

LM1119TC LM1138TC LM1120TC LM1121TC LM1122TC LM1123TC LM1125TC LM50TC

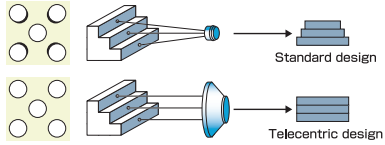
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TELECENTRIC Series

High Resolution Lenses

Features of TC Series

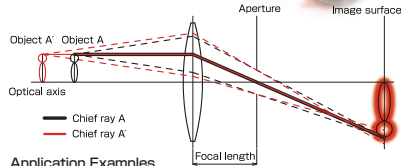
- ▶ Produces high contrast and resolution in both the center and corners.
- ▶ Virtually no TV distortion of entire image area.



Telecentric Optical System

In a telecentric optical system, there is no change in magnification when focusing. Thus, the magnification remains constant at different working distances. Similarly, the movement of an object also does not change the magnification, which makes a telecentric lens ideal for measuring objects with high accuracy.

In a telecentric optical system, the chief rays are parallel to the optical axis. As a result, the aperture becomes greater as the magnification is fixed by the focusing rays. This means that the F-number on a telecentric lens tends to be larger when compared to a standard megapixel lens.



Application Examples

- ▶ Surface inspection of silicon wafers
- ▶ Image defect inspections
- ▶ Inspection of dirt on prisms and glass circuit boards
- ▶ Measurement of thread pitches
- ▶ Reading 2D codes



2/3" TELECENTRIC 5 MEGAPIXEL PLUS

- ▶ Telecentric lens with variable magnification
- ▶ Able to adjust the magnification to match with the pixel size of the camera
- ▶ Lenses are designed with an optical magnification that is ideal for over 5 megapixels
- ▶ Distortion free lenses of less than 0.02%. TV distortion is limited to 0.25% on the entire image area even when used with a 5 megapixel camera

LM1120TC



LM1121TC



LM1122TC



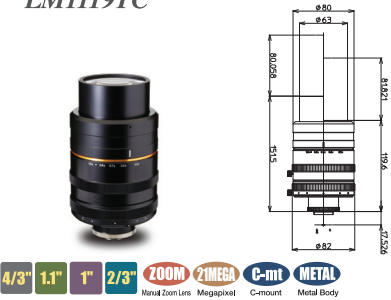
LM1123TC



4/3" MACRO ZOOM 21 MEGAPIXEL

- ▶ Telecentric lens with variable magnification
- ▶ Able to resolve up to 21 megapixels
- ▶ 0.5x~1.0x for macro use

LM1119TC



4/3" MACRO 21 MEGAPIXEL

- ▶ 2.0x for macro use
- ▶ Able to resolve up to 21 megapixels

LM1138TC



LM1125TC



2/3" MACRO ZOOM

- ▶ Telecentric lens with variable magnification
- ▶ 0.3x~1.0x for macro use

LM50TC



Model	LM1119TC	LM1138TC
Magnification	0.5-1.0x	2.0x
Image Size	18.4x13.8(Φ23)	18.4x13.8(Φ23)
Shooting Magnification	0.5x 1.0x	2.0x
Objective N.A.	0.05	0.2
W.D(mm)	80	80.6
Shooting Range (mm)	4/3 inch 36.8x27.6 1 inch 25.6x19.2 2/3 inch 17.6x13.2	18.4x13.8 12.8x9.6 4.4x3.3
TV Distortion(%)	0.1	0.1
Back Focus in Air(mm)	14.7	15.0
Mount	C-mount	C-mount
Resolution	120lp/mm	120lp/mm
Size	Φ82x151.5	Φ64x151.0
Weight(g)	1000	830
Temperature Range	-10°C~+50°C	-10°C~+50°C
Storage Temperature Range	-20°C~+60°C	-20°C~+60°C

† Images may differ from the actual product.

Model	LM1120TC	LM1121TC	LM1122TC	LM1123TC	LM1125TC	LM50TC
Magnification	3.45-4.4x	1.725-2.2x	1.15-1.47x	0.69-0.88x	0.346-0.44x	0.3-1.0x
Image Size	8.8x6.6(Φ11)	8.8x6.6(Φ11)	8.8x6.6(Φ11)	8.8x6.6(Φ11)	8.8x6.6(Φ11)	8.8x6.6(Φ11)
Shooting Magnification	3.45x 4.0x 4.4x	1.725x 2.0x 2.2x	1.15x 1.3x 1.47x	0.69x 0.8x 0.88x	0.346x 0.4x 0.44x	0.3x 1.0x
Objective N.A.	0.2 0.2 0.2	0.131 0.131 0.131	0.101 0.101 0.101	0.07 0.07 0.07	0.04 0.04 0.04	0.038 0.100
W.D(mm)	65.9 65.9 65.9	114.8 111.4 109.4	111.6 111.6 111.6	111.0 111.0 111.0	112.7 112.7 112.7	193.4 81.8
Shooting Range (mm)	1/9x2.6 1/7x2.2 1/5x2.0	5.1x3.8 4.4x3.3 4.0x3.0	7.6x5.7 6.6x5.0 6.0x4.5	12.7x9.6 11.0x8.2 10.0x7.5	19.1x25.4 16.5x20.0 15.0x20.0	29.5x22.2 19.3x4 8.8x6.6
TV Distortion(%)	0.015 0.003 -0.002	0.011 0.004 0.001	-0.015 -0.001 0.011	-0.001 -0.009 0.005	0.02 -0.009 0.01	-0.19 -0.1
Back Focus in Air(mm)	17.1 24.5 30	55.8 67.7 76.3	18.7 23.6 29.8	34 28.8 25.3	17.6 17 16.5	22.0
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Resolution	120lp/mm	120lp/mm	120lp/mm	120lp/mm	120lp/mm	120lp/mm
Filter Thread(mm)	-	-	-	-	-	M37.5xP0.5
Size(mm)	Φ57x180.0	Φ48x147.5	Φ50x123.9	Φ50x121.5	Φ51.5x142.3	Φ56x115.7
Weight(g)	645	420	330	290	395	317
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C
Storage Temperature Range	-20°C~+60°C	-20°C~+60°C	-20°C~+60°C	-20°C~+60°C	-20°C~+60°C	-20°C~+60°C

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