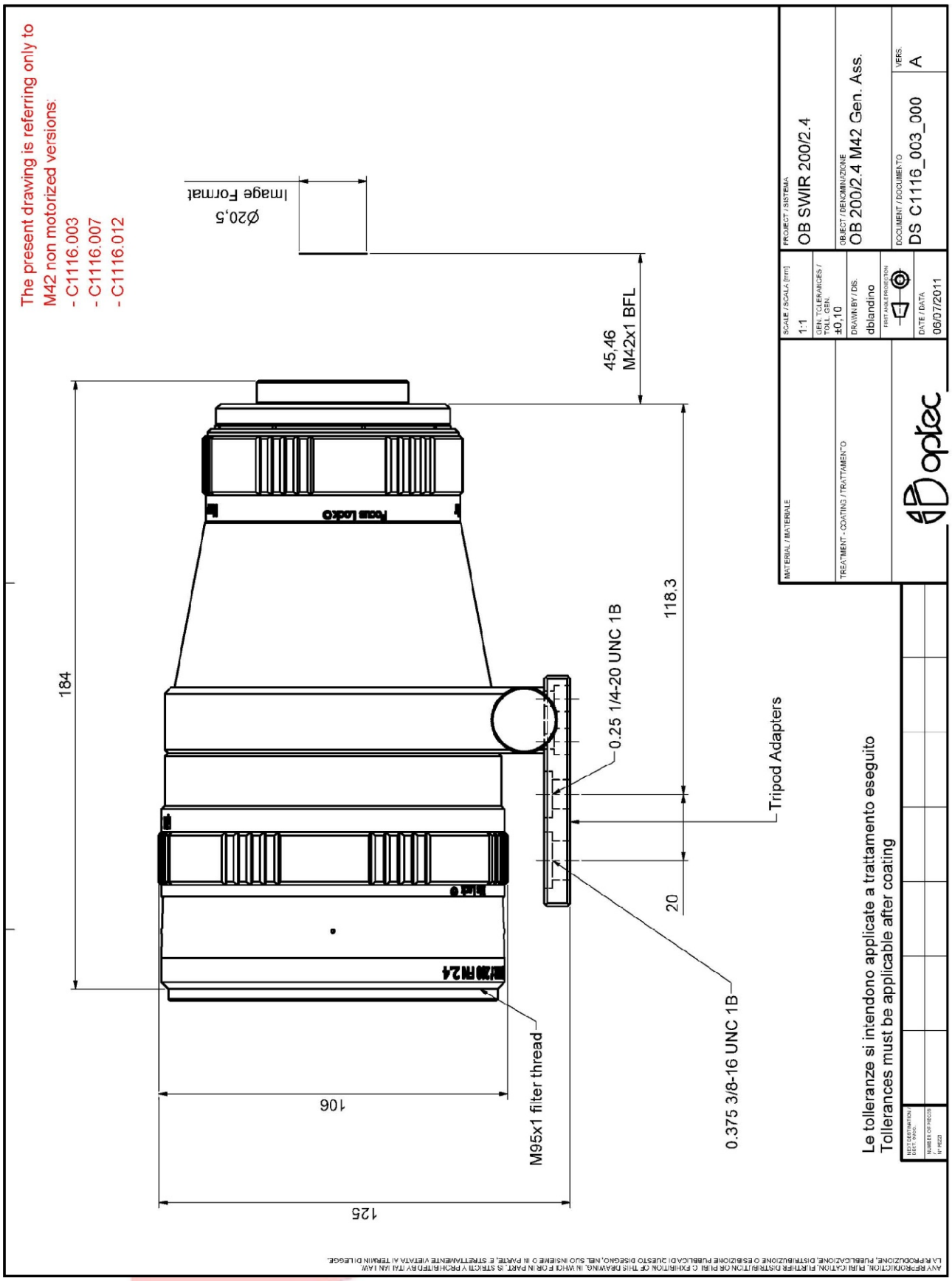
Hirose HR10A-10P-12P connector Pin list

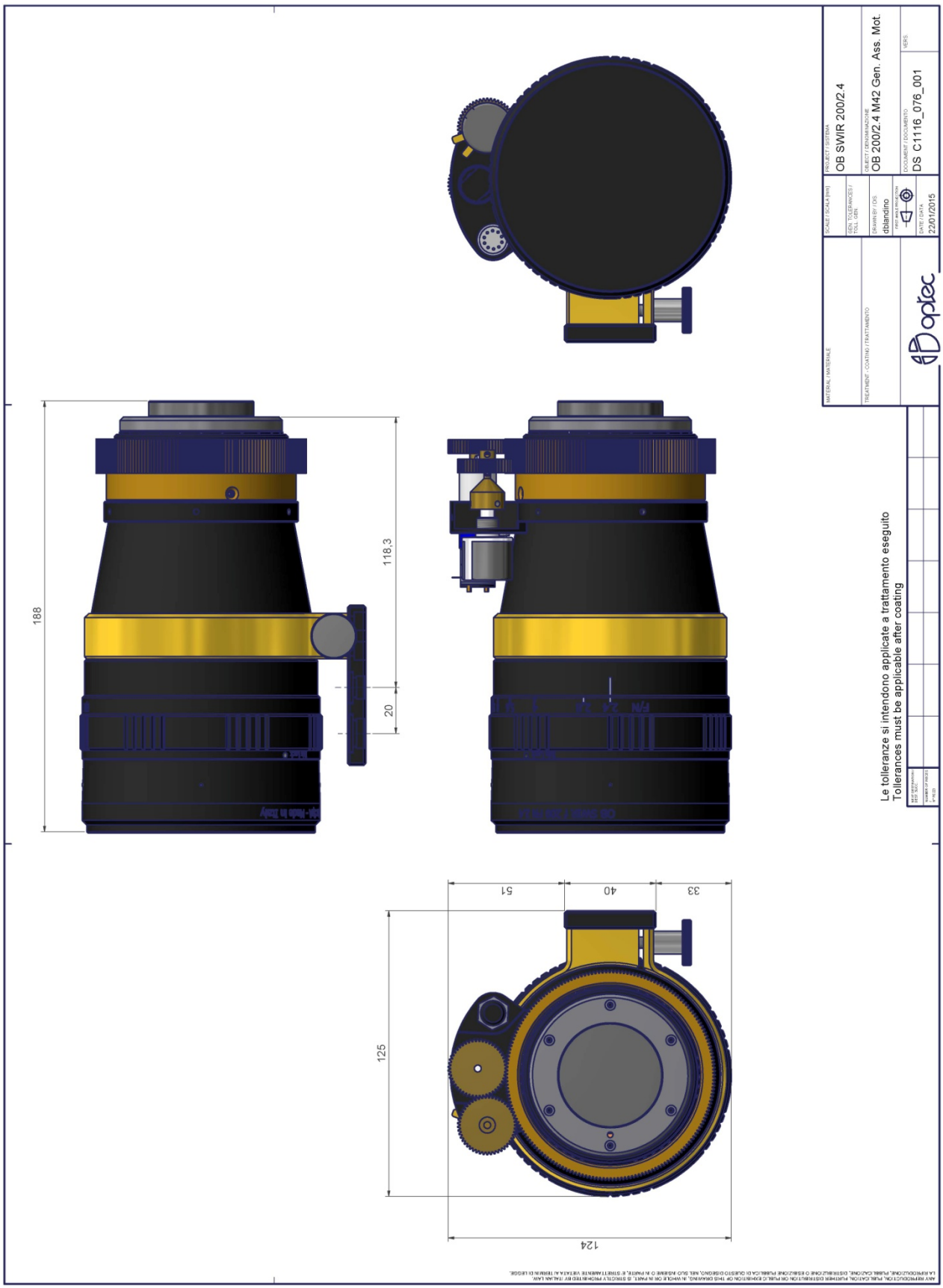


PIN	MOTORIZED IRIS	MOTORIZED FOCUS	MOTORIZED IRIS & FOCUS
1	Vcc	Vcc	Vcc
2	Gnd	Gnd	Gnd
3	NA	Analog Focus position	Analog Focus position
4	Analog Iris position	NA	Analog Iris position
5	Identification resistor #1	Identification resistor #1	Identification resistor #1
6	Identification resistor #2	Identification resistor #2	Identification resistor #2
7	NA	Focus Motor +	Focus Motor +
8	NA	Focus Motor –	Focus Motor –
9	Iris Motor +	NA	Iris Motor +
10	Iris Motor –	NA	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor







LENS OB-SWIR300/3.5 – P/N C0245

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

Focal length	300 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	3.9 degrees
Max aperture	F/N = 3.5
Object format	N.A.
Min working distance	7000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 3.5 Min F/N = 22

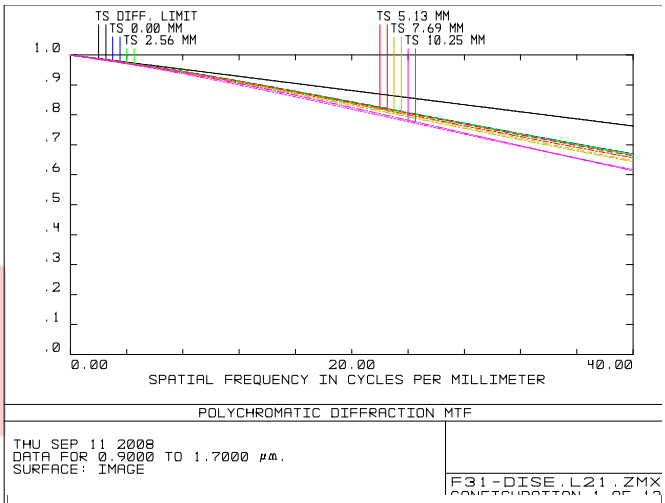
N. of elements	7
Dimensions	Dia 99 x 293 mm
Weight	2 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A
Other mount type	Upon request
Customization	Upon request

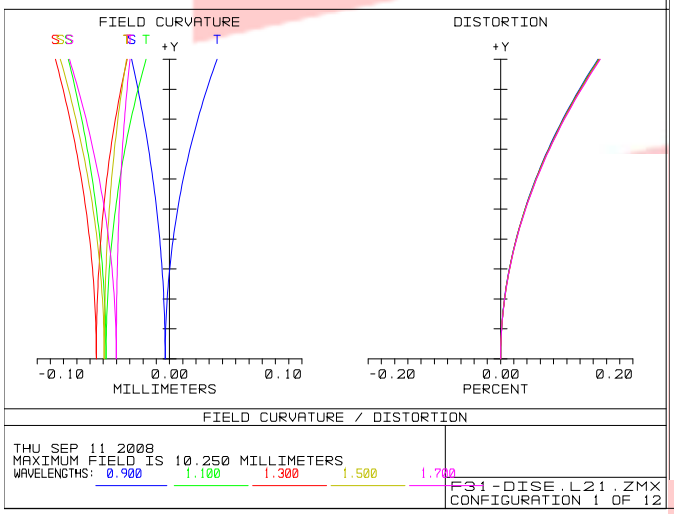
P/N	*wavelength range*	*mount type*	*note*
C0245.001	900-1700 nm	Canon FD	Without iris diaphragm
C0245.002			With manual iris diaphragm
C0245.003			Without iris with motorized focus
C0245.077			With motorized iris and focus
C0245.004		C-mount	Without iris diaphragm
C0245.005			With manual iris diaphragm
C0245.006			Without iris with motorized focus
C0245.076			With motorized iris and focus
C0245.031		Nikon	Without iris diaphragm
C0245.032			With manual iris diaphragm
C0245.033			Without iris with motorized focus
C0245.078			With motorized iris and focus
C0245.007		M42	Without iris diaphragm
C0245.008			With manual iris diaphragm
C0245.009			Without iris with motorized focus
C0245.079			With motorized iris and focus

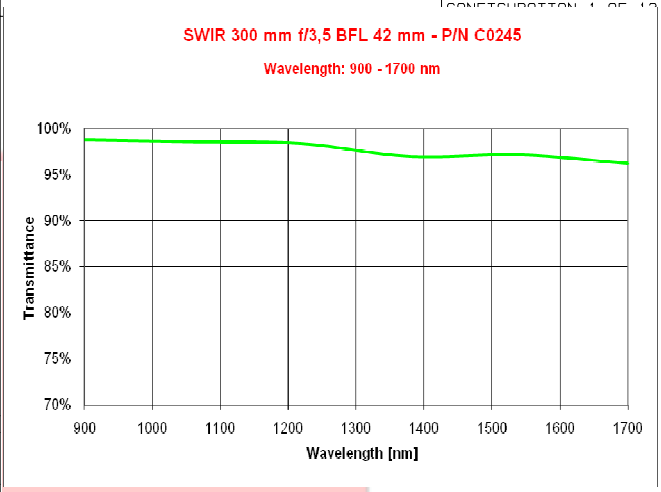
P/N	wavelength range	mount type	note
C0245.011	1700-2300 nm	Canon FD	Without iris diaphragm
C0245.012			With manual iris diaphragm
C0245.013			Without iris with motorized focus
C0245.087			With motorized iris and focus
C0245.014		C-mount	Without iris diaphragm
C0245.015			With manual iris diaphragm
C0245.016			Without iris with motorized focus
C0245.086			With motorized iris and focus
C0245.034		Nikon	Without iris diaphragm
C0245.035			With manual iris diaphragm
C0245.036			Without iris with motorized focus
C0245.088			With motorized iris and focus
C0245.017		M42	Without iris diaphragm
C0245.018			With manual iris diaphragm
C0245.019			Without iris with motorized focus
C0245.089			With motorized iris and focus
C0245.021	900-2300 nm	Canon FD	Without iris diaphragm
C0245.022			With manual iris diaphragm
C0245.023			Without iris with motorized focus
C0245.097			With motorized iris and focus
C0245.024		C-mount	Without iris diaphragm
C0245.025			With manual iris diaphragm
C0245.026			Without iris with motorized focus
C0245.096			With motorized iris and focus
C0245.037		Nikon	Without iris diaphragm
C0245.038			With manual iris diaphragm
C0245.039			Without iris with motorized focus
C0245.098			With motorized iris and focus
C0245.027		M42	Without iris diaphragm
C0245.028			With manual iris diaphragm
C0245.029			Without iris with motorized focus
C0245.099			With motorized iris and focus
C0245.050	***ONLY FOR LASER*** 1545-1555 nm	Canon FD	Without iris diaphragm.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







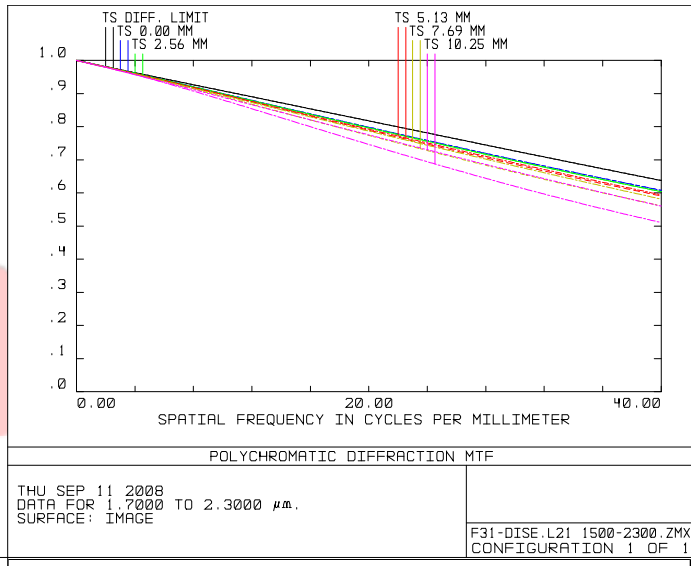
Optical parameters for wavelength range 0.9 – 1.7 μm

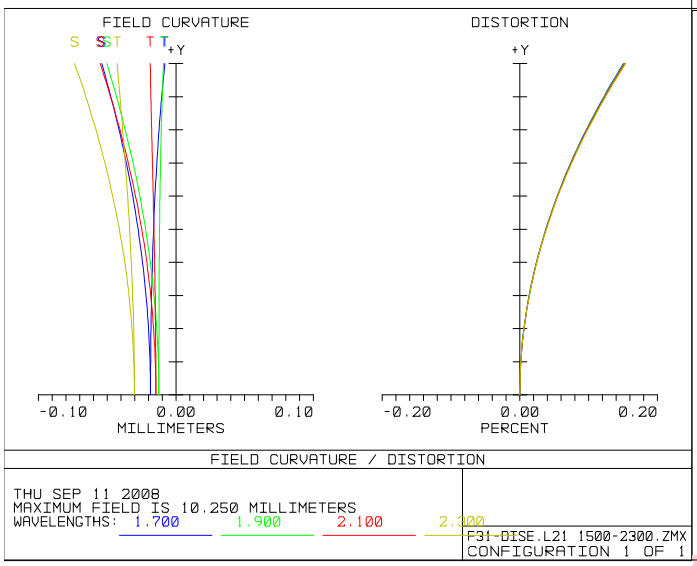
Resolution	MTF > 60%@40lp/mm
Distortion	< 0.2%
Average axial chromatic aberration	< 0.0477 mm

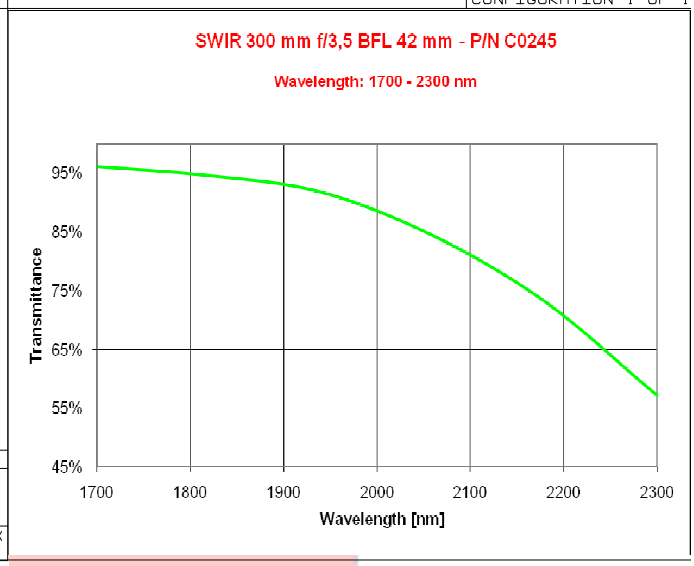
Lens Transmission without coating	> 96%
Antireflection Coating	R ≤ 1%
Vignetting	< 12%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







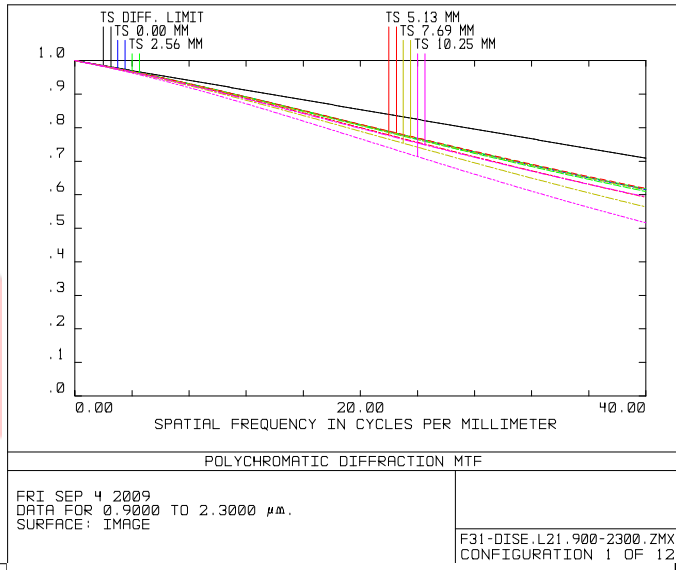
Optical parameters for wavelength range 1.7 – 2.3 μm

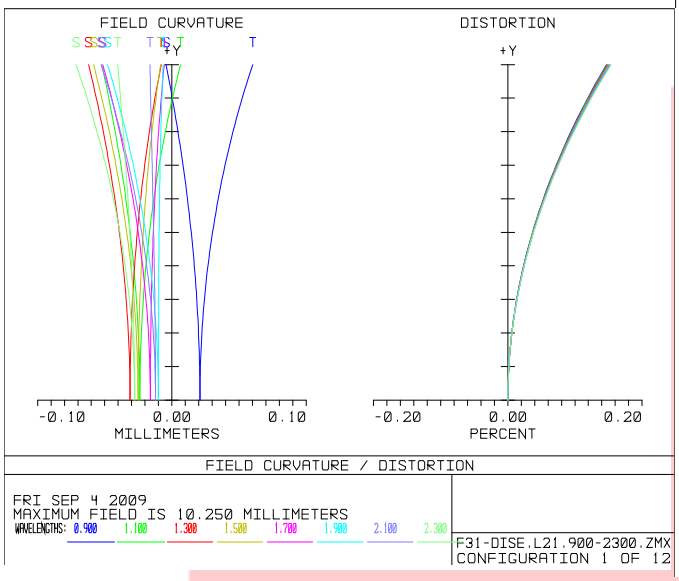
Resolution	MTF > 50%@40lp/mm
Distortion	< 0.2%

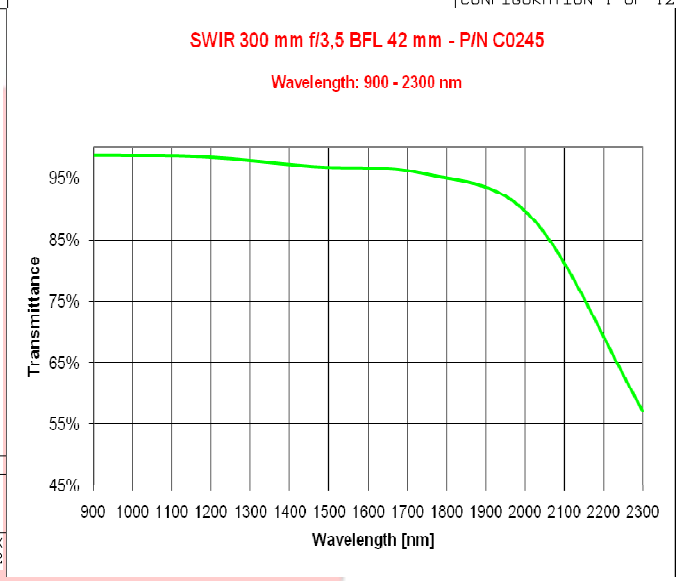
Lens Transmission without coating	> 56%
Antireflection Coating	R ≤ 0.5%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 µm

Resolution	MTF > 50%@40lp/mm
Distortion	< 0.2%

Lens Transmission without coating	> 56%
Antireflection Coating	R ≤ 1%

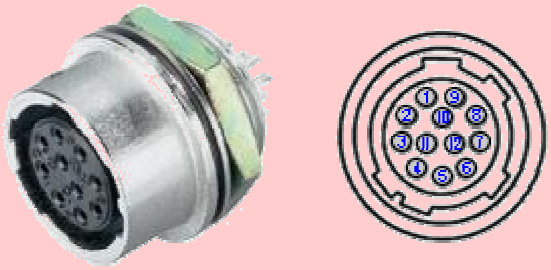
More details are available upon request and technical drawings are open for the customers and their needs.

Electrical data & Interfaces

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

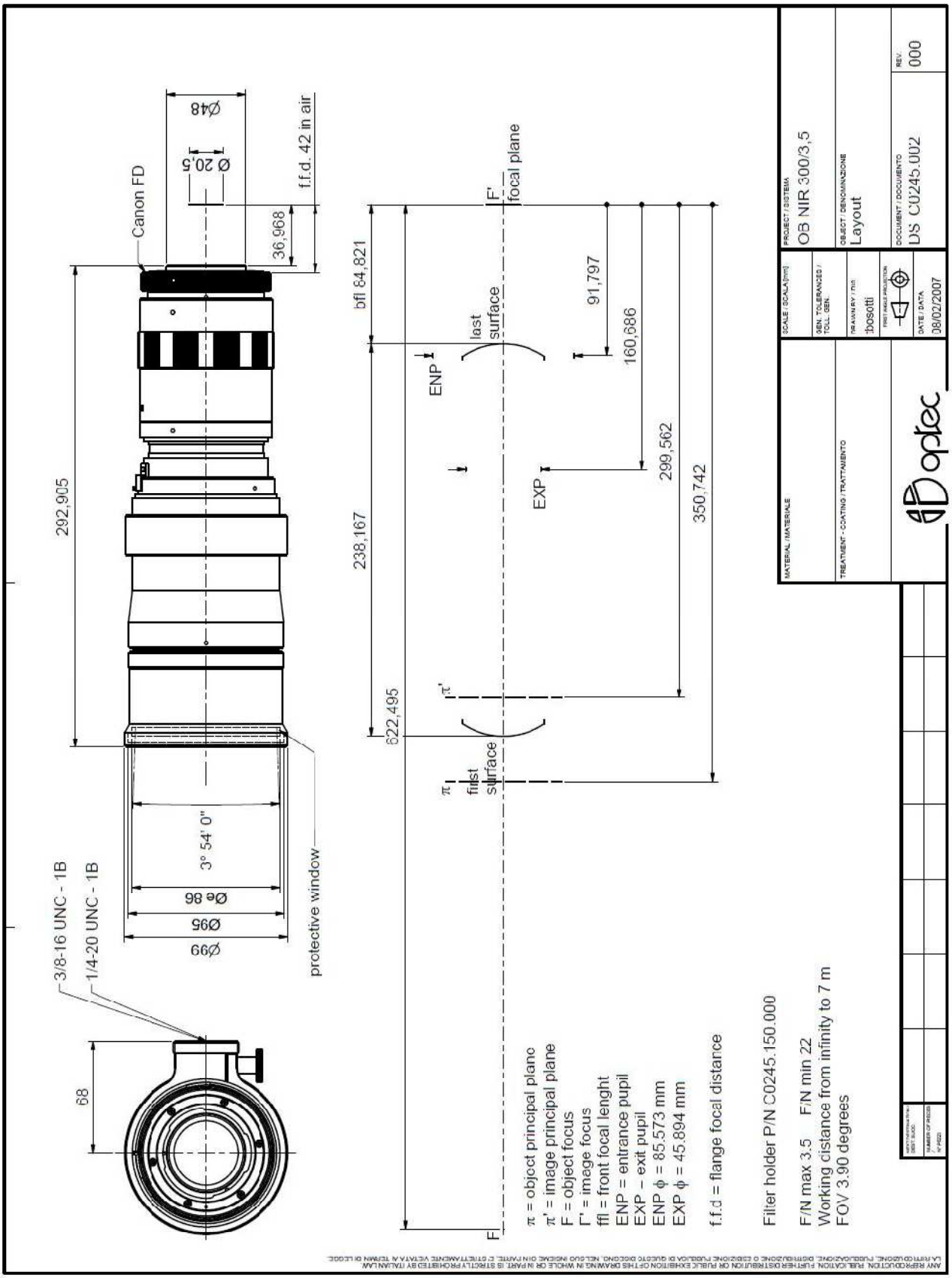
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

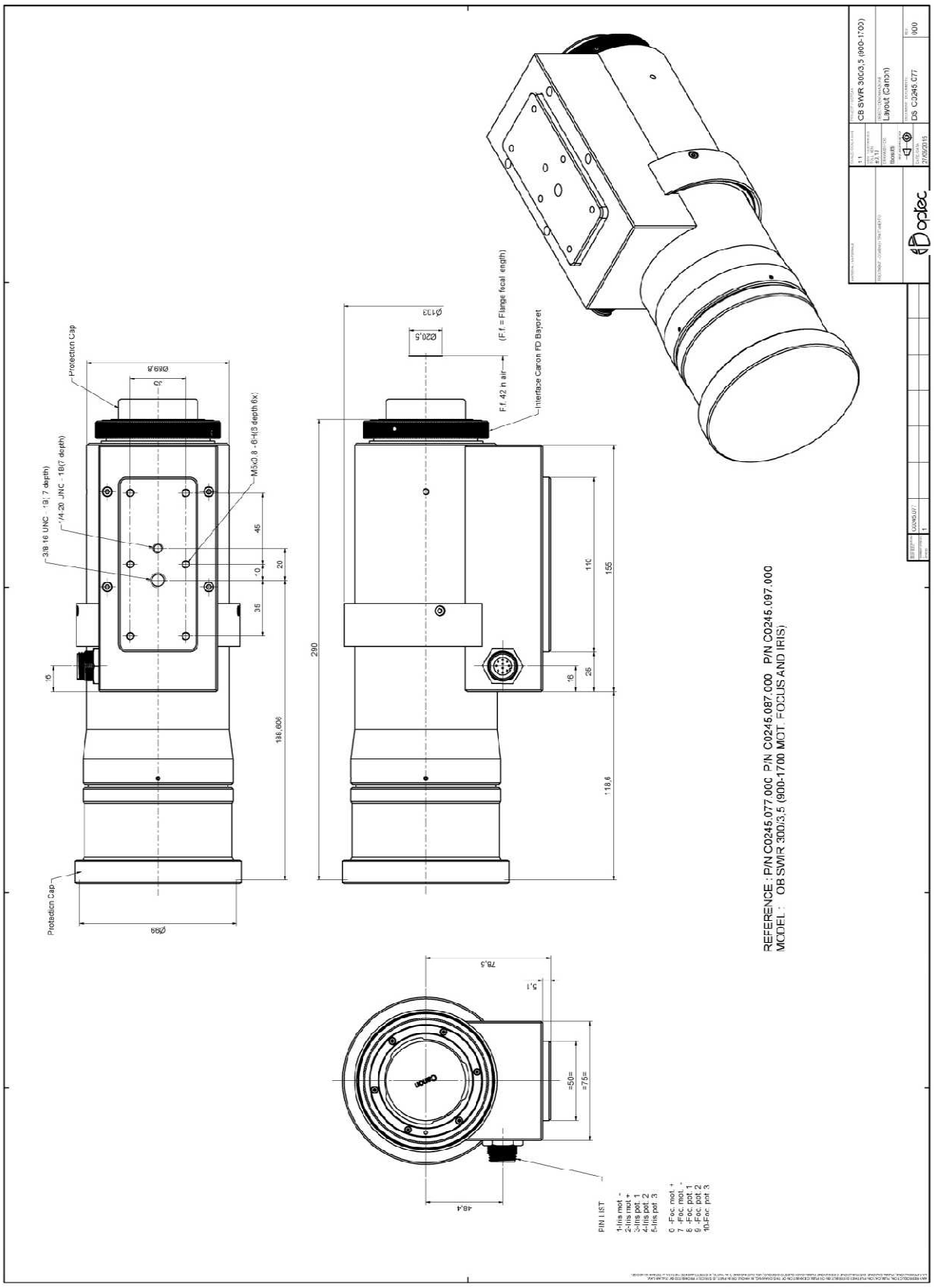
Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS & FOCUS
1	Vcc
2	Gnd
3	Analog Focus position
4	Analog Iris position
5	Identification resistor #1
6	Identification resistor #2
7	Focus Motor +
8	Focus Motor –
9	Iris Motor +
10	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor

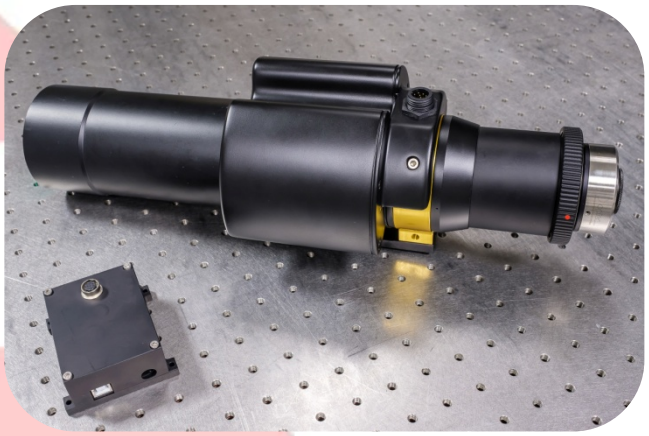




LENS OB-SWIR500/7 – P/N C0615

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.



Optical and mechanical parameters

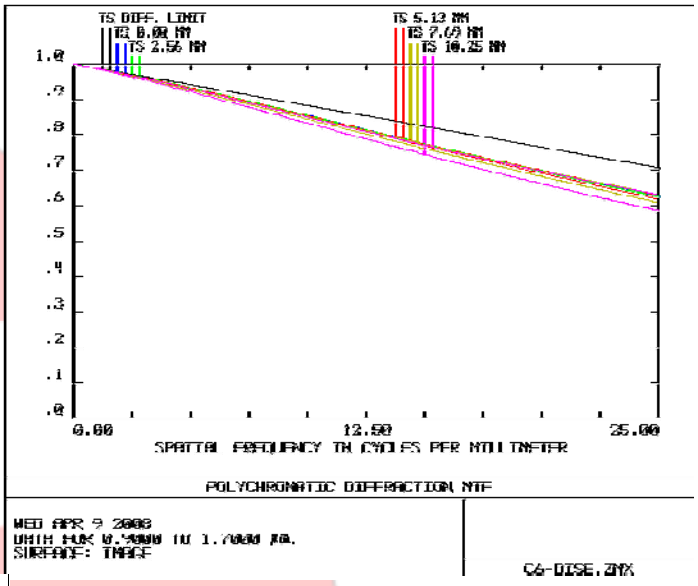
Focal length	500 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	2.35 degrees
Max aperture	F/N = 7
Object format	N.A.
Min working distance	20000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 7 Min F/N = 22

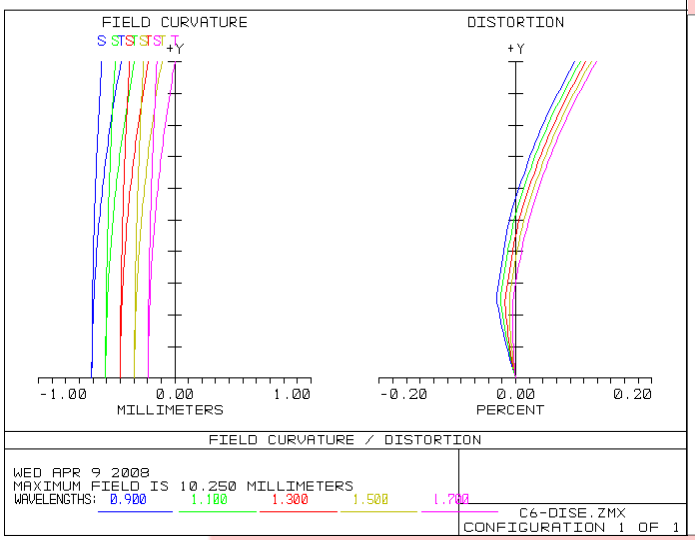
N. of elements	5
Dimensions	Dia 85x 400 mm
Weight	2.4 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A
Other mount type	Upon request
Customization	Upon request

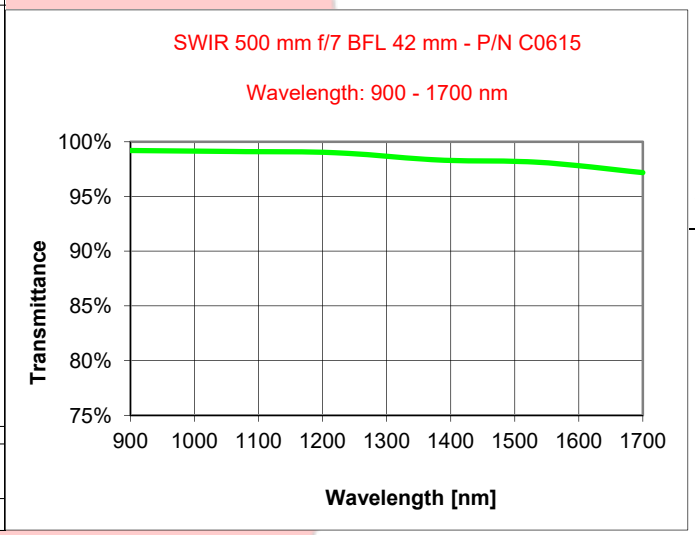
P/N	wavelength range	mount type	note
C0615.001	900-1700 nm	Canon FD	Without iris diaphragm
C0615.002			With iris diaphragm
C0615.010			With motorized focus and iris
C0615.011	1700-2300 nm	Canon FD	Without iris diaphragm
C0615.012			With iris diaphragm
C0615.020			With motorized focus and iris
C0615.021	900-2300 nm	Canon FD	Without iris diaphragm
C0615.022			With iris diaphragm
C0615.030			With motorized focus and iris
C0615.003	900-1700 nm	M42	Without iris diaphragm
C0615.004			With iris diaphragm
C0615.009			With motorized focus and iris
C0615.013	1700-2300 nm	M42	Without iris diaphragm
C0615.014			With iris diaphragm
C0615.019			With motorized focus and iris
C0615.023	900-2300 nm	M42	Without iris diaphragm
C0615.024			With iris diaphragm
C0615.029			With motorized focus and iris
C0615.005	900-1700 nm	Nikon	Without iris diaphragm
C0615.006			With iris diaphragm
C0615.008			With motorized focus and iris
C0615.015	1700-2300 nm	Nikon	Without iris diaphragm
C0615.016			With iris diaphragm
C0615.018			With motorized focus and iris
C0615.025	900-2300 nm	Nikon	Without iris diaphragm
C0615.026			With iris diaphragm
C0615.028			With motorized focus and iris

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







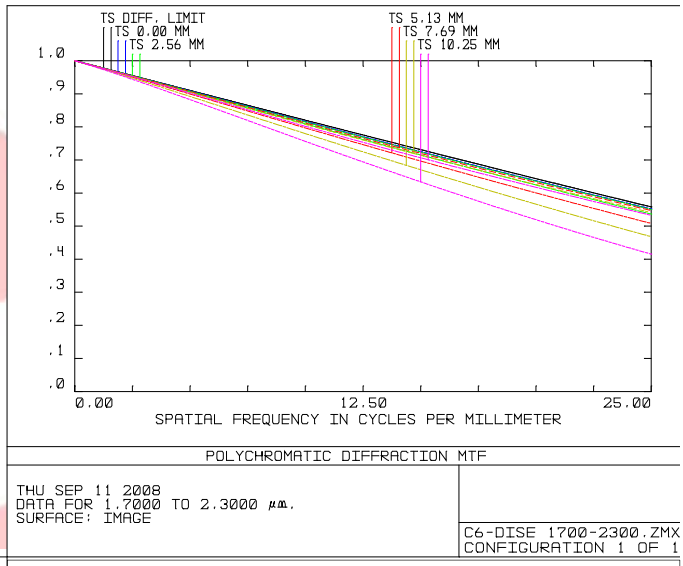
Optical parameters for wavelength range 0.9 – 1.7 μm

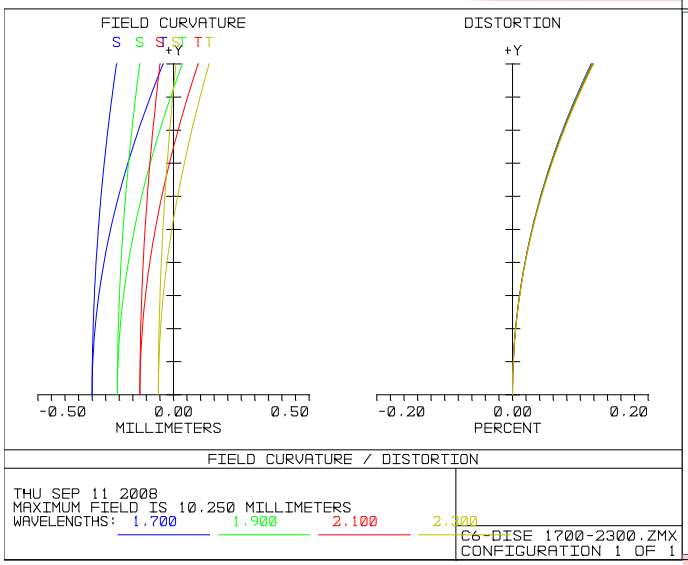
Resolution	MTF > 60%@25lp/mm
Distortion	< 0.2%
Average axial chromatic aberration	< 0.0155 mm

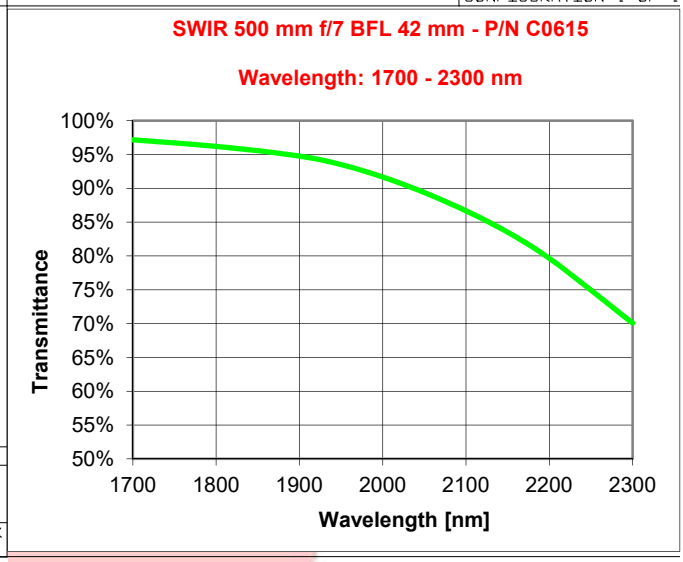
Glass Transmission without coating	> 97%
Antireflection Coating	R ≤ 1%
Vignetting	< 15%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







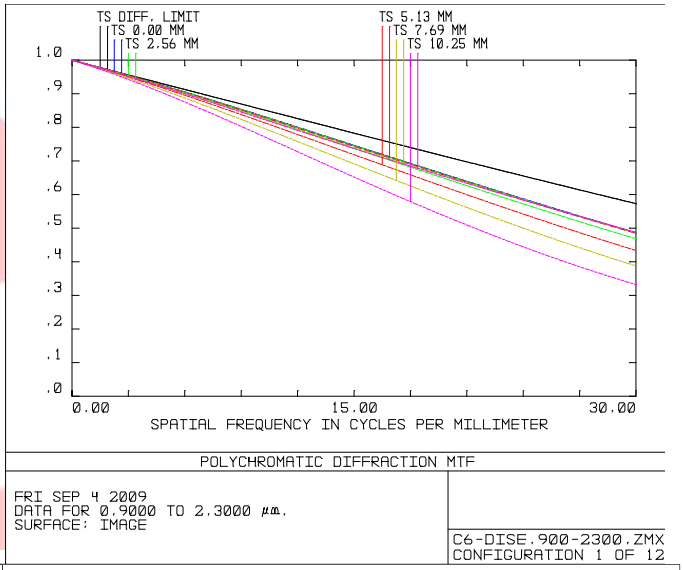
Optical parameters for wavelength range 1.7 – 2.3 μm

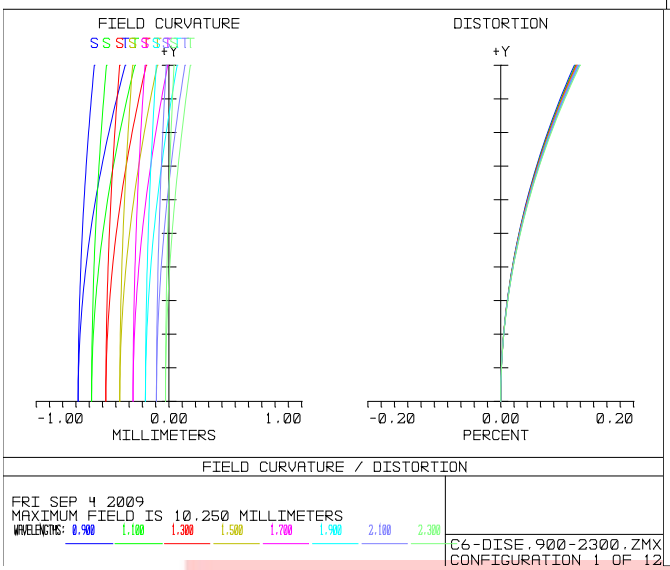
Resolution	MTF > 40%@25lp/mm
Distortion	< 0.2%

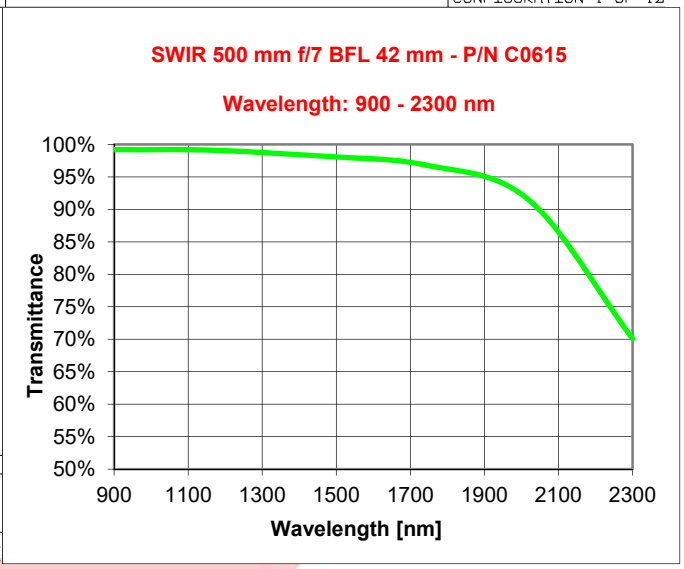
Glass Transmission without coating	> 70%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm

Resolution	MTF > 35%@30lp/mm
Distortion	< 0.2%

Glass Transmission without coating	> 70%
Antireflection Coating	R ≤ 1%

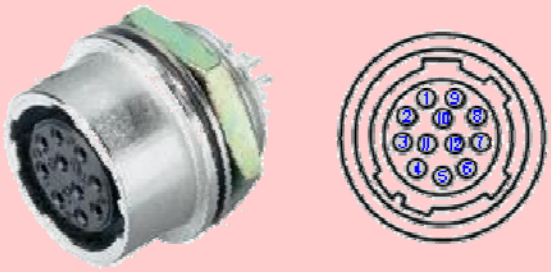
More details are available upon request and technical drawings are open for the customers and their needs.

Electrical data & Interfaces

IRIS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

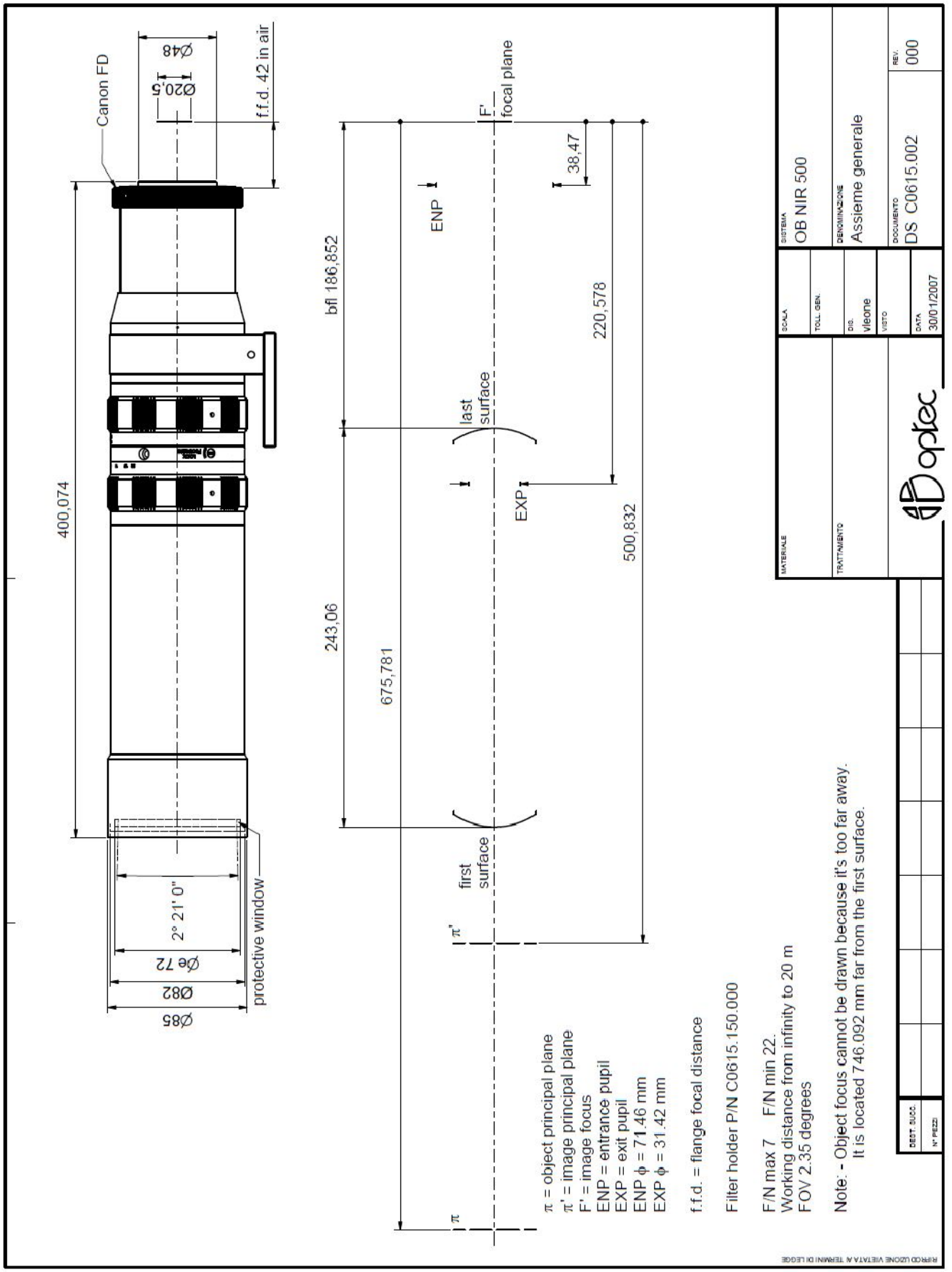
FOCUS FUNCTION	
Motor model	Faulhaber 1516T009SR
Motor nominal voltage	9 VDC
Motor maximum power	0.54 W
Current limit	0.19 A
Feedback	10 kOhm multi-turn potentiometer
Potentiometer model	Spectrol 533-10K ±5%
Gearhead reduction ratio	592:1

Hirose HR10A-10P-12P connector Pin list



PIN	MOTORIZED IRIS & FOCUS
1	Vcc
2	Gnd
3	Analog Focus position
4	Analog Iris position
5	Identification resistor #1
6	Identification resistor #2
7	Focus Motor +
8	Focus Motor –
9	Iris Motor +
10	Iris Motor –

Every shipped motorized lens will be provided with potentiometers values of end positions for both focus and iris motor



LENS OB-SWIR1000/10 – P/N C0912

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

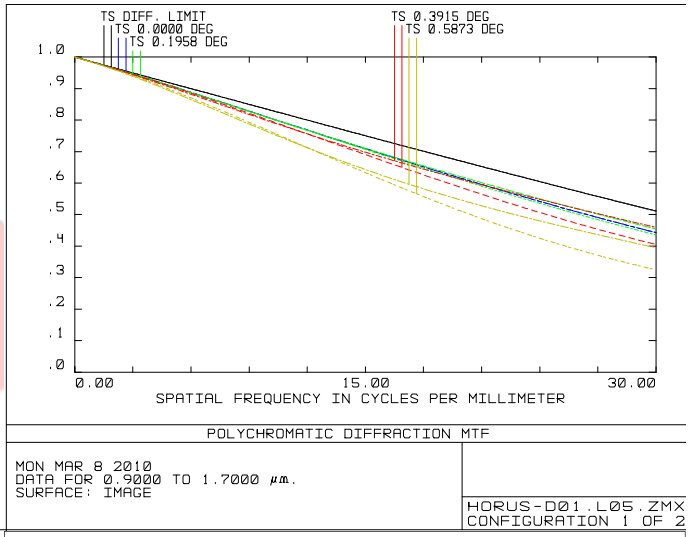
Focal length	1000 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	1.18 degrees
Max aperture	F/N = 10
Object format	N.A.
Min working distance	20 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 10 Min F/N = 32

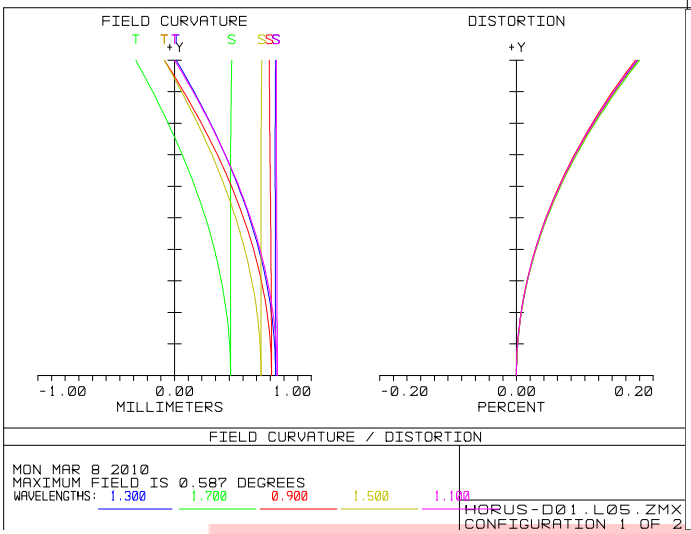
N. of elements	6
Dimensions	Dia 120x 562 mm
Weight	5 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A
Other mount type	Upon request
Customization	Upon request

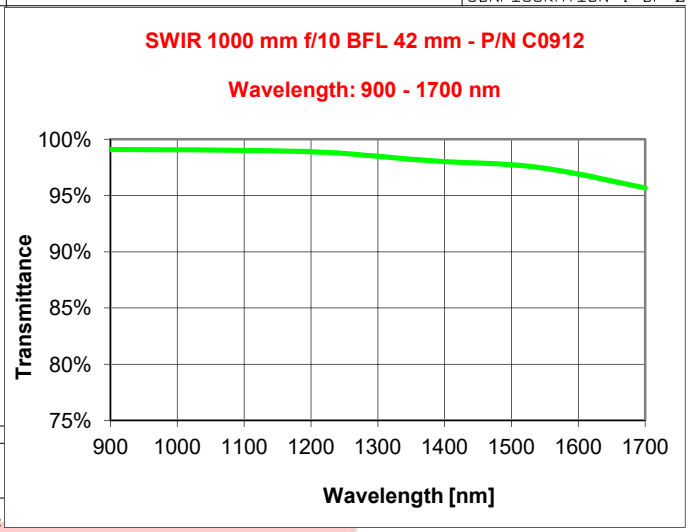
P/N	wavelength range	mount type	note
C0912.001	900-1700 nm	Canon FD	Without iris diaphragm
C0912.051		Canon FD	With iris diaphragm
C0912.002		Nikon	Without iris diaphragm
C0912.052		Nikon	With iris diaphragm
C0912.003		M42 Screw	Without iris diaphragm
C0912.053		M42 Screw	With iris diaphragm
C0912.005	1700-2300 nm	Canon FD	Without iris diaphragm
C0912.055		Canon FD	With iris diaphragm
C0912.006		Nikon	Without iris diaphragm
C0912.056		Nikon	With iris diaphragm
C0912.007		M42 Screw	Without iris diaphragm
C0912.057		M42 Screw	With iris diaphragm
C0912.010	900-2300 nm	Canon FD	Without iris diaphragm
C0912.060		Canon FD	With iris diaphragm
C0912.011		Nikon	Without iris diaphragm
C0912.061		Nikon	With iris diaphragm
C0912.012		M42 Screw	Without iris diaphragm
C0912.062		M42 Screw	With iris diaphragm

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







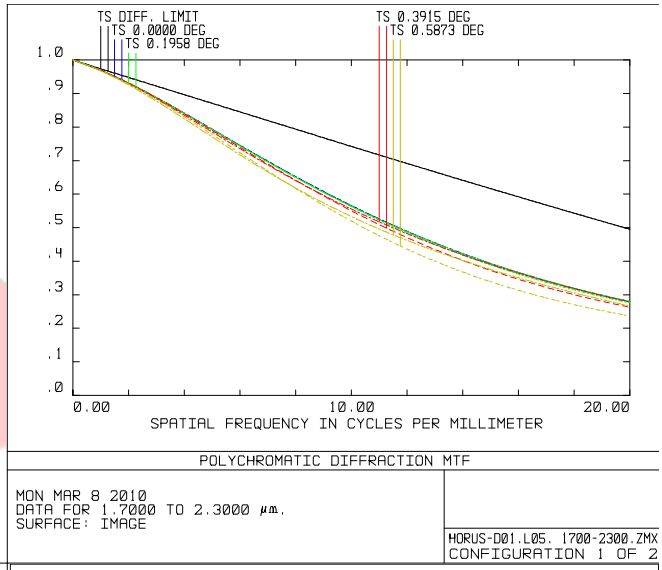
Optical parameters for wavelength range 0.9 – 1.7 μm

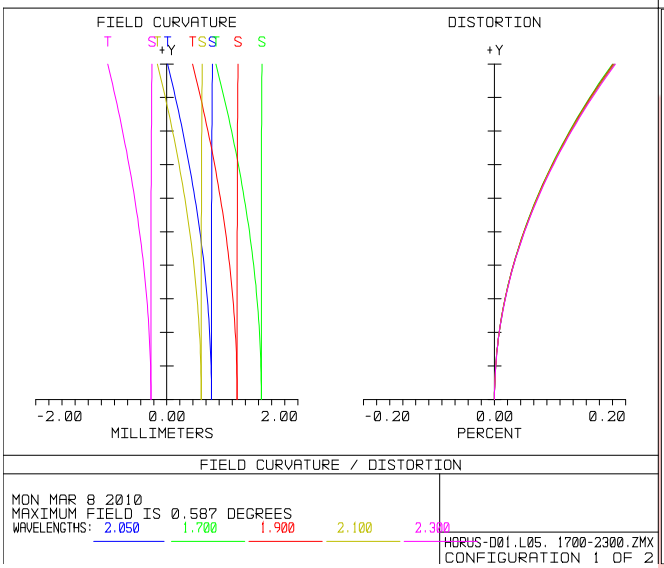
Resolution	MTF > 30%@30lp/mm
Distortion	< 0.2%
Average axial chromatic aberration	

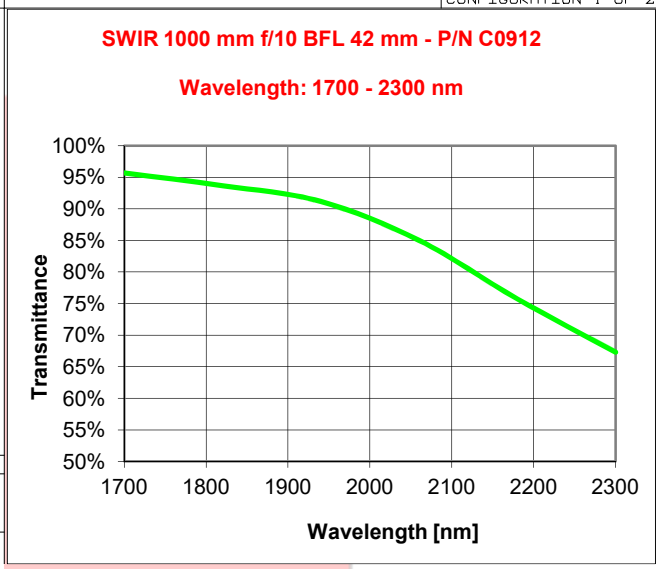
Glass Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	< 1%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







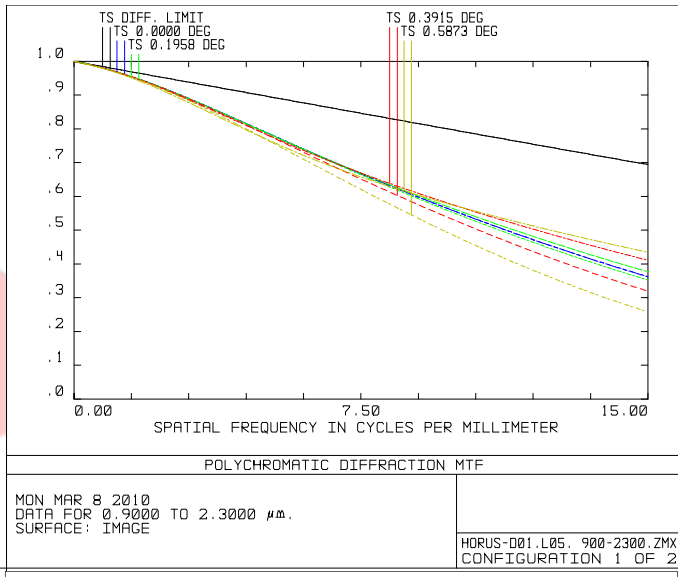
Optical parameters for wavelength range 1.7 – 2.3 μm

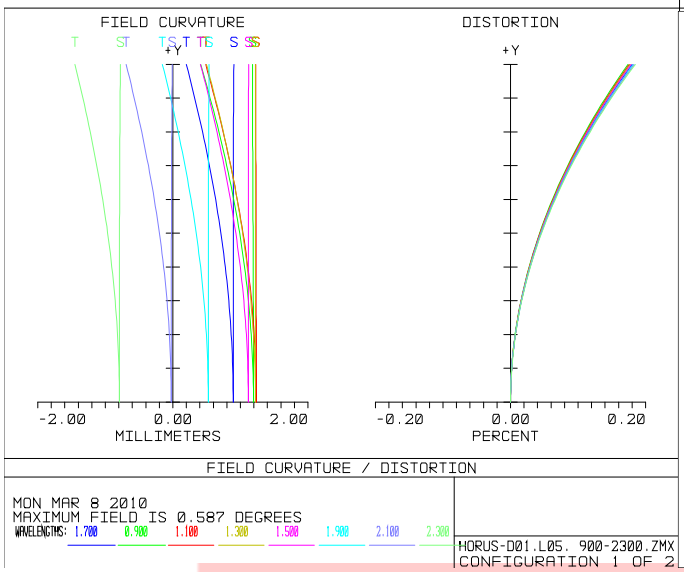
Resolution	MTF > 25%@20lp/mm
Distortion	< 0.2%

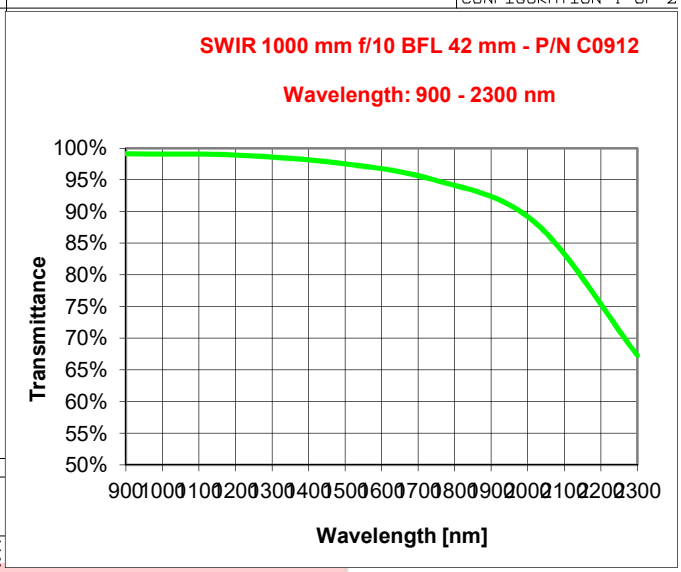
Glass Transmission without coating	> 67%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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%).





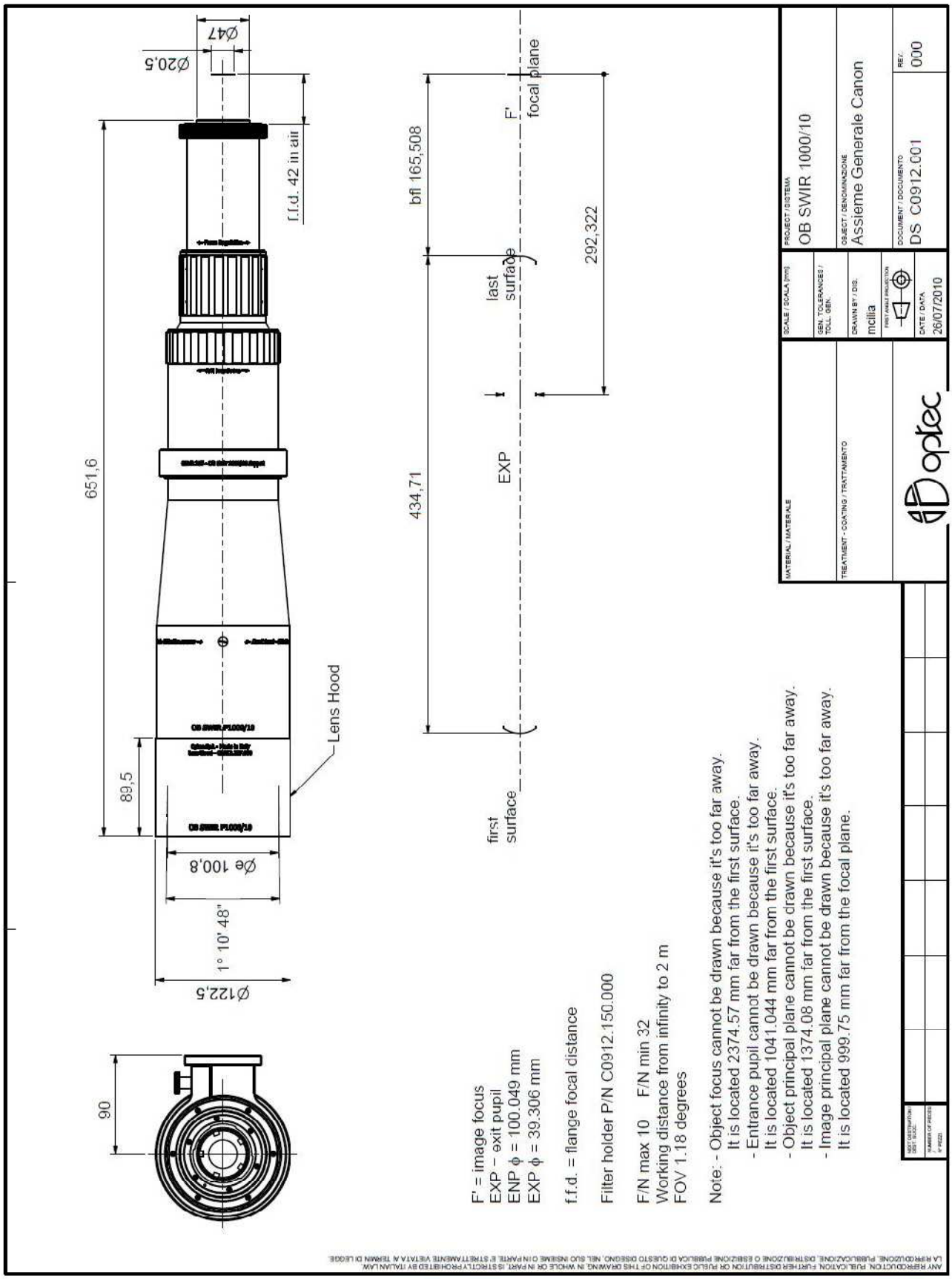


Optical parameters for wavelength range 0.9 – 2.3 μm

Resolution	MTF > 25%@15lp/mm
Distortion	< 0.2%

Glass Transmission without coating	> 67%
Antireflection Coating	R ≤ 1%

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



LENS ZOOM-SWIR 7x – P/N C0628

General Description

This family of high resolution SWIR lenses image from 0.9 – 2.3 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

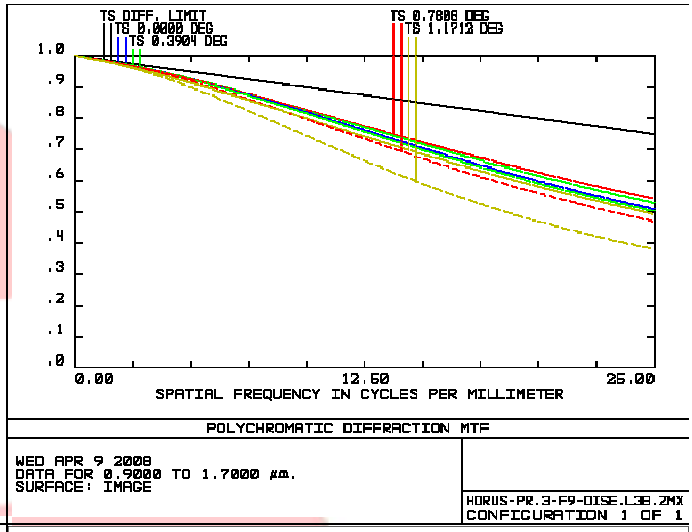
Focal length	75-500 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	15.6-2.35 degrees
Max aperture	F/N = 6
Object format	N.A.
Min working distance	15000 mm
Zoom value	6.7
Focus	compensated
Iris	Max F/N = 6 Min F/N = 16

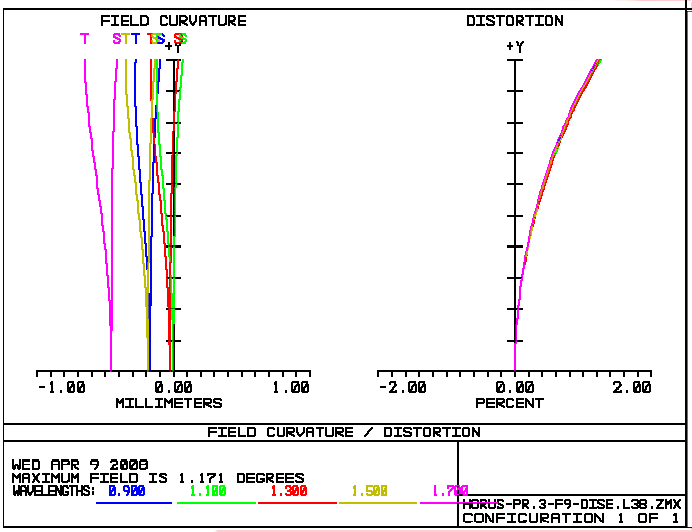
N. of elements	12
Dimensions	Dia 180x 530 mm
Weight	9 Kg
Options	
Tele Lens Position	-
Motorized focus	Upon request
Motorized iris	Yes
Motorized zoom	Yes
Other mount type	Upon request
Customization	Upon request

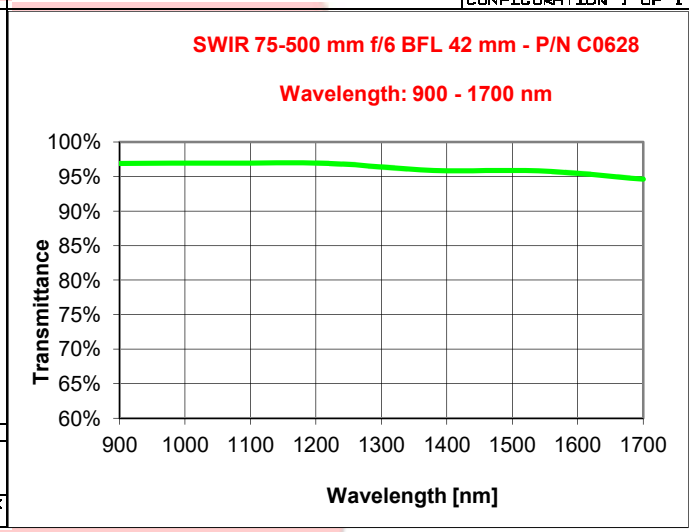
P/N	*wavelength range*	*mount type*	*note*
C0628.015	900-1700 nm	Canon	Macro motorized working distance from 15 m to infinity
C0628.016		Nikon	
C0628.017		M42 Screw	
C0628.025	1700-2300 nm	Canon	
C0628.026		Nikon	
C0628.027		M42 Screw	
C0628.035	900-2300 nm	Canon	
C0628.036		Nikon	
C0628.037		M42 Screw	

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm

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%).







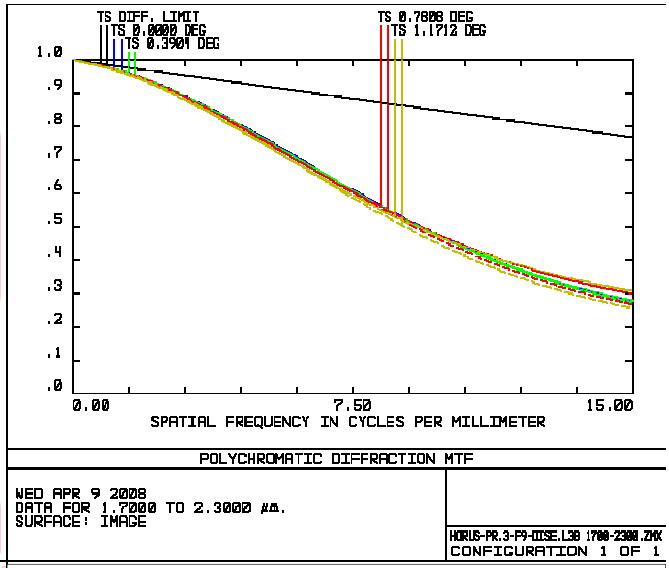
Optical parameters for wavelength range 0.9 – 1.7 µm

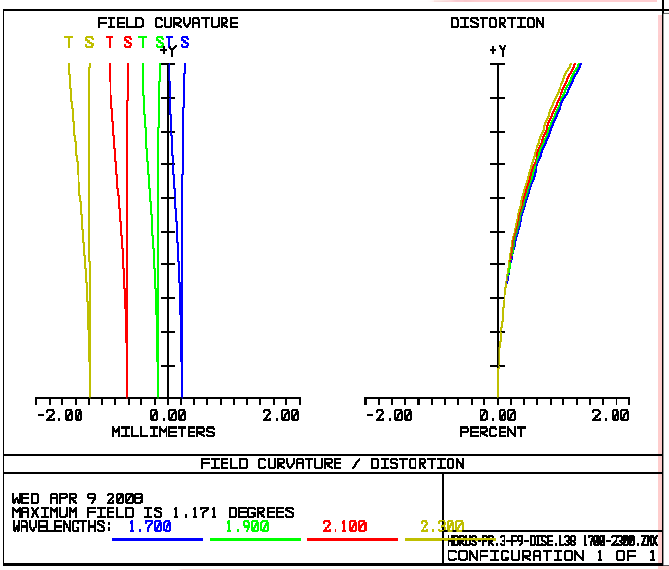
Resolution	MTF > 40%@25lp/mm
Distortion	< 2%
Average axial chromatic aberration	< 0.139 mm

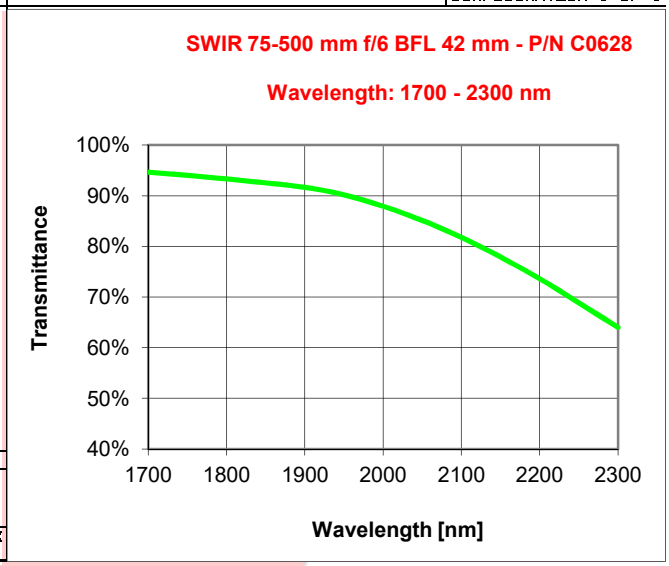
Glass Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	< 14%

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm

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%).







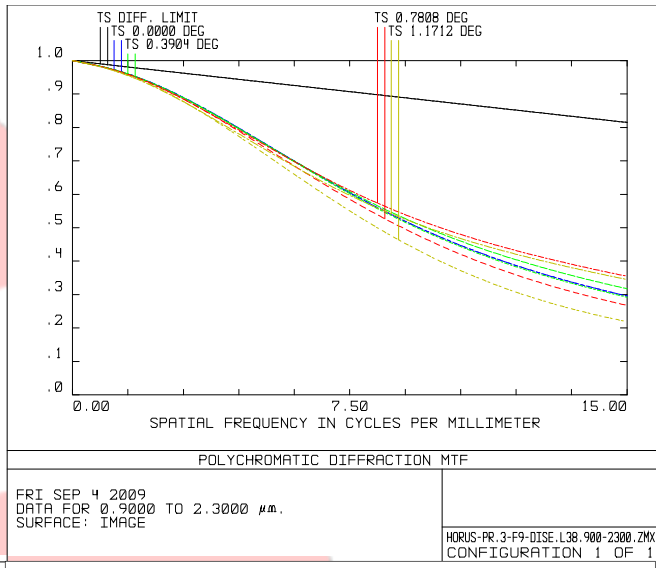
Optical parameters for wavelength range 1.7 – 2.3 µm

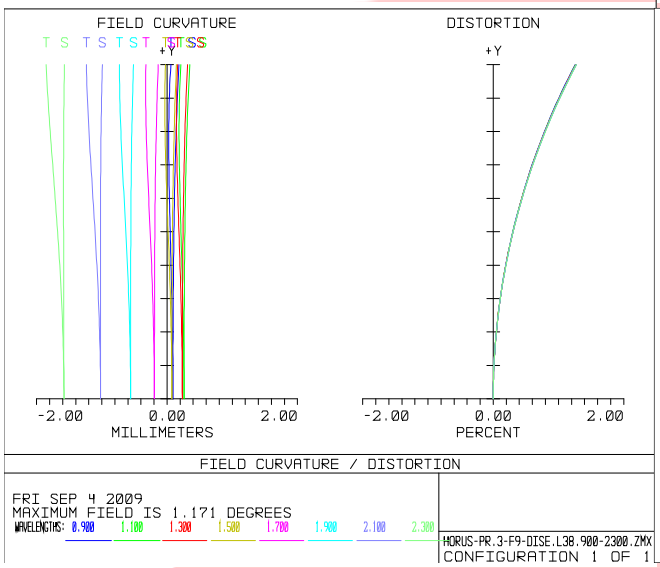
Resolution	MTF > 25%@15lp/mm
Distortion	< 2%

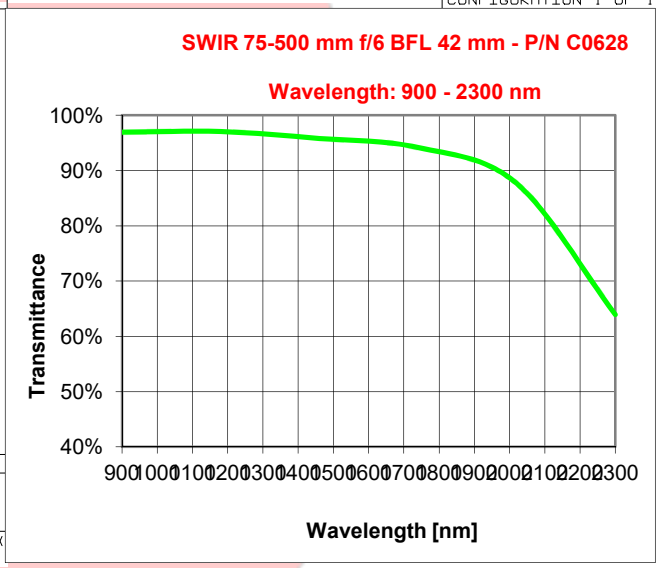
Glass Transmission without coating	> 65%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm

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 – 2.3 μm	

Resolution	MTF > 20%@15lp/mm	Glass Transmission without coating	> 65%
Distortion	< 2%	Antireflection Coating	R ≤ 1%

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

Electrical data & interfaces

ZOOM FUNCTION	
Motors Nominal Voltages	12 VDC
Motors Maximum Power	0.8 watts (over two different motors)
Encoder Maximum Voltages	4.5 – 5-5 VDC
Encoder Maximum Power	0.1 watts (over two different encoders)
Lines per revolution	2560

IRIS FUNCTION	
Motor Nominal Voltages	12 VDC
Motor Maximum Power	0.4 watts
Encoder Maximum Voltages	4.5 – 5-5 VDC
Encoder Maximum Power	0.05 watts
Lines per revolution	2560

CONTROLLER	
Controllers Nominal Voltages	12-28 VDC
Controllers Maximum Continuos current	5 Amp
Controllers Maximum Peak current	10 Amp
PWM switching frequency	62.5 kHz
Serial Port Interface	RS232 – 9600 (1200, 2400, 4800, 19200)
Program Memory	Serial EEPROM – 7936

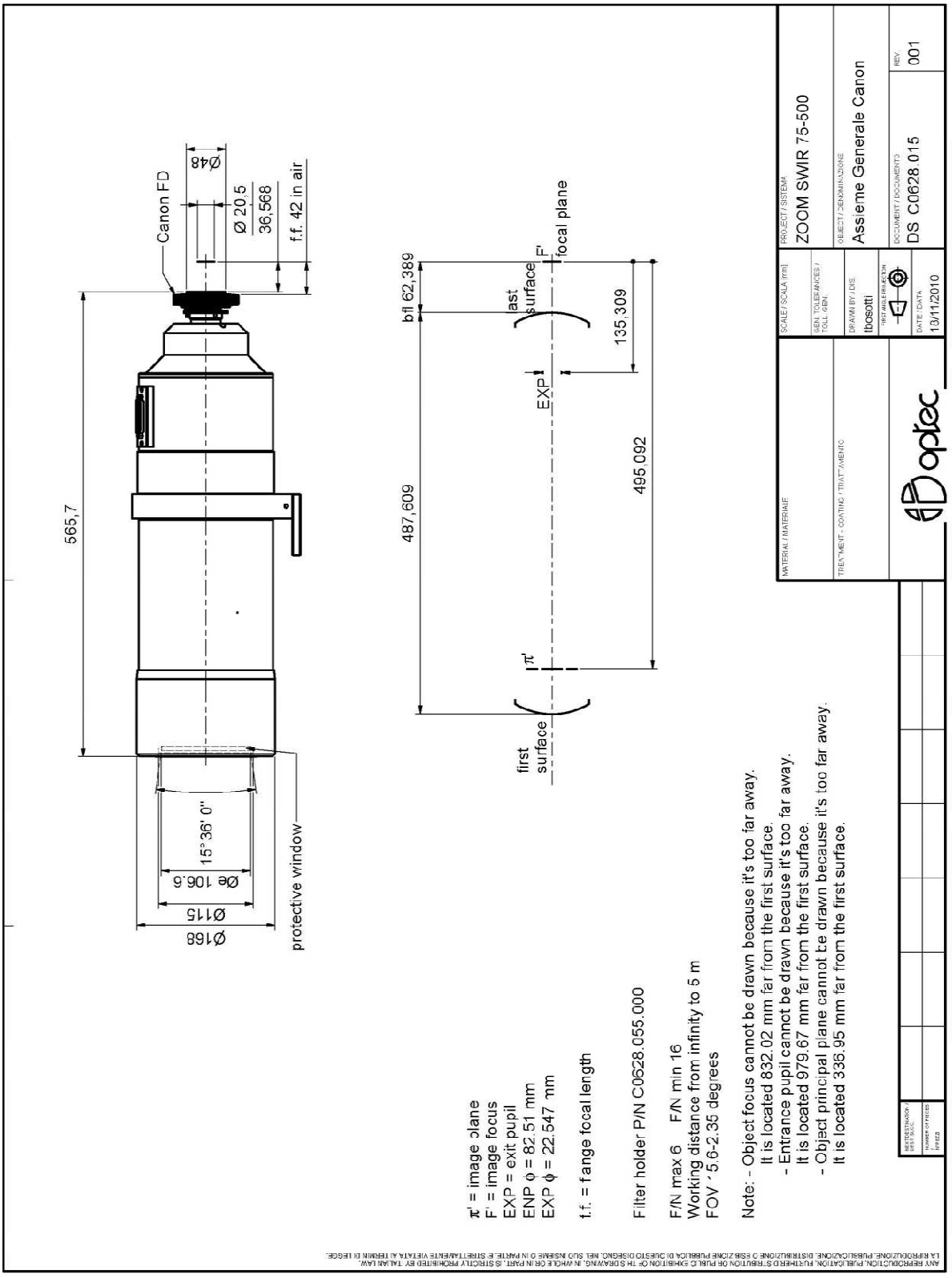
FOCUS FUNCTION
Automatic focus compensation over full zoom range
Focus adjustment can be manually performed to change the working distance: mimimum working distance is 15 m

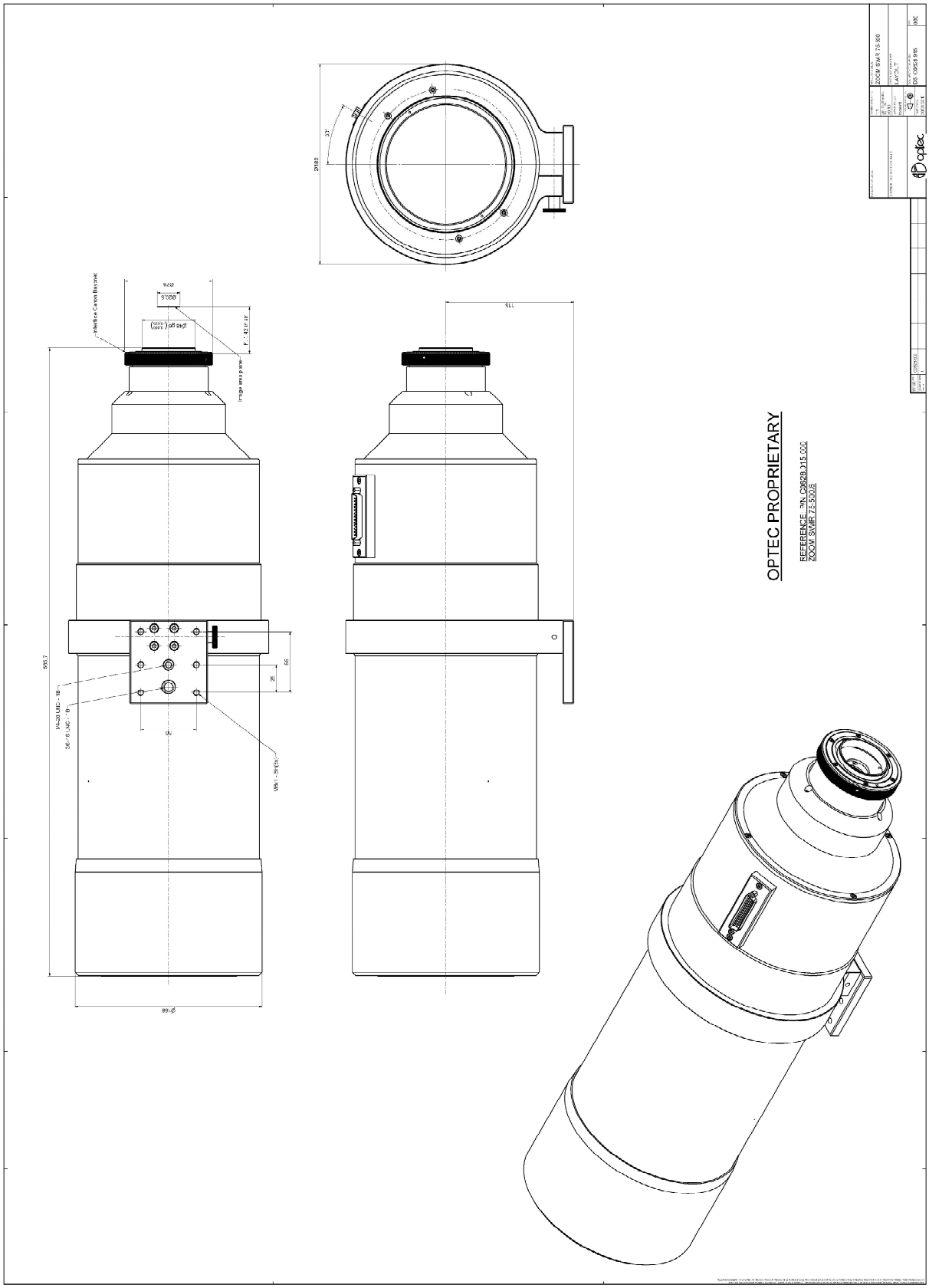
LENS INTERFACE	
Standard	The standard version is provided with Canon F-Mount
Options	Other interfaces can be provided like Nikon F-Mount
Customized interfaces can be also considered upon request	

MOUNTING
Lens is able to support the camera
Special interface for tripod installation is also provided

DB25M connector Pin list

PIN	DESCRIPTION
1	Zoom 1 – Motor-
2	Zoom 1 - +5V
3	Zoom 1 – Channel B
4	Zoom 2 – Motor+
5	Zoom 2 - +5V
6	Zoom 2 – Channel A
7	Iris – Motor+
8	Iris - +5V
9	Iris – Channel A
10	Focus – Motor-
11	Focus - +5V
12	Focus – Channel B
13	Zoom 1 / Zoom 2 / Iris / Focus - GND
14	Zoom 1 – Motor+
15	Zoom 1 – Channel A
16	Zoom 2 – Motor-
17	Zoom 2 – Channel B
18	Iris – Motor-
19	Iris – Channel B
20	Focus – Motor+
21	Focus – ChannelA
22	Zoom 1 – Stroke End
23	Zoom 2 – Stroke End
24	Iris – Stroke End
25	Focus – Stroke End



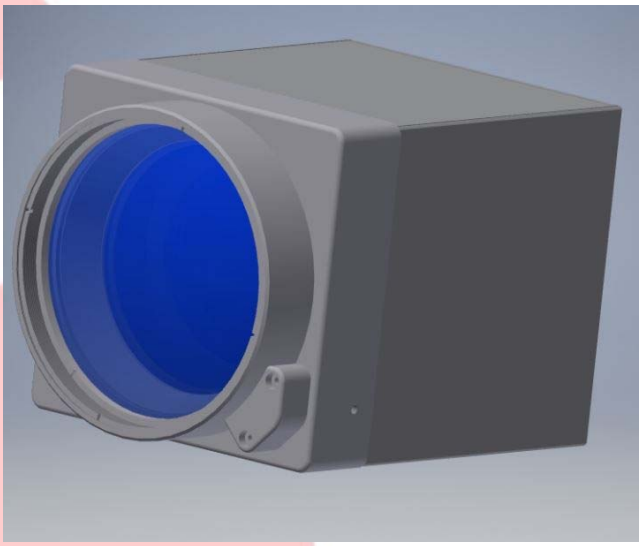


LENS ZOOM VIS-SWIR 24-140/4.5 C-mount

P/N C1319

General Description

This family of high resolution SWIR lenses image from 0.4 – 1.7 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest. In the picture is reported a customized version for a special application.



Optical and mechanical parameters

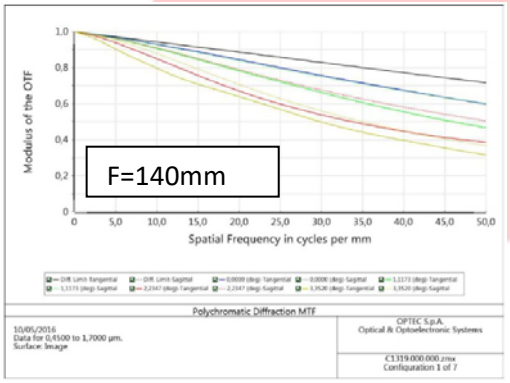
Focal length	24-140 mm
Image format (diagonal)	16.4 mm
F.O.V. (diagonal)	±3.35° - ±18.85°
Max aperture	F/N = 4.5
Object format	N.A.
Min working distance	N.A.
Zoom value	5.8x
Focus	compensated
Iris	Max F/N = 4.5 Min F/N = 11

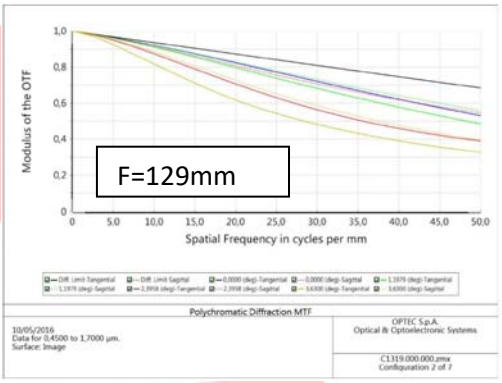
N. of elements	13
Dimensions	129 x 123 mm
Weight	NA
Options	
Tele Lens Position	-
Motorized focus	Yes
Motorized iris	Yes
Motorized zoom	Yes
Other mount type	Upon request
Customization	Upon request

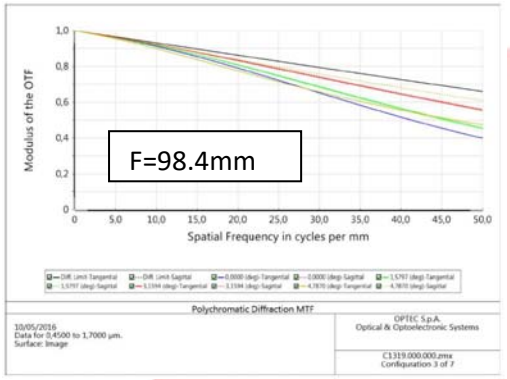
P/N	*wavelength range*	*mount type*	*note*
C1319.001	400-1700 nm	C-mount	-

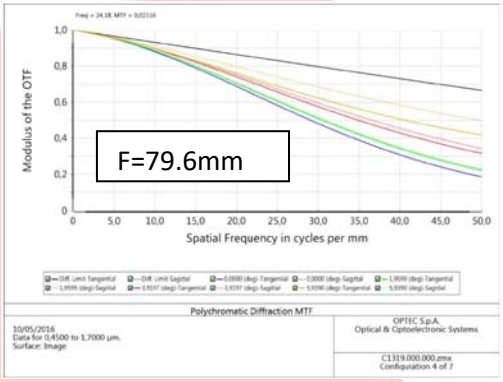
MTF, Field Curvature, Distortion and Transmission from 400 to 1700 nm

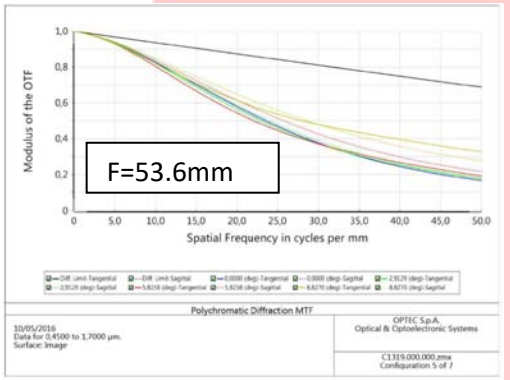
The calculated MTF values are displayed below and are verified at the maximum F/N and the best focus plane. The colored lines represent the F.O.V. starting from the center (0%) to the corner (100%).

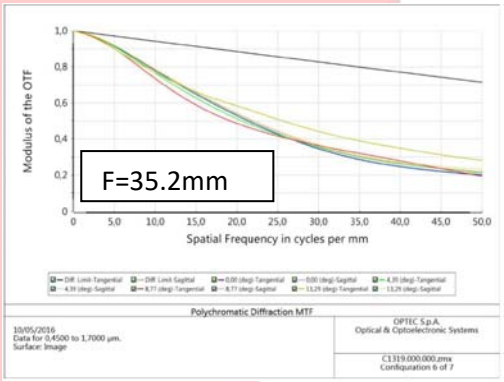


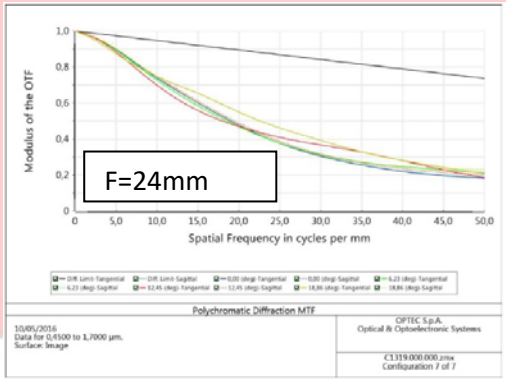


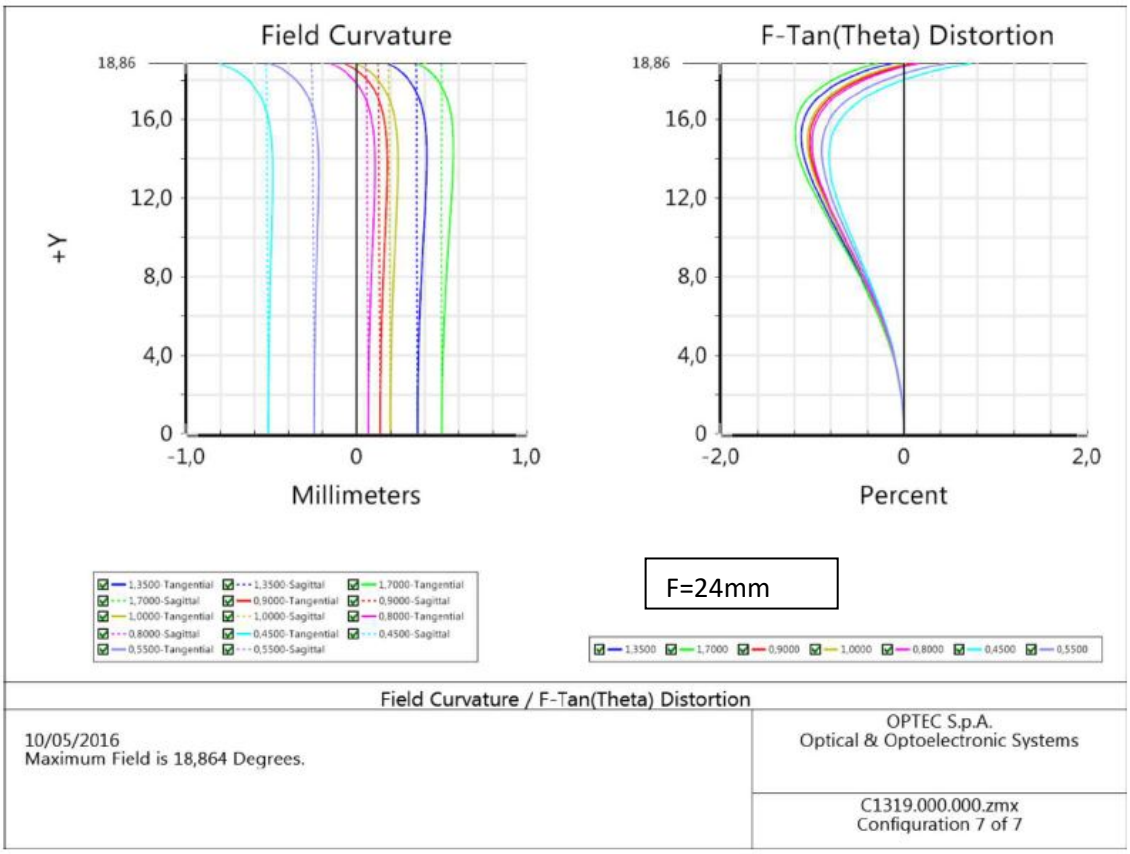


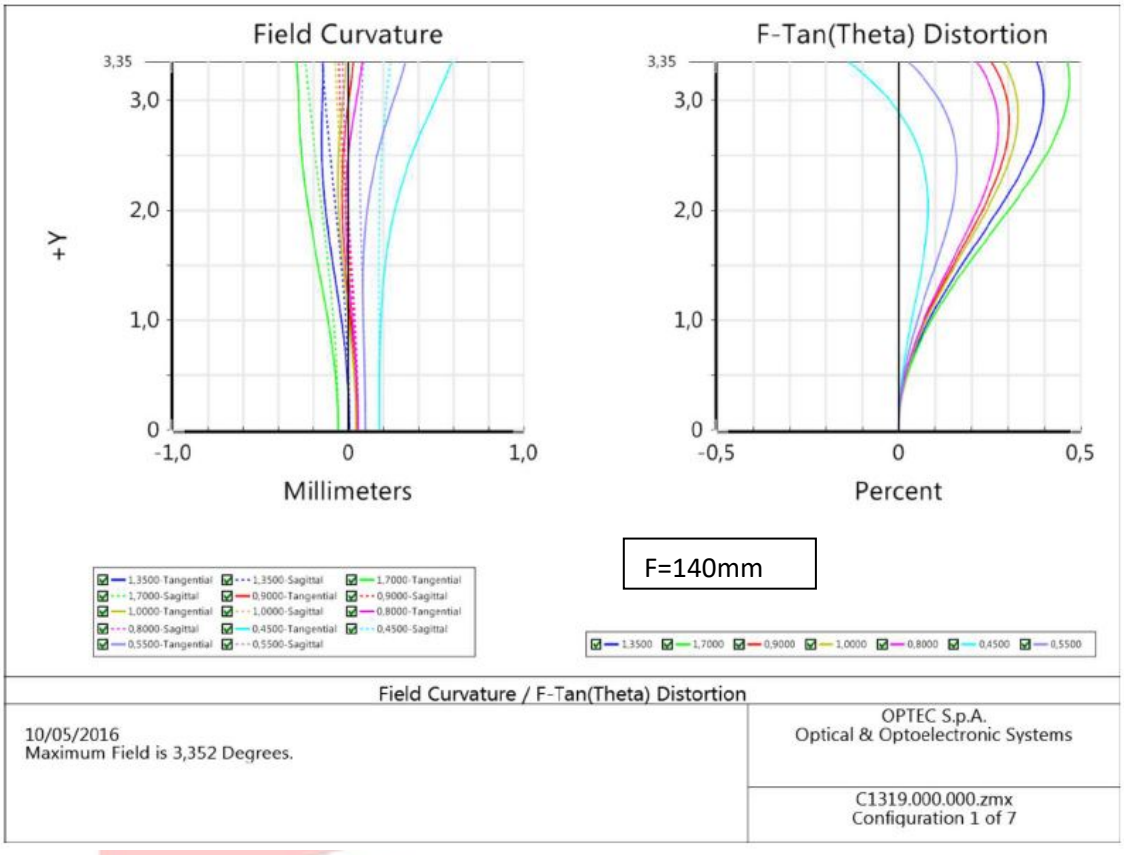


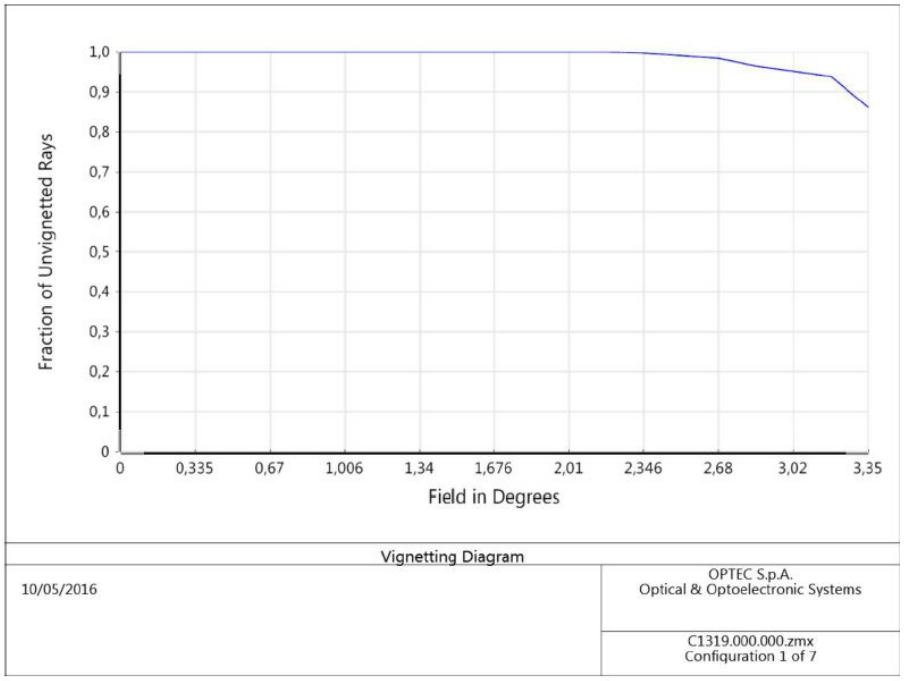


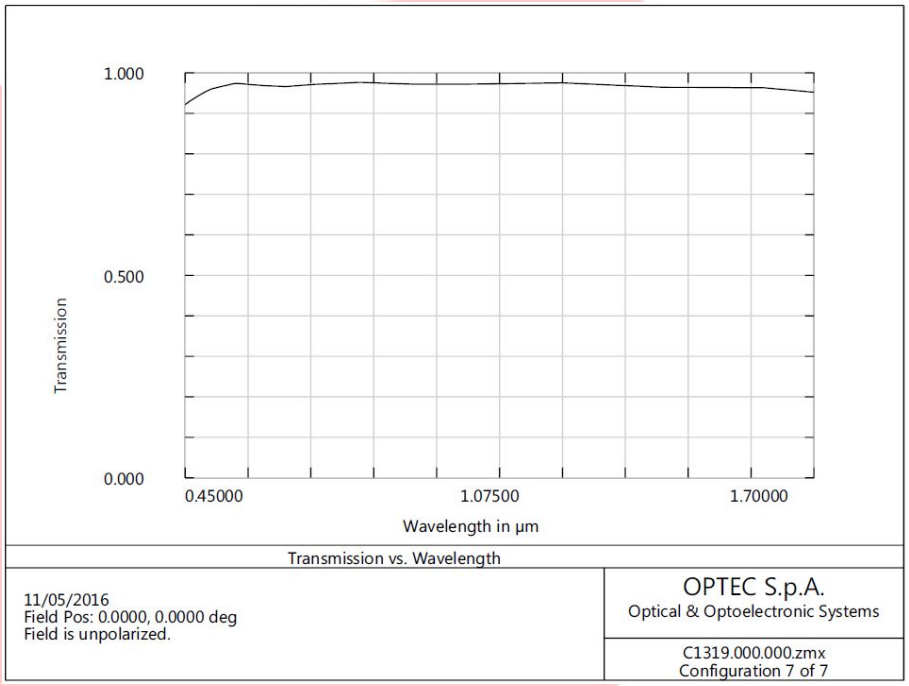












Optical parameters for wavelength range 0.4 – 1.7 µm

Resolution	MTF > 20%@50lp/mm	Glass Transmission without coating	> 75%
Distortion	< 1.5%	Antireflection Coating	R ≤ 1%
Average axial chromatic aberration		Vignetting	< 20%

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

Electrical data & interfaces

ZOOM FUNCTION	
Motors Nominal Voltages	
Motors Maximum Power	
Encoder Maximum Voltages	
Encoder Maximum Power	
Lines per revolution	

IRIS FUNCTION	
Motor Nominal Voltages	
Motor Maximum Power	
Encoder Maximum Voltages	
Encoder Maximum Power	
Lines per revolution	

CONTROLLER	
Controllers Nominal Voltages	
Controllers Maximum Continuos current	
Controllers Maximum Peak current	
PWM switching frequency	
Serial Port Interface	
Program Memory	

FOCUS FUNCTION
Automatic focus compensation over full zoom range
Focus adjustment can be manually performed to change the working distance: mimimum working distance is xx m

LENS INTERFACE	
Standard	
Options	
Customized interfaces can be also considered upon request	

MOUNTING
Lens is able to support the camera
Special interface for tripod installation is also provided

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 μm) and sized to accomadate 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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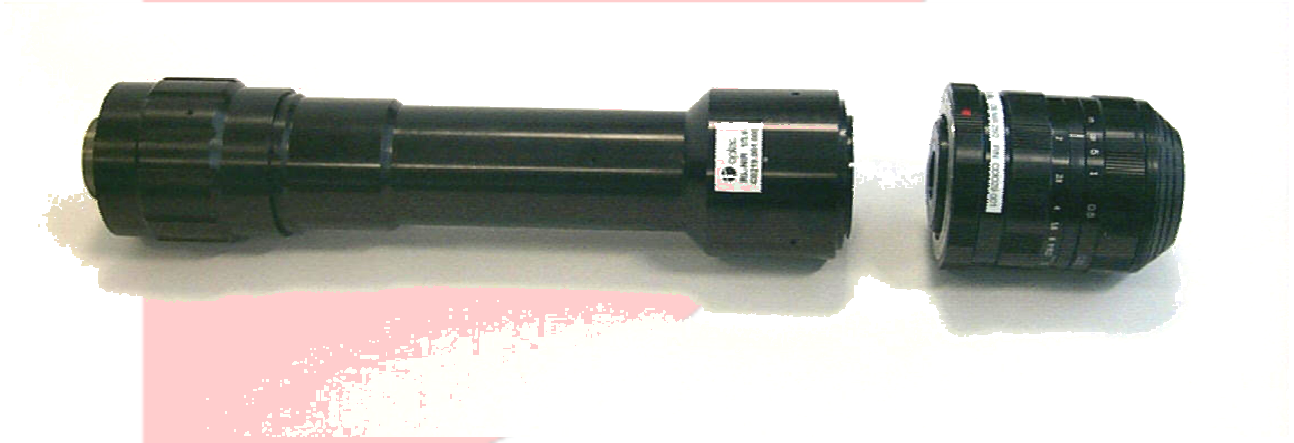
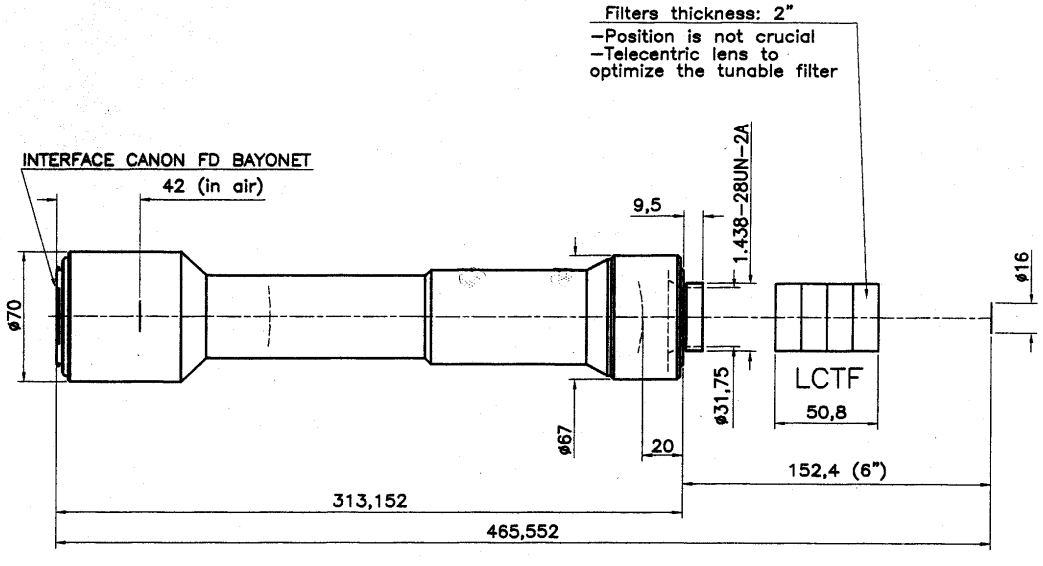


Optical and mechanical parameters

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
Options	
Motorized focus	Upon request
Motorized iris	Yes
Motorized zoom	Yes
Other mount type	Upon request
Customization	Upon request

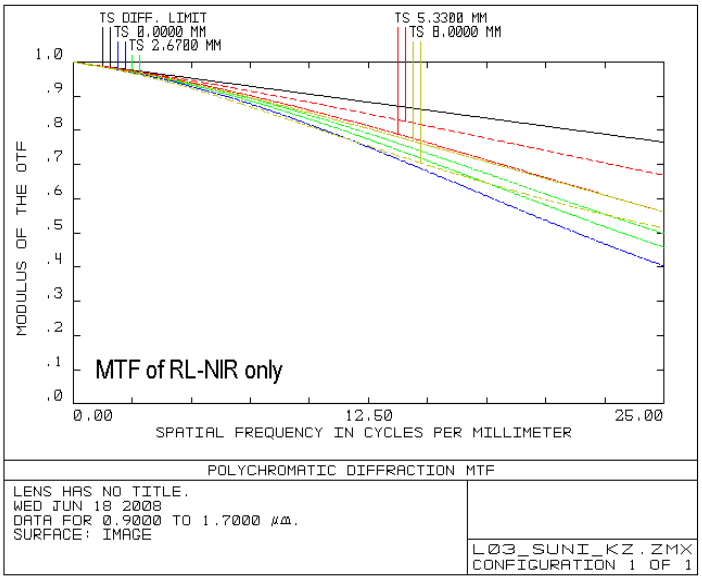
P/N	*wavelength range*	*mount type*	*note*
C0219.001	900-1700 nm	Canon or Nikon Front Interface Customized rear interface	
C0219.011	1700-2300 nm		
C0219.021	900-2300 nm		

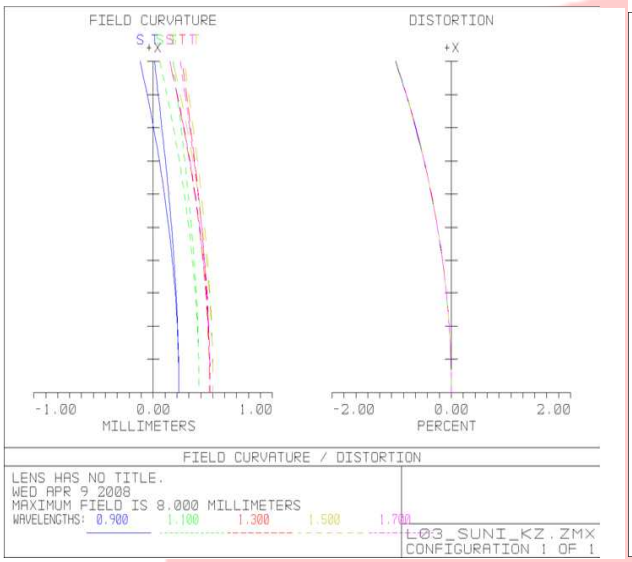


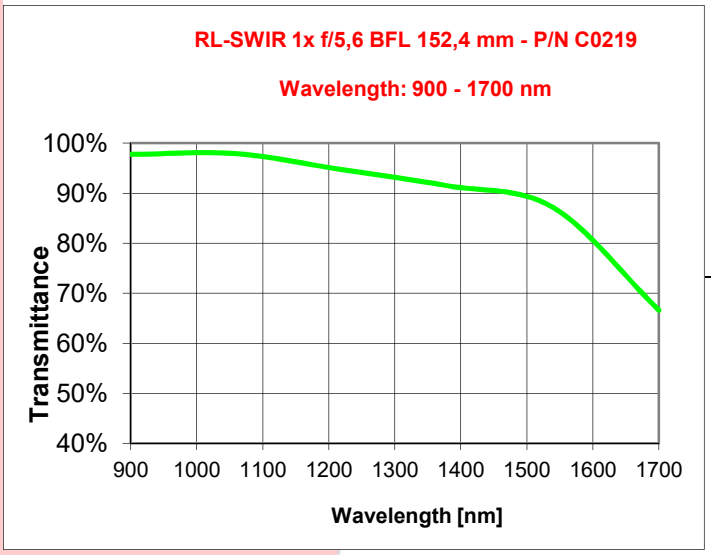
More details are available upon request and technical drawings are open for the customers and their needs.

MTF, Field Curvature, Distortion and Transmission from 900 to 1700 nm O f 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%).





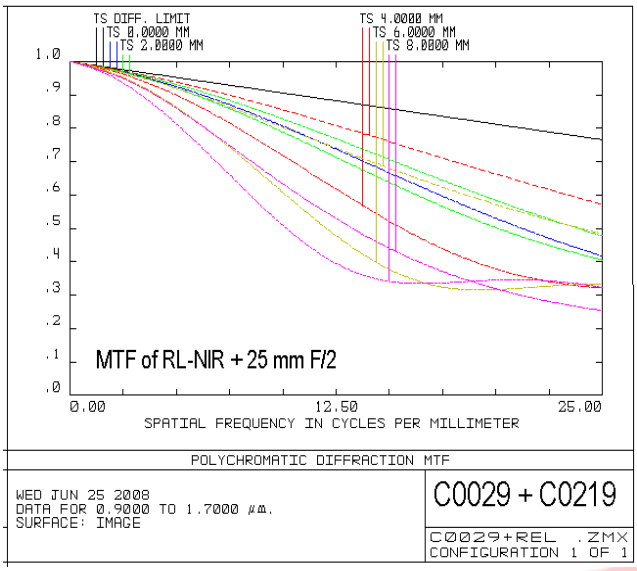


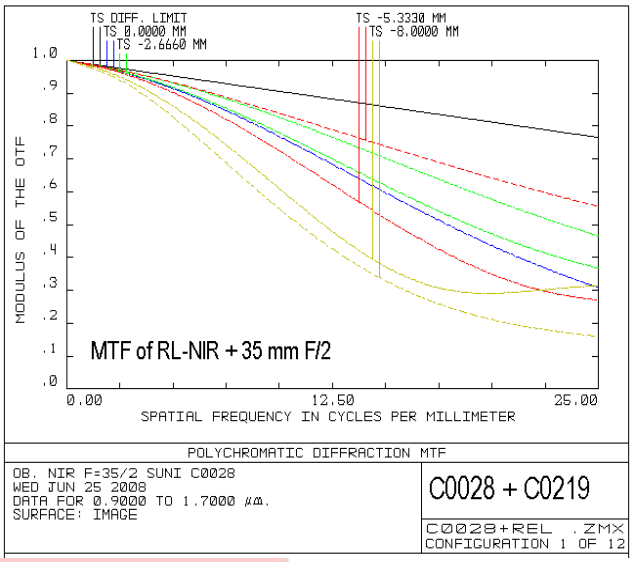
Optical parameters for wavelength range 0.9 – 1.7 μm

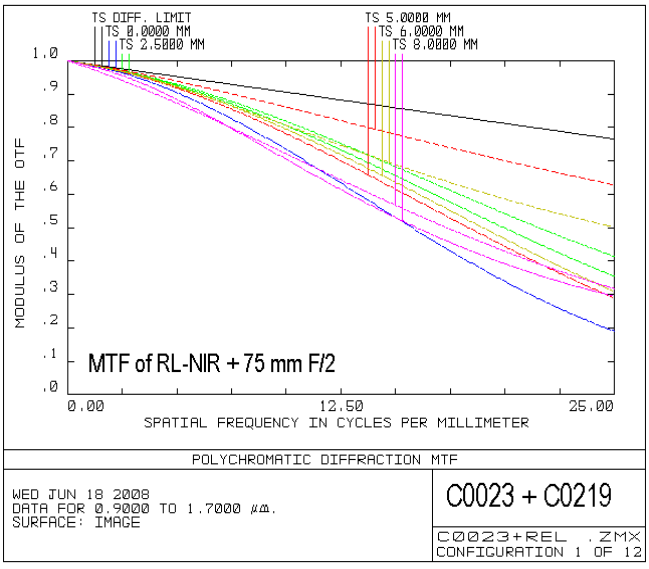
Resolution	MTF > 40%@25lp/mm
Distortion	< 2%
Average axial chromatic aberration	< 0.176 mm

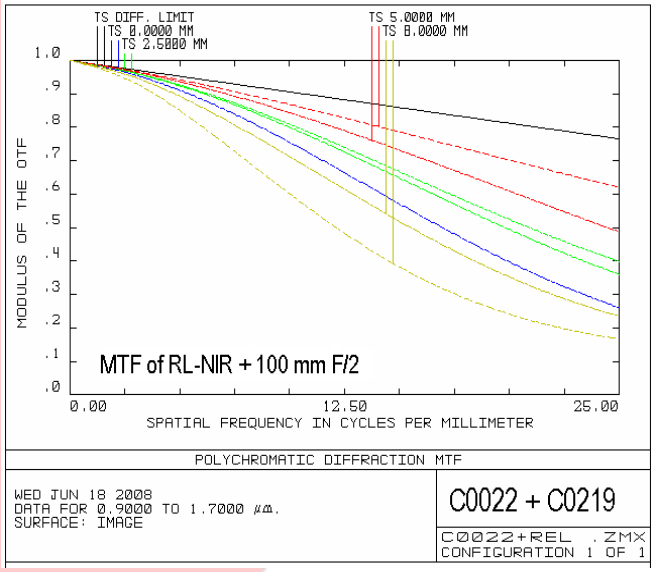
Glass Transmission without coating	> 65%
Antireflection Coating	R ≤ 1%
Vignetting	< 14%

MTF from 900 to 1700 nm





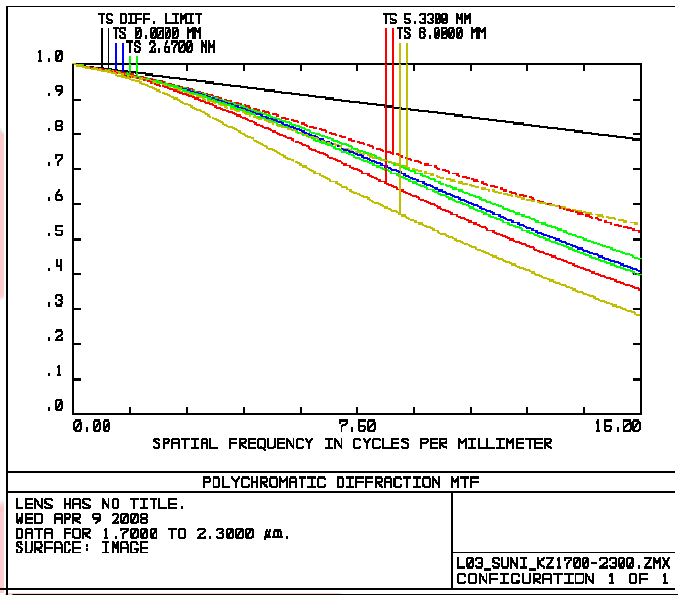


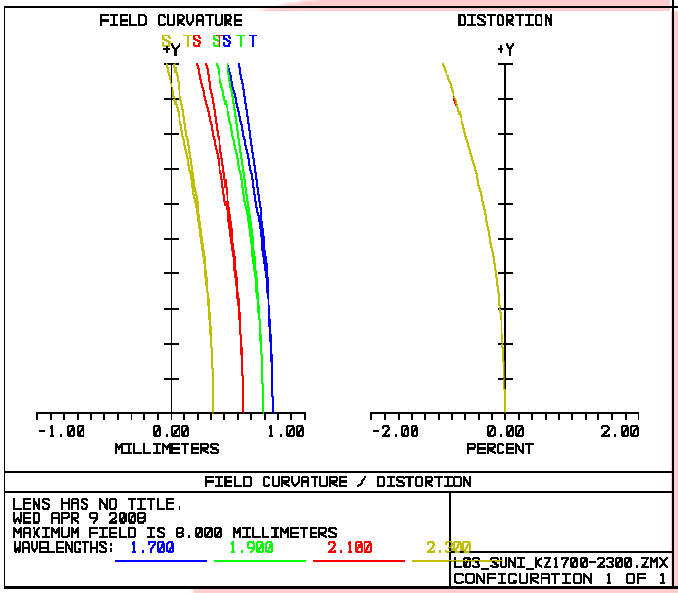


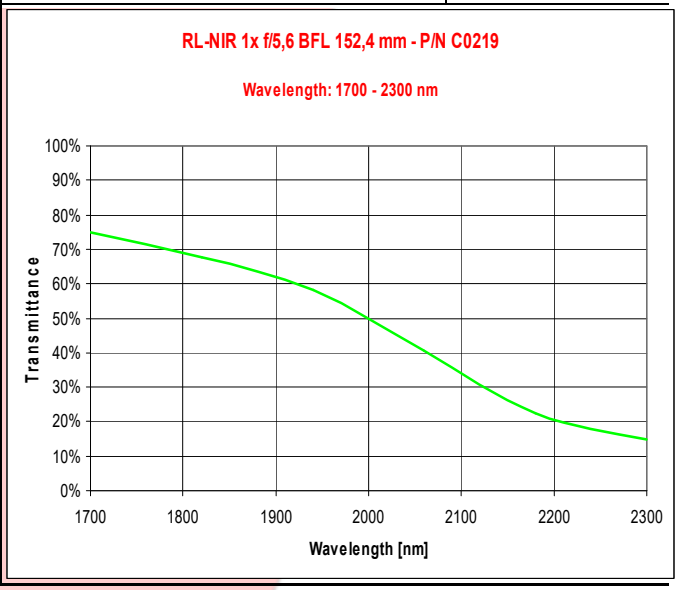
The optimum F/N (vis-à-vis the aperture of the LCTF device) and excellent transmission are obtained using special optical glasses. The added bonus of superior transmission in the visible range (0.4 – 0.7 μm) suits alignment and tracking applications.

MTF, Field Curvature, Distortion and Transmission from 1700 to 2300 nm O f 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%).







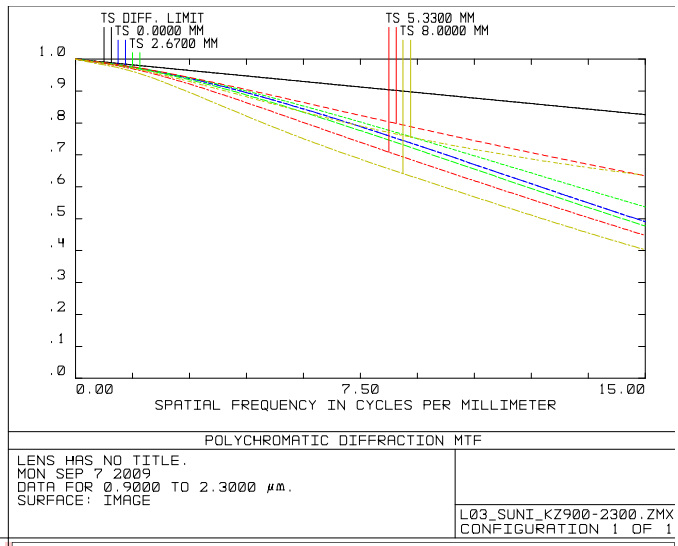
Optical parameters for wavelength range 1.7 – 2.3 µm

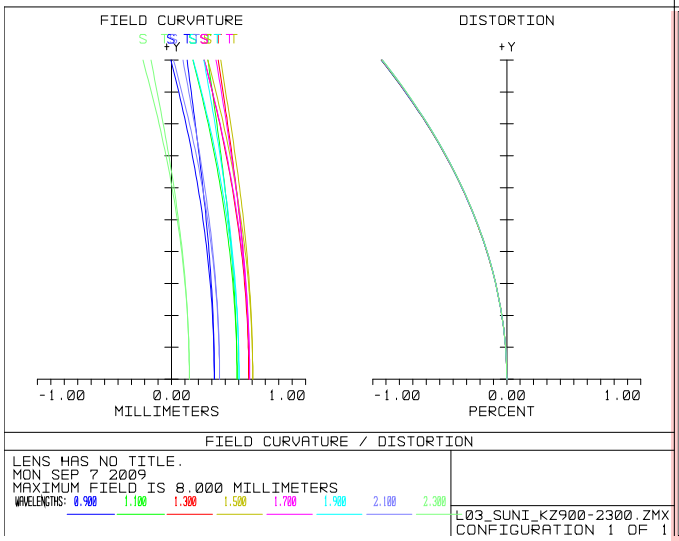
Resolution	MTF > 30%@15lp/mm
Distortion	< 2%

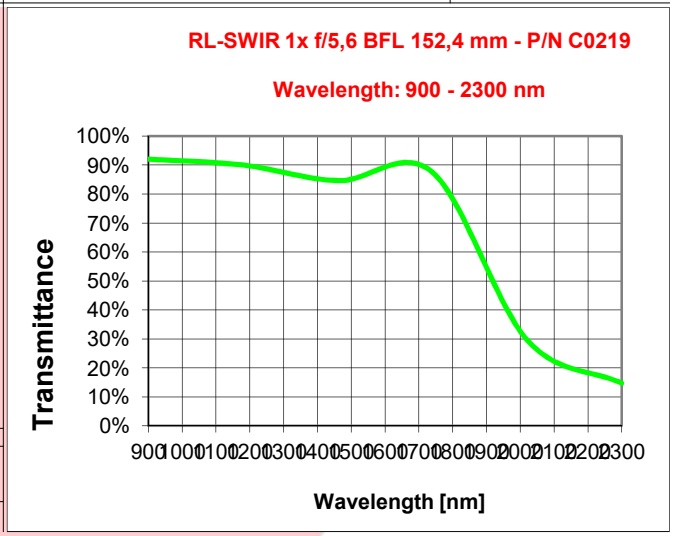
Glass Transmission without coating	> 15%
Antireflection Coating	R ≤ 1%

MTF, Field Curvature, Distortion and Transmission from 900 to 2300 nm O f 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 – 2.3 µm

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

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

Apochromatic Lens OB V-SWIR 16/1.6 – P/N C1326

General Description

A new high resolution V-SWIR apochromatic lenses image from 0.4 – 1.7 μm making them especially well-suited for PCB inspection, special laser applications, surveillance & defense, alignment and tracking.
A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters

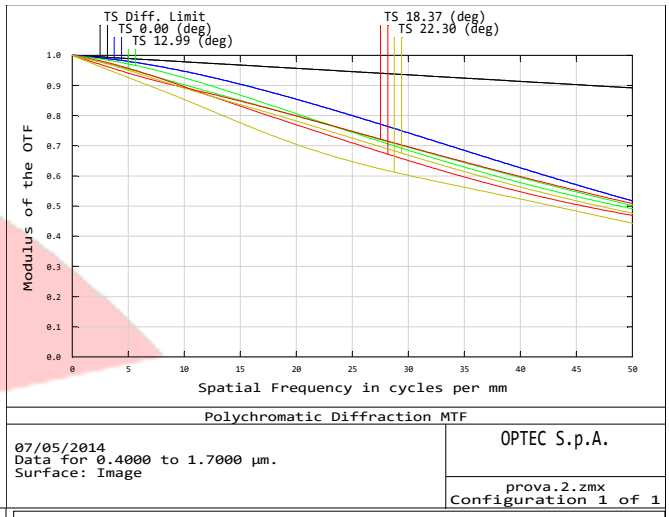
Focal length	16 mm
Image format (diagonal)	12.3 mm
F.O.V. (diagonal)	±21 degrees
Max aperture	F/N = 1.6
Object format	N.A.
Min working distance	1000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 1.6 Min F/N = 11

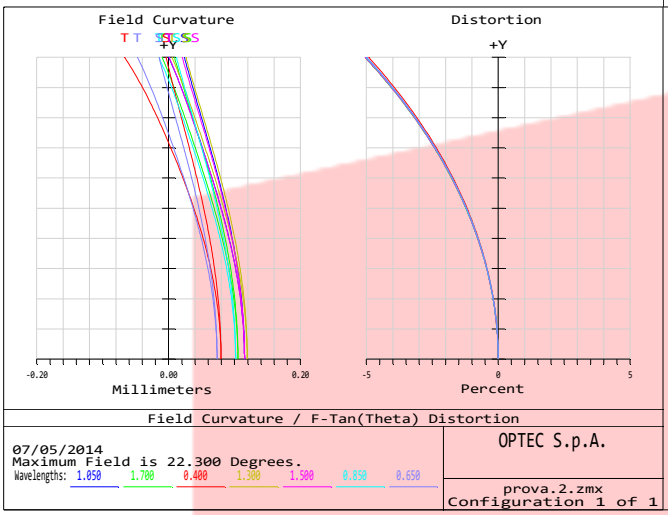
N. of elements	9
Dimensions	Dia 40 x 105 mm
Weight	0.400 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A
Other mount type	Upon request
Customization	Upon request

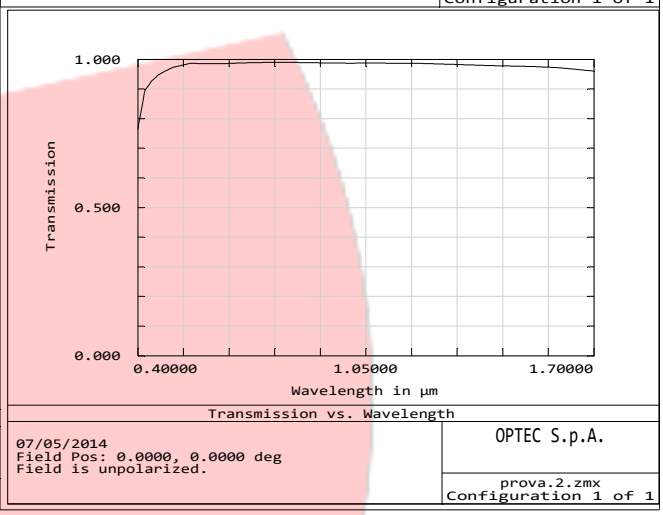
P/N	***wavelength range***	***mount type***	***Note***
C1326.001	400-1700 nm	C-Mount	-

MTF, Field Curvature, Distortion and Transmission from 400 to 1700 nm

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 0.4 – 1.7 µm

Resolution	MTF > 40%@50lp/mm
Distortion	< 5%
Average axial chromatic aberration	0.018 mm

Glass Transmission without coating	> 80%
Antireflection Coating	R ≤ 1%
Vignetting	< 1%

Outline Dimensions & Technical Notes

All the dimensions are reported to help the customer, mainly to define the interface with the cameras. More details are available upon request and technical drawings are open for the customers and their needs.

Apochromatic Lens OB V-SWIR F16/4 – P/N C1038

General Description

A new high resolution V-SWIR apochromatic lenses image from 0.4 – 1.7 μm making them especially well-suited for PCB inspection, special laser applications, surveillance & defense, alignment and tracking.

A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

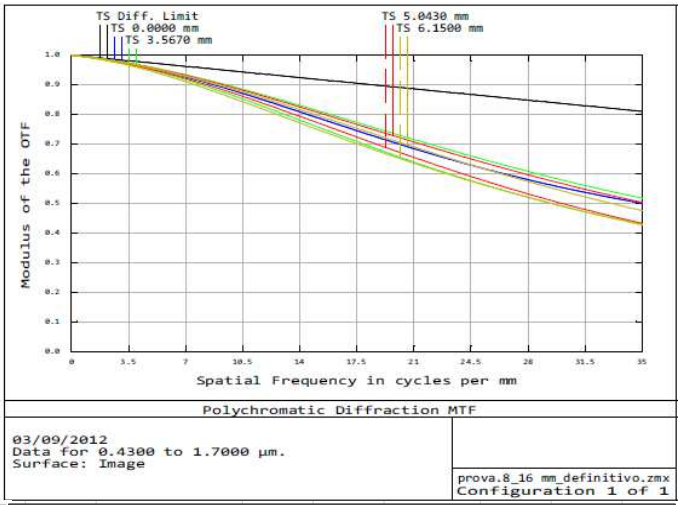
Optical and mechanical parameters	
Focal length	16 mm
Image format (diagonal)	12.3 mm
F.O.V. (diagonal)	42 degrees
Max aperture	F/N = 4
Object format	N.A.
Min working distance	5000 mm (without refocus) 250 mm (with focus)
Zoom value	N.A.
Focus	Manual
Iris	Fixed

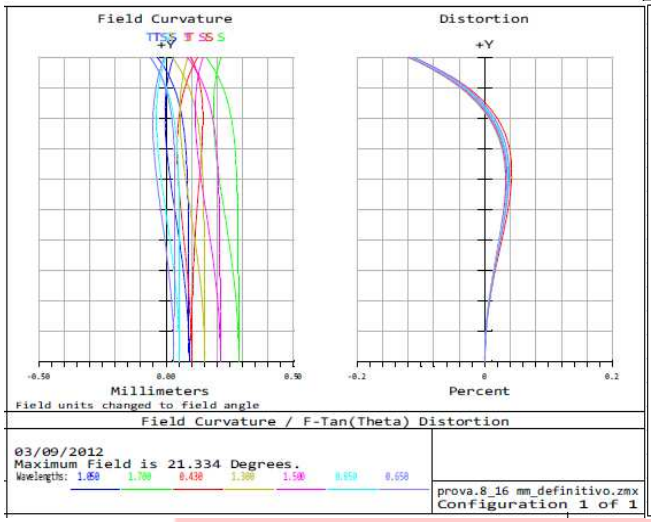
N. of elements	6
Dimensions	Dia 19x17.6 mm
Weight	10 gr.
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A
Other mount type	Upon request
Customization	Upon request

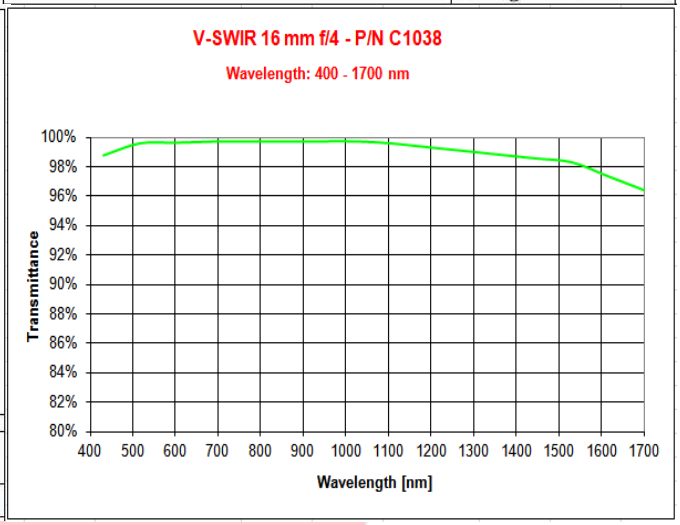
P/N	***wavelength range***	***mount type***	***note***
C1038.001	400-1700 nm	M14 Screw	-

MTF, Field Curvature, Distortion and Transmission from 400 to 1700 nm

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%).







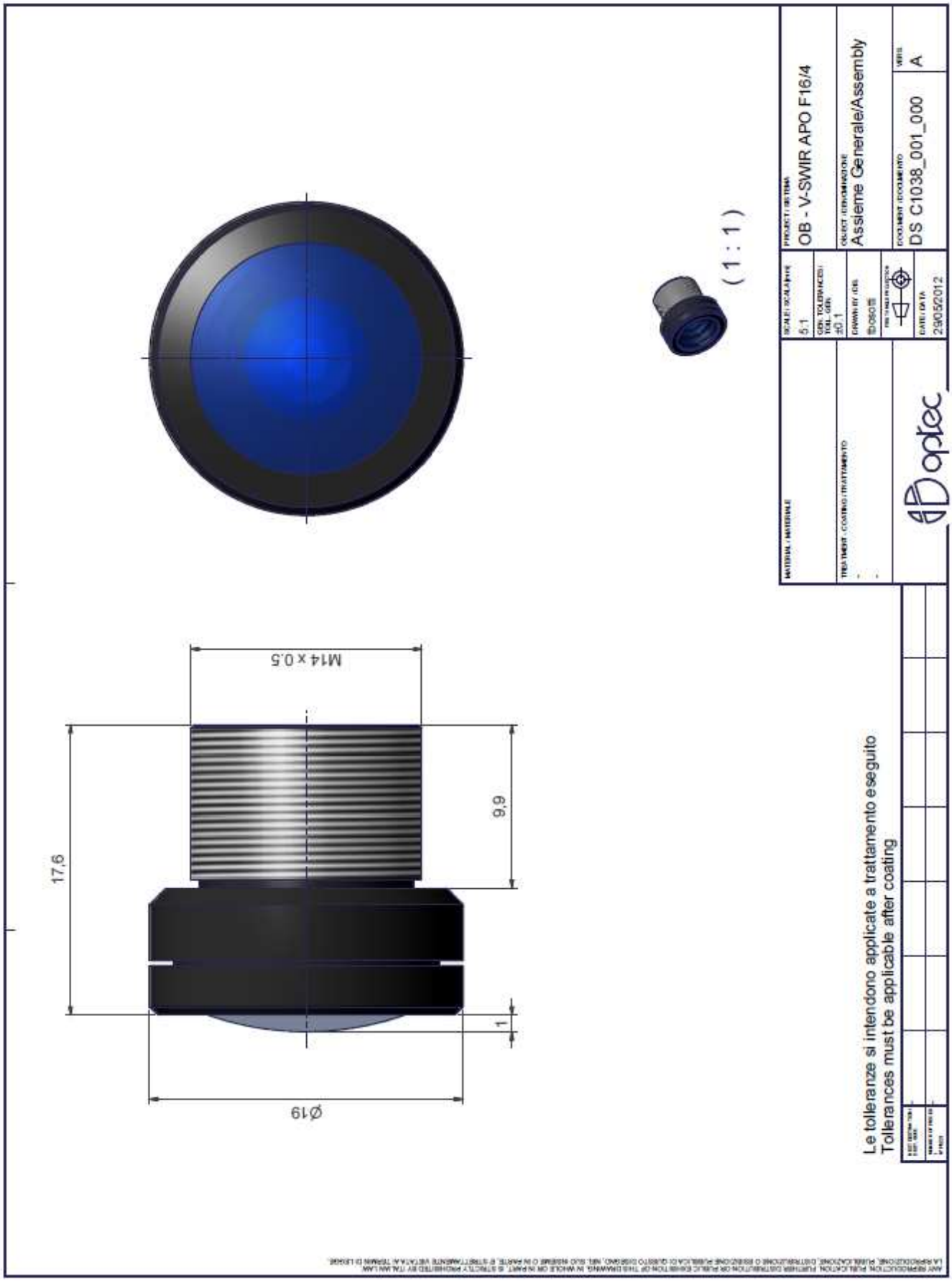
Optical parameters for wavelength range 0.4 – 1.7 µm

Resolution	MTF > 40%@35lp/mm
Distortion	< 0.2%
Average axial chromatic aberration	0.018 mm

Glass Transmission without coating	> 95%
Antireflection Coating	R ≤ 1%
Vignetting	< 1%

Outline Dimensions & Technical Notes

All the dimensions are reported to help the customer, mainly to define the interface with the cameras. More details are available upon request and technical drawings are open for the customers and their needs. The main parameters are reported in the front table and here below.



Apochromatic Lens OB V-SWIR 25/2 – P/N C0952

General Description

A new high resolution V-SWIR apochromatic lenses image from 0.4 – 1.7 μm making them especially well-suited for PCB inspection, special laser applications, surveillance & defense, alignment and tracking.
A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

Optical and mechanical parameters	

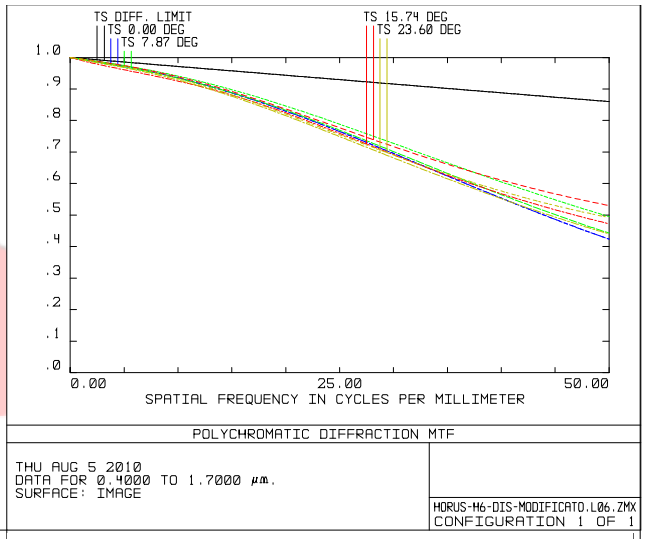
Focal length	25 mm
Image format (diagonal)	20.5 mm
F.O.V. (diagonal)	44.6 degrees
Max aperture	F/N = 2
Object format	N.A.
Min working distance	1000 mm
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2 Min F/N = 11

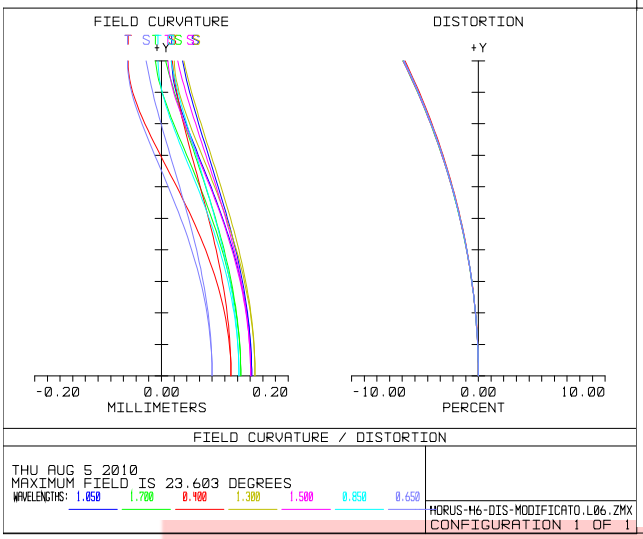
N. of elements	9
Dimensions	Dia 60x 114 mm
Weight	0.450 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A
Other mount type	Upon request
Customization	Upon request

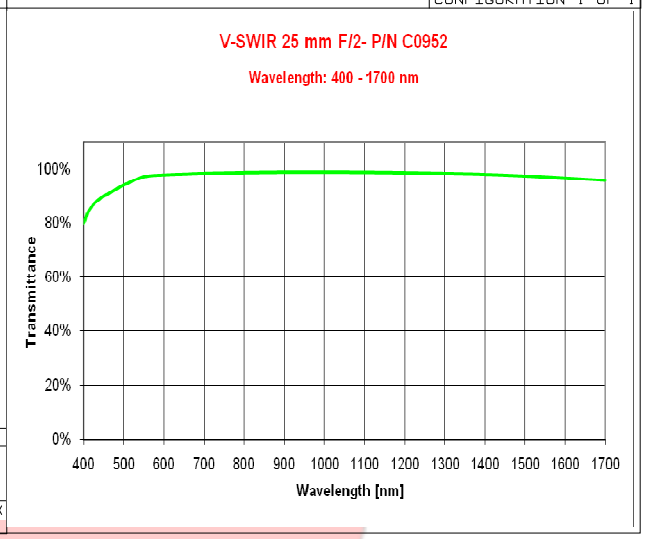
P/N	***wavelength range***	***mount type***	***note***
C0952.001	400-1700 nm	C-Mount	-

MTF, Field Curvature, Distortion and Transmission from 400 to 1700 nm

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%).







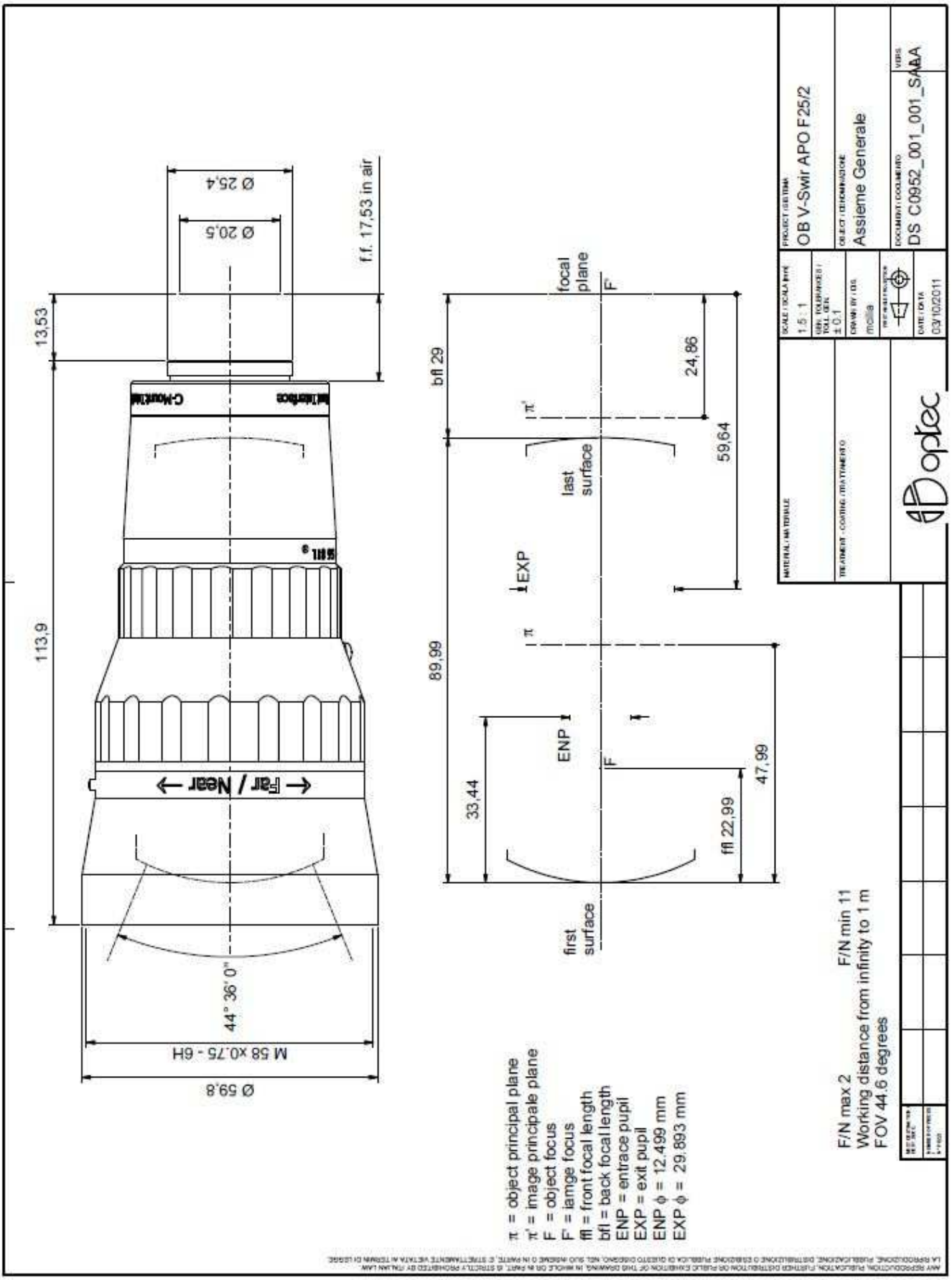
Optical parameters for wavelength range 0.4 – 1.7 µm

Resolution	MTF > 45%@50lp/mm
Distortion	< 6%
Average axial chromatic aberration	0.018 mm

Glass Transmission without coating	> 80%
Antireflection Coating	R ≤ 1%
Vignetting	< 9%

Outline Dimensions & Technical Notes

All the dimensions are reported to help the customer, mainly to define the interface with the cameras. More details are available upon request and technical drawings are open for the customers and their needs. The main parameters are reported in the front table and here below.



Apochromatic Lens OB V-SWIR F100/2.0 – P/N C1602

General Description

A new high resolution V-SWIR apochromatic lenses image from 0.4 – 1.7 μm making them especially well-suited for PCB inspection, special laser applications, surveillance & defense, alignment and tracking.

A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest.

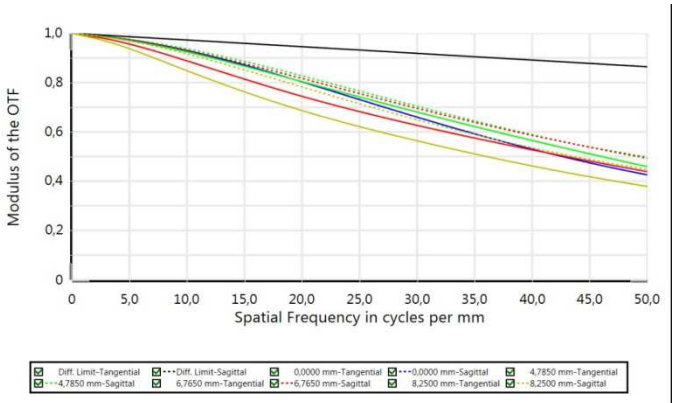
Optical and mechanical parameters	
Focal length	100 mm
Image format (diagonal)	16.6 mm
F.O.V. (diagonal)	9.43 degrees
Max aperture	F/N = 2
Object format	N.A.
Min working distance	7.5 m
Zoom value	N.A.
Focus	Manual
Iris	Max F/N = 2 Min F/N = 22

N. of elements	6
Dimensions	Dia 106 x 127 mm
Weight	1.6 Kg
Options	
Motorized focus	Upon request
Motorized iris	Upon request
Motorized zoom	N.A
Other mount type	Upon request
Customization	Upon request

P/N	***wavelength range***	***mount type***	***note***
C1602.001	400-1700 nm	Canon FD	With iris diaphragm
C1602.002	400-1700 nm	Nikon	With iris diaphragm

MTF, Field Curvature, Distortion and Transmission from 400 to 1700 nm

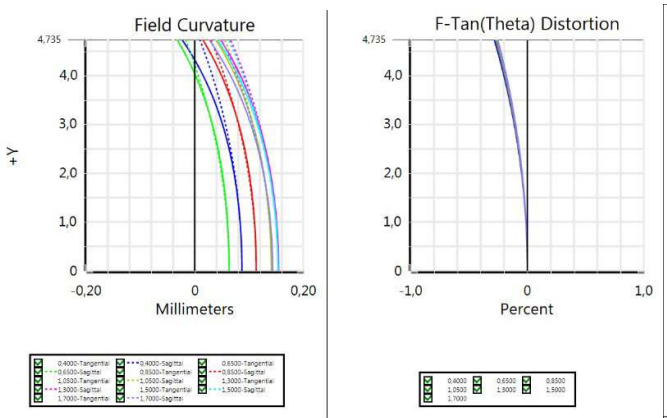
The calculated MTF values are displayed below and are verified at the maximum F/N and the best focus plane. The colored lines represent the F.O.V. starting from the center (0%) to the corner (100%).



Polychromatic Diffraction MTF

20/01/2017
Data for 0,4000 to 1,7000 µm.
Surface: Image
Legend items refer to Field positions

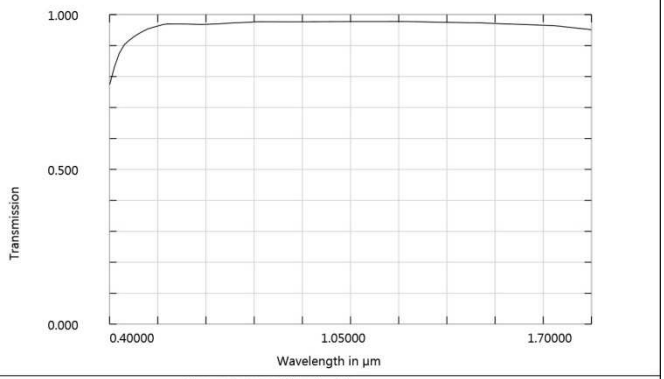
OPTEC S.p.A.
C1602.000.000.zmx
Configuration 1 of 1



Field Curvature / F-Tan(Theta) Distortion

20/01/2017
Maximum Field is 4,735 Degrees.
Legend items refer to Wavelengths

OPTEC S.p.A.
C1602.000.000.zmx
Configuration 1 of 1



Transmission vs. Wavelength

20/01/2017
Field Pos: 0.0000, 0.0000 DATA 3

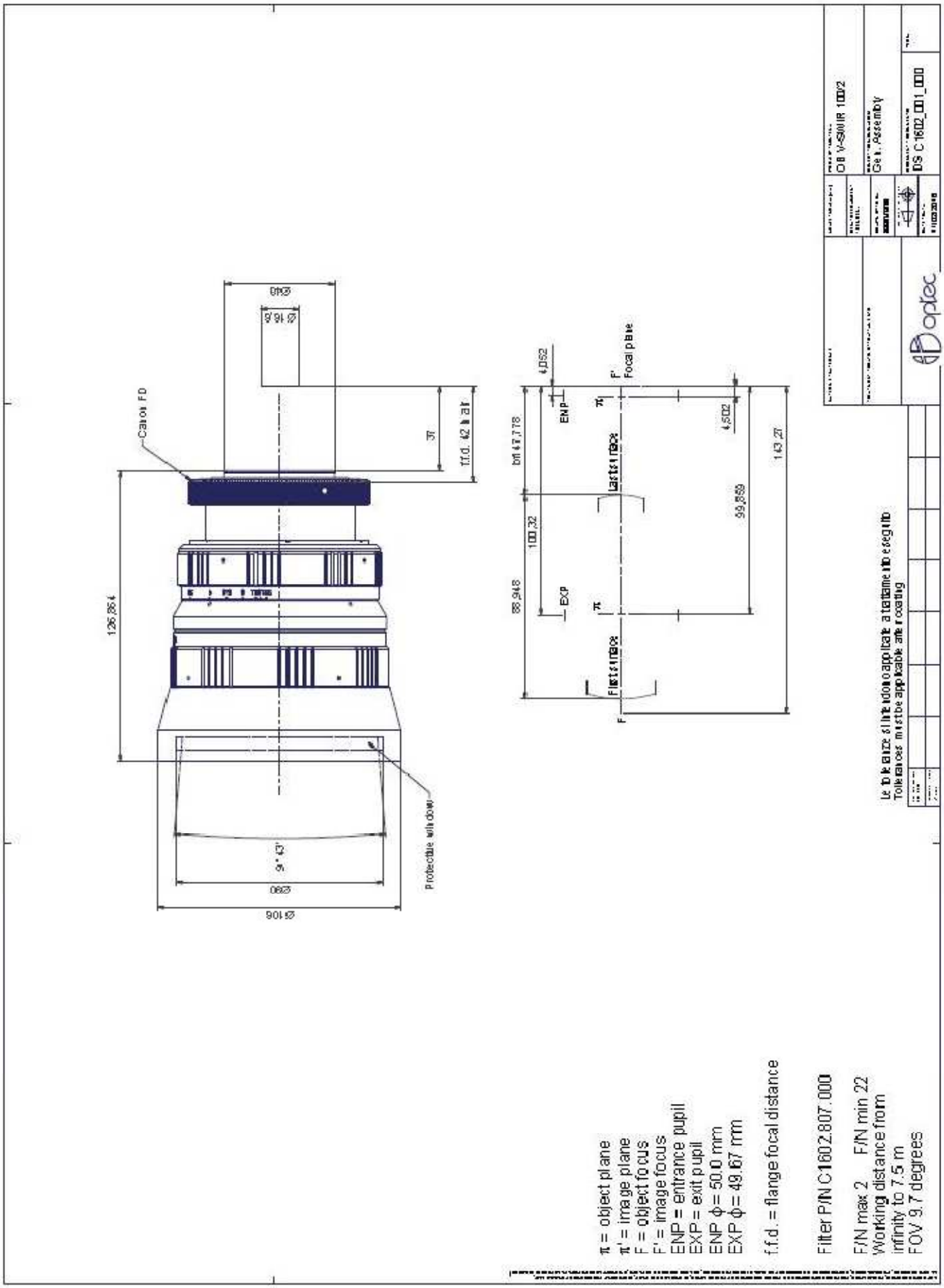
OPTEC S.p.A.
Optical & Optoelectronic Systems
C1602.000.000.zmx
Configuration 1 of 1

Optical parameters for wavelength range 0.4 – 1.7 µm	

Resolution	MTF > 40% @ 50lp/mm	Glass Transmission without coating	> 95 %
Distortion	< 0.5 %	Antireflection Coating	R ≤ 1 %
Average axial chromatic aberration	< 0.022 mm	Vignetting	< 1 %

Outline Dimensions & Technical Notes

All the dimensions are reported to help the customer, mainly to define the interface with the cameras. More details are available upon request and technical drawings are open for the customers and their needs. The main parameters are reported in the front table and here below.



LENS SWIR 2X Magnifier – P/N C0435

General Description

This family of high resoluton SWIR lenses image from 0.9 – 2.4 μm making them especially well-suited for PCB inspection, special laser applications, surveillance and alignment and tracking. A high F/N and excellent transmission characteristics allow superior imaging in these wavelengths of interest. To enlarge the variety of focal length, a special 2X magnifier lens is available to double the focal length lens available.

Optical and mechanical parameters

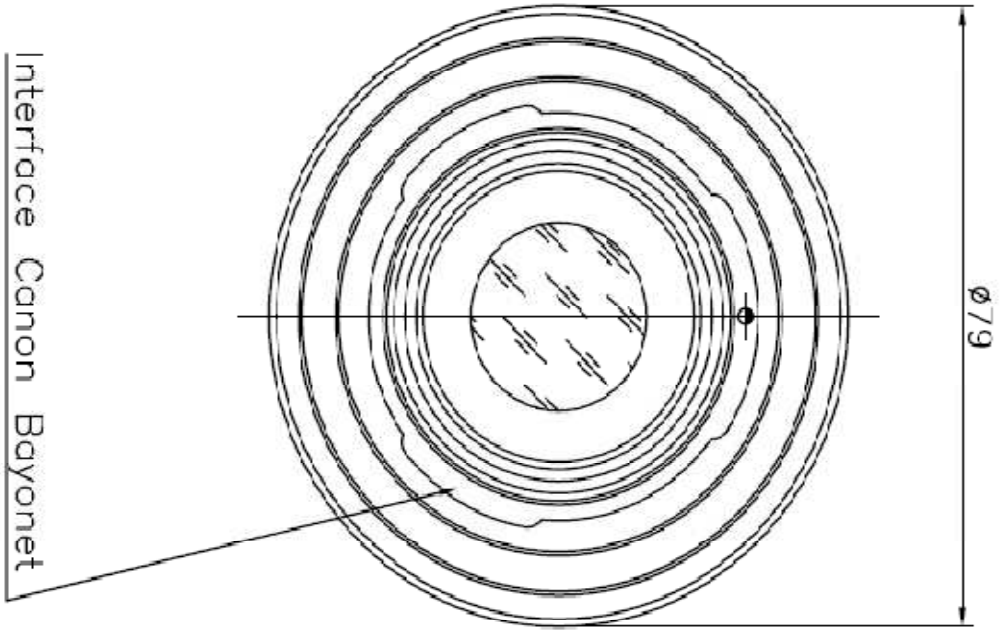
Focal length	Magnification 2X
Image format (diagonal)	18 mm
F.O.V. (diagonal)	N.A.
Max aperture	N.A.
Object format	N.A.
Min working distance	N.A.
Zoom value	N.A.
Focus	None
Iris	None

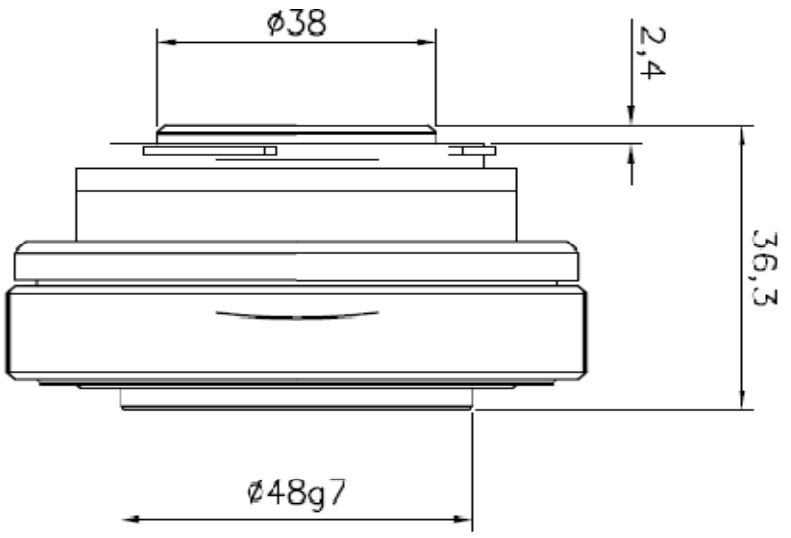
N. of elements	5
Dimensions	Dia 79 x 37 mm
Weight	0.25 Kg
Options	
Motorized focus	N.A.
Motorized iris	N.A.
Motorized zoom	N.A.
Other mount type	Upon request Canon C-Mount Nikon
Customization	Upon request

Simulations with specific OB-SWIR lenses available upon request.

Outline Dimensions & Technical Notes

The lens outlines are shown here with further details available upon request.





CANON EOS Adapter– P/N C0997_050_000

General Description

A very simple device able to adapt any kind of optical instruments with photographic escape thread 42x1 to the standard photocamere series Canon EOS. All the M42 Screw bayonet interfaces, can be adapted without particular action.

In some special case, this adapter can produce a vignetting phenomena, easily predictable if the lens design available.

Outline Dimension

….. & Technical Notes

More details are available upon request.

The most important value is the BFL (Back Focal Length) of the Canon EOS adapter that is 44.00 mm.

The BFL for M42 screw is 45.46 mm (only for information).

C-Mount Adapter– P/N C0998_040_000

P/N C0998_050_000

General Description

A very simple device able to adapt any kind of lens interface to the standard C-Mount interface. All the bayonet interfaces, like Canon and Nikon, can be adapted without particular action.

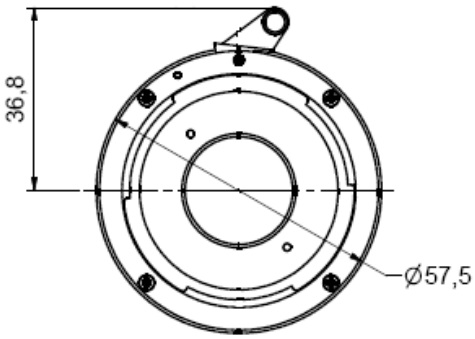
In some special case, this adapter can produce a vignetting phenomena, easily predictable if the lens design available.

Outline Dimension

….. & Technical Notes

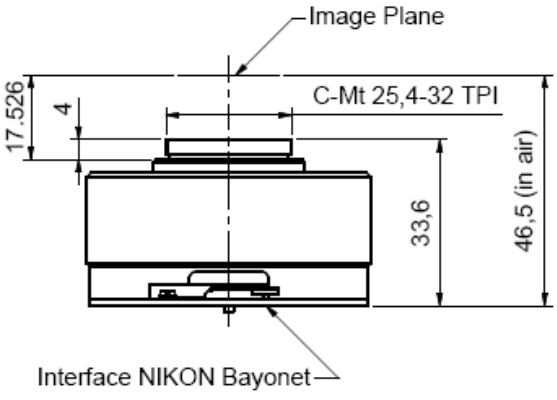
The technical drawing shows the main dimensions and interfaces in order to guarantee a proper assy (for Canon FD bayonet, but others available too).

More details are available upon request.



The most important value is the BFL (Back Focal Length) of the C-Mount adapter that is 17.525 mm.

The BFL for Canon is 42 mm and the BFL for Nikon is 46.5 mm (only for information).



C-Mount Adapter– P/N C0999_040_000
P/N C0999_041_000
P/N C0999_050_000
P/N C0999_051_000

General Description

A very simple device able to adapt any kind of lens interface to the standard C-Mount interface. All the bayonet interfaces, like Canon and Nikon, can be adapted without particular action.

In some special case, this adapter can produce a vignetting phenomena, easily predictable if the lens design available.

Outline Dimension
….. & Technical Notes

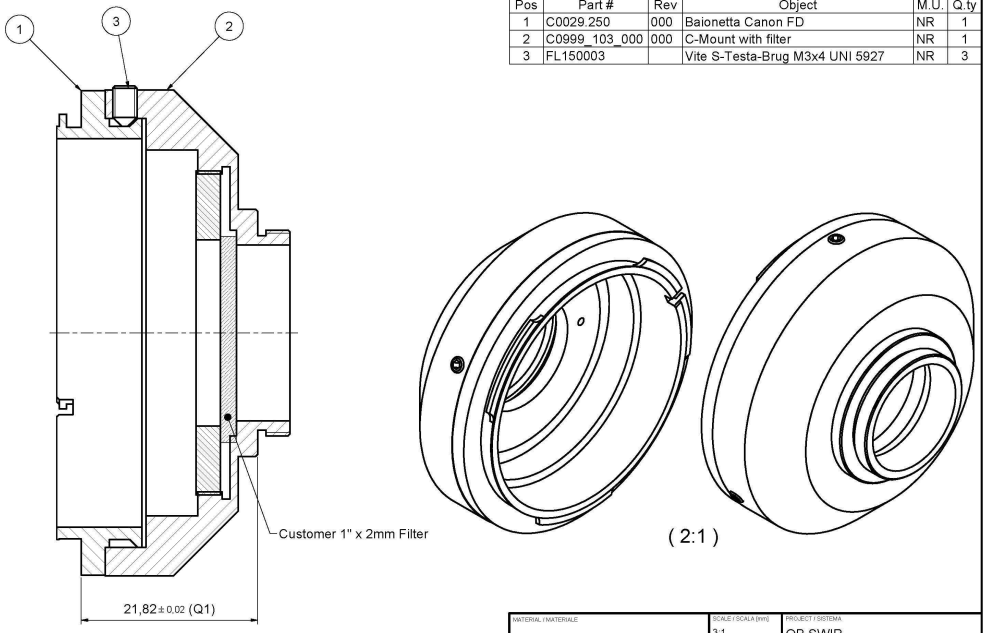
The technical drawing shows the main dimensions and interfaces in order to guarantee a proper assy (for Canon FD bayonet, but others available too).

More details are available upon request.

The most important value is the BFL (Back Focal Length) of the C-Mount adapter that is 17.525 mm.

The BFL for Canon is 42 mm and the BFL for Nikon is 46.5 mm (only for information).

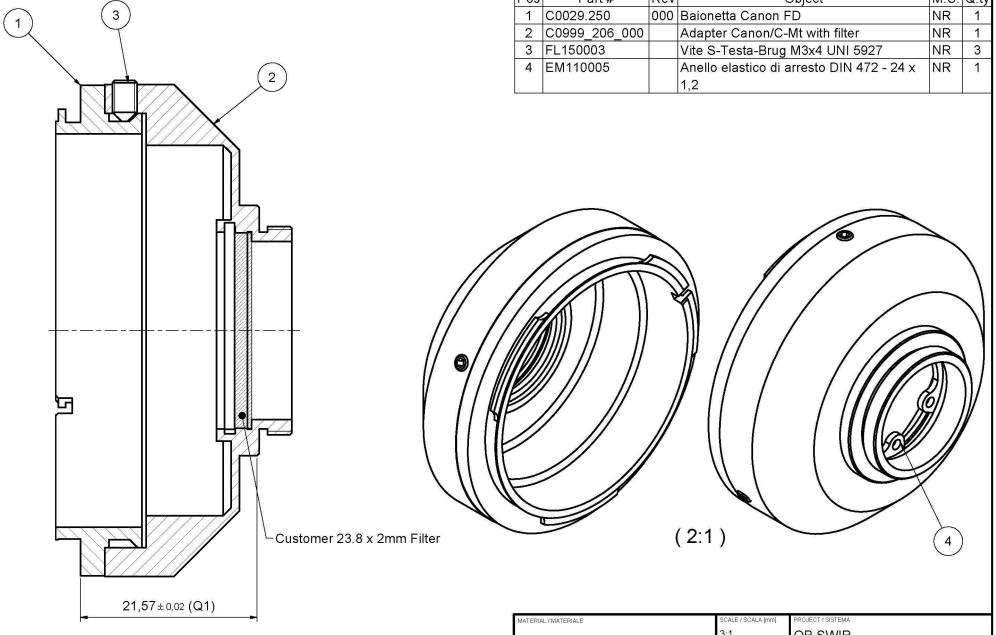
Parts List					
Pos	Part #	Rev	Object	M.U.	Q.ty
1	C0029.250	000	Baionetta Canon FD	NR	1
2	C0999_103_000	000	C-Mount with filter	NR	1
3	FL150003		Vite S-Testa-Brug M3x4 UNI 5927	NR	3



Note:
1. Bloccare elemento in Pos. 3 con Loctite 222

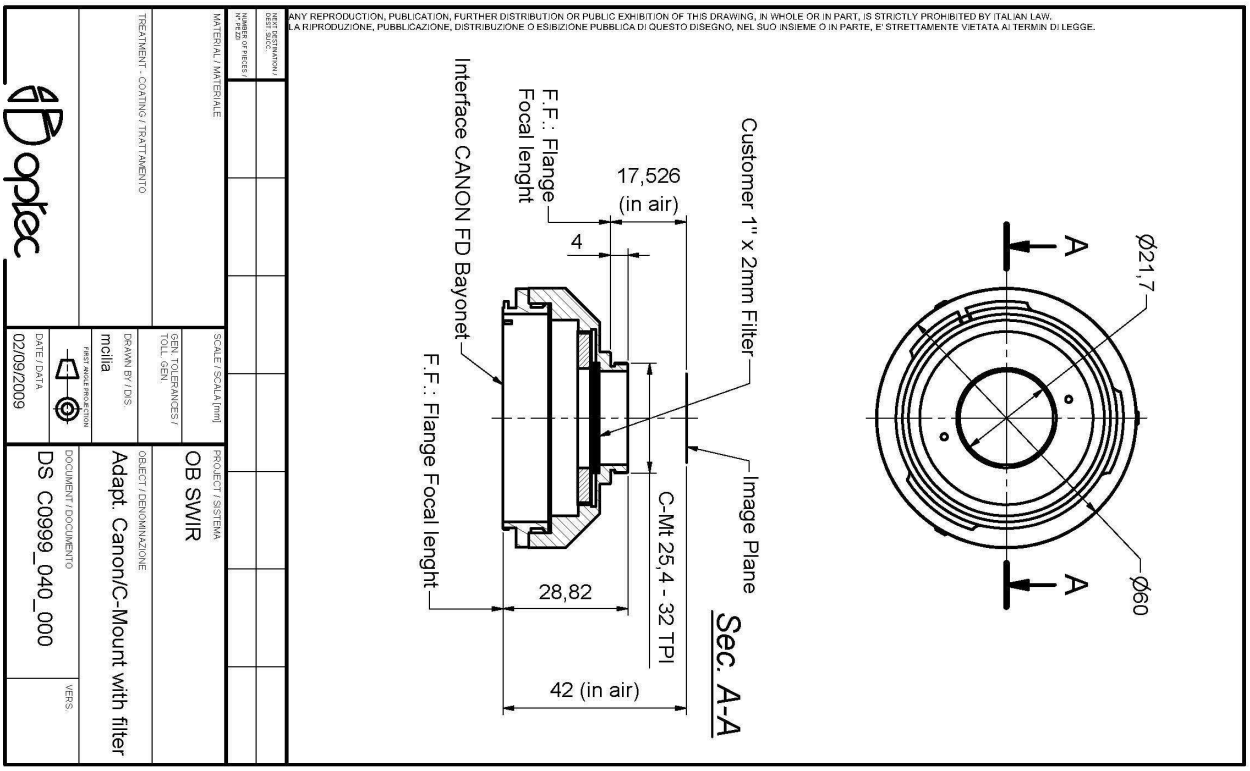
MATERIAL / MATERIALE	-
TREATMENT - COATING / TRATTAMENTO	-
SCALE / SCALA [mm]	3:1
GEN. TOLERANCES / TOLL. GEN.	±0,1
DRAWN BY / DIS.	mcilia
DATE / DATA	02/09/2009
PROJECT / SISTEMA	OB SWIR
OBJECT / DENOMINAZIONE	Adapt. Canon/C-Mount with filter
DOCUMENT / DOCUMENTO	DS C0999_040_000
VERS.	A

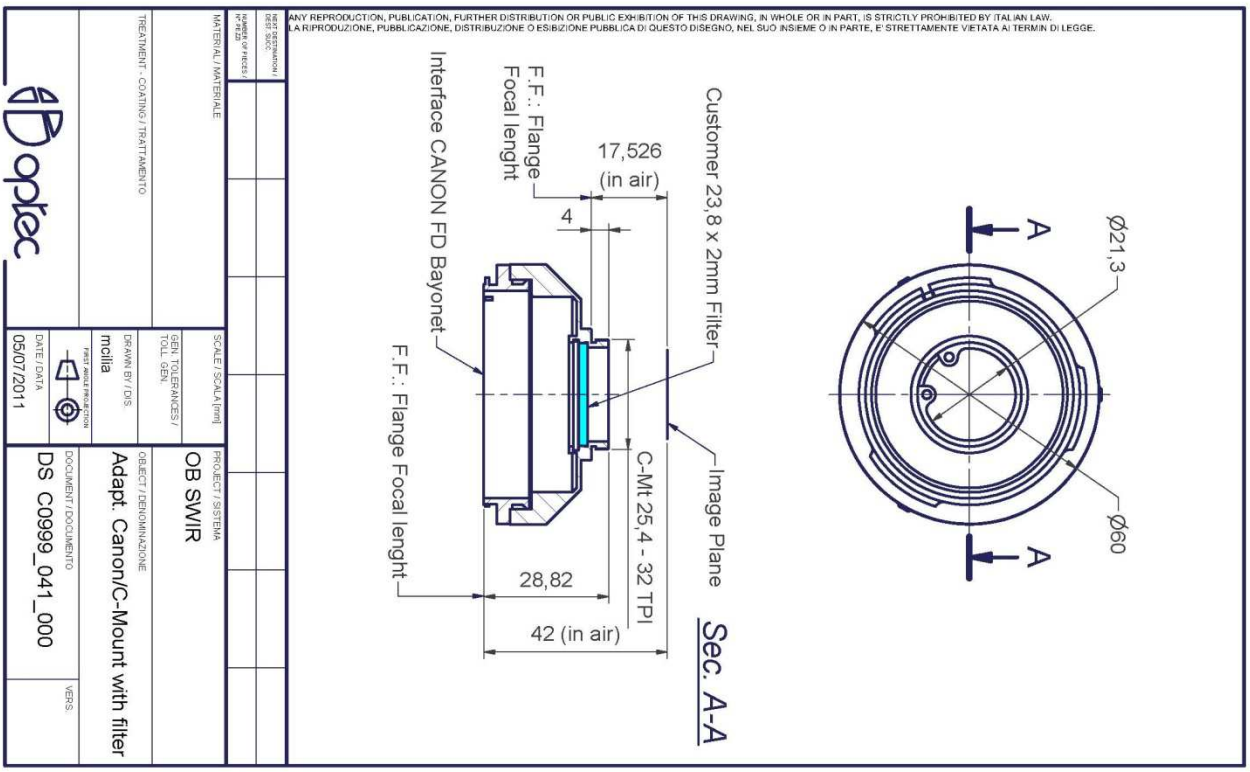
Parts List					
Pos	Part #	Rev	Object	M.U.	Q.ty
1	C0029.250	000	Baionetta Canon FD	NR	1
2	C0999_206_000		Adapter Canon/C-Mt with filter	NR	1
3	FL150003		Vite S-Testa-Brug M3x4 UNI 5927	NR	3
4	EM110005		Anello elastico di arresto DIN 472 - 24 x 1,2	NR	1

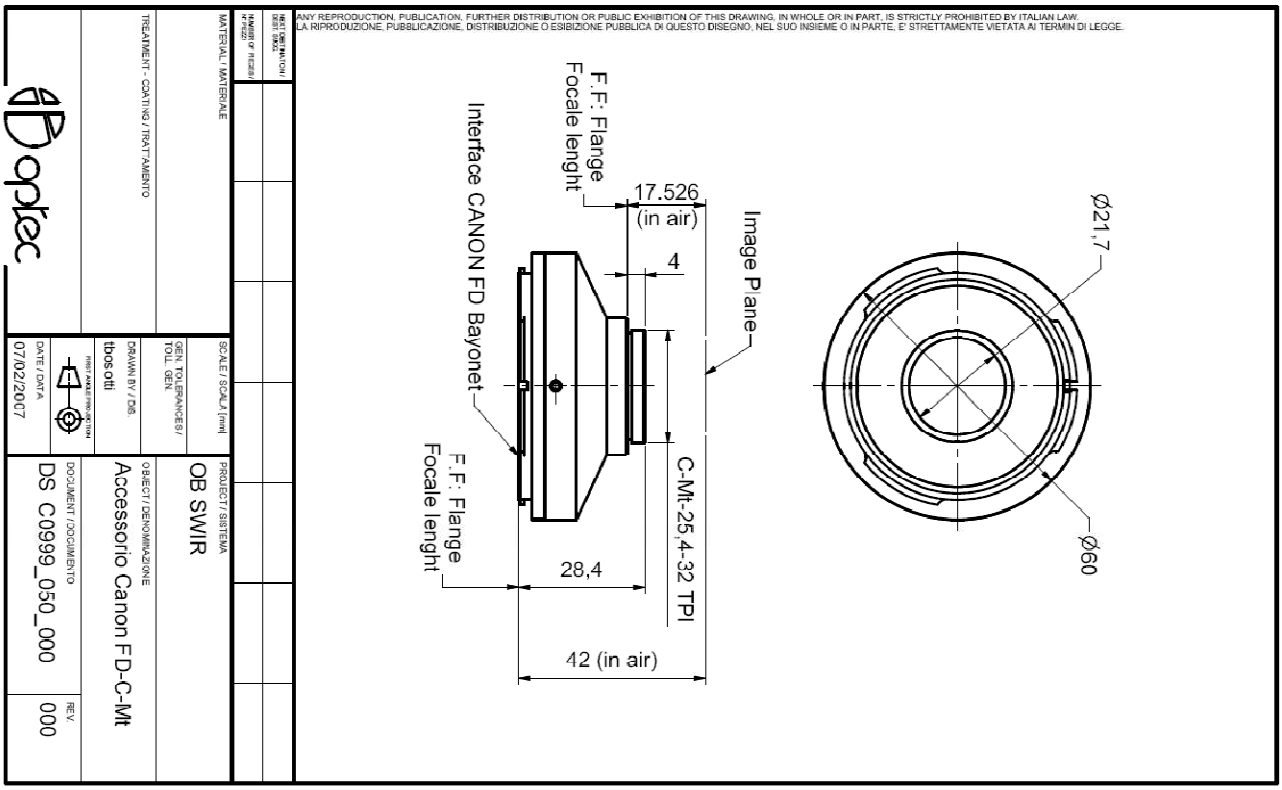


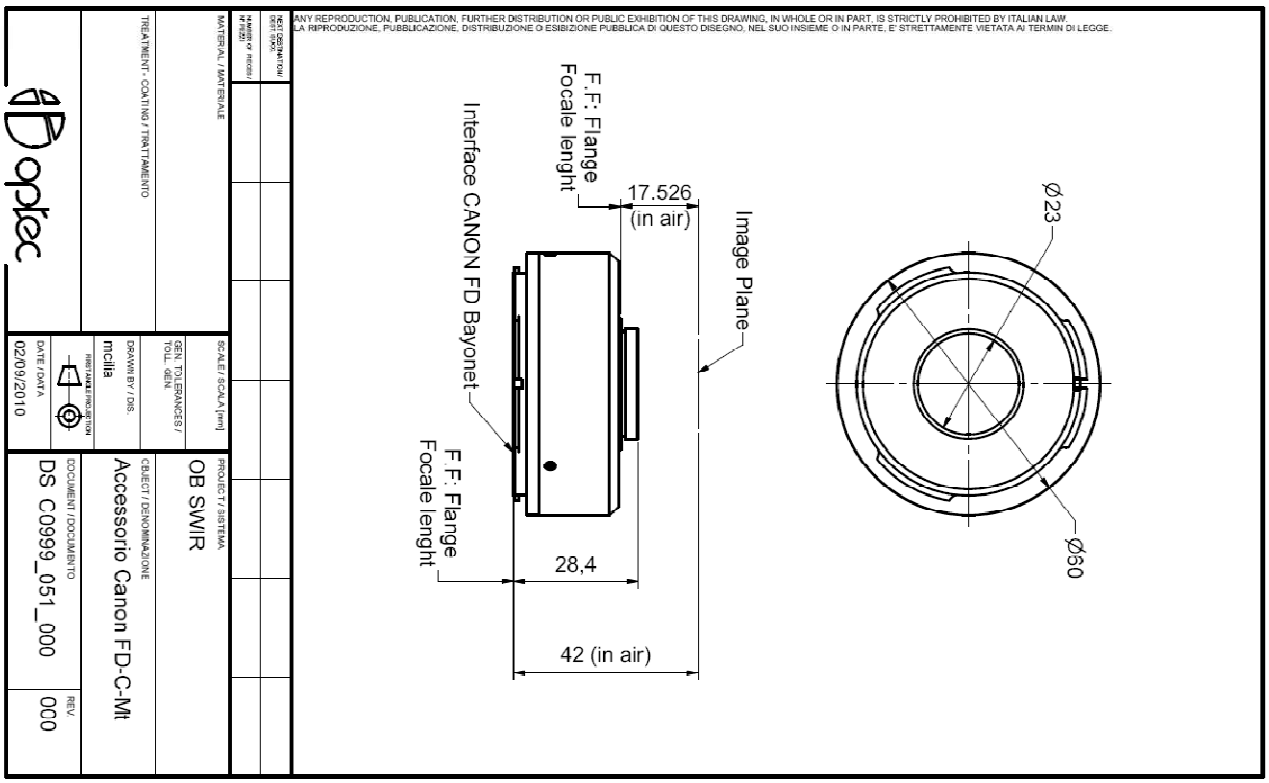
Note:
1. Bloccare elemento in Pos. 3 con Loctite 222

MATERIAL / MATERIALE	-
TREATMENT - COATING / TRATTAMENTO	-
SCALE / SCALA [mm]	3:1
GEN. TOLERANCES / TOLL. GEN.	±0,1
DRAWN BY / DIS.	mcilia
DATE / DATA	05/07/2011
PROJECT / SISTEMA	OB SWIR
OBJECT / DENOMINAZIONE	Adapt. Canon/C-Mount with filter
DOCUMENT / DOCUMENTO	DS C0999_041_000
VERS.	A









C-Mount Adapter Macro – P/N C0999_052_000

General Description

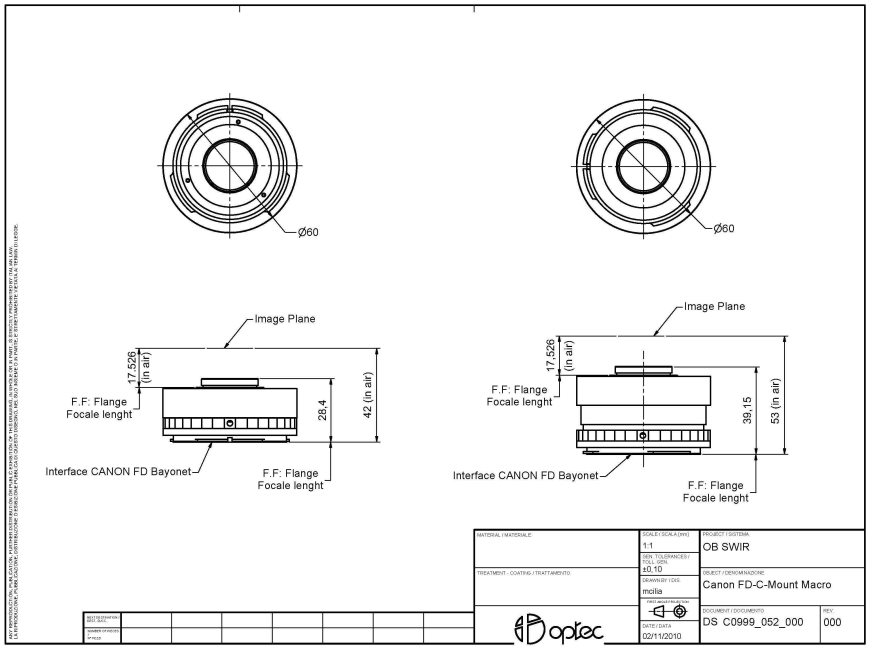
A very simple device able to adapt any kind of Canon FD lens interface to the standard C-Mount Interface with Macro Option. All the Canon bayonet interfaces, can be adapted without particular action.

In some special case, this adapter can produce a vignetting phenomena, easily predictable if the lens design available.

Outline Dimension

….. & Technical Notes

The technical drawing shows the main dimensions and interfaces in order to guarantee a proper assy (for Canon FD bayonet, but others available too). More details are available upon request. The most important value is the BFL (Back Focal Length) of the C-Mount adapter that is 17.525 mm. The BFL for Canon is 42 mm and the BFL for Nikon is 46.5 mm (only for information).



C1115.001.001 - Motion Controller

Overview

The Optec Motion Controller controls two different DC motors at the same time with a maximum output current of 480 mA (240 mA for each motor). It implements a complete PID position control system with continuous movement on the entire working range and with preset fixed positions.

To communicate with the PC the Optec Motion Controller requires only a USB cable (A-B) from which it receives also the power supply.

Absolute Maximum ratings	
Maximum output current	480 mA (for both channels)
Supply voltage	5 V (from USB)
Input analog voltage	5 V
Temperature working range	-10 to 70 °C

Size	
Weight	125 g
Length	77 mm
Depth	60 mm
Height	34 mm
Maximum height (with connector)	40 mm

USB overcurrent protection

The Optec Motion Controller has a resettable polyfuse that protects the computer's USB ports from short-circuits and overcurrent. If more than 500 mA is applied to the USB port, the fuse will automatically break the connection until the short or overload is removed.

Electronic features			
Operating voltage	5 V	Minimum current consumption	30 mA
Number of independent channels	2	Maximum current consumption (without motors)	40 mA
Number of analog inputs	2	Flash memory	32 KB
Analog input voltage	0 to 5 V	SRAM	2 KB
Output voltage (to motors)	0 to 4,14 V (direction A LOW), 0 to 4,39 V (dir A HIGH)	EEPROM	1 KB
Output voltage (to potentiometers)	0 to 5 V	Clock speed	16 MHz

Connector pin list

1 - Motor A +

2 - Motor A -

3 - + 5 V

4 - Analog input 1

5 - Analog input 2

6 - GND

7 - Motor B -

8 - Motor B +

9 - N/C

10 - N/C

C1115.002.000 - Motion Controller

Overview

The Optec Motion Controller controls two different DC motors at the same time with a maximum output current of 4 A (2 A for each motor). It implements a complete PID position control system with continuous movement on the entire working range and with preset fixed positions.

To communicate with the PC the Optec Motion Controller uses the standard serial protocol RS232 thru USB or Serial DB9 connector.

Absolute Maximum ratings	
Maximum DC output current	2 A (for each motor)
Maximum peak output current	3 A (for each motor)
Maximum Supply voltage	20 V
Input analog voltage	5 V
Temperature working range	-10 to 70 °C

Size	
Weight	125 g
Length	77 mm
Depth	60 mm
Height	34 mm
Maximum height (with connector)	40 mm

USB overcurrent protection

The Optec Motion Controller has a resettable polyfuse that protects the computer's USB ports from short-circuits and overcurrents. If more than 500 mA is applied to the USB port, the fuse will automatically break the connection until the short or overload is removed.

Electronic features			
Input voltage supply	12 V (from external power pack)	Output voltage (to potentiometers)	0 to 5 V
Number of independent channels	2	Minimum current consumption	30 mA
Number of analog inputs	2	Maximum current consumption (without motors)	40 mA
Analog input voltage	0 to 5 V	Analog input sampling rate	10.6 Mhz
Output voltage (to motors)	0 to 9.79 V (in both directions)	Clock speed	16 MHz

Serial Interface			
Serial protocol	RS232 (8-N-1)	Data bits	8
Serial port connector	Standard DE-9	Parity	None
Baud rate	9600 bps	Stop bit	1

Connector pin list

1 - + 5 V
2 - GND
3 - Analog input 1
4 - Analog input 2
5 - Reserved
6 - Reserved
7 - Motor 1 +
8 - Motor 1 -
9 - Motor 2 +
10 - Motor 2 -

C0628.020.000 - Motion Controller

Overview

The Optec C0628 Motion Controller can manage 4 different DC motors at the same time with a maximum output power of 20 W for each motor. It implements a complete PID position control system with continuous movement on the preset fixed positions. It also provides an ECAM system for synchronized zoom lenses.

To communicate with the PC the Optec C1107 Motion Controller requires an USB cable (A-B) or an Ethernet cable.

Absolute Maximum ratings	
Maximum output current	1 A
Supply voltage	24 Vcc / 110~240 VCA
Temperature working range	0 – 70°C
Humidity	20-95% RH, non-condensing

Size	
Weight	4 Kg
Length	350 mm
Depth	70 mm
Width	205 mm

Electronic features			
Number of independent channels	2	Minimum current consumption	
Output voltage (to motors)	0 to ±12 V	Maximum current consumption (without motors)	
Program memory size	2000 lines x 80 characters	Clock speed	15 MHz

"Lens control" connector pin list			
1	Zoom 1 +5V	23	N.C.
2	Zoom 2 +5V	24	N.C.
3	Iris +5V	25	N.C.
4	Focus +5V	26	N.C.
5	Zoom 1 GND	27	N.C.
6	Zoom 2 GND	28	N.C.
7	Iris GND	29	Zoom 1 CHA+
8	Focus GND	30	Zoom 1 CHA-
9	Zoom 1 Mot+	31	Zoom 1 CHB+
10	Zoom 1 Mot-	32	Zoom 1 CHB-
11	Zoom 2 Mot+	33	Zoom 2 CHA+
12	Zoom 2 Mot-	34	Zoom 2 CHA-
13	Iris Mot+	35	Zoom 2 CHB+
14	Iris Mot-	36	Zoom 2 CHB-
15	Focus Mot+	37	Iris CHA+
16	Focus Mot-	38	Iris CHA-
17	Zoom 1 Home	39	Iris CHB+
18	Zoom 2 Home	40	Iris CHB-
19	Iris Home	41	Focus CHA+
20	Focus Home	42	Focus CHA-
21	N.C.	43	Focus CHB+
22	N.C.	44	Focus CHB-