Quality of Light

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MACHINE VISION LENSES

FACTORY AUTOMATION LENSES

FA-EN_210500AN-2

2021
Ver.2.0

Kowa

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.

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 NEW

- 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.

1.1" 24 MEGAPIXEL 2.5 μm

FC24M Series NEW

- 2.5μm pixel pitch high resolution compact lens.
- High traceability by QR code management.
- Compatible with maximum 1.2inch format size.

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

HC-VIS-SW Series NEW

- 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.

CONTENTS

NEW 2" 50MEGAPIXEL 3.1μm **VM** SERIES 06

LM18VM42/LM18VM35 LM25VM42/LM25VM35 LM35VM42/LM35VM35

4/3" 20 MEGAPIXEL PLUS **XC** SERIES 08

LM8XC LM12XC LM16XC LM25XC LM35XC LM50XC

NEW 1.1" 24 MEGAPIXEL 2.5μm **FC24M** SERIES 10

LM6FC24M LM8FC24M LM16FC24M LM25FC24M LM35FC24M

1" MEGAPIXEL PLUS **HC** SERIES 12

LM6HC LM8HC LM12HC LM16HC LM25HC LM35HC LM50HC LM75HC

1" RUGGEDIZED MEGAPIXEL PLUS **HC-V** SERIES 14

LM8HC-V LM12HC-V LM16HC-V LM25HC-V LM35HC-V LM50HC-V

2/3" 10 MEGAPIXEL **JC10M** SERIES 16

LM5JC10M LM8JC10M LM12JC10M LM16JC10M LM25JC10M LM35JC10M LM50JC10M

2/3" 5 MEGAPIXEL 3.45μm **JC5M2** SERIES 18

LM12JC5M2 LM16JC5M2 LM25JC5M2 LM35JC5M2

2/3" ULTRA COMPACT 5 MEGAPIXEL 3.45μm **JC5MC** SERIES 20

LM8JC5MC LM12JC5MC LM16JC5MC LM25JC5MC

WIDE MEGAPIXEL **NCM/JCM** SERIES 23

LM3NCM LM6NCM LM5JCM

2/3" MEGAPIXEL **JC1MS** SERIES 24

LM5JCM LM8JC1MS LM12JC1MS LM16JC1MS LM25JC1MS LM35JC1MS LM50JC1MS LM75JC1MS LM100JC1MS

2/3" RUGGEDIZED MEGAPIXEL **JCM-V** SERIES 26

LM5JCM-V LM8JCM-V LM12JCM-V LM16JCM-V LM25JCM-V LM35JCM-V LM50JCM-V

2/3" RUGGEDIZED
WATER AND DUST RESISTANCE MEGAPIXEL **JCM-WP** SERIES 28

LM5JCM-WP LM8JCM-WP LM12JCM-WP LM16JCM-WP LM25JCM-WP LM35JCM-WP LM50JCM-WP

2/3" STANDARD **JC** SERIES 30

LM6JC LM8JC LM12JC LM16JC LM25JC LM35JC LM50JC

1/1.8" STANDARD **NCL** SERIES 31

LM4NCL LM5NCL LM6NCL LM12NCL

NEW 1" 12 MEGAPIXEL
IR-CORRECTED (VIS-SWIR) 3.1μm **HC-VIS-SW** SERIES 33

LM12HC-VIS-SW LM25HC-VIS-SW LM50HC-VIS-SW

2/3" 5 MEGAPIXEL
IR-CORRECTED (VIS-NIR) 3.45μm **JC5M-IR** SERIES 34

LM16JC5M-IR LM25JC5M-IR LM35JC5M-IR

1" SWIR MEGAPIXEL **HC-SW** SERIES 35

LM8HC-SW LM12HC-SW LM16HC-SW LM25HC-SW LM35HC-SW LM50HC-SW

LINE SCAN **LF** SERIES 36

LM28LF LM35LF LM50LF

3CCD LARGE FORMAT **CLS** SERIES 36

LM28CLS LM35CLS LM50CLS

1/2.5"MEGAPIXEL S-MOUNT LENS 37

LM3QS28 LM3QS40 LM3QS56

1/3" NF-MOUNT **NF** SERIES 37

LM3NF LM5NF LM9NF

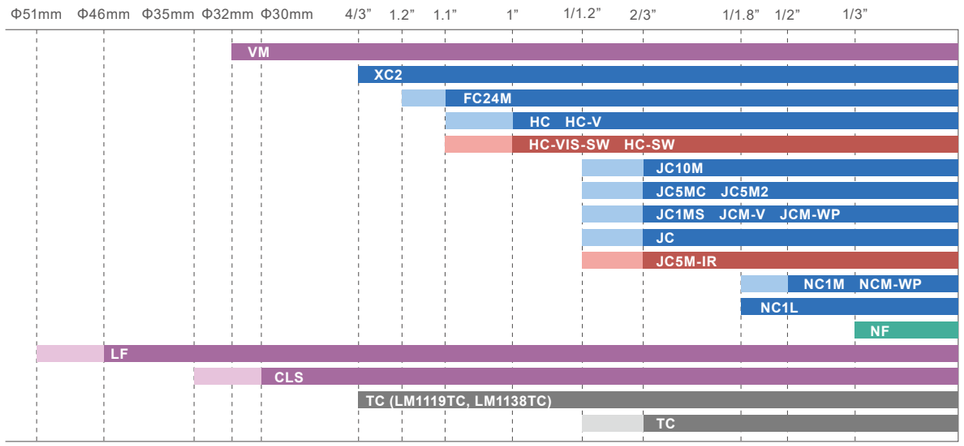
TELECENTRIC **TC** SERIES 38

LM1119TC LM1138TC LM1120TC LM1121TC LM1122TC LM1123TC LM1125TC

VARIFOCAL / MACRO ZOOM ..... 40 / 41

LMVZ4411 LMVZ990-IR LMZ45T3 LMZ69M

ACCESSORIES 42



VM Series NEW

✓ Compatible ◇ Suitable – Incompatible

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	◇	◇	✓	✓	✓	✓	✓	✓

Features of 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.
- 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

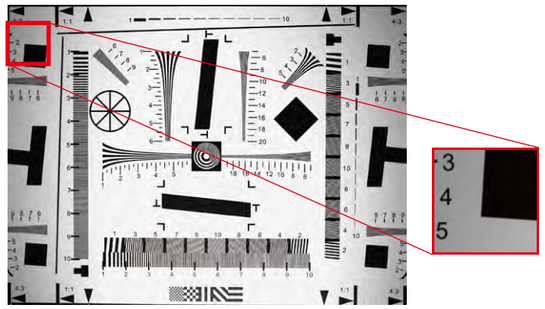
The flange back can change by using optional mount adapters included with each lens.

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

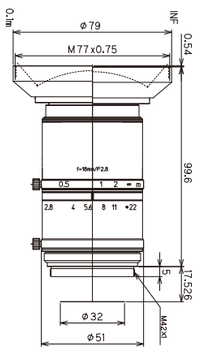
Kowa's VM series features a newly designed switch locking screw mechanism that prevents thumb screws from falling off by utilizing a fixing screw that does not rotate in a set position. The thumb screw locks into place by sliding the fixing screw to the right side. It can then be detached by sliding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

† Images may differ from the actual product.

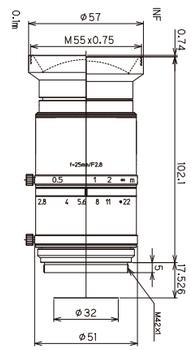
LM18VM42 LM18VM35 NEW



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

Model		LM18VM42	LM18VM35
Focal Length(mm)		18	
Image Size(mm)		Φ32	
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 (Degrees)	2 Inch	70.5×56.1	
	APS-C Inch	63.4×49.7	
	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)(∞)		Φ79×99.6	
Weight(g)		460	
Temperature Range		−10°C~+50°C	

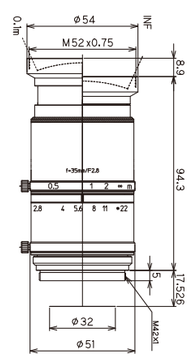
LM25VM42 LM25VM35 NEW



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

Model		LM25VM42	LM25VM35
Focal Length(mm)		25	
Image Size(mm)		Φ32	
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 (Degrees)	2 Inch	54.0×42.0	
	APS-C Inch	48.0×37.0	
	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)(∞)		Φ57×102.1	
Weight(g)		400	
Temperature Range		−10°C~+50°C	

LM35VM42 LM35VM35 NEW



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

Model		LM35VM42	LM35VM35
Focal Length(mm)		35	
Image Size(mm)		Φ32	
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 (Degrees)	2 Inch	40.2×30.7	
	APS-C Inch	35.4×26.9	
	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)(∞)		Φ54×94.3	
Weight(g)		375	
Temperature Range		−10°C~+50°C	

† Images may differ from the actual product.

XC Series

High Resolution FA/MV Lenses

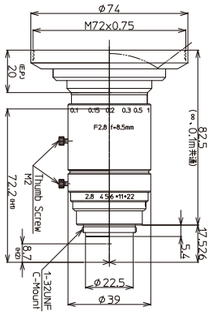
✓ Compatible ◇ Suitable – Incompatible

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	✓	✓	✓	✓	✓	✓	✓	✓	✓

Features of 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.

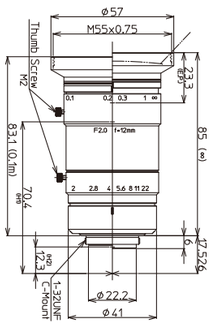
LM8XC



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

Model		LM8XC
Focal Length(mm)		8.5
Image Size(mm)		18.4×13.8(Φ23)
Iris Range(F-stop)		F2.8~F22
Focusing Range(m)		0.1~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		238.4(H)×179.1(V)
Angle of View (Degrees)	4/3 Inch	93.5×77.1
	1.1 Inch	78.2×62.7
	1 Inch	72.9×57.9
	2/3 Inch	53.8×41.6
Resolution(Center, Corner)		160lp/mm, 80lp/mm
TV Distortion(%)		0.12
Back Focus in Air(mm)		12.9
Mount		C-mount
Filter Thread(mm)		M72×P0.75
Size(mm)(∞)		Φ74×82.5
Weight(g)		245
Temperature Range		−10°C~+50°C

LM12XC



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

Model		LM12XC
Focal Length(mm)		12
Image Size(mm)		18.4×13.8(Φ23)
Iris Range(F-stop)		F2.0~F22
Focusing Range(m)		0.1~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		181.5(H)×135.5(V)
Angle of View (Degrees)	4/3 Inch	74.9×59.6
	1.1 Inch	60.6×47.1
	1 Inch	55.9×43.1
	2/3 Inch	39.8×30.2
Resolution(Center, Corner)		160lp/mm, 80lp/mm
TV Distortion(%)		0.59
Back Focus in Air(mm)		13.0
Mount		C-mount
Filter Thread(mm)		M55×P0.75
Size(mm)(∞)		Φ57×85
Weight(g)		270
Temperature Range		−10°C~+50°C

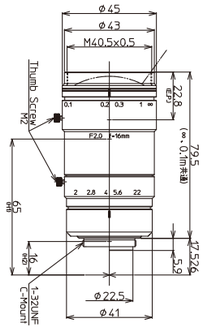
Magnification Using A Close Up Ring

You can use close up rings to increase the magnification and decrease the minimum object distance (M.O.D.) of the lens. Simply screw in the spacer ring between the threads of the lens mount and camera.

† Images may differ from the actual product.

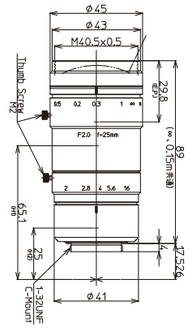
4/3" 20 MEGAPIXEL PLUS (3.1μm)

LM16XC



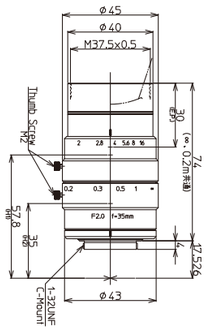
LO-DIS Low Distortion · FLOAT Floating · XD Extra Low Dispersion · WBMC Wide-Band Multi-Coating

LM25XC



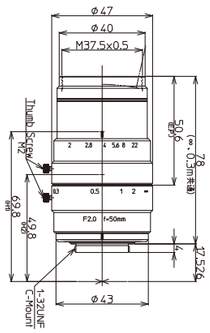
LO-DIS Low Distortion · FLOAT Floating · XD Extra Low Dispersion · WBMC Wide-Band Multi-Coating

LM35XC



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

LM50XC



LO-DIS Low Distortion · FLOAT Floating · WBMC 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	Manual	Manual	Manual
	Focus	Manual	Manual	Manual	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)
Angle of View (Degrees)	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
TV Distortion(%)		0.02	−0.57	−0.17	0.80
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×

† Images may differ from the actual product.

FC24M Series NEW

High Resolution FA/MV Lens

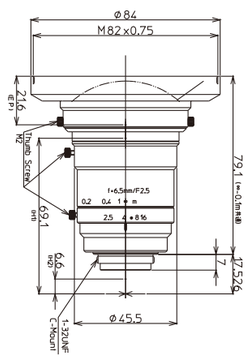
✓ Compatible ◇ Suitable – Incompatible

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

Features of FC24M Series

- 2.5μm 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.

LM6FC24M NEW



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

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	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		256(H)×190(V)
Angle of View (Degrees)	1.1 Inch	95.7×78.7
	1 Inch	89.9×73.0
	2/3 Inch	68.1×53.5
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

† Images may differ from the actual product.

LM8FC24 NEW

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

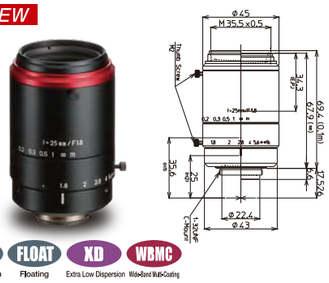
LM12FC24M NEW

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

LM16FC24M NEW

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

LM25FC24M NEW



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

LM35FC24M NEW

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

LM50FC24M NEW

LO-DIS Low Distortion · FLOAT Floating · XD Extra Low Dispersion · WBMC 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	Iris	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 View (Degrees)	1.1 Inch	79.2×63.8	60.0×46.9	48.0×36.7	31.5×23.9	22.1×16.7	16.1×12.1
	1 Inch	73.9×58.8	55.3×42.9	43.6×33.4	28.7×21.7	20.2×15.2	14.6×11.0
	2/3 Inch	54.5×42.1	39.6×30.1	30.8×23.3	20.0×15.0	14.0×10.5	10.1×7.6
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

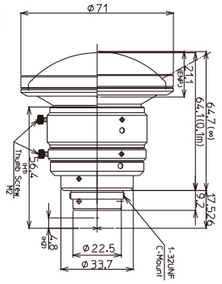
✓ Compatible ◇ Suitable – Incompatible

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

Features of HC Series

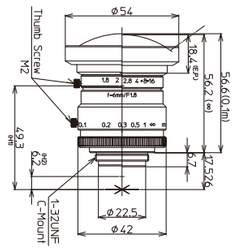
- Wide product range: 9 lenses in HC series
- Up to 5 megapixels performance
- Excellent corner brightness
- High performance compact lenses
- Low distortion

LM4HC NEW

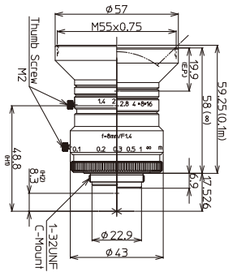


*Optional filter holder can be attached.

LM6HC



LM8HC



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
Control 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 View (Degrees) 1 Inch	112.2×95.4	96.8×79.4	79.4×63.0
Angle of View (Degrees) 2/3 Inch	90.0×72.2	74.1×58.0	58.3×44.7
Angle of View (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

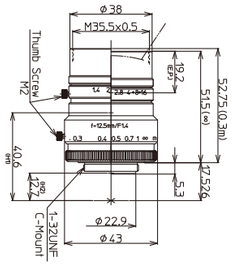
*Optional filter holder can be attached.

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

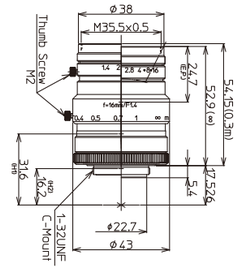
Model	LM4HC	LM6HC	LM8HC	LM12HC	LM16HC	LM25HC	LM35HC	LM50HC	LM75HC
(Non)M.O.D./Magnification	100mm/0.04×	100mm/0.05×	100mm/0.07×	300mm/0.04×	300mm/0.05×	300mm/0.08×	300mm/0.12×	500mm/0.11×	1000mm/0.078×
(1mm Ring)M.O.D./Magnification	–	–	–	93mm/0.12×	134mm/0.11×	200mm/0.12×	243mm/0.15×	424mm/0.13×	858mm/0.091×
(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.

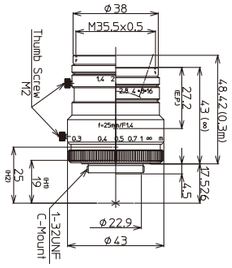
LM12HC



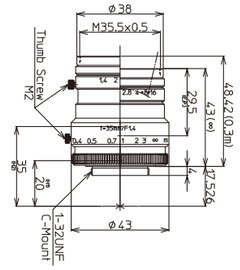
LM16HC



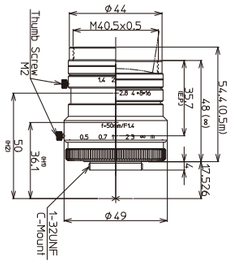
LM25HC



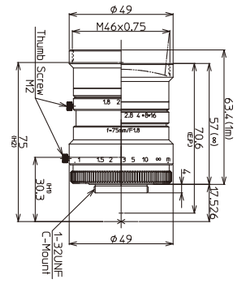
LM35HC



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
Control 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 View (Degrees) 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
Angle of View (Degrees) 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
Angle of View (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

† Images may differ from the actual product.

1" RUGGEDIZED MEGAPIXEL PLUS

HC-V Series

High Resolution FA/MV Lenses

✓ 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
LM8HC-V	–	–	–	✓	✓	✓	✓	✓	✓
LM12HC-V	–	–	◇	✓	✓	✓	✓	✓	✓
LM16HC-V	–	–	◇	✓	✓	✓	✓	✓	✓
LM25HC-V	–	◇	◇	✓	✓	✓	✓	✓	✓
LM35HC-V	–	◇	◇	✓	✓	✓	✓	✓	✓
LM50HC-V	–	–	◇	✓	✓	✓	✓	✓	✓
LM75HC-V	–	–	◇	✓	✓	✓	✓	✓	✓

Kowa's new 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 new ruggedized megapixel lens series is ideal for applications that require increased durability and high optical performance.

Features of HC-V Series

- 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.

Instruction Video

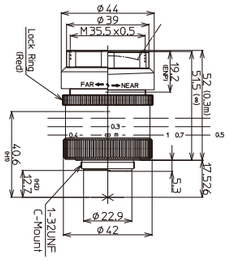
Two Way Reversible Nut

† Images may differ from the actual product.

LM8HC-V

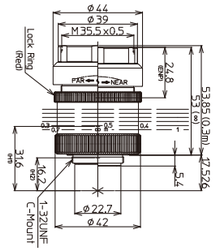
RUGGED Ruggedized lens

LM12HC-V



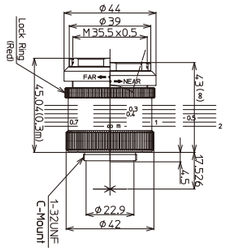
RUGGED Ruggedized lens

LM16HC-V



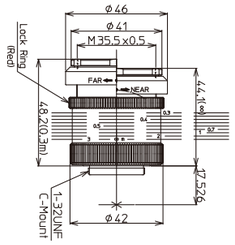
RUGGED Ruggedized lens

LM25HC-V



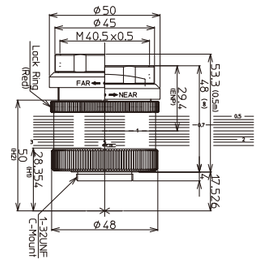
RUGGED Ruggedized lens

LM35HC-V



RUGGED Ruggedized lens

LM50HC-V



RUGGED Ruggedized lens

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 (Degrees)	1 Inch	79.7×63.0	55.6×42.5	44.3×33.6	29.3×22.0	20.9×15.8	14.5×10.8
	2/3 Inch	58.3×44.7	39.1×29.5	30.8×23.2	20.2×15.1	14.4×10.8	10.0×7.5
	1/1.8 Inch	48.5×36.9	32.1×24.2	25.3×19.0	16.5×12.4	11.8×8.8	8.2×6.2
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°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.

JC10M Series

High Resolution FA/MV Lenses

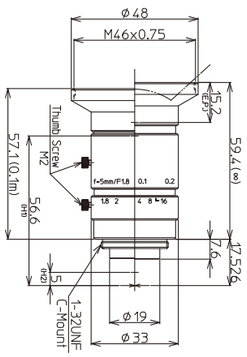
✓ Compatible ◇ Suitable – Incompatible

Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LM5JC10M	–	–	–	–	–	✓	✓	✓	✓
LM8JC10M	–	–	–	–	–	✓	✓	✓	✓
LM12JC10M	–	–	–	–	–	✓	✓	✓	✓
LM16JC10M	–	–	–	–	◇	✓	✓	✓	✓
LM25JC10M	–	–	–	–	◇	✓	✓	✓	✓
LM35JC10M	–	–	–	–	◇	✓	✓	✓	✓
LM50JC10M	–	–	–	–	◇	✓	✓	✓	✓

Features of 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 (5 models/f=5~25mm) allow for easy installation in compact machine vision systems.

LM5JC10M

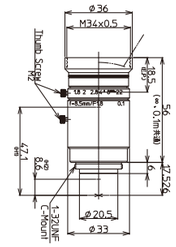


LO-DIS Low Distortion · FLOAT Floating · XD Extra Low Dispersion · WBMC Wide-Band Multi-Coating

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
Control Focus	Manual
Shooting Range at M.O.D.(mm)	197.0(H)×147.0(V)
Angle of View (Degrees) 2/3 Inch	82.2×66.5
Angle of View (Degrees) 1/1.8 Inch	71.1×56.5
Angle of View (Degrees) 1/2 Inch	64.9×51.1
Resolution(Center, Corner)	200lp/mm, 160lp/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

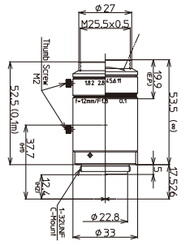
† Images may differ from the actual product.

LM8JC10M



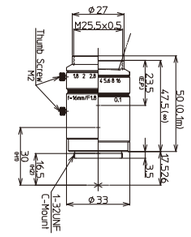
LO-DIS Low Distortion · FLOAT Floating · XD Extra Low Dispersion · WBMC Wide-Band Multi-Coating

LM12JC10M



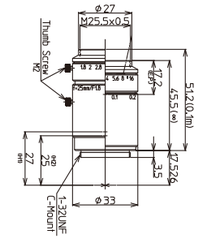
LO-DIS Low Distortion · FLOAT Floating · XD Extra Low Dispersion · WBMC Wide-Band Multi-Coating

LM16JC10M



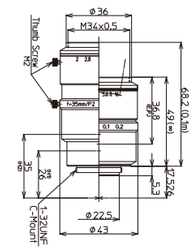
LO-DIS Low Distortion · FLOAT Floating · WBMC Wide-Band Multi-Coating

LM25JC10M



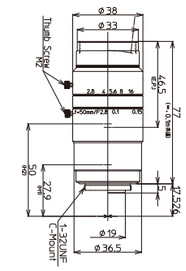
LO-DIS Low Distortion · FLOAT Floating · WBMC Wide-Band Multi-Coating

LM35JC10M



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

LM50JC10M



LO-DIS Low Distortion · FLOAT Floating · XD Extra Low Dispersion · WBMC 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
Control 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 (Degrees) 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
Angle of View (Degrees) 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
Angle of View (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	−0.20	−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)(∞)	Φ36×56.0	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	LM5JC10M	LM8JC10M	LM12JC10M	LM16JC10M	LM25JC10M	LM35JC10M	LM50JC10M
(Non)M.O.D./Magnification	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.

JC5M2 Series

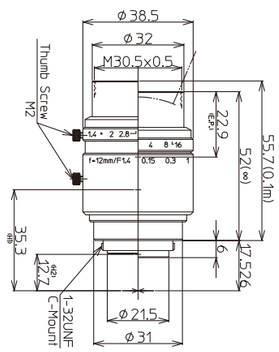
✓ Compatible ◇ Suitable – Incompatible

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

Features of 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)

LM12JC5M2

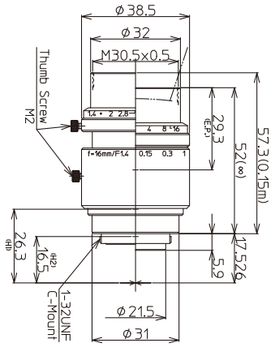


LO-DIS Low Distortion FLOAT Floating

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
Control Focus	Manual
Shooting Range at M.O.D.(mm)	81.4(H)×60.9(V)
Angle of View (Degrees) 2/3 Inch	38.4×29.2
1/1.8 Inch	31.7×24.0
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

† Images may differ from the actual product.

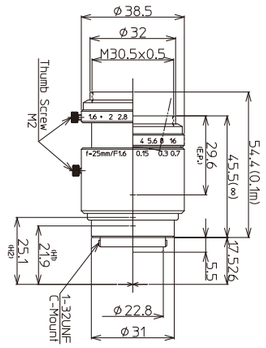
LM16JC5M2



LO-DIS Low Distortion FLOAT Floating

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
Control Focus	Manual
Shooting Range at M.O.D.(mm)	64.6(H)×48.4(V)
Angle of View (Degrees) 2/3 Inch	29.9×22.7
1/1.8 Inch	24.7×18.6
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

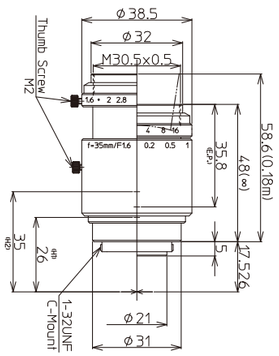
LM25JC5M2



LO-DIS Low Distortion FLOAT Floating

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
Control Focus	Manual
Shooting Range at M.O.D.(mm)	35.1(H)×26.3(V)
Angle of View (Degrees) 2/3 Inch	19.9×15.0
1/1.8 Inch	16.4×12.3
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

LM35JC5M2



LO-DIS Low Distortion FLOAT Floating

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
Control Focus	Manual
Shooting Range at M.O.D.(mm)	42.1(H)×31.6(V)
Angle of View (Degrees) 2/3 Inch	14.3×10.8
1/1.8 Inch	11.7×8.8
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

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×

† Images may differ from the actual product.

JC5MC Series NEW

High Resolution FA/MV Lenses

✓ Compatible ◇ Suitable – Incompatible

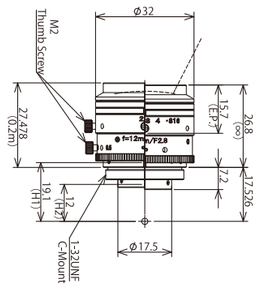
Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LM8JC5MC	–	–	–	–	–	✓	✓	✓	✓
LM12JC5MC	–	–	–	–	–	✓	✓	✓	✓
LM16JC5MC	–	–	–	–	–	✓	✓	✓	✓
LM25JC5MC	–	–	–	–	–	✓	✓	✓	✓

Features of 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)
- Focal length 35mm and 50mm : To Be Released in 2021

LM12JC5MC NEW

LO-DIS Low Distortion

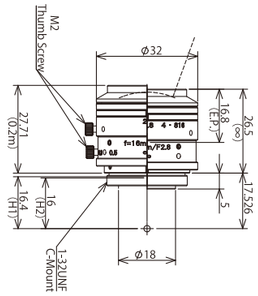


Model		LM12JC5MC
Focal Length(mm)		12
Image Size(mm)		8.8×6.6(Φ11)
Iris Range(F-stop)		F2.8~F16
Focusing Range(m)		0.2~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		159.0(H)×118.0(V)
Angle of View (Degrees)	2/3 Inch	41.0×31.2
	1/1.8 Inch	33.9×25.6
	1/2 Inch	30.3×22.8
Resolution(Center, Corner)		160lp/mm, 100lp/mm
TV Distortion(%)		-0.27
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

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

LM16JC5MC NEW

LO-DIS Low Distortion

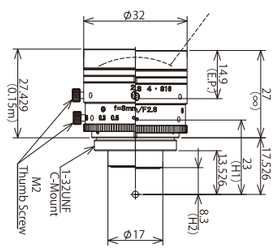


Model		LM16JC5MC
Focal Length(mm)		16
Image Size(mm)		8.8×6.6(Φ11)
Iris Range(F-stop)		F2.8~F16
Focusing Range(m)		0.2~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		117.0(H)×88.0(V)
Angle of View (Degrees)	2/3 Inch	30.9×23.4
	1/1.8 Inch	25.5×19.2
	1/2 Inch	22.7×17.2
Resolution(Center, Corner)		160lp/mm, 100lp/mm
TV Distortion(%)		-0.04
Back Focus in Air(mm)		14.7
Mount		C-mount
Filter Thread(mm)		*
Size(mm)(∞)		Φ32×26.5
Weight(g)		55
Temperature Range		−10°C~+50°C

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

LM8JC5MC NEW

LO-DIS Low Distortion

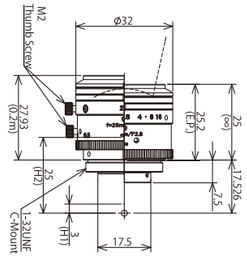


Model		LM8JC5MC
Focal Length(mm)		8
Image Size(mm)		8.8×6.6(Φ11)
Iris Range(F-stop)		F2.8~F16
Focusing Range(m)		0.15~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		178.0(H)×132.0(V)
Angle of View (Degrees)	2/3 Inch	57.6×44.4
	1/1.8 Inch	48.1×36.7
	1/2 Inch	43.1×32.8
Resolution(Center, Corner)		160lp/mm, 100lp/mm
TV Distortion(%)		-0.85
Back Focus in Air(mm)		10.8
Mount		C-mount
Filter Thread(mm)		M30.5×P0.5
Size(mm)(∞)		Φ32×27
Weight(g)		55
Temperature Range		−10°C~+50°C

† Images may differ from the actual product.

LM25JC5MC NEW

LO-DIS Low Distortion



Model		LM25JC5MC
Focal Length(mm)		25
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)		75.0(H)×56.0(V)
Angle of View (Degrees)	2/3 Inch	20.0×15.0
	1/1.8 Inch	16.4×12.4
	1/2 Inch	14.6×11.0
Resolution(Center, Corner)		160lp/mm, 100lp/mm
TV Distortion(%)		0.11
Back Focus in Air(mm)		11.7
Mount		C-mount
Filter Thread(mm)		*
Size(mm)(∞)		Φ32×25
Weight(g)		55
Temperature Range		−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
(Non)M.O.D./Magnification	150mm/0.05×	200mm/0.06×	200mm/0.08×	200mm/0.12×
(1mm Ring)M.O.D./Magnification	35mm/0.18×	75mm/0.13×	105mm/0.14×	145mm/0.16×
(5mm Ring)M.O.D./Magnification	–	–	–	66mm/0.32×
(10mm Ring)M.O.D./Magnification	–	–	–	–
(20mm Ring)M.O.D./Magnification	–	–	–	–

† Images may differ from the actual product.

NCM/JCM Series

High Resolution FA/MV Lenses

✓ 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
LM3NCM	–	–	–	–	–	–	✓	✓	✓
LM6NCM	–	–	–	–	–	–	◇	✓	✓
LM5JCM	–	–	–	–	–	✓	✓	✓	✓

Features of WIDE 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

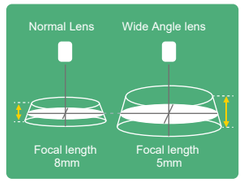
- Reduces the distortion to corner

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

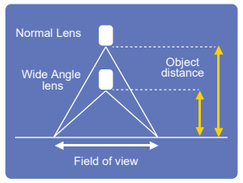
High quality

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

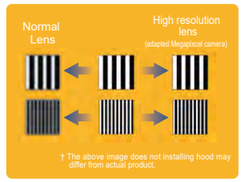
Long Depth of field



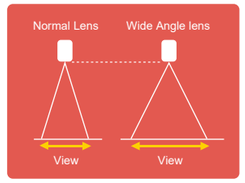
Short Close distance



Clear image



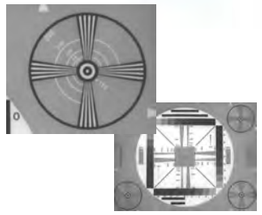
Large field of view



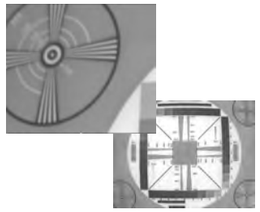
Corner image comparison

(Super wide angle lens vs. Standard lens)

LM5JCM: 2/3inch f=5mm

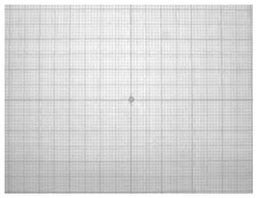


LM6JC: 2/3inch f=6mm

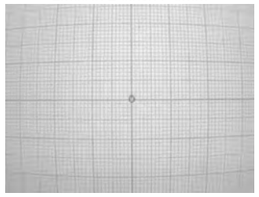


Distortion comparison at short distance object

LM5JCM: 2/3inch f=5mm



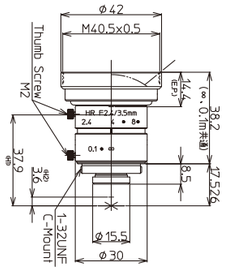
LM6JC: 2/3inch f=6mm



Capture image taken by 2megapixcel camera

† Images may differ from the actual product.

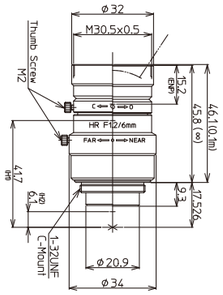
LM3NCM



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	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		226.3(H)×171.4(V)
Angle of View (Degrees)	2/3 inch	–
	1/1.8 inch	89.0×73.8
	1/2 inch	82.4×66.9
	1/3 inch	66.9×52.7
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

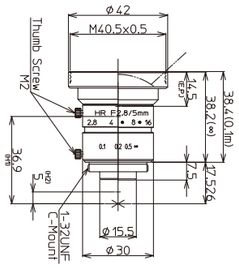
LM6NCM



LO-DIS
Low Distortion

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	Manual
	Focus	Manual
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	56.2×43.5
	1/3 inch	43.5×33.2
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

LM5JCM



LO-DIS
Low Distortion

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	Manual
	Focus	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
	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

✓ Compatible ◇ Suitable – Incompatible

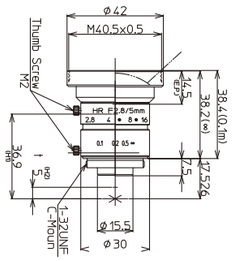
Model	Format Size(Inch)								
	4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3
LM5JCM	–	–	–	–	–	✓	✓	✓	✓
LM8JC1MS	–	–	–	–	–	✓	✓	✓	✓
LM12JC1MS	–	–	–	–	–	✓	✓	✓	✓
LM16JC1MS	–	–	–	–	–	✓	✓	✓	✓
LM25JC1MS	–	–	–	–	–	✓	✓	✓	✓
LM35JC1MS	–	–	–	◇	◇	✓	✓	✓	✓
LM50JC1MS	–	◇	◇	◇	◇	✓	✓	✓	✓
LM75JC1MS	–	–	◇	◇	◇	✓	✓	✓	✓
LM100JC1MS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

Features of 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

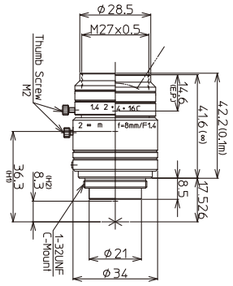
LM5JCM

LO-DIS
Low Distortion



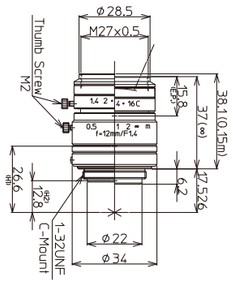
LM8JC1MS

LO-DIS
Low Distortion



LM12JC1MS

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	Manual	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 (Degrees)	2/3 Inch	82.4×66.9	56.5×43.9	38.3×29.1
	1/1.8 Inch	71.7×57.1	47.4×36.3	31.7×24.0
	1/2 Inch	65.2×51.3	42.6×32.5	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

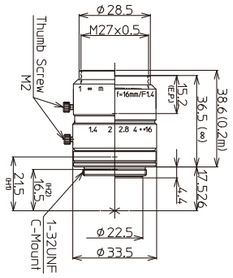
Diagram of M.O.D. / Magnification Using A Close Up Ring

Model	LM5JM	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.

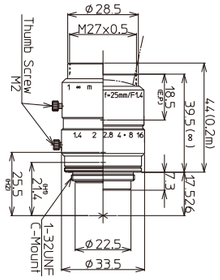
LM16JC1MS

LO-DIS FLOAT
Low Distortion Floating



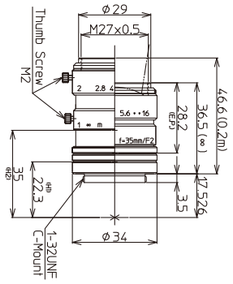
LM25JC1MS

LO-DIS FLOAT
Low Distortion Floating



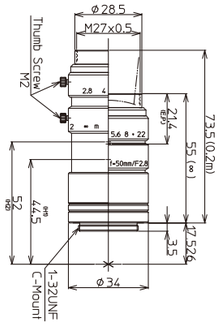
LM35JC1MS

FLOAT
Floating



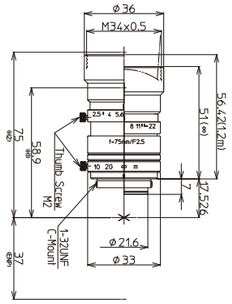
LM50JC1MS

LO-DIS FLOAT
Low Distortion Floating



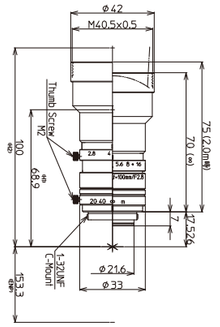
LM75JC1MS

FLOAT
Floating



LM100JC1MS

FLOAT
Floating



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	F2.5~F22	F2.8~F32
Focusing Range(m)		0.2~∞	0.2~∞	0.2~∞	0.2~∞	1.2~∞	2.0~∞
Control	Iris	Manual	Manual	Manual	Manual	Manual	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 (Degrees)	2/3 Inch	30.0×22.7	19.6×14.8	14.4×10.8	9.6×7.2	6.7×5.0	5.0×3.8
	1/1.8 Inch	24.7×18.6	16.1×12.1	11.8×8.8	7.9×5.9	5.5×4.1	4.1×3.1
	1/2 Inch	21.8×16.4	14.0×10.5	10.5×7.9	7.0×5.2	4.9×3.7	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

† Images may differ from the actual product.

✓ 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
LM5JCM-V	–	–	–	–	–	✓	✓	✓	✓
LM8JCM-V	–	–	–	–	–	✓	✓	✓	✓
LM12JCM-V	–	–	–	–	–	✓	✓	✓	✓
LM16JCM-V	–	–	–	–	–	✓	✓	✓	✓
LM25JCM-V	–	–	–	–	–	✓	✓	✓	✓
LM35JCM-V	–	–	–	◇	◇	✓	✓	✓	✓
LM50JCM-V	–	◇	◇	◇	◇	✓	✓	✓	✓

JCM-V Series

High Resolution FA/MV Lenses

Kowa's new 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 new ruggedized megapixel lens series is ideal for applications that require increased durability and high optical performance.

Features of JCM-V Series

- 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

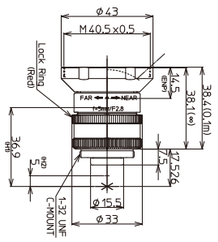
2 Unscrew the bottom ring of the outside body to adjust the focus to optimal position.

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

LM5JCM-V

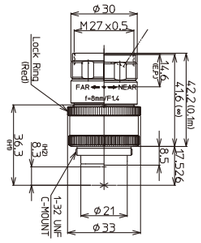


LO-DIS Low Distortion RUGGED Ruggedized lens

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	–
	Focus	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)(∞)		Φ43×38.1
Weight(g)		73
Temperature Range		−10°C~+50°C

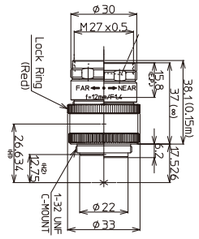
† Images may differ from the actual product.

LM8JCM-V



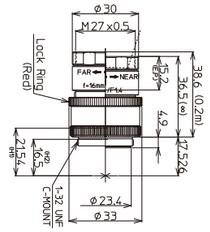
LO-DIS Low Distortion RUGGED Ruggedized lens

LM12JCM-V



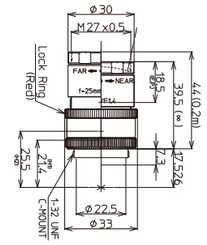
LO-DIS Low Distortion RUGGED Ruggedized lens

LM16JCM-V



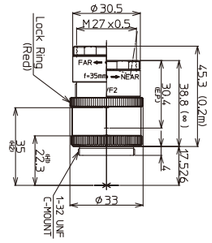
LO-DIS Low Distortion RUGGED Ruggedized lens

LM25JCM-V



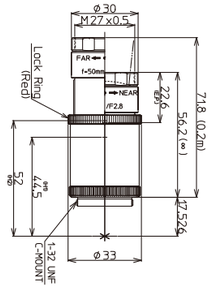
LO-DIS Low Distortion RUGGED Ruggedized lens

LM35JCM-V



LO-DIS Low Distortion RUGGED Ruggedized lens

LM50JCM-V



LO-DIS Low Distortion RUGGED Ruggedized lens

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	–	–	–	–	–	–
	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 (Degrees)	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
	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
	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)(∞)		Φ33.0×41.6	Φ33.0×37.0	Φ33.0×36.5	Φ33.0×39.5	Φ33.0×38.8	Φ33.0×56.2
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.

✓ 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
LM3NCM-WP	–	–	–	–	–	–	✓	✓	✓
LM5JCM-WP	–	–	–	–	–	✓	✓	✓	✓
LM8JCM-WP	–	–	–	–	–	✓	✓	✓	✓
LM12JCM-WP	–	–	–	–	–	✓	✓	✓	✓
LM16JCM-WP	–	–	–	–	–	✓	✓	✓	✓
LM25JCM-WP	–	–	–	–	–	✓	✓	✓	✓
LM35JCM-WP	–	–	–	◇	◇	✓	✓	✓	✓
LM50JCM-WP	–	◇	◇	◇	◇	✓	✓	✓	✓

JCM-WP Series

High Resolution FA/MV Lenses

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.

† Image is for illustration purposes

Features of JCM-WP Series

- 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

1 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.

Focus Adjustment Procedure

2 Unscrew the bottom ring of the outside body to adjust the focus to optimal position.

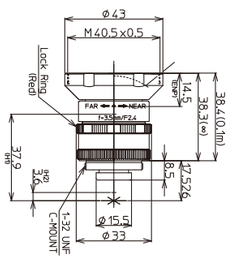
3 Screw the red two way reversible nut on the center body towards the bottom ring to lock in the focus.

Interchangeable Iris Plates

Two Way Reversible Nut

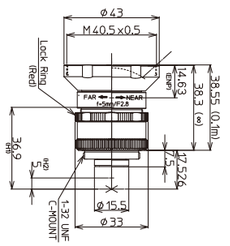
Instruction Video

LM3NCM-WP NEW



LO-DIS Low Distortion | RUGGED Ruggedized lens | WR Water Resistance | DR Dust Resistance

LM5JCM-WP

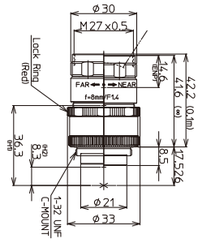


LO-DIS Low Distortion | RUGGED Ruggedized lens | WR Water Resistance | DR Dust Resistance

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	–	–
	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 (Degrees)	2/3 Inch	–	82.4×66.9
	1/1.8 Inch	89.0×73.8	71.7×57.1
	1/2 Inch	82.4×66.9	65.2×51.3
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)(∞)		Φ43×38.4	Φ43×38.3
Weight(g)		80	75
Temperature Range		−10°C~+50°C	−10°C~+50°C

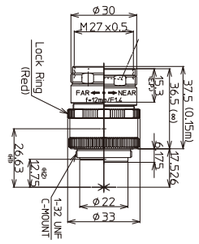
† Images may differ from the actual product.

LM8JCM-WP



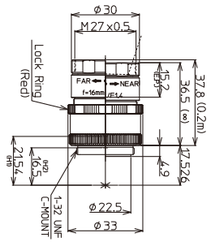
LO-DIS Low Distortion | RUGGED Ruggedized lens | WR Water Resistance | DR Dust Resistance

LM12JCM-WP



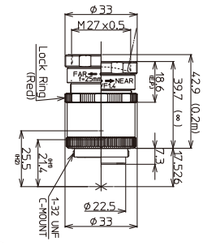
LO-DIS Low Distortion | RUGGED Ruggedized lens | WR Water Resistance | DR Dust Resistance

LM16JCM-WP



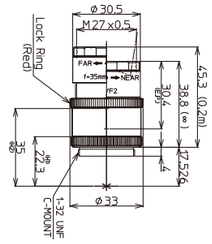
LO-DIS Low Distortion | RUGGED Ruggedized lens | WR Water Resistance | DR Dust Resistance

LM25JCM-WP



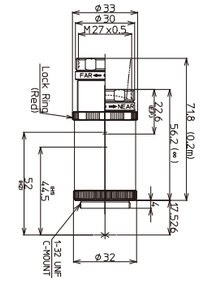
LO-DIS Low Distortion | RUGGED Ruggedized lens | WR Water Resistance | DR Dust Resistance

LM35JCM-WP



LO-DIS Low Distortion | RUGGED Ruggedized lens | WR Water Resistance | DR Dust Resistance

LM50JCM-WP



LO-DIS Low Distortion | RUGGED Ruggedized lens | WR Water Resistance | DR 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	–	–	–	–	–	–
	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 (Degrees)	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
	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
	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	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)(∞)		Φ33.0×41.6	Φ33.0×36.5	Φ33.0×36.5	Φ33.0×39.7	Φ33.0×38.8	Φ33.0×56.2
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.

2/3" STANDARD

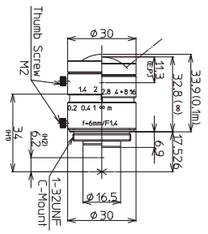
JC Series

- High resolution
- Low distortion
- Excellent cost performance
- Compact, lightweight and durable
- Excellent corner brightness

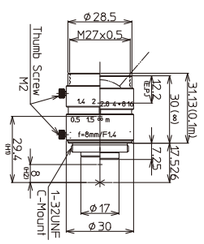
✓ Compatible ◇ Suitable – Incompatible

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	–	–	◇	◇	◇	✓	✓	✓	✓

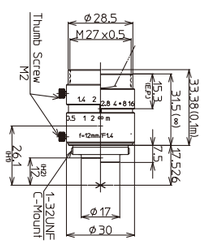
LM6JC



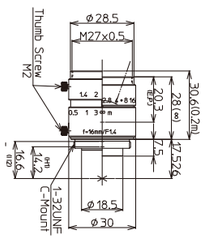
LM8JC



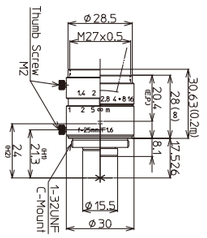
LM12JC



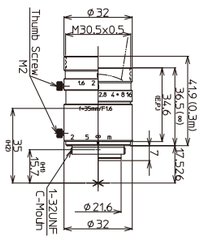
LM16JC



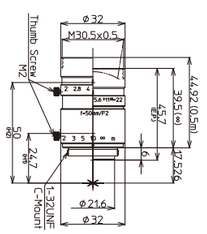
LM25JC



LM35JC



LM50JC



† Images may differ from the actual product.

2/3" & 1/1.8" STANDARD

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	Iris	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)	76.0H)×56.9(V)	85.0(H)×63.6(V)
Angle of View (Degrees)	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	10.1×7.6
	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	8.2×6.2
	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	7.3×5.5
Resolution(Center, Corner)		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
TV Distortion(%)		−10.7	−6.2	−2.5	−1.5	−0.6	−0.2	−0.1
Back Focus in Air(mm)		11.3	11.3	11.1	12.1	10.3	14.9	17.2
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

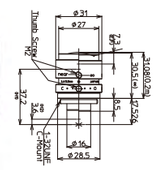
Model	LM6JC	LM8JC	LM12JC	LM16JC	LM25JC	LM35JC	LM50JC
(Non)M.O.D./Magnification	100mm/0.06×	100mm/0.07×	100mm/0.12×	200mm/0.08×	200mm/0.12×	300mm/0.12×	500mm/0.10×
(1mm Ring)M.O.D./Magnification	–	–	50mm/0.19×	110mm/0.14×	136mm/0.15×	240mm/0.14×	422mm/0.12×
(5mm Ring)M.O.D./Magnification	–	–	–	–	46mm/0.31×	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×

1/1.8" STANDARD

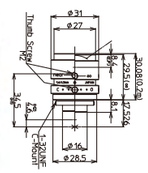
NCL Series

- 4 wide angle lenses
- Locking screws
- Metal body

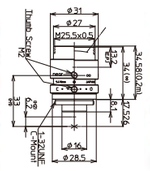
LM4NCL



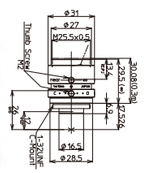
LM5NCL



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	Iris	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 (Degrees)	1/1.8 inch	117.7×86.7	88.8×66.9	62.7×48.4	34.6×25.9
	1/2 inch	103.6×76.7	79.0×59.4	57.3×44.0	30.7×23.0
	1/3 inch	76.7×57.7	59.4×45.1	44.0×33.7	23.0×17.2
Resolution(Center, Corner)		100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm
TV Distortion(%)		−28.0	−17.5	−1.0	−0.8
Back Focus in Air(mm)		8.9	10.0	9.5	11.1
Mount		C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)		–	–	M25.5×P0.5	M25.5×P0.5
Size(mm)(∞)		Φ31×30.5	Φ31×29.5	Φ31×34	Φ31×29.5
Weight(g)		60	55	60	55
Temperature Range		−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.

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

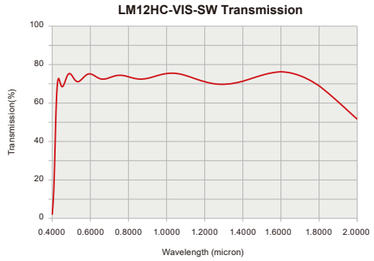
HC-VIS-SW Series NEW

Features of 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.
- Utilizes ultra wideband multi-coatings to increase transmission.
- Special extra low dispersion (XD) glass significantly reduces chromatic aberration, otherwise known as color fringing.
- Focal length 8mm, 16mm and 35mm : To Be Released in 2021

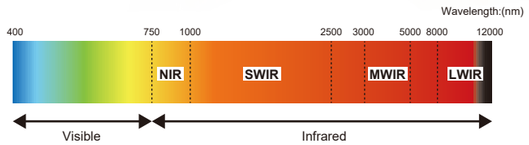
✓ Compatible ◇ Suitable – Incompatible

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



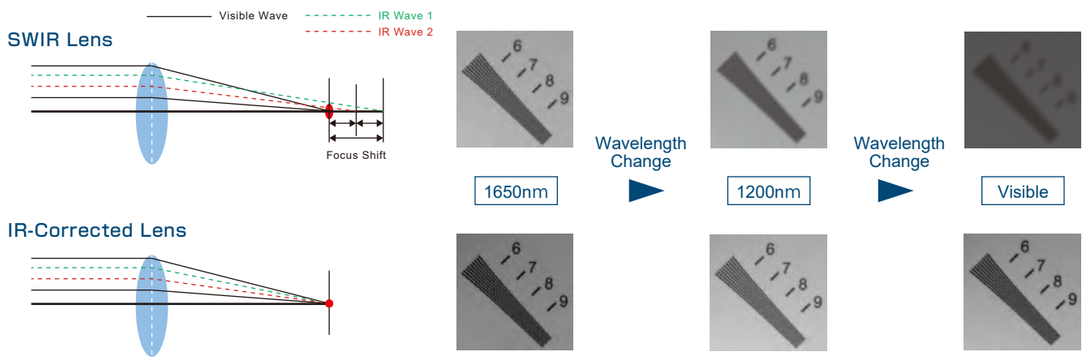
Design of IR-Corrected Lenses

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 verse. 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.

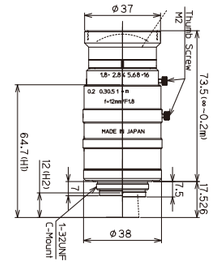


Example of Focus Shift

* Focusing at 1650nm



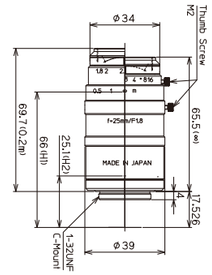
NEW LM12HC-VIS-SW



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

Model		LM12HC-VIS-SW
Focal Length(mm)		12
Image Size(mm)		12.8 × 9.6 (Φ16)
Iris Range(F-stop)		F1.8~F16
Focusing Range(m)		0.2~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		237.0(H)×175.0(V)
Angle of View (Degrees)	1 Inch	58.0×44.5
	2/3 Inch	41.0×31.1
	1/1.8 Inch	33.8×25.5
Resolution(Center, Corner)		160lp/mm, 100lp/mm
TV Distortion(%)		-1.6
Back Focus in Air(mm)		11.1
Mount		C-mount
Filter Thread(mm)		M34×P0.5
Size(mm)(∞)		Φ38×73.5
Weight(g)		175
Temperature Range		−10°C~+50°C

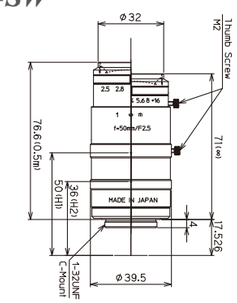
NEW LM25HC-VIS-SW



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

Model		LM25HC-VIS-SW
Focal Length(mm)		25
Image Size(mm)		12.8 × 9.6 (Φ16)
Iris Range(F-stop)		F1.8~F16
Focusing Range(m)		0.2~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		109.0(H)×81.0(V)
Angle of View (Degrees)	1 Inch	29.2×22.0
	2/3 Inch	20.2×15.0
	1/1.8 Inch	16.5×12.3
Resolution(Center, Corner)		160lp/mm, 100lp/mm
TV Distortion(%)		-0.97
Back Focus in Air(mm)		24.5
Mount		C-mount
Filter Thread(mm)		M27×P0.5
Size(mm)(∞)		Φ39×65.5
Weight(g)		160
Temperature Range		−10°C~+50°C

NEW LM50HC-VIS-SW



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

Model		LM50HC-VIS-SW
Focal Length(mm)		50
Image Size(mm)		12.8 × 9.6 (Φ16)
Iris Range(F-stop)		F2.5~F16
Focusing Range(m)		0.5~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		127.0(H)×95.0(V)
Angle of View (Degrees)	1 Inch	14.6×11.0
	2/3 Inch	10.0×7.6
	1/1.8 Inch	8.2×6.2
Resolution(Center, Corner)		160lp/mm, 100lp/mm
TV Distortion(%)		-0.11
Back Focus in Air(mm)		34.9
Mount		C-mount
Filter Thread(mm)		M30.5×P0.5
Size(mm)(∞)		Φ39.5×71
Weight(g)		155
Temperature Range		−10°C~+50°C

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

Model	LM12HC-VIS-SW	LM25HC-VIS-SW	LM50HC-VIS-SW
(Non)M.O.D./Magnification	200mm/0.0562×	200mm/0.120×	500mm/0.101×
(1mm Ring)M.O.D./Magnification	73mm/0.139×	147mm/0.159×	418mm/0.121×
(5mm Ring)M.O.D./Magnification	12mm/0.485×	68mm/0.316×	252mm/0.200×
(10mm Ring)M.O.D./Magnification	–	37mm/0.514×	168mm/0.301×
(20mm Ring)M.O.D./Magnification	–	16mm/0.895×	102mm/0.497×

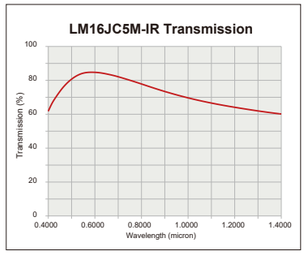
2/3" 5 MEGAPIXEL IR-CORRECTED (VIS-NIR) 3.45 μm

JC5M-IR Series

✓ 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
LM16JC5M-IR	–	–	–	–	–	✓	✓	✓	✓
LM25JC5M-IR	–	–	–	–	◇	✓	✓	✓	✓
LM35JC5M-IR	–	–	–	–	◇	✓	✓	✓	✓

- 5 megapixel lens
- IR corrected design
- Fast F-stop of F1.4 *LM35JC5M-IR is F2.0
- Low distortion



LM16JC5M-IR

LO-DIS Low Distortion IR IR-Corrected

LM25JC5M-IR

LO-DIS Low Distortion IR IR-Corrected

LM35JC5M-IR

LO-DIS Low Distortion IR IR-Corrected

Model	LM16JC5M-IR	LM25JC5M-IR	LM35JC5M-IR
Focal Length(mm)	16	25	35
Image Size(mm)	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~F22
Focusing Range(m)	0.3~∞	0.3~∞	0.3~∞
Control Iris	Manual	Manual	Manual
Control Focus	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	171.4(H)×127.4(V)	113.3(H)×84.5(V)	75.8(H)×56.6(V)
Angle of View (Degrees) 2/3 Inch	30.9×23.2	20.1×15.1	13.9×10.5
Angle of View (Degrees) 1/1.8 Inch	25.4×19.0	16.5×12.4	11.4×8.3
Angle of View (Degrees) 1/2 Inch	22.6×16.9	14.6×11.0	10.2×7.6
Resolution(Center, Corner)	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
TV Distortion(%)	−0.8	−0.3	−0.3
Back Focus in Air(mm)	14.7	12	19.2
Mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M27×P0.5	M30.5×P0.5	M30.5×P0.5
Size(mm)(∞)	Φ34.0×44.5	Φ34.0×47.0	Φ34.0×43.0
Weight(g)	100	110	100
Temperature Range	−10°C~+50°C	−10°C~+50°C	−10°C~+50°C

Reduction of visible-NIR focus shift

Visible design lens

Visible » NIR

Wavelength Change

Focus Shift

IR Corrected design lens Kowa's IR-lens

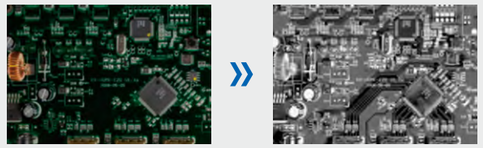
Visible » NIR

Wavelength Change

Maintains sharp Focus

Examples

Visible » NIR



Visible » NIR

† Images may differ from the actual product.

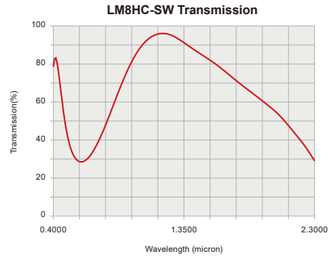
1" SWIR MEGAPIXEL

HC-SW Series

✓ 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
LM8HC-SW	–	–	–	✓	✓	✓	✓	✓	✓
LM12HC-SW	–	–	◇	✓	✓	✓	✓	✓	✓
LM16HC-SW	–	–	◇	✓	✓	✓	✓	✓	✓
LM25HC-SW	–	◇	◇	✓	✓	✓	✓	✓	✓
LM35HC-SW	–	◇	◇	✓	✓	✓	✓	✓	✓
LM50HC-SW	–	–	◇	✓	✓	✓	✓	✓	✓

- Incorporating Kowa's special coating technology, the 1" format HC-SW series will maintains high transmission from 800nm to 1900nm.
- Designed for Near Infrared(NIR) and Short Wavelength Infrared (SWIR) applications.



LM8HC-SW

SWIR SWIR Coating

LM12HC-SW

SWIR SWIR Coating

LM16HC-SW

SWIR SWIR Coating

LM25HC-SW

SWIR SWIR Coating

LM35HC-SW

SWIR SWIR Coating

LM50HC-SW

SWIR SWIR Coating

Model	LM8HC-SW	LM12HC-SW	LM16HC-SW	LM25HC-SW	LM35HC-SW	LM50HC-SW
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~F16	F1.4~F16	F1.4~F16	F1.4~F16	F1.4~F16	F1.4~F16
Focusing Range(m)	0.1~∞	0.3~∞	0.3~∞	0.3~∞	0.3~∞	0.5~∞
Control Iris	Manual	Manual	Manual	Manual	Manual	Manual
Control Focus	Manual	Manual	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	196.0(H)×143.2(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 (Degrees) 1 inch	79.4×63.0	55.6×42.5	44.3×33.6	29.3×22.0	20.9×15.8	14.5×10.8
Angle of View (Degrees) 2/3 inch	58.3×44.7	39.1×29.5	30.8×23.2	20.2×15.1	14.4×10.8	10.0×7.5
Angle of View (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	8.2×6.2
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)(∞)	Φ57×58	Φ43×51.5	Φ43×52.9	Φ43×43	Φ43×43	Φ49×48
Weight(g)	205	160	150	135	135	210
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.

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 4/3	18.0 1/1
LM28LF	—	—	✓	✓	✓	✓	✓	✓	✓
LM35LF	—	◇	✓	✓	✓	✓	✓	✓	✓
LM50LF	—	◇	✓	✓	✓	✓	✓	✓	✓

LM28LF

LO-DIS Low Distortion

LM35LF

LO-DIS Low Distortion

LM50LF

LO-DIS Low Distortion

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		Manual	
Control Focus	Manual		Manual		Manual	
Shooting Range at M.O.D.(mm)	424.3×281.1		239.9×160.3		162.9×108.9	
Angle of View (Degrees) Full size	64.6×45.8		53.7×37.2		39.7×27.1	
Angle of View (Degrees) 4/3 inch	35.8×27.2		28.9×21.8		20.9×15.7	
Angle of View (Degrees) 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	17.5	46.5	17.5
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	Φ75×127	Φ57.5×71	Φ57.5×100	Φ57.5×77	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

✓ Compatible ◇ Suitable — Incompatible

Model	Format Size(Φ)								
	57.0	51.0	46.0	38.0	35.0	30.0	28.0	23.0 4/3	18.0 1/1
LM28CLS	—	—	—	—	—	✓	✓	✓	✓
LM35CLS	—	—	—	—	—	✓	✓	✓	✓
LM50CLS	—	—	—	—	◇	✓	✓	✓	✓

LM28CLS

3CMOS 3CMOS Camera

LM35CLS

3CMOS 3CMOS Camera

LM50CLS

3CMOS 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	Manual
Control Focus	Manual	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.
† Images may differ from the actual product.

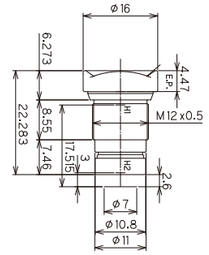
1/2.5" MEGAPIXEL S-MOUNT LENS (3.2μm)

- 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	1/2.8	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 (Degrees) 1/2.5 inch	86.7×70.6		
Angle of View (Degrees) 1/2.8 inch	83.3×58.2		
Angle of View (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)(∞)	Φ16x22.3		
Weight(g)	6		
Temperature Range	−10°C~+50°C		

1/3" NF-MOUNT

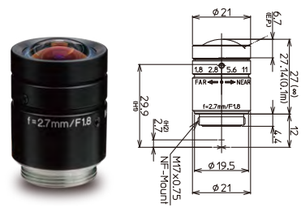
Compact NF-mt. lens Series

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

✓ 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
LM3NF	—	—	—	—	—	—	—	—	✓
LM5NF	—	—	—	—	—	—	—	—	✓
LM9NF	—	—	—	—	—	—	—	◇	✓

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	Manual
Control Focus	Manual	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

† Images may differ from the actual product.

TELECENTRIC Series

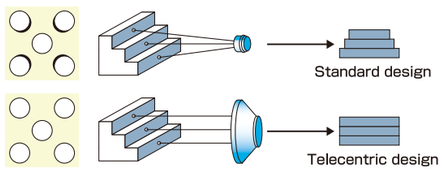
High Resolution Lenses

✓ 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	Collapse telecentricity					✓	✓	✓	✓
LM1121TC						✓	✓	✓	✓
LM1122TC						✓	✓	✓	✓
LM1123TC						✓	✓	✓	✓
LM1125TC						✓	✓	✓	✓

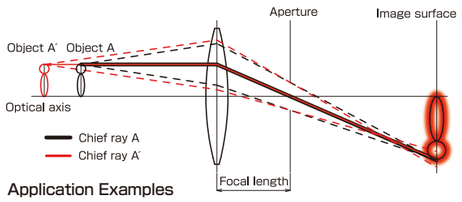
Features of TC Series

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



Telecentric Optical System

In a telecentric optical system, there is no change in magnification when focusing. Thus, the magnification remains constant at different working distances. Similarly, the movement of an object also does not change the magnification, which makes a telecentric lens ideal for measuring objects with high accuracy.
In a telecentric optical system, the chief rays are parallel to the optical axis.
As a result, the aperture becomes greater as the magnification is fixed by the focusing rays. This means that the F-number on a telecentric lens tends to be larger when compared to a standard megapixel lens.



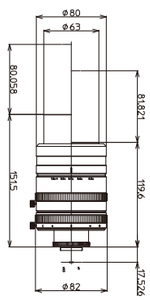
Application Examples

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

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

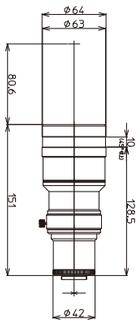
LM1119TC



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

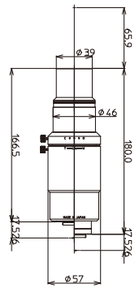
† Images may differ from the actual product.

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

DIS-F
Distortion Free

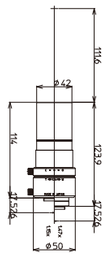


LM1121TC

DIS-F
Distortion Free

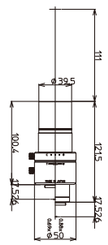
LM1122TC

DIS-F
Distortion Free



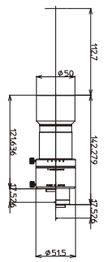
LM1123TC

DIS-F
Distortion Free



LM1125TC

DIS-F
Distortion Free



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	67.7	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°C~+50°C			−10°C~+50°C			−10°C~+50°C			−10°C~+50°C			−10°C~+50°C		
Storage Temperature Range		−20°C~+60°C			−20°C~+60°C			−20°C~+60°C			−20°C~+60°C			−20°C~+60°C		

† Images may differ from the actual product.

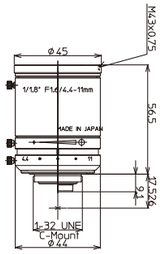
VARIFOCAL

✓ 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	—	—	—	—	—	—	—	✓	✓

LMVZ4411

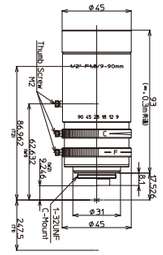
LO-DIS
Low Distortion



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	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		W507.5×379.0/T211.4×159.0
Angle of View (Degrees)	1/1.8 Inch	W76.6×61.2/T36.7×28.0
	1/2 Inch	W70.2×55.5/T32.9×25.0
	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

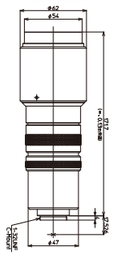


Model		LMVZ990-IR
Focal Length(mm)		9~90(10×)
Image Size(mm)		6.4×4.8(Φ8)
Iris Range(F-stop)		F1.8~F16
Focusing Range(m)		0.3~∞
Control	Iris	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		W252.7×182.5/T94.4×70.8
Angle of View (Degrees)	1/2 Inch	W41.1×30.3/T4.2×3.1
	1/3 Inch	W30.3×22.5/T3.1×2.4
TV 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

MACRO ZOOM

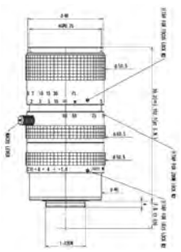
▸ Excellent for pattern matching, measurement, inspection, and character recognition

LMZ45T3



Model		LMZ45T3	
Magnification		inf~1.1×	
Zoom Magnification		6×	
Image Size(mm)		8.8x6.6(Φ11)	
Close up lens		3Dpt.un-installed	3Dpt.installed
Shooting Magnification		Inf~0.72×	0.053~1.1×
W.D (mm)		Inf~M.O.D=185	WD=330~115
Iris Range(F-stop)		F2.5~Close	
Object side N.A.		–	–
Image side N.A.		–	–
TV Distortion(%)		−0.3	−0.1
Angle of View(Degrees)	2/3 inch	inf wide: 27.3×20.5° inf tele: 4.7×3.5° WD=185 wide: 67.0×50.1 WD=185 tele: 11.7×9.0	WD=330 wide: 165.4×123.8 WD=330 tele: 28.3×21.3 WD=115 wide: 43.8×32.8 WD=115 tele: 7.6×5.9
	1/2 inch	inf wide: 19.9×14.9° inf tele: 3.4×2.6° WD=185 wide: 48.6×36.5 WD=185 tele: 8.7×6.6	WD=330 wide: 120.0×89.8 WD=330 tele: 20.7×15.6 WD=115 wide: 31.8×23.8 WD=115 tele: 5.7×4.3
	1/3 inch	inf wide: 14.9×11.2° inf tele: 2.6×2.0° WD=185 wide: 36.5×27.3 WD=185 tele: 6.6×5.0	WD=330 wide: 89.8×67.4 WD=330 tele: 15.6×11.7 WD=115 wide: 23.8×17.9 WD=115 tele: 4.3×3.3
Mount		C-mount	
Control	Iris	Manual	
	Focus	Manual	
	Zoom	Manual	
Filter Thread(mm)		M52×P0.75	
Size(mm)(∞)		Φ62×171.7	
Weight(g)		595	
Temperature Range		−10°C~+50°C	

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	Manual
	Focus	Manual
	Zoom	Manual
Angle of View(Degrees)		W41.9×32.0/T7.3×5.5
Mount		C-mount
Filter Thread(mm)		M46×0.75
Size(mm)(∞)		Φ50.5×98.2
Weight(g)		300
Temperature Range		−10°C~+50°C

† Images may differ from the actual product.

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	Manual	Manual	Manual	Manual	Manual
	Focus	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 (Degrees)	1 Inch	55.9×43.1	44.0×33.6	28.9×21.8	20.8×15.6	14.6×11.0
	2/3 Inch	39.8×30.2	30.9×23.3	20.1×15.2	14.3×10.8	10.1×7.6
	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	Manual	Manual	Manual	Manual	Manual	Manual
	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 (Degrees)	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
	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
	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

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	Manual	Manual
	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 (Degrees)	1 Inch	14.4×10.8	12.2×9.2
	2/3 Inch	9.9×7.5	8.4×6.3
	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

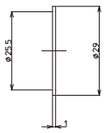
LMVZ166HC

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	Manual
	Focus	Manual
Shooting Range at M.O.D.(mm)		W881.4×639.7/T238.2×177.9
Angle of View (Degrees)	1 Inch	W45.9×34.2/T11.7×14.6
	2/3 Inch	W31.3×23.4/T8.1×6.1
	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

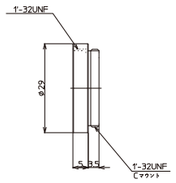
† Images may differ from the actual product.

Close Up Rings

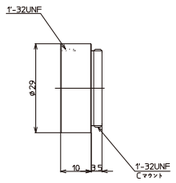
1mm



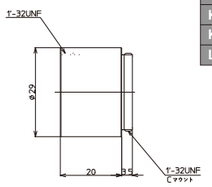
5mm



10mm



20mm



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

LM6FC24M

WD	Magni-fication	Fields of View (mm)					
		1.1"		1"		2/3"	
mm		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

LM8FC24M

WD	Magni-fication	Fields of View (mm)					
		1.1"		1"		2/3"	
mm		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

LM12FC24M

WD	Magni-fication	Fields of View (mm)					
		1.1"		1"		2/3"	
mm		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

LM16FC24M

WD	Magni-fication	Fields of View (mm)					
		1.1"		1"		2/3"	
mm		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

LM25FC24M

WD	Magni-fication	Fields of View (mm)					
		1.1"		1"		2/3"	
mm		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	43.4
100	0.219	65.2	48.7	59.0	44.0	40.3	30.2

LM35FC24M

WD	Magni-fication	Fields of View (mm)					
		1.1"		1"		2/3"	
mm		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

LM50FC24M

WD	Magni-fication	Fields of View (mm)					
		1.1"		1"		2/3"	
mm		H	V	H	V	H	V
1000	0.049	289.2	217.3	262.5	196.7	180.3	135.2
950	0.051	275.0	206.6	249.6	187.1	171.5	128.6
900	0.054	260.8	196.0	236.7	177.4	162.6	121.9
850	0.057	246.6	185.3	223.8	167.8	153.8	115.3
800	0.061	232.4	174.6	210.9	158.1	144.9	108.6
750	0.065	218.1	163.9	198.0	148.4	136.0	102.0
700	0.069	203.9	153.2	185.1	138.7	127.2	95.3
650	0.075	189.6	142.5	172.1	129.0	118.3	88.7
600	0.081	175.4	131.8	159.2	119.3	109.4	82.0
550	0.088	161.1	121.0	146.2	109.6	100.5	75.3
500	0.096	146.7	110.3	133.2	99.9	91.5	68.6
450	0.107	132.4	99.5	120.2	90.1	82.6	61.9
400	0.120	118.0	88.7	107.1	80.3	73.6	55.2
350	0.136	103.5	77.8	94.0	70.5	64.6	48.4
300	0.159	89.0	66.9	80.8	60.6	55.5	41.6
250	0.190	74.3	55.8	67.4	50.6	46.4	34.8
200	0.238	59.3	44.6	53.9	40.4	37.0	27.8

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
950	0.009	1058.2	784.0	858.3	637.0	759.3	564.4
900	0.009	1003.3	743.2	813.7	603.9	719.9	535.1
850	0.010	948.3	702.5	769.1	570.8	680.4	505.7
800	0.010	893.3	661.7	724.5	537.7	640.9	476.4
750	0.011	838.4	621.0	679.9	504.5	601.4	447.0
700	0.012	783.4	580.2	635.3	471.4	562.0	417.7
650	0.013	728.3	539.5	590.6	438.3	522.5	388.3
600	0.014	673.5	498.7	546.0	405.2	483.0	359.0
550	0.015	618.5	458.0	501.4	372.0	443.5	329.6
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

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
950	0.012	719.3	536.2	585.9	437.3	519.6	388.1
900	0.013	682.0	508.3	555.5	414.5	492.6	367.9
850	0.014	644.6	480.4	525.0	391.8	465.6	347.7
800	0.015	607.2	452.6	494.6	369.1	438.6	327.5
750	0.016	569.9	424.7	464.1	346.3	411.6	307.4
700	0.017	532.5	396.8	433.7	323.6	384.6	287.2
650	0.018	495.2	369.0	403.2	300.9	357.6	267.0
600	0.020	457.8	341.1	372.8	278.1	330.6	246.8
550	0.021	420.4	313.2	342.3	255.4	303.6	226.7
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

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
950	0.017	532.0	398.4	434.8	325.6	386.2	289.4
900	0.018	504.4	377.6	412.2	308.6	366.2	274.2
850	0.019	476.6	356.8	389.6	291.8	346.0	259.2
800	0.020	449.0	336.2	367.0	274.8	326.0	244.2
750	0.021	421.4	315.4	344.4	257.8	305.8	229.2
700	0.022	393.8	294.8	321.8	241.0	285.8	214.0
650	0.024	366.0	274.0	299.2	224.0	265.6	199.0
600	0.026	338.4	253.4	276.6	207.0	245.6	184.0
550	0.028	310.8	232.6	254.0	190.2	225.6	169.0
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

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
950	0.026	339.2	254.4	277.6	208.2	246.6	185.0
900	0.027	321.6	241.2	263.2	197.4	233.8	175.4
850	0.029	304.0	228.0	248.8	186.6	221.0	165.8
800	0.031	286.4	214.8	234.4	175.8	208.2	156.2
750	0.033	268.8	201.6	220.0	165.0	195.6	146.6
700	0.035	251.4	188.4	205.6	154.2	182.8	137.0
650	0.038	233.8	175.2	191.2	143.4	170.0	127.4
600	0.041	216.2	162.0	176.8	132.6	157.2	117.8
550	0.044	198.6	148.8	162.4	121.8	144.4	108.2
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

NCM/JC1MSseries

JC3NCM

WD	Magni-fication	Fields of View (mm)					
		1/1.8"		1/2"		1/3"	
mm		H	V	H	V	H	V
1000	0.00360	2003.1	1513.4	1786.2	1347.7	1347.7	1011.6
950	0.00380	1904.4	1438.8	1698.1	1281.3	1281.3	961.7
900	0.00400	1805.7	1364.1	1610.1	1214.8	1214.8	911.8
850	0.00420	1706.9	1289.5	1522.0	1148.3	1148.3	861.9
800	0.00450	1608.2	1214.9	1434.0	1081.8	1081.8	812.0
750	0.00480	1509.5	1140.3	1345.9	1015.4	1015.4	762.1
700	0.00510	1410.8	1065.6	1257.9	948.9	948.9	712.2
650	0.00550	1312.1	991.0	1169.8	882.4	882.4	662.2
600	0.00590	1213.3	916.4	1081.8	816.0	816.0	612.3
550	0.00650	1114.6	841.7	993.7	749.5	749.5	562.4
500	0.00710	1015.9	767.1	905.7	683.0	683.0	512.5
450	0.00780	917.2	692.5	817.6	616.5	616.5	462.6
400	0.00880	818.5	617.8	729.5	550.1	550.1	412.7
350	0.01000	719.7	543.2	641.5	483.6	483.6	362.8
300	0.01160	621.0	468.6	553.4	417.1	417.1	312.9
250	0.01380	522.3	394.0	465.4	350.7	350.7	263.0
200	0.01700	423.6	319.3	377.3	284.2	284.2	213.1
150	0.02230	324.9	244.7	289.3	217.7	217.7	163.2
100	0.03210	226.1	170.1	201.2	151.2	151.2	113.3

LM4NCM

WD	Magni-fication	Fields of View (mm)					
		1/1.8"		1/2"		1/3"	
mm		H	V	H	V	H	V
1000	0.00450	1610.8	1206.3	1431.1	1071.3	1071.3	801.3
950	0.00480	1531.8	1147.1	1360.9	1018.7	1018.7	762.0
900	0.00500	1452.9	1087.9	1290.7	966.1	966.1	722.6
850	0.00530	1373.9	1028.8	1220.6	913.6	913.6	683.3
800	0.00560	1294.9	969.6	1150.4	861.0	861.0	644.0
750	0.00600	1216.0	910.4	1080.2	808.4	808.4	604.6
700	0.00640	1137.0	851.2	1010.0	755.9	755.9	565.3
650	0.00690	1058.1	792.0	939.9	703.3	703.3	526.0
600	0.00750	979.1	732.9	869.7	650.7	650.7	486.6
550	0.00810	900.2	673.7	799.5	598.2	598.2	447.3
500	0.00890	821.2	614.5	729.3	545.6	545.6	408.0
450	0.00980	742.3	555.3	659.2	493.0	493.0	368.6
400	0.01100	663.4	496.2	589.0	440.5	440.5	329.3
350	0.01250	584.4	437.0	518.8	387.9	387.9	290.0
300	0.01450	505.5	377.8	448.7	335.3	335.3	250.6
250	0.01720	426.6	318.7	378.5	282.8	282.8	211.3
200	0.02110	347.7	259.5	308.4	230.2	230.2	172.0
150	0.02740	268.8	200.4	238.3	177.7	177.7	132.6
100	0.03900	190.1	141.3	168.2	125.2	125.2	93.3

LM6NCM

WD	Magni-fication	Fields of View (mm)					
		1/1.8"		1/2"		1/3"	
mm		H	V	H	V	H	V
1000	0.00600	-	-	1081.4	808.4	808.4	603.3
950	0.00630	-	-	1028.1	768.6	768.6	573.6
900	0.00670	-	-	974.9	728.7	728.7	543.8
850	0.00710	-	-	921.6	688.8	688.8	514.0
800	0.00750	-	-	868.3	649.0	649.0	484.3
750	0.00800	-	-	815.0	609.1	609.1	454.5
700	0.00860	-	-	761.7	569.3	569.3	424.8
650	0.00920	-	-	708.4	529.4	529.4	395.0
600	0.00990	-	-	655.1	489.5	489.5	365.3
550	0.01080	-	-	601.8	449.7	449.7	335.5
500	0.01190	-	-	548.6	409.8	409.8	305.8
450	0.01320	-	-	495.3	370.0	370.0	276.0
400	0.01480	-	-	442.0	330.1	330.1	246.2
350	0.01680	-	-	388.7	290.2	290.2	216.5
300	0.01950	-	-	335.4	250.4	250.4	186.7
250	0.02320	-	-	282.1	210.5	210.5	157.0
200	0.02860	-	-	228.8	170.7	170.7	127.2
150	0.03730	-	-	175.6	130.8	130.8	97.5
100	0.05380	-	-	122.3	90.9	90.9	67.7

LM5JCM

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.00490	1781.3	1345.0	1465.0	1102.1	1304.7	979.5
950	0.00520	1693.5	1278.6	1392.8	1047.7	1240.4	931.1
900	0.00550	1605.7	1212.3	1320.5	993.3	1176.0	882.8
850	0.00580	1517.9	1145.9	1248.2	938.9	1111.6	834.5
800	0.00620	1430.1	1079.6	1176.0	884.5	1047.3	786.1
750	0.00660	1342.3	1013.2	1103.7	830.2	982.9	737.8
700	0.00700	1254.5	946.9	1031.5	775.8	918.5	689.5
650	0.00750	1166.6	880.5	959.2	721.4	854.2	641.1
600	0.00820	1078.8	814.2	887.0	667.0	789.8	592.8
550	0.00890	991.0	747.9	814.7	612.6	725.5	544.4
500	0.00980	903.2	681.5	742.5	558.3	661.1	496.1
450	0.01080	815.4	615.2	670.2	503.9	596.7	447.8
400	0.01210	727.6	548.8	598.0	449.5	532.4	399.4
350	0.01380	639.8	482.5	525.7	395.1	468.0	351.1
300	0.01600	552.0	416.1	453.4	340.7	403.6	302.8
250	0.01900	464.2	349.8	381.2	286.4	339.3	254.4
200	0.02350	376.3	283.4	308.9	232.0	274.9	206.1
150	0.03070	288.5	217.1	236.7	177.6	210.5	157.7
100	0.04440	200.7	150.7	164.4	123.2	146.2	109.4

LM8JC1MS

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.00820	1083.6	813.6	888.1	664.1	788.7	589.4
950	0.00860	1030.1	773.4	844.2	631.3	749.7	560.3
900	0.00910	976.5	733.2	800.3	598.4	710.7	531.2
850	0.00960	923.0	693.0	756.5	565.6	671.8	502.0
800	0.01020	869.5	652.8	712.6	532.8	632.8	472.9
750	0.01090	816.0	612.6	668.7	500.0	593.8	443.8
700	0.01170	762.5	572.4	624.8	467.2	554.9	414.6
650	0.01250	709.0	532.2	581.0	434.4	515.9	385.5
600	0.01360	655.5	492.0	537.1	401.5	476.9	356.4
550	0.01480	601.9	451.8	493.2	368.7	437.9	327.3
500	0.01620	548.4	411.6	449.3	335.9	399.0	298.1
450	0.01800	494.9	371.4	405.5	303.1	360.0	269.0
400	0.02020	441.4	331.2	361.6	270.3	321.0	239.9
350	0.02300	387.9	291.0	317.7	237.5	282.1	210.7
300	0.02660	334.4	250.8	273.8	204.6	243.1	181.6
250	0.03170	280.9	210.6	230.0	171.8	204.1	152.5
200	0.03920	227.4	170.4	186.1	139.0	165.2	123.3
150	0.05140	173.8	130.2	142.2	106.2	126.2	94.2
100	0.07450	120.3	90.0	98.3	73.4	87.2	65.1

LM12JC1MS

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.01260	702.2	525.7	573.9	429.5	509.7	381.5
950	0.01330	667.4	499.7	545.5	408.3	484.5	362.6
900	0.01400	632.7	473.7	517.1	387.0	459.3	343.8
850	0.01480	598.0	447.7	488.7	365.8	434.0	324.9
800	0.01570	563.3	421.7	460.3	344.5	408.8	306.0
750	0.01680	528.5	395.7	432.0	323.3	383.6	287.1
700	0.01800	493.8	369.7	403.6	302.0	358.4	268.2
650	0.01930	459.1	343.7	375.2	280.8	333.2	249.4
600	0.02090	424.3	317.7	346.8	259.5	308.0	230.5
550	0.02280	389.6	291.7	318.4	238.3	282.7	211.6
500	0.02500	354.9	265.6	290.0	217.0	257.5	192.7
450	0.02770	320.2	239.6	261.6	195.7	232.3	173.9
400	0.03110	285.4	213.6	233.2	174.5	207.1	155.0
350	0.03540	250.7	187.6	204.8	153.2	181.9	136.1
300	0.04110	216.0	161.6	176.4	132.0	156.7	117.2
250	0.04900	181.3	135.6	148.0	110.7	131.4	98.3
200	0.06070	146.5	109.6	119.7	89.5	106.2	79.5
150	0.07960	111.8	83.6	91.3	68.2	81.0	60.6

LM16JC1MS

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.01640	541.1	405.1	442.2	331.1	392.8	294.1
950	0.01720	514.2	385.0	420.3	314.7	373.3	279.6
900	0.01820	487.4	365.0	398.4	298.3	353.8	265.0
850	0.01920	460.6	344.9	376.4	281.9	334.4	250.4
800	0.02040	433.8	324.8	354.5	265.5	314.9	235.8
750	0.02170	407.0	304.7	332.6	249.1	295.5	221.3
700	0.02330	380.2	284.7	310.7	232.7	276.0	206.7
650	0.02500	353.4	264.6	288.8	216.2	256.5	192.1
600	0.02710	326.6	244.5	266.9	199.8	237.1	177.5
550	0.02950	299.8	224.5	245.0	183.4	217.6	163.0
500	0.03240	273.0	204.4	223.1	167.0	198.2	148.4
450	0.03600	246.2	184.3	201.2	150.7	178.7	133.8
400	0.04030	219.4	164.3	179.3	134.3	159.3	119.3
350	0.04590	192.7	144.2	157.4	117.9	139.8	104.7
300	0.05340	165.9	124.2	135.6	101.5	120.4	90.2
250	0.06360	139.2	104.2	113.7	85.1	101.0	75.6
200	0.07870	112.5	84.2	91.9	68.8	81.6	61.1

LM25JC1MS

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.02540	346.3	259.7	283.4	212.5	251.9	188.9
950	0.02680	329.1	246.8	269.3	201.9	239.3	179.5
900	0.02820	311.9	233.9	255.1	191.3	226.8	170.1
850	0.02990	294.6	220.9	241.0	180.7	214.2	160.6
800	0.03170	277.4	208.0	226.9	170.2	201.7	151.2
750	0.03390	260.2	195.1	212.8	159.6	189.2	141.8
700	0.03630	242.9	182.2	198.7	149.0	176.6	132.4
650	0.03900	225.7	169.2	184.6	138.4	164.1	123.0
600	0.04230	208.5	156.3	170.5	127.9	151.6	113.7
550	0.04610	191.3	143.4	156.5	117.3	139.1	104.3
500	0.05060	174.0	130.5	142.4	106.7	126.5	94.9
450	0.05620	156.8	117.6	128.3	96.2	114.0	85.5
400	0.06310	139.6	104.7	114.2	85.6	101.5	76.1
350	0.07200	122.5	91.8	100.2	75.1	89.0	66.7
300	0.08380	105.3	78.9	86.1	64.5	76.5	57.4
250	0.10020	88.1	66.0	72.0	54.0	64.0	48.0
200	0.12460	70.8	53.1	57.9	43.4	51.5	38.6

LM35JC1MS

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.03540	249.2	186.6	203.6	152.6	180.9	135.6
950	0.03730	236.6	177.2	193.3	144.9	171.8	128.7
900	0.03940	224.0	167.7	183.0	137.1	162.6	121.9
850	0.04180	211.4	158.3	172.7	129.4	153.5	115.0
800	0.04440	198.8	148.9	162.4	121.7	144.3	108.2
750	0.04740	186.2	139.4	152.1	114.0	135.2	101.3
700	0.05090	173.6	130.0	141.9	106.3	126.0	94.4
650	0.05480	161.0	120.6	131.6	98.6	116.9	87.6
600	0.05950	148.4	111.1	121.3	90.9	107.8	80.7
550	0.06500	135.8	101.7	111.0	83.2	98.6	73.9
500	0.07170	123.3	92.3	100.7	75.5	89.5	67.1
450	0.07980	110.7	82.9	90.5	67.8	80.4	60.2
400	0.09000	98.2	73.5	80.2	60.1	71.3	53.4
350	0.10320	85.6	64.1	70.0	52.4	62.2	46.6
300	0.12090	73.1	54.7	59.7	44.7	53.1	39.8
250	0.14580	60.6	45.4	49.5	37.1	44.0	33.0
200	0.18350	48.2	36.1	39.4	29.5	35.0	26.2

LM50JC1MS

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
1000	0.05360	164.3	123.2	134.4	100.8	119.5	89.6
950	0.05650	155.8	116.9	127.5	95.6	113.3	85.0
900	0.05970	147.4	110.5	120.6	90.4	107.2	80.4
850	0.06340	138.9	104.2	113.6	85.2	101.0	75.8
800	0.06750	130.4	97.8	106.7	80.0	94.9	71.1
750	0.07220	122.0	91.5	99.8	74.8	88.7	66.5
700	0.07750	113.5	85.1	92.9	69.7	82.6	61.9
650	0.08380	105.1	78.8	86.0	64.5	76.4	57.3
600	0.09110	96.6	72.5	79.1	59.3	70.3	52.7
550	0.09980	88.2	66.1	72.1	54.1	64.1	48.1
500	0.11040	79.7	59.8	65.2	48.9	58.0	43.5
450	0.12350	71.3	53.5	58.3	43.7	51.8	38.9
400	0.14000	62.9	47.1	51.4	38.6	45.7	34.3
350	0.16170	54.4	40.8	44.5	33.4	39.6	29.7
300	0.19130	46.0	34.5	37.6	28.2	33.5	25.1
250	0.23410	37.6	28.2	30.8	23.1	27.4	20.5
200	0.30100	29.3	21.9	23.9	18.0	21.3	16.0

LM75JC1MS

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
2000	0.03880	226.1	169.8	185.2	139.0	164.7	123.6
1900	0.04090	214.4	161.0	175.6	131.8	156.2	117.2
1800	0.04330	202.7	152.3	166.0	124.6	147.7	110.8
1700	0.04590	191.1	143.5	156.5	117.5	139.2	104.4
1600	0.04890	179.4	134.7	146.9	110.3	130.6	98.0
1500	0.05230	167.7	125.9	137.3	103.1	122.1	91.7
1400	0.05620	156.0	117.2	127.8	95.9	113.6	85.3
1300	0.06080	144.4	108.4	118.2	88.7	105.1	78.9
1200	0.06620	132.7	99.6	108.6	81.5	96.6	72.5

LM100JC1MS

WD	Magni-fication	Fields of View (mm)					
		2/3"		1/1.8"		1/2"	
mm		H	V	H	V	H	V
3000	0.03430	257.0	192.6	210.1	157.5	186.7	140.0
2900	0.03550	248.2	186.0	202.9	152.1	180.3	135.2
2800	0.03680	239.3	179.4	195.7	146.7	173.9	130.4
2700	0.03820	230.5	172.8	188.5	141.3	167.5	125.6
2600	0.03970	221.7	166.2	181.3	135.9	161.1	120.8
2500	0.04140	212.9	159.6	174.1	130.5	154.7	116.0
2400	0.04320	204.1	153.0	166.9	125.1	148.3	111.2
2300	0.04510	195.3	146.4	159.7	119.7	141.9	106.4
2200	0.04720	186.5	139.8	152.5	114.3	135.5	101.6
2100	0.04960	177.7	133.2	145.3	108.9	129.1	96.8
2000	0.05220	168.9	126.6	138.1	103.5	122.7	92.0

FA LENS SPECIFICATION

2" 50MEGAPIXEL 3.1μm

Model	Format Size(Ø) 38.0	35.0	32.0	30.0	APS-C	4/3"	1.2"	1.1"	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
NEW LM18VM42 LM18VM35	–	–	✓	✓	✓	✓	✓	✓	18	Φ32	F2.8~F16	0.1	M42 TFL	70.5×56.1	1.25	Φ79×99.6	460	6
NEW LM25VM42 LM25VM35	◇	◇	✓	✓	✓	✓	✓	✓	25	Φ32	F2.8~F16	0.1	M42 TFL	54.0×42.0	0.59	Φ57×102.1	400	7
NEW 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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
NEW 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
NEW 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
NEW 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
NEW 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
NEW 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
NEW LM35FC24M	–	◇	✓	✓	✓	✓	✓	✓	✓	35	14.1×10.6(Φ17.6)	F2.0~F16	0.2~∞	C	22.1×16.7	0.01	Φ45×66	205	11
NEW 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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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" ULTRA COMPACT 5 MEGAPIXEL

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
NEW LM8JC5MC	–	–	–	–	–	✓	✓	✓	✓	8	8.8×6.6(Φ11)	F2.8~F16	0.15~∞	C	57.6×44.4	−0.85	Φ32×27	55	20
NEW LM12JC5MC	–	–	–	–	–	✓	✓	✓	✓	12	8.8×6.6(Φ11)	F2.8~F16	0.2~∞	C	41.0×31.2	−0.27	Φ32×26.8	55	21
NEW LM16JC5MC	–	–	–	–	–	✓	✓	✓	✓	16	8.8×6.6(Φ11)	F2.8~F16	0.2~∞	C	30.9×23.4	−0.04	Φ32×26.5	55	21
NEW LM25JC5MC	–	–	–	–	–	✓	✓	✓	✓	25	8.8×6.6(Φ11)	F2.8~F16	0.2~∞	C	20.0×15.0	0.11	Φ32×25	55	21

WIDE MEGAPIXEL

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
LM3NCM	–	–	–	–	–	–	✓	✓	✓	3.5	7.2×5.4(Φ9)	F2.4~F14	0.1~∞	C	89.0×73.8	0.4	Φ42×38.2	85	23
LM6NCM	–	–	–	–	–	–	◇	✓	✓	6	6.4×4.8(Φ8)	F1.2~Close	0.1~∞	C	56.2×43.5	−0.2	Φ34×45.8	100	23
LM5JCM	–	–	–	–	–	✓	✓	✓	✓	5	8.8×6.6(Φ11)	F2.8~F16	0.1~∞	C	82.4×66.9	0.5	Φ42×38.2	84	23

2/3" MEGAPIXEL

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
LM5JCM	–	–	–	–	–	✓	✓	✓	✓	5	8.8×6.6(Φ11)	F2.8~F16	0.1~∞	C	82.4×66.9	0.5	Φ42×38.2	84	24
LM8JC1MS	–	–	–	–	–	✓	✓	✓	✓	8	8.8×6.6(Φ11)	F1.4~Close	0.1~∞	C	56.5×43.9	−0.60	Φ34×41.6	90	24
LM12JC1MS	–	–	–	–	–	✓	✓	✓	✓	12	8.8×6.6(Φ11)	F1.4~Close	0.15~∞	C	38.3×29.1	−0.07	Φ34×37	85	24
LM16JC1MS	–	–	–	–	–	✓	✓	✓	✓	16	8.8×6.6(Φ11)	F1.4~F16	0.2~∞	C	30.0×22.7	−0.05	Φ33.5×36.5	85	25
LM25JC1MS	–	–	–	–	–	✓	✓	✓	✓	25	8.8×6.6(Φ11)	F1.4~F16	0.2~∞	C	19.6×14.8	−0.04	Φ33.5×39.5	90	25
LM35JC1MS	–	–	–	◇	◇	✓	✓	✓	✓	35	8.8×6.6(Φ11)	F2.0~F16	0.2~∞	C	14.4×10.8	0.2	Φ34×36.5	70	25
LM50JC1MS	–	◇	◇	◇	◇	✓	✓	✓	✓	50	8.8×6.6(Φ11)	F2.8~F22	0.2~∞	C	9.6×7.2	0.2	Φ34×55	95	25
LM75JC1MS	–	–	◇	◇	◇	✓	✓	✓	✓	75	8.8×6.6(Φ11)	F2.5~F22	1.2~∞	C	6.7×5.0	−0.1	Φ36×51	105	25
LM100JC1MS	–	–	–	◇	◇	✓	✓	✓	✓	100	8.8×6.6(Φ11)	F2.8~F32	2.0~∞	C	5.0×3.8	−0.05	Φ42×70	145	25

2/3" RUGGEDIZED MEGAPIXEL

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
LM5JCM-V	–	–	–	–	–	✓	✓	✓	✓	5	8.8×6.6(Φ11)	F2.8/4/5.6/8	0.1~∞	C	82.4×66.9	0.5	Φ43×38.1	73	26
LM8JCM-V	–	–	–	–	–	✓	✓	✓	✓	8	8.8×6.6(Φ11)	F1.4/4/8/16	0.1~∞	C	56.5×43.9	−0.6	Φ33×41.6	88	27
LM12JCM-V	–	–	–	–	–	✓	✓	✓	✓	12	8.8×6.6(Φ11)	F1.4/4/8/16	0.15~∞	C	38.3×29.1	−0.07	Φ33×37	75	27
LM16JCM-V	–	–	–	–	–	✓	✓	✓	✓	16	8.8×6.6(Φ11)	F1.4/4/8/16	0.2~∞	C	30.0×22.7	−0.05	Φ33×36.5	76.5	27
LM25JCM-V	–	–	–	–	–	✓	✓	✓	✓	25	8.8×6.6(Φ11)	F1.4/4/8/16	0.2~∞	C	19.6×14.8	−0.04	Φ33×39.5	83	27
LM35JCM-V	–	–	–	◇	◇	✓	✓	✓	✓	35	8.8×6.6(Φ11)	F2/4/8/16	0.2~∞	C	14.4×10.8	−0.2	Φ33×38.8	72.5	27
LM50JCM-V	–	◇	◇	◇	◇	✓	✓	✓	✓	50	8.8×6.6(Φ11)	F2.8/4/8/16	0.2~∞	C	9.6×7.2	−0.03	Φ33×56.2	85	27

How to read the Format Size(Inch) table ✓ Compatible: Ideal sensor size. ◇ Suitable: Can be used depending on applications. – Incompatible: Can not be used.

FA LENS SPECIFICATION

2/3" RUGGEDIZED WATER AND DUST RESISTANCE MEGAPIXEL ＊Only LM3NCM-WP : 1/1.8" MODEL

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
NEW LM3NCM-WP	–	–	–	–	–	–	✓	✓	✓	3.5	7.2×5.4(Φ9)	F2.8/4/5.6/8	0.1~∞	C	89.0×73.8	0.4	Φ43×38.4	80	28
LM5JCM-WP	–	–	–	–	–	✓	✓	✓	✓	5	8.8×6.6(Φ11)	F2.8/4/5.6/8	0.1~∞	C	82.4×66.9	0.5	Φ43×38.3	75	28
LM8JCM-WP	–	–	–	–	–	✓	✓	✓	✓	8	8.8×6.6(Φ11)	F1.4/4/8/16	0.1~∞	C	56.5×43.9	−0.6	Φ33×41.6	85	29
LM12JCM-WP	–	–	–	–	–	✓	✓	✓	✓	12	8.8×6.6(Φ11)	F1.4/4/8/16	0.15~∞	C	38.3×29.1	−0.07	Φ33×36.5	75	29
LM16JCM-WP	–	–	–	–	–	✓	✓	✓	✓	16	8.8×6.6(Φ11)	F1.4/4/8/16	0.2~∞	C	30.0×22.7	−0.05	Φ33×36.5	75	29
LM25JCM-WP	–	–	–	–	–	✓	✓	✓	✓	25	8.8×6.6(Φ11)	F1.4/4/8/16	0.2~∞	C	19.6×14.8	−0.04	Φ33×39.7	75	29
LM35JCM-WP	–	–	–	◇	◇	✓	✓	✓	✓	35	8.8×6.6(Φ11)	F2/4/8/16	0.2~∞	C	14.4×10.8	−0.2	Φ33×38.8	65	29
LM50JCM-WP	–	◇	◇	◇	◇	✓	✓	✓	✓	50	8.8×6.6(Φ11)	F2.8/4/8/16	0.2~∞	C	9.6×7.2	−0.03	Φ33×56.2	85	29

2/3" STANDARD

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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" 12 MEGAPIXEL IR-CORRECTED (VIS-SWIR) 3.1μm

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
NEW LM12HC-VIS-SW	–	–	–	✓	✓	✓	✓	✓	✓	16	12.8 × 9.6(Φ16)	F1.8~F16	0.2~∞	C	58.0×44.5	-1.6	Φ38×73.5	175	33
NEW 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
NEW LM50HC-VIS-SW	◇	◇	◇	✓	✓	✓	✓	✓	✓	35	12.8 × 9.6(Φ16)	F2.5~F16	0.2~∞	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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 57.0	51.0	46.0	38.0	35.0	30.0	28.0	23.0 4/3"	18.0 1.1"	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 57.0	51.0	46.0	38.0	35.0	30.0	28.0	23.0 4/3"	18.0 1.1"	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 1.1	1	1/1.2	2/3	1/1.8	1/2	1/2.5	1/2.8	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
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) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Magnification Range	Image Size(mm)	Shooting Magnification	W.D(mm)	Shooting Range(mm)	TV Distortion(%)	Mount	Size(mm)(∞)	Weight(g)	Page
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	–	–	–	–	–	✓	✓	✓	✓	1.725~2.2×	8.8×6.6(Φ11)	1.725× 2.0× 2.2×	114.8 111.4 109.4	5.1×3.8 4.4×3.3 4.0×3.0	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 0.011	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

Collapse telecentricity

VARIFOCAL

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
LMVZ4411	–	–	–	–	–	–	✓	✓	✓	4.4~11(2.5×)	7.2×5.4(Φ9)	F1.6~F16	0.3~	C	W76.6×61.2/T36.7×28.0	W−0.2/T0.4	Φ45×56.5	125	40
LMVZ990-IR	–	–	–	–	–	–	–	✓	✓	9~90(10×)	6.4×4.8(Φ8)	F1.8~F16	0.3~∞	C	W41.1×30.3/T4.2×3.1	W−4.3/T0.3	Φ45×93	194	40

MACRO ZOOM

Model	Format Size(Inch) 4/3	1.2	1.1	1	1/1.2	2/3	1/1.8	1/2	1/3	Focal Length(mm)	Image Size	Iris Range (F-stop)	Focusing Range(m)	Mount	Field Angle(H×V)	TV Distortion(%)	Size(mm)(∞)	Weight(g)	Page
LMZ45T3	–	–	–	–	–	✓	✓	✓	✓	18~108(6×)	8.8×6.6(Φ11)	F2.5~Close	0.115~∞	C	W27.3×20.5/T4.7×3.5	−0.3(3Dpt.un-installed −0.1(3Dpt.installed	Φ62×171.7	595	40
LMZ69M	–	–	–	–	–	✓	✓	✓	✓	11.5~69(6×)	8.8×6.6(Φ11)	F1.4~Close	1.0~∞(0.01 at Macro)	C	W41.9×32.0/T7.3×5.5	–	Φ50.5×98.2	300	40

How to read the Format Size(Inch) table ✓ Compatible: Ideal sensor size. ◇ Suitable: Can be used depending on applications. – Incompatible: Can not be used.

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.

Product Number Breakdown Ex. LM 12 JCM
① ② ③

①Represents lens function

- ●LM·····KOWA CCTV lenses
- ●LMZ·····KOWA Zoom lenses
- ●LMVZ·····KOWA Varifocal lenses

②Represents focal length (fixed focal length lenses)

③Represents format sizes and lens type

- ●XC ····· 4/3 inch format megapixel lens
- ●CLS ····· 3CCD color line scan lens
- ●SC,HC···· 1 inch format megapixel lens
- ●HC-SW ···· 1 inch format SWIR lens
- ●JC ····· 2/3 inch format lens
- ●JCM ·····2/3 inch format megapixel lens
- ●NCL ····· 1/2 inch format lens
- ●NCM ·····1/2 inch format megapixel lens
- ●M ····· Macro lens
- ●TC ····· Telecentric lens
- ●NC3 ····· 1/2 inch format 3CCD megapixel lens
- ●IR ····· IR-corrected lens
- ●NF ····· NF mount lens

■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.

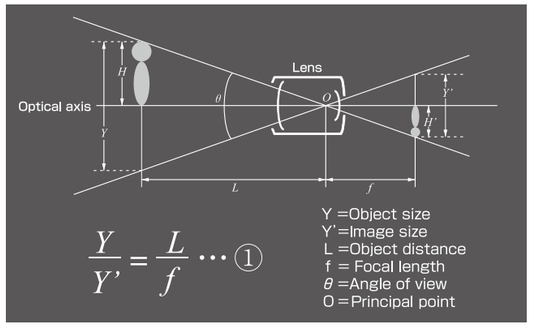
Y′=8.8mm(See image size chart), L=300mm, Y=100mm
f = 300*8.8/100
f=26.4mm.
The most appropriate lens is f=25mm lens, which is close but not greater than the 26.4 derived from the calculation.
Lenses with shorter focal lengths than the given number can capture an object in its entirety.

■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= 120mm
Vertical-Y′=4.8mm (Vertical), f=16mm, L=300mm
Y=300*4.8/16
Y=90mm
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〉

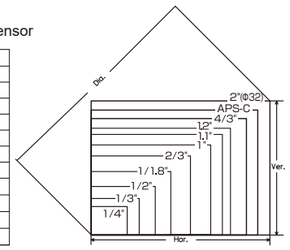


Object size····· Field range which can be captured by the image sensor
Image size ····· See description
Object distance Distance from the lens to the object
Focal length····· Distance from the pricipal point to the focus point
Angle of view····· This angle represents a shooting range in degrees. The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

■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

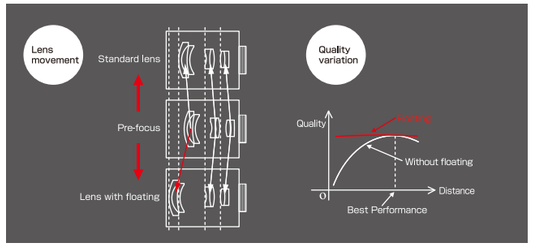
Depth of field is the range of distance, in front of and behind a subject that appears in focus. If the depth of field is deep, an object will appear to be in focus even if it moves slightly back and forth.

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.



Lens processing facility

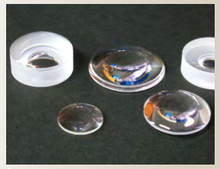
Kowa has the facility to manufacture any optical device with the requested specifications.

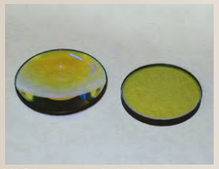
Examples of optical devices

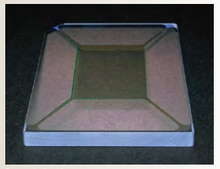
- **Parabolic mirrors**
- **Plastic molded lenses**
- **Germanium lenses**
- **Special filters**
- **Aspherical Lenses**

Coating machine

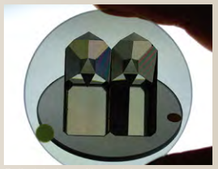
Spectrophotometer


Spherical and Aspherical lenses


YAG laser cut optical devices


Special mirrors

Various prisms


Optical devices with special coatings

Ultra-precision optical devices

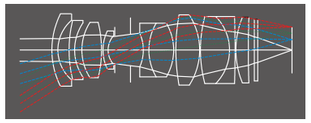
Design & Development

OEM Product Design

Kowa has the ability to create an OEM customized optical system, which includes the optical, mechanical, electrical and software design. We will provide you the best solution for every customer who requires high-end customized products.

Example of Customized Optics

- **Optics for Medical X-ray diagnostics**
- **Optics for Semiconductor instruments**
- **Optics for laser scanning applications**
- **Optics for surveillance applications**
- **Optics for printing applications**



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

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Meeting and quotation
Meeting with customer → Define specification → Optical simulation → Provide simulation results → Quotation

Designing phase
Optical designing → Provide design results → Mechanical and electrical designing → Provide a complete product design

Prototype and production phase
Parts arrangement → Assembly and adjustment → Provide prototype → Final evaluation → Production