

HF50SA-1

Technical Datasheet

2/3"

FUJINON

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Fujinon HF-SA-1 Series

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Fujifilm's Fujinon HF-SA series lenses offer a 3.45 μ m pixel pitch (equivalent to 5.0 megapixels) and are suitable for up to 2/3" sensors. The HF-SA series is available in 6 variants from 12.5 mm to 75 mm and offer low distortion thanks to Fujinon's aspherical lens design

Specification Highlights

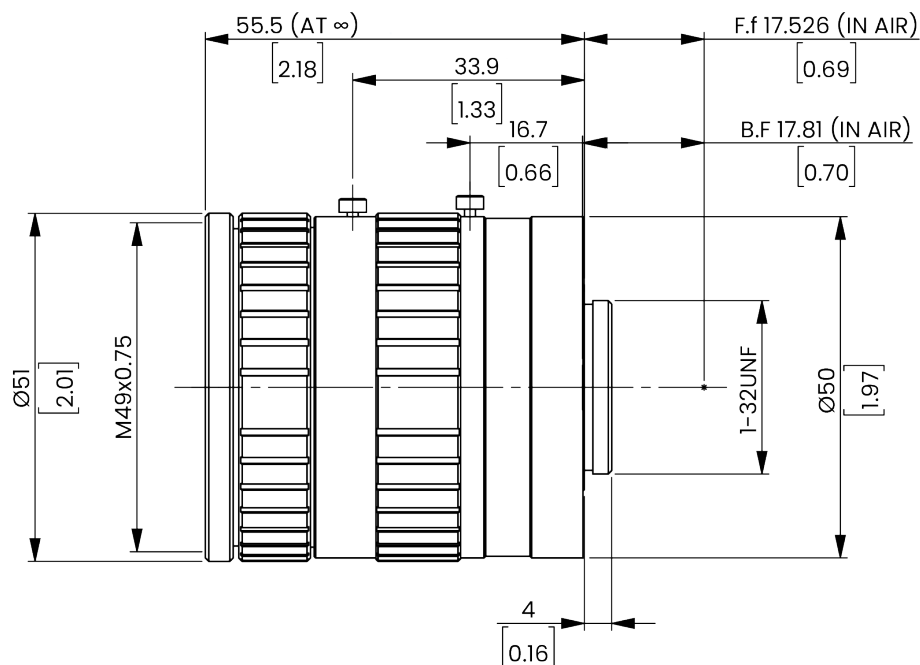
FOCAL LENGTH: 50 mm
FORMAT: 2/3"
PIXEL SIZE: 3.45 μ m
LENS MOUNT: C-Mount
APERTURE: F1.8-F22

WORKING DISTANCE: 400 mm - Infinity
FILTER THREAD: M49 x 0.75
WEIGHT: 240 grams
RESOLUTION MP: 5 MP
LENS CLASS: Fixed Focal Length

Full Specifications

Focal Length	50 mm	Flange Back	17.526 mm
Focal Length Design Value	51.72 mm	Entrance Pupil Position (From Mount)	Not Specified
Iris Range (f-number)	F1.8-F22	Exit Pupil Position (From Image Plane)	-49.93 mm
Angle of View	9.7° x 17.3° (2/3")	Front Principal Point (From Mount)	-1.87 mm
Working Distance (From Front of Lens Barrel)	400 mm - Infinity	Rear Principal Point (From Mount)	-34.19 mm
Operation of Focus	Manual	Distance Between Principal Points	-32.32 mm
Operation of Iris	Manual	TV Distortion	0.08%
Filter Thread	M49 x 0.75	Dimensions	φ51 × 55.5
Mount	C-Mount	Chief Ray Angle	Not Specified
Weight	240 Grams	Relative Illumination (Aperture F4.0; Image Height at Diagonal)	Not Listed
Sensor Size (Standard)	2/3" (3.45 μm)	Relative Illumination (Aperture at Full Open; Image Height at Diagonal)	75%
Back Focal Length (In Air)	17.81 mm	Operation Temperature	-10°C - +50°C

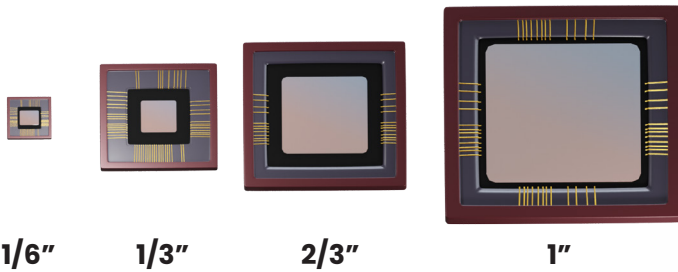
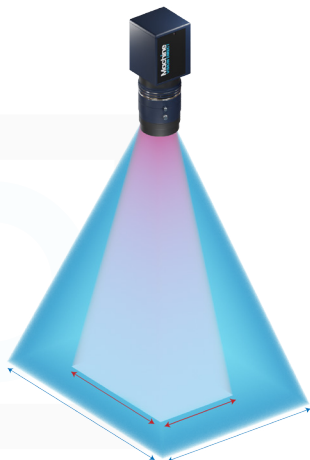
Dimensions



HF50SA-1 REFERENCE FOV CHART

Working Distance (mm)	Optical Magnification	Extension Ring (mm)	Field of View (mm)									
			2/3"		1/1.8"		1/2"		1/2.5"		1/3"	
			H	V	H	V	H	V	H	V	H	V
1500	0.034x	-	255.5	191.6	206.7	155.1	185.8	139.4	165.6	124.2	139.4	104.5
1450	0.036x	-	247.0	185.3	199.9	149.9	179.7	134.8	160.1	120.1	134.8	101.1
1400	0.037x	-	238.5	178.9	193.0	144.7	173.5	130.1	154.6	116.0	130.1	97.6
1350	0.038x	-	230.0	172.5	186.1	139.6	167.3	125.5	149.1	111.8	125.5	94.1
1300	0.040x	-	221.5	166.1	179.2	134.4	161.1	120.8	143.6	107.7	120.8	90.6
1250	0.041x	-	213.0	159.8	172.3	129.3	154.9	116.2	138.1	103.6	116.2	87.1
1200	0.043x	-	204.5	153.4	165.5	124.1	148.7	111.6	132.6	99.4	111.6	83.7
1150	0.045x	-	196.0	147.0	158.6	118.9	142.6	106.9	127.1	95.3	106.9	80.2
1100	0.047x	-	187.5	140.6	151.7	113.8	136.4	102.3	121.5	91.2	102.3	76.7
1050	0.049x	-	179.0	134.3	144.8	108.6	130.2	97.6	116.0	87.0	97.6	73.2
1000	0.052x	-	170.5	127.9	138.0	103.5	124.0	93.0	110.5	82.9	93.0	69.7
950	0.054x	-	162.0	121.5	131.1	98.3	117.8	88.4	105.0	78.8	88.4	66.3
900	0.057x	-	153.5	115.1	124.2	93.1	111.6	83.7	99.5	74.6	83.7	62.8
850	0.061x	-	145.0	108.7	117.3	88.0	105.5	79.1	94.0	70.5	79.1	59.3
800	0.064x	-	136.5	102.4	110.4	82.8	99.3	74.4	88.5	66.3	74.4	55.8
750	0.069x	-	128.0	96.0	103.6	77.7	93.1	69.8	83.0	62.2	69.8	52.3
700	0.074x	-	119.5	89.6	96.7	72.5	86.9	65.2	77.4	58.1	65.2	48.9
650	0.079x	-	111.0	83.2	89.8	67.3	80.7	60.5	71.9	53.9	60.5	45.4
600	0.086x	-	102.5	76.9	82.9	62.2	74.5	55.9	66.4	49.8	55.9	41.9
550	0.094x	-	94.0	70.5	76.0	57.0	68.3	51.2	60.9	45.7	51.2	38.4
500	0.103x	-	85.5	64.1	69.2	51.9	62.2	46.6	55.4	41.5	46.6	34.9
450	0.114x	-	77.0	57.7	62.3	46.7	56.0	42.0	49.9	37.4	42.0	31.5
400	0.129x	-	68.5	51.3	55.4	41.5	49.8	37.3	44.4	33.3	37.3	28.0
350	0.147x	1	60.0	45.0	48.5	36.4	43.6	32.7	38.8	29.1	32.7	24.5
300	0.171x	5	51.5	38.6	41.6	31.2	37.4	28.0	33.3	25.0	28.0	21.0
250	0.205x	5	43.0	32.2	34.7	26.0	31.2	23.4	27.8	20.9	23.4	17.5
200	0.256x	10	34.5	25.8	27.9	20.9	25.0	18.8	22.3	16.7	18.8	14.1
150	0.340x	15	25.9	19.4	21.0	15.7	18.8	14.1	16.8	12.6	14.1	10.6
100	0.507x	20	17.4	13.0	14.1	10.5	12.6	9.5	11.3	8.4	9.5	7.1

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

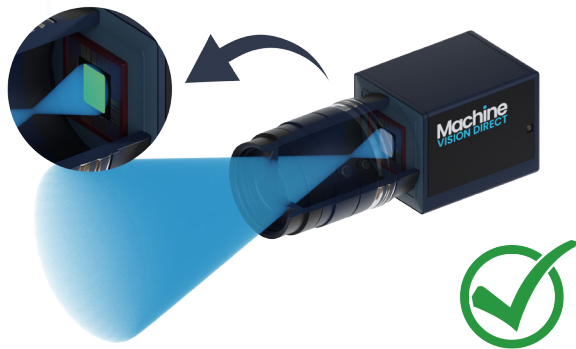
It is important to make sure you size your lens to the correct sensor size (format). The image you get from a 2/3" format lens will provide a smaller Field of View when used with a 1/3" format sensor than it will provide when used with a 2/3" format sensor, even with the same working distance

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	
HF12.5SA-1	-	-	-	-	•	•	•	•	12.5
HF16SA-1	-	-	-	-	•	•	•	•	16
HF25SA-1	-	-	-	-	•	•	•	•	25
HF35SA-1	-	-	-	-	•	•	•	•	35
HF50SA-1	-	-	-	-	•	•	•	•	50
HF75SA-1	-	-	-	-	•	•	•	•	75

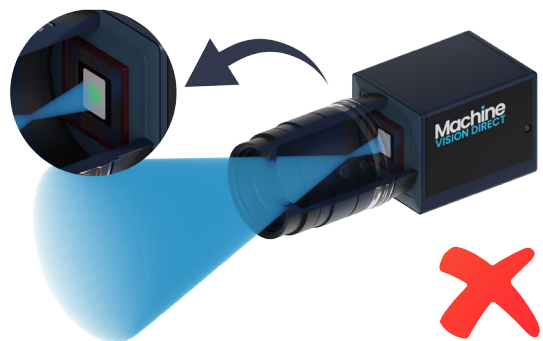
- Compatible sensor size (std.): Ideal size to maximize the target resolution.

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-SA-1 SERIES LENSES



HF12.5SA-1

FOCAL LENGTH: 12.5 mm
APERTURE: F1.4-F22
WORKING DISTANCE: 100 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M49 x 0.75

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HF16SA-1

FOCAL LENGTH: 16 mm
APERTURE: F1.4-F22
WORKING DISTANCE: 100 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M49 x 0.75

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HF25SA-1

FOCAL LENGTH: 25 mm
APERTURE: F1.4-F22
WORKING DISTANCE: 100 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M49 x 0.75

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HF35SA-1

FOCAL LENGTH: 35 mm
APERTURE: F1.4-F22
WORKING DISTANCE: 200 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M49 x 0.75

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HF50SA-1

FOCAL LENGTH: 50 mm
APERTURE: F1.8-F22
WORKING DISTANCE: 400 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M49 x 0.75

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HF75SA-1

FOCAL LENGTH: 75 mm
APERTURE: F1.8-F22
WORKING DISTANCE: 900 mm - Infinity
FORMAT: 2/3"
FILTER THREAD: M49 x 0.75

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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

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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

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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

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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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