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**
Fixed-Focal Machine Vision Lens Series

Machine vision lenses featuring superior optical technology
Tamron’s Mega-Pixel Machine Vision Lens Series provides outstanding optical quality and enhanced performance in close-focus situations and meets the needs of diverse image processing applications.

### 1.1” Ultra-High-Performance Machine Vision Fixed-Focal Lenses

**Compatible with MP camera**

<table>
<thead>
<tr>
<th>1.1” cameras</th>
<th>1” cameras</th>
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</thead>
<tbody>
<tr>
<td>1/1.2” cameras</td>
<td>2/3” cameras</td>
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<tr>
<td>1/1.8” cameras</td>
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</tbody>
</table>

**3.1µm**

**Industry-Leading High Contrast and Resolution**

The lenses are optimized for 3.1-µm-pixel-pitch imagers, equivalent to 1.1” 12 mega-pixels. Use of state-of-the-art optical technology enables high-contrast and high-resolution from the corner to the periphery of images despite the large aperture size. Tamron’s machine vision fixed-focal lens line-up also opens gates to other areas of applications including traffic monitoring, notably for ITS (Intelligent Transport Systems).

**Combination of Advanced Coating Technology and Use of Diverse Types of Lenses**

Tamron’s proprietary coating technology is employed to enhance the lens light transmittance, and combinations of diverse types of lens elements are optimized to bring the resolution to the maximum height. An aspherical lens is deployed on a wide-angle model for the first time in Tamron’s machine vision lenses.

**Uncompromised Image Quality at Close Distances**

High image-fidelity is maintained at frequently-used close distances.

**Enhanced Functionality and Utility**

Well-tuned rotational torque of both focus and iris control rings facilitates smooth adjustments of focusing and aperture. For ease of installation, the rings are also equipped with a lock mechanism, similar to Tamron’s other current machine vision fixed-focal lens models; the rings can be locked at a choice of three lock screw positions (two positions for the Model: M111FM08).

**Designed for Rugged Lens Appearance**

Metal barrels are adopted for durability and vibration-resiliency, giving a rugged appearance to the lenses.

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### 1/1.2”, 2/3” Ultra-High-Performance Machine Vision Fixed-Focal Lenses (ø29mm)

**Compatible with MP camera**

<table>
<thead>
<tr>
<th>1/1.2” cameras</th>
<th>2/3” cameras</th>
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</thead>
<tbody>
<tr>
<td>1/1.8” cameras</td>
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</tbody>
</table>

**5.86µm**

**Industry-Leading High Contrast and Resolution at Compact Size**

Compatible with both 5.86µm pixel-pitch 1/1.2” imagers and 3.45µm pixel-pitch 2/3” imagers. Equivalent resolution of full 5-mega-pixels. Industry-leading resolution and contrast in ø29mm machine-vision lenses. First-class performance in all different focal lengths of the models.

**High-Quality Imaging at Close-Shooting Distances**

Lenses assure high-quality imaging at close-shooting distances often used.

**Functionality and Utility**

Rotational torque is increased to improve maneuverability for focusing and iris adjustment. Lock-screw positions are now selectable from four locations, assisting easier installation for users.
Fixed-Focal Machine Vision Lens Series

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

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

- Shortened MOD
  The Minimum Object Distance (MOD) is 10cm for f=6, 8, 12, 16, 25mm and 15cm for f=35 and 50mm lens. Thanks to the reduced minimum focus distance, troublesome use of extension rings 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.

- Compatible with 5MP Camera + SD Lens

- SD Camera


2/3” Mega-Pixel Machine Vision Lens Series

Compatible with MP camera
4.0µm pixel pitch
2/3” cameras 1/1.8” cameras 1/2” cameras

- 4.0µm-Pixel-Pitch Sensor
  By supporting a 4.0µm-pixel-pitch, the lens maintains high-resolution from center to periphery. This lens series offers superior optical performance with resolution in the mega-pixel range even at the periphery of the image, and can be used for various applications such as inspection of small components, and inspection of detailed particles. In addition, each lens in the series provides high-quality images with minimized distortion.

- Compact design, yet achieves 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. (ø30.5 mm)

- Compatible with 5MP Camera + Ultra-High-Resolution Lens

- Not Enough Resolution

1/1.8” Mega-Pixel Machine Vision Lens Series

Compatible with MP camera
4.0µm pixel pitch
1/1.8” cameras 1/2” cameras 1/3” cameras

- 4.0µm-Pixel-Pitch Sensor
  By supporting a 4.0µm-pixel-pitch, the lens maintains high-resolution from center to periphery. This lens series offers superior optical performance with resolution in the mega-pixel range even at the periphery of the image, and can be used for various applications such as inspection of small components, and inspection of detailed particles. In addition, each lens in the series provides high-quality images with minimized distortion.

- Compact design, yet achieves 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)
Fixed-Focal Machine Vision Lens Series

### 2/3" High-Resolution Machine Vision Lens Series

For cameras with resolution in the mega-pixel range. Please use following lens series: 1/1.2", 2/3", 1/1.8" Mega-Pixel Machine Vision/FIA Lens Series.

<table>
<thead>
<tr>
<th>Model</th>
<th>1/1.2&quot;</th>
<th>2/3&quot;</th>
<th>1/1.8&quot;</th>
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</thead>
<tbody>
<tr>
<td>22HA</td>
<td>1/1.2&quot;</td>
<td>2/3&quot;</td>
<td>1/1.8&quot;</td>
</tr>
<tr>
<td>219HB</td>
<td>1/1.2&quot;</td>
<td>2/3&quot;</td>
<td>1/1.8&quot;</td>
</tr>
<tr>
<td>25HA/ HB</td>
<td>1/1.2&quot;</td>
<td>2/3&quot;</td>
<td>1/1.8&quot;</td>
</tr>
<tr>
<td>17HD/ HF</td>
<td>1/1.2&quot;</td>
<td>2/3&quot;</td>
<td>1/1.8&quot;</td>
</tr>
<tr>
<td>20HC</td>
<td>1/1.2&quot;</td>
<td>2/3&quot;</td>
<td>1/1.8&quot;</td>
</tr>
<tr>
<td>35HB</td>
<td>1/1.2&quot;</td>
<td>2/3&quot;</td>
<td>1/1.8&quot;</td>
</tr>
<tr>
<td>21HC</td>
<td>1/1.2&quot;</td>
<td>2/3&quot;</td>
<td>1/1.8&quot;</td>
</tr>
<tr>
<td>1A1HB</td>
<td>1/1.2&quot;</td>
<td>2/3&quot;</td>
<td>1/1.8&quot;</td>
</tr>
</tbody>
</table>

### Special Accessories for Machine Vision Lenses

- **Extension Ring**: MR-SET, 7 Sets (0.5mm, 1mm, 2mm, 5mm, 10mm, 20mm, 40mm)
- **Filter for Protection**: 25.5-NO, 25.5-PL, 25.5-PL, Polarizer Filter
- **Filter Screw**: 1-32UNF

**Remarks**

1. **1/1" lenses can also be used with 1/1", 1/1.2", 2/3", 1/8", 1/2", 1/2.5", 1/2.7", 1/2.8", 1/3", & 1/4" Imager cameras.**
2. **1/1.2" lenses can also be used with 2/3", 1/8", 1/2", 1/2.5", 1/2.7", 1/2.8", 1/3", & 1/4" Imager cameras.**
3. **2/3" lenses can also be used with 1/8", 1/2", 1/2.5", 1/2.7", 1/2.8", 1/3", & 1/4" Imager cameras.**
4. **1/1.8" lenses can also be used with 1/2", 1/2.5", 1/2.7", 1/2.8", 1/3", & 1/4" Imager cameras.**
5. **1/2" lenses can also be used with 1/2.5", 1/2.7", 1/2.8", 1/3", & 1/4" Imager cameras.**
6. **1/3" lenses can also be used with 1/2.5", 1/2.7", 1/2.8", 1/3", & 1/4" Imager cameras.**
7. **1/4" lenses can also be used with 1/2.5", 1/2.7", 1/2.8", 1/3", & 1/4" Imager cameras.**

When you fit C-Mount lenses with C-Mount cameras, please use the C-CIS adapter.

The "Field of View Angle" in the data sheets shows the data when the lens is used with a camera with the indicated imager size. When other cameras with different imager sizes are used, please refer to the following datum:

- **1/1.2" Camera**: 6.717 against the Specified Angle of View
- **2/3" Camera**: 6.63 against the Specified Angle of View
- **1/1.8" Camera**: 6.464 against the Specified Angle of View
- **1/2" Camera**: 6.34 against the Specified Angle of View
- **1/3" Camera**: 6.26 against the Specified Angle of View
- **1/4" Camera**: 6.20 against the Specified Angle of View

**Dimensions**

- **5.86µm pixel pitch**: IMX174, 1/1.2", 2-Mega, IMX249, 1/1.2", 2-Mega, IMX250, 2/3", 5-Mega, IMX264, 2/3", 5-Mega.

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### 1/1.2", 2/3" Ultra-High-Performance Machine Vision Fixed-Focal Lenses (Ø29mm)

- **25mm F/1.8** (Model: M112FM25)
- **35mm F/2.1** (Model: M112FM35)
- **50mm F/2.8** (Model: M112FM50)

- **16mm F/2.0** (Model: M112FM16)
- **12mm F/2.0** (Model: M112FM12)
- **8mm F/2.4** (Model: M112FM08)
- **6mm F/2.8** (Model: M112FM06)

**Dimensions**

- **5.86µm pixel pitch**: IMX174, 1/1.2", 2-Mega, IMX249, 1/1.2", 2-Mega, IMX250, 2/3", 5-Mega, IMX264, 2/3", 5-Mega.