INFRARED OPTICS

SHORT WAVE INFRARED	120 - 121
MEDIUM WAVE INFRARED	122
LONG WAVE INFRARED	123

Beyond the visible range, for advanced optical applications.

Opto Engineering® offers a wide variety of **high resolution IR optics**
for both cooled and uncooled IR cameras spanning all IR spectral bands.
Our IR optics feature large field of view and low distortion
and can be equipped with custom mount interfaces.
MWIR and LWIR thermal series also include HCAR coating
for use in harsh environments.

IR optics are used in a wide variety of sectors including defense,
security/surveillance, industrial, medical and R&D.
Applications include tracking/targeting systems,
predictive maintenance, monitoring of high temperature
industrial processes, thermography, flame detection,
quality control / inspection.

Refer to specific datasheets available at www.opto-e.com
for product compliancy with regulations, certifications and safety labels.

SWIR series

Short-wave infrared lenses

KEY ADVANTAGES

High resolution
Designed for high resolution detectors up to 15 µm pixel pitch and 21 mm diameter.

Custom mount interface
Can be provided upon request.

Large field of view and low distortion
Superior optical performance.

SWIR series is a range of **short-wave infrared lenses** specifically designed to operate in the 0.9-1.7 µm wavelength region. This serie has been specifically designed to match the new 15 µm format InGaAs FPA Focal Plane Arrays.
These lenses offer an industry standard C-mount threaded style interface or, alternatively, they can be equipped with a custom mount interface.

In the design of the lenses, great importance was attached to a good image quality and a large aperture (small F-number).
These lenses, mounted on a SWIR camera, are the perfect choice for a variety of applications, including solar cell inspection, night vision imaging of outdoors scenes without additional illumination (security applications), detecting bruises on fruit, imaging through silicon, biomedical imaging and many other infrared applications.
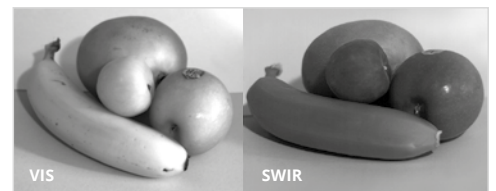
Application examples
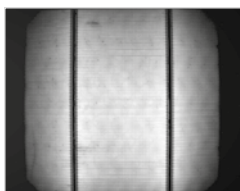
Solar cell inspection.
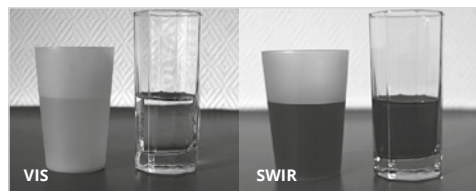
Liquid level inspection.

Fruit sorting.

	Optical specifications									Mechanical specifications						
Part number	Focal length	F/#	Wave length	Average trans.	Circular FOV	WD	Image Diagonal	Distortion	CTF @ 30lp/mm	Image side NA	Mount	Focus type	Locking screw	Back focal length	Length	Diam.	Mass
	(mm)		(µm)	(%)	(deg)	(mm)	(mm)	(%)	(%)					(mm)	(mm)	(mm)	(g)
				1			**2**	**3**			**4**			**5**			**6**
SW03520	35.00	2.0	0.9-1.7	90	33.4	350 - ∞	21.0	-0.50	39.09	0.243	C	Manual	Yes	12.16	49.34	71	340
SW05020	50.00	2.0	0.9-1.7	90	23.7	500 - ∞	21.0	0.41	43.09	0.243	C	Manual	Yes	14.07	71.00	71	400
SW07520	75.00	2.0	0.9-1.7	90	15.9	750 - ∞	21.0	0.50	30.19	0.243	C	Manual	Yes	14.10	101.20	71	540

1 Based on the listed image diagonal.
2 Maximum value at central wavelength.
3 Mean value at all the different fields.

4 Any custom mount is available at no additional cost.
5 Measured from the front end of the mechanics to the camera flange.
6 Given with no mount attached. See layout drawings.

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ENSWIRMP series

SWIR C-mount lenses for up to 2/3" detectors

* RT

Part number	Optical specifications								Mechanical specifications		
	Focal length	Magnification	Image circle	Max detector size	WD	F/#	Back focal length	Distortion	Mount	Length	Diameter
	(mm)		Ø (mm)		(mm)		(mm)	(%)		(mm)	(mm)
RT-M1614-SW	16	0.05 - 0	12.3	2/3"	300 - ∞	1.4 - 16	13.3	0.5	C	28.2	33.5
RT-M2514-SW	25	0.08 - 0	12.3	2/3"	300 - ∞	1.4 - 16	14.6	0.5	C	36.0	33.5
RT-M3514-SW	35	0.10 - 0	12.3	2/3"	300 - ∞	1.4 - 16	14.6	0.1	C	38.2	33.5
RT-M5018-SW	50	0.15 - 0	12.3	2/3"	300 - ∞	1.4 - 16	13.3	0.5	C	28.2	33.5

FULL RANGE OF COMPATIBLE ACCESSORIES	
Optical filters	p. 242

MWIR series

Medium-wave infrared lenses

KEY ADVANTAGES

High resolution
Designed for high resolution detectors up to 15 µm pixel pitch and 21 mm diameter.

Custom mount interface
Can be equipped with any custom mount interface.

Large field of view and low distortion
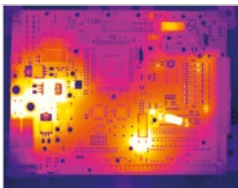Superior optical performance.

HCAR coating
For applications exposing optical elements to harsh environments.

MWIR series is a range of **medium-wave infrared lenses** specifically designed to operate in the 3-5 µm wavelength region with InSb Focal Plane Arrays (FPA). The lenses offer a standard Bayonet interface or, alternatively, they can be equipped with a custom mount interface.
In the design of the lenses, great importance was attached to a good image quality and a large aperture (small F-number).

These lenses, mounted on a MWIR camera, are the perfect choice for a variety of applications, including imaging through fog, high-speed thermal imaging, thermography, R&D (MWIR range), non-destructive testing.
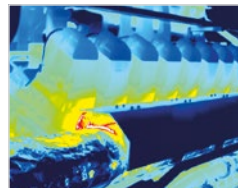
Application examples

Electronic boards inspection.

Thermal imaging.

Automotive.

	Optical specifications									Mechanical specifications						
Part number	Focal length	F/#	Wave length	Average trans.	Circular FOV	WD	Image Diagonal	Distortion	CTF @ 30lp/mm	Image side NA	Mount	Focus type	Locking screw	Back focal length	Length	Diam.	Mass
	(mm)		(µm)	(%)	(deg)	(mm)	(mm)	(%)	(%)					(mm)	(mm)	(mm)	(g)
				1			**2**	**3**			**4**				**5**		**6**
MW03523	35.00	2.3	3.0-5.0	90	33.4	350 - ∞	21.0	-0.20	39.68	0.212	Bayonet	Manual	Yes	32.45	57.69	71	263
MW05023	50.00	2.3	3.0-5.0	90	23.7	500 - ∞	21.0	-0.20	57.02	0.212	Bayonet	Manual	Yes	34.44	55.70	71	245
MW07523	75.00	2.3	3.0-5.0	90	15.9	750 - ∞	21.0	-0.20	56.86	0.212	Bayonet	Manual	Yes	57.14	57.02	84	335
MW10023	100.00	2.3	3.0-5.0	90	12.0	1000 - ∞	21.0	-0.20	61.01	0.212	Bayonet	Manual	Yes	52.00	90.51	108	1060

1 Based on the listed image diagonal.
2 Maximum value at central wavelength.
3 Mean value at all the different fields.

4 Any custom mount is available at no additional cost.
5 Measured from the front end of the mechanics to the camera flange.
6 Given with no mount attached. See layout drawings.

LWIR series

Long-wave infrared lenses

KEY ADVANTAGES

High resolution
Designed for high resolution detectors up to 15 μm pixel pitch and 21 mm diameter.

Custom mount interface
Can be equipped with any custom mount interface.

Large field of view and low distortion
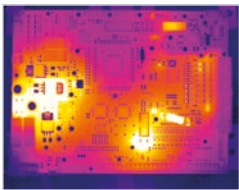Superior optical performance.

HCAR coating
For applications exposing optical elements to harsh environments.

LWIR series is a range of **long-wave infrared lenses** specifically designed to operate in the 8-14 μm wavelength region with uncooled detectors (a-Si, VOx, …).
In the design of the lenses great importance was assigned to high image quality and large aperture (small F-number). These lenses can also be equipped with custom mount interfaces.

These lenses, mounted on an uncooled LWIR camera are the perfect choice for a variety of applications spanning from industrial to military, including temperature measurement for process quality control and monitoring, predictive maintenance, imaging through smoke and fog, medical imaging.
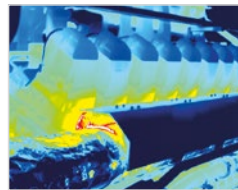
Application examples

Electronic boards inspection.

Thermal imaging.

Automotive.

	Optical specifications									Mechanical specifications						
Part number	Focal length	F/#	Wave length	Average trans.	Circular FOV	WD	Image Diagonal	Distortion	CTF @ 30lp/mm	Image side NA	Mount	Focus type	Locking screw	Back focal length	Length	Diam.	Mass
	(mm)		(μm)	(%)	(deg)	(mm)	(mm)	(%)	(%)					(mm)	(mm)	(mm)	(g)
				1			**2**	**3**			**4**				**5**		**6**
LW03514	35.00	1.4	8.0-14.0	90	33.4	350 - ∞	21.0	0.20	44.99	0.336	M46X1	Manual	Yes	11.88	57.62	71	300
LW05014	50.00	1.4	8.0-14.0	90	23.7	500 - ∞	21.0	0.20	40.70	0.336	M46X1	Manual	Yes	18.00	51.50	71	300
LW07514	75.00	1.4	8.0-14.0	90	15.9	750 - ∞	21.0	0.20	38.43	0.336	M46X1	Manual	Yes	14.63	106.41	85	850

1   Based on the listed image diagonal.
2   Maximum value at central wavelength.
3   Mean value at all the different fields.

4   Any custom mount is available at no additional cost.
5   Measured from the front end of the mechanics to the camera flange.
6   Given with no mount attached. See layout drawings.