



MACHINE VISION LENSES

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MACHINE VISION LENS



About Us

Kowa Optronics Co., Ltd. is part of Kowa Company, Ltd., one of the largest privately owned companies in Japan. Founded in 1894, Kowa produces a wide variety of products in a number of industries, including but not limited to healthcare, industrial, and energy conservation sectors.

Since 1946, Kowa has developed and manufactured high-end optical equipment such as CCTV and machine vision lenses, spotting scopes, handheld binoculars, and coin operated binoculars.

With over 70 years of technical experience, Kowa Optronics Co., Ltd. continues its tradition of being a leader in its industries by providing innovative solutions and new technologies to solve even the toughest vision system obstacles. www.kowa.hk, China Sales: (+86+0)13006699017



Function Icons

Float Floating Mechanism Design

XD Extra Low Dispersion

LO-DIS Low Distortion

RUGGED Ruggedized lens

WR Water Resistance

DR Dust Resistance

WBMC Wide-Band Multi-Coating

SWIR SWIR Coating

IR IR-Corrected

3CMOS 3CMOS Camera

2" 50MEGAPIXEL 3.1μm

VM Series

- ▶ Large image size of φ32mm with M42-mount or TFL-mount.
- ▶ High quality lenses with a resolving power of 3.1μm.
- ▶ Suitable for 8K resolution and are rated at up to 50 megapixels for use with top performance cameras.



2/3" 10MEGAPIXEL (Better than 2.4μm)

JC10M Series

- ▶ 200lp/mm center resolution and low distortion maximize performance of high-end inspection.
- ▶ Short minimum object distance and compact design using aspherical lenses (6 models/f=3.7~25mm) allow for easy installation in compact machine vision systems.



2/3" ULTRA COMPACT 5 MEGAPIXEL 3.45μm

JC5MC Series

- ▶ One of the industry's smallest and lightest 5 megapixel lenses.
- ▶ Unique mechanical design to guard against strong vibration and shock.
- ▶ Easy to change the iris to the marked F-number by click-type iris mechanism. (F2.8, 4, 5.6, 8 and 16)



1" 12 MEGAPIXEL IR-CORRECTED (VIS-SWIR) 3.1μm

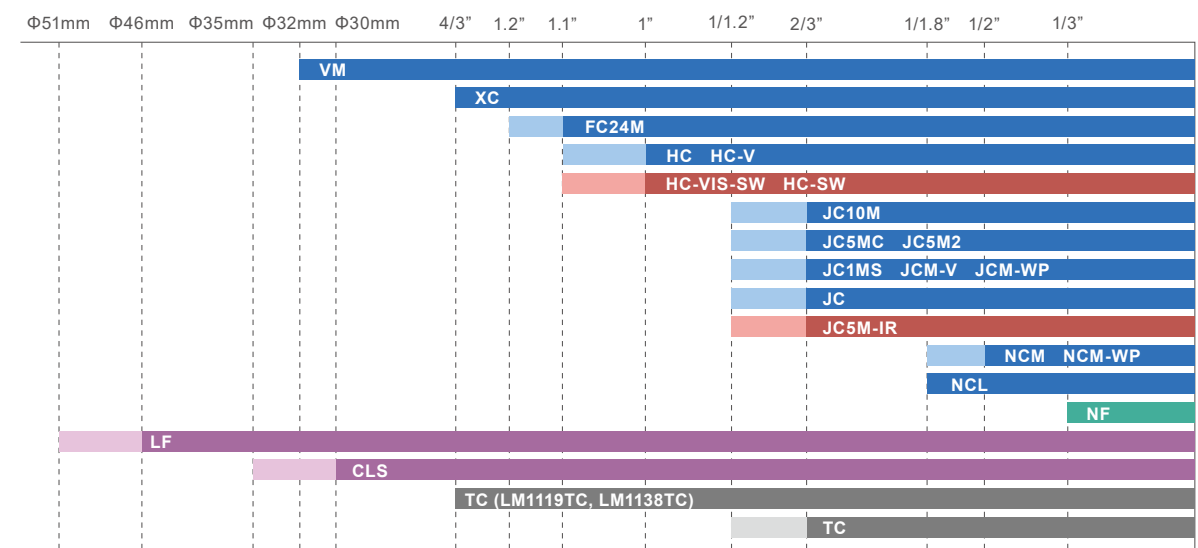
HC-VIS-SW Series

- ▶ A maximum of 12 megapixel and 3.1μm performance can be found at select wavelength ranges.
- ▶ Virtually zero focus shift from visible to 2000nm wavelength range.



	2" 50MEGAPIXEL 3.1μm VM SERIES LM18VM42/LM18VM35 LM25VM42/LM25VM35 LM35VM42/LM35VM35	06
	4/3" 20 MEGAPIXEL PLUS XC SERIES LM8XC2 LM12XC2 LM16XC2 LM25XC2 LM35XC2 LM50XC2	08
	1.1" 24 MEGAPIXEL 2.5μm FC24M SERIES LM6FC24M LM8FC24M LM12FC24M LM16FC24M LM25FC24M LM35FC24M LM50FC24M	10
	1" MEGAPIXEL PLUS HC SERIES LM4HC LM6HC LM8HC LM12HC LM16HC LM25HC LM35HC LM50HC LM75HC	12
	1" RUGGEDIZED MEGAPIXEL PLUS HC-V SERIES LM8HC-V LM12HC-V LM16HC-V LM25HC-V LM35HC-V LM50HC-V	15
	2/3" 10 MEGAPIXEL JC10M SERIES LM3JC10M LM5JC10M LM8JC10M LM12JC10M LM16JC10M LM25JC10M LM35JC10M LM50JC10M	16
	2/3" 5 MEGAPIXEL 3.45μm JC5M2 SERIES LM12JC5M2 LM16JC5M2 LM25JC5M2 LM35JC5M2	18
	2/3" ULTRA COMPACT 5 MEGAPIXEL 3.45μm JC5MC SERIES LM8JC5MC LM12JC5MC LM16JC5MC LM25JC5MC LM35JC5MC LM50JC5MC	20
	WIDE MEGAPIXEL NCM/JCM SERIES LM3NC1M LM4NC1M LM6NC1M LM5JC1M	23
	2/3" MEGAPIXEL JC1MS SERIES LM8JC1MS LM12JC1MS LM16JC1MS LM25JC1MS LM35JC1MS LM50JC1MS LM75JC1MS LM100JC1MS	24
	2/3" RUGGEDIZED MEGAPIXEL JCM-V SERIES LM5JCM-V LM8JCM-V LM12JCM-V LM16JCM-V LM25JCM-V LM35JCM-V LM50JCM-V	26
	2/3" RUGGEDIZED WATER AND DUST RESISTANCE MEGAPIXEL NCM-WP / JCM-WP SERIES LM8NCM-WP LM5JCM-WP LM8JCM-WP LM12JCM-WP LM16JCM-WP LM25JCM-WP LM35JCM-WP LM50JCM-WP	28
	2/3" STANDARD JC SERIES 1/1.8" STANDARD NCL SERIES LM6JC LM8JC LM12JC LM16JC LM25JC LM35JC LM50JC LM4NC1L LM5NC1L LM6NC1L LM12NC1L	30 • 31

	NEW 1" 12 MEGAPIXEL IR-CORRECTED (VIS-SWIR) 3.1μm HC-VIS-SW SERIES LM8HC-VIS-SW LM12HC-VIS-SW LM16HC-VIS-SW LM25HC-VIS-SW LM35HC-VIS-SW LM50HC-VIS-SW	33
	2/3" 5 MEGAPIXEL IR-CORRECTED (VIS-NIR) 3.45μm JC5M-IR SERIES LM16JC5M-IR LM25JC5M-IR LM35JC5M-IR	34
	1" SWIR MEGAPIXEL HC-SW SERIES LM8HC-SW LM12HC-SW LM16HC-SW LM25HC-SW LM35HC-SW LM50HC-SW	35
	LINE SCAN LF SERIES LM28LF LM35LF LM50LF	36
	3CCD LARGE FORMAT CLS SERIES LM28CL1S LM35CL1S LM50CL1S	36
	1/2.5" MEGAPIXEL S-MOUNT LENS LM3QS28 LM3QS40 LM3QS56	37
	1/3" NF-MOUNT NF SERIES LM3NF LM6NF LM9NF	37
	TELECENTRIC TC SERIES LM1119TC LM1138TC LM1120TC LM1121TC LM1122TC LM1123TC LM1125TC	38
	VARIFOCA / MACRO ZOOM LMVZ4411 LMVZ990-IR LMZ69M	40
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VM Series

- ▶ Large image size of $\phi 32$ mm with M42-mount or TFL-mount.
- ▶ High quality lenses with a resolving power of 3.1 μ m.
- ▶ Suitable for 8K resolution and are rated at up to 50 megapixels for use with top performance cameras.
- ▶ Kowa's new and innovative switch locking screw mechanism prevents thumb screws from falling off.
- ▶ The flange back distance can be modified by attaching optional mount adapters to convert to TFL-II or other formats.
- ▶ High magnification design with a focusing range as close as 0.1m away.

Optional Mount Adapters

The flange back can change by using optional mount adapters included with each lens.

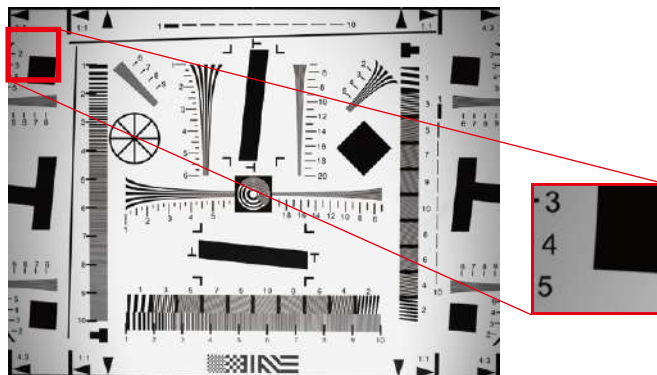
Standard : M42-mount has a 17.526mm flange back distance.



Series	Mount Adapter	Flange Back (mm)	Mount
VM42	FB-1600VM	16	M42 Mount
	FB-1148VM	11.48	M42 Mount
	FB-1000VM	10	M42 Mount
	FB-0656VM	6.56	M42 Mount
	FB-1750VM	17.5	TFL-II Mount

*Mount adapters do not work with VM35 series lenses.

High Resolution Image at the Corners (LM25VM).



Switch Locking Screw Mechanism Prevents Fatigue Failure of Thumb Screws

Kowa's VM series features a newly designed switch locking screw mechanism that prevents thumb screws from falling off by utilizing a fixing screw that does not rotate in a set position. The thumb screw locks into place by sliding the fixing screw to the right side. It can then be detached by sliding the fixing screw to the left side.



The thumb screw can detach by sliding the fixing screw to the left side.

Applications

- Line Scan
- FPD Inspection
- Aerial photography
- Drones

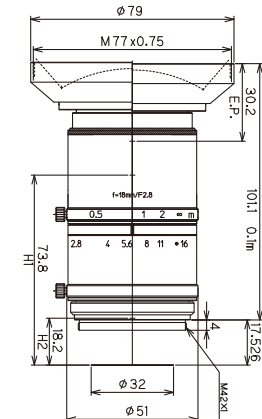
Model	Format Size(ϕ)							
	38.0	35.0	32.0	30.0	APS-C	4/3"	1.2"	1.1"
LM18VM42	—	—	✓	✓	✓	✓	✓	✓
LM18VM35	—	—	✓	✓	✓	✓	✓	✓
LM25VM42	◇	◇	✓	✓	✓	✓	✓	✓
LM25VM35	◇	◇	✓	✓	✓	✓	✓	✓
LM35VM42	◇	◇	✓	✓	✓	✓	✓	✓
LM35VM35	◇	◇	✓	✓	✓	✓	✓	✓

✓ Compatible ◇ Suitable — Incompatible

LM18VM42 LM18VM35



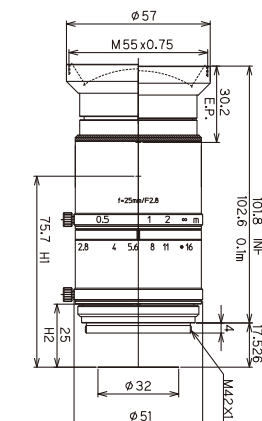
LO-DIS **FLOAT** **XD** **WBMC**
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LM25VM42 LM25VM35



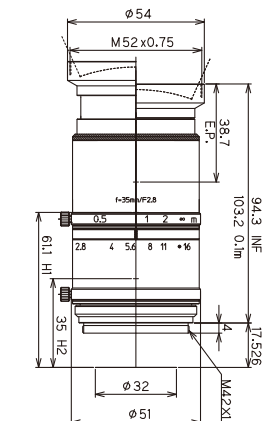
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LM35VM42 LM35VM35



LO-DIS **FLOAT** **XD** **WBMC**
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Model	LM18VM42	LM18VM35
Focal Length(mm)	18	
Image Size(mm)	$\phi 32$	
Iris Range(F-stop)	F2.8~F16	
Focusing Range(m)	0.1~∞	
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)	172(H)×128(V)	
Angle of View	2 Inch	70.5×56.1
	APS-C Inch	63.4×49.7
(Degrees)	4/3 Inch	54.1×41.8
Resolution(Center, Corner)	160lp/mm, 100lp/mm	
TV Distortion(%)	1.25	
Back Focus in Air(mm)	15.5	
Flange Focus in Air(mm)	17.526	
Mount	M42-mount	TFL-mount
Filter Thread(mm)	M77×P0.75	
Size(mm)(ϕ)	$\phi 79 \times 99.6$	
Weight(g)	460	
Temperature Range	-10°C~+50°C	

Model	LM25VM42	LM25VM35
Focal Length(mm)	25	
Image Size(mm)	$\phi 32$	
Iris Range(F-stop)	F2.8~F16	
Focusing Range(m)	0.1~∞	
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)	125(H)×93(V)	
Angle of View	2 Inch	54.0×42.0
	APS-C Inch	48.0×37.0
(Degrees)	4/3 Inch	40.4×30.9
Resolution(Center, Corner)	160lp/mm, 100lp/mm	
TV Distortion(%)	0.59	
Back Focus in Air(mm)	20.3	
Flange Focus in Air(mm)	17.526	
Mount	M42-mount	TFL-mount
Filter Thread(mm)	M55×P0.75	
Size(mm)(ϕ)	$\phi 57 \times 101.8$	
Weight(g)	400	
Temperature Range	-10°C~+50°C	

Model	LM35VM42	LM35VM35
Focal Length(mm)	35	
Image Size(mm)	$\phi 32$	
Iris Range(F-stop)	F2.8~F16	
Focusing Range(m)	0.1~∞	
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)	76(H)×57(V)	
Angle of View	2 Inch	40.2×30.7
	APS-C Inch	35.4×26.9
(Degrees)	4/3 Inch	29.5×22.3
Resolution(Center, Corner)	160lp/mm, 100lp/mm	
TV Distortion(%)	0.12	
Back Focus in Air(mm)	19.5	
Flange Focus in Air(mm)	17.526	
Mount	M42-mount	TFL-mount
Filter Thread(mm)	M52×P0.75	
Size(mm)(ϕ)	$\phi 54 \times 94.3$	
Weight(g)	375	
Temperature Range	-10°C~+50°C	

† Images may differ from the actual product.

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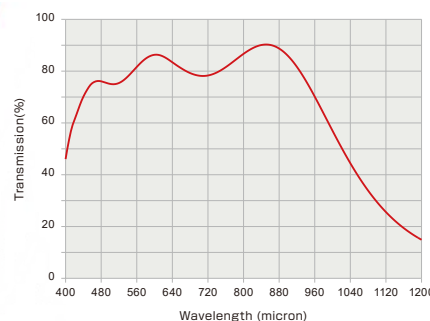
XC Series

- ▶ Large image size of Φ23mm incorporated within a C-mount design.
- ▶ Megapixel resolution is maintained throughout the entire image even when the iris is fully opened.
- ▶ High precision aspherical lens greatly reduces distortion and produces a high-definition picture.
- ▶ The LM8XC generates a very wide 93.5° horizontal angle of view.
- ▶ Kowa's floating mechanism system virtually eliminates optical aberrations from close distance to infinity.

✓ Compatible
◇ Suitable
— Incompatible

Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LM8XC	✓	✓	✓	✓	✓	✓	✓	✓	✓
LM12XC	✓	✓	✓	✓	✓	✓	✓	✓	✓
LM16XC	✓	✓	✓	✓	✓	✓	✓	✓	✓
LM25XC	✓	✓	✓	✓	✓	✓	✓	✓	✓
LM35XC	✓	✓	✓	✓	✓	✓	✓	✓	✓
LM50XC	✓	✓	✓	✓	✓	✓	✓	✓	✓

LM8XC2 Transmission



LM16XC



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LM25XC



LO-DIS FLOAT XD WBMG
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LM35XC



LO-DIS FLOAT WBMG
Low Distortion Floating Wide-Band Multi-Coating

LM50XC



LO-DIS FLOAT WBMG
Low Distortion Floating Wide-Band Multi-Coating

Model	LM16XC	LM25XC	LM35XC	LM50XC
Focal Length(mm)	16	25	35	50
Image Size(mm)	18.4×13.8(Φ23)	18.4×13.8(Φ23)	18.4×13.8(Φ23)	18.4×13.8(Φ23)
Iris Range(F-stop)	F2.0~F22	F2.0~F16	F2.0~F16	F2.0~F22
Focusing Range(m)	0.1~∞	0.15~∞	0.2~∞	0.3~∞
Control	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual
Shooting Range at M.O.D.(mm)	134.6(H)×100.8(V)	124.8(H)×93.0(V)	100.3(H)×75.3(V)	100.2(H)×75.5(V)
4/3 Inch	60.6×47.2	40.9×31.1	29.6×22.4	20.6×15.7
1.1 Inch	48.0×36.8	31.8×24.0	22.8×17.2	16.0×12.0
1 Inch	44.0×33.6	28.9×21.8	20.8×15.6	14.6×11.0
2/3 Inch	30.9×23.3	20.1×15.2	14.3×10.8	10.1×7.6
Resolution(Center, Corner)	160lp/mm, 80lp/mm	160lp/mm, 80lp/mm	160lp/mm, 80lp/mm	160lp/mm, 80lp/mm
Distortion(%)	0.02	-0.57	-0.17	0.8
Back Focus in Air(mm)	13.0	24.3	15.2	21.6
Mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M40.5×P0.5	M40.5×P0.5	M37.5×P0.5	M37.5×P0.5
Size(mm)(∞)	Φ45×79.5	Φ45×89	Φ45×74	Φ47×78
Weight(g)	250	255	210	235
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

Diagram of M.O.D. / Magnification Using A Close Up Ring

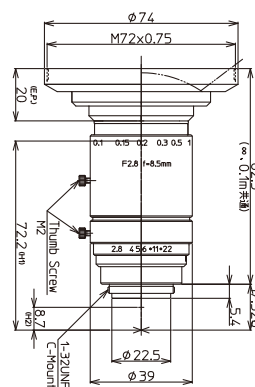
Model	LM8XC	LM12XC	LM16XC	LM25XC	LM35XC	LM50XC
(Non)M.O.D./Magnification	100mm/0.08×	100mm/0.10×	100mm/0.14×	150mm/0.15×	200mm/0.18×	300mm/0.18×
(1mm Ring)M.O.D./Magnification	30mm/0.19×	48mm/0.19×	64mm/0.20×	115mm/0.19×	174mm/0.21×	273mm/0.20×
(5mm Ring)M.O.D./Magnification	-	-	21mm/0.46×	56mm/0.35×	117mm/0.33×	204mm/0.28×
(10mm Ring)M.O.D./Magnification	-	-	-	31mm/0.55×	85mm/0.48×	158mm/0.39×
(20mm Ring)M.O.D./Magnification	-	-	-	12mm/0.96×	58mm/0.77×	115mm/0.59×

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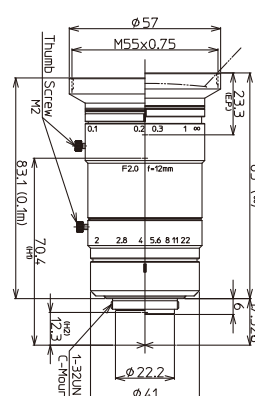
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LM12XC



LO-DIS FLOAT XD WBMG
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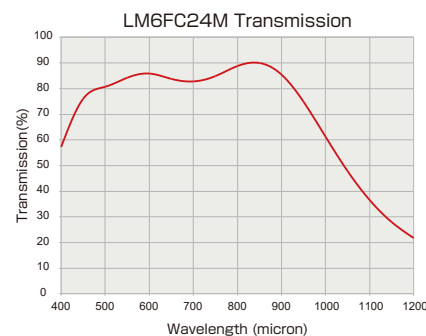


FC24M Series NEW

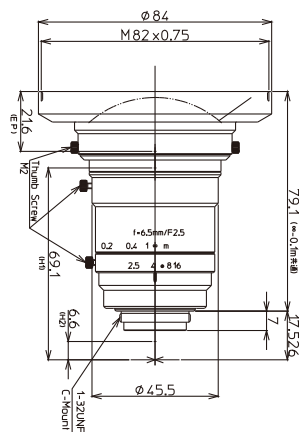
- ▶ 2.5 μ m pixel pitch high resolution compact lens.
- ▶ Compatible with maximum 1.2inch format size.
- ▶ Excellent corner brightness and low distortion.
- ▶ Kowa's floating mechanism system virtually eliminates optical aberrations from close distance to infinity.
- ▶ Kowa's wide-band multi-coating effectively decreases ghost and flare and produces a high transmission from the visible to NIR wavelength range.
- ▶ High traceability by QR code management.

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)							
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2
LM6FC24M	—	—	✓	✓	✓	✓	✓	✓
LM8FC24M	—	—	✓	✓	✓	✓	✓	✓
LM12FC24M	—	◇	✓	✓	✓	✓	✓	✓
LM16FC24M	—	◇	✓	✓	✓	✓	✓	✓
LM25FC24M	—	◇	✓	✓	✓	✓	✓	✓
LM35FC24M	—	◇	✓	✓	✓	✓	✓	✓
LM50FC24M	—	◇	✓	✓	✓	✓	✓	✓



LM6FC24M



Model	LM6FC24M
Focal Length(mm)	6.5
Image Size(mm)	14.1×10.6(Φ17.6)
Iris Range(F-stop)	F2.5~F16
Focusing Range(m)	0.1~∞
Control	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	256(H)×190(V)
Angle of	1.1 Inch
View	1 Inch
(Degrees)	2/3 Inch
Resolution(Center, Corner)	200lp/mm, 100lp/mm
TV Distortion(%)	-1.51
Back Focus in Air(mm)	10.9
Mount	C-mount
Filter Thread(mm)	M82×P0.75
Size(mm)(∞)	Φ84×79.1
Weight(g)	300
Temperature Range	-10°C~+50°C

LO-DIS FLOAT XD WBMC
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† Images may differ from the actual product.

LM8FC24



LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating

LM12FC24M



LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating

LM16FC24M



LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating

LM25FC24M



LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating

LM35FC24M



LO-DIS FLOAT WBMC
Low Distortion Floating Wide-Band Multi-Coating

LM50FC24M



LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating

Model	LM8FC24M	LM12FC24M	LM16FC24M	LM25FC24M	LM35FC24M	LM50FC24M
Focal Length(mm)	8.5	12	16	25	35	50
Image Size(mm)	14.1×10.6(Φ17.6)	14.1×10.6(Φ17.6)	14.1×10.6(Φ17.6)	14.1×10.6(Φ17.6)	14.1×10.6(Φ17.6)	14.1×10.6(Φ17.6)
Iris Range(F-stop)	F2.5~F16	F1.8~F16	F1.8~F16	F1.8~F16	F1.8~F16	F1.8~F16
Focusing Range(m)	0.1~∞	0.1~∞	0.1~∞	0.1~∞	0.2~∞	0.2~∞
Control	Manual	Manual	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	184(H)×138(V)	135(H)×101(V)	102(H)×77(V)	64(H)×48(V)	84(H)×63(V)	59(H)×44(V)
Angle of	1.1 Inch	79.2×63.8	60.0×46.9	48.0×36.7	31.5×23.9	22.1×16.7
View	1 Inch	73.9×58.8	55.3×42.9	43.6×33.4	28.7×21.7	20.2×15.2
(Degrees)	2/3 Inch	54.5×42.1	39.6×30.1	30.8×23.3	20.0×15.0	14.0×10.5
Resolution(Center, Corner)	200lp/mm, 100lp/mm	200lp/mm, 100lp/mm	200lp/mm, 100lp/mm	200lp/mm, 100lp/mm	200lp/mm, 100lp/mm	200lp/mm, 100lp/mm
TV Distortion(%)	0.55	0.26	-0.4	-0.3	0.01	-0.03
Back Focus in Air(mm)	12.9	14.5	11.9	13.3	15.5	14.8
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M62×P0.75	M49×P0.75	M35.5×P0.5	M35.5×P0.5	M40.5×P0.5	M40.5×P0.5
Size(mm)(∞)	Φ64×73.3	Φ51×73.8	Φ43×65.7	Φ45×67.9	Φ45×66	Φ45×74.5
Weight(g)	230	260	200	220	205	205
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

Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM6FC24M	LM8FC24M	LM12FC24M	LM16FC24M	LM25FC24M	LM35FC24M	LM50FC24M
(Non)M.O.D./Magnification	100mm/0.06×	100mm/0.08×	100mm/0.11×	100mm/0.14×	100mm/0.22×	200mm/0.17×	200mm/0.24×
(1mm Ring)M.O.D./Magnification	—	28mm/0.19×	50mm/0.18×	64mm/0.20×	82mm/0.26×	170mm/0.20×	184mm/0.26×
(5mm Ring)M.O.D./Magnification	—	—	—	20mm/0.45×	45mm/0.41×	106mm/0.31×	140mm/0.35×
(10mm Ring)M.O.D./Magnification	—	—	—	—	25mm/0.61×	71mm/0.46×	108mm/0.46×
(20mm Ring)M.O.D./Magnification	—	—	—	—	—	42mm/0.75×	76mm/0.68×

† Images may differ from the actual product.

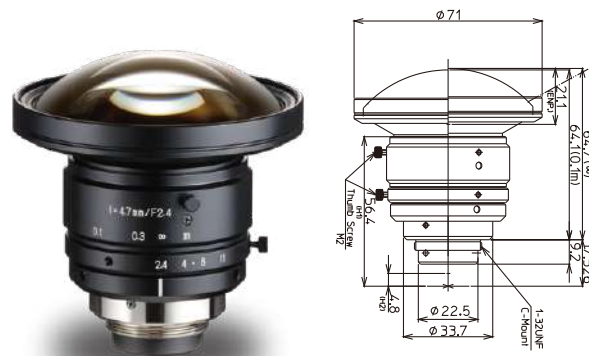
HC Series

- ▶ Wide product range: 9 lenses in HC series
- ▶ Up to 5 megapixels performance
- ▶ Excellent corner brightness
- ▶ High performance compact lenses
- ▶ Low distortion

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)							
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/3
LM4HC	—	—	—	✓	✓	✓	✓	✓
LM6HC	—	—	—	✓	✓	✓	✓	✓
LM8HC	—	—	—	✓	✓	✓	✓	✓
LM12HC	—	—	◇	✓	✓	✓	✓	✓
LM16HC	—	—	◇	✓	✓	✓	✓	✓
LM25HC	—	◇	◇	✓	✓	✓	✓	✓
LM35HC	—	◇	◇	✓	✓	✓	✓	✓
LM50HC	—	—	◇	✓	✓	✓	✓	✓
LM75HC	—	—	◇	✓	✓	✓	✓	✓

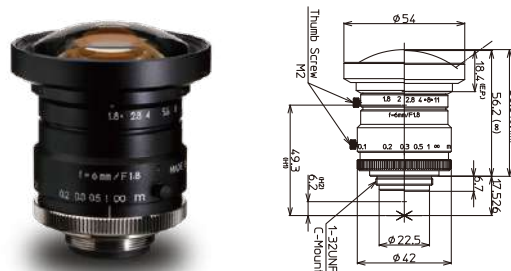
LM4HC



LM8HC



LM6HC



Model	LM4HC	LM6HC	LM8HC
Focal Length(mm)	4.7	6	8
Image Size(mm)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)
Iris Range(F-stop)	F2.4~F11	F1.8~F11	F1.4~F16
Focusing Range(m)	0.1~∞	0.1~∞	0.1~∞
Control Iris	Manual	Manual	Manual
Focus	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	375.6(H)×272.1(V)	267.4(H)×196.3(V)	196.0(H)×143.2(V)
Angle of 1 Inch	112.2×95.4	96.8×79.4	79.4×63.0
View 2/3 Inch	90.0×72.2	74.1×58.0	58.3×44.7
(Degrees) 1/1.8 Inch	77.4×60.8	62.6×48.2	48.5×36.9
Resolution(Center, Corner)	100lp/mm, 50lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
TV Distortion(%)	-0.58	-0.2	-1.2
Back Focus in Air(mm)	9.0	11.1	11.2
Mount	C-mount	C-mount	C-mount
Filter Thread(mm)	*	—	M55×P0.75
Size(mm)(∞)	Φ71×64.7	Φ54×56.2	Φ57×58
Weight(g)	360	215	205
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

*Optional filter holder can be attached.

† Images may differ from the actual product.

LM12HC



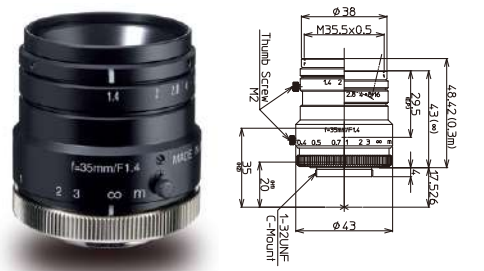
LM16HC



LM25HC



LM35HC



LM50HC



LM75HC



Model	LM12HC	LM16HC	LM25HC	LM35HC	LM50HC	LM75HC
Focal Length(mm)	12.5	16	25	35	50	75
Image Size(mm)	12.8×9.6(Φ16)	12.8×9.6(Φ16)	12.8×9.6(Φ16)	12.8×9.6(Φ16)	12.8×9.6(Φ16)	12.8×9.6(Φ16)
Iris Range(F-stop)	F1.4~F16	F1.4~F16	F1.4~F16	F1.4~F16	F1.4~F16	F1.8~F16
Focusing Range(m)	0.3~∞	0.3~∞	0.3~∞	0.3~∞	0.5~∞	1.0~∞
Control Iris	Manual	Manual	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	330.6(H)×243.5(V)	251.5(H)×186.2(V)	160.7(H)×119.2(V)	110.1(H)×82.0(V)	121.8(H)×91.3(V)	165.5(H)×123.9(V)
Angle of 1 Inch	55.6×42.5	44.3×33.6	29.3×22.0	20.9×15.8	14.5×10.8	9.7×7.3
View 2/3 Inch	39.1×29.5	30.8×23.2	20.2×15.1	14.4×10.8	10.0×7.5	6.7×5.0
(Degrees) 1/1.8 Inch	32.1×24.2	25.3×19.0	16.5×12.4	11.8×8.8	8.2×6.2	5.5×4.1
Resolution(Center, Corner)	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
TV Distortion(%)	-1.58	-1.0	-1.0	-0.5	0.05	-0.2
Back Focus in Air(mm)	12.6	12.6	16.5	16.8	14.8	14.5
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M35.5×P0.5	M35.5×P0.5	M35.5×P0.5	M35.5×P0.5	M40.5×P0.5	M46×P0.75
Size(mm)(∞)	Φ43×51.5	Φ43×52.9	Φ43×43	Φ43×43	Φ49×48	Φ49×57
Weight(g)	160	150	135	135	210	195
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

Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM4HC	LM6HC	LM8HC	LM12HC	LM16HC	LM25HC	LM35HC	LM50HC	LM75HC
(Non)M.O.D./Magnification	100mm/0.04×	100mm/0.05×	100mm/0.07×	300mm/0.04×	300mm/0.05×	300mm/0.08×	300mm/0.12×	500mm/0.11×	1000mm/0.078×
(1mm Ring)M.O.D./Magnification	—	—	—	93mm/0.12×	134mm/0.11×	200mm/0.12×	243mm/0.15×	424mm/0.13×	858mm/0.091×
(5mm Ring)M.O.D./Magnification	—	—	—	—	—	83mm/0.28×	138mm/0.26×	269mm/0.20×	553mm/0.14×
(10mm Ring)M.O.D./Magnification	—	—	—	—	—	—	91mm/0.40×	189mm/0.30×	389mm/0.21×
(20mm Ring)M.O.D./Magnification	—	—	—	—	—	—	—	124mm/0.50×	251mm/0.34×

† Images may differ from the actual product.

HC-V Series

✓ Compatible ◇ Suitable — Incompatible								
Model	Format Size(Inch)							
	4/3	1.2	1.1	1	1/1.2	2/3	1/2	1/3
LM8HC-V	—	—	—	✓	✓	✓	✓	✓
LM12HC-V	—	—	◇	✓	✓	✓	✓	✓
LM16HC-V	—	—	◇	✓	✓	✓	✓	✓
LM25HC-V	—	◇	◇	✓	✓	✓	✓	✓
LM35HC-V	—	◇	◇	✓	✓	✓	✓	✓
LM50HC-V	—	—	◇	✓	✓	✓	✓	✓
LM75HC-V	—	—	◇	✓	✓	✓	✓	✓

The HC-V series is made for use in high vibration and shock environments. With a design based on Kowa's standard 1" HC lenses, this ruggedized megapixel lens series is ideal for applications that require increased durability and high optical performance.

- ▶ Up to 5 megapixels performance
- ▶ Unique mechanical design to guard against strong vibration and shock.
- ▶ Two way reversible nut is utilized instead of thumb screws in order to tightly lock the focus adjustment ring in place.
- ▶ Utilizing two way reversible nut contributes to the prevention of screw dropping troubles.
- ▶ All internal glass elements are glued to the inside housing to improve stability.
- ▶ Interchangeable iris plates are used to select the F-stop.



Interchangeable Iris Plates

- 1 The HC-V series uses interchangeable iris plates instead of mechanical iris diaphragms with moving blades. You can choose from four iris plates to adjust the F-stop.



Interchangeable Iris Plates

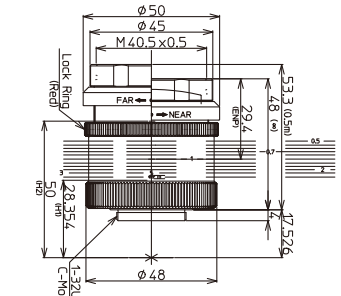
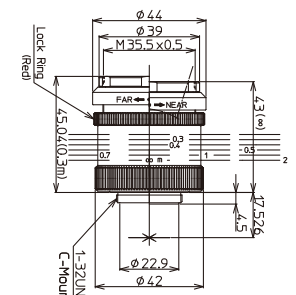
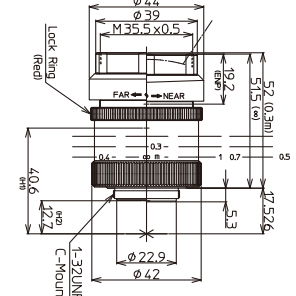
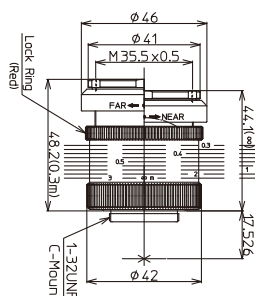
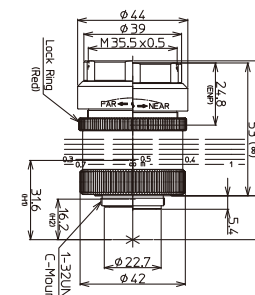
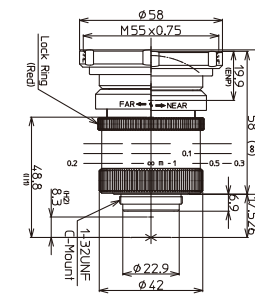
Focus Adjustment Procedure

- 2 Unscrew the bottom ring of the outside body to adjust the focus to optimal position.
- 3 Screw the red two way reversible nut on the center body towards the bottom ring to lock in the focus.



Two Way Reversible Nut

Instruction Video



Model	LM8HC-V	LM12HC-V	LM16HC-V	LM25HC-V	LM35HC-V	LM50HC-V
Focal Length (mm)	8	12.5	16	25	35	50
Image Size (mm)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)
Iris Range (F-stop)	F1.4 / F2.8 / F4 / F8	F1.4 / F2.8 / F4 / F8	F1.4 / F2.8 / F4 / F8	F1.4 / F2.8 / F4 / F8	F1.4 / F2.8 / F4 / F8	F1.4 / F2.8 / F4 / F8
Focusing Range (m)	0.1~∞	0.3~∞	0.3~∞	0.3~∞	0.3~∞	0.5~∞
Control	Iris	-	-	-	-	-
Focus	Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D. (mm)	196.0(H)×143.0(V)	330.6(H)×243.5(V)	251.5(H)×186.2(V)	160.7(H)×119.2(V)	110.1(H)×82.0(V)	121.8(H)×91.3(V)
Angle of View	1 Inch	79.7×63.0	55.6×42.5	44.3×33.6	29.3×22.0	20.9×15.8
	2/3 Inch	58.3×44.7	39.1×29.5	30.8×23.2	20.2×15.1	14.4×10.8
(Degrees)	1/1.8 Inch	48.5×36.9	32.1×24.2	25.3×19.0	16.5×12.4	11.8×8.8
Resolution(Center, Corner)	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
TV Distortion (%)	-1.2	-1.58	-1.0	-1.0	-0.5	0.05
Back Focus in Air(mm)	11.2	12.6	12.6	16.5	16.8	14.8
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread (mm)	M55×P0.75	M35.5×P0.5	M35.5×P0.5	M35.5×P0.5	M35.5×P0.5	M40.5×P0.5
Size (mm)(∞)	Φ58×58	Φ44×51.5	Φ44×53	Φ44×43	Φ46×44.1	Φ50×48
Weight(g)	183	130	120	104	133	170
Temperature Range	-10℃~+50℃	-10℃~+50℃	-10℃~+50℃	-10℃~+50℃	-10℃~+50℃	-10℃~+50℃

† Images may differ from the actual product.

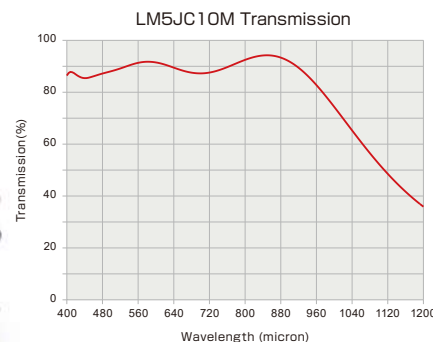
† Images may differ from the actual product.

JC10M Series

- ▶ 200lp/mm center resolution and low distortion maximize performance of high-end inspection.
- ▶ Incorporating Kowa's wide-band multi-coating and floating mechanism system, the JC10M lens series greatly reduces chromatic aberration from close distance to infinity and maintains a high transmission from visible to NIR.
- ▶ Short minimum object distance and compact design using aspherical lenses (6models/f=3.7~25mm) allow for easy installation in compact machine vision systems.

✓ Compatible ◇ Suitable — Incompatible

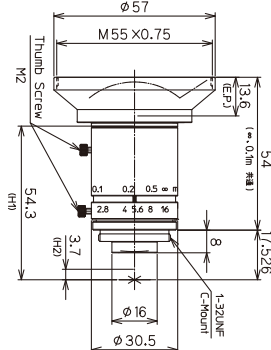
Model	Format Size(Inch)						
	4/3	1.2	1.1	1	1/1.2	2/3	1/2
LM3JC10M	—	—	—	—	◇	✓	✓
LM5JC10M	—	—	—	—	—	✓	✓
LM8JC10M	—	—	—	—	—	✓	✓
LM12JC10M	—	—	—	—	—	✓	✓
LM16JC10M	—	—	—	—	◇	✓	✓
LM25JC10M	—	—	—	—	—	✓	✓
LM35JC10M	—	—	◇	◇	◇	✓	✓
LM50JC10M	—	—	—	—	—	✓	✓



LM3JC10M



LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating

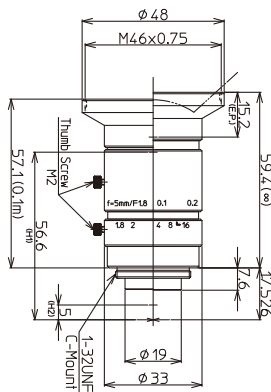


Model	LM3JC10M
Focal Length(mm)	3.7
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.8~F16
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	278.7(H)×207.3(V)
Angle of View	2/3 Inch 100.2°×83.7°
1/1.8 Inch	88.7°×72.4°
(Degrees) 1/2 Inch	82.0°×66.1°
Resolution(Center, Corner)	200lp/mm, 125lp/mm
TV Distortion(%)	-0.09
Back Focus in Air(mm)	9.9
Mount	CC-mount
Filter Thread(mm)	M55×0.75
Size(mm)(∞)	Φ57×54
Weight(g)	120
Temperature Range	-10°C~+50°C

LM5JC10M



LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating

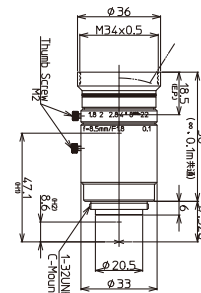


Model	LM5JC10M
Focal Length(mm)	5
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.8~F16
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	197.0(H)×147.0(V)
Angle of View	2/3 Inch 82.2°×66.5°
1/1.8 Inch	71.1°×56.5°
(Degrees) 1/2 Inch	64.9°×51.1°
Resolution(Center, Corner)	200lp/mm, 140lp/mm
TV Distortion(%)	-0.33
Back Focus in Air(mm)	10.3
Mount	C-mount
Filter Thread(mm)	M46×P0.75
Size(mm)(∞)	Φ48×59.4
Weight(g)	120
Temperature Range	-10°C~+50°C

LM8JC10M



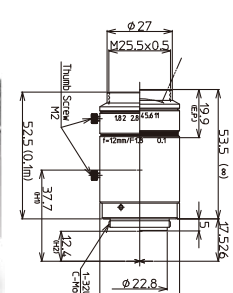
LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating



LM12JC10M



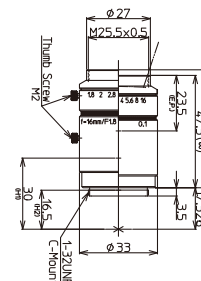
LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating



LM16JC10M



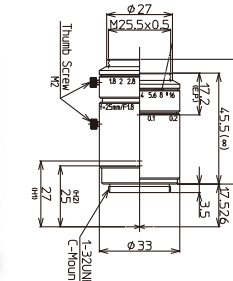
LO-DIS FLOAT WBMC
Low Distortion Floating Wide-Band Multi-Coating



LM25JC10M



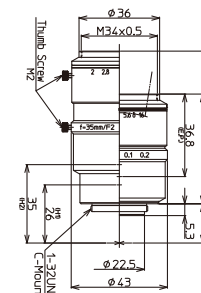
LO-DIS FLOAT WBMC
Low Distortion Floating Wide-Band Multi-Coating



LM35JC10M



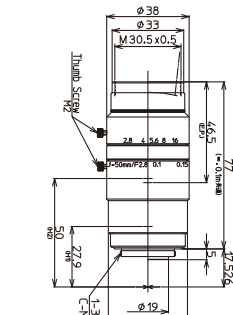
LO-DIS FLOAT WBMC
Low Distortion Floating Wide-Band Multi-Coating



LM50JC10M



LO-DIS FLOAT XD WBMC
Low Distortion Floating Extra Low Dispersion Wide-Band Multi-Coating



Model	LM8JC10M	LM12JC10M	LM16JC10M	LM25JC10M	LM35JC10M	LM50JC10M
Focal Length(mm)	8.5	12	16	25	35	50
Image Size(mm)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.8~F22	F1.8~F11	F1.8~F16	F1.8~F16	F2.0~F16	F2.8~F16
Focusing Range(m)	0.1~∞	0.1~∞	0.1~∞	0.1~∞	0.1~∞	0.1~∞
Control Iris	Manual	Manual	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	133.2(H)×99.6(V)	80.7(H)×60.2(V)	61.1(H)×45.7(V)	36.7(H)×27.5(V)	23.4(H)×17.6(V)	19.1(H)×14.3(V)
Angle of View	2/3 Inch 54.0°×41.9°	39.1°×29.8°	30.0°×22.7°	20.0°×15.1°	14.3°×10.8°	10.1°×7.6°
1/1.8 Inch	45.3°×34.8°	32.4°×24.6°	24.7°×18.6°	16.4°×12.3°	11.7°×8.8°	8.2°×6.1°
(Degrees) 1/2 Inch	40.8°×31.2°	28.9°×21.9°	22.0°×16.6°	14.6°×11.0°	10.4°×7.8°	7.3°×5.5°
Resolution(Center, Corner)	200lp/mm, 160lp/mm	200lp/mm, 160lp/mm	200lp/mm, 160lp/mm	200lp/mm, 160lp/mm	200lp/mm, 160lp/mm	200lp/mm, 160lp/mm
TV Distortion(%)	0.31	-0.12	-0.2	-0.09	0.05	-0.02
Back Focus in Air(mm)	12.1	13.9	14.6	17.9	14.2	12.8
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M34×P0.5	M25.5×P0.5	M25.5×P0.5	M25.5×P0.5	M34×P0.5	M30.5×P0.5
Size(mm)(∞)	Φ36×56	Φ33×53.5	Φ33×47.5	Φ33×45.5	Φ43×49	Φ38×77
Weight(g)	115	105	90	95	160	170
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

Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM3JC10M	LM5JC10M	LM8JC10M	LM12JC10M	LM16JC10M	LM25JC10M	LM35JC10M	LM50JC10M
(Non)M.O.D./Magnification	100mm/0.03×	100mm/0.05×	100mm/0.07×	100mm/0.11×	100mm/0.15×	100mm/0.24×	100mm/0.38×	100mm/0.46×
(1mm Ring)M.O.D./Magnification	—	—	20mm/0.20×	48mm/0.19×	61mm/0.21×	79mm/0.28×	85mm/0.40×	91mm/0.48×
(5mm Ring)M.O.D./Magnification	—	—	—	—	18mm/0.45×	46mm/0.44×	65mm/0.50×	76mm/0.58×
(10mm Ring)M.O.D./Magnification	—	—	—	—	—	29mm/0.63×	49mm/0.62×	64mm/0.70×
(20mm Ring)M.O.D./Magnification	—	—	—	—	—	—	31mm/0.87×	49mm/0.94×

† Images may differ from the actual product.

† Images may differ from the actual product.

JC5M2 Series

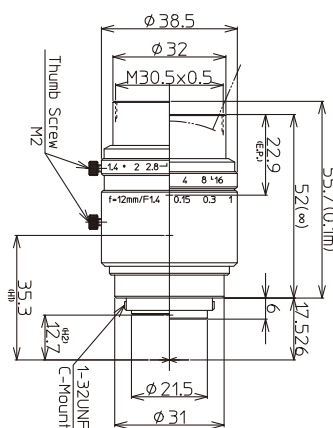
- ▶ Incorporating Kowa's floating mechanism system, the JC5M2 lens series greatly reduces chromatic aberration from close distance to infinity.
- ▶ Good performance at the edge as well as the center.
- ▶ Available in F1.4. (LM12JC5M2 and LM16-JC5M2)

Model	Format Size(Inch)							
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2
LM12JC5M2	—	—	—	—	✓	✓	✓	✓
LM16JC5M2	—	—	—	—	✓	✓	✓	✓
LM25JC5M2	—	—	—	◇	—	✓	✓	✓
LM35JC5M2	—	—	◇	◇	✓	✓	✓	✓

✓ Compatible ◇ Suitable — Incompatible



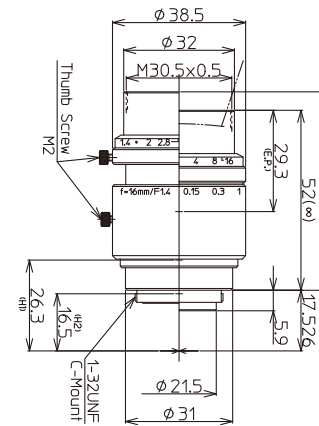
LM12JC5M2



Model	LM12JC5M2
Focal Length(mm)	12.5
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~F16
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	81.4(H)×60.9(V)
Angle of 2/3 Inch	38.4×29.2
View 1/1.8 Inch	31.7×24.0
(Degrees) 1/2 Inch	28.4×21.4
Resolution(Center, Corner)	160lp/mm, 125lp/mm
TV Distortion(%)	-0.06
Back Focus in Air(mm)	11.5
Mount	C-mount
Filter Thread(mm)	M30.5×P0.5
Size(mm)(∞)	Φ38.5×52
Weight(g)	130
Temperature Range	-10°C~+50°C

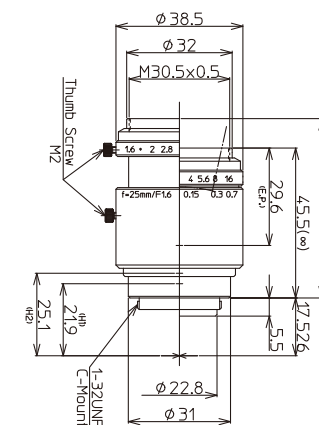
LO-DIS FLOAT
Low Distortion Floating

LM16JC5M2



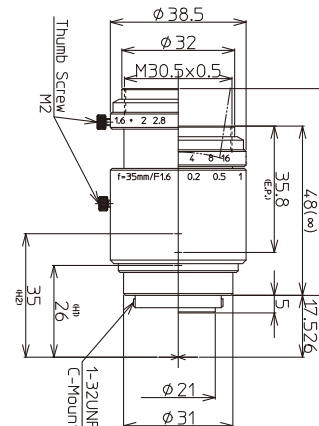
LO-DIS FLOAT
Low Distortion Floating

LM25JC5M2



LO-DIS FLOAT
Low Distortion Floating

LM35JC5M2



LO-DIS FLOAT
Low Distortion Floating

Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM12JC5M2	LM16JC5M2	LM25JC5M2	LM35JC5M2
(Non)M.O.D./Magnification	100mm/0.109×	100mm/0.137×	100mm/0.251×	180mm/0.209×
(1mm Ring)M.O.D./Magnification	50mm/0.184×	62mm/0.195×	86mm/0.288×	160mm/0.235×
(5mm Ring)M.O.D./Magnification	—	—	54mm/0.434×	109mm/0.341×
(10mm Ring)M.O.D./Magnification	—	—	—	78mm/0.470×
(20mm Ring)M.O.D./Magnification	—	—	—	49mm/0.728×

Model	LM16JC5M2
Focal Length(mm)	16
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~F16
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	64.6(H)×48.4(V)
Angle of 2/3 Inch	29.9×22.7
View 1/1.8 Inch	24.7×18.6
(Degrees) 1/2 Inch	22.0×16.6
Resolution(Center, Corner)	160lp/mm, 125lp/mm
TV Distortion(%)	0.03
Back Focus in Air(mm)	11.6
Mount	C-mount
Filter Thread(mm)	M30.5×P0.5
Size(mm)(∞)	Φ38.5×52
Weight(g)	125
Temperature Range	-10°C~+50°C

Model	LM25JC5M2
Focal Length(mm)	25
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.6~F16
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	35.1(H)×26.3(V)
Angle of 2/3 Inch	19.9×15.0
View 1/1.8 Inch	16.4×12.3
(Degrees) 1/2 Inch	14.6×10.9
Resolution(Center, Corner)	160lp/mm, 125lp/mm
TV Distortion(%)	-0.01
Back Focus in Air(mm)	11.2
Mount	C-mount
Filter Thread(mm)	M30.5×P0.5
Size(mm)(∞)	Φ38.5×45.5
Weight(g)	115
Temperature Range	-10°C~+50°C

Model	LM35JC5M2
Focal Length(mm)	35
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.6~F16
Focusing Range(m)	0.18~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	42.1(H)×31.6(V)
Angle of 2/3 Inch	14.3×10.8
View 1/1.8 Inch	11.7×8.8
(Degrees) 1/2 Inch	10.4×7.8
Resolution(Center, Corner)	160lp/mm, 125lp/mm
TV Distortion(%)	-0.03
Back Focus in Air(mm)	12.2
Mount	C-mount
Filter Thread(mm)	M30.5×P0.5
Size(mm)(∞)	Φ38.5×48
Weight(g)	120
Temperature Range	-10°C~+50°C

† Images may differ from the actual product.

† Images may differ from the actual product.

JC5MC Series

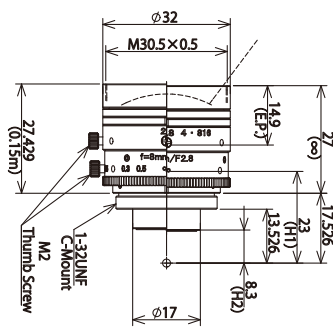
- ▶ One of the industry's smallest and lightest 5 megapixel lenses.
- ▶ Roughly half the size of Kowa's current 2/3" 5MP JC5M2 series lenses.
- ▶ Unique mechanical design to guard against strong vibration and shock.
- ▶ Easy to change the iris to the marked F-number by click-type iris mechanism. (F2.8, 4, 5.6, 8 and 16)



LM8JC5MC



LO-DIS
Low Distortion

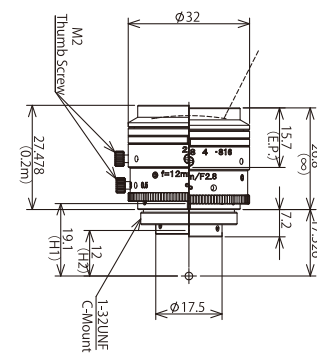


Model	LM8JC5MC
Focal Length(mm)	8
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.8~F16
Focusing Range(m)	0.15~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	178.0(H)×132.0(V)
Angle of 2/3 Inch	57.6×44.4
View 1/1.8 Inch	48.1×36.7
(Degrees) 1/3 Inch	43.1×32.8
Resolution(Center, Corner)	160lp/mm, 100lp/mm
TV Distortion(%)	-0.85
Back Focus in Air(mm)	10.8
Mount	C-mount
Filter Thread(mm)	M30.5xP0.5
Size(mm)(∞)	Φ32×27
Weight(g)	55
Temperature Range	-10°C~+50°C

LM12JC5MC



LO-DIS
Low Distortion



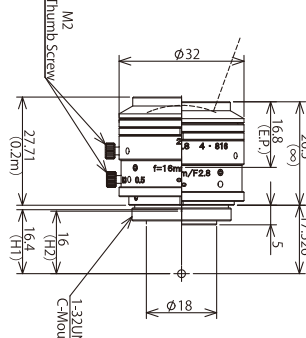
Model	LM12JC5MC
Focal Length(mm)	12
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.8~F16
Focusing Range(m)	0.2~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	159.0(H)×118.0(V)
Angle of 2/3 Inch	41.0×31.2
View 1/1.8 Inch	33.9×25.6
(Degrees) 1/3 Inch	30.3×22.8
Resolution(Center, Corner)	160lp/mm, 100lp/mm
TV Distortion(%)	-0.43
Back Focus in Air(mm)	12.6
Mount	C-mount
Filter Thread(mm)	*
Size(mm)(∞)	Φ32×26.8
Weight(g)	55
Temperature Range	-10°C~+50°C

† Images may differ from the actual product.

LM16JC5MC



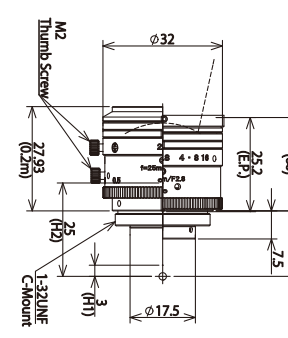
LO-DIS
Low Distortion



LM25JC5MC



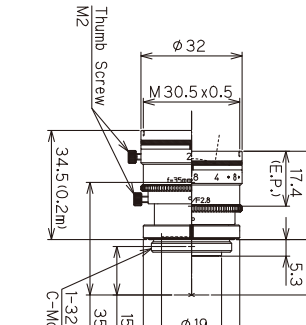
LO-DIS
Low Distortion



LM35JC5MC



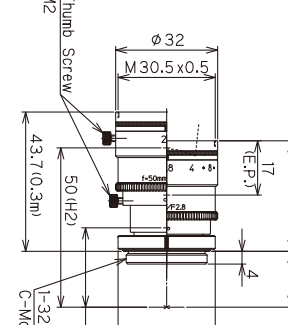
LO-DIS
Low Distortion



LM50JC5MC



LO-DIS
Low Distortion



Model	LM16JC5MC	LM25JC5MC	LM35JC5MC	LM50JC5MC
Focal Length(mm)	16	25	35	50
Image Size(mm)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.8~F16	F2.8~F16	F2.8~F16	F2.8~F16
Focusing Range(m)	0.2~∞	0.2~∞	0.2~∞	0.3~∞
Control Iris	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	117.0(H)×88.0(V)	75.0(H)×56.0(V)	48.0(H)×36.0(V)	49.0(H)×37.0(V)
Angle of 2/3 Inch	30.9×23.4	20.0×15.0	14.0×10.6	10.0×7.5
View 1/1.8 Inch	25.5×19.2	16.4×12.4	11.5×8.7	8.2×6.2
(Degrees) 1/3 Inch	22.7×17.2	14.6×11.0	10.3×7.7	7.3×5.5
Resolution(Center, Corner)	160lp/mm, 100lp/mm	160lp/mm, 100lp/mm	160lp/mm, 125lp/mm	160lp/mm, 125lp/mm
TV Distortion(%)	-0.09	0.06	-0.02	-0.01
Back Focus in Air(mm)	14.7	11.7	13.3	14.9
Mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	*	*	M30.5×P0.5	M30.5×P0.5
Size(mm)(∞)	Φ32×26.5	Φ32×25	Φ32×27.9	Φ32×34.7
Weight(g)	55	55	50	60
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

*Optional filter holder can be attached.(M30.5×P0.5)

Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM8JC5MC	LM12JC5MC	LM16JC5MC	LM25JC5MC	LM35JC5MC	LM50JC5MC
(Non)M.O.D./Magnification	150mm/0.05×	200mm/0.06×	200mm/0.08×	200mm/0.12×	200mm/0.183×	300mm/0.180×
(1mm Ring)M.O.D./Magnification	35mm/0.18×	75mm/0.13×	105mm/0.14×	145mm/0.16×	174mm/0.211×	272mm/0.201×
(5mm Ring)M.O.D./Magnification	-	-	-	66mm/0.32×	115mm/0.325×	201mm/0.280×
(10mm Ring)M.O.D./Magnification	-	-	-	-	82mm/0.465×	154mm/0.381×
(20mm Ring)M.O.D./Magnification	-	-	-	-	53mm/0.748×	109mm/0.579×

† Images may differ from the actual product.

NCM/JCM Series

- ▶ Super wide optical design
- ▶ Large angle of view
- ▶ Expansion angle
(Horizontal angle 82degree, Vertical angle 66degree)

† 2/3" model: LM5JCM, 1/1.8" model: LM3NCM

Low distortion

- ▶ Reduces the distortion to corner

† LM5JCM: Under 0.5%, LM3NCM: Under 0.4% (TV distortion)

High quality

- ▶ Adapts to 2 megapixel cameras
- ▶ Improves center and corner resolution
- ▶ High transmittance

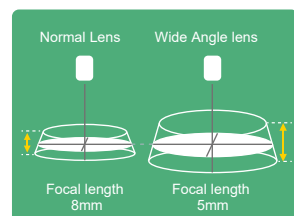
✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)						
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8
LM3NCM	—	—	—	—	—	✓	✓
LM6NCM	—	—	—	—	—	◇	✓
LM5JCM	—	—	—	—	—	✓	✓

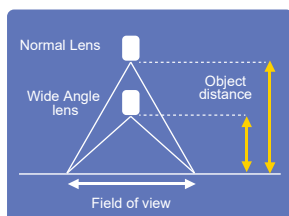


Corner image comparison
(Super wide angle lens vs. Standard lens)

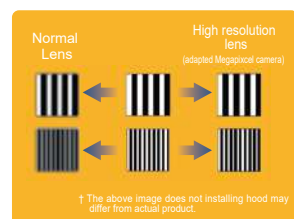
Long Depth of field



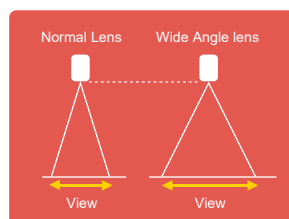
Short Close distance



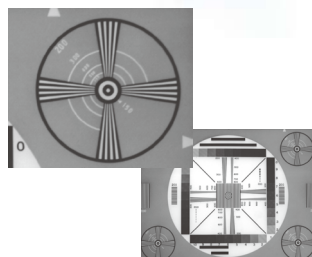
Clear image



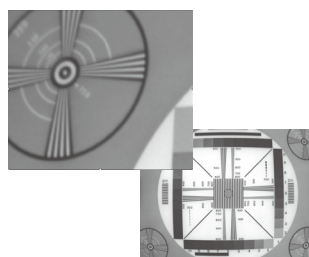
Large field of view



LM5JCM: 2/3inch f=5mm

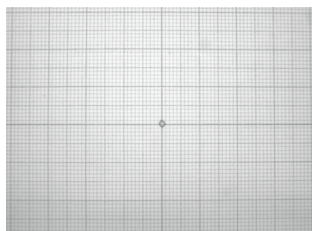


LM6JC: 2/3inch f=6mm

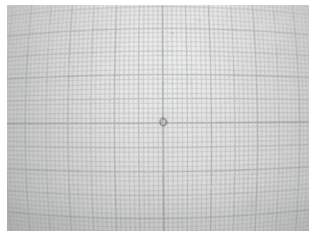


Distortion comparison at short distance object

LM5JCM: 2/3inch f=5mm



LM6JC: 2/3inch f=6mm



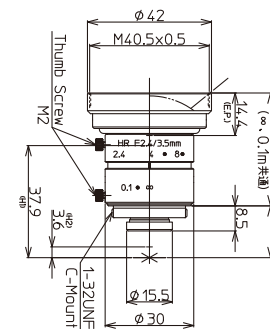
Capture image taken by 2megapixel camera

† Images may differ from the actual product.

LM3NCM



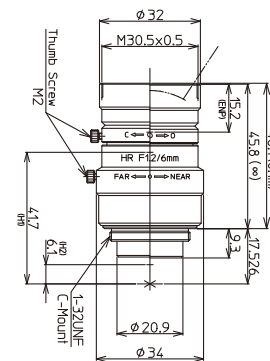
LO-DIS
Low Distortion



LM6NCM



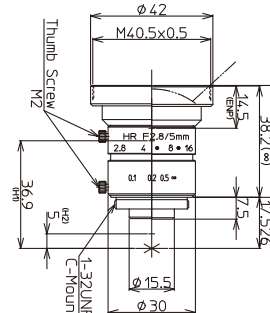
LO-DIS
Low Distortion



LM5JCM



LO-DIS
Low Distortion



Model	LM3NCM
Focal Length(mm)	3.5
Image Size(mm)	7.2×5.4(Φ9)
Iris Range(F-stop)	F2.4~F14
Focusing Range(m)	0.1~∞
Control	Iris Focus
Shooting Range at M.O.D.(mm)	226.3(H)×171.4(V)
Angle of View (Degrees)	2/3 inch 1/1.8 inch 1/2 inch 1/3 inch
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	0.4
Back Focus in Air(mm)	9.7
Mount	C-mount
Filter Thread(mm)	M40.5×P0.5
Size(mm)(∞)	Φ42×38.2
Weight(g)	85
Temperature Range	-10°C~+50°C

Model	LM6NCM
Focal Length(mm)	6
Image Size(mm)	6.4×4.8(Φ8)
Iris Range(F-stop)	F1.2~Close
Focusing Range(m)	0.1~∞
Control	Iris Focus
Shooting Range at M.O.D.(mm)	122.2(H)×91.0(V)
Angle of View (Degrees)	2/3 inch 1/1.8 inch 1/2 inch 1/3 inch
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	-0.2
Back Focus in Air(mm)	8.2
Mount	C-mount
Filter Thread(mm)	M30.5×P0.5
Size(mm)(∞)	Φ34×45.8
Weight(g)	100
Temperature Range	-10°C~+50°C

Model	LM5JCM
Focal Length(mm)	5
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.8~F16
Focusing Range(m)	0.1~∞
Control	Iris Focus
Shooting Range at M.O.D.(mm)	200.8(H)×150.8(V)
Angle of View (Degrees)	2/3 inch 1/1.8 inch 1/2 inch 1/3 inch
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	0.5
Back Focus in Air(mm)	10.0
Mount	C-mount
Filter Thread(mm)	M40.5×P0.5
Size(mm)(∞)	Φ42×38.2
Weight(g)	84
Temperature Range	-10°C~+50°C

† Images may differ from the actual product.

JC1MS Series

- ▶ Wide product range: 9 lenses in JC1MS series
- ▶ Equivalent to 2 megapixels performance
- ▶ World standard and popular lens series
- ▶ Excellent corner brightness
- ▶ Low distortion

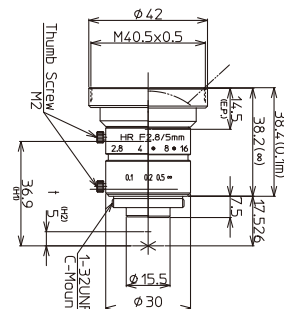
✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)						
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8
LM5JCM	—	—	—	—	✓	✓	✓
LM8JC1MS	—	—	—	—	✓	✓	✓
LM12JC1MS	—	—	—	—	✓	✓	✓
LM16JC1MS	—	—	—	—	✓	✓	✓
LM25JC1MS	—	—	—	—	✓	✓	✓
LM35JC1MS	—	—	—	—	✓	✓	✓
LM50JC1MS	—	◇	◇	◇	✓	✓	✓
LM75JC1MS	—	—	◇	◇	✓	✓	✓
LM100JC1MS	—	—	—	◇	✓	✓	✓

LM5JCM



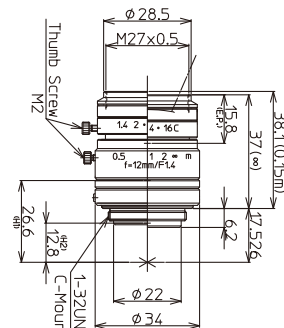
LO-DIS
Low Distortion



LM12JC1MS



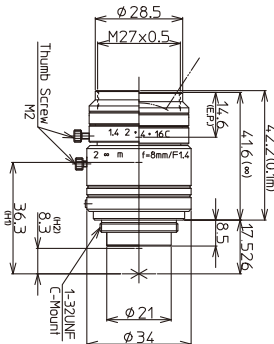
LO-DIS
Low Distortion



LM8JC1MS



LO-DIS
Low Distortion



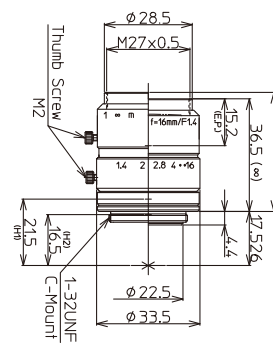
Model	LM5JCM	LM8JC1MS	LM12JC1MS
Focal Length(mm)	5	8	12
Image Size(mm)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)
Iris Range(F-stop)	F2.8~F16	F1.4~Close	F1.4~Close
Focusing Range(m)	0.1~∞	0.1~∞	0.15~∞
Control	Iris: Manual Focus: Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	200.8(H)×150.8(V)	120.3(H)×90.0(V)	110.0(H)×82.5(V)
Angle of View	2/3 Inch: 82.4×66.9 1/1.8 Inch: 71.7×57.1 (Degrees) 1/2 Inch: 65.2×51.3	56.5×43.9 47.4×36.3 42.6×32.5	38.3×29.1 31.7×24.0 28.3×21.4
Resolution(Center, Corner)	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm
TV Distortion(%)	0.5	-0.6	-0.07
Back Focus in Air(mm)	10.0	9.74	11.7
Mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M40.5×P0.5	M27×P0.5	M27×P0.5
Size(mm)(∞)	Φ42×38.2	Φ34×41.6	Φ34×37
Weight(g)	84	90	85
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

† Images may differ from the actual product.

LM16JC1MS



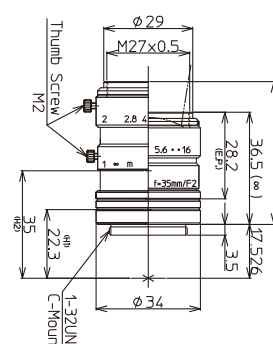
LO-DIS FLOAT
Low Distortion Floating



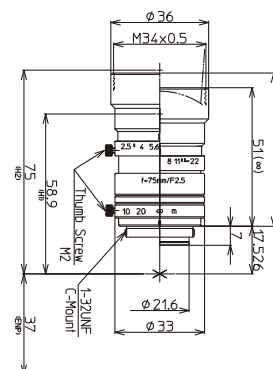
LM35JC1MS



FLOAT
Floating



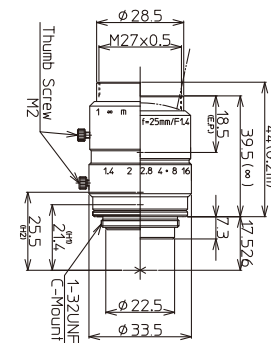
LM75JC1MS



LM25JC1MS



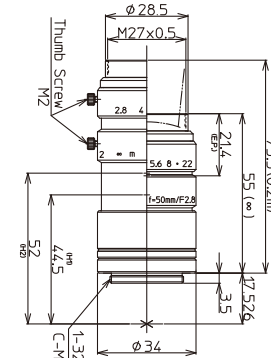
LO-DIS FLOAT
Low Distortion Floating



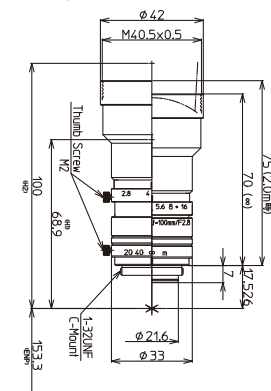
LM50JC1MS



LO-DIS FLOAT
Low Distortion Floating



LM100JC1MS



Model	LM16JC1MS	LM25JC1MS	LM35JC1MS	LM50JC1MS	LM75JC1MS	LM100JC1MS
Focal Length(mm)	16	25	35	50	75	100
Image Size(mm)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)
Iris Range(F-stop)	F1.4~F16	F1.4~F16	F2.0~F16	F2.8~F22	F2.8~F22	F2.8~F32
Focusing Range(m)	0.2~∞	0.2~∞	0.2~∞	0.2~∞	1.2~∞	2.0~∞
Control	Iris: Manual Focus: Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	112.8(H)×84.4(V)	71.1(H)×53.3(V)	47.9(H)×35.8(V)	29.3(H)×21.9(V)	132.6(H)×99.6(V)	168.8(H)×126.6(V)
Angle of View	2/3 Inch: 30.0×22.7 1/1.8 Inch: 24.7×18.6 (Degrees) 1/2 Inch: 21.8×16.4	19.6×14.8 16.1×12.1 14.0×10.5	14.4×10.8 11.8×8.8 10.5×7.9	9.6×7.2 7.9×5.9 7.0×5.2	6.7×5.0 5.5×4.1 4.9×3.7	5.0×3.8 4.1×3.1 3.7×2.8
Resolution(Center, Corner)	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
TV Distortion(%)	-0.05	-0.04	-0.2	-0.03	-0.1	-0.05
Back Focus in Air(mm)	13.1	11.7	20.1	35.5	18.0	19.0
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5	M34×P0.5	M40.5×P0.5
Size(mm)(∞)	Φ33.5×36.5	Φ33.5×39.5	Φ34×36.5	Φ34×55	Φ36×51	Φ42×70
Weight(g)	85	90	70	95	105	145
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

Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM5JCM	LM8JC1MS	LM12JC1MS	LM16JC1MS	LM25JC1MS	LM35JC1MS	LM50JC1MS	LM75JC1MS	LM100JC1MS
(Non)M.O.D./Magnification	100mm/0.04×	100mm/0.07×	150mm/0.08×	200mm/0.08×	200mm/0.12×	200mm/0.18×	200mm/0.30×	1200mm/0.07×	2000mm/0.05×
(1mm Ring)M.O.D./Magnification	—	30mm/0.20×	70mm/0.16×	110mm/0.14×	150mm/0.16×	175mm/0.21×	190mm/0.32×	1010mm/0.08×	1700mm/0.06×
(5mm Ring)M.O.D./Magnification	—	—	—	—	73mm/0.31×	115mm/0.32×	160mm/0.39×	630mm/0.13×	1060mm/0.10×
(10mm Ring)M.O.D./Magnification	—	—	—	—	—	81mm/0.46×	135mm/0.48×	440mm/0.20×	740mm/0.15×
(20mm Ring)M.O.D./Magnification	—	—	—	—	—	51mm/0.73×	105mm/0.65×	285mm/0.34×	480mm/0.25×

† Images may differ from the actual product.

JCM-V Series

The JCM-V Series is designed for use in high vibration and shock environments.

With a design based on Kowa's standard 2/3" JC1MS lenses, this ruggedized megapixel lens series is ideal for applications that require increased durability and high optical performance.

- ▶ Equivalent to 2 megapixels performance
- ▶ Two way reversible nut is utilized instead of thumb screws in order to tightly lock the focus adjustment ring in place.
- ▶ Utilizing two way reversible nut contributes to the prevention of screw dropping troubles.

- ▶ Interchangeable iris plates are used to select the F-stop.
- ▶ Unique mechanical design to guard against strong vibration and shock.
- ▶ All internal glass elements are glued to the inside housing to improve stability.

Interchangeable Iris Plates

- 1 The JCM-V series uses interchangeable iris plates instead of mechanical iris diaphragms with moving blades. You can choose from four iris plates to adjust the F-stop.



Interchangeable Iris Plates

Focus Adjustment Procedure

- 2 Unscrew the bottom ring of the outside body to adjust the focus to optimal position.
- 3 Screw the red two way reversible nut on the center body towards the bottom ring to lock in the focus.



Instruction Video



Two Way Reversible Nut

✓ Compatible ◇ Suitable — Incompatible

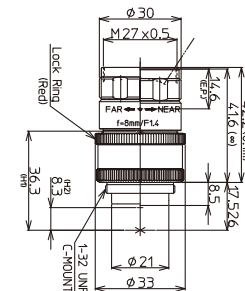
Model	Format Size(Inch)							
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2
LM5JCM-V	—	—	—	—	✓	✓	✓	✓
LM8JCM-V	—	—	—	—	✓	✓	✓	✓
LM12JCM-V	—	—	—	—	✓	✓	✓	✓
LM16JCM-V	—	—	—	—	✓	✓	✓	✓
LM25JCM-V	—	—	—	—	✓	✓	✓	✓
LM35JCM-V	—	—	◇	◇	✓	✓	✓	✓
LM50JCM-V	—	◇	◇	◇	✓	✓	✓	✓



LM8JCM-V



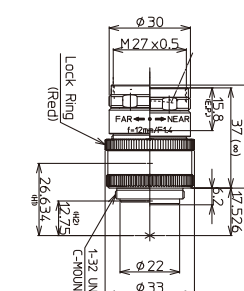
LO-DIS RUGGED
Low Distortion Ruggedized lens



LM12JCM-V



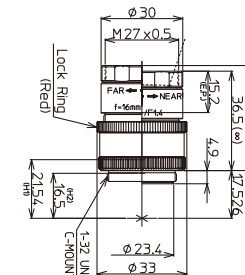
LO-DIS RUGGED
Low Distortion Ruggedized lens



LM16JCM-V



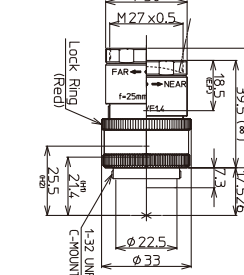
LO-DIS RUGGED
Low Distortion Ruggedized lens



LM25JCM-V



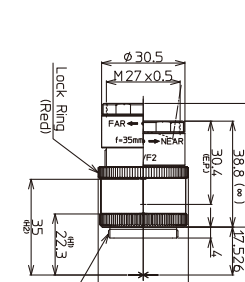
LO-DIS RUGGED
Low Distortion Ruggedized lens



LM35JCM-V



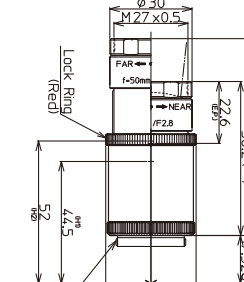
LO-DIS RUGGED
Low Distortion Ruggedized lens



LM50JCM-V



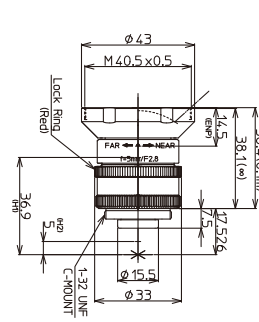
LO-DIS RUGGED
Low Distortion Ruggedized lens



LM5JCM-V



LO-DIS RUGGED
Low Distortion Ruggedized lens



Model	LM5JCM-V
Focal Length (mm)	5
Image Size (mm)	8.8×6.6 (Φ11)
Iris Range (F-stop)	F2.8 / F4 / F5.6 / F8
Focusing Range (m)	0.1~∞
Control	Iris: Manual
Shooting Range at M.O.D. (mm)	200.8(H)×150.8(V)
Angle of View (Degrees)	2/3 Inch: 82.4×66.9 1/1.8 Inch: 71.7×57.1 1/2 Inch: 65.2×51.3
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion (%)	0.5
Back Focus in Air(mm)	10.0
Mount	C-mount
Filter Thread (mm)	M40.5×P0.5
Size (mm)(∞)	Φ43×38.4
Weight(g)	73
Temperature Range	-10°C~+50°C

† Images may differ from the actual product.

Model	LM8JCM-V	LM12JCM-V	LM16JCM-V	LM25JCM-V	LM35JCM-V	LM50JCM-V
Focal Length (mm)	8	12	16	25	35	50
Image Size (mm)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)
Iris Range (F-stop)	F1.4 / F4 / F8 / F16	F1.4 / F4 / F8 / F16	F1.4 / F4 / F8 / F16	F1.4 / F4 / F8 / F16	F2 / F4 / F8 / F16	F2.8 / F4 / F8 / F16
Focusing Range (m)	0.1~∞	0.15~∞	0.2~∞	0.2~∞	0.2~∞	0.2~∞
Control	Iris: Manual	Iris: Manual	Iris: Manual	Iris: Manual	Iris: Manual	Iris: Manual
Shooting Range at M.O.D. (mm)	120.3(H)×90.0(V)	110.0(H)×82.5(V)	112.8(H)×84.4(V)	71.1(H)×53.3(V)	47.9(H)×35.8(V)	29.3(H)×21.9(V)
Angle of View (Degrees)	2/3 Inch: 56.5×43.9 1/1.8 Inch: 47.4×36.3 1/2 Inch: 42.6×32.5	2/3 Inch: 38.3×29.1 1/1.8 Inch: 31.7×24.0 1/2 Inch: 28.3×21.4	2/3 Inch: 30.0×22.7 1/1.8 Inch: 24.7×18.6 1/2 Inch: 21.8×16.4	2/3 Inch: 19.6×14.8 1/1.8 Inch: 16.1×12.1 1/2 Inch: 14.0×10.5	2/3 Inch: 14.4×10.8 1/1.8 Inch: 11.8×8.8 1/2 Inch: 10.5×7.9	2/3 Inch: 9.6×7.2 1/1.8 Inch: 7.9×5.9 1/2 Inch: 7.0×5.2
Resolution(Center, Corner)	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm
TV Distortion (%)	-0.6	-0.07	-0.05	-0.04	-0.2	-0.03
Back Focus in Air(mm)	9.74	11.7	13.1	11.7	20.1	35.5
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread (mm)	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5
Size (mm)(∞)	Φ33×41.6	Φ33×37.0	Φ33×36.5	Φ33×39.5	Φ33×38.8	Φ33×56.2
Weight(g)	88	75	76.5	83	72.5	85
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

† Images may differ from the actual product.

JCM-WP Series

The JCM-WP series is a water and dust resistant high-resolution lens with a design based on Kowa's ruggedized megapixel JCM-V lenses.

*Performance may no be secured depending on environment and condition to be used.

*Not intended for underwater use.

*Refer to the instructions and our web page for more information.

- ▶ Water repellency and easy cleaning of the front lens surface by applying Kowa's special coating.
- ▶ Two way reversible nut is utilized instead of thumb screws in order to tightly lock the focus adjustment ring in place.
- ▶ Utilizing two way reversible nut contributes to the prevention of screw dropping troubles.

- ▶ Interchangeable iris plates are used to select the F-stop.
- ▶ All internal glass elements are glued to the inside housing to improve stability.
- ▶ Equivalent to 2 megapixels performance

Interchangeable Iris Plates

- The JCM-WP series uses interchangeable iris plates instead of mechanical iris diaphragms with moving blades. You can choose from four iris plates to adjust the F-stop.

LM3NCM-WP



LO-DIS **RUGGED** **WR** **DR**
Low Distortion Ruggedized Lens Water Resistance Dust Resistance

LM5JCM-WP



LO-DIS **RUGGED** **WR** **DR**
Low Distortion Ruggedized Lens Water Resistance Dust Resistance

✓ Compatible ◇ Suitable — Incompatible

Model	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LM3NCM-WP	—	—	—	—	—	✓	✓	✓	✓
LM5JCM-WP	—	—	—	—	—	✓	✓	✓	✓
LM8JCM-WP	—	—	—	—	—	✓	✓	✓	✓
LM12JCM-WP	—	—	—	—	—	✓	✓	✓	✓
LM16JCM-WP	—	—	—	—	—	✓	✓	✓	✓
LM25JCM-WP	—	—	—	—	—	✓	✓	✓	✓
LM35JCM-WP	—	—	—	—	—	✓	✓	✓	✓
LM50JCM-WP	—	—	—	—	—	✓	✓	✓	✓



† Image is for illustration purposes

Focus Adjustment Procedure

- Unscrew the bottom ring of the outside body to adjust the focus to optimal position.
- Screw the red two way reversible nut on the center body towards the bottom ring to lock in the focus.



Interchangeable Iris Plates

Two Way Reversible Nut

Instruction Video



Model	LM3NCM-WP	LM5JCM-WP
Focal Length (mm)	3.5	5
Image Size (mm)	7.2×5.4 (Φ9)	8.8×6.6 (Φ11)
Iris Range (F-stop)	F2.8 / F4 / F5.6 / F8	F2.8 / F4 / F5.6 / F8
Focusing Range (m)	0.1~∞	0.1~∞
Control	Iris	Iris
Focus	Manual	Manual
Shooting Range at M.O.D. (mm)	226.3(H)×171.4(V)	200.8(H)×150.8(V)
Angle of View	—	82.4×66.9
(Degrees)	—	82.4×66.9
Resolution(Center, Corner)	100lp/mm, 80lp/mm	120lp/mm, 100lp/mm
TV Distortion (%)	0.4	0.5
Back Focus in Air(mm)	10.0	10.2
Mount	C-mount	C-mount
Filter Thread (mm)	M40.5×P0.5	M40.5×P0.5
Size (mm)(∞)	Φ43×38.3	Φ43×38.3
Weight(g)	80	75
Temperature Range	-10°C~+50°C	-10°C~+50°C

† Images may differ from the actual product.

LM8JCM-WP



LO-DIS **RUGGED** **WR** **DR**
Low Distortion Ruggedized Lens Water Resistance Dust Resistance

LM16JCM-WP



LO-DIS **RUGGED** **WR** **DR**
Low Distortion Ruggedized Lens Water Resistance Dust Resistance

LM35JCM-WP



LO-DIS **RUGGED** **WR** **DR**
Low Distortion Ruggedized Lens Water Resistance Dust Resistance

LM12JCM-WP



LO-DIS **RUGGED** **WR** **DR**
Low Distortion Ruggedized Lens Water Resistance Dust Resistance

LM25JCM-WP



LO-DIS **RUGGED** **WR** **DR**
Low Distortion Ruggedized Lens Water Resistance Dust Resistance

LM50JCM-WP



LO-DIS **RUGGED** **WR** **DR**
Low Distortion Ruggedized Lens Water Resistance Dust Resistance

Model	LM8JCM-WP	LM12JCM-WP	LM16JCM-WP	LM25JCM-WP	LM35JCM-WP	LM50JCM-WP
Focal Length (mm)	8	12	16	25	35	50
Image Size (mm)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)	8.8×6.6 (Φ11)
Iris Range (F-stop)	F1.4 / F4 / F8 / F16	F1.4 / F4 / F8 / F16	F1.4 / F4 / F8 / F16	F1.4 / F4 / F8 / F16	F2 / F4 / F8 / F16	F2.8 / F4 / F8 / F16
Focusing Range (m)	0.1~∞	0.15~∞	0.2~∞	0.2~∞	0.2~∞	0.2~∞
Control	Iris	Iris	Iris	Iris	Iris	Iris
Focus	Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D. (mm)	120.3(H)×90.0(V)	110.0(H)×82.5(V)	112.8(H)×84.4(V)	71.1(H)×53.3(V)	47.9(H)×35.8(V)	29.3(H)×21.9(V)
Angle of View	56.5×43.9	38.3×29.1	30.0×22.7	19.6×14.8	14.4×10.8	9.6×7.2
(Degrees)	56.5×43.9	38.3×29.1	30.0×22.7	19.6×14.8	14.4×10.8	9.6×7.2
Resolution(Center, Corner)	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm
TV Distortion (%)	-0.6	-0.07	-0.05	-0.04	-0.2	-0.03
Back Focus in Air(mm)	9.74	11.7	13.1	11.7	19.9	35.4
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread (mm)	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5
Size (mm)(∞)	Φ33×41.6	Φ33×36.5	Φ33×36.5	Φ33×39.7	Φ33×38.8	Φ33×56.2
Weight(g)	85	75	75	75	65	85
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

† Images may differ from the actual product.

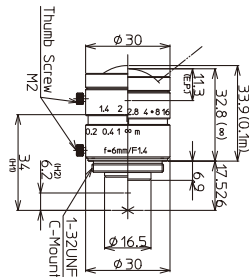
JC Series

- ▶ Excellent cost performance
- ▶ Compact, lightweight and durable

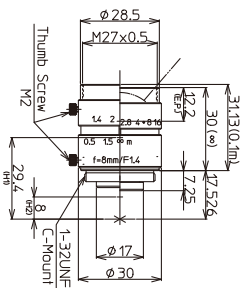
✓ Compatible
◇ Suitable
— Incompatible

Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LM6JC	—	—	—	—	—	✓	✓	✓	✓
LM8JC	—	—	—	—	—	✓	✓	✓	✓
LM12JC	—	—	—	—	—	✓	✓	✓	✓
LM16JC	—	—	—	—	—	✓	✓	✓	✓
LM25JC	—	—	—	—	—	✓	✓	✓	✓
LM35JC	—	—	—	—	◇	✓	✓	✓	✓
LM50JC	—	—	◇	◇	—	✓	✓	✓	✓

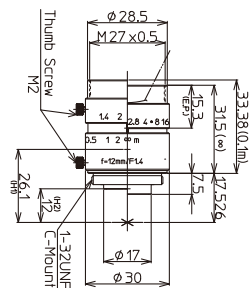
LM6JC



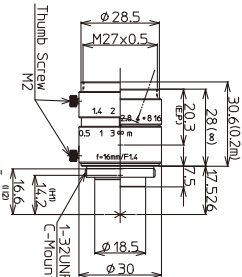
LM8JC



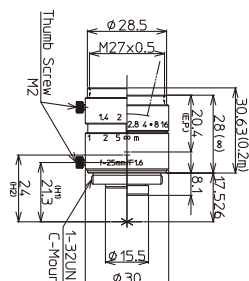
LM12JC



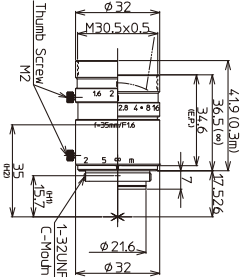
LM16JC



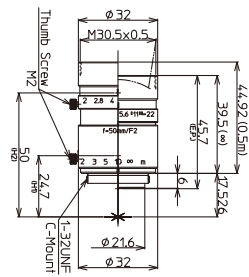
LM25JC



LM35JC



LM50JC



† Images may differ from the actual product.

Model	LM6JC	LM8JC	LM12JC	LM16JC	LM25JC	LM35JC	LM50JC
Focal Length(mm)	6	8	12	16	25	35	50
Image Size(mm)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~F16	F1.4~F16	F1.4~F16	F1.4~F16	F1.6~F16	F1.6~F16	F2.0~F22
Focusing Range(m)	0.1~∞	0.1~∞	0.1~∞	0.2~∞	0.2~∞	0.3~∞	0.5~∞
Control	Manual	Manual	Manual	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	190.6(H)×130.3(V)	136.0(H)×96.1(V)	81.1(H)×59.4(V)	111.8(H)×82.6(V)	72.1(H)×53.7(V)	76.0(H)×56.9(V)	85.0(H)×63.6(V)
Angle of View	2/3 Inch	81.9×61.2	64.2×47.7	42.5×31.7	30.5×22.8	21.0×15.7	14.4×10.8
(Degrees)	1/1.8 Inch	66.9×50.1	52.4×39.1	34.6×25.9	23.8×18.7	17.2×12.9	11.8×8.8
Resolution(Center, Corner)	1/2 Inch	59.4×44.5	46.2×34.6	30.7×23.0	22.2×16.6	15.3×11.4	10.5×7.9
TV Distortion(%)	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm
Back Focus in Air(mm)	-10.7	-6.2	-2.5	-1.5	-0.6	-0.2	-0.1
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	—	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5	M30.5×P0.5	M30.5×P0.5
Size(mm)(∞)	Φ30×32.8	Φ30×30	Φ30×31.5	Φ30×28	Φ30×28	Φ32×36.5	Φ32×39.5
Weight(g)	65	60	60	55	55	85	90
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	-10°C~+50°C

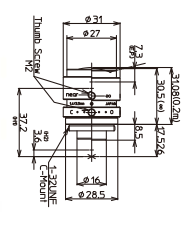
Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM6JC	LM8JC	LM12JC	LM16JC	LM25JC	LM35JC	LM50JC
(Non)M.O.D./Magnification	100mm/0.06×	100mm/0.07×	100mm/0.12×	200mm/0.08×	200mm/0.12×	300mm/0.12×	500mm/0.10×
(1mm Ring)M.O.D./Magnification	—	—	50mm/0.19×	110mm/0.14×	136mm/0.15×	240mm/0.14×	422mm/0.12×
(5mm Ring)M.O.D./Magnification	—	—	—	—	46mm/0.31×	132mm/0.26×	264mm/0.20×
(10mm Ring)M.O.D./Magnification	—	—	—	—	—	84mm/0.40×	183mm/0.30×
(20mm Ring)M.O.D./Magnification	—	—	—	—	—	—	117mm/0.50×

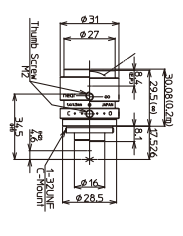
NCL Series

- ▶ 4 wide angle lenses
- ▶ Locking screws
- ▶ Metal body

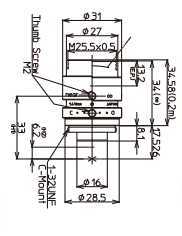
LM4NCL



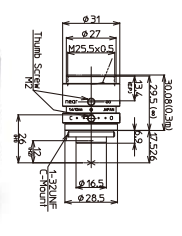
LM5NCL



LM6NCL



LM12NCL



Model	LM4NCL	LM5NCL	LM6NCL	LM12NCL
Focal Length(mm)	3.5	4.5	6	12
Image Size(mm)	7.2×5.4(Φ9)	7.2×5.4(Φ9)	7.2×5.4(Φ9)	7.2×5.4(Φ9)
Iris Range(F-stop)	F1.4~F16	F1.4~F16	F1.4~F16	F1.4~F16
Focusing Range(m)	0.2~∞	0.2~∞	0.2~∞	0.3~∞
Control	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	679.9(H)×389.3(V)	405.3(H)×273.8(V)	255.8(H)×188.7(V)	189.9(H)×140.0(V)
Angle of View	1/1.8 inch	117.7×86.7	88.8×66.9	62.7×48.4
(Degrees)	1/2 inch	103.6×76.7	79.0×59.4	57.3×44.0
Resolution(Center, Corner)	1/3 inch	76.7×57.7	59.4×45.1	44.0×33.7
TV Distortion(%)	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm
Back Focus in Air(mm)	-28.0	-17.5	-1.0	-0.8
Mount	8.9	10.0	9.5	11.1
Filter Thread(mm)	C-mount	C-mount	C-mount	C-mount
Size(mm)(∞)	—	—	M25.5×P0.5	M25.5×P0.5
Weight(g)	Φ31×30.5	Φ31×29.5	Φ31×34	Φ31×29.5
Temperature Range	60	55	60	55
	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LM4NCL	—	—	—	—	—	—	✓	✓	✓
LM5NCL	—	—	—	—	—	—	✓	✓	✓
LM6NCL	—	—	—	—	—	—	✓	✓	✓
LM12NCL	—	—	—	—	—	◇	✓	✓	✓

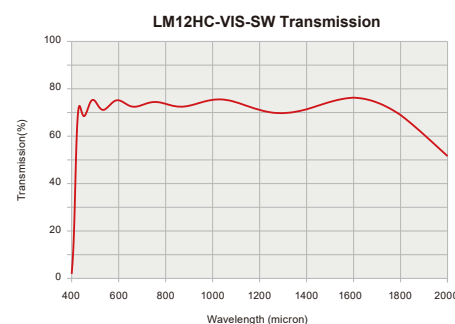
Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM4NCL	LM5NCL	LM6NCL	LM12NCL
(Non)M.O.D./Magnification	200mm/0.018×	200mm/0.02×	200mm/0.03×	300mm/0.08×
(1mm Ring)M.O.D./Magnification	—	—	22mm/0.19×	93mm/0.12×
(5mm Ring)M.O.D./Magnification	—	—	—	22mm/0.45×

† Images may differ from the actual product.

HC-VIS-SW Series

- ▶ A maximum of 12 megapixel and 3.1 μ m performance can be found at select wavelength ranges.
- ▶ Virtually zero focus shift from visible to 2000nm wavelength range.
- ▶ Utilizes ultra wideband multi-coatings to increase transmission.
- ▶ Special extra low dispersion (XD) glass significantly reduces chromatic aberration, otherwise known as color fringing.

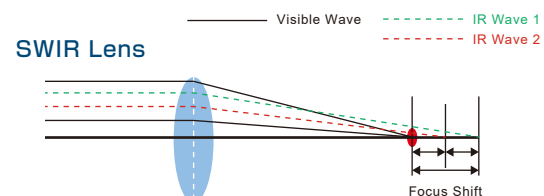


Design of IR-Corrected Lenses

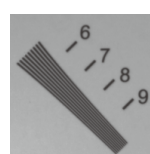
In addition to having high transmission, Kowa's HC-VIS-SW series is IR-Corrected. The primary benefit for IR-Correction is that it allows an image to remain in focus even when the wavelength changes from visible to infrared or vice versa. With a standard visible, NIR or SWIR lens, a focus shift will occur due to differences in the refractive index if the wavelength fluctuates. However, by incorporating extra low dispersion (XD) glass and carefully aligning all internal lens elements, such focus shift problems are eliminated.

Example of Focus Shift

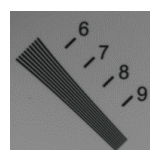
* Focusing at 1650nm



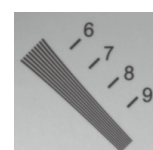
IR-Corrected Lens



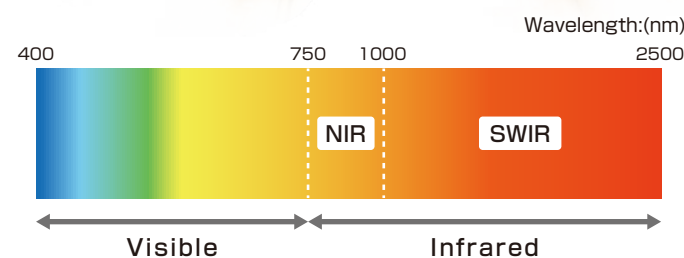
Wavelength Change



Wavelength Change



Visible



Visible

Infrared

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)							
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/3
LM8HC-VIS-SW	—	—	—	✓	✓	✓	✓	✓
LM12HC-VIS-SW	—	—	—	✓	✓	✓	✓	✓
LM16HC-VIS-SW	—	—	—	✓	✓	✓	✓	✓
LM25HC-VIS-SW	—	—	◇	✓	✓	✓	✓	✓
LM35HC-VIS-SW	—	◇	◇	✓	✓	✓	✓	✓
LM50HC-VIS-SW	◇	◇	◇	✓	✓	✓	✓	✓

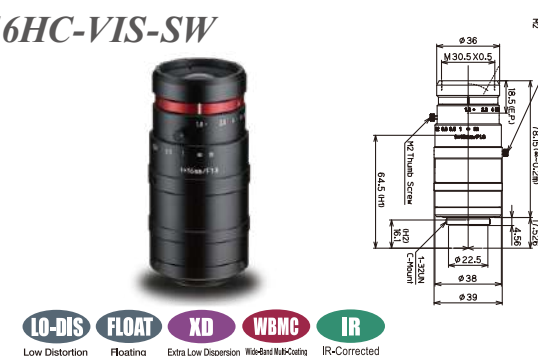
LM8HC-VIS-SW



LM12HC-VIS-SW



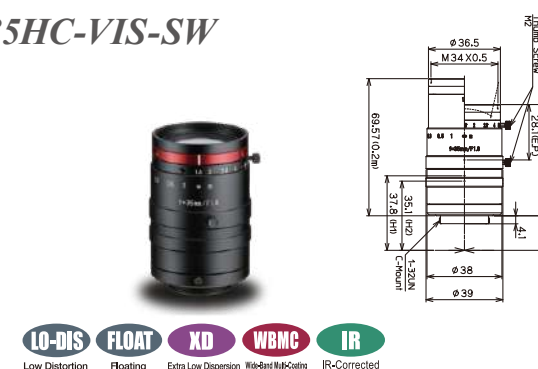
LM16HC-VIS-SW



LM25HC-VIS-SW



LM35HC-VIS-SW



LM50HC-VIS-SW



Model	LM8HC-VIS-SW	LM12HC-VIS-SW	LM16HC-VIS-SW	LM25HC-VIS-SW	LM35HC-VIS-SW	LM50HC-VIS-SW
Focal Length(mm)	8	12	16	25	35	50
Image Size(mm)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)	12.8×9.6 (Φ16)
Iris Range(F-stop)	F1.8~F16	F1.8~F16	F1.8~F16	F1.8~F16	F1.8~F16	F2.5~F16
Focusing Range(m)	0.2~∞	0.2~∞	0.2~∞	0.2~∞	0.2~∞	0.5~∞
Control Iris	Manual	Manual	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	387.0(H)×272.0(V)	237.0(H)×175.0(V)	174.0(H)×129.0(V)	109.0(H)×81.0(V)	68.0(H)×51.0(V)	127.0(H)×95.0(V)
Angle of View	1 Inch 81.3×63.5	1 Inch 58.0×44.5	1 Inch 44.2×33.6	1 Inch 29.2×22.0	1 Inch 20.4×15.4	1 Inch 14.6×11.0
2/3 Inch 58.7×44.8	2/3 Inch 41.0×31.1	2/3 Inch 31.0×23.3	2/3 Inch 20.2×15.0	2/3 Inch 14.0×10.6	2/3 Inch 10.0×7.6	2/3 Inch 8.2×6.2
(Degrees) 1/1.8 Inch 48.6×36.9	1/1.8 Inch 33.8×25.5	1/1.8 Inch 25.4×19.1	1/1.8 Inch 16.5×12.3	1/1.8 Inch 11.5×8.6	1/1.8 Inch 8.2×6.2	1/1.8 Inch 6.2×4.6
Resolution(Center, Corner)	160lp/mm, 80lp/mm	160lp/mm, 100lp/mm	160lp/mm, 100lp/mm	160lp/mm, 100lp/mm	160lp/mm, 100lp/mm	160lp/mm, 100lp/mm
TV Distortion(%)	-3.1	-1.6	-0.81	-0.97	-0.37	-0.11
Back Focus in Air(mm)	11.1	11.1	15.0	24.5	16.4	34.9
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M55×P0.75	M34×P0.5	M30.5×P0.5	M27×P0.5	M34×P0.5	M30.5×P0.5
Size(mm)(∞)	Φ58×79.5	Φ38×73.5	Φ39×78.2	Φ39×65.5	Φ39×56.42	Φ39.5×71
Weight(g)	210	175	190	160	150	155
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

Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM8HC-VIS-SW	LM12HC-VIS-SW	LM16HC-VIS-SW	LM25HC-VIS-SW	LM35HC-VIS-SW	LM50HC-VIS-SW
(Non)M.O.D./Magnification	200mm/0.0377×	200mm/0.0562×	200mm/0.0753×	200mm/0.120×	200mm/0.189×	500mm/0.101×
(1mm Ring)M.O.D./Magnification	35mm/0.160×	73mm/0.139×	101mm/0.138×	147mm/0.159×	173mm/0.216×	418mm/0.121×
(5mm Ring)M.O.D./Magnification	—	12mm/0.485×	26mm/0.389×	68mm/0.316×	115mm/0.323×	252mm/0.200×
(10mm Ring)M.O.D./Magnification	—	—	—	37mm/0.514×	81mm/0.457×	168mm/0.301×
(20mm Ring)M.O.D./Magnification	—	—	—	16mm/0.895×	51mm/0.722×	102mm/0.497×



LINE SCAN

Φ46.0mm IMAGE SIZE
Φ30.0mm IMAGE SIZE (3CMOS)

LF Series

Optimized design for machine vision

- ▶ Large format (Image size Φ46.0mm)
- ▶ Corresponds to 4K Line Scan Camera
- ▶ Low distortion
- ▶ Suitable for close distance inspection

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Φ)							
	57.0	51.0	46.0	38.0	35.0	30.0	28.0	23.0
LM28LF	—	—	✓	✓	✓	✓	✓	✓
LM35LF	—	◇	✓	✓	✓	✓	✓	✓
LM50LF	—	◇	✓	✓	✓	✓	✓	✓

LM28LF



LM35LF



LM50LF



Model	LM28LF	LM28LF-48	LM35LF	LM35LF-48	LM50LF	LM50LF-48
Focal Length(mm)	28		35		50	
Image Size(mm)	46.0(Φ46)		46.0(Φ46)		46.0(Φ46)	
Iris Range(F-stop)	F2.8~F22		F2.8~F22		F2.8~F22	
Focusing Range(m) (FROM SENSOR)	0.5~∞		0.4~∞		0.4~∞	
Control	Iris		Manual		Manual	
	Focus		Manual		Manual	
Shooting Range at M.O.D.(mm)	424.3×281.1		239.9×160.3		162.9×108.9	
Angle of View	Full size		Full size		Full size	
	64.6×45.8		53.7×37.2		39.7×27.1	
View	4/3 inch		4/3 inch		4/3 inch	
(Degrees)	1 inch		1 inch		1 inch	
	25.3×19.1		20.3×15.3		14.6×11.0	
Resolution(Center, Corner)	160lp/mm, 63lp/mm		160lp/mm, 63lp/mm		160lp/mm, 63lp/mm	
TV Distortion(%)	-0.17		-0.15		-0.04	
Flange Back in Air(mm)	46.5		17.5		46.5	
Mount	Nikon F-mount		TFL-II mount		Nikon F-mount	
	TFL-II mount		Nikon F-mount		TFL-II mount	
Filter Thread(mm)	M72×P0.75		M52×P0.75		M52×P0.75	
Size(mm)(∞)	Φ75×98		Φ57.5×71		Φ57.5×77	
	Φ75×127		Φ57.5×100		Φ57.5×106	
Weight(g)	500		430		470	

Nikon is a trademark of Nikon Corporation.

CLS Series

- ▶ For industrial 3CMOS color line scan camera
- ▶ Ultra high resolution
- ▶ For use with 30mm length line sensor
- ▶ Low chromatic aberration
- ▶ Excellent corner brightness
- ▶ Close up lens is available for close distance applications

LM28CLS



3CMOS Camera

LM35CLS



3CMOS Camera

LM50CLS



3CMOS Camera

Model	LM28CLS	LM35CLS	LM50CLS
Focal Length(mm)	28	35	50
Image Size(mm)	30.0(Φ30)	30.0(Φ30)	30.0(Φ30)
Iris Range(F-stop)	F2.8~F22	F2.8~F22	F2.8~F22
Focusing Range(m) (FROM SENSOR)	0.5~∞	0.5~∞	0.5~∞
Control	Iris	Manual	Manual
	Focus	Manual	Manual
Shooting Range at M.O.D.(mm)	317.9(V)	259.1(V)	157.7(V)
Angle of View(Degrees)	55.2(V)	46.1(V)	32.3(V)
Resolution(Center, Corner)	160lp/mm, 63lp/mm	160lp/mm, 63lp/mm	160lp/mm, 63lp/mm
TV Distortion(%)	-0.1	0.06	-0.1
Flange Back in Air(mm)	46.5	46.5	46.5
Mount	Nikon F-mount	Nikon F-mount	Nikon F-mount
Filter Thread(mm)	M72×P0.75	M62×P0.75	M52×P0.75
Size(mm)(∞)	Φ75×108	Φ65×108	Φ58×63.5
Weight(g)	482	480	358

Nikon is a trademark of Nikon Corporation.

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Φ)							
	57.0	51.0	46.0	38.0	35.0	30.0	28.0	23.0
LM28CLS	—	—	—	—	—	✓	✓	✓
LM35CLS	—	—	—	—	—	✓	✓	✓
LM50CLS	—	—	—	—	—	—	—	—

† Images may differ from the actual product.



1/2.5" MEGA PIXEL S-MOUNT LENS (3.2μm)

- ▶ Low distortion
- ▶ Wide optical design
- ▶ High transmission from VIS to NIR

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)							
	1.1	1	1/1.2	2/3	1/1.8	1/2	1/2.5	1/3
LM3QS28	—	—	—	—	—	—	✓	—
LM3QS40	—	—	—	—	—	—	✓	—
LM3QS56	—	—	—	—	—	—	✓	—

LM3QS28 / 40 / 56



Model	LM3QS28	LM3QS40	LM3QS56
Focal Length(mm)	3		
Image Size	1/2.5		
Iris Range(F-stop)	F2.8	F4	F5.6
Focusing Range(m)	0.1~∞		
Angle of View	1/2.5 inch		
	86.7×70.6		
View	1/2.8 inch		
(Degrees)	1/3 inch		
	76.9×61.6		
Resolution(Center, Corner)	160lp/mm, 125lp/mm		
TV Distortion(%)	0.02		
Back Focus in Air(mm)	2.6		
Mount	S-mount (M12×0.5)		
Size(mm)(∞)	Φ16×22.3		
Weight(g)	6		
Temperature Range	-10°C~+50°C		



1/3" NF-MOUNT

Compact NF-mt. lens series

- ▶ Introducing the lineup of megapixel NF-mount lenses. The compact body and high resolution design will maximize the performance of NF-mount camera.

LM3NF



LM5NF



LM9NF



Model	LM3NF	LM5NF	LM9NF
Focal Length(mm)	2.7	4.5	9
Image Size(mm)	4.8×3.6(Φ6)	4.8×3.6(Φ6)	4.8×3.6(Φ6)
Iris Range(F-stop)	F1.8~F11	F1.8~F11	F1.8~F11
Focusing Range(m)	0.1~∞	0.1~∞	0.1~∞
Control	Iris	Manual	Manual
	Focus	Manual	Manual
Shooting Range at M.O.D.(mm)	262.7(H)×167.8(V)	122.9(H)×89.9(V)	58.1(H)×43.3(V)
Angle of View(Degrees) 1/3 Inch	102.3×76.7	59.2×45.0	30.2×22.8
Resolution(Center, Corner)	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm
TV Distortion(%)	-7.3	-2.8	-0.6
Back Focus in Air(mm)	7.8	8.1	8.6
Mount	NF-mount	NF-mount	NF-mount
Size(mm)(∞)	Φ21×27	Φ21×31	Φ22×34
Weight(g)	30	35	40
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

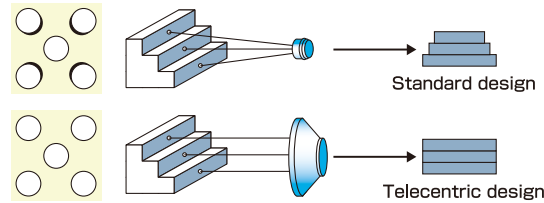
✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)							
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/3
LM3NF	—	—	—	—	—	—	—	—
LM5NF	—	—	—	—	—	—	—	—
LM9NF	—	—	—	—	—	—	—	—

† Images may differ from the actual product.

TELECENTRIC Series

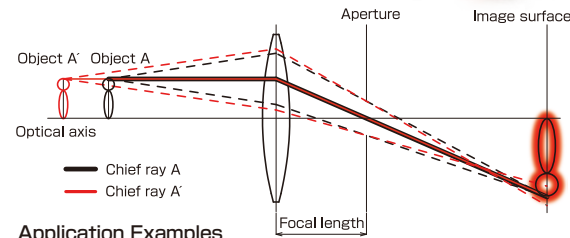
- ▶ Produces high contrast and resolution in both the center and corners.
- ▶ Virtually no TV distortion of entire image area.



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

4/3" MACRO ZOOM 21 MEGAPIXEL

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

LM1119TC



4/3" MACRO 21 MEGAPIXEL

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

LM1138TC



Model	LM1119TC		LM1138TC
Magnification Range	0.5~1.0×		2.0×
Image Size	18.4×13.8(Φ23)		18.4×13.8(Φ23)
Shooting Magnification	0.5×	1.0×	2.0×
Objective N.A.	0.05	0.1	0.2
W.D(mm)	80	81.8	80.6
Shooting Range (mm)	4/3 inch 36.8×27.6	18.4×13.8	9.20×6.90
	1 inch 25.6×19.2	12.8×9.6	6.40×4.8
	2/3 inch 17.6×13.2	8.8×6.6	4.4×3.3
TV Distortion(%)	0.1	0.1	0.1
Back Focus in Air(mm)	14.7		15.0
Mount	C-mount		C-mount
Resolution	120lp/mm		120lp/mm
Size(mm)(∞)	Φ82×151.5		Φ64×151.0
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.

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



LM1122TC



LM1125TC



LM1121TC



LM1123TC



✓ Compatible ◇ Suitable ✗ Incompatible									
Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LM1119TC	✓		✓	✓	✓	✓	✓	✓	✓
LM1138TC	✓	✓		✓	✓	✓	✓	✓	✓
LM1120TC		✓	✓					✓	✓
LM1121TC						✓	✓	✓	✓
LM1122TC						✓	✓	✓	✓
LM1123TC						✓	✓	✓	✓
LM1125TC						✓	✓	✓	✓

Model	LM1120TC			LM1121TC			LM1122TC			LM1123TC			LM1125TC			
Magnification Range	3.45~4.4×			1.725~2.2×			1.15~1.47×			0.69~0.88×			0.346~0.44×			
Image Size	8.8×6.6(Φ11)			8.8×6.6(Φ11)			8.8×6.6(Φ11)			8.8×6.6(Φ11)			8.8×6.6(Φ11)			
Shooting Magnification	3.45×	4.0×	4.4×	1.725×	2.0×	2.2×	1.15×	1.3×	1.47×	0.69×	0.8×	0.88×	0.346×	0.4×	0.44×	
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	
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	
Shooting Range (mm)	2/3 inch	2.6×1.9	2.2×1.7	2.0×1.5	5.1×3.8	4.4×3.3	4.0×3.0	7.6×5.7	6.6×5.0	6.0×4.5	12.7×9.6	11.0×8.2	10.0×7.5	25.4×19.1	22.0×16.5	20.0×15.0
	1/1.8 inch	2.1×1.6	1.8×1.4	1.6×1.2	4.2×3.1	3.6×2.7	3.3×2.4	6.3×4.7	5.5×4.1	4.9×3.7	10.4×7.8	9.0×6.7	8.2×6.1	20.9×15.7	18.1×13.6	16.5×12.3
	1/2 inch	1.9×1.4	1.6×1.2	1.5×1.1	3.7×2.8	3.2×2.4	2.9×2.2	5.6×4.2	4.9×3.7	4.3×3.3	9.3×7.0	8.0×6.0	7.3×5.5	18.6×13.9	16.1×12.1	14.6×11.0
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	
Back Focus in Air(mm)	17.1	24.5	30	55.8	60.7	76.3	18.7	23.6	29.8	34	28.8	25.3	17.6	17	16.5	
Mount	C-mount			C-mount			C-mount			C-mount			C-mount			
Resolution	120lp/mm			120lp/mm			120lp/mm			120lp/mm			120lp/mm			
Filter Thread(mm)	-			-			-			-			-			
Size(mm)(∞)	Φ57×180.0			Φ48×147.5			Φ50×123.9			Φ50×121.5			Φ51.5×142.3			
Weight(g)	645			420			330			290			420			
Temperature Range	-10℃~-+50℃			-10℃~-+50℃			-10℃~-+50℃			-10℃~-+50℃			-10℃~-+50℃			
Storage Temperature Range	-20℃~-+60℃			-20℃~-+60℃			-20℃~-+60℃			-20℃~-+60℃			-20℃~-+60℃			

† Images may differ from the actual product.

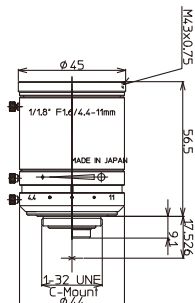


VARIFOCAL

LMVZ4411



LO-DIS
Low Distortion

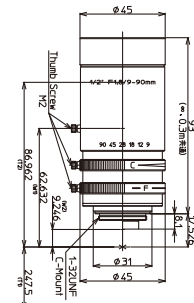


Model	LMVZ4411
Focal Length(mm)	4.4~11(2.5×)
Image Size(mm)	7.2×5.4(Φ9)
Iris Range(F-stop)	F1.6~F16
Focusing Range(m)	0.3~∞
Control	Iris Focus
	Manual
Shooting Range at M.O.D.(mm)	W507.5×379.0/T211.4×159.0
Angle of View	1/1.8 Inch W76.6×61.2/T36.7×28.0
View	1/2 Inch W70.2×55.5/T32.9×25.0
(Degrees)	1/3 Inch W55.5×43.0/T25.0×18.9
TV Distortion(%)	W-0.2/T0.4
Back Focus in Air(mm)	W8.8/T14.5
Mount	C-mount
Filter Thread(mm)	M43×P0.75
Size(mm)(∞)	Φ45×56.5
Weight(g)	125
Temperature Range	-10°C~+50°C

LMVZ990-IR



LO-DIS
Low Distortion



Model	LMVZ990-IR
Focal Length(mm)	9~90(10×)
Image Size(mm)	6.4×4.8(Φ8)
Iris Range(F-stop)	F1.8~F16
Focusing Range(m)	0.3~∞
Control	Iris Focus
	Manual
Shooting Range at M.O.D.(mm)	W252.7×182.5/T94.4×70.8
Angle of View	1/2 Inch W41.1×30.3/T4.2×3.1
(Degrees)	1/3 Inch W30.3×22.5/T3.1×2.4
TV Distortion(%)	W-4.3/T0.3
Back Focus in Air(mm)	W15.4/T11.7
Mount	C-mount
Filter Thread(mm)	M43×P0.75
Size(mm)(∞)	Φ45×93
Weight(g)	194
Temperature Range	-10°C~+50°C

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LMVZ4411	—	—	—	—	—	—	✓	✓	✓
LMVZ990-IR	—	—	—	—	—	—	—	✓	✓

BUILT-TO-ORDER MODELS

SC Series

Model	LM12SC	LM16SC	LM25SC	LM35SC	LM50SC
Focal Length(mm)	12	16	25	35	50
Image Size(mm)	12.8×9.6(Φ16)	12.8×9.6(Φ16)	12.8×9.6(Φ16)	12.8×9.6(Φ16)	12.8×9.6(Φ16)
Iris Range(F-stop)	F1.8~F16	F1.8~F16	F1.8~F16	F2.0~F16	F2.0~F16
Focusing Range(m)	0.1~∞	0.1~∞	0.15~∞	0.2~∞	0.3~∞
Control	Iris Focus	Manual Manual	Manual Manual	Manual Manual	Manual Manual
Shooting Range at M.O.D.(mm)	125.5(H)×93.5(V)	93.5(H)×69.9(V)	86.1(H)×64.4(V)	69.9(H)×52.4(V)	70.1(H)×52.7(V)
Angle of View	1 Inch 55.9×43.1	44.0×33.6	28.9×21.8	20.8×15.6	14.6×11.0
View	2/3 Inch 39.8×30.2	30.9×23.3	20.1×15.2	14.3×10.8	10.1×7.6
(Degrees)	1/1.8 Inch 32.9×24.9	25.5×19.2	16.5×12.4	11.7×8.8	8.3×6.2
Resolution(Center, Corner)	160lp/mm, 120lp/mm	160lp/mm, 120lp/mm	160lp/mm, 120lp/mm	160lp/mm, 120lp/mm	160lp/mm, 120lp/mm
TV Distortion(%)	-0.55	0.02	-0.34	0.02	0.30
Back Focus in Air(mm)	13.0	13.0	24.3	15.2	21.6
Mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M40.5×P0.5	M34×P0.5	M34×P0.5	M34×P0.5	M34×P0.5
Size(mm)(∞)	Φ43×84.0	Φ43×80.0	Φ43×89.0	Φ43×74.0	Φ43×78.5
Weight(g)	255	240	245	200	210
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

JC3M2 Series

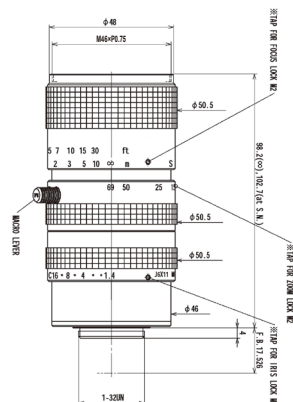
Model	LM8JC3M2	LM12JC3M2	LM16JC3M2	LM25JC3M2	LM35JC3M2	LM50JC3M2
Focal Length(mm)	8	12	16	25	35	50
Image Size(mm)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~Close	F1.4~Close	F1.4~F16	F1.4~F16	F2.0~F16	F2.8~F22
Focusing Range(m)	0.1~∞	0.15~∞	0.2~∞	0.2~∞	0.2~∞	0.2~∞
Control	Iris Focus	Manual Manual	Manual Manual	Manual Manual	Manual Manual	Manual Manual
Shooting Range at M.O.D.(mm)	120.3(H)×90.0(V)	110.0(H)×82.5(V)	112.8(H)×84.4(V)	71.1(H)×53.3(V)	47.9(H)×35.8(V)	29.3(H)×21.9(V)
Angle of View	2/3 Inch 56.5×43.9	38.3×29.1	30.0×22.7	19.6×14.8	14.4×10.8	9.6×7.2
View	1/1.8 Inch 47.4×36.3	31.7×24.0	24.7×18.6	16.1×12.1	11.8×8.8	7.9×5.9
(Degrees)	1/2 Inch 42.6×32.5	28.3×21.4	21.8×16.4	14.0×10.5	10.5×7.9	7.0×5.2
Resolution(Center, Corner)	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm
TV Distortion(%)	-0.6	-0.07	-0.05	-0.04	-0.2	-0.03
Back Focus in Air(mm)	9.74	11.7	13.1	11.7	20.1	35.5
Mount	C-mount	C-mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5	M27×P0.5
Size(mm)(∞)	Φ34×41.6	Φ34×37	Φ33.5×36.5	Φ33.5×39.5	Φ34×36.5	Φ34×55
Weight(g)	90	85	85	90	70	95
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

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LMZ69M	—	—	—	—	—	✓	✓	✓	✓

- ▶ Excellent for pattern matching, measurement, inspection, and character recognition

LMZ69M



Model	LMZ69M
Focal Length(mm)	11.5~69(6×)
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~Close
Focusing Range(m)	1.0~∞
(Macro)	0.01
Control	Iris Focus Zoom
	Manual Manual Manual
Angle of View(Degrees)	W41.9×32.0/T7.3×5.5
Mount	C-mount
Filter Thread(mm)	M46×P0.75
Size(mm)(∞)	Φ50.5×98.2
Weight(g)	300
Temperature Range	-10°C~+50°C

HC-IR Series

Model	LM50HC-IR	LM60HC-IR
Focal Length(mm)	50	60
Image Size(mm)	12.8×9.6(Φ16)	12.8×9.6(Φ16)
Iris Range(F-stop)	F1.8~F16	F2.0~F16
Focusing Range(m)	1.0~∞	1.0~∞
Control	Iris Focus	Manual Manual
Shooting Range at M.O.D.(mm)	246.0(H)×184.0(V)	216.9(H)×162.1(V)
Angle of View	1 Inch 14.4×10.8	12.2×9.2
View	2/3 Inch 9.9×7.5	8.4×6.3
(Degrees)	1/1.8 Inch 8.2×6.2	6.9×5.2
Resolution(Center, Corner)	160lp/mm, 125lp/mm	160lp/mm, 125lp/mm
TV Distortion(%)	-0.09	-0.06
Back Focus in Air(mm)	20.4	15.7
Mount	C-mount	C-mount
Filter Thread(mm)	—	M37.5×P0.5
Size(mm)(∞)	Φ50.0×47.4	Φ49.2×54.6
Weight(g)	180	200
Temperature Range	-10°C~+50°C	-10°C~+50°C

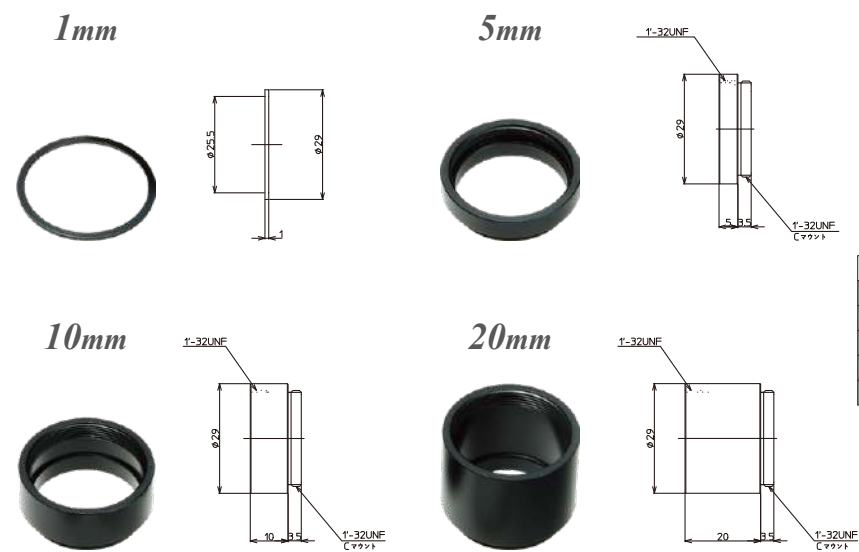
LMVZ166HC

Model	LMVZ166HC
Focal Length(mm)	16~64(4.0×)
Image Size(mm)	12.8×9.6(Φ16)
Iris Range(F-stop)	F1.8~F16
Focusing Range(m)	1.0~∞
Control	Iris Focus
	Manual Manual
Shooting Range at M.O.D.(mm)	W881.4×639.7/T238.2×177.9
Angle of View	1 Inch W45.9×34.2/T11.7×14.6
View	2/3 Inch W31.3×23.4/T8.1×6.1
(Degrees)	1/1.8 Inch W25.5×19.1/T6.6×5.0
TV Distortion(%)	W-3.4/T0.2
Back Focus in Air(mm)	W29.2/T29.5
Mount	C-mount
Filter Thread(mm)	M58×P0.75
Size(mm)(∞)	Φ60×124
Weight(g)	370
Temperature Range	-10°C~+50°C

† Images may differ from the actual product.

† Images may differ from the actual product.

Close Up Rings



Model	Specification
KW-EXT1	1mm
KW-EXT5	5mm
KW-EXT10	10mm
KW-EXT20	20mm
LMZ4S	1mm, 5mm, 10mm, 20mm

Filter Holders



- An optional filter holder can be attached to the JC5MC series. (LM12JC5MC, LM16JC5MC and LM25JC5MC)

Model	Specification
FL-12JC5MC	Φ32
FL-16JC5MC	
FL-25JC5MC	

Mount Adapters



- VM series can change the flange back by using optional mount adapters included with each lens.
Standard: M42-mount has a 17.526mm flange back distance.

Series	Mount Adapter	Flange Back (mm)	Mount
VM42	FB-1600VM	16	M42 mount
	FB-1148VM	11.48	M42 mount
	FB-1000VM	10	M42 mount
	FB-0656VM	6.56	M42 mount
	FB-1750VM	17.5	TFL-II mount

*Mount adapters do not work with VM35 series lenses.

Field of View

FC24M series

LM8FC24M

WD mm	Magni- fication	Fields of View (mm)					
		1.1"		1"		2/3"	
		H	V	H	V	H	V
1000	0.009	1688.7	1269.1	1534.6	1147.5	1050.3	783.9
950	0.009	1605.1	1206.3	1458.6	1090.8	998.3	745.1
900	0.009	1520.6	1142.9	1381.9	1033.5	945.9	706.0
850	0.010	1436.3	1079.7	1305.3	976.3	893.6	667.0
800	0.011	1353.4	1017.3	1230.0	919.9	842.0	628.5
750	0.011	1270.5	955.0	1154.6	863.5	790.4	590.0
700	0.012	1187.5	892.6	1079.2	807.2	738.8	551.5
650	0.013	1104.0	829.9	1003.3	750.5	686.9	512.7
600	0.014	1020.6	767.2	927.5	693.8	635.0	474.0
550	0.015	937.7	704.9	852.2	637.4	583.5	435.5
500	0.017	854.9	642.6	776.9	581.1	531.9	397.0
450	0.019	772.1	580.3	701.6	524.8	480.4	358.6
400	0.021	689.2	518.0	626.3	468.4	428.8	320.1
350	0.024	606.2	455.6	550.9	412.0	377.1	281.5
300	0.027	523.2	393.3	475.5	355.6	325.5	243.0
250	0.033	440.3	330.9	400.1	299.2	273.9	204.5
200	0.040	357.2	268.5	324.6	242.8	222.2	165.9
150	0.052	273.9	205.9	248.9	186.2	170.5	127.3
100	0.075	190.1	143.0	172.8	129.4	118.5	88.5

LM16FC24M

WD mm	Magni- fication	Fields of View (mm)					
		1.1"		1"		2/3"	
		H	V	H	V	H	V
1000	0.016	905.7	677.6	820.7	612.8	561.2	419.9
950	0.017	861.1	644.2	780.4	582.7	533.6	399.3
900	0.017	816.6	610.9	740.0	552.6	506.0	378.6
850	0.019	772.1	577.6	699.7	522.4	478.4	358.0
800	0.020	727.5	544.3	659.3	492.3	450.8	337.3
750	0.021	683.0	511.0	618.9	462.2	423.2	316.7
700	0.022	638.4	477.7	578.6	432.0	395.6	296.0
650	0.024	593.9	444.3	538.2	401.9	368.0	275.4
600	0.026	549.4	411.0	497.8	371.7	340.4	254.7
550	0.028	504.8	377.7	457.5	341.6	312.8	234.1
500	0.031	460.3	344.3	417.1	311.4	285.2	213.4
450	0.034	415.7	311.0	376.7	281.3	257.6	192.7
400	0.038	371.1	277.7	336.3	251.1	230.0	172.1
350	0.044	326.6	244.3	295.9	221.0	202.4	151.4
300	0.051	282.0	211.0	255.5	190.8	174.7	130.8
250	0.060	237.4	177.6	215.1	160.6	147.1	110.1
200	0.074	192.8	144.2	174.7	130.5	119.5	89.4
150	0.096	148.1	110.8	134.2	100.2	91.8	68.7
100	0.138	103.3	77.3	93.6	69.9	64.0	47.9

LM35FC24M

WD mm	Magni- fication	Fields of View (mm)					
		1.1"		1"		2/3"	
		H	V	H	V	H	V
1000	0.035	399.0	300.0	362.2	271.7	249.1	186.8
950	0.037	379.3	285.2	344.4	258.3	236.8	177.6
900	0.039	359.7	270.4	326.5	244.9	224.5	168.4
850	0.042	340.0	255.7	308.7	231.6	212.3	159.2
800	0.044	320.4	240.9	290.9	218.2	200.0	150.0
750	0.047	300.8	226.1	273.0	204.8	187.7	140.8
700	0.050	281.1	211.4	255.2	191.4	175.5	131.6
650	0.054	261.5	196.6	237.4	178.0	163.2	122.4
600	0.058	241.8	181.8	219.5	164.6	150.9	113.2
550	0.064	222.1	167.0	201.7	151.3	138.6	104.0
500	0.070	202.4	152.2	183.8	137.8	126.4	94.8
450	0.077	182.7	137.4	165.9	124.4	114.1	85.5
400	0.087	163.0	122.5	148.0	111.0	101.7	76.3
350	0.099	143.2	107.7	130.0	97.5	89.4	67.0
300	0.114	123.4	92.8	112.0	84.0	77.0	57.8
250	0.136	103.5	77.8	93.9	70.4	64.6	48.4
200	0.169	83.4	62.7	75.7	56.8	52.0	39.0

LM6FC24M

WD mm	Magni- fication	Fields of View (mm)					
		1.1"		1"		2/3"	
		H	V	H	V	H	V
1000	0.007	2252.1	1669.3	2033.1	1506.4	1377.1	1026.1
950	0.007	2141.3	1587.1	1933.1	1432.3	1309.4	975.6
900	0.007	2030.4	1505.0	1833.0	1358.1	1241.6	925.1
850	0.008	1919.6	1422.9	1732.9	1284.0	1173.8	874.6
800	0.008	1808.7	1340.7	1632.9	1209.9	1106.1	824.1
750	0.009	1697.9	1258.6	1532.8	1135.8	1038.3	773.6
700	0.009	1587.0	1176.4	1432.8	1061.6	970.5	723.1
650	0.010	1476.2	1094.3	1332.7	987.5	902.8	672.6
600	0.011	1365.3	1012.1	1232.6	913.4	835.0	622.1
550	0.012	1254.5	930.0	1132.6	839.2	767.2	571.6
500	0.013	1143.6	847.8	1032.5	765.1	699.4	521.1
450	0.014	1032.7	765.6	932.4	691.0	631.7	470.6
400	0.016	921.9	683.5	832.3	616.8	563.9	420.1
350	0.018	811.0	601.3	732.3	542.7	496.1	369.6
300	0.021	700.1	519.2	632.2	468.5	428.3	319.1
250	0.025	589.2	437.0	532.1	394.4	360.5	268.6
200	0.031	478.2	354.8	431.9	320.2	292.7	218.1
150	0.040	367.2	272.6	331.8	246.0	224.9	167.6
100	0.057	255.8	190.1	231.2	171.6	156.9	117.0

LM12FC24M

WD mm	Magni- fication	Fields of View (mm)					
		1.1"		1"		2/3"	
		H	V	H	V	H	V
1000	0.012	1174.7	883.2	1067.1	799.4	732.2	548.0
950	0.013	1117.0	839.8	1014.7	760.1	696.2	521.1
900	0.013	1059.3	796.4	962.3	720.8	660.3	494.1
850	0.014	1001.6	753.0	909.8	681.5	624.3	467.2
800	0.015	943.9	709.6	857.4	642.2	588.3	440.2
750	0.016	886.2	666.2	805.0	603.0	552.3	413.3
700	0.017	828.5	622.8	752.6	563.7	516.3	386.4
650	0.018	770.8	579.4	700.2	524.4	480.3	359.5
600	0.020	713.1	536.0	647.7	485.1	444.3	332.5
550	0.022	655.4	492.6	595.3	445.8	408.4	305.6
500	0.024	597.7	449.2	542.9	406.5	372.4	278.6
450	0.026	540.0	405.8	490.4	367.2	336.4	251.7
400	0.030	482.3	362.4	438.0	327.9	300.4	224.8
350	0.034	424.6	319.0	385.5	288.6	264.4	197.8
300	0.039	366.8	275.5	333.1	249.3	228.4	170.9
250	0.046	309.1	232.1	280.6	210.0	192.3	143.9
200	0.057	251.3	188.6	228.1	170.7	156.3	116.9
150	0.074	193.4	145.1	175.5	131.3	120.2	89.9
100	0.106	135.3	101.4	122.8	91.8	84.0	62.8

LM25FC24M

WD mm	Magni- fication	Fields of View (mm)					
		1.1"		1"		2/3"	
		H	V	H	V	H	V
1000	0.025	576.2	431.8	522.5	390.8	358.0	268.2
950	0.026	547.8	410.6	496.7	371.5	340.4	255.0
900	0.027	519.5	389.3	471.0	352.3	322.8	241.8
850	0.029	491.1	368.0	445.3	333.1	305.1	228.6
800	0.031	462.7	346.8	419.6	313.8	287.5	215.4
750	0.033	434.4	325.5	393.8	294.6	269.9	202.2
700	0.035	406.0	304.2	368.1	275.3	252.2	188.9
650	0.038	377.6	283.0	342.4	256.1	234.6	175.7
600	0.041	349.2	261.7	316.6	236.8	216.9	162.5
550	0.044	320.9	240.4	290.9	217.5	199.3	149.3
500	0.049	292.5	219.1	265.2	198.3	181.7	136.1
450	0.054	264.1	197.9	239.4	179.0	164.0	122.9
400	0.060	235.7	176.6	213.7	159.8	146.4	109.6
350	0.069	207.3	155.3	187.9	140.5	128.7	96.4
300	0.079	178.9	134.0	162.2	121.2	111.1	83.2
250	0.094	150.5	112.7	136.4	102.0	93.4	69.9
200	0.117	122.1	91.4	110.6	82.7	75.7	56.7
150	0.152	93.6	70.0	84.8	63.3	58.0	43.

JC5MCseries

LM8JC5MC

WD	Magni- fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.008	1113.2	824.7	902.9	670.2	798.8	593.8
900	0.009	1003.3	743.2	813.7	603.9	719.9	535.1
800	0.010	893.3	661.7	724.5	537.7	640.9	476.4
700	0.012	783.4	580.2	635.3	471.4	562.0	417.7
600	0.014	673.5	498.7	546.0	405.2	483.0	359.0
500	0.016	563.6	417.2	456.8	338.9	404.1	300.3
450	0.018	508.6	376.5	412.2	305.8	364.6	270.9
400	0.020	453.6	335.7	367.6	272.7	325.1	241.6
350	0.023	398.7	294.9	323.0	239.5	285.6	212.2
300	0.027	343.7	254.2	278.4	206.4	246.2	182.9
250	0.032	288.7	213.4	233.8	173.3	206.7	153.5
200	0.039	233.8	172.7	189.2	140.2	167.2	124.2
150	0.051	178.8	131.9	144.6	107.0	127.7	94.8

LM16JC5MC

WD	Magni- fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.016	559.6	419.0	457.4	342.6	406.2	304.4
900	0.018	504.4	377.6	412.2	308.6	366.2	274.2
800	0.020	449.0	336.2	367.0	274.8	326.0	244.2
700	0.022	393.8	294.8	321.8	241.0	285.8	214.0
600	0.026	338.4	253.4	276.6	207.0	245.6	184.0
500	0.031	283.2	211.8	231.2	173.2	205.4	153.8
450	0.035	255.6	191.2	208.6	156.2	185.4	138.8
400	0.039	227.8	170.4	186.0	139.2	165.2	123.8
350	0.044	200.2	149.8	163.4	122.4	145.2	108.8
300	0.051	172.6	129.0	140.8	105.4	125.0	93.6
250	0.061	145.0	108.4	118.2	88.4	105.0	78.6
200	0.080	117.2	87.6	95.6	71.6	85.0	63.6

LM35JC5MC

WD	Magni- fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.036	245.4	184.2	200.9	150.8	178.6	134.0
900	0.040	220.8	165.7	180.7	135.6	160.7	120.6
800	0.045	196.2	147.2	160.5	120.5	142.7	107.1
700	0.051	171.5	128.7	140.4	105.3	124.8	93.6
600	0.060	146.9	110.2	120.2	90.2	106.8	80.1
500	0.072	122.2	91.7	100.0	75.0	88.9	66.7
450	0.080	109.9	82.4	89.9	67.4	79.9	59.9
400	0.090	97.6	73.2	79.8	59.9	71.0	53.2
350	0.103	85.3	63.9	69.7	52.3	62.0	46.5
300	0.121	73.0	54.7	59.7	44.7	53.0	39.7
250	0.146	60.6	45.4	49.6	37.1	44.0	33.0
200	0.183	48.3	36.2	39.5	29.6	35.1	26.3

NC1M/JC1Mseries

LM3NC1M

WD	Magni- fication	Fields of View (mm)					
		1/1.8"		1/2"		1/3"	
mm		H	V	H	V	H	V
1000	0.004	2003.1	1513.4	1786.2	1347.7	1347.7	1011.6
900	0.004	1805.7	1364.1	1610.1	1214.8	1214.8	911.8
800	0.005	1608.2	1214.9	1434.0	1081.8	1081.8	812.0
700	0.005	1410.8	1065.6	1257.9	948.9	948.9	712.2
600	0.006	1213.3	916.4	1081.8	816.0	816.0	612.3
500	0.007	1015.9	767.1	905.7	683.0	683.0	512.5
450	0.008	917.2	692.5	817.6	616.5	616.5	462.6
400	0.009	818.5	617.8	729.5	550.1	550.1	412.7
350	0.010	719.7	543.2	641.5	483.6	483.6	362.8
300	0.012	621.0	468.6	553.4	417.1	417.1	312.9
250	0.014	522.3	394.0	465.4	350.7	350.7	263.0
200	0.017	423.6	319.3	377.3	284.2	284.2	213.1
150	0.022	324.9	244.7	289.3	217.7	217.7	163.2
100	0.032	226.1	170.1	201.2	151.2	151.2	113.3

LM6NC1M

WD	Magni- fication	Fields of View (mm)					
		1/1.8"		1/2"		1/3"	
mm		H	V	H	V	H	V
1000	0.006	-	-	1081.4	808.4	808.4	603.3
900	0.007	-	-	974.9	728.7	728.7	543.8
800	0.008	-	-	868.3	649.0	649.0	484.3
700	0.009	-	-	761.7	569.3	569.3	424.8
600	0.010	-	-	655.1	489.5	489.5	365.3
500	0.012	-	-	548.6	409.8	409.8	305.8
450	0.013	-	-	495.3	370.0	370.0	276.0
400	0.015	-	-	442.0	330.1	330.1	246.2
350	0.017	-	-	388.7	290.2	290.2	216.5
300	0.020	-	-	335.4	250.4	250.4	186.7
250	0.023	-	-	282.1	210.5	210.5	157.0
200	0.029	-	-	228.8	170.7	170.7	127.2
150	0.037	-	-	175.6	130.8	130.8	97.5
100	0.054	-	-	122.3	90.9	90.9	67.7

LM12JC5MC

WD	Magni- fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.012	756.7	564.1	616.4	460.0	546.7	408.3
900	0.013	682.0	508.3	555.5	414.5	492.6	367.9
800	0.015	607.2	452.6	494.6	369.1	438.6	327.5
700	0.017	532.5	396.8	433.7	323.6	384.6	287.2
600	0.020	457.8	341.1	372.8	278.1	330.6	246.8
500	0.023	383.1	285.4	311.9	232.7	276.5	206.5
450	0.026	345.7	257.5	281.4	209.9	249.5	186.3
400	0.029	308.3	229.6	251.0	187.2	222.5	166.1
350	0.033	271.0	201.8	220.5	164.5	195.5	145.9
300	0.038	233.6	173.9	190.1	141.7	168.5	125.8
250	0.046	196.3	146.0	159.6	119.0	141.5	105.6
200	0.057	158.9	118.1	129.2	96.3	114.5	85.4

LM25JC5MC

WD	Magni- fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.025	356.8	267.6	291.8	219.0	259.4	194.6
900	0.027	321.6	241.2	263.2	197.4	233.8	175.4
800	0.031	286.4	214.8	234.4	175.8	208.2	156.2
700	0.035	251.4	188.4	205.6	154.2	182.8	137.0
600	0.041	216.2	162.0	176.8	132.6	157.2	117.8
500	0.049	181.0	135.6	148.0	111.0	131.6	98.6
450	0.054	163.4	122.4	133.6	100.2	118.8	89.0
400	0.061	145.8	109.2	119.2	89.4	106.0	79.4
350	0.069	128.2	96.0	104.8	78.6	93.2	69.8
300	0.080	110.6	82.8	90.4	67.8	80.4	60.2
250	0.095	93.0	69.6	76.0	57.0	67.6	50.6
200	0.120	75.4	56.4	61.6	46.2	54.8	41.0

LM50JC5MC

WD	Magni- fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.051	171.9	129.0	140.7	105.6	125.1	93.8
900	0.057	154.3	115.8	126.3	94.8	112.3	84.2
800	0.064	136.8	102.6	111.9	84.0	99.5	74.6
700	0.074	119.2	89.4	97.5	73.2	86.7	65.0
600	0.087	101.6	76.2	83.2	62.4	73.9	55.4
500	0.105	84.1	63.0	68.8	51.6	61.1	45.8
450	0.117	75.3	56.4	61.6	46.2	54.7	41.0
400	0.133	66.5	49.9	54.4	40.8	48.3	36.3
350	0.153	57.7	43.3	47.2	35.4	41.9	31.5
300	0.180	48.9	36.7	40.0	30.0	35.5	26.7

LM4NC1M

WD	Magni- fication	Fields of View (mm)					
		1/1.8"		1/2"		1/3"	
mm		H	V	H	V	H	V
1000	0.005	1610.8	1206.3	1431.1	1071.3	1071.3	801.3
900	0.005	1452.9	1087.9	1290.7	966.1	966.1	722.6
800	0.006	1294.9	969.6	1150.4	861.0	861.0	644.0
700	0.006	1137.0	851.2	1010.0	755.9	755.9	565.3
600	0.008	979.1	732.9	869.7	650.7	650.7	486.6
500	0.009	821.2	614.5	729.3	545.6	545.6	408.0
450	0.010	742.3	555.3	659.2	493.0	493.0	368.6
400	0.011	663.4	496.2	589.0	440.5	440.5	329.3
350	0.013	584.4	437.0	518.8	387.9	387.9	290.0
300	0.015	505.5	377.8	448.7	335.3	335.3	250.6
250	0.017	426.6	318.7	378.5	282.8	282.8	211.3
200	0.021	347.7	259.5	308.4	230.2	230.2	172.0
150	0.027	268.8	200.4	238.3	177.7	177.7	132.6
100	0.039	190.1	141.3	168.2	125.2	125.2	93.3

LM5JC1M

WD	Magni- fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.005	1781.3	1345.0	1465.0	1102.1	1304.7	979.5
900	0.006	1605.7	1212.3	1320.5	993.3	1176.0	882.8
800	0.006	1430.1	1079.6	1176.0	884.5	1047.3	786.1
700	0.007	1254.5	946.9	1031.5	775.9	918.5	689.5
600	0.008	1078.8	814.2	887.0	667.0	789.8	592.8
500	0.010	903.2	681.5	742.5	558.3	661.1	496.1
450	0.011	815.4	615.2	670.2	503.9	596.7	447.8
400	0.012	727.6	548.8	598.0	449.5	532.4	399.4
350	0.014	639.8	482.5	525.7	395.1	468.0	351.1
300	0.016	552.0	416.1	453.4	340.7	403.6	302.8
250	0.019	464.2	349.8	381.2	286.4	339.3	254.4
200	0.024	376.3	283.4	308.9	232.0	274.9	206.1
150	0.031	288.5	217.1	236.7	177.6	210.5	157.7
100	0.044	200.7	150.7	164.4	123.2	146.2	109.4

FA LENS SPECIFICATION

Specifications are subject to change without notice.

2" 50MEGAPIXEL 3.1μm																		
Model	Format Size(φ)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	38.0	35.0	32.0	30.0	APS-C	4/3"	1.2"											1.1"
LM18VM42 LM18VM35	—	—	✓	✓	✓	✓	✓	✓	18	Φ32	F2.8~F16	0.1	M42 TFL	70.5×56.1	1.25	Φ79×99.6	460	6
LM25VM42 LM25VM35	◇	◇	✓	✓	✓	✓	✓	✓	25	Φ32	F2.8~F16	0.1	M42 TFL	54.0×42.0	0.59	Φ57×102.1	400	7
LM35VM42 LM35VM35	◇	◇	✓	✓	✓	✓	✓	✓	35	Φ32	F2.8~F16	0.1	M42 TFL	40.2×30.7	0.12	Φ54×94.3	375	7

4/3" 20 MEGAPIXEL PLUS																		
Model	Format Size(Inch)								Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2										
LM8XC	✓	✓	✓	✓	✓	✓	✓	✓	8.5	18.4×13.8(Φ23)	F2.8~F22	0.1~∞	C	93.5×77.1	0.12	Φ74×82.5	245	8
LM12XC	✓	✓	✓	✓	✓	✓	✓	✓	12	18.4×13.8(Φ23)	F2.0~F22	0.1~∞	C	74.9×59.6	0.59	Φ57×85	270	9
LM16XC	✓	✓	✓	✓	✓	✓	✓	✓	16	18.4×13.8(Φ23)	F2.0~F22	0.1~∞	C	60.6×47.2	0.02	Φ45×79.5	250	9
LM25XC	✓	✓	✓	✓	✓	✓	✓	✓	25	18.4×13.8(Φ23)	F2.0~F16	0.15~∞	C	40.9×31.1	-0.57	Φ45×89	255	9
LM35XC	✓	✓	✓	✓	✓	✓	✓	✓	35	18.4×13.8(Φ23)	F2.0~F16	0.2~∞	C	29.6×22.4	-0.17	Φ45×74	210	9
LM50XC	✓	✓	✓	✓	✓	✓	✓	✓	50	18.4×13.8(Φ23)	F2.0~F22	0.3~∞	C	20.6×15.7	0.80	Φ47×78	235	9

1.1" 24MEGAPIXEL																		
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8											1/2
LM6FC24M	—	—	✓	✓	✓	✓	✓	✓	6.5	14.1×10.6(Φ17.6)	F2.5~F16	0.1~∞	C	95.7×78.7	-1.51	Φ84×79.1	300	10
LM8FC24M	—	—	✓	✓	✓	✓	✓	✓	8.5	14.1×10.6(Φ17.6)	F2.5~F16	0.1~∞	C	79.2×63.8	0.55	Φ64×73.3	230	11
LM12FC24M	—	◇	✓	✓	✓	✓	✓	✓	12	14.1×10.6(Φ17.6)	F1.8~F16	0.1~∞	C	60.0×46.9	0.26	Φ51×73.8	260	11
LM16FC24M	—	◇	✓	✓	✓	✓	✓	✓	16	14.1×10.6(Φ17.6)	F1.8~F16	0.1~∞	C	48.0×36.7	-0.4	Φ43×65.7	200	11
LM25FC24M	—	◇	✓	✓	✓	✓	✓	✓	25	14.1×10.6(Φ17.6)	F1.8~F16	0.1~∞	C	31.5×23.9	-0.3	Φ45×67.9	220	11
LM35FC24M	—	◇	✓	✓	✓	✓	✓	✓	35	14.1×10.6(Φ17.6)	F2.0~F16	0.2~∞	C	22.1×16.7	0.01	Φ45×66	205	11
LM50FC24M	—	◇	✓	✓	✓	✓	✓	✓	50	14.1×10.6(Φ17.6)	F1.8~F16	0.2~∞	C	16.1×12.1	-0.03	Φ45×74.5	205	11

1" MEGAPIXEL PLUS																		
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8											1/2
LM4HC	—	—	—	✓	✓	✓	✓	✓	4.7	12.8×9.6(Φ16)	F2.8~F16	0.1~∞	C	112.2×95.4	-0.58	Φ54×56.2	360	12
LM6HC	—	—	—	✓	✓	✓	✓	✓	6	12.8×9.6(Φ16)	F1.8~F11	0.1~∞	C	96.8×79.4	-0.2	Φ54×56.2	215	12
LM8HC	—	—	—	✓	✓	✓	✓	✓	8	12.8×9.6(Φ16)	F1.4~F16	0.1~∞	C	79.4×63.0	-1.2	Φ57×58	205	12
LM12HC	—	—	◇	✓	✓	✓	✓	✓	12.5	12.8×9.6(Φ16)	F1.4~F16	0.3~∞	C	55.6×42.5	-1.58	Φ43×51.5	160	13
LM16HC	—	—	◇	✓	✓	✓	✓	✓	16	12.8×9.6(Φ16)	F1.4~F16	0.3~∞	C	44.3×33.6	-1.0	Φ43×52.9	150	13
LM25HC	—	◇	◇	✓	✓	✓	✓	✓	25	12.8×9.6(Φ16)	F1.4~F16	0.3~∞	C	29.3×22.0	-1.0	Φ43×43	135	13
LM35HC	—	◇	◇	✓	✓	✓	✓	✓	35	12.8×9.6(Φ16)	F1.4~F16	0.3~∞	C	20.9×15.8	-0.5	Φ43×43	135	13
LM50HC	—	—	◇	✓	✓	✓	✓	✓	50	12.8×9.6(Φ16)	F1.4~F16	0.5~∞	C	14.5×10.8	0.05	Φ49×48	210	13
LM75HC	—	—	◇	✓	✓	✓	✓	✓	75	12.8×9.6(Φ16)	F1.8~F16	1.0~∞	C	9.7×7.3	-0.2	Φ49×57	195	13

1" RUGGEDIZED MEGAPIXEL PLUS																		
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8											1/2
LM8HC-V	—	—	—	✓	✓	✓	✓	✓	8	12.8×9.6(Φ16)	F1.4/2.8/4/8	0.1~∞	C	79.7×63.0	-1.2	Φ58×58	183	15
LM12HC-V	—	—	◇	✓	✓	✓	✓	✓	12.5	12.8×9.6(Φ16)	F1.4/2.8/4/8	0.3~∞	C	55.6×42.5	-1.58	Φ44×51.5	130	15
LM16HC-V	—	—	◇	✓	✓	✓	✓	✓	16	12.8×9.6(Φ16)	F1.4/2.8/4/8	0.3~∞	C	44.3×33.6	-1.0	Φ44×53	120	15
LM25HC-V	—	◇	◇	✓	✓	✓	✓	✓	25	12.8×9.6(Φ16)	F1.4/2.8/4/8	0.3~∞	C	29.3×22.0	-1.0	Φ43×43	104	15
LM35HC-V	—	◇	◇	✓	✓	✓	✓	✓	35	12.8×9.6(Φ16)	F1.4/2.8/4/8	0.3~∞	C	20.9×15.8	-0.5	Φ46×44.1	133	15
LM50HC-V	—	—	◇	✓	✓	✓	✓	✓	50	12.8×9.6(Φ16)	F1.4/2.8/4/8	0.5~∞	C	14.5×10.8	0.05	Φ50×48	170	15

2/3" 10 MEGAPIXEL																		
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8											1/2
LM3JC10M	—	—	—	—	◇	●	●	●	3.7	8.8×6.6(Φ11)	F2.8~F16	0.1~∞	C	100.2×83.7	-0.09	Φ57×54	120	16
LM5JC10M	—	—	—	—	—	●	●	●	5	8.8×6.6(Φ11)	F1.8~F16	0.1~∞	C	82.2×66.5	-0.33	Φ48×59.4	120	16
LM8JC10M	—	—	—	—	—	●	●	●	8.5	8.8×6.6(Φ11)	F1.8~F22	0.1~∞	C	54.0×41.9	0.31	Φ36×56	115	17
LM12JC10M	—	—	—	—	—	●	●	●	12	8.8×6.6(Φ11)	F1.8~F11	0.1~∞	C	39.1×29.8	-0.12	Φ33×53.5	105	17
LM16JC10M	—	—	—	—	◇	●	●	●	16	8.8×6.6(Φ11)	F1.8~F16	0.1~ ∞	C	30.0×22.7	-0.20	Φ33×50	90	17
LM25JC10M	—	—	—	—	◇	●	●	●	25	8.8×6.6(Φ11)	F1.8~F16	0.1~∞	C	20.0×15.1	-0.09	Φ33×45.5	95	17
LM35JC10M	—	—	◇	◇	◇	●	●	●	35	8.8×6.6(Φ11)	F2.0~F16	0.1~∞	C	14.3×10.8	0.05	Φ43×49	160	17
LM50JC10M	—	—	—	—	◇	●	●	●	50	8.8×6.6(Φ11)	F2.8~F16	0.1~∞	C	10.1×7.6	-0.02	Φ38×77	170	17

2/3" 5 MEGAPIXEL																		
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8											1/2
LM12JC5M2	—	—	—	—	—	✓	✓	✓	12.5	8.8×6.6(Φ11)	F1.4~F16	0.1~∞	C	38.4×29.2	−0.06	Φ38.5×52	130	18
LM16JC5M2	—	—	—	—	—	✓	✓	✓	16	8.8×6.6(Φ11)	F1.4~F16	0.1~∞	C	29.9×22.7	0.03	Φ38.5×52	125	19
LM25JC5M2	—	—	—	—	◇	✓	✓	✓	25	8.8×6.6(Φ11)	F1.6~F16	0.1~∞	C	19.9×15.0	−0.01	Φ38.5×45.5	115	19
LM35JC5M2	—	—	—	—	◇	◇	✓	✓	35	8.8×6.6(Φ11)	F1.6~F16	0.18~∞	C	14.3×10.8	−0.03	Φ38.5×48	120	19

2/3" 5 MEGAPIXEL																		
Model	Format Size(Inch)								Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2										
LM8JC5MC	—	—	—	—	—	✓	✓	✓	8	8.8×6.6(Φ11)	F2.8~F16	0.15~∞	C	57.6×44.4	-0.85	Φ32×27	55	20
LM12JC5MC	—	—	—	—	—	✓	✓	✓	12	8.8×6.6(Φ11)	F2.8~F16	0.2~∞	C	41.0×31.2	-0.27	Φ32×26.8	55	20
LM16JC5MC	—	—	—	—	—	✓	✓	✓	16	8.8×6.6(Φ11)	F2.8~F16	0.2~∞	C	30.9×23.4	-0.04	Φ32×26.5	55	21
LM25JC5MC	—	—	—	—	—	✓	✓	✓	25	8.8×6.6(Φ11)	F2.8~F16	0.2~∞	C	20.0×15.0	0.11	Φ32×25	55	21
LM35JC5MC	—	—	—	◇	◇	✓	✓	✓	35	8.8×6.6(Φ11)	F2.8~F16	0.2~∞	C	14.0×10.6	-0.02	Φ32×27.9	50	21
LM50JC5MC	—	—	—	—	◇	✓	✓	✓	50	8.8×6.6(Φ11)	F2.8~F16	0.3~∞	C	10.0×7.5	-0.01	Φ32×34.7	60	21

2/3" STANDARD																			
Model	Format Size(Inch)								Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2											1/3
LM6JC	—	—	—	—	—	✓	✓	✓	✓	6	8.8×6.6(Φ11)	F1.4~F16	0.1~∞	C	81.9×61.2	−10.7	Φ30×32.8	65	30
LM8JC	—	—	—	—	—	✓	✓	✓	✓	8	8.8×6.6(Φ11)	F1.4~F16	0.1~∞	C	64.2×47.7	−6.2	Φ30×30	60	30
LM12JC	—	—	—	—	—	✓	✓	✓	✓	12	8.8×6.6(Φ11)	F1.4~F16	0.1~∞	C	42.5×31.7	−2.5	Φ30×31.5	60	30
LM16JC	—	—	—	—	—	✓	✓	✓	✓	16	8.8×6.6(Φ11)	F1.4~F16	0.2~∞	C	30.5×22.8	−1.5	Φ30×28	55	30
LM25JC	—	—	—	—	—	✓	✓	✓	✓	25	8.8×6.6(Φ11)	F1.6~F16	0.2~∞	C	21.0×15.7	−0.6	Φ30×28	55	30
LM35JC	—	—	—	—	◇	✓	✓	✓	✓	35	8.8×6.6(Φ11)	F1.6~F16	0.3~∞	C	14.4×10.8	−0.2	Φ32×36.5	85	30
LM50JC	—	—	◇	◇	◇	✓	✓	✓	✓	50	8.8×6.6(Φ11)	F2.0~F22	0.5~∞	C	10.1×7.6	−0.1	Φ32×39.5	90	31

1/1.8" STANDARD																			
Model	Format Size(Inch)									Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3										
LM4NCL	—	—	—	—	—	—	✓	✓	✓	3.5	7.2×5.4(Φ9)	F1.4~F16	0.2~∞	C	117.7×86.7	−28.0	Φ31×30.5	60	31
LM5NCL	—	—	—	—	—	—	✓	✓	✓	4.5	7.2×5.4(Φ9)	F1.4~F16	0.2~∞	C	88.8×66.9	−17.5	Φ31×29.5	55	31
LM6NCL	—	—	—	—	—	—	✓	✓	✓	6	7.2×5.4(Φ9)	F1.4~F16	0.2~∞	C	62.7×48.4	−1.0	Φ31×34	60	31
LM12NCL	—	—	—	—	◇	—	✓	✓	✓	12	7.2×5.4(Φ9)	F2.8~F32	0.3~∞	C	34.6×25.9	−0.8	Φ31×29.5	55	31

1" SWIR MEGAPIXEL																		
Model	Format Size(Inch)								Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2										
LM8HC-VIS-SW	—	—	—	✓	✓	✓	✓	✓	8	12.8×9.6(Φ16)	F1.8~F16	0.2~∞	C	81.3×63.5	-3.1	Φ58×79.5	210	33
LM12HC-VIS-SW	—	—	—	✓	✓	✓	✓	✓	12	12.8×9.6(Φ16)	F1.8~F16	0.2~∞	C	58.0×44.5	-1.6	Φ38×73.5	175	33
LM16HC-VIS-SW	—	—	—	✓	✓	✓	✓	✓	16	12.8×9.6(Φ16)	F1.8~F16	0.2~∞	C	44.2×33.6	-0.81	Φ39×78.2	190	33
LM25HC-VIS-SW	—	—	◇	✓	✓	✓	✓	✓	25	12.8×9.6(Φ16)	F1.8~F16	0.2~∞	C	29.2×22.0	-0.97	Φ39×65.5	160	33
LM35HC-VIS-SW	—	◇	◇	✓	✓	✓	✓	✓	35	12.8×9.6(Φ16)	F1.8~F16	0.2~∞	C	20.4×15.4	-0.37	Φ39×56.42	150	33
LM50HC-VIS-SW	◇	◇	◇	✓	✓	✓	✓	✓	50	12.8×9.6(Φ16)	F2.5~F16	0.5~∞	C	14.6×11.0	-0.11	Φ39.5×71	155	33

2/3" 5 MEGAPIXEL IR-CORRECTED (VIS-NIR) 3.45 μm																			
Model	Format Size(Inch)									Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3										
LM16JC5M-IR	—	—	—	—	—	—	✓	✓	✓	16	8.8×6.6(Φ11)	F1.4~F16	0.3~∞	C	30.9×23.2	−0.8	Φ34×44.5	100	34
LM25JC5M-IR	—	—	—	—	◇	✓	✓	✓	✓	25	8.8×6.6(Φ11)	F1.4~F16	0.3~∞	C	20.1×15.1	−0.3	Φ34×47	110	34
LM35JC5M-IR	—	—	—	—	◇	✓	✓	✓	✓	35	8.8×6.6(Φ11)	F2.0~F22	0.3~∞	C	13.9×10.5	−0.3	Φ34×43	100	34

1" SWIR MEGAPIXEL																			
Model	Format Size(Inch)								Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2											1/3
LM8HC-SW	—	—	—	—	✓	✓	✓	✓	✓	8	12.8×9.6(Φ16)	F1.4~F16	0.1~∞	C	79.4×63.0	-1.2	Φ57×58	205	35
LM12HC-SW	—	—	◇	—	✓	✓	✓	✓	✓	12.5	12.8×9.6(Φ16)	F1.4~F16	0.3~∞	C	55.6×42.5	-1.58	Φ43×51.5	160	35
LM16HC-SW	—	—	◇	✓	✓	✓	✓	✓	✓	16	12.8×9.6(Φ16)	F1.4~F16	0.3~∞	C	44.3×33.6	-1.0	Φ43×52.9	150	35
LM25HC-SW	—	◇	◇	✓	✓	✓	✓	✓	✓	25	12.8×9.6(Φ16)	F1.4~F16	0.3~∞	C	29.3×22.0	-1.0	Φ43×43	135	35
LM35HC-SW	—	◇	◇	✓	✓	✓	✓	✓	✓	35	12.8×9.6(Φ16)	F1.4~F16	0.3~∞	C	20.9×15.8	-0.5	Φ43×43	135	35
LM50HC-SW	—	—	◇	✓	✓	✓	✓	✓	✓	50	12.8×9.6(Φ16)	F1.4~F16	0.5~∞	C	14.5×10.8	0.05	Φ49×48	210	35

LINE SCAN																		
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	57.0	51.0	46.0	38.0	35.0	30.0	23.0											
LM28LF	—	—	—	—	✓	✓	✓	✓	28	46.0(Φ46)	F2.8~F22	0.5~∞	Nikon F	64.6×45.8	-0.17	Φ75×98	500	36
LM35LF	—	◇	—	✓	✓	✓	✓	✓	35	46.0(Φ46)	F2.8~F22	0.4~∞	Nikon F	53.7×37.2	-0.15	Φ57.5×71	430	36
LM50LF	—	◇	✓	✓	✓	✓	✓	✓	50	46.0(Φ46)	F2.8~F22	0.4~∞	Nikon F	39.7×27.1	-0.04	Φ57.5×77	470	36

3CMOS LARGE FORMAT																	
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
	57.0	51.0	46.0	38.0	35.0	30.0	23.0										
LM28CLS	—	—	—	—	—	✓	✓	28	30.0(Φ30)	F2.8~F22	0.5~∞	Nikon F	55.2(V)	-0.1	Φ75×108	482	36
LM35CLS	—	—	—	—	—	✓	✓	35	30.0(Φ30)	F2.8~F22	0.5~∞	Nikon F	46.1(V)	0.06	Φ65×108	480	36
LM50CLS	—	—	—	◇	✓	✓	✓	50	30.0(Φ30)	F2.8~F22	0.5~∞	Nikon F	32.3(V)	-0.1	Φ58×63.5	358	36

1/2.5" MEGAPIXEL S-MOUNT LENS																	
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
	1.1	1	1/1.2	2/3	1/1.8	1/2	1/2.5										
LM3QS28	—	—	—	—	—	—	✓	3	5.7×4.28(Φ7.13)	F2.8	0.1~∞	S (M12×0.5)	86.7×70.6	0.02	Φ16×22.3	6	37
LM3QS40	—	—	—	—	—	—	✓			F4							
LM3QS56	—	—	—	—	—	✓	—			F5.6							

1/3" NF-MOUNT																		
Model	Format Size(Inch)							Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8											1/2
LM3NF	—	—	—	—	—	—	—	✓	2.7	4.8×3.6(Φ6)	F1.8~F11	0.1~ ∞	NF	102.3×76.7	-7.3	Φ21×27	30	37
LM5NF	—	—	—	—	—	—	—	✓	4.5	4.8×3.6(Φ6)	F1.8~F11	0.1~ ∞	NF	59.2×45.0	-2.8	Φ21×31	35	37
LM9NF	—	—	—	—	—	—	—	◇ ✓	9	4.8×3.6(Φ6)	F1.8~F11	0.1~ ∞	NF	30.2×22.8	-0.6	Φ22×34	40	37

TELECENTRIC																		
Model	Format Size(Inch)							Magnification Range	Image Size(mm)	Shooting Magnification	W.D(mm)	Shooting Range(mm)	TV Distortion(%)	Mount	Size(mm)(∞)	Weight(g)	Page	
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8											1/2
LM1119TC	✓	✓	✓	✓	✓	✓	✓	✓	0.5~1.0×	18.4×13.8(Φ23)	0.5× 1.0×	80 81.8	36.8×27.6 18.4×13.8	0.1 0.1	C	Φ82×151.5	1000	38
LM1138TC	✓	✓	✓	✓	✓	✓	✓	✓	2.0×	18.4×13.8(Φ23)	2.0×	80.6	9.20×6.90	0.1	C	Φ64×151	830	38
LM1120TC	—	—	—	—	—	✓	✓	✓	3.45~4.4×	8.8×6.6(Φ11)	3.45× 4.0× 4.4×	65.9 65.9 65.9	2.6×1.9 2.2×1.7 2.0×1.5	0.015 0.003 -0.002	C	Φ57×180	645	39
LM1121TC	Collapse telecentricity	—	—	—	—	✓	✓	✓	1.725~2.2×	8.8×6.6(Φ11)	1.725× 2.0×	114.8 111.4	5.1×3.8 4.4×3.3	0.011 0.004 0.001	C	Φ48×147.5	420	39
LM1122TC		—	—	—	—	✓	✓	✓	1.15~1.47×	8.8×6.6(Φ11)	1.15× 1.3× 1.47×	111.6 111.6 111.6	7.6×5.7 6.6×5.0 6.0×4.5	-0.015 -0.001 0.016	C	Φ50×123.9	330	39
LM1123TC		—	—	—	—	✓	✓	✓	0.69~0.88×	8.8×6.6(Φ11)	0.69× 0.8× 0.88×	111.0 111.0 111.0	12.7×9.6 11.0×8.2 10.0×7.5	-0.001 -0.009 0.005	C	Φ50×121.5	290	39
LM1125TC		—	—	—	—	✓	✓	✓	0.346~0.44×	8.8×6.6(Φ11)	0.346× 0.4× 0.44×	112.7 112.7 112.7	25.4×19.1 22.0×16.5 20.0×15.0	0.02 -0.009 0.01	C	Φ51.5×142.3	420	39

Various types of lenses are used in machine vision systems. In order to achieve the highest performance, it is important to select the lens most suitable for the application.

Quick selection - How to calculate focal length

Ex) A 2/3" camera is used to capture an object 100mm wide from a distance of 300mm.
Use the picture below and the image size chart to substitute for Y, L, and Y'. Then, to capture the entire object, use the formula $f=L*Y'/Y$ to calculate focal length.

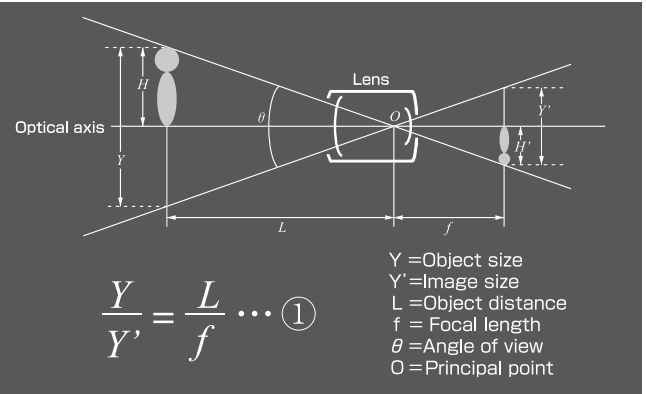
Y=8.8mm(See image size chart), L=300mm, Y=100mm
 $f=300*8.8/100$
 $f=26.4$ mm.
The most appropriate lens is f=25mm lens, which is close but not greater than the 26.4 derived from the calculation.
Lenses with shorter focal lengths than the given number can capture an object in its entirety.

Quick selection - How to calculate the angle of view

Ex) A 1/2" camera is used to shoot an object 300mm away. The focal length of the lens is 16mm. Use the picture below and image size chart to substitute for f, L, and Y1 (H or V accordingly). Then to calculate the angle of view, use the formula $Y=L*Y'/f$.

Width- Y=6.4mm (Horizontal), f=16mm, L=300mm
 $Y=300*6.4/16$
 $Y=120$ mm
Vertical-Y=4.8mm (Vertical), f=16mm, L=300mm
 $Y=300*4.8/16$
 $Y=90$ mm
Thus in order to capture the object in its entirety, the maximum dimensions of an object at a distance of 300mm is 120mm wide and 90mm height.

<Characteristics of lenses are described below>



Object size..... Field range which can be captured by the image sensor
Image size See description
Object distance Distance from the lens to the object
Focal length..... Distance from the principal point to the focus point
Angle of view This angle represents a shooting range in degrees. The shorter a focal length is, the bigger an angle of view is.
Principal point ... Optical center of the lens

Resolving power

The resolving power indicates the degree of detailed information that can be acquired by the lens. In the image created by the lens, the details of black and white stripes which can be distinguished from striped patterns are shown in units of lines per mm or line pairs (LP) per mm. These units express the maximum number of lines of the striped pattern that can be discerned in a 1mm width when counting each pair of black and white lines as one line. For example, for a lens that has a resolving power of 80 lines/mm, when viewing the striped pattern through the lens, information can be acquired to discern patterns having up to 80 lines per 1mm width.

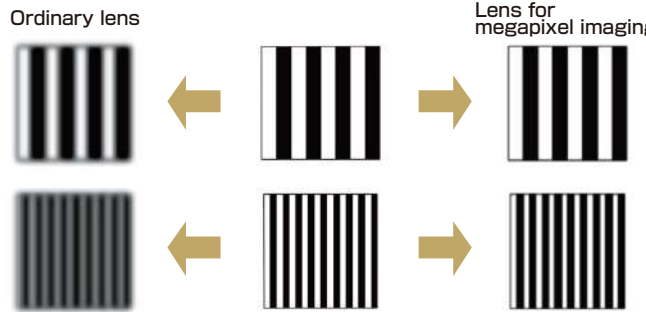
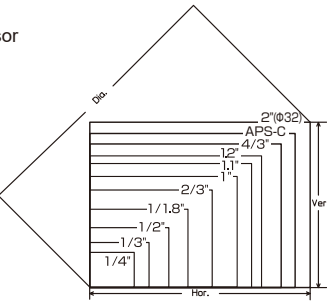


Image size

Image size represents size of camera sensor

Camera	Hor.(mm)	Ver.(mm)	Dia.(mm)
1/4inch	3.6	2.7	4.5
1/3inch	4.8	3.6	6
1/2inch	6.4	4.8	8
1/1.8inch	7.2	5.4	9
2/3inch	8.8	6.6	11
1inch	12.8	9.6	16
1.1inch	14.1	10.6	17.6
1.2inch	15.4	11.5	19.2
4/3inch	18.4	13.8	23
APS-C	22.3	16.7	27.9
2(Φ32)inch	25.6	19.2	32



F-number

The F-number represents the amount of light that passes through a lens. As the F-number decreases, the amount of light that passes through the lens increases. The F-number affects the depth of field as mentioned below.

Depth of field

Depth of field is the range of distance, in front of and behind a subject that appears in focus. If the depth of field is deep, an object will appear to be in focus even if it moves slightly back and forth.

The characteristics of depth of field (comparing lenses with the same specifications)

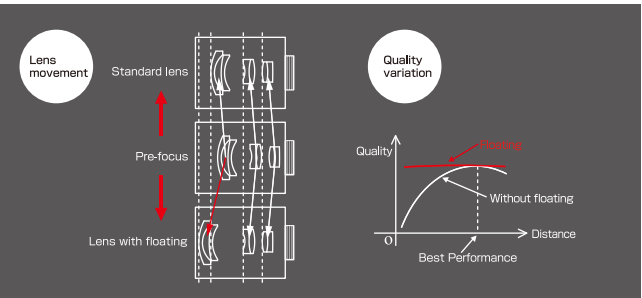
- Increasing the F-number (darker) increases the depth.
- Shortening the focal length increases the depth.
- Lengthening the object distance increases the depth.

Floating Mechanism system

The floating mechanism system is effective in preventing malfunction and increasing the life of the lens. It is also called the close distance aberration compensation mechanism.

In standard CCTV lenses, the whole or a part of the lens moves when focusing. However, moving one lens element and not the entire lens system changes the direction of the light rays and decreases the optical performance.

However, lenses with the floating mechanism system can vary the distance between the lens elements. This enables the lens to achieve the highest performance at various objective distances.



Angle of view

The angle of view indicates the shooting range of defined image size as an angle. The finite angle of view θ can be roughly estimated from the formula ② below. However, this formula does not apply to lenses that have large distortions.

$$\theta = 2 \tan^{-1} \frac{Y}{2L} = 2 \tan^{-1} \frac{Y'}{2f} \dots \textcircled{2}$$

Y=Object size
Y'=Image size
L=Object distance
f=Focal length
 θ =Angle of view

For example, to find the angle of view θ when shooting an object 300mm away using a 1/2" camera and 16mm focal length lens, substitute $f=16$ and $Y'=6.4$ in formula k to find θ (Horizontal) = $2 \tan^{-1} (6.4/2/16) = 22.6^\circ$, and substitute $f=16$ and $Y'=4.8$ in formula k to find θ (Vertical) = $2 \tan^{-1} (4.8/2/16) = 17.1^\circ$. The angle of view will therefore be $22.6^\circ \times 17.1^\circ$.

Would you like to create your optimum lens?

Kowa Customized Lenses

Kowa proposes consistent product creation, from designing to trial manufacturing, production, performance evaluation, and quality assurance.

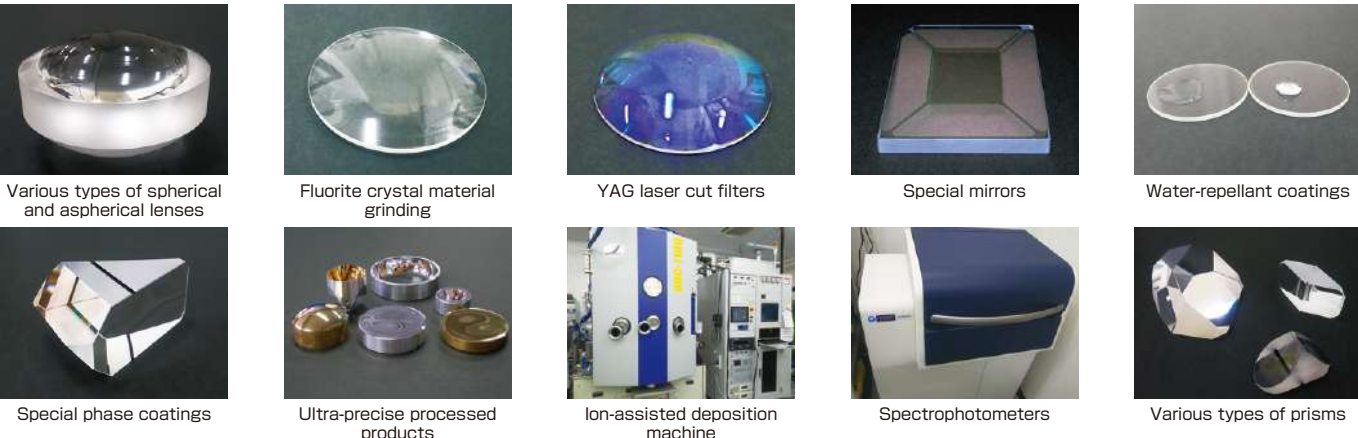
Kowa accepts orders to design and manufacture a wide range of optical designs that match customer needs. In addition to designing the optics, we can provide system designs which also combine mechanical and electrical systems and software. Further, Kowa works together with customers to actively propose designs such as for improving technical levels or solving cost-related problems.

- Examples of technical development
- Optical systems for image processing
 - Optical systems for 3D measurement
 - Optical systems with built-in lighting
 - Optical systems for surveillance
 - Optical systems for robot vision
 - Optical systems for laser scanning
 - Optical systems for semiconductor manufacturing equipment
 - Temperature-resistant and vibration-resistant optical systems
 - Ultra-high resolution optical systems

Optical processing technologies

Kowa will manufacture various types of optical components to meet customers' requirements regarding shape and precision. Further, we offer a variety of coatings, including anti-reflective coatings, multilayer filters, and special-purpose coatings.

- Examples of technical products
- Various types of parabolic mirror processed products/glass
 - Plastic molded lens mold core processed products
 - Crystal processed products for IR imaging (Germanium processed products, etc.)
 - Precision-cut components (Germanium processed products, etc.)



Kowa will provide suggestions about the customized optics based on the flow chart below.

