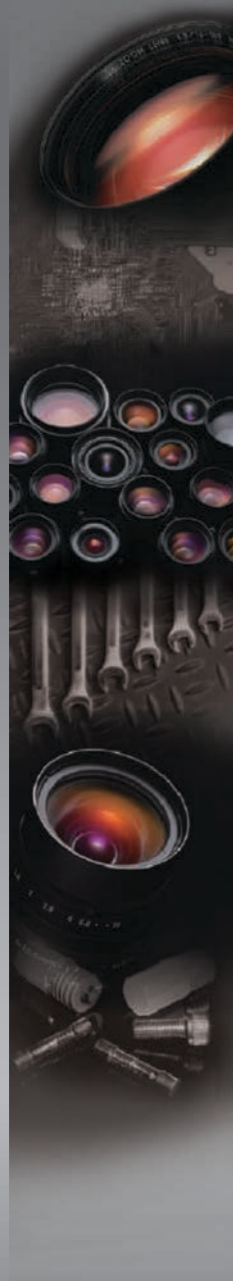




Quality of Light

INDUSTRIAL FA LENSES

2016 Ver.1.0



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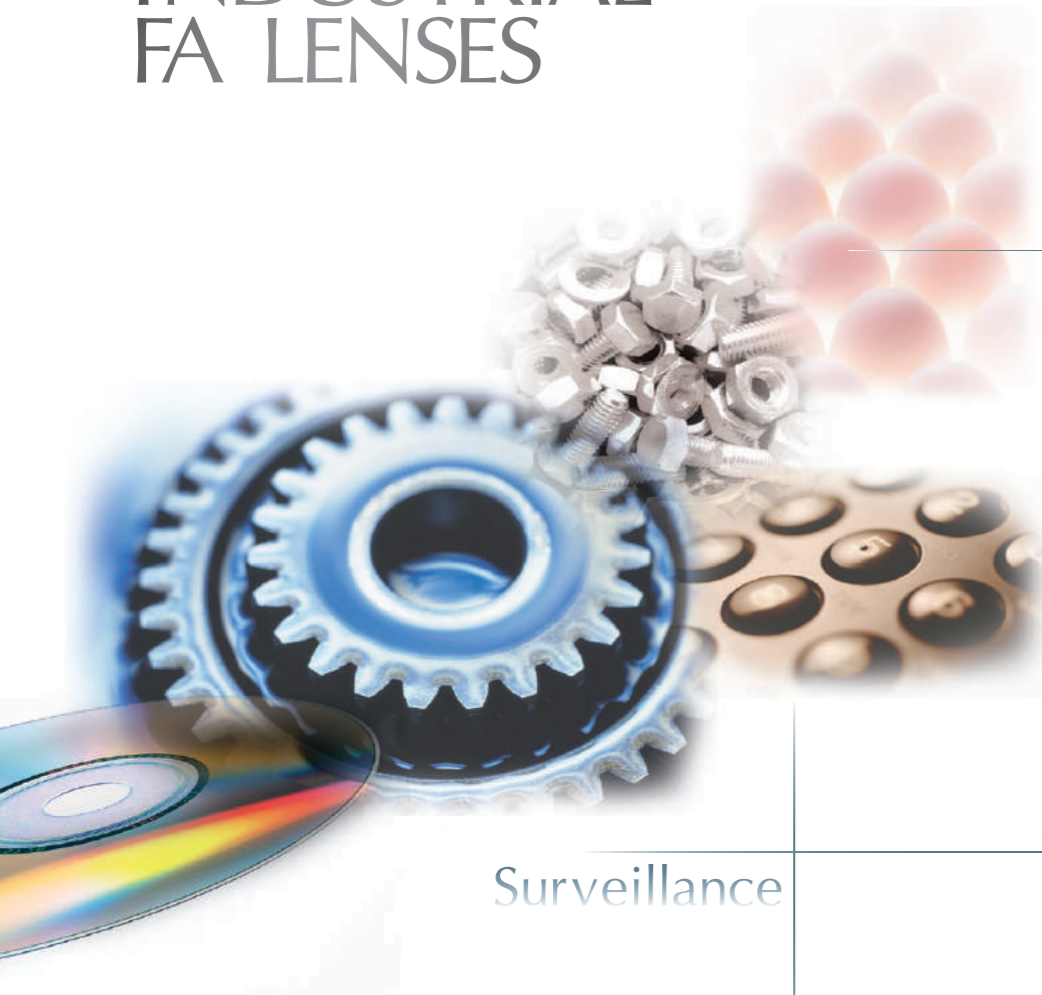
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Note: Specifications and availability are subject to change without notice. FAOV0000000SI

INDUSTRIAL FA LENSES



Measurement

Inspection

Analysis

Surveillance

Control

Function Icons

- FIXED** Fixed Focal Lens **VARI** Varifocal Lens **ZOOM** Manual Zoom Lens
- 21MEGA** Lens for 21 Megapixel Camera **10MEGA** Lens for 10 Megapixel Camera **8MEGA** Lens for 8 Megapixel Camera **6MEGA+** Lens for 6 Megapixel Plus Camera
- 5MEGA+** Lens for 5 Megapixel Plus Camera **5MEGA** Lens for 5 Megapixel Camera **MEGA** Lens for Megapixel Camera **3CCD** Lens for 3CCD Camera
- C-mt** C-mount Lens **NF-mt** NF-mount Lens **METAL** Lens with Metal Body **RUGGED** Ruggedized lens
- FLOAT** Floating Mechanism Design **DIS-F** Distortion Free **LO-DIS** Low Distortion
- XD** Extra Low Dispersion **IR** Infrared

- 4/3"** 4/3 Inch Format Lens
- 1"** 1 Inch Format Lens
- 2/3"** 2/3 Inch Format Lens
- 1/1.8"** 1/1.8 Inch Format Lens
- 1/2"** 1/2 Inch Format Lens
- 1/3"** 1/3 Inch Format Lens
- fmm** Focal Length (mm)

4/3" 8 MEGAPIXEL XC SERIES 04	LM8XC LM12XC LM16XC LM25XC LM35XC LM50XC
1" 6 MEGAPIXEL PLUS SC SERIES 06	LM12SC LM16SC LM25SC LM35SC LM50SC
1" MEGAPIXEL HC SERIES 08	LM6HC LM8HC LM12HC LM16HC LM25HC LM35HC LM50HC LM75HC
1" RUGGEDIZED MEGAPIXEL HC-V SERIES NEW 10	LM8HC-V LM12HC-V LM16HC-V LM25HC-V LM35HC-V LM50HC-V
2/3" 10 MEGAPIXEL JC10M SERIES 12	LM6JC10M LM8JC10M LM12JC10M LM16JC10M LM25JC10M LM35JC10M LM50JC10M
2/3" 5 MEGAPIXEL JC5M2 SERIES 15	LM12JC5M2 LM16JC5M2 LM25JC5M2 LM35JC5M2
WIDE MEGAPIXEL 16	LM3NCM LM4NCM LM6NCM LM5JCM
2/3" MEGAPIXEL JCM SERIES 18	LM8JCM LM12JCM LM16JCM LM25JCM LM35JCM LM50JCM
2/3" RUGGEDIZED MEGAPIXEL JCM-V SERIES NEW 20	LM8JCM-V LM12JCM-V LM16JCM-V LM25JCM-V LM35JCM-V LM50JCM-V
2/3" STANDARD JC SERIES 22	LM6JC LM8JC LM12JC LM16JC LM25JC LM35JC LM50JC LM75JC LM100JC
1/1.8" STANDARD NCL SERIES 23	LM4NCL LM5NCL LM6NCL LM12NCL
1" SWIR MEGAPIXEL HC-SW SERIES 24	LM8HC-SW LM12HC-SW LM16HC-SW LM25HC-SW LM35HC-SW LM50HC-SW
LARGE FORMAT NIR & DAY/NIGHT SERIES 26	LM50-IR LM65-IR
LINE SCAN LF SERIES 27	LM28LF LM35LF LM50LF
3CCD LARGE FORMAT CLS SERIES 27	LM28CLS LM35CLS LM50CLS
1/3" NF-MOUNT NF SERIES 28	LM3NF LM5NF LM9NF
1/1.8" 3CCD MEGAPIXEL NC3 SERIES 28	LM6NC3 LM12NC3 LM50NC3
MACRO ZOOM 29	LM250M LM245T3 LM268M LM269M
TELECENTRIC TC SERIES NEW 30	LM119TC LM1138TC LM1120TC LM1121TC LM1122TC LM1123TC LM1125TC LM50TC
VARIFOCAL 34	LMV21040 LMV24411 LMV2655 LMV2990-R

8 MEGA
1" 6 MEGA
1" MEGA
1" RUG
10 MEGA
5 MEGA
WIDE MEGA
2/3" MEGA
2/3" RUG
FIXED FOCAL LENGTH
2/3" JC
1/1.8" NCL
SWIR
NIR
NIR
LINE SCAN
CLS
NF
3CCD
NC3
MACRO
TELECENTRIC
OTHERS
VARIFOCAL

4/3" 8 MEGAPIXEL

LM8XC LM12XC LM16XC LM25XC LM35XC LM50XC

MEGAPIXEL LENS SERIES FOR 4/3" SENSORS (Φ23mm IMAGE SIZE) XC Series

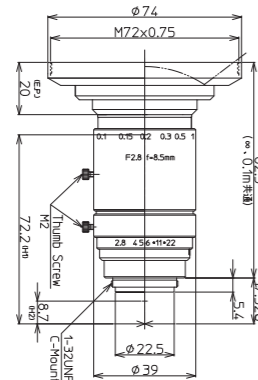
High Resolution FA/MV Lenses

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.



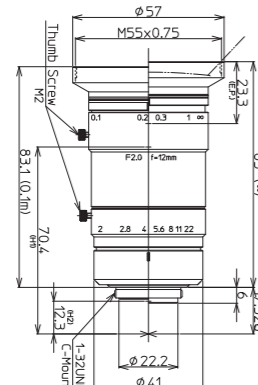
LM8XC



4/3" 1" 2/3" 8.5mm FIXED 8MEGA C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

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 4/3 Inch	93.5×77.1
View 1 Inch	72.9×57.9
(Degrees) 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



4/3" 1" 2/3" 12mm FIXED 8MEGA C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

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 4/3 Inch	74.9×59.6
View 1 Inch	55.9×43.1
(Degrees) 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.

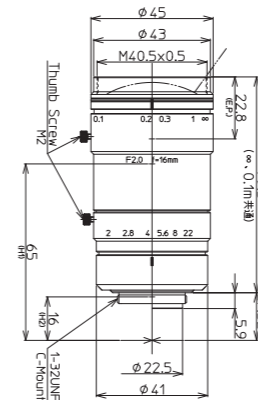


† Images may differ from the actual product.

4/3" 8 MEGAPIXEL

LM8XC LM12XC LM16XC LM25XC LM35XC LM50XC

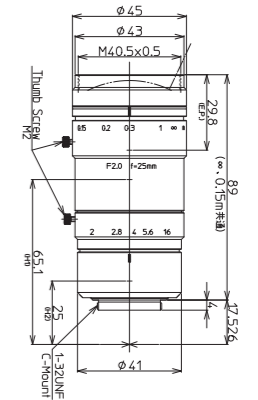
LM16XC



4/3" 1" 2/3" 16mm

FIXED 8MEGA C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

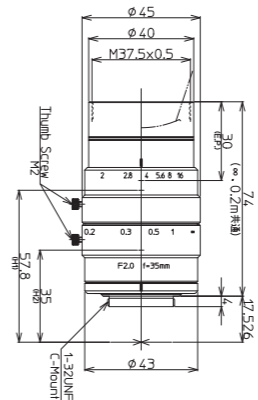
LM25XC



4/3" 1" 2/3" 25mm

FIXED 8MEGA C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

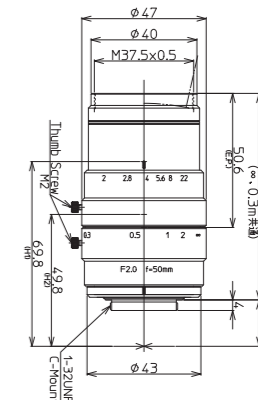
LM35XC



4/3" 1" 2/3" 35mm

FIXED 8MEGA C-mt METAL LO-DIS FLOAT
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating

LM50XC



4/3" 1" 2/3" 50mm

FIXED 8MEGA C-mt METAL LO-DIS FLOAT
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating

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~∞	0.2~∞	0.3~∞	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 4/3 Inch	60.6×47.2	40.9×31.1	29.6×22.4	20.6×15.7
View 1 Inch	44.0×33.6	28.9×21.8	20.8×15.6	14.6×11.0
(Degrees) 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	Φ47×78.0
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.

1" 6 MEGAPIXEL PLUS

LM12SC LM16SC LM25SC LM35SC LM50SC

1" 6 MEGAPIXEL PLUS LENS SERIES

SC Series

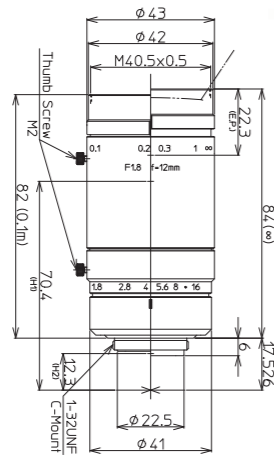
High Resolution FA/MV Lenses

Features of SC Series

- Large image size of $\Phi 16\text{mm}$ (C-mount).
- Able to maintain a sharp image with high resolution and contrast from the center to the corners of an image (less degradation of corner resolution).
- High precision aspherical lens greatly reduces distortion and creates a short minimum object distance.
- Kowa's wide-band multi-coating effectively decreases glare and refraction and produces a high transmission from the visible to NIR wavelength range.



LM12SC



Model	LM12SC
Focal Length(mm)	12
Image Size(mm)	12.8x9.6($\Phi 16$)
Iris Range(F-stop)	F1.8~F16
Focusing Range(m)	0.1~ ∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	125.5(H)x93.5(V)
Angle of 1 Inch	55.9x43.1
View 2/3 Inch	39.8x30.2
(Degrees) 1/1.8 Inch	32.9x24.9
Resolution(Center, Corner)	160lp/mm, 120lp/mm
TV Distortion(%)	0.55
Back Focus in Air(mm)	13.0
Mount	C-mount
Filter Thread(mm)	M4.0xP0.5
Size(mm)	$\Phi 43 \times 84.0$
Weight(g)	255
Temperature Range	-10°C~+50°C

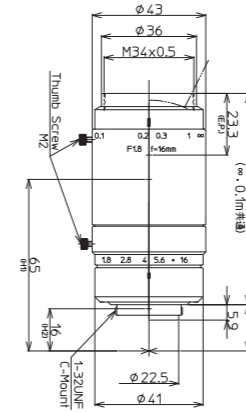
1" 2/3" 1/1.8" 12mm FIXED 6MEGA+ C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

† Images may differ from the actual product.

1" 6 MEGAPIXEL PLUS

LM12SC LM16SC LM25SC LM35SC LM50SC

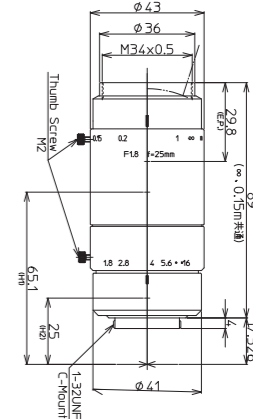
LM16SC



1" 2/3" 1/1.8" 16mm

FIXED 6MEGA+ C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

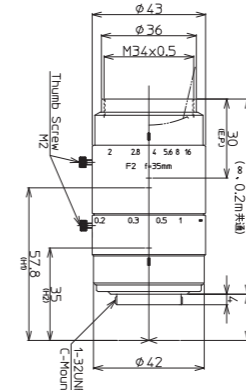
LM25SC



1" 2/3" 1/1.8" 25mm

FIXED 6MEGA+ C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

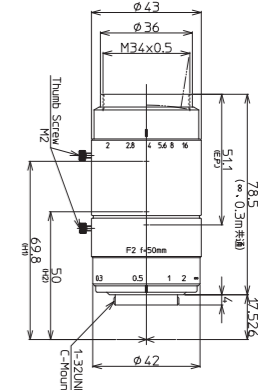
LM35SC



1" 2/3" 1/1.8" 35mm

FIXED 6MEGA+ C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

LM50SC



1" 2/3" 1/1.8" 50mm

FIXED 6MEGA+ C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

Model	LM16SC	LM25SC	LM35SC	LM50SC
Focal Length(mm)	16	25	35	50
Image Size(mm)	12.8x9.6($\Phi 16$)	12.8x9.6($\Phi 16$)	12.8x9.6($\Phi 16$)	12.8x9.6($\Phi 16$)
Iris Range(F-stop)	F1.8~F16	F1.8~F16	F2.0~F16	F2.0~F16
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)	93.5(H)x69.9(V)	86.1(H)x64.4(V)	69.9(H)x52.4(V)	70.1(H)x52.7(V)
Angle of 1 Inch	44.0x33.6	28.9x21.8	20.8x15.6	14.6x11.0
View 2/3 Inch	30.9x23.3	20.1x15.2	14.3x10.8	10.1x7.6
(Degrees) 1/1.8 Inch	25.5x19.2	16.5x12.4	11.7x8.8	8.3x6.2
Resolution(Center, Corner)	160lp/mm, 120lp/mm	160lp/mm, 120lp/mm	160lp/mm, 120lp/mm	160lp/mm, 120lp/mm
TV Distortion(%)	0.02	-0.34	0.02	0.30
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)	M3.4xP0.5	M3.4xP0.5	M3.4xP0.5	M3.4xP0.5
Size(mm)	$\Phi 43 \times 80.0$	$\Phi 43 \times 89.0$	$\Phi 43 \times 74.0$	$\Phi 43 \times 78.5$
Weight(g)	240	245	200	210
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	LM12SC	LM16SC	LM25SC	LM35SC	LM50SC
(Non)M.O.D./Magnification	100mm/0.10x	100mm/0.14x	150mm/0.15x	200mm/0.18x	300mm/0.18x
(1mm Ring)M.O.D./Magnification	48mm/0.19x	64mm/0.20x	115mm/0.19x	174mm/0.21x	273mm/0.20x
(5mm Ring)M.O.D./Magnification	-	21mm/0.46x	56mm/0.35x	117mm/0.33x	204mm/0.28x
(10mm Ring)M.O.D./Magnification	-	-	31mm/0.55x	85mm/0.48x	158mm/0.39x
(20mm Ring)M.O.D./Magnification	-	-	12mm/0.96x	58mm/0.77x	115mm/0.59x

† Images may differ from the actual product.

1" MEGAPIXEL

LM6HC LM8HC LM12HC LM16HC LM25HC LM35HC LM50HC LM75HC

HC Series

- Wide product range: 8 lenses in HC series
- Excellent corner brightness
- For large format 1" megapixel applications
- Low distortion
- High performance compact lenses

1" MEGAPIXEL

LM6HC LM8HC LM12HC LM16HC LM25HC LM35HC LM50HC LM75HC

LM25HC



1" 2/3" 1/1.8" 25mm FIXED MEGA C-mt METAL
Fixed Focal Megapixel C-mount Metal Body

LM35HC



1" 2/3" 1/1.8" 35mm FIXED MEGA C-mt METAL
Fixed Focal Megapixel C-mount Metal Body

LM50HC



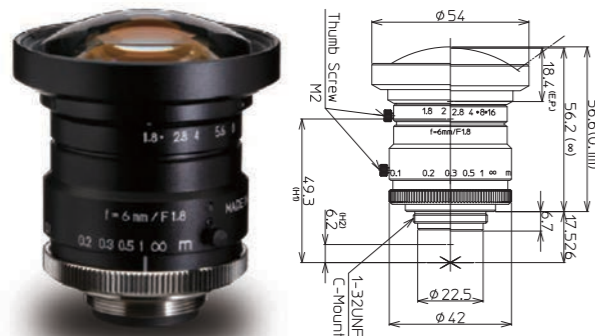
1" 2/3" 1/1.8" 50mm FIXED MEGA C-mt METAL
Fixed Focal Megapixel C-mount Metal Body

LM75HC



1" 2/3" 1/1.8" 75mm FIXED MEGA C-mt METAL
Fixed Focal Megapixel C-mount Metal Body

LM6HC



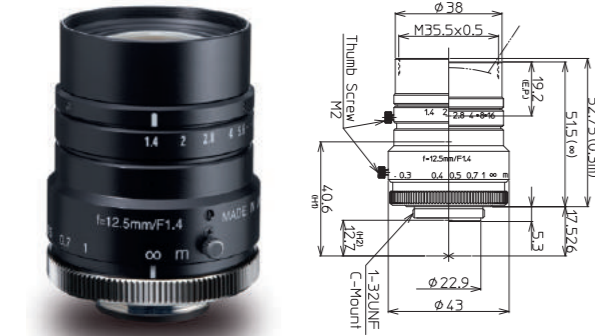
1" 2/3" 1/1.8" 6mm FIXED MEGA C-mt METAL
Fixed Focal Megapixel C-mount Metal Body

LM8HC



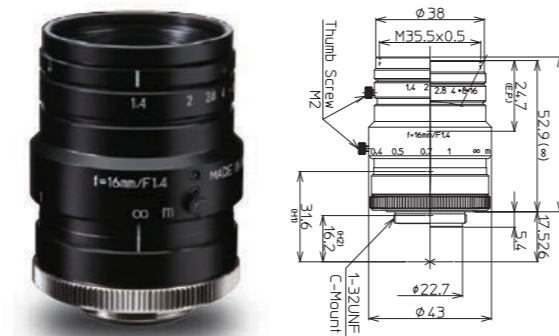
1" 2/3" 1/1.8" 8mm FIXED MEGA C-mt METAL
Fixed Focal Megapixel C-mount Metal Body

LM12HC



1" 2/3" 1/1.8" 12.5mm FIXED MEGA C-mt METAL
Fixed Focal Megapixel C-mount Metal Body

LM16HC



1" 2/3" 1/1.8" 16mm FIXED MEGA C-mt METAL
Fixed Focal Megapixel C-mount Metal Body

Model	LM6HC	LM8HC	LM12HC	LM16HC
Focal Length(mm)	6	8	12.5	16
Image Size(mm)	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	F1.4-F16	F1.4-F16	F1.4-F16
Focusing Range(m)	0.1-∞	0.1-∞	0.3-∞	0.3-∞
Control	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual
Shooting Range at M.O.D.(mm)	267.4(H)×196.3(V)	196.0(H)×143.2(V)	330.6(H)×243.5(V)	251.5(H)×186.2(V)
Angle of View	1 Inch: 96.8×79.4 2/3 Inch: 74.1×58.0 1/1.8 Inch: 62.6×48.2	1 Inch: 79.7×63.0 2/3 Inch: 58.3×44.7 1/1.8 Inch: 48.5×36.9	1 Inch: 55.6×42.5 2/3 Inch: 39.1×29.5 1/1.8 Inch: 32.1×24.2	1 Inch: 44.3×33.6 2/3 Inch: 30.8×23.2 1/1.8 Inch: 25.3×19.0
Resolution(Center, Corner)	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
TV Distortion(%)	-0.2	-1.2	-1.58	-1.0
Back Focus in Air(mm)	11.1	11.2	12.6	12.6
Mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	-	M55×P0.75	M35.5×P0.5	M35.5×P0.5
Size(mm)	Φ54×56.2	Φ57×58	Φ43×51.5	Φ43×52.9
Weight(g)	215	205	160	150
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

Model	LM25HC	LM35HC	LM50HC	LM75HC
Focal Length(mm)	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)
Iris Range(F-stop)	F1.4-F16	F1.4-F16	F1.4-F16	F1.8-F16
Focusing Range(m)	0.3-∞	0.3-∞	0.5-∞	1.0-∞
Control	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual
Shooting Range at M.O.D.(mm)	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	1 Inch: 29.3×22.0 2/3 Inch: 20.2×15.1 (Degrees) 1/1.8 Inch: 16.5×12.4	1 Inch: 20.9×15.8 2/3 Inch: 14.4×10.8 (Degrees) 1/1.8 Inch: 11.8×8.8	1 Inch: 14.5×10.8 2/3 Inch: 10.0×7.5 (Degrees) 1/1.8 Inch: 8.2×6.2	1 Inch: 9.7×7.3 2/3 Inch: 6.7×5.0 (Degrees) 1/1.8 Inch: 5.5×4.1
Resolution(Center, Corner)	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
TV Distortion(%)	-1.0	-0.5	0.05	-0.2
Back Focus in Air(mm)	16.5	16.8	14.8	14.5
Mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M35.5×P0.5	M35.5×P0.5	M40.5×P0.5	M46×P0.75
Size(mm)	Φ43×43	Φ43×43	Φ49×48	Φ49×57
Weight(g)	135	135	210	195
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	LM6HC	LM8HC	LM12HC	LM16HC	LM25HC	LM35HC	LM50HC	LM75HC
(Non)M.O.D./Magnification	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.

† Images may differ from the actual product.

1" RUGGEDIZED MEGAPIXEL

Ruggedized Megapixel Lenses

NEW HC-V SERIES

High Resolution FA/MV Lenses

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

- For megapixel applications requiring a sensor size of 1" (Φ16mm).
- Unique mechanical design to guard against strong vibration and shock.
- Two way reversible nut is utilized to tightly lock the focus adjustment ring in place.
- 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 conventional locking screw system for fixing adjustable iris blades has been replaced with a system that utilizes robust interchangeable iris plates to set the F-Stop.



Variable Step Up Rings

Focus Adjustment Procedure

2. The conventional locking screw system for fixing the focus ring position has been replaced with a system that utilizes a two way reversible nut to lock in the focus position.
3. All internal lens elements are glued together for maximum stability.



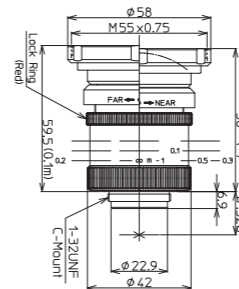
Two Way Reversible Nut

† Images may differ from the actual product.

1" RUGGEDIZED MEGAPIXEL

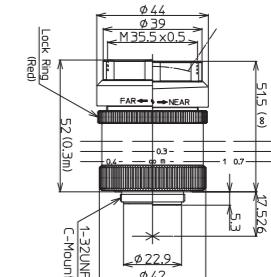
LM8HC-V LM12HC-V LM16HC-V LM25HC-V LM35HC-V LM50HC-V

NEW LM8HC-V



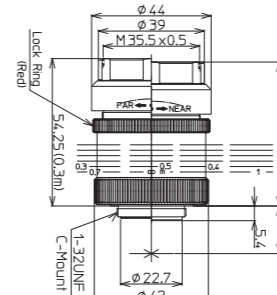
1" 2/3" 1/1.8" 8mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM12HC-V



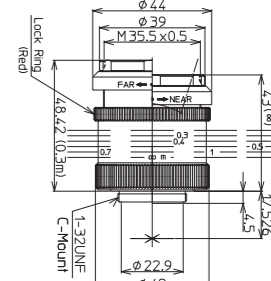
1" 2/3" 1/1.8" 12.5mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM16HC-V



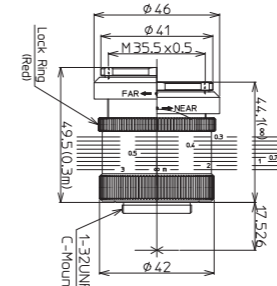
1" 2/3" 1/1.8" 16mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM25HC-V



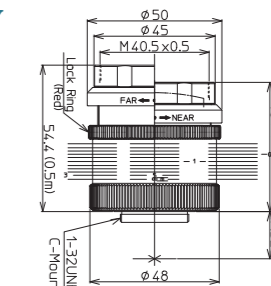
1" 2/3" 1/1.8" 25mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM35HC-V



1" 2/3" 1/1.8" 35mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM50HC-V



1" 2/3" 1/1.8" 50mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body 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)	79.7×63.0	55.6×42.5	44.3×33.6	29.3×22.0	20.9×15.8	14.5×10.8
(Degrees)	58.3×44.7	39.1×29.5	30.8×23.2	20.2×15.1	14.4×10.8	10.0×7.5
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)	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.

10 MEGAPIXEL LENS SERIES JC10M Series

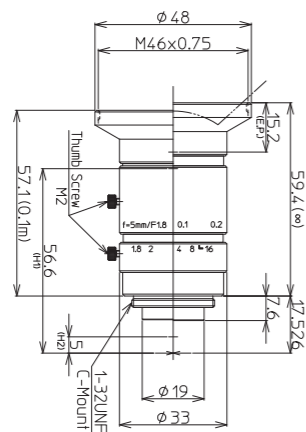
High Resolution FA/MV Lenses

Features of JC10M Series

- 200lp/mm center resolution and low distortion maximize performance of high-end inspection.
- Incorporating Kowa's wide-band 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.



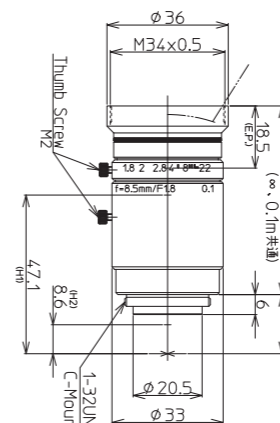
LM5JC10M



Model	LM5JC10M
Focal Length(mm)	5
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.8~F16
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	197.0(H)×147.0(V)
Angle of 2/3 Inch	82.2×66.5
View 1/1.8 Inch	71.1×56.5
(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

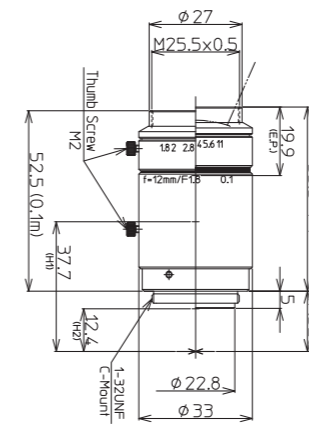


LM8JC10M



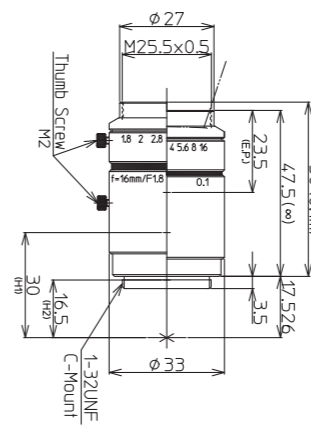
Model	LM8JC10M
Focal Length(mm)	8.5
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.8~F22
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	133.2(H)×99.6(V)
Angle of 2/3 Inch	54.0×41.9
View 1/1.8 Inch	45.3×34.8
(Degrees) 1/2 Inch	40.8×31.2
Resolution(Center, Corner)	200lp/mm, 160lp/mm
TV Distortion(%)	0.31
Back Focus in Air(mm)	12.1
Mount	C-mount
Filter Thread(mm)	M34×P0.5
Size(mm)	Φ36×56.0
Weight(g)	115
Temperature Range	-10°C~+50°C

LM12JC10M



Model	LM12JC10M
Focal Length(mm)	12
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.8~F11
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	80.7(H)×60.2(V)
Angle of 2/3 Inch	39.1×29.8
View 1/1.8 Inch	32.4×24.6
(Degrees) 1/2 Inch	28.9×21.9
Resolution(Center, Corner)	200lp/mm, 160lp/mm
TV Distortion(%)	-0.12
Back Focus in Air(mm)	13.9
Mount	C-mount
Filter Thread(mm)	M25.5×P0.5
Size(mm)	Φ33×53.5
Weight(g)	105
Temperature Range	-10°C~+50°C

LM16JC10M



Model	LM16JC10M
Focal Length(mm)	16
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.8~F16
Focusing Range(m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting Range at M.O.D.(mm)	61.1(H)×45.7(V)
Angle of 2/3 Inch	30.0×22.7
View 1/1.8 Inch	24.7×18.6
(Degrees) 1/2 Inch	22.0×16.6
Resolution(Center, Corner)	200lp/mm, 160lp/mm
TV Distortion(%)	-0.20
Back Focus in Air(mm)	14.6
Mount	C-mount
Filter Thread(mm)	M25.5×P0.5
Size(mm)	Φ33×50
Weight(g)	90
Temperature Range	-10°C~+50°C

† Images may differ from the actual product.

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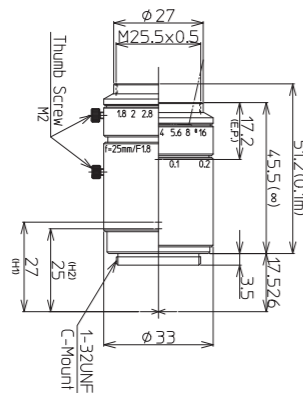
2/3" 10 MEGAPIXEL

LM5JC10M LM8JC10M LM12JC10M LM16JC10M LM25JC10M LM35JC10M LM50JC10M

2/3" 5 MEGAPIXEL

LM12JC5M2 LM16JC5M2 LM25JC5M2 LM35JC5M2

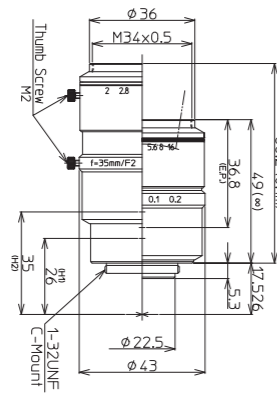
LM25JC10M



Model	LM25JC10M
Focal Length(mm)	25
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.8-F16
Focusing Range(m)	0.1-∞
Control	Iris: Manual Focus: Manual
Shooting Range at M.O.D.(mm)	36.7(H)×27.5(V)
Angle of View	2/3 Inch: 20.0×15.1 1/1.8 Inch: 16.4×12.3 (Degrees) 1/2 Inch: 14.6×11.0
Resolution(Center, Corner)	200lp/mm, 160lp/mm
TV Distortion(%)	-0.09
Back Focus in Air(mm)	17.9
Mount	C-mount
Filter Thread(mm)	M25.5×P0.5
Size(mm)	Φ33×45.5
Weight(g)	95
Temperature Range	-10°C~+50°C

2/3" 1/1.8" 1/2" 25mm FIXED 10MEGA C-mt METAL LO-DIS FLOAT
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating

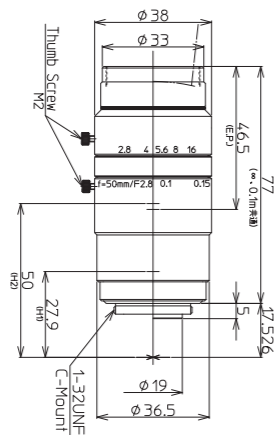
LM35JC10M



Model	LM35JC10M
Focal Length(mm)	35
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.0-F16
Focusing Range(m)	0.1-∞
Control	Iris: Manual Focus: Manual
Shooting Range at M.O.D.(mm)	23.4(H)×17.6(V)
Angle of View	2/3 Inch: 14.3×10.8 1/1.8 Inch: 11.7×8.8 (Degrees) 1/2 Inch: 10.4×7.8
Resolution(Center, Corner)	200lp/mm, 160lp/mm
TV Distortion(%)	0.05
Back Focus in Air(mm)	14.2
Mount	C-mount
Filter Thread(mm)	M34×P0.5
Size(mm)	Φ43×49
Weight(g)	160
Temperature Range	-10°C~+50°C

2/3" 1/1.8" 1/2" 35mm FIXED 10MEGA C-mt METAL LO-DIS FLOAT
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating

LM50JC10M



Model	LM50JC10M
Focal Length(mm)	50
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)	19.1(H)×14.3(V)
Angle of View	2/3 Inch: 10.1×7.6 1/1.8 Inch: 8.2×6.1 (Degrees) 1/2 Inch: 7.3×5.5
Resolution(Center, Corner)	200lp/mm, 160lp/mm
TV Distortion(%)	-0.02
Back Focus in Air(mm)	12.8
Mount	C-mount
Filter Thread(mm)	M30.5×P0.5
Size(mm)	Φ38×77
Weight(g)	170
Temperature Range	-10°C~+50°C

2/3" 1/1.8" 1/2" 50mm FIXED 10MEGA C-mt METAL LO-DIS FLOAT XD
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating Extra Low Dispersion

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

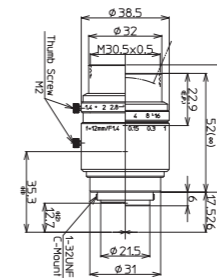
Model	LM5JC10M	LM8JC10M	LM12JC10M	LM16JC10M	LM25JC10M	LM35JC10M	LM50JC10M
(Non)M.O.D./Magnification	100mm/0.05×	100mm/0.07×	100mm/0.11×	100mm/0.15×	100mm/0.24×	100mm/0.38×	100mm/0.46×
(1mm Ring)M.O.D./Magnification	-	20mm/0.20×	48mm/0.19×	61mm/0.21×	79mm/0.28×	85mm/0.40×	91mm/0.48×
(5mm Ring)M.O.D./Magnification	-	-	-	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

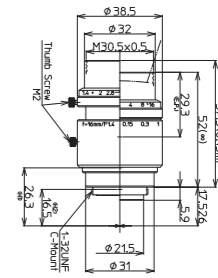
Kowa's JC5M2 lens series is perfect for high-end applications that require the use of 5 megapixel cameras. With a fast F-stop, locking screws, and a compact design, these lenses provide a good value between price versus performance.

LM12JC5M2



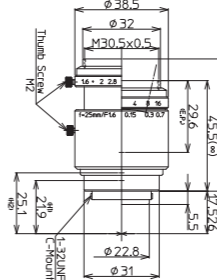
2/3" 1/1.8" 1/2" 12.5mm
FIXED 5MEGA C-mt METAL LO-DIS FLOAT
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating

LM16JC5M2



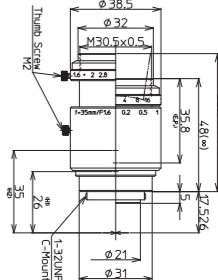
2/3" 1/1.8" 1/2" 16mm
FIXED 5MEGA C-mt METAL LO-DIS FLOAT
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating

LM25JC5M2



2/3" 1/1.8" 1/2" 25mm
FIXED 5MEGA C-mt METAL LO-DIS FLOAT
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating

LM35JC5M2



2/3" 1/1.8" 1/2" 35mm
FIXED 5MEGA C-mt METAL LO-DIS FLOAT
Fixed Focal Megapixel C-mount Metal Body Low Distortion Floating

Model	LM12JC5M2	LM16JC5M2	LM25JC5M2	LM35JC5M2
Focal Length(mm)	12.5	16	25	35
Image Size(mm)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4-F16	F1.4-F16	F1.6-F16	F1.6-F16
Focusing Range(m)	0.1-∞	0.1-∞	0.1-∞	0.18-∞
Control	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual	Iris: Manual Focus: Manual
Shooting Range at M.O.D.(mm)	81.4(H)×60.9(V)	64.6(H)×48.4(V)	35.1(H)×26.3(V)	42.1(H)×31.6(V)
Angle of View	2/3 Inch: 38.4×29.2 1/1.8 Inch: 31.7×24.0 (Degrees) 1/2 Inch: 28.4×21.4	29.9×22.7 24.7×18.6 22.0×16.6	19.9×15.0 16.4×12.3 14.6×10.9	14.3×10.8 11.7×8.8 10.4×7.8
Resolution(Center, Corner)	160lp/mm, 125lp/mm	160lp/mm, 125lp/mm	160lp/mm, 125lp/mm	160lp/mm, 125lp/mm
TV Distortion(%)	-0.06	0.03	-0.01	-0.03
Back Focus in Air(mm)	11.5	11.6	11.2	12.2
Mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M30.5×P0.5	M30.5×P0.5	M30.5×P0.5	M30.5×P0.5
Size(mm)	Φ38.5×52	Φ38.5×52	Φ38.5×45.5	Φ38.5×52
Weight(g)	130	125	115	120
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	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.

SUPER WIDE ANGLE AND LOW DISTORTION LENS

NCM/JCM Series

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)

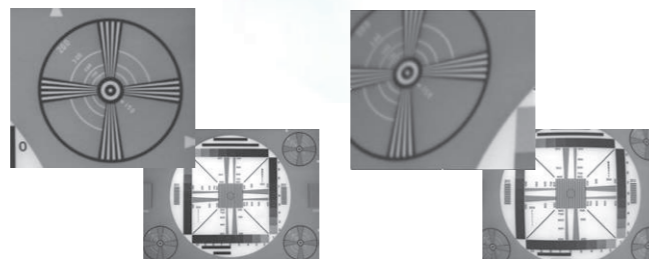
High quality

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



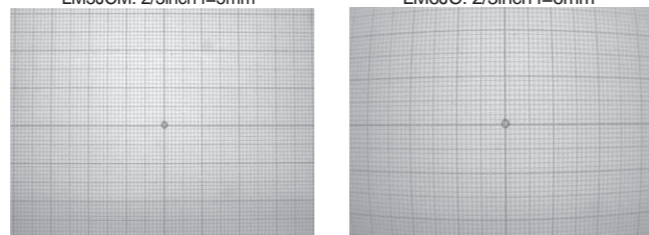
Corner image comparison
(Super wide angle lens vs. Standard lens)

LM5JCM: 2/3inch f=5mm LM6JC: 2/3inch f=6mm



Distortion comparison at short distance object

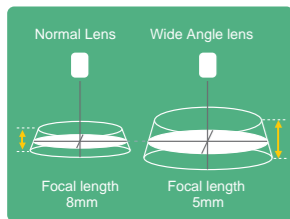
LM5JCM: 2/3inch f=5mm LM6JC: 2/3inch f=6mm



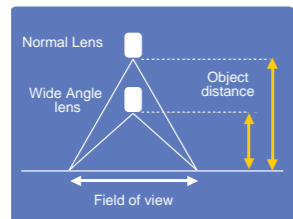
Capture image taken by 2megapixel camera

† Images may differ from the actual product.

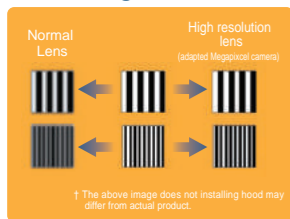
Long Depth of field



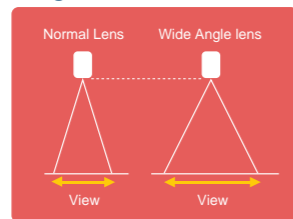
Short Close distance



Clear image



Large field of view



LM3NCM LM4NCM LM6NCM LM5JCM

LM3NCM



1/1.8" 1/2" 1/3" 3.5mm FIXED MEGA C-mt METAL LO-DIS
Fixed Focal Megapixel C-mount Metal Body Low Distortion

LM4NCM



1/1.8" 1/2" 1/3" 4.4mm FIXED MEGA C-mt METAL LO-DIS
Fixed Focal Megapixel C-mount Metal Body Low Distortion

LM6NCM



1/2" 1/3" 6mm FIXED MEGA C-mt METAL LO-DIS
Fixed Focal Megapixel C-mount Metal Body Low Distortion

LM5JCM



2/3" 1/1.8" 1/2" 5mm FIXED MEGA C-mt METAL LO-DIS
Fixed Focal Megapixel C-mount Metal Body Low Distortion

Model	LM3NCM	LM4NCM	LM6NCM	LM5JCM
Focal Length(mm)	3.5	4.4	6	5
Image Size(mm)	7.2×5.4(Φ9)	7.2×5.4(Φ9)	6.4×4.8(Φ8)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.4~F14	F1.6~F16	F1.2~Close	F2.8~F16
Focusing Range(m)	0.1~∞	0.1~∞	0.1~∞	0.1~∞
Control Iris	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	226.3(H)×171.4(V)	190.0(H)×141.2(V)	122.2(H)×91.0(V)	200.8(H)×150.8(V)
Angle of View	2/3 inch -	-	-	82.4×66.9
1/1.8 inch	89.0×73.8	76.6×61.3	-	71.7×57.1
(Degrees) 1/2 inch	82.4×66.9	70.2×55.5	56.2×43.5	65.2×51.3
1/3 inch	66.9×52.7	55.5×43	43.5×33.2	-
Resolution(Center, Corner)	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm
TV Distortion(%)	0.4	-0.2	-0.2	0.5
Back Focus in Air(mm)	9.7	8.6	8.2	10.0
Mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M40.5×P0.5	M43×P0.75	M30.5×P0.5	M40.5×P0.5
Size(mm)	Φ42×38.2	Φ45×57.3	Φ34×45.8	Φ42×38.2
Weight(g)	85	150	100	84
Temperature Range	-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" MEGAPIXEL

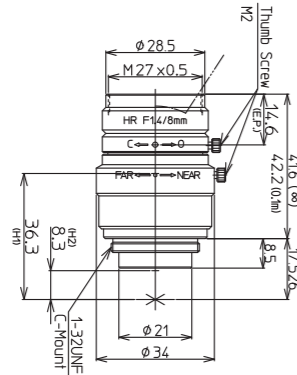
LM8JCM LM12JCM LM16JCM LM25JCM LM35JCM LM50JCM

JCM Series

- World standard and popular lens series
- For megapixel applications
- Low distortion
- Excellent corner brightness
- High resolution

Option : Models with iris & focus scales (LM-JC1MS Series)

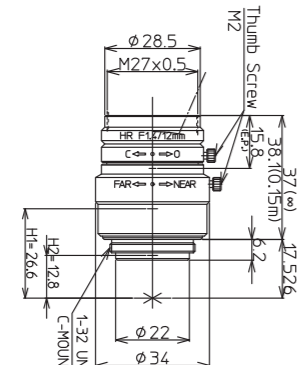
LM8JCM



2/3" 1/1.8" 1/2" 8mm FIXED MEGA C-mt METAL LO-DIS
Fixed Focal Megapixel C-mount Metal Body Low Distortion

Model	LM8JCM
Focal Length(mm)	8
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~Close
Focusing Range(m)	0.1~∞
Control	Iris: Manual, Focus: Manual
Shooting Range at M.O.D.(mm)	120.3(H)×90.0(V)
Angle of View	2/3 Inch: 56.5×43.9, 1/1.8 Inch: 47.4×36.3, 1/2 Inch: 42.6×32.5
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	-0.6
Back Focus in Air(mm)	9.5
Mount	C-mount
Filter Thread(mm)	M27×P0.5
Size(mm)	Φ34×41.6
Weight(g)	90
Temperature Range	-10°C~+50°C

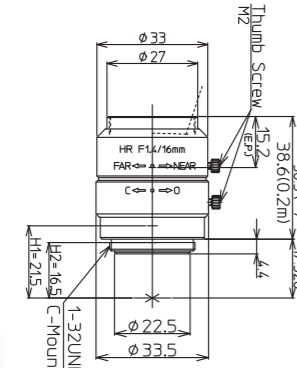
LM12JCM



2/3" 1/1.8" 1/2" 12.5mm FIXED MEGA C-mt METAL LO-DIS
Fixed Focal Megapixel C-mount Metal Body Low Distortion

Model	LM12JCM
Focal Length(mm)	12
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~Close
Focusing Range(m)	0.15~∞
Control	Iris: Manual, Focus: Manual
Shooting Range at M.O.D.(mm)	110.0(H)×82.5(V)
Angle of View	2/3 Inch: 38.3×29.1, 1/1.8 Inch: 31.7×24.0, 1/2 Inch: 28.3×21.4
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	-0.07
Back Focus in Air(mm)	11.7
Mount	C-mount
Filter Thread(mm)	M27×P0.5
Size(mm)	Φ34×37
Weight(g)	85
Temperature Range	-10°C~+50°C

LM16JCM



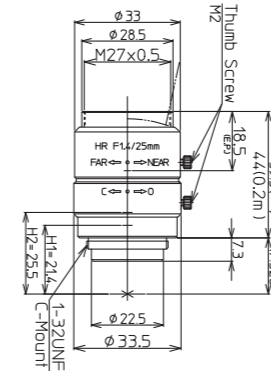
2/3" 1/1.8" 1/2" 16mm FIXED MEGA C-mt METAL FLOAT LO-DIS
Fixed Focal Megapixel C-mount Metal Body Floating Low Distortion

Model	LM16JCM
Focal Length(mm)	16
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~F16
Focusing Range(m)	0.2~∞
Control	Iris: Manual, Focus: Manual
Shooting Range at M.O.D.(mm)	112.8(H)×84.4(V)
Angle of View	2/3 Inch: 30.0×22.7, 1/1.8 Inch: 24.7×18.6, 1/2 Inch: 21.8×16.4
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	-0.05
Back Focus in Air(mm)	13.1
Mount	C-mount
Filter Thread(mm)	M25.5×P0.5
Size(mm)	Φ33.5×36.5
Weight(g)	85
Temperature Range	-10°C~+50°C

2/3" MEGAPIXEL

LM8JCM LM12JCM LM16JCM LM25JCM LM35JCM LM50JCM

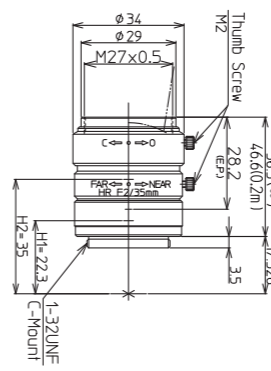
LM25JCM



2/3" 1/1.8" 1/2" 25mm FIXED MEGA C-mt METAL FLOAT
Fixed Focal Megapixel C-mount Metal Body Floating

Model	LM25JCM
Focal Length(mm)	25
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.4~F16
Focusing Range(m)	0.2~∞
Control	Iris: Manual, Focus: Manual
Shooting Range at M.O.D.(mm)	71.1(H)×53.3(V)
Angle of View	2/3 Inch: 19.6×14.8, 1/1.8 Inch: 16.1×12.1, 1/2 Inch: 14.0×10.5
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	-0.04
Back Focus in Air(mm)	11.7
Mount	C-mount
Filter Thread(mm)	M27×P0.5
Size(mm)	Φ33.5×39.5
Weight(g)	90
Temperature Range	-10°C~+50°C

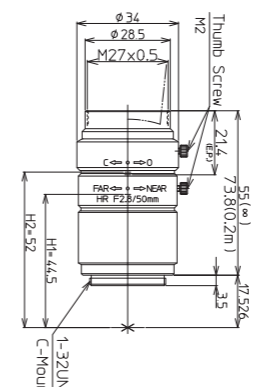
LM35JCM



2/3" 1/1.8" 1/2" 35mm FIXED MEGA C-mt METAL FLOAT
Fixed Focal Megapixel C-mount Metal Body Floating

Model	LM35JCM
Focal Length(mm)	35
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.0~F16
Focusing Range(m)	0.2~∞
Control	Iris: Manual, Focus: Manual
Shooting Range at M.O.D.(mm)	47.9(H)×35.8(V)
Angle of View	2/3 Inch: 14.4×10.8, 1/1.8 Inch: 11.8×8.8, 1/2 Inch: 10.5×7.9
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	-0.2
Back Focus in Air(mm)	20.1
Mount	C-mount
Filter Thread(mm)	M27×P0.5
Size(mm)	Φ34×36.5
Weight(g)	70
Temperature Range	-10°C~+50°C

LM50JCM



2/3" 1/1.8" 1/2" 50mm FIXED MEGA C-mt METAL FLOAT
Fixed Focal Megapixel C-mount Metal Body Floating

Model	LM50JCM
Focal Length(mm)	50
Image Size(mm)	8.8×6.6(Φ11)
Iris Range(F-stop)	F2.8~F22
Focusing Range(m)	0.2~∞
Control	Iris: Manual, Focus: Manual
Shooting Range at M.O.D.(mm)	29.3(H)×21.9(V)
Angle of View	2/3 Inch: 9.6×7.2, 1/1.8 Inch: 7.9×5.9, 1/2 Inch: 7.0×5.2
Resolution(Center, Corner)	120lp/mm, 100lp/mm
TV Distortion(%)	-0.03
Back Focus in Air(mm)	35.5
Mount	C-mount
Filter Thread(mm)	M27×P0.5
Size(mm)	Φ34×55
Weight(g)	95
Temperature Range	-10°C~+50°C

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

Model	LM8JCM	LM12JCM	LM16JCM	LM25JCM	LM35JCM	LM50JCM
(Non)M.O.D./Magnification	100mm/0.07×	150mm/0.08×	200mm/0.08×	200mm/0.12×	200mm/0.18×	200mm/0.30×
(1mm Ring)M.O.D./Magnification	30mm/0.20×	70mm/0.16×	110mm/0.14×	150mm/0.16×	175mm/0.21×	190mm/0.32×
(5mm Ring)M.O.D./Magnification	-	-	-	73mm/0.31×	115mm/0.32×	160mm/0.39×
(10mm Ring)M.O.D./Magnification	-	-	-	-	81mm/0.46×	135mm/0.48×
(20mm Ring)M.O.D./Magnification	-	-	-	-	51mm/0.73×	105mm/0.65×

† Images may differ from the actual product.

† Images may differ from the actual product.

Ruggedized Megapixel Lenses

NEW JCM-V Series

High Resolution FA/MV Lenses

Kowa's new JCM-V series is made for use in high vibration and shock environments. With a design based on Kowa's standard 2/3" JCM lenses, this new ruggedized megapixel lens series is ideal for applications that require increased durability and high optical performance.

Features of JCM-V series

- For megapixel applications requiring a sensor size of 2/3" (Φ11mm) or smaller.
- Unique mechanical design to guard against strong vibration and shock.
- Two way reversible nut is utilized to tightly lock the focus adjustment ring in place.
- 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

- 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.



Variable Step Up Rings

Focus Adjustment Procedure

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



Two Way Reversible Nut

† Images may differ from the actual product.

LM8JCM LM12JCM LM16JCM LM25JCM LM35JCM LM50JCM

NEW LM8JCM-V



2/3" 1/1.8" 1/2" 8mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM12JCM-V



2/3" 1/1.8" 1/2" 12mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM16JCM-V



2/3" 1/1.8" 1/2" 16mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM25JCM-V



2/3" 1/1.8" 1/2" 25mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM35JCM-V



2/3 1/1.8" 1/2" 35mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body Ruggedized lens

NEW LM50JCM-V



2/3 1/1.8" 1/2" 50mm FIXED MEGA C-mt METAL RUGGED
Fixed Focal Megapixel C-mount Metal Body 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	2/3 Inch 56.5×43.9	38.3×29.1	30.0×22.7	19.6×14.8	14.4×10.8	9.6×7.2
View (Degrees)	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
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	Φ33.0×37.8	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

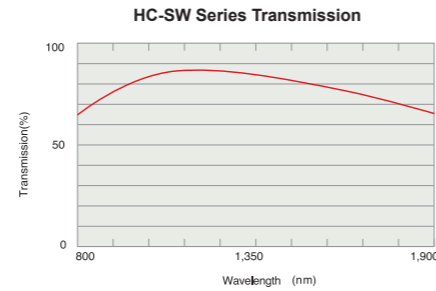
† Images may differ from the actual product.

1" SWIR MEGAPIXEL

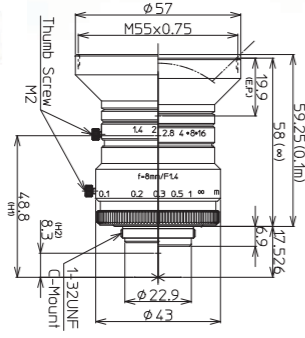
LM8HC-SW LM12HC-SW LM16HC-SW LM25HC-SW LM35HC-SW LM50HC-SW

HC-SW Series

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



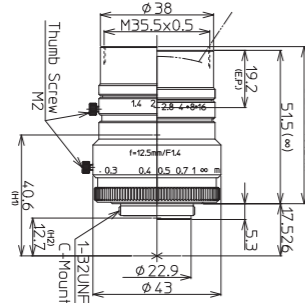
LM8HC-SW



1" 2/3" 1/1.8" 8mm FIXED MEGA C-mt METAL IR

Model	LM8HC-SW
Focal Length(mm)	8
Image Size(mm)	12.8×9.6(Φ16)
Iris Range(F-stop)	F1.4~F16
Focusing Range(m)	0.1~∞
Control	Iris Manual Focus Manual
Shooting Range at M.O.D.(mm)	196.0(H)×143.2(V)
Angle of View	1 Inch 79.4×63.0 2/3 Inch 58.3×44.7 (Degrees) 1/1.8 Inch 48.5×36.9
TV Distortion(%)	-1.2
Back Focus in Air(mm)	11.2
Mount	C-mount
Filter Thread(mm)	M55×P0.75
Size(mm)	Φ57×58
Weight(g)	205
Temperature Range	-10°C~+50°C

LM12HC-SW



1" 2/3" 1/1.8" 12.5mm FIXED MEGA C-mt METAL IR

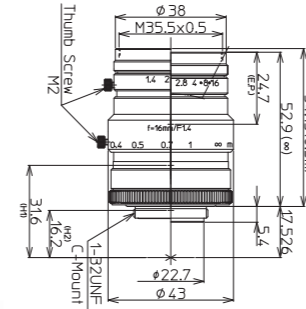
Model	LM12HC-SW
Focal Length(mm)	12.5
Image Size(mm)	12.8×9.6(Φ16)
Iris Range(F-stop)	F1.4~F16
Focusing Range(m)	0.3~∞
Control	Iris Manual Focus Manual
Shooting Range at M.O.D.(mm)	330.6(H)×243.5(V)
Angle of View	1 Inch 55.6×42.5 2/3 Inch 39.1×29.5 (Degrees) 1/1.8 Inch 32.1×24.2
TV Distortion(%)	-1.6
Back Focus in Air(mm)	12.6
Mount	C-mount
Filter Thread(mm)	M35.5×P0.5
Size(mm)	Φ43×51.5
Weight(g)	160
Temperature Range	-10°C~+50°C

† Images may differ from the actual product.

1" SWIR MEGAPIXEL

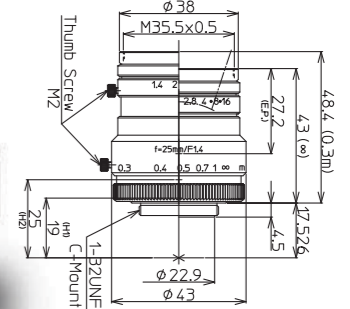
LM8HC-SW LM12HC-SW LM16HC-SW LM25HC-SW LM35HC-SW LM50HC-SW

LM16HC-SW



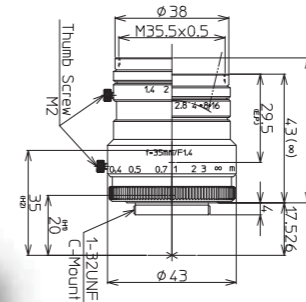
1" 2/3" 1/1.8" 16mm FIXED MEGA C-mt METAL IR

LM25HC-SW



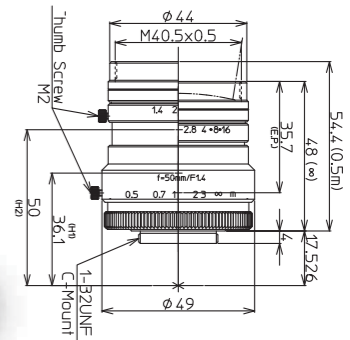
1" 2/3" 1/1.8" 25mm FIXED MEGA C-mt METAL IR

LM35HC-SW



1" 2/3" 1/1.8" 35mm FIXED MEGA C-mt METAL IR

LM50HC-SW



1" 2/3" 1/1.8" 50mm FIXED MEGA C-mt METAL IR

Model	LM16HC-SW	LM25HC-SW	LM35HC-SW	LM50HC-SW
Focal Length(mm)	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)
Iris Range(F-stop)	F1.4~F16	F1.4~F16	F1.4~F16	F1.4~F16
Focusing Range(m)	0.3~∞	0.3~∞	0.5~∞	0.5~∞
Control	Iris Manual Focus Manual	Iris Manual Focus Manual	Iris Manual Focus Manual	Iris Manual Focus Manual
Shooting Range at M.O.D.(mm)	251.5(H)×186.2(V)	160.7(H)×119.2(V)	110.1(H)×82.0(V)	121.8(H)×91.3(V)
Angle of View	1 inch 44.3×33.6 2/3 inch 30.8×23.2 (Degrees) 1/1.8 inch 25.3×19.0	1 inch 29.3×22.0 2/3 inch 20.2×15.1 (Degrees) 1/1.8 inch 16.5×12.4	1 inch 20.9×15.8 2/3 inch 14.4×10.8 (Degrees) 1/1.8 inch 11.8×8.8	1 inch 14.5×10.8 2/3 inch 10.0×7.5 (Degrees) 1/1.8 inch 8.2×6.2
TV Distortion(%)	-1.0	-1.0	-0.5	0.05
Back Focus in Air(mm)	12.6	16.5	16.8	14.8
Mount	C-mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M35.5×P0.5	M35.5×P0.5	M35.5×P0.5	M40.5×P0.5
Size(mm)	Φ43×52.9	Φ43×43	Φ43×43	Φ49×48
Weight(g)	150	135	135	210
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

† Images may differ from the actual product.

LARGE FORMAT NIR

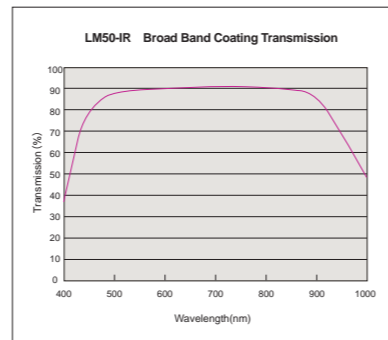
LM50-IR LM65-IR

Broad Band(Visible+NIR+DAY/NIGHT) Large Format Lens

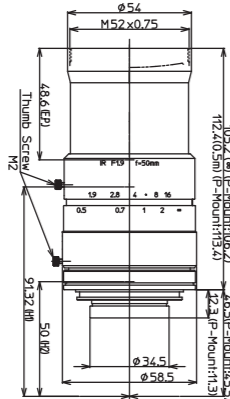
- IR corrected design
- Bright F-stop of F1.9
- Broad band coating
- F-mount & P-mount(M42x1)

(Application)

- Solar panel inspection
- ITS
- Visible/NIR line scan
- Large format area scan



LM50-IR

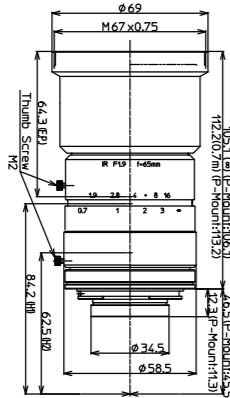


50mm FIXED MEGA METAL LO-DIS IR
Fixed Focal Megapixel Metal Body Low Distortion Infrared

Model	LM50-IR
Focal Length(mm)	50
Image Size(mm)	43.3(Φ43.3)
Iris Range(F-stop)	F1.9~F16
Focusing range(m)	0.5~∞
Control	Iris Manual Focus Manual
Shooting Range at M.O.D.(mm)	366.9(H)×242.9(V)
Angle of Full Size	40.2×27.2
View 4/3 Inch	21.0×15.8
(Degrees) 1 Inch	14.6×11.0
TV Distortion(%)	-0.5
Back Focus in Air(mm)	34.6
Mount	Nikon F-mount
Filter Thread(mm)	M52×P0.75
Size(mm)	Φ58.5×105.2
Weight(g)	605
Temperature Range	-10°C~+50°C

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LM65-IR



65mm FIXED MEGA METAL LO-DIS IR
Fixed Focal Megapixel Metal Body Low Distortion Infrared

Model	LM65-IR
Focal Length(mm)	65
Image Size(mm)	43.3(Φ43.3)
Iris Range(F-stop)	F1.9~F16
Focusing range(m)	0.7~∞
Control	Iris Manual Focus Manual
Shooting Range at M.O.D.(mm)	313.6(H)×209.8(V)
Angle of Full Size	31.9×21.7
View 4/3 Inch	16.4×12.3
(Degrees) 1 Inch	11.7×8.8
TV Distortion(%)	0.7
Back Focus in Air(mm)	34.6
Mount	Nikon F-mount
Filter Thread(mm)	M67×P0.75
Size(mm)	Φ69×105.1
Weight(g)	650
Temperature Range	-10°C~+50°C

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Reduction of visible-NIR focus shift

Visible design lens



Visible Focus Shift

IR Corrected design lens LM50-IR



Visible Maintains sharp Focus

† Images may differ from the actual product.

LINE SCAN

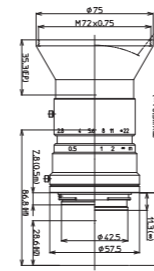
LM28LF LM35LF LM50LF LM28CLS LM35CLS LM50CLS

LF Series

Optimized design for machine vision

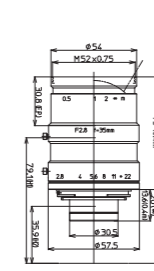
- Large format (Image size Φ46.0mm)
- Corresponds to 4K Line Scan Camera
- Low distortion
- Suitable for close distance inspection

LM28LF



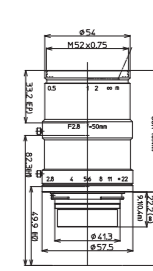
28mm FIXED METAL LO-DIS
Fixed Focal Metal Body Low Distortion

LM35LF



35mm FIXED METAL LO-DIS
Fixed Focal Metal Body Low Distortion

LM50LF



50mm FIXED METAL LO-DIS
Fixed Focal Metal Body 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)	0.5~∞		0.5~∞		0.5~∞	
Control	Iris Manual Focus Manual		Iris Manual Focus Manual		Iris Manual Focus Manual	
Shooting Range at M.O.D.(mm)	424.3×281.1		239.9×160.3		162.9×108.9	
Angle of Full size	64.6×45.8		53.7×37.2		39.7×27.1	
View 4/3 inch	35.8×27.2		28.9×21.8		20.9×15.7	
(Degrees) 1 inch	25.3×19.1		20.3×15.3		14.6×11.0	
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	

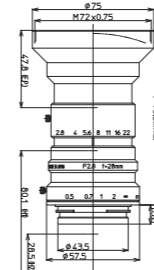
Nikon is a trademark of Nikon Corporation.

CLS Series

- For industrial 3CCD color line scan camera
- For use with 30mm length line sensor
- Close up lens is available for close distance applications

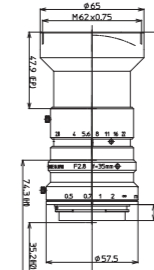
- Ultra high resolution
- Low chromatic aberration
- Excellent corner brightness

LM28CLS



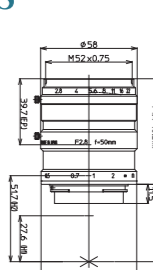
28mm FIXED 3CCD METAL
Fixed Focal 3CCD Camera Metal Body

LM35CLS



35mm FIXED 3CCD METAL
Fixed Focal 3CCD Camera Metal Body

LM50CLS



50mm FIXED 3CCD METAL
Fixed Focal 3CCD Camera Metal Body

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)	0.5~∞	0.5~∞	0.5~∞
Control	Iris Manual Focus Manual	Iris Manual Focus Manual	Iris Manual Focus 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)
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.

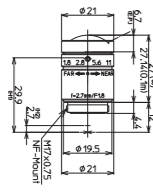
1/3" NF-MOUNT

Compact NF-mt. lens Series

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

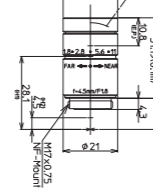
LM3NF LM5NF LM9NF

LM3NF



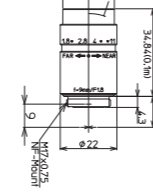
1/3" 2.7mm FIXED MEGA NF-mt METAL
Fixed Focal Megapixel NF-mount Metal Body

LM5NF



1/3" 4.5mm FIXED MEGA NF-mt METAL
Fixed Focal Megapixel NF-mount Metal Body

LM9NF



1/3" 9mm FIXED MEGA NF-mt METAL
Fixed Focal Megapixel NF-mount Metal Body

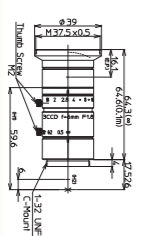
Model	LM3NF	LM5NF	LM9NF
Focal Length(mm)	2.7	4.5	9
Image Size(mm)	4.8×3.6(Φ6)	4.8×3.6(Φ6)	4.8×3.6(Φ6)
Iris Range(F-stop)	F1.8~F16	F1.8~F11	F1.8~F11
Focusing Range(m)	0.1~∞	0.1~∞	0.1~∞
Control	Iris Manual Focus Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	262.7(H)×167.8(V)	122.9(H)×89.9(V)	58.1(H)×43.3(V)
Angle of View(Degrees) 1/3 Inch	102.3×76.7	59.2×45.0	30.2×22.8
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

1/1.8" 3CCD

- For 1/1.8", 1/2" & 1/3" 3CCD C-mount cameras
- For megapixel applications
- Excellent corner brightness
- Low distortion
- Low chromatic aberration

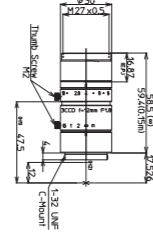
LM6NC3 LM12NC3 LM50NC3

LM6NC3



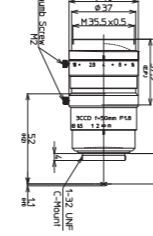
1/1.8" 1/2" 1/3" 6mm FIXED MEGA 3CCD C-mt METAL
Fixed Focal Megapixel 3CCD Camera C-mount Metal Body

LM12NC3



1/1.8" 1/2" 1/3" 12mm FIXED MEGA 3CCD C-mt METAL
Fixed Focal Megapixel 3CCD Camera C-mount Metal Body

LM50NC3



1/1.8" 1/2" 1/3" 50mm FIXED MEGA 3CCD C-mt METAL
Fixed Focal Megapixel 3CCD Camera C-mount Metal Body

Model	LM6NC3	LM12NC3	LM50NC3
Focal Length(mm)	6	12	50
Image Size(mm)	6.4×4.5(Φ8)	6.4×4.5(Φ8)	6.4×4.5(Φ8)
Iris Range(F-stop)	F1.8~F16	F1.8~F16	F1.8~F16
Focusing Range(m)	0.1~∞	0.15~∞	0.3~∞
Control	Iris Manual Focus Manual	Manual	Manual
Shooting Range at M.O.D.(mm)	146.9(H)×107.2(V)	99.8(H)×74.0(V)	45.8(H)×34.3(V)
Angle of View 1/1.8 inch	65.3×50.1	34.1×25.7	7.9×5.9
1/2 inch	58.8×44.9	30.4×22.8	7.0×5.3
1/3 inch	45.7×33.9	22.8×17.2	5.3×4.0
Resolution(Center, Corner)	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm
TV Distortion(%)	-2.4	0.02	-
Back Focus in Air(mm)	15.2	15.2	21.2
Mount	C-mount	C-mount	C-mount
Filter Thread(mm)	M37.5×P0.5	M27×P0.5	M35.5×P0.5
Size(mm)	Φ39×64.3	Φ30×58.5	Φ40×66
Weight(g)	105	95	160
Temperature Range	-10°C~+50°C	-10°C~+50°C	-10°C~+50°C

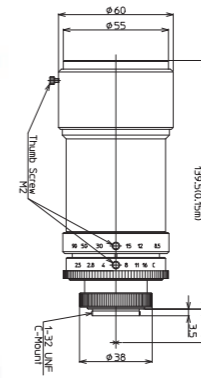
† Images may differ from the actual product.

MACRO ZOOM

LMZ50M LMZ45T3 LMZ68M LMZ69M

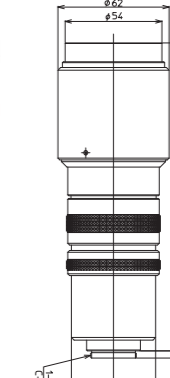
- 2 zoom ranges (6× and 10×)
- Excellent for pattern matching, measurement, inspection, and character recognition

LMZ50M



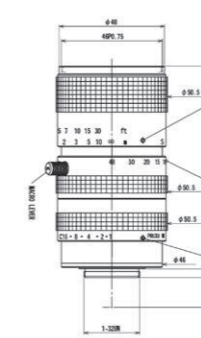
1/3" inf~0.7x 8.5-90mm ZOOM C-mt METAL
Fixed Focal C-mount Metal Body

LMZ45T3



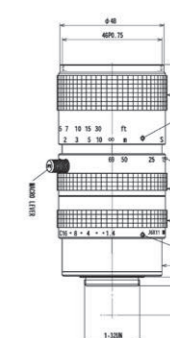
2/3" 1/2" 1/3" inf~1.1x 18-108mm ZOOM C-mt METAL
Fixed Focal C-mount Metal Body

LMZ68M



1/2" 8-48mm ZOOM C-mt METAL
Fixed Focal C-mount Metal Body

LMZ69M



2/3" 11.5-69mm ZOOM C-mt METAL
Fixed Focal C-mount Metal Body

Model	LMZ50M		LMZ45T3	
Magnification	inf~0.7x		inf~1.1x	
Zoom magnification	10x		6x	
Image Size(mm)	4.8×3.6(Φ6)		8.8×6.6(Φ11)	
Close up lens	3Dpt.un-installed	3Dpt.installed	3Dpt.un-installed	3Dpt.installed
Shooting Magnification	Inf-0.28x	0.07~0.7x	Inf-0.72x	0.053~1.1x
W.D (mm)	Inf-M.O.D=310	WD=310~150	Inf-M.O.D=185	WD=330~115
Iris Range(F-stop)	F2.5~Close		F2.5~Close	
Object side N.A.	-	-	-	-
Image side N.A.	-	-	-	-
TV Distortion(%)	0.1	0.1	-0.3	-0.1
Angle of View(Degrees)	-	-	inf wide inf tele WD=185 wide WD=185 tele	27.3×20.5° 4.7×3.5° 67.0×50.1° 11.7×9.0°
2/3 inch	-	-	-	WD=330 wide WD=330 tele WD=115 wide WD=115 tele
1/2 inch	-	-	-	165.4×123.8° 28.3×21.3° 43.8×32.8° 7.6×5.9°
1/3 inch	inf wide inf tele WD=310 wide WD=310 tele	31.3×23.5° 3.2×2.4° 140.7×103.0° 14.0×10.4°	WD=310 wide WD=310 tele WD=150 wide WD=150 tele	inf wide inf tele WD=185 wide WD=185 tele
1/2 inch	-	-	-	19.9×14.9° 3.4×2.6° 48.6×36.5° 8.7×6.6°
1/3 inch	-	-	-	WD=330 wide WD=330 tele WD=115 wide WD=115 tele
120.0×89.8° 20.7×15.6° 31.8×23.8° 5.7×4.3°	-	-	-	89.8×67.4° 15.6×11.7° 23.8×17.9° 4.3×3.3°
Mount	C-mount			
Control	Iris Manual Focus Manual Zoom Manual			
Filter Thread(mm)	M48×P0.75		M52×P0.75	
Size(mm)	Φ60×130		Φ62×171.7	
Weight(g)	437		595	
Temperature Range	-10°C~+50°C		-10°C~+50°C	

Model	LMZ68M	LMZ69M
Focal Length(mm)	8~48(6x)	11.5~69(6x)
Image Size(mm)	6.4×4.8(Φ8)	8.8×6.6(Φ11)
Iris Range(F-stop)	F1.0~Close	F1.4~Close
Focusing Range(m)	1.0~∞	1.0~∞
(Macro)	0.01	0.01
Control	Iris Manual Focus Manual Zoom Manual	Manual
Angle of View(Degrees)	W43.6×33.4/T7.7×5.7	W41.9×32.0/T7.3×5.5
Mount	C-mount	C-mount
Filter Thread(mm)	M46×0.75	M46×0.75
Size(mm)	Φ50.5×92.8	Φ50.5×98.2
Weight(g)	280	300
Temperature Range	-10°C~+50°C	-10°C~+50°C

† Images may differ from the actual product.

NEW TELECENTRIC SERIES

High Resolution lenses

Features of TC series

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

4/3" MACRO ZOOM 21 MEGAPIXEL

- LM1119TC (0.5~1.0x)

4/3" MACRO 21 MEGAPIXEL

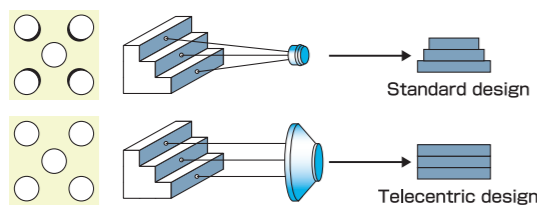
- LM1138TC (2.0x)

2/3" 5 MEGAPIXEL PLUS

- LM1120TC (3.45~4.4x)
- LM1121TC (1.725~2.2x)
- LM1122TC (1.15~1.47x)
- LM1123TC (0.69~0.88x)
- LM1125TC (0.346~0.44x)

2/3" MACRO ZOOM

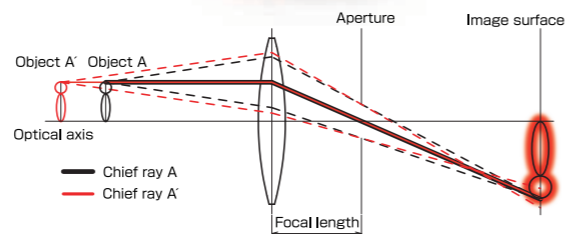
- LM50TC (0.3~1.0x)



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

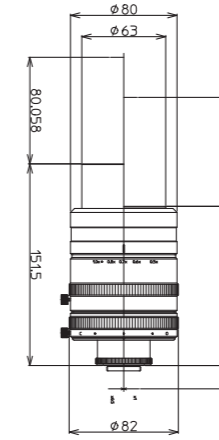
† Images may differ from the actual product.

LM1119TC LM1138TC LM1120TC LM1121TC LM1122TC LM1123TC LM1125TC LM50TC

NEW 4/3" MACRO ZOOM 21 MEGAPIXEL

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

NEW LM1119TC



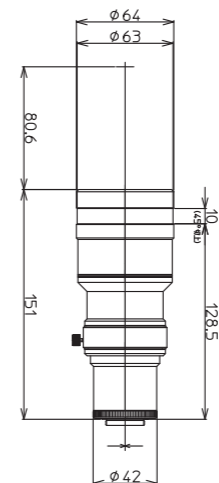
4/3" 1" 2/3" ZOOM 21MEGA C-mt METAL
Manual Zoom Lens Megapixel C-mount Metal Body

Model	LM1119TC	
magnification	0.5~1.0x	
Image Size	18.4x13.8(Φ23)	
Shooting Magnification	0.5x	1.0x
Objective N.A.	0.05~0.007	0.1~0.014
W.D(mm)	80	81.8
Shooting Range (mm)	4/3 inch 36.8x27.6	18.4x13.8
1 inch	25.6x19.2	12.8x9.6
2/3 inch	17.6x13.2	8.8x6.6
TV Distortion(%)	0.1	0.1
Back Focus in Air(mm)	14.7	
Mount	C-mount	
Resolution	120lp/mm	
Size	Φ82x151.5	
Weight(g)	1000	
Temperature Range	-10°C~+50°C	
Storage Temperature Range	-20°C~+60°C	

NEW 4/3" MACRO 21 MEGAPIXEL

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

NEW LM1138TC



4/3" 1" 2/3" ZOOM 21MEGA C-mt METAL
Manual Zoom Lens Megapixel C-mount Metal Body

Model	LM1138TC	
magnification	2.0x	
Image Size	18.4x13.8(Φ23)	
Shooting Magnification	2.0x	
Objective N.A.	0.2	
W.D(mm)	80.6	
Shooting Range (mm)	4/3 inch 9.20x6.90	
1 inch	6.40x4.8	
2/3 inch	4.4x3.3	
TV Distortion(%)	0.1	
Back Focus in Air(mm)	15.0	
Mount	C-mount	
Resolution	120lp/mm	
Size	Φ64x151.0	
Weight(g)	830	
Temperature Range	-10°C~+50°C	
Storage Temperature Range	-20°C~+60°C	

† Images may differ from the actual product.

8 MEGA 1" 6 MEGA 1" MEGA 1" RUG 1.0 MEGA 2" MEGA 2" MEGA 2" RUG 2" 3" J.C. 1/1.8" NCL
FWD/DOAL LENGTH SWIR NIR NIR LFE SCAN CTS NF NF 3CCD MACRO TELECENTRIC VARIOFOCAL OTHERS

NEW 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

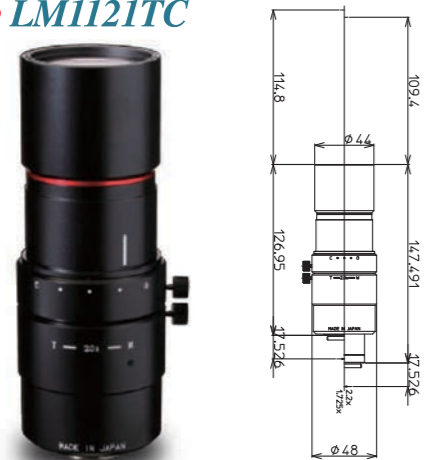
NEW LM1120TC



2/3" 1/1.8" 1/2" 5MEGA+ C-mt METAL DIS-F
5 Megapixel Plus C-mount Metal Body Distortion Free

Model	LM1120TC		
magnification	3.45~4.4x		
Image Size	8.8×6.6(Φ11)		
Shooting Magnification	3.45x	4.0x	4.4x
Objective N.A.	0.2	0.2	0.2
W.D(mm)	65.9	65.9	65.9
Shooting Range (mm)	2/3 inch 1.9×2.6 1/1.8 inch 1.6×2.1 1/2 inch 1.4×1.9	1.7×2.2 1.4×1.8 1.2×1.6	1.5×2.0 1.2×1.6 1.1×1.5
TV Distortion(%)	0.015	0.003	-0.002
Back Focus in Air(mm)	17.1	24.5	30
Mount	C-mount		
Resolution	120lp/mm		
Size(mm)	Φ57×180.0		
Weight(g)	645		
Temperature Range	-10°C~+50°C		
Storage Temperature Range	-20°C~+60°C		

NEW LM1121TC



2/3" 1/1.8" 1/2" 5MEGA+ C-mt METAL DIS-F
5 Megapixel Plus C-mount Metal Body Distortion Free

Model	LM1121TC		
magnification	1.725~2.2x		
Image Size	8.8×6.6(Φ11)		
Shooting Magnification	1.725x	2.0x	2.2x
Objective N.A.	0.043	0.032	0.026
W.D(mm)	114.8	111.4	109.4
Shooting Range (mm)	2/3 inch 5.1×3.8 1/1.8 inch 4.2×3.1 1/2 inch 3.7×2.8	4.4×3.3 3.6×2.7 3.2×2.4	4.0×3.0 3.3×2.4 2.9×2.2
TV Distortion(%)	0.011	0.004	0.001
Back Focus in Air(mm)	55.8	67.7	76.3
Mount	C-mount		
Resolution	120lp/mm		
Size(mm)	Φ48×147.5		
Weight(g)	420		
Temperature Range	-10°C~+50°C		
Storage Temperature Range	-20°C~+60°C		

NEW LM1122TC



2/3" 1/1.8" 1/2" 5MEGA+ C-mt METAL DIS-F
5 Megapixel Plus C-mount Metal Body Distortion Free

Model	LM1122TC		
magnification	1.15~1.47x		
Image Size	8.8×6.6(Φ11)		
Shooting Magnification	1.15x	1.3x	1.47x
Objective N.A.	0.047	0.060	0.077
W.D(mm)	111.6	111.6	111.6
Shooting Range (mm)	2/3 inch 7.6×5.7 1/1.8 inch 6.3×4.7 1/2 inch 5.6×4.2	6.6×5.0 5.5×4.1 4.9×3.7	6.0×4.5 4.9×3.7 4.3×3.3
TV Distortion(%)	-0.015	-0.001	0.011
Back Focus in Air(mm)	18.7	23.6	29.8
Mount	C-mount		
Resolution	120lp/mm		
Size(mm)	Φ50×123.9		
Weight(g)	330		
Temperature Range	-10°C~+50°C		
Storage Temperature Range	-20°C~+60°C		

NEW LM1123TC



2/3" 1/1.8" 1/2" 5MEGA+ C-mt METAL DIS-F
5 Megapixel Plus C-mount Metal Body Distortion Free

Model	LM1123TC		
magnification	0.69~0.88x		
Image Size	8.8×6.6(Φ11)		
Shooting Magnification	0.69x	0.8x	0.88x
Objective N.A.	0.080	0.097	0.130
W.D(mm)	111.0	111.0	111.0
Shooting Range (mm)	2/3 inch 12.7×9.6 1/1.8 inch 10.4×7.8 1/2 inch 9.3×7.0	11.0×8.2 9.0×6.7 8.0×6.0	10.0×7.5 8.2×6.1 7.3×5.5
TV Distortion(%)	-0.001	-0.009	0.005
Back Focus in Air(mm)	34	28.8	25.3
Mount	C-mount		
Resolution	120lp/mm		
Size(mm)	Φ50×121.5		
Weight(g)	290		
Temperature Range	-10°C~+50°C		
Storage Temperature Range	-20°C~+60°C		

NEW LM1125TC



2/3" 1/1.8" 1/2" 5MEGA+ C-mt METAL DIS-F
5 Megapixel Plus C-mount Metal Body Distortion Free

Model	LM1125TC		
magnification	0.346~0.44x		
Image Size	8.8×6.6(Φ11)		
Shooting Magnification	0.346x	0.4x	0.44x
Objective N.A.	0.04	0.04	0.04
W.D(mm)	112.7	112.7	112.7
Shooting Range (mm)	2/3 inch 19.1×25.4 1/1.8 inch 15.7×20.9 1/2 inch 13.9×18.6	16.5×22.0 13.6×18.1 12.1×16.1	15.0×20.0 12.3×16.5 11.0×14.6
TV Distortion(%)	0.02	-0.009	0.01
Back Focus in Air(mm)	17.6	17	16.5
Mount	C-mount		
Resolution	120lp/mm		
Size(mm)	Φ51.5×142.3		
Weight(g)	395		
Temperature Range	-10°C~+50°C		
Storage Temperature Range	-20°C~+60°C		

2/3" MACRO ZOOM

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

LM50TC



2/3" 1/1.8" 1/2" ZOOM C-mt METAL
Manual Zoom Lens C-mount Metal Body

Model	LM50TC	
magnification	0.3~1.0x	
Image Size	8.8×6.6(Φ11)	
Shooting Magnification	0.3x	1.0x
Objective N.A.	0.038	0.100
W.D(mm)	193.4	81.8
Shooting Range (mm)	2/3 inch 29.5×22.2 1/1.8 inch 24.1×18.0 1/2 inch 21.4×16.0	8.8×6.6 7.2×5.4 6.4×4.8
TV Distortion(%)	-0.19	-0.1
Back Focus in Air(mm)	22.0	
Mount	C-mount	
Resolution	120lp/mm	
Filter Thrad(mm)	M37.5×P0.5	
Size	Φ56×115.7	
Weight(g)	317	
Temperature Range	-10°C~+50°C	
Storage Temperature Range	-20°C~+60°C	

† Images may differ from the actual product.

† Images may differ from the actual product.

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 Represents lens function ② Represents focal length (fixed focal length lenses)
 ③ Represents format sizes and lens type

- LM.....KOWA CCTV lenses
- LMZ.....KOWA Zoom lenses
- LMVZ.....KOWA Varifocal lenses
- 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 $f=L \cdot Y' / Y$ to calculate focal length.

$$Y=8.8\text{mm (See image size chart), } L=300\text{mm, } Y'=100\text{mm}$$

$$f=300 \cdot 8.8 / 100$$

$$f=26.4\text{mm.}$$

The most appropriate lens is f=25mm lens, which is close but not greater than the 26.4 derived from the calculation.
 Lenses with shorter focal lengths than the given number can capture an object in its entirety.

Quick selection - How to calculate the angle of view

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

$$\text{Width- } Y=6.4\text{mm (Horizontal), } f=16\text{mm, } L=300\text{mm}$$

$$Y=300 \cdot 6.4 / 16$$

$$Y=120\text{mm}$$

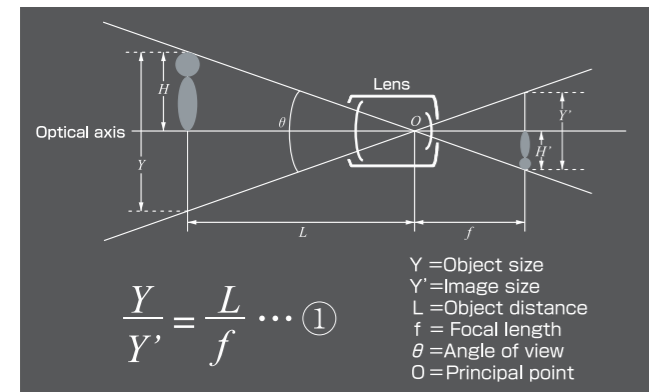
$$\text{Vertical- } Y=4.8\text{mm (Vertical), } f=16\text{mm, } L=300\text{mm}$$

$$Y=300 \cdot 4.8 / 16$$

$$Y=90\text{mm}$$

Thus in order to capture the object in its entirety, the maximum dimensions of an object at a distance of 300mm is 120mm wide and 90mm height.

(Characteristics of lenses are described below)

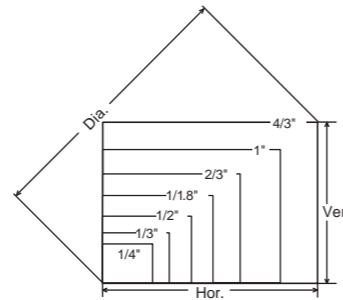


- Object size..... Field range which can be captured by the image sensor
- Image size..... See description
- Object distance..... Distance from the lens to the object
- Focal length..... Distance from the principal point to the focus point
- Angle of view..... This angle represents a shooting range in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

Image size

Image size represents size of camera sensor

Camera	Hor.(mm)	Ver.(mm)	Dia.(mm)
1/4 inch	3.6	2.7	4.5
1/3 inch	4.8	3.6	6
1/2 inch	6.4	4.8	8
1/1.8 inch	7.2	5.4	9
2/3 inch	8.8	6.6	11
1 inch	12.8	9.6	16
4/3 inch	18.4	13.8	23



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)

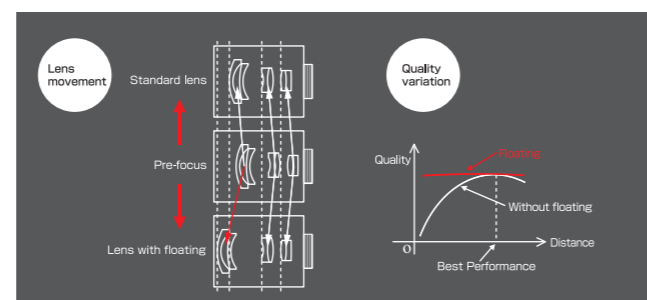
- Increasing the F-number (darker) increases the depth.
- Shortening the focal length increases the depth.
- Lengthening the object distance increases the depth.

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



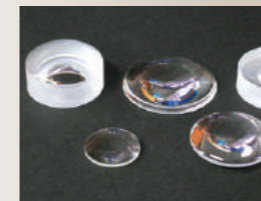
Coating machine



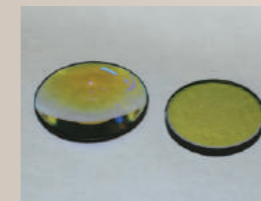
Aspherical lens processing machine



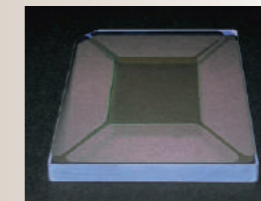
Ultra-precision processing machine



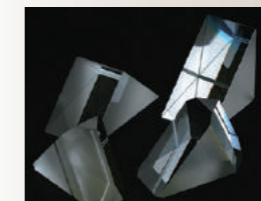
Spherical and Aspherical lenses



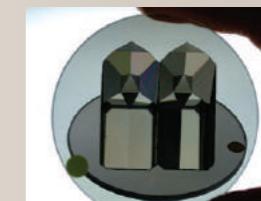
YAG laser cut optical devices



Special mirrors



Various prisms



Optical devices with special coatings



Ultra-precision optical devices

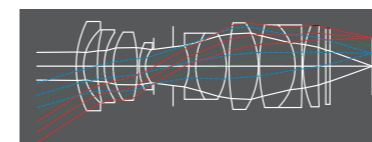
Design & Development

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.

