

A light blue silhouette of a world map is centered in the background. A thick yellow diagonal stripe runs from the bottom left towards the top right, crossing the map. The TMS logo is centered over the map.

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Lens Selection Tutorial

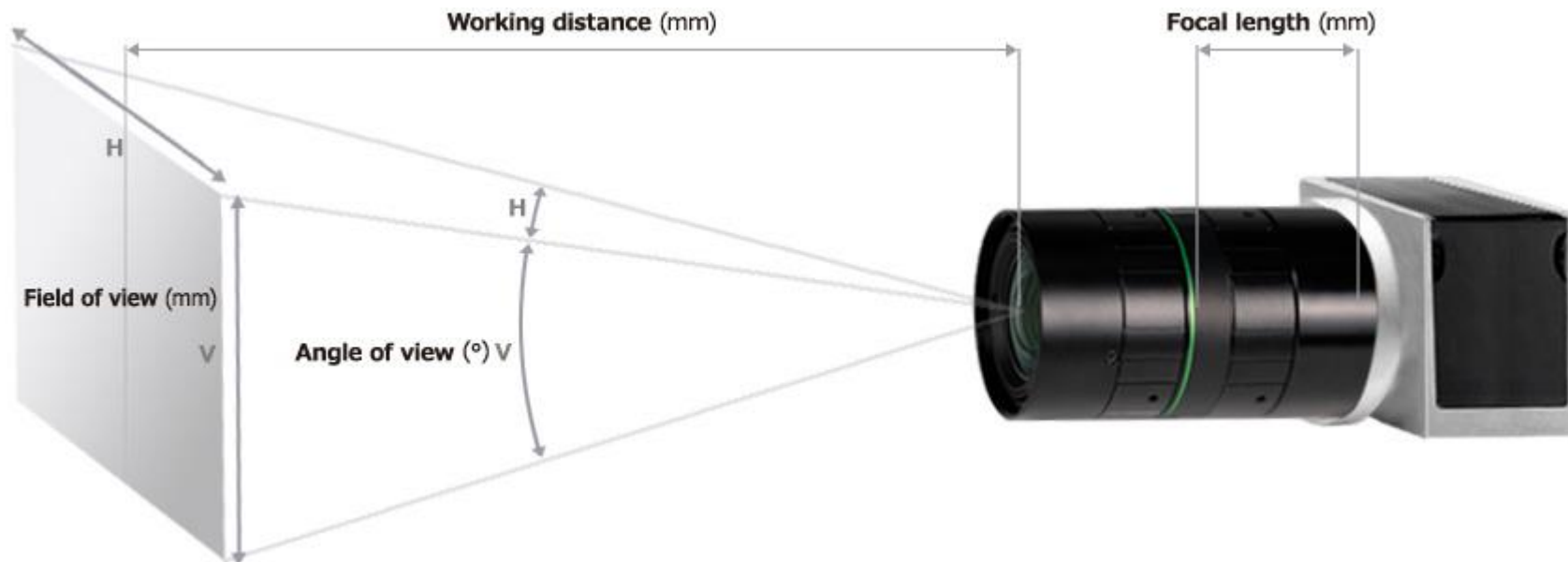
Lens Selector - FUJINON

Link: <https://optics.fujifilm.com/mvlens/en/selector/>

Info for spec in LENS

1. Camera sensor size
2. Focal length
3. Working distance from lens to object
4. FOV

Note: **Only suitable for fixed focal length lens**



Lens Selector - FUJINON

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Step 1 Click the “Sensor Size” button to get different sensor size

The screenshot shows the 'Sensor Size' selection interface. At the top, it says '【1】 Select sensor size'. Below that, it instructs the user to 'Select sensor size from the pull-down menu or enter the size (mm) directly.' There is a green button labeled 'Sensor Size ▼'. Below the button are two input fields: 'H mm X' and 'V mm'. A blue arrow points from the 'Sensor Size' dropdown menu to the 'Sensor Size' button. The dropdown menu is open, showing a list of sensor sizes: 1.1", 1.2", 1", 1/1.2", 2/3", and 1/1.7".

Lens Selector - FUJINON

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Step 2 Enter any 2 info that you get it from your customer

[2] Enter any two items

Focal length	<input type="text"/>	mm
Working distance	<input type="text"/>	mm
Angle of view	<input type="text" value="H"/> ° X	<input type="text" value="V"/> °
Field of view	<input type="text" value="H"/> mm X	<input type="text" value="V"/> mm

Reset values



[2] Enter any two items

Focal length	<input type="text" value="17"/>	mm
Working distance	<input type="text" value="100"/>	mm
Angle of view	<input type="text" value="28.1"/> ° X	<input type="text" value="23.6"/> °
Field of view	<input type="text" value="50"/> mm X	<input type="text" value="42"/> mm














Reset values

Lens Selector - FUJINON

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Result

You will get the suitable lens through the result table

	Product name	Sensor size (max.)	Sensor size (standard)	Focal Length (mm)	Iris Range (F no)	Dimension(mm)
	CF16ZA-1S	 	 	 		
			1.1"(2.5μm)	16	F1.8-F16	Ø39x67.6
	HF1618-12M	1/1.2"(4.5μm)	2/3"(2.1μm)	16	F1.8-F22	Ø33x52.5
	HF16XA-5M	1/1.2"(4.5μm)	2/3"(3.45μm)	16	F1.6-F16	Ø29.5x46.0
	HF16XA-1F	1/1.2"(4.5μm)	2/3"(3.45μm)	16	F1.6-F16	Ø29.5x46.0
	HF16SA-1	2/3"(3.45μm)		16	F1.4-F22	Ø51x70.5
	HF16HA-1S	2/3"(6.2μm)		16	F1.4-F16	Ø29.5x29.5
	CF16HA-1	1"(9.1μm)		16	F1.4-F22	Ø51x70.5

Lens Selector – Opto Engineering

Link: <https://www.opto-e.com/en/resources/tools/imaging-lens-selector>

Info for spec in LENS

1. Camera Pixel Size
2. Camera Horizontal Resolution
3. Camera Vertical Resolution
4. Camera Mount
5. Type of FOV (Rectangular / Circular)
6. FOV [(W x H)] or Diameter]
7. Type of Lens (Telecentric / Fixed Focal / Macro)
8. Working Distance
9. Magnification

Lens Selector – Opto Engineering

Link: <https://www.opto-e.com/en/resources/tools/imaging-lens-selector>

Step 1

Select the OE camera model or fill in the info that you get from your customer and click “NEXT STEP” button

Step 1

Select one camera from the list (PN, HRxVR, pixel, mount) or fill in with your camera sensor data then click Next Step

NEXT STEP >

Search for camera...

ITA04-GC-10C: IMX287 728 x 544, 6.90µm, C
ITA04-GM-10C: IMX287 728 x 544, 6.90µm, C
ITA16-GC-10C: IMX273 1456 x 1088, 3.45µm, C
ITA16-GM-10C: IMX273 1456 x 1088, 3.45µm, C
ITA24-GC-10C: IMX392 1936 x 1216, 3.45µm, C
ITA24-GM-10C: IMX392 1936 x 1216, 3.45µm, C
ITA32-GC-10C: IMX265 2064 x 1544, 3.45µm, C

IMAGE SENSOR DATA

Pixel size µm

Range [0.5 - 30] (min-max)

Horizontal resolution px

Vertical resolution px

Mount ▼

Lens Selector – Opto Engineering

Link: <https://www.opto-e.com/en/resources/tools/imaging-lens-selector>

Step 2 Select the type of FOV and fill in the FOV.
Click “NEXT STEP” button to step 3

Step 2

Select type of FoV (field of view), fill in object dimensions and click Next Step

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NEXT STEP >

RECTANGULAR



Object Width

100 mm

Object Height

100 mm

CIRCULAR



Object Diameter

mm

Lens Selector – Opto Engineering

Link: <https://www.opto-e.com/en/resources/tools/imaging-lens-selector>

Step 3

Select the type of LENS and click “NEXT STEP” button.

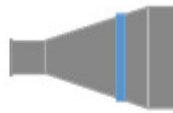
Note: Fixed focal and Macro lens need to fill in the working distance

Step 3

Select type of lens and fill in options then click Next Step

< BACK

NEXT STEP >



TELECENTRIC



FIXED FOCAL

Working distance (min value 50 mm)

mm



MACRO

Desired working distance (20% tolerance)

mm

Notes

Thin lens approximation, focus at infinity, formula used for calculation is:

$$\alpha = 2 \arctan(d / 2f)$$

Lens Selector – Opto Engineering

Link: <https://www.opto-e.com/en/resources/tools/imaging-lens-selector>

Step 4

You may double check the info that you fill in and click the “CALCULATE” button to get the result

Step 4

Check parameters and click Calculate

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CALCULATE >

PARAMETERS

Field of view =>R

Pixel size =>3.5

Horizontal resolution =>1200

Vertical resolution =>120

Mount type =>ALL

Mount name =>-

Object Width =>100

Object Height =>100

Object Diameter =>>null

Lens type =>TC

Compact size =>-

Coaxial =>-

Working distance =>-

Limit working distance (mm) =>-

Lens Selector – Opto Engineering

Link: <https://www.opto-e.com/en/resources/tools/imaging-lens-selector>

Result You will get suitable lens through the result table

Search results: 4

Partnumber	Magnification	Image circle ø Ø (mm)	Working distance (mm)	Focal length (mm)	Mount	FOV preview
TC12192	0.033	8.0	526.9	-	C	
TC13120	0.038	6.0	334.5	-	C	
TC13144	0.033	6.0	396.0	-	C	
TC23240	0.037	11.0	492.8	-	C	

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THANK YOU



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