

Lenses by LINOS

The dynamic growth of the market, the short innovation cycle in the Photonics industry as well as outside competition require a high degree of flexibility and commitment from the producers and suppliers in developing new products. This involves solving problems in an interdisciplinary manner and mastering a wide range of fields: from optical manufacturing and mechanics, to electro-optics and optical design software. In order to do justice to these demands, LINOS consistently positioned itself as a supplier of customized solutions for OEM-customers.

LINOS is one of the few companies in the world that gives its customers comprehensive support in the development of optical system solutions. Complex development and production operations have to be mastered and combined with each other perfectly in order to be able to manufacture high-end systems of the quality the market requires. LINOS is an expert in all the operations throughout the value added chain that control quality and is technology leader in many production areas.

LENS TYPE	PAGE
Compact lenses for 1/3" CCD-Cameras	1
Measuring lenses MeVis-C	2
Telecentric lenses TL and x.tc	2
Macro lenses	3
Measuring lenses for large imaging sensors	4

Compact Lenses for 1/3" CCD-Cameras

Because of their extreme compactness, microcameras with 1/3" CCD are ideal for monitoring and testing applications in which the camera dimensions must be very small or the camera weight has to be very light. The lenses are optimized for the wavelength range from 400 to 700 nm and available in a broad focal length range from 3.8 up to 30 mm.

The lenses provide a maximum reproduction of detail, a high contrast as well as a low distortion and uniform image field illumination (low vignetting).



Designation (Linos Order Code)	Aperture ratio	Focal length [mm]	Image angle horizontal [degree]	Magnification range*	Distance range from the front edge of the mount [mm]	Video distortion
1/3"-CCD-Lens-3,8 (263.004.001.020)	1:2	3,8	75°x 55°	1:∞ - 1:10	∞ - 35	-8%
1/3"-CCD-Lens-6 (263.004.001.020)		6,0	47°x 34°	1:∞ - 1:6	∞ - 35	-3%
1/3"-CCD-Lens-12 (263.004.001.020)		12,0	23°x 17°	1:∞ - 1:5	∞ - 65	-0,3%
1/3"-CCD-Lens-30 (263.004.001.020)	1:3,4	30,0	9°x 7°	1:∞ - 1:10	∞ - 330	> -0,1%

* Focusing is done using the threaded mount and locking collar.

Measuring lenses MeVis-C

These lenses provide an excellent resolution, uniform distribution of brightness over the entire image field and no distortion. They were developed for the spectral range of 400-900 nm (VIS and NIR). All available types come with a C-mount adapter for CCD cameras and lockable focusing and diaphragm settings.

The recorded pictures are free of irritating colour edging and show no colour fringing when used with 3-chip cameras and beam splitters. All lenses provide a filter thread M35.5 x 0.5.



Designation	LINOS order code	Focal length [mm]	F-number	Max. Sensor size [Zoll]	MOD [m]
MeVis-C-12*	03 8403	12	1,6 - 16	2/3	0,22
Me-Vis-C-16	03 8403	16			
MeVis-C-25	03 8403	25			
MeVis-C-35	03 8403	35	1,8 - 16	1	0,32
MeVis-C-50	03 8403	50			0,45
					0,76

* in preparation

Telecentric lenses TL and x.tc

These lenses are suitable for 2D and 3D measurement purposes with high resolution and extreme low distortion (< 0.2 %). They provide a high transmission in the visible range and are insensitive to variation of working distance. All lenses of this group come with standard threads for combination with filters on front side and are compatible with LINOS rail systems like FLS and X 95.

The applications for telecentric lenses are e.g. vision technology, identification of parts, quality inspection, process control and automatization.



Designation	LINOS-order code	Sensor size [Zoll]	Objekt field Ø [mm]	N.A.	Free working distance [mm]
TL 1/2-15-120	03 8349	1/2	120	0,007	2840
TL 2/3-10-120	03 8348	2/3		0,01	263,0
TL 1/2-6-60	03 8347	1/2	60	0,02	144,0
TL 2/3-5-60	03 8346	2/3			92,0
TL 1/2-3-55	03 8344	1/2	55	0,03	174,0
TL 2/3-3-55	03 8345	2/3			
x.tc 1/3-50	03 8323	1/3	50	0,14	241,3
x.tc 1/2-50	03 8327	1/2		0,10	
x.tc 2/3-50	03 8331	2/3			
TL 1/2-2-28	03 8342	1/2	28	0,05	117,0
TL 2/3-2-28	03 8343	2/3			
x.tc 1/3-25	03 8322	1/3	25	0,08	241,3
x.tc 1/2-25	03 8326	1/2		0,13	
x.tc 2/3-25	03 8330	2/3			
TL 1/2-1-12	03 8340	1/2	12	0,10	106,0
TL 2/3-1-12	03 8341	2/3			

Macro lenses

Macrolenses developed by Rodenstock Präzisionsoptik for CCD cameras feature the highest resolution, excellent contrast, color neutrality and are virtually distortionfree.

A large selection of macrolenses is available: A number of macro lenses with fixed focal lengths for magnifications of 0.14x (ratio 1:7) to 8x (ratio 8:1), which can be supplied with various fixed diaphragm aperture settings, as well as a number of macro lenses with fixed focal lengths for magnifications of 2x to 8x, which are available in a choice of versions with parallel axis illumination for shadow-free illumination (for example in narrow recesses).



Macro lenses for Magnification from 0.14x to 1x

Designation	LINOS-order code	Focal length [mm]	Magnification	Object field [mm]		Aperture
				1/2"-Sensor	2/3"-Sensor	
Macro-CCD Lens 0.14x-4	260.0014.001.020	15	0,14x (1:7.1)	46 x 34	59 x 44	4,0
Macro-CCD Lens 0.14x-5.6	260.0014.001.020					5,6
Macro-CCD Lens 0.14x-8	260.0014.001.020					8,0
Macro-CCD Lens 0.3x-3.5	260.0014.001.020	24	0,3x (1:3.3)	21 x 16	31 x 21	3,5
Macro-CCD Lens 0.3x-5.6	260.0014.001.020					5,6
Macro-CCD Lens 0.3x-8	260.0014.001.020					8,0
Macro-CCD Lens 0.7x-5.6	260.0014.001.020	35	0,5x (1:2)	13 x 10	17 x 12	5,6
Macro-CCD Lens 0.7x-8	260.0014.001.020					8,0
Macro-CCD Lens 1x-4	260.0014.001.020	50	1x (1:1)	6,4 x 4,8	8,3 x 6,2	4,0
Macro-CCD Lens 1x-5.6	260.0014.001.020					5,6
Macro-CCD Lens 1x-8	260.0014.001.020					8,0

Depending on the application, it is possible to choose between the largest relative aperture or the greatest depth of field with low vignetting and thus with more consistent illumination of the image field.

Macro lenses for Magnifications of 2x to 8x

Designation	LINOS-order code	Focal length [mm]	Magnification	Object field [mm]		Aperture
				1/2"-Sensor	1/2"-Sensor	
Macro-CCD Lens 2x	261.0200.001.020	26	2x (2:1)	3,2 x 2,4	4,2 x 3,1	
Macro-CCD Lens 2x L	261.0200.002.020					epi-illuminator
Macro-CCD Lens 4x	261.0400.001.020	20	4x (4:1)	1,6 x 1,2	2,1 x 1,6	
Macro-CCD Lens 4x L	261.0400.002.020					epi-illuminator
Macro-CCD Lens 6x	261.0600.001.020	13	6x (6:1)	1,1 x 0,8	1,4 x 1,0	
Macro-CCD Lens 6x L	261.0600.002.020					epi-illuminator
Macro-CCD Lens 8x	261.0800.001.020	9	8x (8:1)	0,8 x 0,6	1,0 x 0,8	
Macro-CCD Lens 8x L	261.0800.002.020					epi-illuminator

The epi-illuminator focuses the light of a glass fiber light source into the observation beam path so that it is parallel to the optical axis, allowing completely shadow-free illumination even of narrow recesses.

Measuring Lenses

The measuring lenses developed by LINOS feature the highest resolution, excellent contrast, minimum possible distortion and color neutrality. They sharply reproduce images all the way to the very corner edges.

The lenses with a focal length of 25 to 35 mm provide a mounting thread M32.5 x 0.5. Each lens is shipped with an adapter ring M39 x 1/26" included. Lenses with a focal lengths of 40 to 105 mm provide a mounting thread M39 x 1/26" (Leica mount)



Available are lenses out of the following series:

- Rogonar-S:** Inexpensive lens with good imaging performance. Optimal price/performance ratio.
- Rodagon:** High-performance lens featuring a highly consistent imaging quality and broad magnification range.
- Rodagon-WA:** High-performance lens with extended viewing angle (shorter focal length for the same image field possible).
- Apo-Rodagon-N:** Apochromatically corrected lens designed to meet the highest requirements in an especially broad magnification range.
- Apo-Rodagon-D:** Apochromatically corrected special lens designed to meet the highest requirements for magnifications from 1:5 to 1:3.

Designation	LINOS order code	Aperture	Focal length	Support dimensions for ∞	Thread	
Rogonar-S 1:4/25	208.0025.001.000	1:4	25	23,0	M32,5 x 0,5"	
Rogonar-S 1:4/35	208.0035.001.000		35	34,0		
Rogonar-S 1:4/50	208.0050.001.000	1:2,8	50	47,0	M39 x 1/26"	
Rogonar-S 1:4/60	208.0060.001.000	1:4	60	52,5		
Rogonar-S 1:4/75	208.0075.001.000		75	65,5		
Rogonar-S 1:4/90	208.0090.001.000		90	80,0		
Rogonar-S 1:4/105	208.0105.001.000		105	95,0		
Rodagon 1:4/28	270.0028.001.040	1:4	28	27,7	M32,5 x 0,5"	
Rodagon 1:4/35	270.0035.001.040		35	35,6		
Rodagon 1:2.8/50	270.0051.001.040	1:2,8	50	43,5	M39 x 1/26"	
Rodagon 1:4/60	270.0060.001.040	1:4	60	56,0		
Rodagon 1:4/80	270.0081.001.040		80	74,7		
Rodagon 1:5.6/105	270.0105.001.040	1:5,6	105	99,5		
Rodagon-WA 1:4/40	277.0040.001.040	1:4	40	36,5		
Rodagon-WA 1:4/60	277.0060.001.040		60	55,5		
Rodagon-WA 1:4/80	277.0080.001.040		80	77,0		
Apo-Rodagon-N 1:2.8/50	275.0050.001.040	1:2,8	50	46,0		M39 x 1/26"
Apo-Rodagon-N 1:4/80	275.0080.001.040	1:4	80	77,0		
Apo-Rodagon-N 1:5.6/105	275.0105.001.040	1:5,6	105	99,1		
Apo-Rodagon-D 1:4/75	273.0075.001.040	1:4	75	136,7		
Apo-Rodagon-D 2x 1:4.5/75	273.0075.002.040	1:4,5	75	109,4		

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