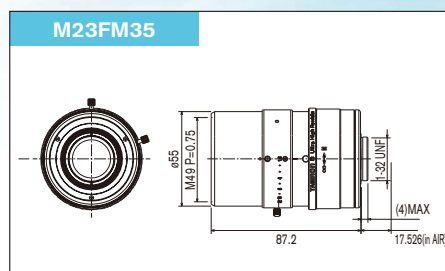
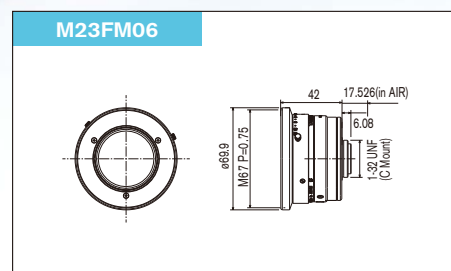
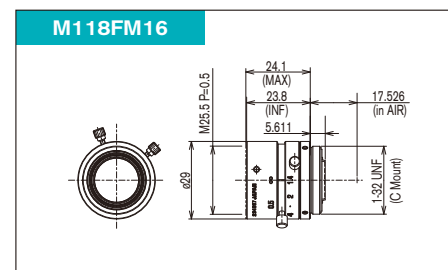
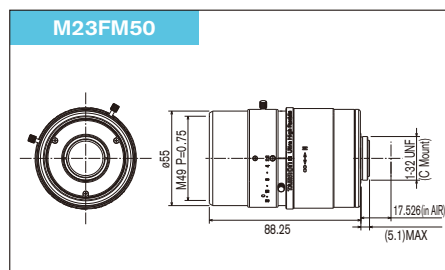
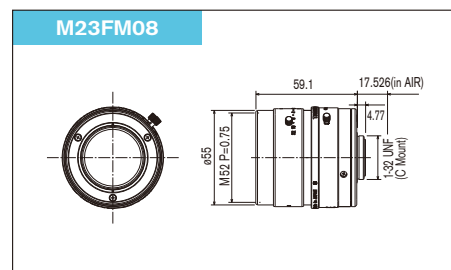
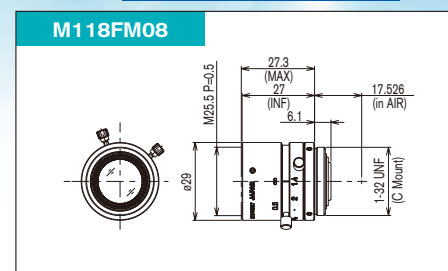


DIMENSIONS

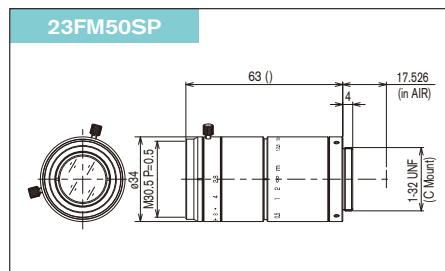
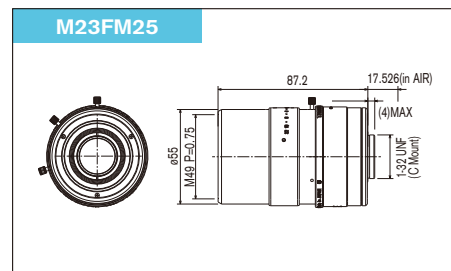
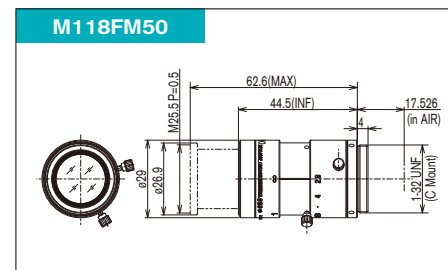
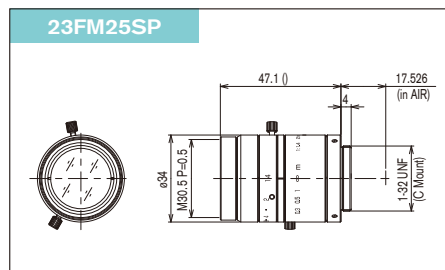
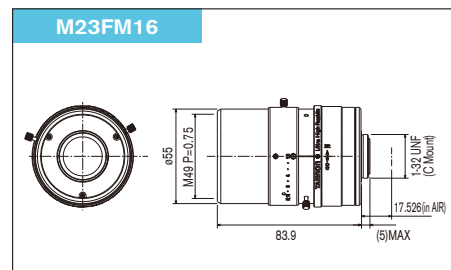
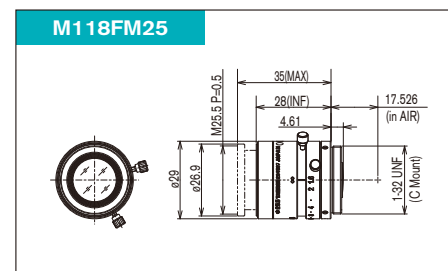
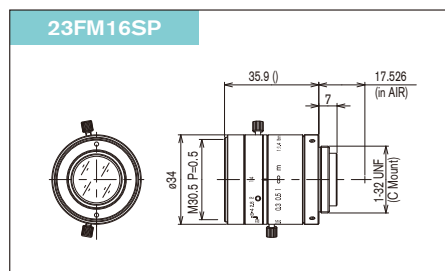
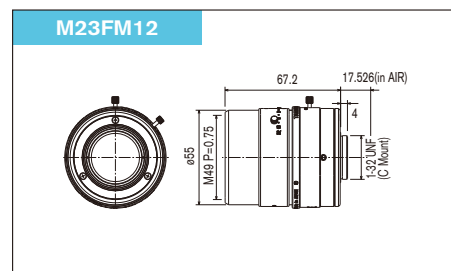
2/3" **2.5μm pixel pitch**



1/1.8" 4μm pixel pitch



2/3" **4μm pixel pitch**



Mega-Pixel Machine Vision / FA Lens Series

Ultra High Resolution Fixed-Focal Lenses for Mega-Pixel Cameras



These Ultra High Resolution Lenses deliver outstanding optical quality with enhanced performance from center to periphery of the image. The best choice for Machine Vision and FA (Factory Automation) applications.

High performance

Minimized Distortion

Enhanced performance in the close-focus range

 Caution : Please read the instruction manual carefully before using the camera.

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Management on Quality and Environment :
Tamron is certified with international standards: ISO 9001 for quality and ISO 14001 for environmental management at its headquarters, domestic sales offices, China plant as well as three production facilities in Amori, Japan, and is fully committed to striving for continued and sustainable improvement at all levels and facets of its business operations.



● Specifications subject to change without notice 2013,12
FAG-EG-222-1312-0030

Machine vision lens featuring with superior optical technology

Tamron's Mega-Pixel Machine Vision Lens Series provide outstanding optical quality and enhanced performance in close-focus situations and meet the needs of diverse image processing applications

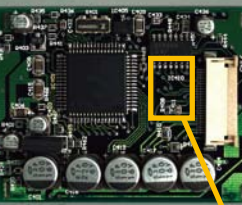
2/3" Ultra High Resolution Fixed-Focal Lens Series

Compatible with MP camera 2.5μm pixel pitch

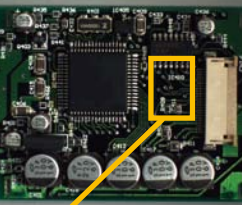
2/3" cameras 1/1.8" cameras 1/2" cameras 1/3" cameras

2.5μm* Pixel Pitch sensor

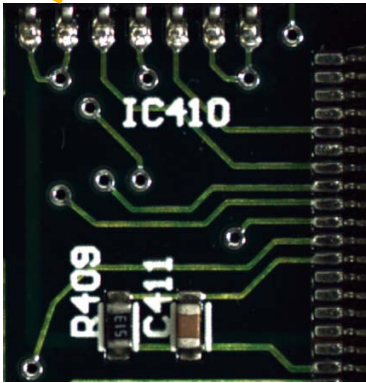
By supporting a 2.5μm pixel pitch, the lens maintains high resolution from center to corner. This lens series offers superior optical performance with resolution in the mega-pixel range even in the periphery of the image, and can be used for various applications such as inspection of small component, and inspection of detailed particles. In addition, each lens in the series provides high quality images with minimized distortion. *design value



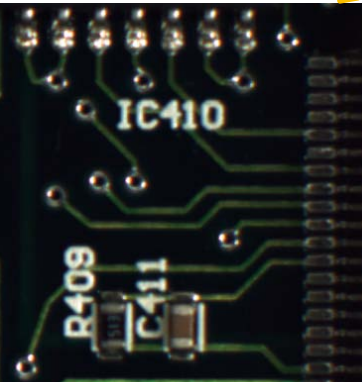
2.5μm Pixel Pitch Sensor (50mm Lens)



SD (50mm Lens)



5MP Camera + Ultra High Resolution Lens
= Resolution is Clear to the Corner



5MP Camera + SD Lens
= Not Enough Resolution

Shortened MOD

The Minimum Object Distance(MOD) is 10cm for f=6, 8, 12, 16, 25mm and 15cm for 35 and 50mm lens. Thanks to the reduced minimum focus distance, troublesome use of extension ring can be reduced. Even with high resolution 2.5μm pixel pitch sensor size, the lens pitch sensor size, the lens provides close-up ability.

Detailed focus adjustment

Newly designed mechanics enable a larger rotation angle for the focus making detailed focus adjustments that are necessary for higher resolution easy.

								
Model		M23FM06	M23FM08	M23FM12	M23FM16	M23FM25	M23FM35	M23FM50
Imager Size		2/3						
Mount		C						
Focal Length		6mm	8mm	12mm	16mm	25mm	35mm	50mm
Aperture Range		F/1.8~22						
Field of View (Horizontal x Vertical)		2/3 74.3°x58.4° 1/2 56.8°x43.6° 1/3 43.6°x33.1°	58.5°x45.1° 43.8°x33.3° 33.3°x25.2°	40.5°x30.9° 30.0°x22.7° 22.7°x17.1°	30.1°x22.8° 22.1°x16.6° 16.6°x12.5°	20.0°x15.1° 14.6°x11.0° 11.0°x8.2°	14.4°x10.8° 10.5°x7.8° 7.8°x5.9°	10.1°x7.6° 7.3°x5.5° 5.5°x4.1°
TV Distortion		Less than -2.1%	Less than -1.5%	Less than -0.4%	Less than -0.2%	Less than -0.14%	Less than -0.09%	Less than -0.03%
Focus Range		0.1m ~ ∞						0.15m ~ ∞
Operation		Focus Iris	Manual w/Lock Manual w/Lock					
Filter Size		M67 P=0.75	M52 P=0.75	M49 P=0.75				
Back Focus (in air)		12.03mm	14.13mm	16.68mm	13.49mm	14.10mm	14.49mm	13.68mm
Weight		240g	280g	333g	358g	380g	388g	374g
Operating Temperature		-10~+70℃						

2/3" Mega-Pixel Machine Vision / FA Lens Series

Compatible with cameras with resolution in the mega-pixel range 4μm pixel pitch

2/3" cameras 1/1.8" cameras 1/2" cameras 1/3" cameras

- Perfectly suited for use with high-end cameras with resolution in the mega-pixel range.
- Excellent not only in the close-focus range, but also throughout the entire focal length.
- Three lock screw positions are provided for ease of set up and effective space utilization. (Iris)
- All lenses in the series use the same filter diameter. (ø30.5 mm)



Model	23FM16SP	23FM25SP	23FM50SP
Imager Size	2/3	2/3	2/3
Mount	C	C	C
Focal Length	16mm	25mm	50mm
Aperture Range	1.4~22	1.4~22	2.8~32
Angle of View (Horizontal x Vertical)	2/3" : 30.9° × 23.4° 1/2" : 22.7° × 17.1° 1/3" : 17.1° × 12.9°	2/3" : 20.0° × 15.1° 1/2" : 14.6° × 11.0° 1/3" : 11.0° × 8.2°	2/3" : 10.1° × 7.6° 1/2" : 7.3° × 5.5° 1/3" : 5.5° × 4.1°
TV Distortion	Less than -0.1%	Less than -0.05%	Less than -0.01%
Focus Range	0.15m~	0.15m~	0.2m~
Operation	Focus: Manual w/Lock Iris: Manual w/Lock	Focus: Manual w/Lock Iris: Manual w/Lock	Focus: Manual w/Lock Iris: Manual w/Lock
Filter Size	M30.5 P=0.5mm	M30.5 P=0.5mm	M30.5 P=0.5mm
Back Focus (in air)	11.54mm	17.17mm	34.46mm
Weight	80g	103g	117g
Operating Temperature	-10~+60°C	-10~+60°C	-10~+60°C

1/1.8" Mega-Pixel Machine Vision / FA Lens Series

Compatible with cameras with resolution in the mega-pixel range 4μm pixel pitch

1/1.8" cameras 1/2" cameras 1/3" cameras

- Compact design, yet achieving mega-pixel performance.
- No more need for a close up ring, minimum focus distance has been minimized to useful distance. This not only improves the durability of imaging systems, but also helps to reduce overall costs.
- The core structural elements — the lens barrel and the lens fixing mechanism — have been strengthened, and vibration resistance has been enhanced.
- Three lock screw positions are provided for ease of set up and effective space utilization. (Both Iris and Focus)
- All lenses in the series use the same filter diameter. (ø25.5 mm)



Model	M118FM08	M118FM16	M118FM25	M118FM50
Imager Size	1/1.8	1/1.8	1/1.8	1/1.8
Mount	C	C	C	C
Focal Length	8mm	16mm	25mm	50mm
Aperture Range	1.4~16	1.4~16	1.6~16	2.8~22
Angle of View (Horizontal x Vertical)	1/1.8" : 50.8° × 38.6° 1/2" : 45.0° × 34.0° 1/3" : 34.0° × 25.6°	1/1.8" : 25.9° × 19.5° 1/2" : 22.8° × 17.1° 1/3" : 17.1° × 12.9°	1/1.8" : 16.6° × 12.5° 1/2" : 14.6° × 11.0° 1/3" : 11.0° × 8.2°	1/1.8" : 8.3° × 6.2° 1/2" : 7.3° × 5.5° 1/3" : 5.5° × 4.1°
TV Distortion	Less than -2.0%	Less than -0.7%	Less than -0.2%	Less than -0.1%
Focus Range	0.1m~	0.1m~	0.1m~	0.2m~
Operation	Focus: Manual w/Lock Iris: Manual w/Lock	Focus: Manual w/Lock Iris: Manual w/Lock	Focus: Manual w/Lock Iris: Manual w/Lock	Focus: Manual w/Lock Iris: Manual w/Lock
Filter Size	M25.5 P=0.5mm	M25.5 P=0.5mm	M25.5 P=0.5mm	M25.5 P=0.5mm
Back Focus (in air)	11.726mm	12.17mm	12.92mm	20.10mm
Weight	44g	39g	39g	52g
Operating Temperature	-10~+60°C	-10~+60°C	-10~+60°C	-10~+60°C

*For cameras with resolution in the mega-pixel range, please use lenses in either of the following series: 2/3" Mega-Pixel Machine Vision / FA Lens Series or 1/1.8" Mega-Pixel Machine Vision / FA Lens Series.

2/3" High Resolution Machine Vision / FA Lens Series

Model	22HA	219HA/HB	25HA/HB	17HD/HF	20HA/HC	35HB	21HA/HC	1A1HB
		*Type HB comes with Focus/Iris Lock.	*Type HB comes with Focus/Iris Lock.	*Type HF comes with Focus/Iris Lock.	*Type HC comes with Focus/Iris Lock.		*Type HC comes with Focus/Iris Lock.	
Imager Size	2/3	2/3	2/3	2/3	2/3	2/3	2/3	2/3
Mount	C	C	C	C	C	C	C	C
Focal Length	6.5mm	8mm	12mm	16mm	25mm	35mm	50mm	75mm
Aperture Range	1.8~Close	1.4~16	1.8~16	1.4~16	1.6~16	2.1~22	2.8~22	3.9~32
Angle of View (Horizontal x Vertical)	2/3" : 71.6° × 55.5° 1/2" : 53.9° × 41.0° 1/3" : 41.0° × 31.0°	2/3" : 59.3° × 45.2° 1/2" : 43.6° × 33.1° 1/3" : 33.1° × 25.0°	2/3" : 40.9° × 30.9° 1/2" : 30.0° × 22.4° 1/3" : 22.4° × 16.6°	2/3" : 30.9° × 23.2° 1/2" : 22.5° × 16.9° 1/3" : 16.9° × 12.7°	2/3" : 20.0° × 15.0° 1/2" : 14.6° × 11.0° 1/3" : 11.0° × 8.2°	2/3" : 14.3° × 10.8° 1/2" : 10.4° × 7.8° 1/3" : 7.8° × 5.9°	2/3" : 10.0° × 7.5° 1/2" : 7.3° × 5.5° 1/3" : 5.5° × 4.1°	2/3" : 6.9° × 5.2° 1/2" : 5.0° × 3.5° 1/3" : 3.5° × 2.5°
TV Distortion	Less than -2.16	Less than -3.0%	Less than -1.6%	Less than -1.5%	Less than -0.5%	Less than +0.5%	Less than +0.5%	Less than +0.1%
Focus Range	1.5m~	0.26m~	0.26m~	0.29m~	0.21m~	0.3m~	0.44m~	0.5m~
Operation	Focus: — Iris: Manual w/Lock	Focus: Manual Iris: Manual	Focus: Manual Iris: Manual	Focus: Manual Iris: Manual	Focus: Manual Iris: Manual	Focus: Manual w/Lock Iris: Manual w/Lock	Focus: Manual Iris: Manual	Focus: Manual w/Lock Iris: Manual w/Lock
Filter Size	M35.5 P=0.5mm	M25.5 P=0.5mm	M25.5 P=0.5mm	M25.5 P=0.5mm	M25.5 P=0.5mm	M25.5 P=0.5mm	M25.5 P=0.5mm	M25.5 P=0.5mm
Back Focus (in air)	13.00mm	11.60mm	11.03mm	11.85mm	11.60mm	15.53mm	22.10mm	27.12mm
Weight	60g	40g (HB : 48g)	40g (HB : 46g)	50g (HF : 48g)	37g (HC : 40g)	44g	50g (HC : 52g)	68g
Operating Temperature	-5~+50°C	-10~+45°C	-10~+45°C	-10~+45°C	-10~+45°C	-10~+60°C	-10~+45°C	-10~+60°C