

HF3520-12M

Technical Datasheet

2/3"

FUJINON
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Fujinon HF-12M Series

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Fujifilm's Fujinon HF-12M series lenses offer a 2.1 μ m resolving power (equivalent to 12.0 megapixels) and are designed for use with 2/3" and smaller sensors. The HF-12M series is available in 5 variants from 8 mm to 35 mm and feature Fujinon's 4DHR technology which allow them to provide highly consistent image sharpness across both the center and outer extremities of the lens.

Specification Highlights

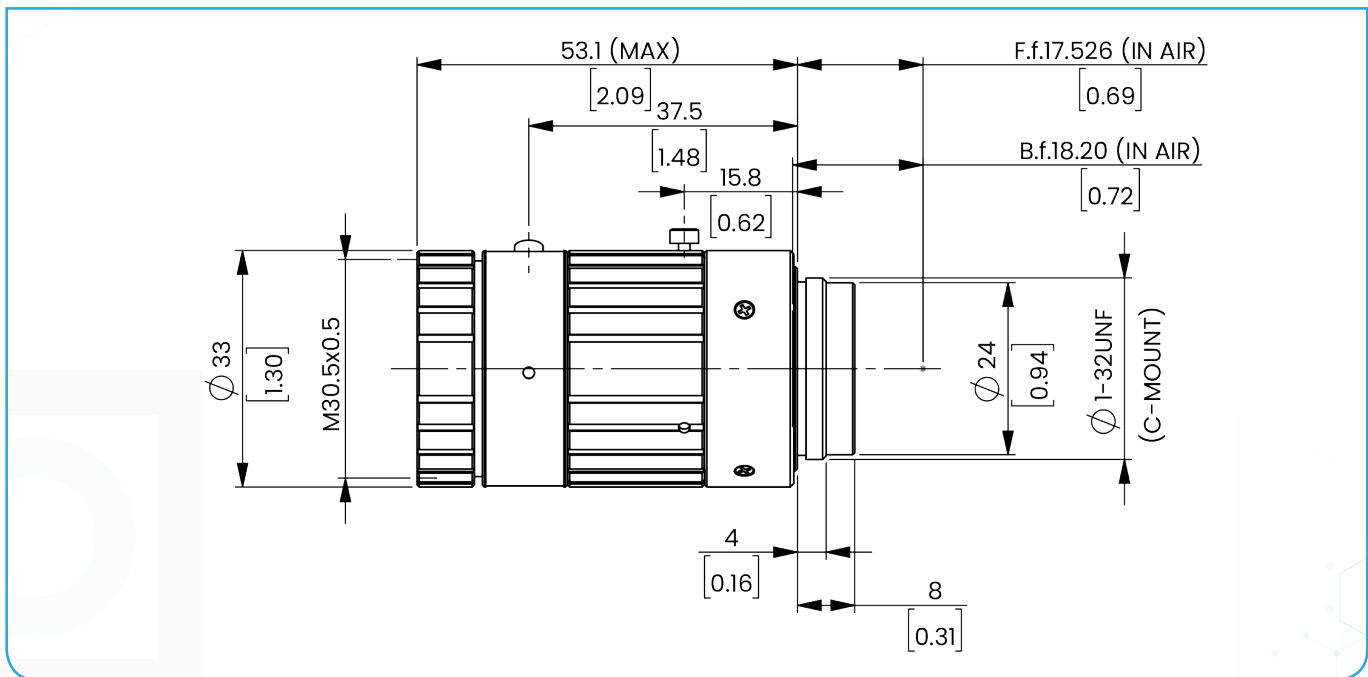
FOCAL LENGTH: 35 mm
FORMAT: 2/3"
PIXEL SIZE: 2.1 μ m
LENS MOUNT: C-Mount
APERTURE: F2.0-F22

WORKING DISTANCE: 200mm - Infinity
FILTER THREAD: M30.5 x 0.5
WEIGHT: 95 grams
RESOLUTION MP: 12 MP
LENS CLASS: Fixed Focal Length

Full Specifications

| | | | |
|--|----------------------|---|---------------|
| Focal Length | 35 mm | Flange Back | 17.526 mm |
| Focal Length Design Value | 34.20 mm | Entrance Pupil Position (From Mount) | -7.18 mm |
| Iris Range (f-number) | F2.0-F22 | Exit Pupil Position (From Image Plane) | -42.25 mm |
| Angle of View | 14.7° x 11.0° (2/3") | Front Principal Point (From Mount) | -1.07 mm |
| Working Distance (From Front of Lens Barrel) | 200 mm - Infinity | Rear Principal Point (From Mount) | -16.68 mm |
| Operation of Focus | Manual | Distance Between Principal Points | -15.61 mm |
| Operation of Iris | Manual | TV Distortion | -0.01% |
| Filter Thread | M30.5 x 0.5 | Dimensions | φ33 × 53.1 |
| Mount | C-Mount | Chief Ray Angle | 7.3° |
| Weight | 95 Grams | Relative Illumination (Aperture F4.0; Image Height at Diagonal) | 95% |
| Sensor Size (Standard) | 2/3" (2.1 μm) | Relative Illumination (Aperture at Full Open; Image Height at Diagonal) | 52% |
| Back Focal Length (In Air) | 18.82 mm | Operation Temperature | -10°C - +50°C |

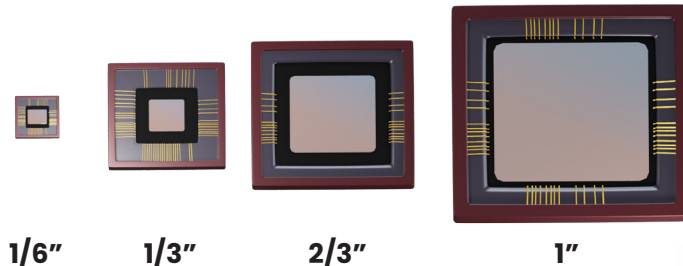
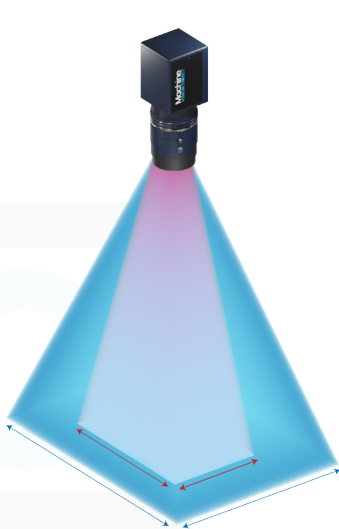
Dimensions



HF3520-12M REFERENCE FOV CHART

| Working Distance (mm) | Optical Magnification | Extension Ring | Field of View (mm) | | | | | | | | | | | | | |
|-----------------------|-----------------------|----------------|--------------------|-------|--------|-------|-------|-------|--------|-------|-------|-------|--------|-------|-------|-------|
| | | | 1" | | 1/1.2" | | 2/3" | | 1/1.8" | | 1/2" | | 1/2.5" | | 1/3" | |
| | | | H | V | H | V | H | V | H | V | H | V | H | V | H | V |
| 1000 | 0.034x | - | 380.8 | 285.5 | 318.8 | 239.1 | 261.7 | 196.2 | 211.7 | 158.8 | 190.3 | 142.7 | 169.6 | 127.2 | 142.7 | 107.0 |
| 950 | 0.035x | - | 362.1 | 271.4 | 303.2 | 227.3 | 248.8 | 186.6 | 201.3 | 150.9 | 180.9 | 135.7 | 161.2 | 120.9 | 135.7 | 101.7 |
| 900 | 0.037x | - | 343.4 | 257.4 | 287.5 | 215.5 | 235.9 | 176.9 | 190.9 | 143.1 | 171.5 | 128.6 | 152.9 | 114.7 | 128.6 | 96.5 |
| 850 | 0.039x | - | 324.6 | 243.3 | 271.8 | 203.8 | 223.0 | 167.2 | 180.4 | 135.3 | 162.2 | 121.6 | 144.5 | 108.4 | 121.6 | 91.2 |
| 800 | 0.042x | - | 305.9 | 229.3 | 256.1 | 192.0 | 210.2 | 157.6 | 170.0 | 127.5 | 152.8 | 114.6 | 136.2 | 102.1 | 114.6 | 85.9 |
| 750 | 0.045x | - | 287.1 | 215.2 | 240.4 | 180.2 | 197.3 | 147.9 | 159.6 | 119.7 | 143.4 | 107.6 | 127.8 | 95.9 | 107.6 | 80.7 |
| 700 | 0.048x | - | 268.4 | 201.2 | 224.7 | 168.4 | 184.4 | 138.3 | 149.2 | 111.8 | 134.1 | 100.5 | 119.5 | 89.6 | 100.5 | 75.4 |
| 650 | 0.051x | - | 249.6 | 187.1 | 209.0 | 156.7 | 171.5 | 128.6 | 138.7 | 104.0 | 124.7 | 93.5 | 111.1 | 83.3 | 93.5 | 70.1 |
| 600 | 0.056x | - | 230.9 | 173.0 | 193.3 | 144.9 | 158.6 | 118.9 | 128.3 | 96.2 | 115.3 | 86.5 | 102.8 | 77.1 | 86.5 | 64.8 |
| 550 | 0.060x | - | 212.1 | 159.0 | 177.5 | 133.1 | 145.7 | 109.2 | 117.8 | 88.4 | 105.9 | 79.4 | 94.4 | 70.8 | 79.4 | 59.6 |
| 500 | 0.066x | - | 193.3 | 144.9 | 161.8 | 121.3 | 132.8 | 99.5 | 107.4 | 80.5 | 96.5 | 72.4 | 86.0 | 64.5 | 72.4 | 54.3 |
| 450 | 0.074x | - | 174.5 | 130.8 | 146.1 | 109.5 | 119.8 | 89.8 | 96.9 | 72.7 | 87.1 | 65.3 | 77.6 | 58.2 | 65.3 | 49.0 |
| 400 | 0.082x | - | 155.7 | 116.6 | 130.3 | 97.7 | 106.9 | 80.1 | 86.5 | 64.8 | 77.7 | 58.3 | 69.2 | 51.9 | 58.3 | 43.7 |
| 350 | 0.094x | - | 136.9 | 102.5 | 114.5 | 85.8 | 93.9 | 70.4 | 76.0 | 57.0 | 68.3 | 51.2 | 60.8 | 45.6 | 51.2 | 38.4 |
| 300 | 0.109x | - | 117.9 | 88.3 | 98.7 | 73.9 | 80.9 | 60.7 | 65.5 | 49.1 | 58.8 | 44.1 | 52.4 | 39.3 | 44.1 | 33.1 |
| 250 | 0.130x | - | 99.0 | 74.1 | 82.8 | 62.0 | 67.9 | 50.9 | 54.9 | 41.1 | 49.3 | 37.0 | 44.0 | 33.0 | 37.0 | 27.7 |
| 200 | 0.161x | - | 79.8 | 59.7 | 66.8 | 50.0 | 54.7 | 41.0 | 44.3 | 33.2 | 39.8 | 29.8 | 35.4 | 26.6 | 29.8 | 22.4 |
| 150 | 0.210x | 2 | 61.2 | 45.8 | 51.2 | 38.3 | 42.0 | 31.4 | 33.9 | 25.4 | 30.5 | 22.8 | 27.2 | 20.4 | 22.8 | 17.1 |
| 100 | 0.304x | 10 | 42.4 | 31.7 | 35.4 | 26.5 | 29.0 | 21.7 | 23.5 | 17.6 | 21.1 | 15.8 | 18.8 | 14.1 | 15.8 | 11.8 |

FOV Charts are intended to be used as general guidance and are not guaranteed to be accurate as all sensors do not have the same dimensions, including sensors with the same format size. For the most accurate approximations, please use a lens calculator that accounts for your specific sensor dimensions



Sensor Formats

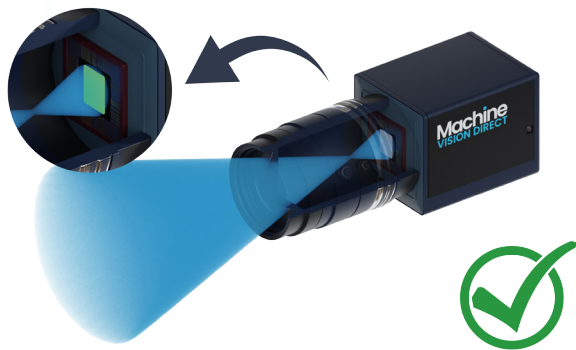
It is important to make sure you size your lens to the correct sensor size (format). The image you get from a 2/3" format lens will provide a smaller Field of View when used with a 1/3" format sensor than it will provide when used with a 2/3" format sensor, even with the same working distance

Sensor Size Compatibility Chart

| Model | Compatible format sizes | | | | | | | | Focal length (mm) |
|----------------------------|-------------------------|-----|---|-------|-----|-------|-----|-----|-------------------|
| | 4/3 | 1.1 | 1 | 1/1.2 | 2/3 | 1/1.8 | 1/2 | 1/3 | |
| HF818-12M | - | - | - | = | • | • | • | • | 8 |
| HF1218-12M | - | - | - | ○ | • | • | • | • | 12 |
| HF1618-12M | - | - | - | ○ | • | • | • | • | 16 |
| HF2518-12M | - | - | - | ○ | • | • | • | • | 25 |
| HF3520-12M | - | - | ○ | ○ | • | • | • | • | 35 |

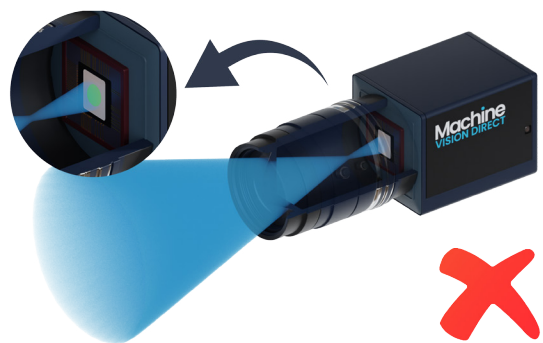
- Compatible sensor size (std.): Ideal size to maximize the target resolution.
- Compatible sensor size (max.): Adaptable sensor size varies depending on the model. Select a lens after checking the peripheral light amount and resolution.

Please note that not all sizes of sensors are listed on this chart. It is generally okay to use larger format lenses with smaller format sensors, but not the other way around



Properly Sized Lens Format

A camera with a properly sized lens will project an image that will cover the whole sensor



Undersized Lens Format

A camera with an undersized lens format will project an image that will not cover the whole sensor. This will cause vignetting of the image

HF-12M SERIES LENSES



HF818-12M

FOCAL LENGTH: 8 mm
APERTURE: F1.8-F22
WORKING DISTANCE: 100 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M30.5 x 0.5

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HF1218-12M

FOCAL LENGTH: 12 mm
APERTURE: F1.8-F22
WORKING DISTANCE: 100 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M30.5 x 0.5

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HF1618-12M

FOCAL LENGTH: 16 mm
APERTURE: F1.8-F22
WORKING DISTANCE: 100 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M30.5 x 0.5

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HF2518-12M

FOCAL LENGTH: 25 mm
APERTURE: F1.8-F22
WORKING DISTANCE: 100 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M30.5 x 0.5

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HF3520-12M

FOCAL LENGTH: 35 mm
APERTURE: F2.0-F22
WORKING DISTANCE: 200 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M30.5 x 0.5

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FUJINON LENS SERIES



HF-HA-1S

FOCAL LENGTH: 6 mm, 9 mm, 12.5 mm
 16 mm, 25 mm, 35 mm
 50 mm, 75 mm

PIXEL SIZE: 6.2 μm

FORMAT: 2/3"

RESOLUTION: 1.5 MP

[VIEW SERIES](#)



HF-SA

FOCAL LENGTH: 12.5 mm, 16 mm, 25 mm
 35 mm, 50 mm, 75 mm

PIXEL SIZE: 3.45 μm

FORMAT: 2/3"

RESOLUTION: 5 MP

[VIEW SERIES](#)



HF-XA-5M

FOCAL LENGTH: 6 mm, 8 mm, 12 mm
 16 mm, 25 mm
 35 mm, 50 mm

PIXEL SIZE: 3.45 μm

FORMAT: 2/3"

RESOLUTION: 5 MP

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HF-XA-1F

FOCAL LENGTH: 8 mm, 12 mm, 16 mm
 25 mm, 35 mm

PIXEL SIZE: 3.45 μm

FORMAT: 2/3"

RESOLUTION: 5 MP

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HF-12M

FOCAL LENGTH: 8 mm, 12 mm, 16 mm
 25 mm, 35 mm

PIXEL SIZE: 2.1 μm

FORMAT: 2/3"

RESOLUTION: 12 MP

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CF-ZA-1S

FOCAL LENGTH: 8 mm, 12 mm, 16 mm
 25 mm, 35 mm, 50 mm

PIXEL SIZE: 2.74 μm

FORMAT: 1.1"

RESOLUTION: 23 MP

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CF-HA

FOCAL LENGTH: 12.5 mm, 16 mm, 25 mm
 35 mm, 50 mm, 75 mm

PIXEL SIZE: 7.4 μm

FORMAT: 1"

RESOLUTION: 1.5 MP

[VIEW SERIES](#)



FE185

FOCAL LENGTH: 6 mm, 9 mm, 12.5 mm
 16 mm, 25 mm, 35 mm
 50 mm, 75 mm

PIXEL SIZE: 6.2 μm

FORMAT: 2/3"

RESOLUTION: 1.5 MP

[VIEW SERIES](#)

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Revision 6/11/2023