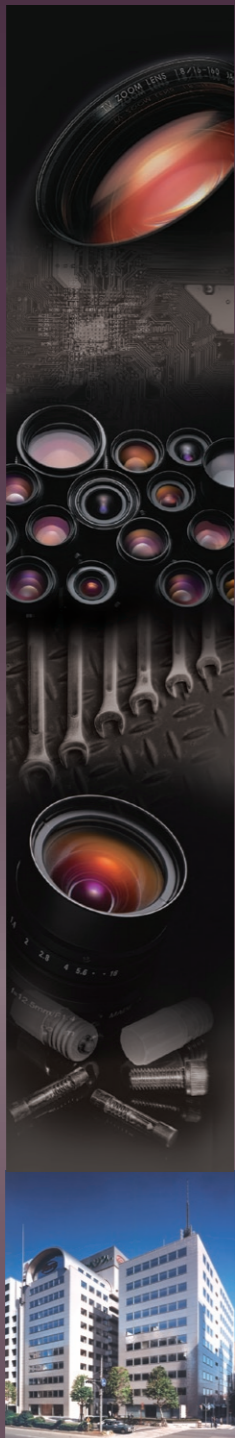




# INDUSTRIAL FA LENSES

2011 Ver1.1



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Technology

Function

Performance



# INDUSTRIAL FA LENSES



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## Function Icons

<b>FIXED</b> Fixed focal lens	<b>VARI</b> Varifocal lens	<b>4/3"</b> 4/3 inch format lens
<b>ZOOM</b> Manual zoom lens		<b>1"</b> 1 inch format lens
<b>10MEGA</b> Lens for 10megapixel camera	<b>MEGA</b> Lens for megapixel camera	<b>2/3"</b> 2/3 inch format lens
<b>3CCD</b> Lens for 3CCD camera		<b>1/1.8"</b> 1/1.8 inch format lens
<b>C</b> C-mount lens	<b>NF</b> NF-mount lens	<b>1/2"</b> 1/2 inch format lens
<b>METAL</b> Lens with metal body		<b>1/3"</b> 1/3 inch format lens
<b>FLOAT</b> Floating mechanism design	<b>LO-DIS</b> Low distortion	<b>fmm</b> Focal length (mm)
<b>KD</b> Extra low dispersion	<b>IR</b> Infrared	

## 4/3" MEGAPIXEL **NEW**

Large image circle of  $\Phi 23\text{mm}$  (C-Mount). Megapixel resolution is maintained throughout the entire image circle even if the iris is fully open. High precision aspherical lens greatly reduces distortion and produces a high definition picture. Kowa's wide-band multi-coating effectively reduces glare and refraction.



4/3" MEGA

## LARGE FORMAT NIR

Introducing the large format, IR corrected lens with broadband coating and low distortion. The LM50-IR will maintain its superior performance from visible to near-infrared wavelengths without focus shift. Available in F-mount or P-mount (M42X1).



NIR

## 10 MEGAPIXEL

200lp/mm resolution and low distortion will maximize performance of high-end inspection. Incorporating Kowa's broad band coating and floating mechanism design, the JC10M lens series will greatly reduce chromatic aberration from close distance to infinity and maintain a high transmission from visible to NIR.



10MEGA

## 1" FORMAT MEGAPIXEL SWIR

Incorporating Kowa's special coating technology, the 1" format HC-SW Series will maintain high transmission 800nm to 2000nm. Designed for Near Infrared and Short Wavelength Infrared (SWIR) applications.



SWIR

## NF-MOUNT **NEW**

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



NF MOUNT

## 3CCD LARGE FORMAT

These lenses are designed for use with 3CCD color line scan cameras and are useful in obtaining accurate color information. With a standard F-mount, they offer ultra high resolution, low chromatic aberration, and excellent corner brightness.



3CCD

## LINE SCAN

Introducing the new lineup of 4K line scan lens. This series will be suitable for high resolution, low distortion and close distance surface inspection using line scan cameras.



NEW LS

## WIDE MEGAPIXEL

This series of megapixel lenses offers super high resolution and utilizes the floating mechanism system. The wide angle 5mm megapixel lens will pave the way for new possibilities in machine vision systems.



WIDE MEGA

## 2/3" MEGAPIXEL

This series of megapixel lenses offers super high resolution and utilizes the floating mechanism system. Megapixel lens will pave the way for new possibilities in machine vision systems.



2/3" MEGA

## 1" MEGAPIXEL

Introducing the new lineup of megapixel lenses designed for 1 inch megapixel cameras. These lenses have low distortion, excellent light transmission and are also highly recommended for use with smaller format size cameras.



1" MEGA

## 2/3" JC

These lenses have supported many machine vision systems in recent years. The lenses have excellent resolution, and with focal lengths from 6mm to 100mm, they can be used in a variety of applications.



2/3" JC

## 1/2" NCL

With metal bodies and locking screws, the NCL series can be used in a variety of machine vision and robotics applications. These lenses are available for 1/2 inch format cameras.



1/2" NC

## 1" & 1/1.8" VARIFOCAL

Introducing the new lineup of megapixel varifocal lenses designed for 1 & 1/1.8 inch megapixel cameras. These varifocal lenses are compact and have low distortion.



VARIFOCAL

## TELECENTRIC

A telecentric optical system is often critical in machine vision systems. The LM50TC is a telecentric lens with zoom capabilities and an optic design specific to KOWA.



TELECENTRIC

## MACRO ZOOM

These zoom lenses are extremely useful in production processes, such as character recognition, pattern matching, measurement, and inspection. This series offers two zoom range types and a 3CCD version is also available.



MACRO

## 1/2" 3CCD MEGAPIXEL

Introducing the lineup of megapixel lens series specially designed for 1/2 inch 3CCD megapixel C-mount cameras. These lenses are designed to reproduce accurate color information with low chromatic aberration and low distortion.



NC3

# Megapixel Lens Series for 4/3 Sensors (Φ23mm Image Circle)

## NEW XC Series

### High Performance Large Format C-Mount Lens Series

#### Features of XC Series

- Large image circle of Φ 23mm (C-Mount).
- Megapixel resolution is maintained throughout the entire image circle even if the iris is fully open.
- High precision aspherical lens greatly reduces distortion and produces a high definition picture.
- Kowa's wide-band multi-coating effectively reduces glare and refraction.
- Kowa's floating mechanism design virtually eliminates optical aberrations from close distance to infinity.

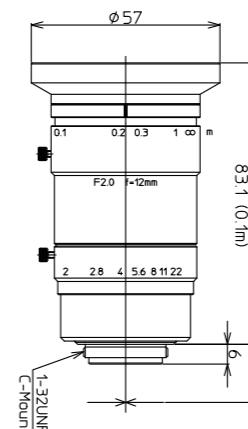


※ Images may differ from the actual product.

## 4/3" MEGAPIXEL

LM12XC | LM16XC | LM25XC | LM35XC | LM50XC

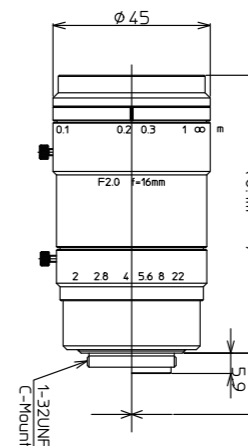
### NEW LM12XC



Model	LM12XC
Focal length (mm)	12
Image size (mm)	4/3" (Φ23)
Iris range (F-stop)	F2.0~F22
Focusing range (m)	0.1~∞
Control	Iris: Manual Focus: Manual
Shooting range at M.O.D.	182(H)×136(V)
Angle of view (degree)	4/3 inch: 74.9×59.6 1 inch: 55.9×43.1 2/3 inch: 39.8×30.2
Resolution (Center, Corner)	160lp/mm, 80lp/mm
Distortion (TV)	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

Specifications are subject to change without notice.

### NEW LM16XC

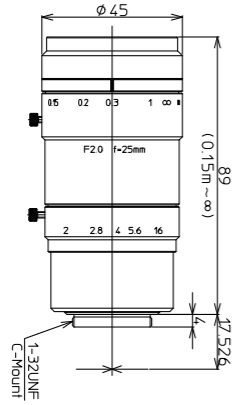


Model	LM16XC
Focal length (mm)	16
Image size (mm)	4/3" (Φ23)
Iris range (F-stop)	F2.0~F22
Focusing range (m)	0.1~∞
Control	Iris: Manual Focus: Manual
Shooting range at M.O.D.	135(H)×101(V)
Angle of view (degree)	4/3 inch: 60.6×47.2 1 inch: 44.0×33.6 2/3 inch: 30.9×23.4
Resolution (Center, Corner)	160lp/mm, 80lp/mm
Distortion (TV)	0.02%
Back focus in air (mm)	13.0
Mount	C-mount
Filter thread (mm)	M40.5×P0.5
Size (mm)	Φ45×79.5
Weight (g)	250
Temperature range	-10°C~+50°C

Specifications are subject to change without notice.

※ Images may differ from the actual product.

## NEW LM25XC

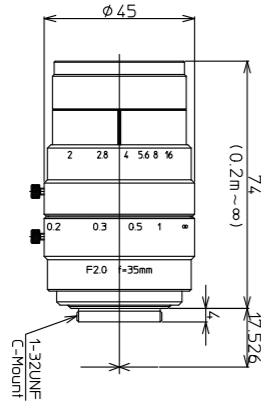


4/3" 25mm **FIXED** C-mt **METAL** **LO-DIS** **FLOAT** **XD**  
 Fixed focal C-mount Metal Body Low Distortion Floating Extra low dispersion

Model	LM25XC
Focal length (mm)	25
Image size (mm)	4/3" (Φ23)
Iris range (F-stop)	F2.0~F16
Focusing range (m)	0.15~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	125 (H) × 93 (V)
Angle of view	4/3 inch 40.9×31.1
(degree)	1 inch 28.9×21.8
2/3 inch	20.1×15.2
Resolution (Center, Corner)	160lp/mm, 80lp/mm
Distortion (TV)	-0.57%
Back focus in air (mm)	24.3
Mount	C-mount
Filter thread (mm)	M40.5×P0.5
Size (mm)	Φ45×89
Weight (g)	250
Temperature range	-10°C~+50°C

Specifications are subject to change without notice.

## NEW LM35XC

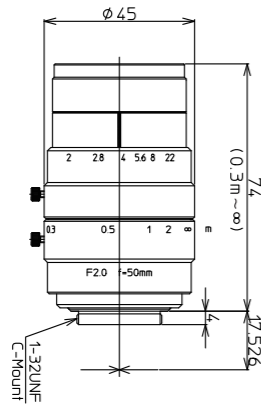


4/3" 35mm **FIXED** C-mt **METAL** **LO-DIS** **FLOAT**  
 Fixed focal C-mount Metal Body Low Distortion Floating

Model	LM35XC
Focal length (mm)	35
Image size (mm)	4/3" (Φ23)
Iris range (F-stop)	F2.0~F16
Focusing range (m)	0.2~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	100 (H) × 75 (V)
Angle of view	4/3 inch 29.6×22.4
(degree)	1 inch 20.8×15.6
2/3 inch	14.3×10.8
Resolution (Center, Corner)	160lp/mm, 80lp/mm
Distortion (TV)	-0.17%
Back focus in air (mm)	15.2
Mount	C-mount
Filter thread (mm)	M37.5×P0.5
Size (mm)	Φ45×74
Weight (g)	210
Temperature range	-10°C~+50°C

Specifications are subject to change without notice.

## NEW LM50XC



4/3" 50mm **FIXED** C-mt **METAL** **LO-DIS** **FLOAT**  
 Fixed focal C-mount Metal Body Low Distortion Floating

Model	LM50XC
Focal length (mm)	50
Image size (mm)	4/3" (Φ23)
Iris range (F-stop)	F2.0~F22
Focusing range (m)	0.3~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	100 (H) × 75 (V)
Angle of view	4/3 inch 20.6×15.7
(degree)	1 inch 14.6×11.0
2/3 inch	10.1×7.6
Resolution (Center, Corner)	160lp/mm, 80lp/mm
Distortion (TV)	-0.80%
Back focus in air (mm)	21.6
Mount	C-mount
Filter thread (mm)	M37.5×P0.5
Size (mm)	Φ45×74.0
Weight (g)	220
Temperature range	-10°C~+50°C

Specifications are subject to change without notice.

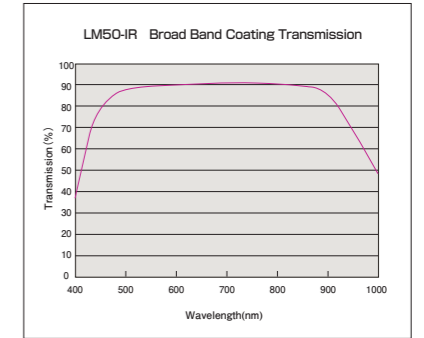
※ Images may differ from the actual product.

## Broad Band (Visible+NIR) Large Format Lens

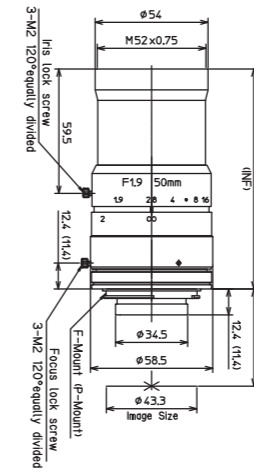
- ◆ IR corrected design
- ◆ Bright F-stop of F1.9
- ◆ Broad band coating
- ◆ Focus range from 0.5m to Infinity
- ◆ F-mount & P-mount (M42×1)

◀ (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)	Φ43.3
IR corrected design	400-1200nm
Iris range	F1.9~F16
Focusing range (m)	0.5~∞
Control Iris	Manual
Focus	Manual
TV Distortion at Φ43.3	-0.54%
at Φ22.5 (1.2" format)	-0.18%
at Φ16 (1" format)	-0.12%
Back focal length in air (mm)	34.6mm
Mechanical back focal length in air (mm)	34.1mm
Mount	Nikon F-mount or P-mount
Flange back (F-mount)	46.5mm
Flange back (P-mount, M42×1)	45.5mm
Filter thread (mm)	M52×0.75
Size (mm)	Φ58.5×105.2
Weight (g)	600
Temperature range	-10°C~+45°C

Nikon is a trademark of Nikon Corporation. Specifications are subject to change without notice. ※ Images may differ from the actual product.

### 1. Reduction of visible-NIR focus shift

Standard visible design lens

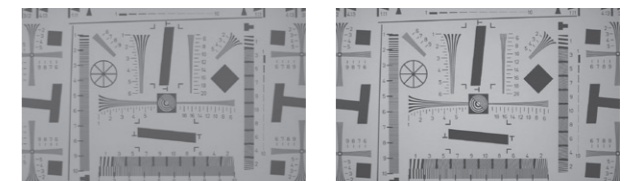


IR Corrected design lens LM50-IR



### 2. High Resolution inspection with NIR illumination

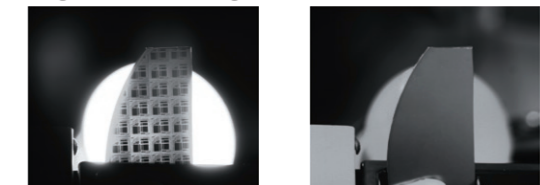
Standard lens LM50-IR



Maintains high resolution at NIR wavelength

### 3. Wafer inspection with NIR illumination

Image with NIR wavelength Image with visible wavelength



Able to see through wafers

※ Images may differ from the actual product.

# 10Megapixel Lens Series

## NEW JC10M Series

### High Resolution FA/MV Lens

#### Features of JC10M Series

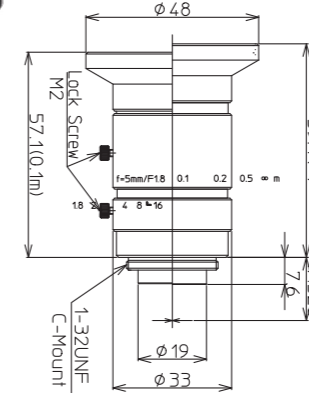
- 200lp/mm resolution and low distortion will maximize performance of high-end inspection.
- Incorporating Kowa's broad band coating and floating mechanism design, the JC10M lens series will greatly reduce chromatic aberration from close distance to infinity and maintain a high transmission from visible to NIR.
- Short minimum focus distance and compact design using aspherical lenses (5 models/f=5~25mm) will allow for easy installation in compact machine vision systems.



# 10 MEGAPIXEL HIGH RESOLUTION 2/3" LENS

LM5JC10M | LM8JC10M | LM12JC10M | LM16JC10M | LM25JC10M | LM35JC10M | LM50JC10M

### NEW LM5JC10M

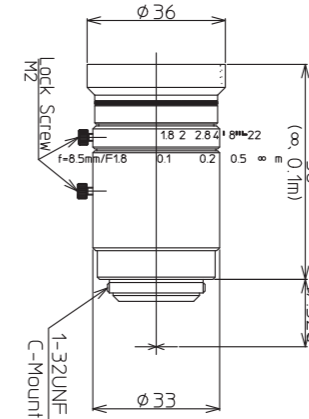


Model	LM5JC10M
Focal length (mm)	5
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.8~F16
Focusing range (m)	0.1~∞
Control	Iris: Manual Focus: Manual
Shooting range at M.O.D.	197.0 (H) × 147.0 (V)
Angle of view (degree)	2/3 inch: 82.2 × 66.5 1/2 inch: 64.9 × 51.1 1/3 inch: 51.1 × 39.5
Resolution (Center, Corner)	200lp/mm, 160lp/mm
Distortion (TV)	-0.33%
Back focus in air (mm)	10.3
Mount	C-mount
Filter thread (mm)	M46 × P0.75
Size (mm)	Φ48 × 57.1
Weight (g)	120
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.



### NEW LM8JC10M



Model	LM8JC10M
Focal length (mm)	8.5
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.8~F22
Focusing range (m)	0.1~∞
Control	Iris: Manual Focus: Manual
Shooting range at M.O.D.	133.2 (H) × 99.6 (V)
Angle of view (degree)	2/3 inch: 54 × 41.9 1/2 inch: 40.8 × 31.2 1/3 inch: 31.2 × 23.6
Resolution (Center, Corner)	200lp/mm, 160lp/mm
Distortion (TV)	0.31%
Back focus in air (mm)	12.1
Mount	C-mount
Filter thread (mm)	M34 × P0.5
Size (mm)	Φ36 × 56
Weight (g)	115
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.



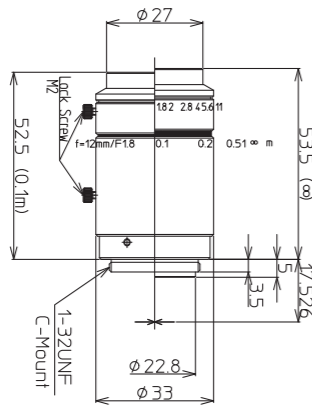
\* Images may differ from the actual product.

4/3" MEGA | NIR | 10MEGA | SWIR | NF MOUNT | 3CCD | NEW LS | WIDE MEGA | 2/3" MEGA | 1" MEGA | 2/3" JC | 1/2" NC | VARIOFOL | TELECENTRIC | MACRO | NC3

# 10 MEGAPIXEL HIGH RESOLUTION 2/3" LENS

LM5JC10M LM8JC10M LM12JC10M LM16JC10M LM25JC10M LM35JC10M LM50JC10M

## NEW LM12JC10M

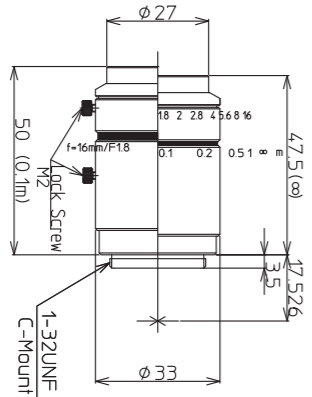


Model	LM12JC10M
Focal length (mm)	12
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.8~F11
Focusing range (m)	0.1~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	80.7 (H) × 60.2 (V)
Angle of view (degree)	2/3 inch 39.1 × 29.8 1/2 inch 28.9 × 21.9 1/3 inch 21.9 × 16.5
Resolution (Center, Corner)	200lp/mm, 160lp/mm
Distortion (TV)	-0.12%
Back focus in air (mm)	13.9
Mount	C-mount
Filter thread (mm)	M25.5 × P0.5
Size (mm)	Φ33 × 52.5
Weight (g)	105
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

**2/3" 12mm** **FIXED** **10MEGA** **C** **METAL** **LO-DIS** **FLOAT** **XD**  
Fixed focal 10Megapixel C-mount Metal Body Low Distortion Floating Extra low dispersion

## NEW LM16JC10M

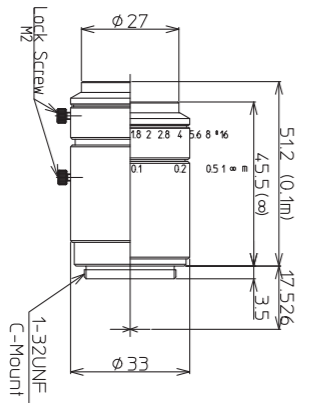


Model	LM16JC10M
Focal length (mm)	16
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.8~F16
Focusing range (m)	0.1~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	61.1 (H) × 45.7 (V)
Angle of view (degree)	2/3 inch 30 × 22.7 1/2 inch 22 × 16.6 1/3 inch 16.6 × 12.5
Resolution (Center, Corner)	200lp/mm, 160lp/mm
Distortion (TV)	-0.20%
Back focus in air (mm)	14.6
Mount	C-mount
Filter thread (mm)	M25.5 × P0.5
Size (mm)	Φ33 × 47.5
Weight (g)	90
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

**2/3" 16mm** **FIXED** **10MEGA** **C** **METAL** **LO-DIS** **FLOAT**  
Fixed focal 10Megapixel C-mount Metal Body Low Distortion Floating

## NEW LM25JC10M



Model	LM25JC10M
Focal length (mm)	25
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.8~F16
Focusing range (m)	0.1~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	36.7 (H) × 27.5 (V)
Angle of view (degree)	2/3 inch 20 × 15.1 1/2 inch 14.6 × 11 1/3 inch 11 × 8.2
Resolution (Center, Corner)	200lp/mm, 160lp/mm
Distortion (TV)	-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 ~ +45°C

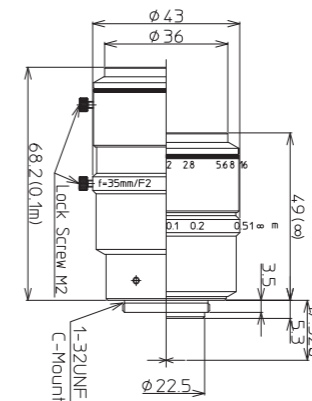
Specifications are subject to change without notice.

**2/3" 25mm** **FIXED** **10MEGA** **C** **METAL** **LO-DIS** **FLOAT**  
Fixed focal 10Megapixel C-mount Metal Body Low Distortion Floating

# 10 MEGAPIXEL HIGH RESOLUTION 2/3" LENS

LM5JC10M LM8JC10M LM12JC10M LM16JC10M LM25JC10M LM35JC10M LM50JC10M

## NEW LM35JC10M

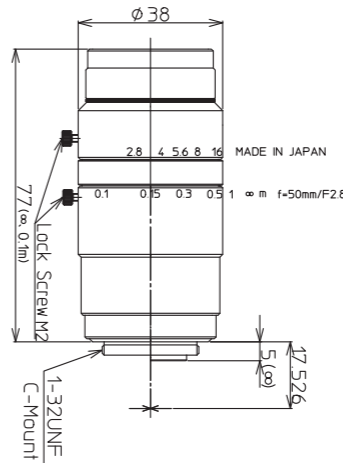


Model	LM35JC10M
Focal length (mm)	35
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F2.0~F16
Focusing range (m)	0.1~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	23.4 (H) × 17.6 (V)
Angle of view (degree)	2/3 inch 14.3 × 10.8 1/2 inch 10.4 × 7.8 1/3 inch 7.8 × 5.9
Resolution (Center, Corner)	200lp/mm, 160lp/mm
Distortion (TV)	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 ~ +45°C

Specifications are subject to change without notice.

**2/3" 35mm** **FIXED** **10MEGA** **C** **METAL** **LO-DIS** **FLOAT**  
Fixed focal 10Megapixel C-mount Metal Body Low Distortion Floating

## NEW LM50JC10M



Model	LM50JC10M
Focal length (mm)	50
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F2.8~F16
Focusing range (m)	0.1~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	19.1 (H) × 14.3 (V)
Angle of view (degree)	2/3 inch 10.1 × 7.6 1/2 inch 7.3 × 5.5 1/3 inch 5.5 × 4.1
Resolution (Center, Corner)	200lp/mm, 160lp/mm
Distortion (TV)	-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 ~ +45°C

Specifications are subject to change without notice.

**2/3" 50mm** **FIXED** **10MEGA** **C** **METAL** **LO-DIS** **FLOAT** **XD**  
Fixed focal 10Megapixel C-mount Metal Body Low Distortion Floating Extra low dispersion

### Diagram of M.O.D. / Magnification using 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

Specifications are subject to change without notice.

※ Images may differ from the actual product.

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4/3" MEGA NIR 10MEGA SWIR NF MOUNT 3CCD NEW LS WIDE MEGA 2/3" MEGA 1" MEGA 2/3" JC 1/2" NC VARIOFOL TELECENTRIC MACRO NC3

# 1" FORMAT MEGAPIXEL SWIR

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 maintain high transmission from 800nm to 2000nm.
- ◆ Designed for Near Infrared and Short Wavelength Infrared (SWIR) applications.



**NEW** LM8HC-SW



**1" 8mm** **FIXED** **MEGA** **C** **METAL** **IR**  
Fixed focal Megapixel C-mount Metal Body Infrared

# 1" FORMAT MEGAPIXEL SWIR

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

**NEW** LM25HC-SW



**1" 25mm** **FIXED** **MEGA** **C** **METAL** **IR**  
Fixed focal Megapixel C-mount Metal Body Infrared

**NEW** LM35HC-SW



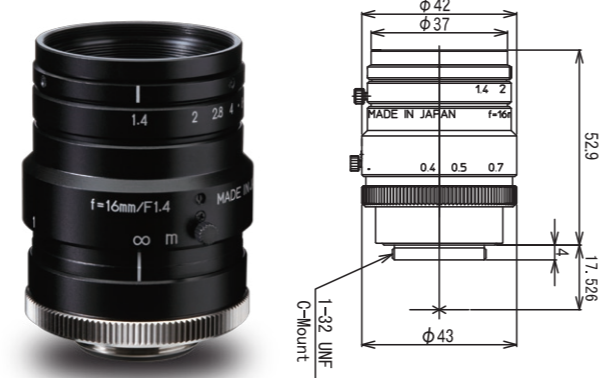
**1" 35mm** **FIXED** **MEGA** **C** **METAL** **IR**  
Fixed focal Megapixel C-mount Metal Body Infrared

**NEW** LM12HC-SW



**1" 12.5mm** **FIXED** **MEGA** **C** **METAL** **IR**  
Fixed focal Megapixel C-mount Metal Body Infrared

**NEW** LM16HC-SW

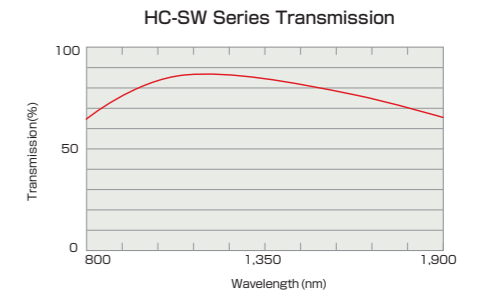


**1" 16mm** **FIXED** **MEGA** **C** **METAL** **IR**  
Fixed focal Megapixel C-mount Metal Body Infrared

**NEW** LM50HC-SW



**1" 50mm** **FIXED** **MEGA** **C** **METAL** **IR**  
Fixed focal Megapixel C-mount Metal Body Infrared



Model	LM8HC-SW	LM12HC-SW	LM16HC-SW
Focal length(mm)	8	12.5	16
Image size(mm)	1" (Φ16)	1" (Φ16)	1" (Φ16)
Iris range (F-stop)	F1.4~F16	F1.4~F16	F1.4~F16
Focusing range(m)	0.1~∞	0.3~∞	0.3~∞
Control	Iris: Manual	Manual	Manual
Focus	Manual	Manual	Manual
Angle of view (degree)	1 inch: 79.7×63.0 2/3 inch: 58.3×44.7 1/2 inch: 43.4×32.9	55.6×42.5 39.1×29.5 28.7×21.6	44.3×33.6 30.8×23.2 22.5×16.9
Resolution (Center, Corner)	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
Distortion (TV)	-1.2%	-1.5%	-1.0%
Back focus in air (mm)	11.2	12.6	12.6
Mount	C-mount	C-mount	C-mount
Filter thread (mm)	M55×P0.75	M35×P0.5	M35.5×P0.5
Size (mm)	Φ57×58	Φ42×52	Φ42×52.9
Weight (g)	200	150	140
Temperature range	-10°C~+45°C	-10°C~+45°C	-10°C~+45°C

Specifications are subject to change without notice.

※ Images may differ from the actual product.

Model	LM25HC-SW	LM35HC-SW	LM50HC-SW
Focal length(mm)	25	35	50
Image size(mm)	1" (Φ16)	1" (Φ16)	1" (Φ16)
Iris range (F-stop)	F1.4~F16	F1.4~F16	F1.4~F16
Focusing range(m)	0.3~∞	0.3~∞	0.5~∞
Control	Iris: Manual	Manual	Manual
Focus	Manual	Manual	Manual
Angle of view (degree)	1 inch: 29.3×22.0 2/3 inch: 20.2×15.1 1/2 inch: 14.7×11.0	20.9×15.8 14.4×10.8 10.5×7.8	14.5×10.8 10.0×7.54 7.3×5.4
Resolution (Center, Corner)	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm	120lp/mm, 80lp/mm
Distortion (TV)	-1.0%	-0.5%	0.05%
Back focus in air (mm)	16.5	16.8	14.8
Mount	C-mount	C-mount	C-mount
Filter thread (mm)	M35.5×P0.5	M35.5×P0.5	M40.5×P0.5
Size (mm)	Φ42×43	Φ42×43	Φ47.5×48
Weight (g)	125	130	200
Temperature range	-10°C~+45°C	-10°C~+45°C	-10°C~+45°C

Specifications are subject to change without notice.

※ Images may differ from the actual product.

4/3" MEGA NIR 10MEGA SWIR NF MOUNT 3CCD NEW LS WIDE MEGA 2/3" MEGA 1" MEGA 2/3" JC 1/2" NC VARIOFOL TELECENTRIC MACRO NC3

# NF MOUNT

LM3NF LM5NF LM9NF

◆ Introducing the new lineup of megapixel NF mount lens. The compact body and high resolution design will maximize the performance of NF mount camera.

## NEW LM3NF



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

Model	LM3NF
Focal length (mm)	2.7
Image size (mm)	1/3" (Φ6)
Iris range (F-stop)	F1.8~16
Angle of view (degree)	VER. 75.5° HOR. 100.8° DIA. 125.9°
Distortion (TV)	-7.3%
Shooting range at M.O.D. (mm)	VER. 164 HOR. 256 DIA. 412
Minimum focus distance (m)	0.1
Flange back in air (mm)	12
Back focus in air (mm)	7.83
Filter screw size	-
Front/Rear effective DIA. (mm)	F Φ16.2 R Φ8.4
Mount	NF-mount
Exit pupil (mm)	-17.9
Weight (g)	26
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

# 3CCD LARGE FORMAT

LM28CLS LM50CLS LM35CLS

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

## LM28CLS



**28mm FIXED 3CCD METAL**  
Fixed focal 3CCD camera Metal Body

Model	LM28CLS
Focal length (mm)	28
Image size (mm)	Φ30
Iris range (F-stop)	F2.8~F22
Focusing range (m)	0.5~∞
Control	Iris Manual Focus Manual
Distortion (TV)	-0.1%
Flange back in air (mm)	46.5
Mount	Nikon F-mount
Filter thread (mm)	M72×P0.75
Size (mm)	Φ75×108
Weight (g)	482

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## NEW LM5NF

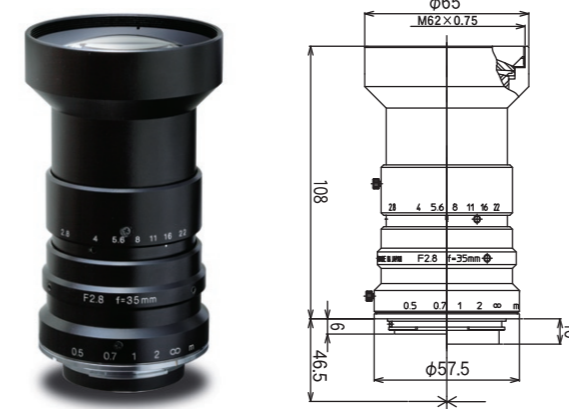


**1/3" 2.7mm FIXED MEGA NF METAL**  
Fixed focal Megapixel NF-mount Metal Body

Model	LM5NF
Focal length (mm)	4.5
Image size (mm)	1/3" (Φ6)
Iris range (F-stop)	F1.8~11
Angle of view (degree)	VER. 45.0° HOR. 59.2° DIA. 72.5°
Distortion (TV)	-2.8%
Shooting range at M.O.D. (mm)	VER. 89 HOR. 122 DIA. 158
Minimum focus distance (m)	0.1
Flange back in air (mm)	12
Back focus in air (mm)	8.11
Filter screw size	-
Front/Rear effective DIA. (mm)	F Φ12.4 R Φ6.4
Mount	NF-mount
Exit pupil (mm)	-44.3
Weight (g)	35
Temperature range	-10°C~+50°C

Specifications are subject to change without notice.

## LM35CLS



**35mm FIXED 3CCD METAL**  
Fixed focal 3CCD Camera Metal Body

Model	LM35CLS
Focal length (mm)	35
Image size (mm)	Φ30
Iris range (F-stop)	F2.8~F22
Focusing range (m)	0.5~∞
Control	Iris Manual Focus Manual
Distortion (TV)	0.06%
Flange back in air (mm)	46.5
Mount	Nikon F-mount
Filter thread (mm)	M62×P0.75
Size (mm)	Φ65×108
Weight (g)	480

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## NEW LM9NF



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

Model	LM9NF
Focal length (mm)	9
Image size (mm)	1/3" (Φ6)
Iris range (F-stop)	F1.8~11
Angle of view (degree)	VER. 22.8° HOR. 30.2° DIA. 37.6°
Distortion (TV)	-0.6%
Shooting range at M.O.D. (mm)	VER. 43 HOR. 58 DIA. 73
Minimum focus distance (m)	0.1
Flange back in air (mm)	12
Back focus in air (mm)	8.64
Filter screw size	-
Front/Rear effective DIA. (mm)	F Φ11.8 R Φ8.3
Mount	NF-mount
Exit pupil (mm)	-23.5
Weight (g)	40
Temperature range	-10°C~+50°C

Specifications are subject to change without notice.

## LM50CLS



**50mm FIXED 3CCD METAL**  
Fixed focal 3CCD Camera Metal Body

Model	LM50CLS
Focal length (mm)	50
Image size (mm)	Φ30
Iris Range (F-stop)	F2.8~F22
Focusing range (m)	0.5~∞
Control	Iris Manual Focus Manual
Distortion (TV)	-0.1%
Flange back in air (mm)	46.5
Mount	Nikon F-mount
Filter thread (mm)	M52×P0.75
Size (mm)	Φ58×63.5
Weight (g)	358

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\* Images may differ from the actual product.

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4/3" MEGA NIR 10MEGA SWIR NF MOUNT 3CCD NEW LS WIDE MEGA 2/3" MEGA 1" MEGA 2/3" JC 1/2" NC VARIOFOL TELECENTRIC MACRO NC3



# LINE SCAN

LM17LF LM28LF LM35LF LM50LF LM75LF

Optimized design for machine vision

- ◆ Large format (Image size 43.3mm)
- ◆ Low distortion
- ◆ Corresponds to 4K Line Scan Camera
- ◆ Suitable for close distance inspection



## NEW LM17LF

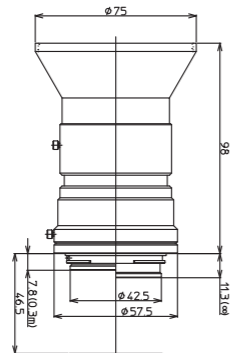


Model	LM17LF
Focal length (mm)	17
Image size (mm)	Φ43.3
Iris range (F-stop)	F2.8~F16
Focusing range (m)	0.3~∞
Control Iris	Manual
Focus	Manual
Distortion (TV)	-0.17%
Flange back in air (mm)	46.5
Mount	Nikon F-mount
Filter thread (mm)	-
Size (mm)	-
Weight (g)	-

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17mm **FIXED** **METAL** **LO-DIS** **MEGA**  
Fixed focal Metal Body Low Distortion Megapixel

## NEW LM28LF



Model	LM28LF
Focal length (mm)	28
Image size (mm)	Φ43.3
Iris range (F-stop)	F2.8~F16
Focusing range (m)	0.3~∞
Control Iris	Manual
Focus	Manual
Distortion (TV)	-0.17%
Flange back in air (mm)	46.5
Mount	Nikon F-mount or M48 mount
Filter thread (mm)	M72×P0.75
Size (mm)	Φ75×98
Weight (g)	500

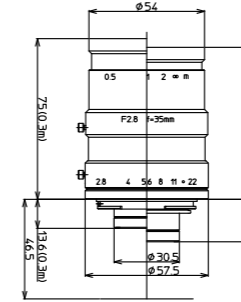
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28mm **FIXED** **METAL** **LO-DIS** **MEGA**  
Fixed focal Metal Body Low Distortion Megapixel

# LINE SCAN

LM17LF LM28LF LM35LF LM50LF LM75LF

## NEW LM35LF

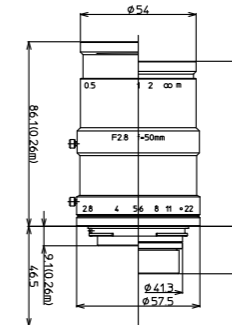


Model	LM35LF
Focal length (mm)	35
Image size (mm)	Φ43.3
Iris range (F-stop)	F2.8~F16
Focusing range (m)	0.26~∞
Control Iris	Manual
Focus	Manual
Distortion (TV)	-0.15%
Flange back in air (mm)	46.5
Mount	Nikon F-mount or M48 mount
Filter thread (mm)	M52×P0.75
Size (mm)	Φ54×71
Weight (g)	420

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35mm **FIXED** **METAL** **LO-DIS** **MEGA**  
Fixed focal Metal Body Low Distortion Megapixel

## NEW LM50LF

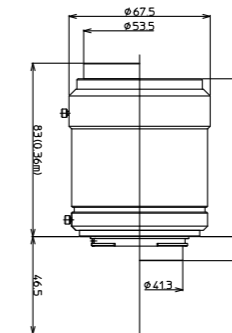


Model	LM50LF
Focal length (mm)	50
Image size (mm)	Φ43.3
Iris range (F-stop)	F2.8~F16
Focusing range (m)	0.26~∞
Control Iris	Manual
Focus	Manual
Distortion (TV)	-0.04%
Flange back in air (mm)	46.5
Mount	Nikon F-mount or M48 mount
Filter thread (mm)	M52×P0.75
Size (mm)	Φ54×77
Weight (g)	460

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50mm **FIXED** **METAL** **LO-DIS** **MEGA**  
Fixed focal Metal Body Low Distortion Megapixel

## NEW LM75LF



Model	LM75LF
Focal length (mm)	75
Image size (mm)	Φ43.3
Iris range (F-stop)	F2.8~F16
Focusing range (m)	0.36~∞
Control Iris	Manual
Focus	Manual
Distortion (TV)	-0.01%
Flange back in air (mm)	46.5
Mount	Nikon F-mount
Filter thread (mm)	M49×P0.75
Size (mm)	Φ67.5×75.5
Weight (g)	-

Nikon is a trademark of Nikon Corporation. Specifications are subject to change without notice.

75mm **FIXED** **METAL** **LO-DIS** **MEGA**  
Fixed focal Metal Body Low Distortion Megapixel

\* Images may differ from the actual product.

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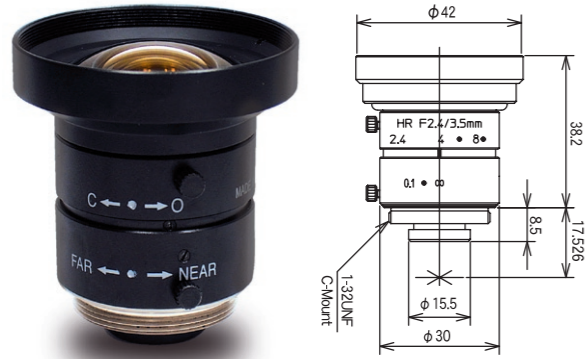
4/3" MEGA NIR 10MEGA SWIR NF MOUNT 3CCD NEW LS WIDE MEGA 2/3" MEGA 1" MEGA 2/3" JC 1/2" NC VARIOFOL TELECENTRIC MACRO NC3

# WIDE MEGAPIXEL HIGH RESOLUTION LENS

LM3NCM LM5JCM LM6NCM

- ◆ Wide angle
- ◆ For megapixel applications
- ◆ Low distortion
- ◆ Excellent corner brightness

## LM3NCM



**1/1.8" 3.5mm** **FIXED** **MEGA** **C** **METAL** **LO-DIS**  
Fixed focal Megapixel C-mount Metal Body Low Distortion

Model	LM3NCM
Focal length (mm)	3.5
Image size (mm)	1/1.8" (Φ9)
Iris range (F-stop)	F2.4~F14
Focusing range (m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	201(H)×151(V)
Angle of view (degree)	1/1.8 inch 89×73.8 1/2 inch 82.4×66.9 1/3 inch 66.9×52.7
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	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)	75
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

# 2/3" MEGAPIXEL HIGH RESOLUTION LENS

LM8JCM LM12JCM LM16JCM LM25JCM LM35JCM LM50JCM

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

Option : Model with iris & focus scales

## LM8JCM

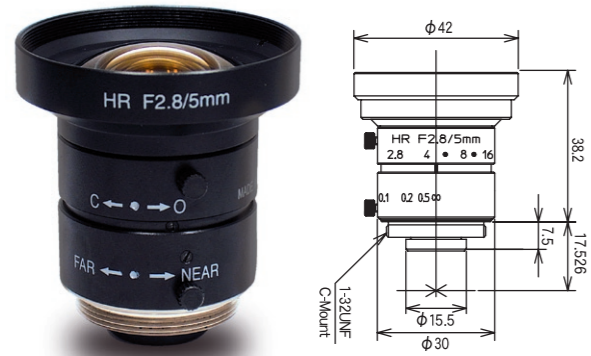


**2/3" 8mm** **FIXED** **MEGA** **C** **METAL**  
Fixed focal Megapixel C-mount Metal Body

Model	LM8JCM
Focal length (mm)	8
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.4~Close
Focusing range (m)	0.12~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	117.3(H)×88(V)
Angle of view (degree)	2/3 inch 56.5×43.9 1/2 inch 42.6×32.5 1/3 inch 32.5×24.6
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	-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)	83
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

## LM5JCM



**2/3" 5mm** **FIXED** **MEGA** **C** **METAL** **LO-DIS**  
Fixed focal Megapixel C-mount Metal Body Low Distortion

Model	LM5JCM
Focal length (mm)	5
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F2.8~F16
Focusing range (m)	0.15~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	288.3(H)×216.9(V)
Angle of view (degree)	2/3 inch 82.4×66.9 1/2 inch 65.2×51.3 1/3 inch 51.3×39.6
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	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)	75
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

## LM12JCM



**2/3" 12mm** **FIXED** **MEGA** **C** **METAL**  
Fixed focal Megapixel C-mount Metal Body

Model	LM12JCM
Focal length (mm)	12
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.4~Close
Focusing range (m)	0.15~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	110(H)×82.5(V)
Angle of view (degree)	2/3 inch 38.3×26.2 1/2 inch 28.3×21.4 1/3 inch 21.4×16.1
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	-0.07%
Back focus in air (mm)	11.7
Mount	C-mount
Filter thread (mm)	M27×P0.5
Size (mm)	Φ34×37
Weight (g)	75
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

## LM6NCM



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

Model	LM6NCM
Focal length (mm)	6
Image size (mm)	1/2" (Φ8)
Iris range (F-stop)	F1.2~Close
Focusing range (m)	0.1~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	148.2(H)×118.5(V)
Angle of view (degree)	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
Distortion (TV)	-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~+45°C

Specifications are subject to change without notice.

## LM16JCM



**2/3" 16mm** **FIXED** **MEGA** **C** **METAL** **FLOAT**  
Fixed focal Megapixel C-mount Metal Body Floating

Model	LM16JCM
Focal length (mm)	16
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.2~∞
Control Iris	Manual
Focus	Manual
Shooting range at M.O.D.	112.8(H)×84.4(V)
Angle of view (degree)	2/3 inch 30.0×22.7 1/2 inch 21.8×16.4 1/3 inch 16.4×12.3
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	-0.05%
Back focus in air (mm)	13.1
Mount	C-mount
Filter thread (mm)	M25.5×P0.5
Size (mm)	Φ33×36.5
Weight (g)	81
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

※ Images may differ from the actual product.

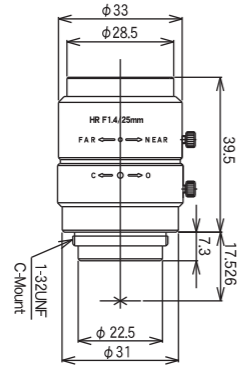
※ Images may differ from the actual product.

4/3" MEGA  
NIR  
10MEGA  
SWIR  
NF MOUNT  
3CCD  
NEW LS  
WIDE MEGA  
2/3" MEGA  
1" MEGA  
2/3" JC  
1/2" NC  
VARIFOCAL  
TELECENTRIC  
MACRO  
NC3

# 2/3" MEGAPIXEL HIGH RESOLUTION LENS

LM8JCM LM12JCM LM16JCM LM25JCM LM35JCM LM50JCM

## LM25JCM

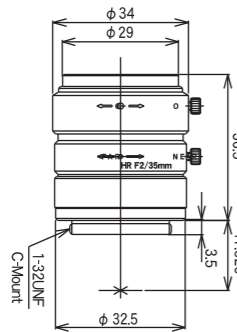


**2/3" 25mm** **FIXED** **MEGA** **C** **METAL** **FLOAT**  
Fixed focal Megapixel C-mount Metal Body Floating

Model	LM25JCM
Focal length (mm)	25
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.2~∞
Control	Iris: Manual Focus: Manual
Shooting range at M.O.D.	71.1 (H) × 53.3 (V)
Angle of view (degree)	2/3 inch: 19.6 × 14.8 1/2 inch: 14.0 × 10.5 1/3 inch: 10.5 × 7.9
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	-0.04%
Back focus in air (mm)	11.1
Mount	C-mount
Filter thread (mm)	M27 × P0.5
Size (mm)	Φ33 × 39.5
Weight (g)	89
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

## LM35JCM

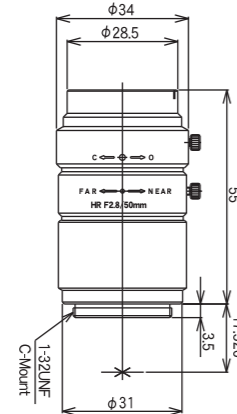


**2/3" 35mm** **FIXED** **MEGA** **C** **METAL** **FLOAT**  
Fixed focal Megapixel C-mount Metal Body Floating

Model	LM35JCM
Focal length (mm)	35
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F2.0~F16
Focusing range (m)	0.2~∞
Control	Iris: Manual Focus: Manual
Shooting range at M.O.D.	47.9 (H) × 35.8 (V)
Angle of view (degree)	2/3 inch: 14.4 × 10.8 1/2 inch: 10.5 × 7.9 1/3 inch: 7.9 × 5.9
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	-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)	89
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

## LM50JCM



**2/3" 50mm** **FIXED** **MEGA** **C** **METAL** **FLOAT**  
Fixed focal Megapixel C-mount Metal Body Floating

Model	LM50JCM
Focal length (mm)	50
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F2.8~F22
Focusing range (m)	0.2~∞
Control	Iris: Manual Focus: Manual
Shooting range at M.O.D.	29.3 (H) × 21.9 (V)
Angle of view (degree)	2/3 inch: 9.6 × 7.2 1/2 inch: 7.0 × 5.2 1/3 inch: 5.2 × 3.9
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	-0.03%
Back focus in air (mm)	35.5
Mount	C-mount
Filter thread (mm)	M27 × P0.5
Size (mm)	Φ34 × 55
Weight (g)	92
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

Diagram of M.O.D. / Magnification using close up ring

Model	LM8JCM	LM12JCM	LM16JCM	LM25JCM	LM35JCM	LM50JCM
(Non) M.O.D./Magnification	120mm/×0.06	150mm/×0.08	200mm/×0.08	200mm/×0.12	200mm/×0.18	200mm/×0.30
(1mm Ring) M.O.D./Magnification	35mm/×0.18	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

Specifications are subject to change without notice.

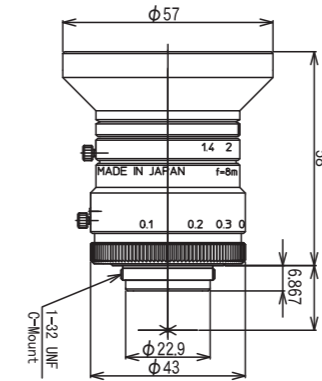
\* Images may differ from the actual product.

# 1" MEGAPIXEL HIGH RESOLUTION LENS

LM8HC LM12HC LM16HC LM25HC LM35HC LM50HC LM75HC

- ◆ Wide product range: 7 lenses in series
- ◆ For Large format 1" megapixel applications
- ◆ High performance compact lenses
- ◆ Excellent corner brightness
- ◆ Low distortion

## LM8HC

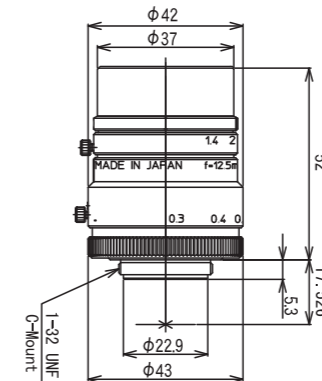


**1" 8mm** **FIXED** **MEGA** **C** **METAL**  
Fixed focal Megapixel C-mount Metal Body

Model	LM8HC
Focal length (mm)	8
Image size (mm)	1" (Φ16)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.1~∞
Control	Iris: Manual Focus: Manual
Angle of view (degree)	1 inch: 79.7 × 63.0 2/3 inch: 58.3 × 44.7 1/2 inch: 43.4 × 32.9
Resolution (Center, Corner)	120lp/mm, 80lp/mm
Distortion (TV)	-1.2%
Back focus in air (mm)	11.2
Mount	C-mount
Filter thread (mm)	M55 × P0.75
Size (mm)	Φ57 × 58
Weight (g)	200
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

## LM12HC

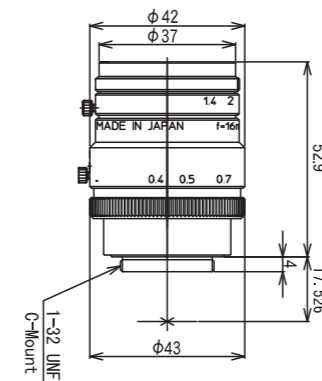


**1" 12.5mm** **FIXED** **MEGA** **C** **METAL**  
Fixed focal Megapixel C-mount Metal Body

Model	LM12HC
Focal length (mm)	12.5
Image size (mm)	1" (Φ16)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.3~∞
Control	Iris: Manual Focus: Manual
Angle of view (degree)	1 inch: 55.6 × 42.5 2/3 inch: 39.1 × 29.5 1/2 inch: 28.7 × 21.6
Resolution (Center, Corner)	120lp/mm, 80lp/mm
Distortion (TV)	-1.5%
Back focus in air (mm)	12.6
Mount	C-mount
Filter thread (mm)	M35 × P0.5
Size (mm)	Φ42 × 52
Weight (g)	150
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

## LM16HC



**1" 16mm** **FIXED** **MEGA** **C** **METAL**  
Fixed focal Megapixel C-mount Metal Body

Model	LM16HC
Focal length (mm)	16
Image size (mm)	1" (Φ16)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.3~∞
Control	Iris: Manual Focus: Manual
Angle of view (degree)	1 inch: 44.3 × 33.6 2/3 inch: 30.8 × 23.2 1/2 inch: 22.5 × 16.9
Resolution (Center, Corner)	120lp/mm, 80lp/mm
Distortion (TV)	-1.0%
Back focus in air (mm)	12.6
Mount	C-mount
Filter thread (mm)	M35.5 × P0.5
Size (mm)	Φ42 × 52.9
Weight (g)	140
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

\* Images may differ from the actual product.

4/3" MEGA  
NIR  
10MEGA  
SWIR  
NF MOUNT  
3CCD  
NEW LS  
WIDE MEGA  
2/3" MEGA  
1" MEGA  
2/3" JC  
1/2" NC  
VARIFOCAL  
TELECENTRIC  
MACRO  
NC3

# 1" MEGAPIXEL HIGH RESOLUTION LENS

LM8HC LM12HC LM16HC LM25HC LM35HC LM50HC LM75HC

LM25HC



1" 25mm FIXED MEGA C METAL  
Fixed focal Megapixel C-mount Metal Body

LM35HC



1" 35mm FIXED MEGA C METAL  
Fixed focal Megapixel C-mount Metal Body

LM50HC



1" 50mm FIXED MEGA C METAL  
Fixed focal Megapixel C-mount Metal Body

LM75HC



1" 75mm FIXED MEGA C METAL  
Fixed focal Megapixel C-mount Metal Body

Model	LM25HC	LM35HC	LM50HC	LM75HC
Focal length (mm)	25	35	50	75
Image size (mm)	1" (Φ16)	1" (Φ16)	1" (Φ16)	1" (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~∞
Control	Iris: Manual	Iris: Manual	Iris: Manual	Iris: Manual
	Focus: Manual	Focus: Manual	Focus: Manual	Focus: Manual
Angle of view (degree)	1inch: 29.3×22.0 2/3 inch: 20.2×15.1 1/2 inch: 14.7×11.0	1inch: 20.9×15.8 2/3 inch: 14.4×10.8 1/2 inch: 10.5×7.8	1inch: 14.5×10.8 2/3 inch: 10.0×7.54 1/2 inch: 7.3×5.4	1inch: 9.7×7.3 2/3 inch: 6.68×5.03 1/2 inch: 4.8×3.6
Resolution(Center, Corner)	120lp/mm,80lp/mm	120lp/mm,80lp/mm	120lp/mm,80lp/mm	120lp/mm,80lp/mm
Distortion (TV)	-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)	Φ42×43	Φ42×43	Φ47.5×48	Φ48×57
Weight (g)	125	130	200	180
Temperature range	-10°C~+45°C	-10°C~+45°C	-10°C~+45°C	-10°C~+45°C

Specifications are subject to change without notice.

## Diagram of M.O.D. / Magnification using close up ring

Model	LM8HC	LM12HC	LM16HC	LM25HC	LM35HC	LM50HC	LM75HC
(Non) M.O.D./Magnification	100mm/×0.07	300mm/×0.04	300mm/×0.05	300mm/×0.08	300mm/×0.12	500mm/×0.11	500mm/×0.16
(1mm Ring) M.O.D./Magnification	-	93mm/×0.12	134mm/×0.11	200mm/×0.12	243mm/×0.15	424mm/×0.13	465mm/×0.17
(5mm Ring) M.O.D./Magnification	-	-	-	83mm/×0.28	138mm/×0.26	269mm/×0.20	364mm/×0.23
(10mm Ring) M.O.D./Magnification	-	-	-	-	91mm/×0.40	189mm/×0.30	289mm/×0.29
(20mm Ring) M.O.D./Magnification	-	-	-	-	124mm/×0.50	209mm/×0.43	-

Specifications are subject to change without notice.

※ Images may differ from the actual product.

# 2/3" JC COMPACT LENS

LM6JC LM8JC LM12JC LM16JC LM25JC LM35JC LM50JC LM75JC LM100JC

- ◆ High resolution
- ◆ Low distortion
- ◆ Excellent cost performance

- ◆ Compact, lightweight and durable
- ◆ Excellent corner brightness

LM6JC



2/3" 6mm FIXED C METAL  
Fixed focal C-mount Metal Body

LM8JC



2/3" 8mm FIXED C METAL  
Fixed focal C-mount Metal Body

LM12JC



2/3" 12mm FIXED C METAL  
Fixed focal C-mount Metal Body

Model	LM6JC
Focal length (mm)	6
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.1~∞
Control	Iris: Manual
	Focus: Manual
Shooting range at M.O.D.	367 (H)×251 (V)
Angle of view (degree)	2/3 inch: 81.9×61.2 1/2 inch: 59.4×44.5 1/3 inch: 44.5×33.3
Resolution(Center, Corner)	100lp/mm,60lp/mm
Distortion (TV)	-10.7%
Back focus in air (mm)	11.30
Mount	C-mount
Filter thread (mm)	-
Size (mm)	Φ30×32.8
Weight (g)	63
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

Model	LM8JC
Focal length (mm)	8
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.1~∞
Control	Iris: Manual
	Focus: Manual
Shooting range at M.O.D.	260 (H)×184 (V)
Angle of view (degree)	2/3 inch: 64.2×47.7 1/2 inch: 46.2×34.6 1/3 inch: 34.5×28.6
Resolution(Center, Corner)	100lp/mm,60lp/mm
Distortion (TV)	-6.2%
Back focus in air (mm)	11.30
Mount	C-mount
Filter thread (mm)	M27×P0.5
Size (mm)	Φ30×30
Weight (g)	60
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

Model	LM12JC
Focal length (mm)	12
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.1~∞
Control	Iris: Manual
	Focus: Manual
Shooting range at M.O.D.	237 (H)×173 (V)
Angle of view (degree)	2/3 inch: 42.5×31.7 1/2 inch: 30.7×23.0 1/3 inch: 23.0×17.2
Resolution(Center, Corner)	100lp/mm,60lp/mm
Distortion (TV)	-2.5%
Back focus in air (mm)	11.12
Mount	C-mount
Filter thread (mm)	M27×P0.5
Size (mm)	Φ30×31.5
Weight (g)	63
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

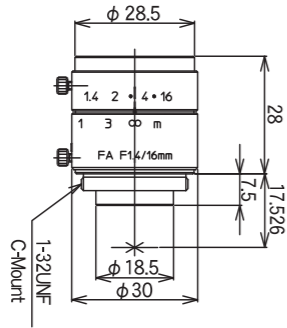
※ Images may differ from the actual product.

4/3" MEGA  
NIR  
10MEGA  
SWIR  
NE MOUNT  
3CCD  
NEW LS  
WIDE MEGA  
2/3" MEGA  
1" MEGA  
2/3" JC  
1/2" NC  
VARIFOCAL  
TELECENTRIC  
MACRO  
NC3

# 2/3" JC COMPACT LENS

LM6JC LM8JC LM12JC LM16JC LM25JC LM35JC LM50JC LM75JC LM100JC

## LM16JC

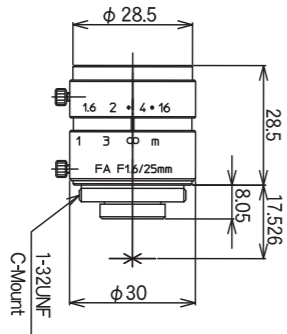


**2/3" 16mm** **FIXED** **C** **METAL**  
Fixed focal C-mount Metal Body

Model	LM16JC
Focal length (mm)	16
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.4~F16
Focusing range (m)	0.2~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	111.8(H)×82.6(V)
Angle of view (degree)	2/3 inch 30.5×22.8 1/2 inch 22.2×16.6 1/3 inch 16.6×12.4
Resolution (Center, Corner)	100lp/mm, 60lp/mm
Distortion (TV)	-1.5%
Back focus in air (mm)	12.15
Mount	C-mount
Filter thread (mm)	M27×P0.5
Size (mm)	Φ30×28
Weight (g)	55
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

## LM25JC

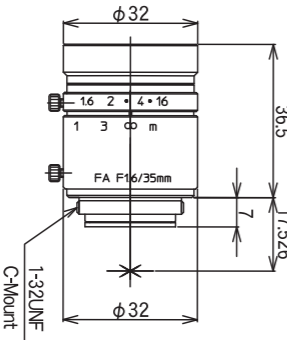


**2/3" 25mm** **FIXED** **C** **METAL**  
Fixed focal C-mount Metal Body

Model	LM25JC
Focal length (mm)	25
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.6~F16
Focusing range (m)	0.2~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	119(H)×89(V)
Angle of view (degree)	2/3 inch 21.0×15.7 1/2 inch 15.3×11.4 1/3 inch 11.5×8.6
Resolution (Center, Corner)	100lp/mm, 60lp/mm
Distortion (TV)	-0.6%
Back focus in air (mm)	10.32
Mount	C-mount
Filter thread (mm)	M27×P0.5
Size (mm)	Φ30×28.5
Weight (g)	58
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

## LM35JC



**2/3" 35mm** **FIXED** **C** **METAL**  
Fixed focal C-mount Metal Body

Model	LM35JC
Focal length (mm)	35
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F1.6~F16
Focusing range (m)	0.35~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	126.6(H)×94.7(V)
Angle of view (degree)	2/3 inch 14.4×10.8 1/2 inch 10.5×7.9 1/3 inch 7.9×5.9
Resolution (Center, Corner)	100lp/mm, 60lp/mm
Distortion (TV)	-0.2%
Back focus in air (mm)	14.9
Mount	C-mount
Filter thread (mm)	M30.5×P0.5
Size (mm)	Φ32×36.5
Weight (g)	85
Temperature range	-10°C~+45°C

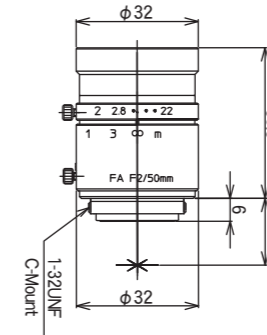
Specifications are subject to change without notice.

\* Images may differ from the actual product.

# 2/3" JC COMPACT LENS

LM6JC LM8JC LM12JC LM16JC LM25JC LM35JC LM50JC LM75JC LM100JC

## LM50JC

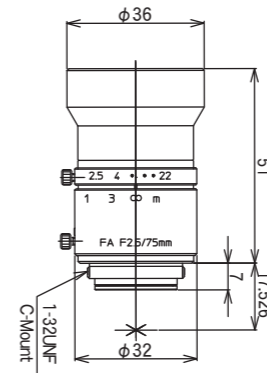


**2/3" 50mm** **FIXED** **C** **METAL**  
Fixed focal C-mount Metal Body

Model	LM50JC
Focal length (mm)	50
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F2.0~F22
Focusing range (m)	0.5~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	85.0(H)×63.6(V)
Angle of view (degree)	2/3 inch 10.1×7.6 1/2 inch 7.3×5.5 1/3 inch 5.5×4.1
Resolution (Center, Corner)	100lp/mm, 60lp/mm
Distortion (TV)	-0.1%
Back focus in air (mm)	17.2
Mount	C-mount
Filter thread (mm)	M30.5×P0.5
Size (mm)	Φ32×39.5
Weight (g)	88
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

## LM75JC

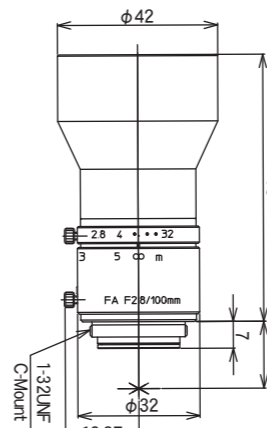


**2/3" 75mm** **FIXED** **C** **METAL**  
Fixed focal C-mount Metal Body

Model	LM75JC
Focal length (mm)	75
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F2.5~F22
Focusing range (m)	1.2~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	50.8(H)×38.1(V)
Angle of view (degree)	2/3 inch 6.7×5.0 1/2 inch 4.9×3.7 1/3 inch 3.7×2.8
Resolution (Center, Corner)	100lp/mm, 60lp/mm
Distortion (TV)	-0.1%
Back focus in air (mm)	18.0
Mount	C-mount
Filter thread (mm)	M34×P0.5
Size (mm)	Φ36×51
Weight (g)	105
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

## LM100JC



**2/3" 100mm** **FIXED** **C** **METAL**  
Fixed focal C-mount Metal Body

Model	LM100JC
Focal length (mm)	100
Image size (mm)	2/3" (Φ11)
Iris range (F-stop)	F2.8~F32
Focusing range (m)	2.0~∞
Control	Iris Manual Focus Manual
Shooting range at M.O.D.	36.8(H)×27.6(V)
Angle of view (degree)	2/3 inch 5.0×3.8 1/2 inch 3.7×2.8 1/3 inch 2.8×2.1
Resolution (Center, Corner)	100lp/mm, 60lp/mm
Distortion (TV)	-0.05%
Back focus in air (mm)	19.0
Mount	C-mount
Filter thread (mm)	M40.5×P0.5
Size (mm)	Φ42×70
Weight (g)	150
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

### Diagram of M.O.D. / Magnification using close up ring

Model	LM8JC	LM12JC	LM16JC	LM25JC	LM35JC	LM50JC	LM75JC	LM100JC
(Non) M.O.D./Magnification	100mm/×0.06	100mm/×0.11	200mm/×0.08	200mm/×0.11	300mm/×0.12	500mm/×0.10	1200mm/×0.07	2000mm/×0.05
(1mm Ring) M.O.D./Magnification	—	50mm/×0.19	110mm/×0.14	136mm/×0.15	240mm/×0.14	422mm/×0.12	1010mm/×0.08	1700mm/×0.06
(5mm Ring) M.O.D./Magnification	—	—	—	46mm/×0.31	132mm/×0.26	264mm/×0.20	630mm/×0.13	1060mm/×0.10
(10mm Ring) M.O.D./Magnification	—	—	—	—	84mm/×0.40	183mm/×0.30	440mm/×0.20	740mm/×0.15
(20mm Ring) M.O.D./Magnification	—	—	—	—	—	117mm/×0.50	285mm/×0.34	480mm/×0.25

Specifications are subject to change without notice.

\* Images may differ from the actual product.

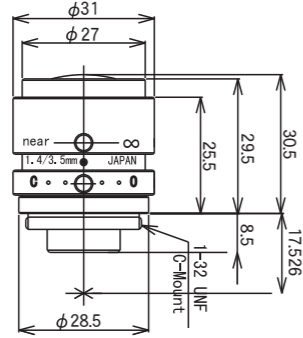
4/3" MEGA NIR 10MEGA SWIR NF MOUNT 3CCD NEW LS WIDE MEGA 2/3" MEGA 1" MEGA 2/3" JC 1/2" NC VARIOFOL TELECENTRIC MACRO NC3

# 1/2" NCL WIDE ANGLE LENS

LM4NCL LM5NCL LM6NCL LM12NCL

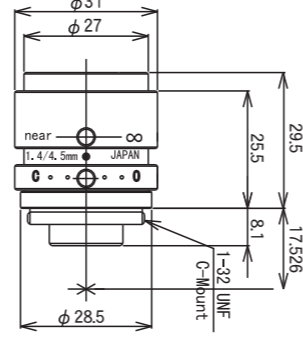
- ◆ 4 wide angle lenses
- ◆ Metal body
- ◆ Locking screws

LM4NCL



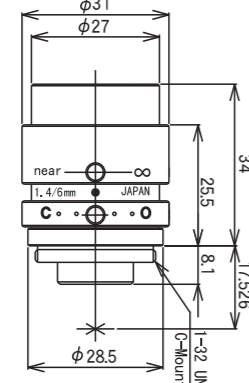
1/2" 3.5mm FIXED C METAL  
Fixed focal C-mount Metal Body

LM5NCL



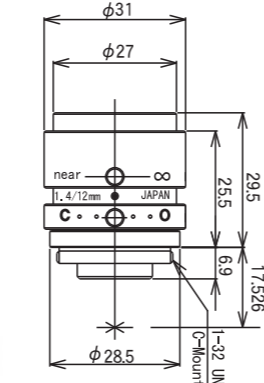
1/2" 4.5mm FIXED C METAL  
Fixed focal C-mount Metal Body

LM6NCL



1/2" 6mm FIXED C METAL  
Fixed focal C-mount Metal Body

LM12NCL



1/2" 12mm FIXED C METAL  
Fixed focal C-mount Metal Body

Model	LM4NCL	LM5NCL	LM6NCL	LM12NCL
Focal length (mm)	3.5	4.5	6	12
Image size (mm)	1/2" (Φ8)	1/2" (Φ8)	1/2" (Φ8)	1/2" (Φ8)
Iris range (F-stop)	F1.4~F16	F1.4~F16	F1.4~F16	F1.4~F16
Focusing range (m)	0.2~∞	0.2~∞	0.2~∞	0.3~∞
Control	Manual	Manual	Manual	Manual
Focus	Manual	Manual	Manual	Manual
Shooting range at M.O.D.	396 (H) × 247 (V)	260 (H) × 180 (V)	174 (H) × 128 (V)	167 (H) × 123 (V)
Angle of view (degree)	2/3 inch: — 1/2 inch: 103.6×76.6 1/3 inch: 77×57.7	2/3 inch: — 1/2 inch: 79.0×59.4 1/3 inch: 59.7×45.1	2/3 inch: — 1/2 inch: 57.3×44.0 1/3 inch: 44.2×33.7	2/3 inch: — 1/2 inch: 30.7×23.0 1/3 inch: 23.0×17.2
Resolution (Center, Corner)	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm
Distortion (TV)	-28.0%	-17.5%	-1.0%	-0.8%
Back focus in air (mm)	8.89	9.96	9.46	11.12
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)	73	71	60	70
Temperature range	-10°C~+45°C	-10°C~+45°C	-10°C~+45°C	-10°C~+45°C

Specifications are subject to change without notice.

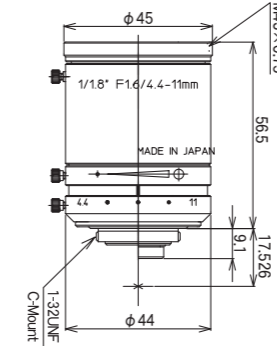
\* Images may differ from the actual product.

# 1" & 1/1.8" VARIFOCAL HIGH RESOLUTION LENS

LMVZ4411 LMVZ1040 LMVZ166HC

- ◆ For 1" & 1/1.8" megapixel applications
- ◆ Varifocal series
- ◆ Low distortion
- ◆ Excellent corner brightness

LMVZ4411

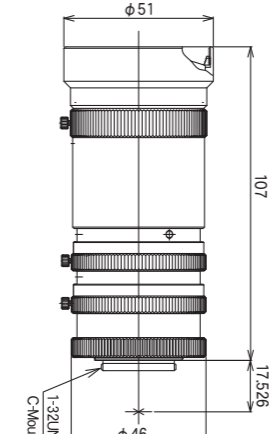


1/1.8" 4.4-11mm VARI MEGA C METAL LO-DIS  
Varifocal Megapixel C-mount Metal Body Low Distortion

Model	LMVZ4411
Focal length (mm)	4.4~11 (2.5x)
Image size (mm)	1/1.8" (Φ9)
Iris range (F-stop)	F1.6~F16
Focusing range (m)	0.3~∞
Control	Manual
Focus	Manual
Angle of view (degree)	2/3 inch: — 1/1.8 inch: W76.6X61.2/T36.7X28.0 1/2 inch: W70.1X55.5/T32.9X25.0
Distortion (TV)	W-0.2%/T0.35%
Back focus in air (mm)	W8.75/T14.48
Mount	C-mount
Filter thread (mm)	M43×P0.75
Size (mm)	Φ45×56.5
Weight (g)	125
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

LMVZ1040

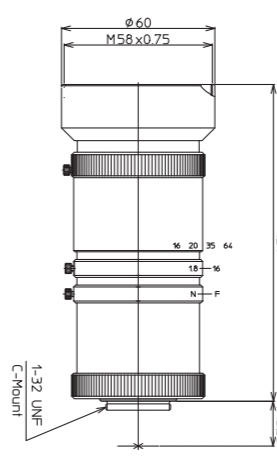


1/1.8" 10-40mm VARI MEGA C METAL LO-DIS  
Varifocal Megapixel C-mount Metal Body Low Distortion

Model	LMVZ1040
Focal length (mm)	10~40 (4.0x)
Image size (mm)	1/1.8" (Φ9)
Iris range (F-stop)	F1.6~F16
Focusing range (m)	0.5~∞
Control	Manual
Focus	Manual
Angle of view (degree)	2/3 inch: — 1/1.8 inch: W39.5X22.5/T10.5X7.9 1/2 inch: W35.3X26.8/T9.4X7.0
Distortion (TV)	W-0.17%/T0.10%
Back focus in air (mm)	16.56
Mount	C-mount
Filter thread (mm)	M49×0.75
Size (mm)	Φ51×107
Weight (g)	280
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

LMVZ166HC (Build-to-order manufacturing)



1" 16-64mm VARI MEGA C METAL  
Varifocal Megapixel C-mount Metal Body

Model	LMVZ166HC
Focal length (mm)	16~64 (4x)
Image size (mm)	1" (Φ16)
Iris range (F-stop)	F1.8~F16
Focusing range (m)	1.0~∞
Control	Manual
Focus	Manual
Angle of view (degree)	1 inch: W45.9X34.2/T11.7X8.8 2/3 inch: W31.3X23.4/T8.1X6.1 1/2 inch: W22.7X17.0/T5.9X4.4
Distortion (TV)	W-3.4%/T0.2%
Back focus in air (mm)	W28.2/T33.6
Mount	C-mount
Filter thread (mm)	M58×0.75
Size (mm)	Φ60×124
Weight (g)	370
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

LMVZ is a trademark of Kowa Company, Ltd.  
\* Images may differ from the actual product.

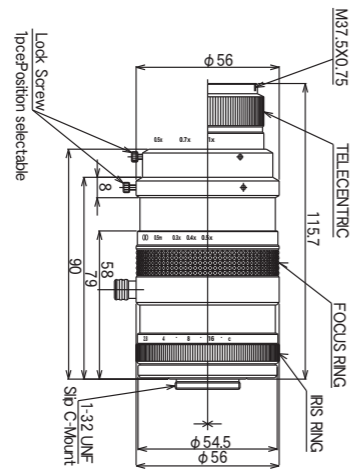
4/3" MEGA NIR 10MEGA SWIR 1MEGA NE MOUNT 3CCD NEW LS WIDE MEGA 2/3" MEGA 1" MEGA 2/3" JC 1/2" NC VARIFOCAL TELECENTRIC MACRO NC3

# TELECENTRIC

LM50TC

- ◆ Telecentric lens with variable magnification
- ◆ Wide telecentric "magnification" range from 0.5x to 1.0x
- ◆ 0.3x for macro use

## LM50TC



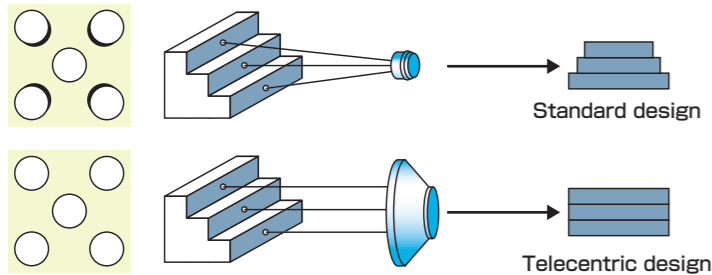
Model	LM50TC
Focal length (mm)	50
Image size (mm)	2/3" (Φ8)
Iris range (F-stop)	F2.8~Close
Focusing range (m)	0.085~∞
Control	Iris: Manual Focus: Manual
Magnification	0.5x~1.0x
Angle of view (degree)	2/3 inch: 10x7.5 1/2 inch: 7.3x5.5 1/3 inch: 5.5x4.1
Corner brightness	97%
Distortion (TV)	0.1% (1.0x) -0.3% (0.5x)
Back focus in air (mm)	22.0
Mount	C-mount
Filter thread (mm)	M37.5xP0.5
Size (mm)	Φ56x115.7
Weight (g)	317
Temperature range	-10°C~+45°C

Specifications are subject to change without notice.

※ Images may differ from the actual product.

2/3" 50mm C METAL

### Telecentric Optical System



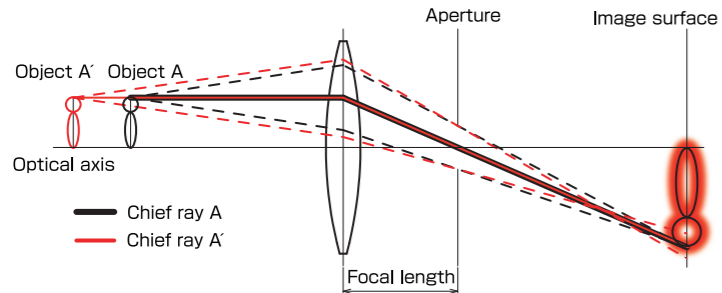
### Telecentric Optical System

In a telecentric optical system, there is no change in magnification when focusing, and magnification is constant over working distances. Thus movement of an object does not change magnification. Therefore, it is suitable 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 focusing the rays. Therefore, its F-number tends to be bigger, in comparison with that of megapixel lenses.

### 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



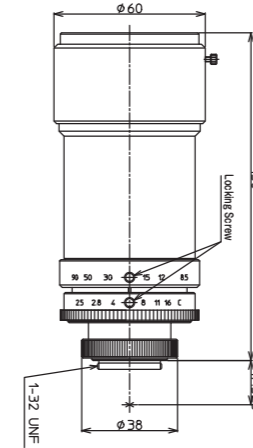
※ Images may differ from the actual product.

# MACRO ZOOM

LMZ50M LMZ45T3 LMZ68M LMZ69M

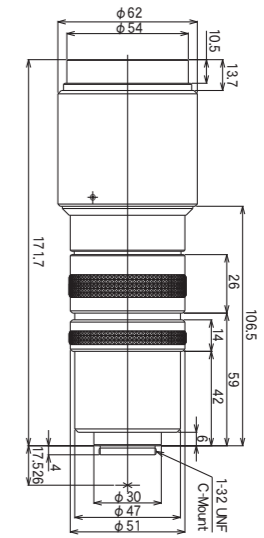
- ◆ Two zoom ranges (6x and 10x)
- ◆ Excellent for pattern matching, measurement, inspection, and character recognition

## LMZ50M



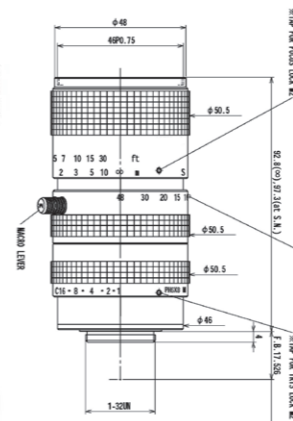
1/3" 8.5-90mm ZOOM C METAL

## LMZ45T3



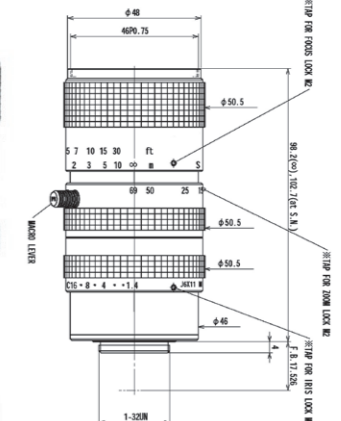
2/3" 18-108mm ZOOM C METAL

## LMZ68M



1/2" 8-48mm ZOOM C METAL

## LMZ69M



2/3" 11.5-69mm ZOOM C METAL

Model	LMZ50M	LMZ68M	LMZ69M	LMZ45T3
Focal length (mm)	8.5~90 (10.6x)	8~48 (6x)	11.5~69 (6x)	18~108 (6x)
Image size (mm)	1/3" (Φ6)	1/2" (Φ8)	2/3" (Φ11)	2/3" (Φ11)
Iris range (F-stop)	F2.5~Close	F1.0 ~Close	F1.4~Close	F2.5~Close
Focusing range (m)	0.3~∞ 0.15~0.3 (with close up lens)	0.5~∞ (0.01 at Macro)	0.5~∞ (0.01 at Macro)	0.3~∞ 0.13~0.3 (with close up lens)
Control	Iris: Manual Focus: Manual	Manual	Manual	Manual
Angle of view (degree)	2/3 inch: - 1/2 inch: - 1/3 inch: W31.3x23.5/T3.2x2.4	2/3 inch: - 1/2 inch: W43.6x33.4/T7.7x5.7 1/3 inch: -	2/3 inch: W14.9x32.0/T7.3x5.5	2/3 inch: W27.3x20.5/T4.7x3.5 1/2 inch: W20.5x15.4/T3.5x2.6 1/3 inch: W15.4x11.6/T2.6x2.0
Resolution (Center, Corner)	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm	100lp/mm, 60lp/mm
Distortion (TV)	W-1.2%/T0.1%	-	-	W-0.7%/T0.1%
Back focus in air (mm)	25.49	14.56	17.93	19.23
Mount	C-mount	C-mount	C-mount	C-mount
Filter thread (mm)	M48xP0.75	M46x0.75	M46x0.75	M52xP0.75
Size (mm)	Φ60x130	Φ48x97.3	Φ48x102.7	Φ62x171.7
Weight (g)	437	280	300	595
Temperature range	-10°C~+45°C	-10°C~+45°C	-10°C~+45°C	-10°C~+45°C

Specifications are subject to change without notice.

※ Images may differ from the actual product.

4/3" MEGA  
NIR  
10MEGA  
SWIR  
NF MOUNT  
3CCD  
NEW LS  
WIDE MEGA  
2/3" MEGA  
1" MEGA  
2/3" JC  
1/2" NC  
VARIFOCAL  
TELECENTRIC  
MACRO  
NC3

# 1/2" 3CCD MEGAPIXEL

LM4NC3 LM6NC3 LM12NC3 LM25NC3 LM50NC3

- ◆ For 1/2" & 1/3" 3CCD C-mount cameras
- ◆ Wide product range: 5 lenses in series
- ◆ For megapixel applications
- ◆ Low distortion
- ◆ Excellent corner brightness
- ◆ Low chromatic aberration



# 1/2" 3CCD MEGAPIXEL

LM4NC3 LM6NC3 LM12NC3 LM25NC3 LM50NC3

## LM6NC3



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

## LM12NC3



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

## LM25NC3



1/2" 25mm FIXED MEGA 3CCD C METAL  
Fixed focal Megapixel 3CCD Camera C-mount Metal Body

## LM50NC3



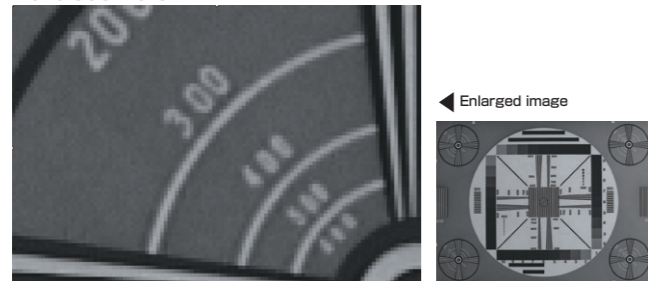
1/2" 50mm FIXED MEGA 3CCD C METAL  
Fixed focal Megapixel 3CCD Camera C-mount Metal Body

Model	LM6NC3	LM12NC3	LM25NC3	LM50NC3
Focal length (mm)	6	12	25	50
Image size (mm)	1/2" (Φ8)	1/2" (Φ8)	1/2" (Φ8)	1/2" (Φ8)
Iris range (F-stop)	F1.8~F16	F1.8~F16	F1.8~F16	F1.8~F16
Focusing range (m)	0.1~∞	0.15~∞	0.2~∞	0.3~∞
Control Iris	Manual	Manual	Manual	Manual
Control Focus	Manual	Manual	Manual	Manual
Shooting range at M.O.D.	117 (H) × 95 (V)	89 (H) × 66 (V)	56 (H) × 42 (V)	39 (H) × 29 (V)
1/2 inch	83.4 × 64.5	30.4 × 22.8	14.6 × 11.0	7.0 × 5.3
1/3 inch	64.5 × 49.2	22.8 × 17.2	11.0 × 8.2	5.3 × 4.0
Resolution (Center, Corner)	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm	120lp/mm, 100lp/mm
Distortion (TV)	-5.0%	-0.90%	-0.17%	0.01%
Back focus in air (mm)	14.7	15.2	15.0	21.2
Mount	C-mount	C-mount	C-mount	C-mount
Filter thread (mm)	M46 × P0.75 (Option)	M27 × P0.5	M27 × P0.5	M35.5 × P0.5
Size (mm)	Φ34 × 66.3	Φ30 × 58.5	Φ30 × 47	Φ40 × 66
Weight (g)	111	99	75	50
Temperature range	-10°C ~ +45°C	-10°C ~ +45°C	-10°C ~ +45°C	-10°C ~ +45°C

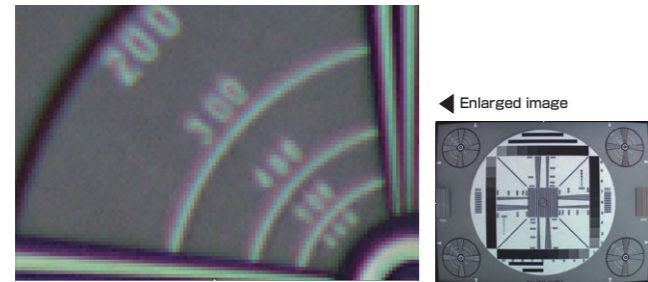
Specifications are subject to change without notice.

## Quality comparison between Kowa 3CCD lens and normal lens

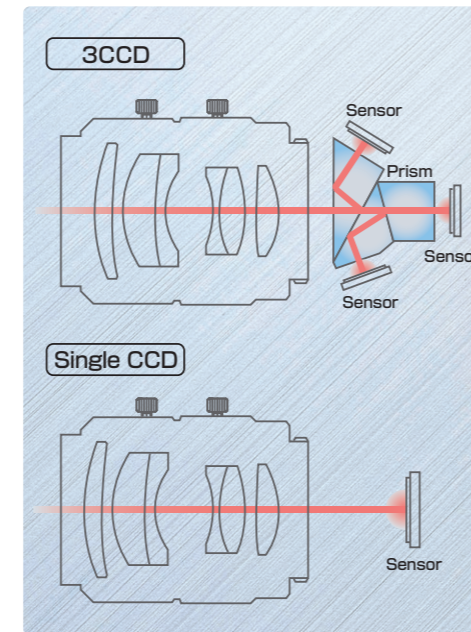
Kowa 3CCD lens



Normal lens



## Diagram of 3CCD designed lens



## LM4NC3



Model	LM4NC3
Focal length (mm)	4
Image size (mm)	1/2" (Φ8)
Iris range (F-stop)	F1.8~F16
Focusing range (m)	0.1~∞
Control Iris	Manual
Control Focus	Manual
Shooting range at M.O.D.	201 (H) × 142 (V)
1/2 inch	83.4 × 64.5
1/3 inch	64.5 × 49.2
Resolution (Center, Corner)	120lp/mm, 100lp/mm
Distortion (TV)	-5.0%
Back focus in air (mm)	14.7
Mount	C-mount
Filter thread (mm)	M46 × P0.75 (Option)
Size (mm)	Φ34 × 66.3
Weight (g)	111
Temperature range	-10°C ~ +45°C

Specifications are subject to change without notice.

1/2" 4mm FIXED MEGA 3CCD C METAL  
Fixed focal Megapixel 3CCD Camera C-mount Metal Body

※ Images may differ from the actual product.

※ Images may differ from the actual product.

4/3" MEGA NIR 10MEGA SWIR NF MOUNT 3CCD NEW LS WIDE MEGA 2/3" MEGA 1" MEGA 2/3" JC 1/2" NC VARIOFOL TELECENTRIC MACRO NC3





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

- LM.....KOWA CCTV lenses
- LMZ.....KOWA Zoom lenses
- LMVZ.....KOWA Varifocal lenses

② Represents focal length ( fixed focal length lenses)

③ Represents format sizes and lens type

- XC ..... 4/3 inch format size megapixel lens
- CLS ..... 3CCD color line scan lens
- HC ..... 1 inch format size megapixel lens
- HC-SW ..... 1 inch format SWIR lens
- JC ..... 2/3 inch format size lens
- JCM ..... 2/3 inch format size megapixel lens
- NCL ..... 1/2 inch format size lens
- NCM ..... 1/2 inch format size megapixel lens
- M ..... Macro lens
- TC ..... Telecentric lens
- NC3 ..... 1/2 inch format 3CCD megapixel lens
- IR ..... Near Infrared 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.

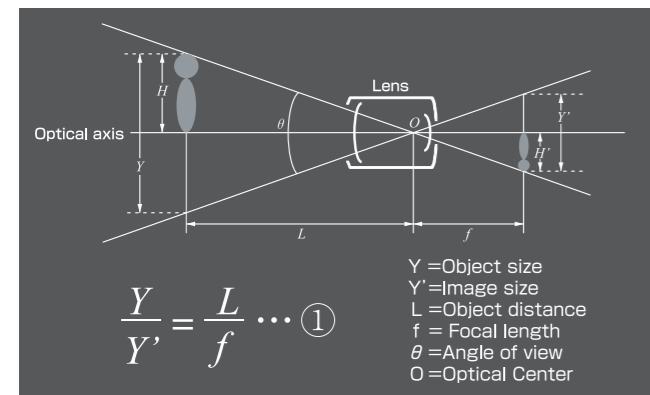
### Quick selection - How to calculate field of view

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 field 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 high.

<Characteristics of lenses are described below>

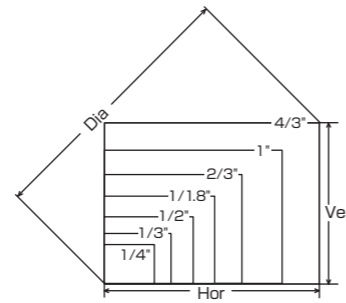


- Object size..... Field range which can be captured by the image sensor
- Image size ..... See description
- Object distance Distance from the lens to the object
- Focal length ..... Distance from the optical center to the focus point
- Angle of view ..... This angle represents a shooting range in degrees.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

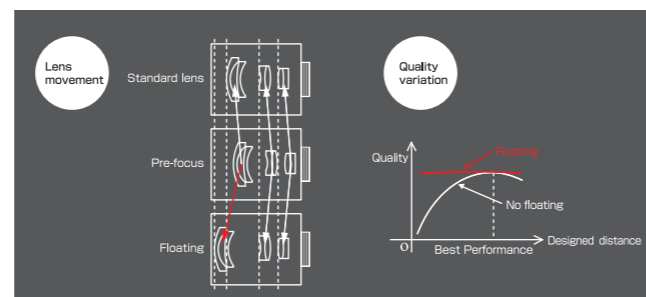
- Increasing the F-number (darker) increases the depth.
- Shortening the focal length increases the depth.
- Lengthening the object distance increases the depth.

### 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, one 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



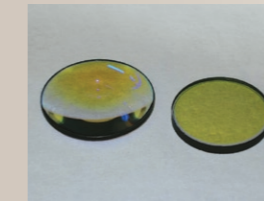
Aspherical lens processing machine



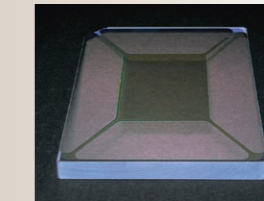
Ultra-precision processing machine



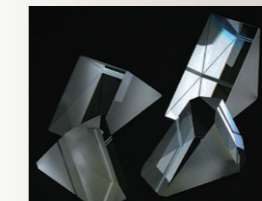
Spherical and Aspherical lenses



YAG laser cut optical devices



Special mirrors



Special prisms



Optical devices with special coatings



Ultra-precision optical devices

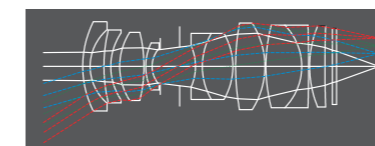
# Design & Development

### 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.

