# TAMRON

## Focus on the Future


## 24MP – MA111F-VIR SERIES

PIXEL PITCH 2.5 µm

1.1" IMAGERS

### RUGGED LENS DESIGN

TAMRON´S IR corrected Lens Series

# FOCUS ON THE FUTURE

With 70 years of expertise, Tamron stands as a renowned leader in optical technology. Our commitment to innovation and precision ensures that our products deliver reliable, high-performance lenses designed to meet the specific demands of machine vision applications. Crafted with meticulous attention to detail, our lenses guarantee superior performance and reliability across diverse industrial applications.

# HIGHLIGHTS OF THE **MA111F-VIR** SERIES


16 mm 25 mm 35 mm 50 mm

- 1.1" Image Sensor
- 2.5µm Pixel Pitch
- IR-corrected
- Ruggedized
- Particularly suitable for ITS
- Low distortion

FOCAL LENGTH

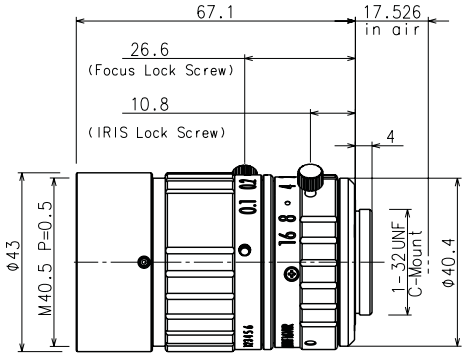
# MA111F16VIR

PIXEL PITCH 2.5 µm

1.1" IMAGERS

**SPECIALTY LINE**

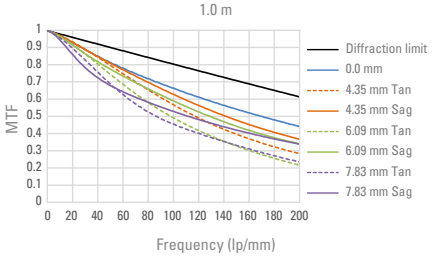
RUGGED AND IR-CORRECTED

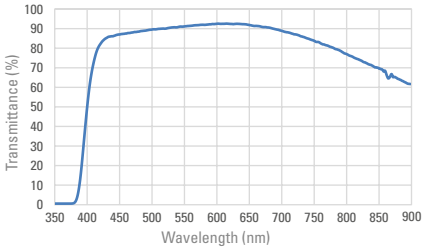

- Focal length 16 mm
- Aperture F/2.8 ~ F/16
- Filter size M40.5 P = 0.5 mm
- Exit Pupil Position -60.6 mm
- TV Distortion 0.21 %
- M.O.D. 100 mm
- Max. Diameter 43.0 mm
- Weight 178 g
- Operating Temp. -20°C ~ +60°C

| Angle of View | | |
|---|---|---|
| | 1.1" | 47.7° x 36.8° |
| | 2/3" | 30.8° x 23.3° |
| | 1/2" | 22.6° x 17.0° |

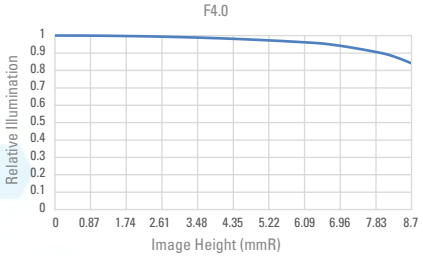
MTF Curves




Transmittance of Wavelengths




Relative Illumination on Image Circle




This table shows the shooting distance and coverage by using different extension rings (Imager Size: 1/1")

| Size of Extension Ring | M111F16VIR (f=16/F2.8) | |
|---|---|---|
| | WD | Coverage |
| W/O | 1000.0<br>100.0 | 888.4 x 665.9<br>100.9 x 75.4 |
| 0.5 | 492.2<br>79.1 | 444.8 x 333.3<br>82.7 x 61.7 |
| 1 | 238.4<br>64.7 | 222.8 x 166.8<br>70.0 x 52.3 |
| 1.5 | 153.7<br>53.9 | 148.8 x 111.3<br>60.6 x 45.2 |
| 5 | 35.2<br>20.9 | 45.1 x 33.6<br>31.7 x 23.6 |
| 10 | 10.1<br>6.0 | 23.0 x 17.1<br>18.7 x 13.9 |
| 15 | – | – |
| 20 | – | – |
| 25 | – | – |
| 30 | – | – |
| 35 | – | – |
| 40 | – | – |

Upper column: Data at the infinity focusing position.
(In W/O, data at 1.0m focusing position)
Lower column: Data at the nearest focusing position
Taking distance: From barrel top to the object

FOCAL LENGTH

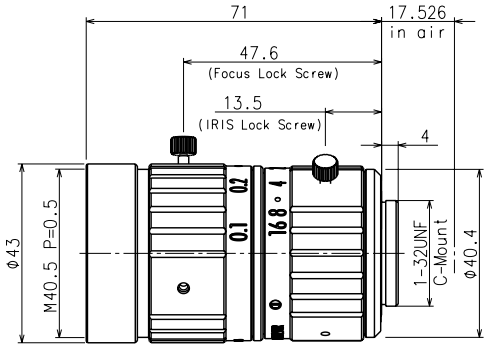
# MA111F25VIR

PIXEL PITCH 2.5 µm

1.1" IMAGERS

**SPECIALTY LINE**

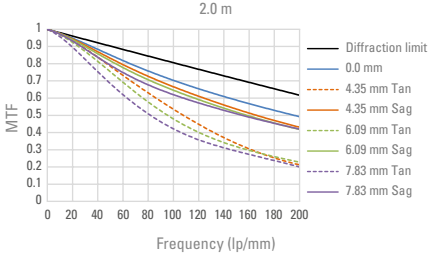
RUGGED AND IR-CORRECTED

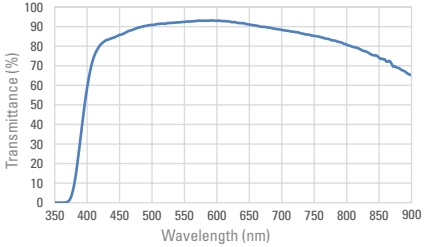

- Focal length 25 mm
- Aperture F/2.8 ~ F/16
- Filter size M40.5 P = 0.5 mm
- Exit Pupil Position -64.5 mm
- TV Distortion -0.3 %
- M.O.D. 100 mm
- Max. Diameter 43 mm
- Weight 196 g
- Operating Temp. -20°C ~ +60°C

| Angle of View | | |
|---|---|---|
| | 1.1" | 31.7° x 23.9° |
| | 2/3" | 20.0° x 15.0° |
| | 1/2" | 14.6° x 10.9° |

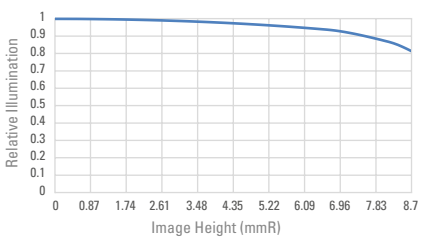
MTF Curves




Transmittance of Wavelengths




Relative Illumination on Image Circle




This table shows the shooting distance and coverage by using different extension rings (Imager Size: 1/1")

| Size of Extension Ring | M111F25VIR (f=25/F2.8) | |
|---|---|---|
| | WD | Coverage |
| W/O | 1000.0<br>100.0 | 573.7 x 428.9<br>66.8 x 50.0 |
| 0.5 | 1220.1<br>89.6 | 696.5 x 520.7<br>60.9 x 45.5 |
| 1 | 600.2<br>81.0 | 348.2 x 260.4<br>55.9 x 41.8 |
| 1.5 | 393.5<br>73.6 | 232.2 x 173.6<br>51.7 x 38.7 |
| 5 | 104.2<br>42.2 | 69.7 x 52.1<br>33.8 x 25.3 |
| 10 | 42.3<br>22.7 | 34.9 x 26.1<br>22.7 x 17.0 |
| 15 | 21.7<br>12.4 | 23.3 x 17.4<br>16.9 x 12.6 |
| 20 | 11.4<br>7.2 | 17.5 x 13.1<br>13.8 x 10.3 |
| 25 | 5.3<br>3.0 | 14.1 x 10.6<br>11.4 x 8.6 |
| 30 | 1.3<br>0.1 | 11.8 x 8.8<br>9.8 x 7.3 |
| 35 | – | – |
| 40 | – | – |

Upper column: Data at the infinity focusing position. (In W/O, data at 1.0m focusing position)
Lower column: Data at the nearest focusing position
Taking distance: From barrel top to the object

FOCAL LENGTH

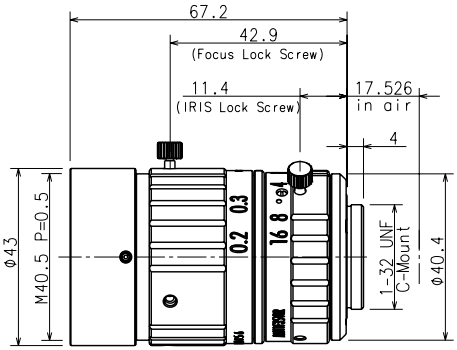
# MA111F35VIR

PIXEL PITCH 2.5 µm

1.1" IMAGERS

**SPECIALTY LINE**

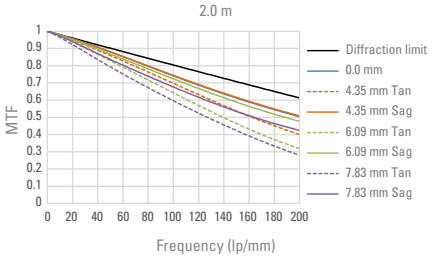
RUGGED AND IR-CORRECTED

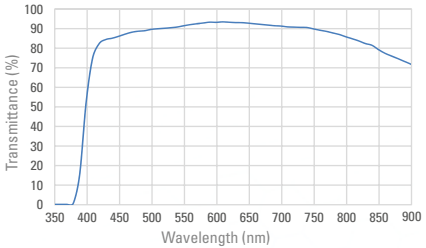

- Focal length 35 mm
- Aperture F/8.4 ~ F/16
- Filter size M40.5 P = 0.5 mm
- Exit Pupil Position -61.4 mm
- TV Distortion 0.3 %
- M.O.D. 200 mm
- Max. Diameter 43 mm
- Weight 179 g
- Operating Temp. -20°C ~ +60°C

| | | |
|---|---|---|
| **Angle of View** | **1.1"** | 22.8° x 17.2° |
| | **2/3"** | 14.4° x 10.8° |
| | **1/2"** | 10.5° x 7.9° |

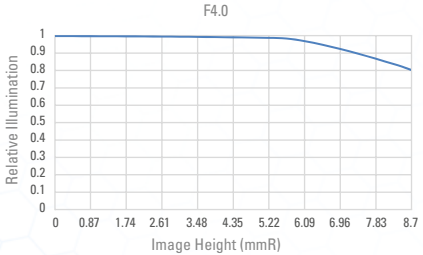
MTF Curves




Transmittance of Wavelengths




Relative Illumination on Image Circle




This table shows the shooting distance and coverage by using different extension rings (Imager Size: 1.1")

| Size of Extension Ring | **MA111F35VIR** (f=35/F2.8) | |
|---|---|---|
| | WD | Coverage |
| W/O | 1000.0<br>200.0 | 403.7 x 302.1<br>80.7 x 60.4 |
| 0.5 | 2410.2<br>184.3 | 970.6 x 726.4<br>74.6 x 55.8 |
| 1 | 1195.7<br>171.0 | 485.2 x 363.1<br>69.4 x 52.0 |
| 1.5 | 791.4<br>159.4 | 323.7 x 242.1<br>65.0 x 48.6 |
| 5 | 225.2<br>107.3 | 97.3 x 72.7<br>44.8 x 33.5 |
| 10 | 104.1<br>71.8 | 48.8 x 36.5<br>31.0 x 23.2 |
| 15 | 62.9<br>53.0 | 32.4 x 24.2<br>23.7 x 17.8 |
| 20 | 43.3<br>41.4 | 24.5 x 18.3<br>19.2 x 14.4 |
| 25 | 31.2<br>33.5 | 19.6 x 14.6<br>16.1 x 12.1 |
| 30 | 23.1<br>27.7 | 16.3 x 12.2<br>13.9 x 10.4 |
| 35 | 17.3<br>23.4 | 14.0 x 10.4<br>12.2 x 9.1 |
| 40 | 13.0<br>20.0 | 12.2 x 9.1<br>10.9 x 8.2 |

Upper column: Data at the infinity focusing position.
(In W/O, data at 1.0m focusing position)
Lower column: Data at the nearest focusing position
Taking distance: From barrel top to the object

FOCAL LENGTH

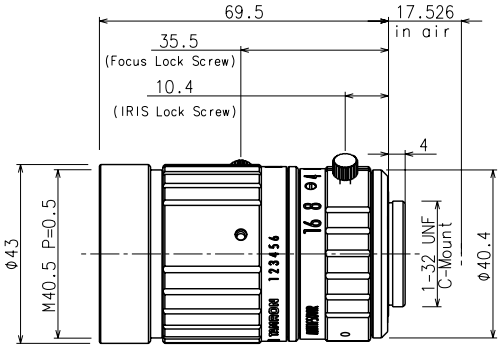
# MA111F50VIR

PIXEL PITCH 2.5 µm

1.1" IMAGERS

**SPECIALTY LINE**

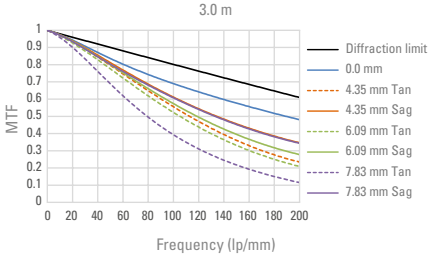
RUGGED AND IR-CORRECTED

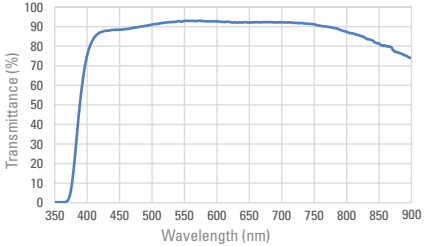

- Focal length 50 mm
- Aperture F/2.8 ~ F/16
- Filter size M40.5 P = 0.5 mm
- Exit Pupil Position -74.9 mm
- TV Distortion 0.1 %
- M.O.D. 200 mm
- Max. Diameter 43 mm
- Weight 181 g
- Operating Temp. -20°C ~ +60°C

| | | |
|---|---|---|
| **Angle of View** | **1.1"** | 16.0° x 12.0° |
| | **2/3"** | 10.1° x 7.5° |
| | **1/2"** | 7.3° x 5.5° |

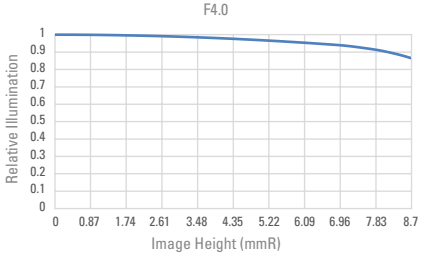
MTF Curves




Transmittance of Wavelengths




Relative Illumination on Image Circle




This table shows the shooting distance and coverage by using different extension rings (Imager Size: 1.1")

| Size of Extension Ring | **MA111F50VIR** (f=50/F2.8) | |
|---|---|---|
| | WD | Coverage |
| W/O | 1000.0<br>200.0 | 282.1 x 211.8<br>57.5 x 43.1 |
| 0.5 | 4965.0<br>191.6 | 1380.5 x 1036.2<br>55.0 x 41.2 |
| 1 | 2481.6<br>184.1 | 690.4 x 518.2<br>52.8 x 39.6 |
| 1.5 | 1653.8<br>177.2 | 460.4 x 345.5<br>50.7 x 38.0 |
| 5 | 494.9<br>140.7 | 138.3 x 103.8<br>39.9 x 29.9 |
| 10 | 246.6<br>109.3 | 69.3 x 52.0<br>30.5 x 22.9 |
| 15 | 163.9<br>89.9 | 46.3 x 34.7<br>24.7 x 18.5 |
| 20 | 122.5<br>76.6 | 34.8 x 26.1<br>20.8 x 15.6 |
| 25 | 97.7<br>67.1 | 27.8 x 20.9<br>17.9 x 13.4 |
| 30 | 81.1<br>59.7 | 23.2 x 17.4<br>15.8 x 11.8 |
| 35 | 69.2<br>54.0 | 19.9 x 14.9<br>14.1 x 10.5 |
| 40 | 60.8<br>49.8 | 17.5 x 13.1<br>12.7 x 9.6 |

Upper column: Data at the infinity focusing position.
(In W/O, data at 1.0m focusing position)
Lower column: Data at the nearest focusing position
Taking distance: From barrel top to the object

## EXPLANATION

1. Model Number, focal lenght
2. Object distance from the tip of the mechanical end at infinity focus
3. Size of the extension ring in mm
4. Object distance from the tip of the mechanical end at MOD
5. Data at infinitiy focusing position
6. Data at the minimum focusing position

1. Please use the data shown here for your reference only, it is not the actual figure.
2. TAMRON will not be responsible for any trouble caused using this figure.
3. This data is a calculated figure, not based on real measurements.
4. Please note that tolerances are not taken into consideration within this calculation.
5. There might be small differences between each piece.
6. There might be some loss in image quality by applying an extension ring.
7. TAMRON does not guarantee the original image performance while using any extension rings.
8. This data is based on all sources available as of June 26, 2017.
9. This data is subject to change without notice.
10. All units are given in mm.

| Size of Extension Ring | ① MA111F50VIR (f=50/F2.8) | |
|---|---|---|
| | WD | Coverage |
| W/O | 1000.0<br>200.0 | 282.1 x 211.8<br>57.5 x 43.1 |
| ③ 0.5 | ②4965.0<br>④ 191.6 | ⑤1380.5 x 1036.2<br>⑥ 55.0 x 41.2 |
| 1 | 2481.6<br>184.1 | 690.4 x 518.2<br>52.8 x 39.6 |
| 1.5 | 1653.8<br>177.2 | 460.4 x 345.5<br>50.7 x 38.0 |
| 5 | 494.9<br>140.7 | 138.3 x 103.8<br>39.9 x 29.9 |
| 10 | 246.6<br>109.3 | 69.3 x 52.0<br>30.5 x 22.9 |
| 15 | 163.9 | 46.3 x 34.7 |

TAMRON

Focus on the Future

**TAMRON Europe GmbH Industrial Optics Division**

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