

Precise Eye Field of View Matrix

Precise Eye Field of View Matrix (in mm at nominal working distance)

Lens Attachment	W.D. (mm)	Camera Format & Parameters	0.5X Adapter 1-62088 H x V	0.67X Adapter 1-61453 H x V	1.0X Adapter 1-61445 H x V	1.33X Adapter 1-61448 H x V	2.0X Adapter 1-61450 H x V
0.25X 0.018 NA DOF 1.59 mm 1-6044	310 (nominal)	Mag.	0.23X	0.30X	0.45X	0.60X	0.90X
		1/4" Sensor	14.2 x 10.7	10.6 x 8.0	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7
		1/3" Sensor	21.3 x 16.0	15.9 x 11.9	10.7 x 8.0	8.0 x 6.0	5.3 x 4.0
	282-351 (1) W.D. Range	1/2" Sensor	28.4 x 21.3	21.2 x 15.9	14.2 x 10.7	10.7 x 8.0	7.1 x 5.3
		2/3" Sensor	39.1 x 29.3	29.2 x 21.9	19.6 x 14.7	14.7 x 11.0	9.8 x 7.3
0.5X 0.035 NA DOF 0.40 mm 1-60110	175 (nominal)	Mag.	0.45X	0.60X	0.90X	1.20X	1.80X
		1/4" Sensor	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3
		1/3" Sensor	10.7 x 8.0	8.0 x 6.0	5.3 x 4.0	4.0 x 3.0	2.7 x 2.0
	170-190 (1) W.D. Range	1/2" Sensor	14.2 x 10.7	10.6 x 8.0	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7
		2/3" Sensor	19.6 x 14.7	14.6 x 10.9	9.8 x 7.3	7.4 x 5.5	4.9 x 3.7
0.75X 0.054 NA DOF 0.18 mm 1-60111	113 (nominal)	Mag.	0.68X	0.90X	1.35X	1.80X	2.70X
		1/4" Sensor	4.7 x 3.6	3.5 x 2.7	2.4 x 1.8	1.8 x 1.3	1.2 x 0.9
		1/3" Sensor	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3
	110-120 (1) W.D. Range	1/2" Sensor	9.5 x 7.1	7.1 x 5.3	4.7 x 3.6	3.6 x 2.7	2.4 x 1.8
		2/3" Sensor	13.0 x 9.8	9.7 x 7.3	6.5 x 4.9	4.9 x 3.7	3.3 x 2.4
None 0.070 NA DOF 0.10 mm	92 (nominal)	Mag.	0.90X	1.21X	1.80X	2.39X	3.60X
		1/4" Sensor	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3	1.3 x 1.0	0.9 x 0.7
		1/3" Sensor	5.3 x 4.0	4.0 x 3.0	2.7 x 2.0	2.0 x 1.5	1.3 x 1.0
	90-93 (1) W.D. Range	1/2" Sensor	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3
		2/3" Sensor	9.8 x 7.3	7.3 x 5.5	4.9 x 3.7	3.7 x 2.8	2.4 x 1.8
1.5X 0.106 NA DOF 0.04 mm 1-60112	51 (nominal)	Mag.	1.35X	1.81X	2.70X	3.59X	5.40X
		1/4" Sensor	2.4 x 1.8	1.8 x 1.3	1.2 x 0.9	0.9 x 0.7	0.6 x 0.4
		1/3" Sensor	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3	1.3 x 1.0	0.9 x 0.7
	49-51 (1) W.D. Range	1/2" Sensor	4.7 x 3.6	3.5 x 2.7	2.4 x 1.8	1.8 x 1.3	1.2 x 0.9
		2/3" Sensor	6.5 x 4.9	4.9 x 3.6	3.3 x 2.4	2.4 x 1.8	1.6 x 1.2
2.0X 0.142 NA DOF 0.02 mm 1-60113	36 (nominal)	Mag.	1.80X	2.41X	3.60X	4.79X	7.20X
		1/4" Sensor	1.8 x 1.3	1.3 x 1.0	0.9 x 0.7	0.7 x 0.5	0.4 x 0.3
		1/3" Sensor	2.7 x 2.0	2.0 x 1.5	1.3 x 1.0	1.0 x 0.8	0.7 x 0.5
	35-36 (1) W.D. Range	1/2" Sensor	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3	1.3 x 1.0	0.9 x 0.7
		2/3" Sensor	4.9 x 3.7	3.6 x 2.7	2.4 x 1.8	1.8 x 1.4	1.2 x 0.9

NOTE: (1) Working distance range when using 3 mm fine focus. Field of view will change with shorter or longer working distances.



R.J. Wilson, Inc.
Imaging Components for Industry & Science

www.rjwilson.com
sales@rjwilson.com
781-335-5500

Ultra Precise Eye Field of View Matrix

Ultra Precise Eye Magnification Matrix (in mm)

Infinity Corrected Objective (Mitutoyo)	W.D. (mm)	Camera Format & Parameters	0.5X Adapter 1-62088 H x V	0.67X Adapter 1-61453 H x V	1.0X Adapter 1-61445 H x V	1.33X Adapter 1-61448 H x V	2.0X Adapter 1-61450 H x V
4X 0.20 NA 1-55075	20	Mag.	1.78X	2.39X	3.56X	4.73X	7.12X
		1/4" Sensor	1.80 x 1.35	1.34 x 1.01	0.90 x 0.67	0.68 x 0.51	0.45 x 0.34
		1/3" Sensor	2.70 x 2.02	2.01 x 1.51	1.35 x 1.01	1.01 x 0.76	0.67 x 0.51
		1/2" Sensor	3.60 x 2.70	2.68 x 2.01	1.80 x 1.35	1.35 x 1.01	0.90 x 0.67
		2/3" Sensor	-	-	2.47 x 1.85	1.86 x 1.39	1.24 x 0.93
5X 0.14 NA 1-60226	34	Mag.	2.23X	2.98X	4.45X	5.92X	8.90X
		1/4" Sensor	1.44 x 1.08	1.07 x 0.80	0.72 x 0.54	0.54 x 0.41	0.36 x 0.27
		1/3" Sensor	2.16 x 1.62	1.61 x 1.21	1.08 x 0.81	0.81 x 0.61	0.54 x 0.40
		1/2" Sensor	2.88 x 2.16	2.15 x 1.61	1.44 x 1.08	1.08 x 0.81	0.72 x 0.54
		2/3" Sensor	-	-	1.98 x 1.48	1.49 x 1.12	0.99 x 0.74
10X 0.28 NA 1-60227	33	Mag.	4.45X	5.96X	8.90X	11.80X	17.80X
		1/4" Sensor	0.72 x 0.54	0.54 x 0.40	0.36 x 0.27	0.27 x 0.20	0.18 x 0.13
		1/3" Sensor	1.08 x 0.81	0.80 x 0.60	0.54 x 0.40	0.41 x 0.30	0.27 x 0.20
		1/2" Sensor	1.44 x 1.08	1.07 x 0.80	0.72 x 0.54	0.54 x 0.41	0.36 x 0.27
		2/3" Sensor	-	-	0.99 x 0.74	0.74 x 0.56	0.49 x 0.37
20X 0.42 NA 1-60228	20	Mag.	8.90X	11.90X	17.80X	23.70X	35.60X
		1/4" Sensor	0.36 x 0.27	0.27 x 0.20	0.18 x 0.13	0.14 x 0.10	0.09 x 0.07
		1/3" Sensor	0.54 x 0.40	0.40 x 0.30	0.27 x 0.20	0.20 x 0.15	0.13 x 0.10
		1/2" Sensor	0.72 x 0.54	0.54 x 0.40	0.36 x 0.27	0.27 x 0.20	0.18 x 0.13
		2/3" Sensor	-	-	0.49 x 0.37	0.37 x 0.28	0.25 x 0.19
50X 0.55 NA 1-60229	13	Mag.	22.30X	29.80X	44.50X	59.20X	89.00X
		1/4" Sensor	0.14 x 0.11	0.11 x 0.08	0.07 x 0.05	0.05 x 0.04	0.04 x 0.03
		1/3" Sensor	0.22 x 0.16	0.16 x 0.12	0.11 x 0.08	0.08 x 0.06	0.05 x 0.04
		1/2" Sensor	0.29 x 0.22	0.21 x 0.16	0.14 x 0.11	0.11 x 0.08	0.07 x 0.05
		2/3" Sensor	-	-	0.20 x 0.15	0.15 x 0.11	0.10 x 0.07

NOTE: The O-I remains constant for each body tube (main assembly) regardless of which infinity corrected objective and adapter are selected: 1-61517 I-O = 219 mm, 1-61521 I-O = 243 mm, 1-61522 I-O = 263 mm



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www.rjwilson.com
sales@rjwilson.com
781-335-5500

Precise Eye Field of View Matrix for Coaxial Illumination

Precise Eye Field of View Matrix for Co-axial Illumination (in mm at nominal working distance)

Lens Attachment	W.D. (mm)	Camera Format & Parameters	0.5X Adapter 1-62088 H x V	0.67X Adapter 1-61453 H x V	1.0X Adapter 1-61445 H x V	1.33X Adapter 1-61448 H x V	2.0X Adapter 1-61450 H x V
0.5X 0.035 NA DOF 0.40 mm 1-60110	175 (nominal)	Mag.	0.45X	0.60X	0.90X	1.20X	1.80X
		1/4" Sensor	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3
	170-190 (1) W.D. Range	1/3" Sensor	10.7 x 8.0	8.0 x 6.0	5.3 x 4.0	4.0 x 3.0	2.7 x 2.0
		1/2" Sensor	14.2 x 10.7	10.6 x 8.0	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7
		2/3" Sensor	19.6 x 14.7	14.6 x 10.9	9.8 x 7.3	7.4 x 5.5	4.9 x 3.7
0.75X 0.054 NA DOF 0.17 mm 1-60111	113 (nominal)	Mag.	0.68X	0.90X	1.35X	1.80X	2.70X
		1/4" Sensor	4.7 x 3.6	3.5 x 2.7	2.4 x 1.8	1.8 x 1.3	1.2 x 0.9
	110-120 (1) W.D. Range	1/3" Sensor	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3
		1/2" Sensor	9.5 x 7.1	7.1 x 5.3	4.7 x 3.6	3.6 x 2.7	2.4 x 1.8
		2/3" Sensor	13.0 x 9.8	9.7 x 7.3	6.5 x 4.9	4.9 x 3.7	3.3 x 2.4
None 0.070 NA DOF 0.10 mm	92 (nominal)	Mag.	0.90X	1.21X	1.80X	2.39X	3.60X
		1/4" Sensor	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3	1.3 x 1.0	0.9 x 0.7
	90-93 (1) W.D. Range	1/3" Sensor	5.3 x 4.0	4.0 x 3.0	2.7 x 2.0	2.0 x 1.5	1.3 x 1.0
		1/2" Sensor	7.1 x 5.3	5.3 x 4.0	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3
		2/3" Sensor	9.8 x 7.3	7.3 x 5.5	4.9 x 3.7	3.7 x 2.8	2.4 x 1.8
1.5X 0.106 NA DOF 0.046 mm 1-60112	51 (nominal)	Mag.	1.35X	1.81X	2.70X	3.59X	5.40X
		1/4" Sensor	2.4 x 1.8	1.8 x 1.3	1.2 x 0.9	0.9 x 0.7	0.6 x 0.4
	49-51 (1) W.D. Range	1/3" Sensor	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3	1.3 x 1.0	0.9 x 0.7
		1/2" Sensor	4.7 x 3.6	3.5 x 2.7	2.4 x 1.8	1.8 x 1.3	1.2 x 0.9
		2/3" Sensor	6.5 x 4.9	4.9 x 3.6	3.3 x 2.4	2.5 x 1.8	1.6 x 1.2
2.0X 0.142 NA DOF 0.025 mm 1-60113	36 (nominal)	Mag.	1.80X	2.41X	3.60X	4.79X	7.20X
		1/4" Sensor	1.8 x 1.3	1.3 x 1.0	0.9 x 0.7	0.7 x 0.5	0.4 x 0.3
	35-36 (1) W.D. Range	1/3" Sensor	2.7 x 2.0	2.0 x 1.5	1.3 x 1.0	1.0 x 0.8	0.7 x 0.5
		1/2" Sensor	3.6 x 2.7	2.7 x 2.0	1.8 x 1.3	1.3 x 1.0	0.9 x 0.7
		2/3" Sensor	4.9 x 3.7	3.6 x 2.7	2.4 x 1.8	1.8 x 1.4	1.2 x 0.9

NOTE:

The internal coax will illuminate a circular area of about 11 mm in diameter. Any field of view larger than 11 mm will have darkened corners.

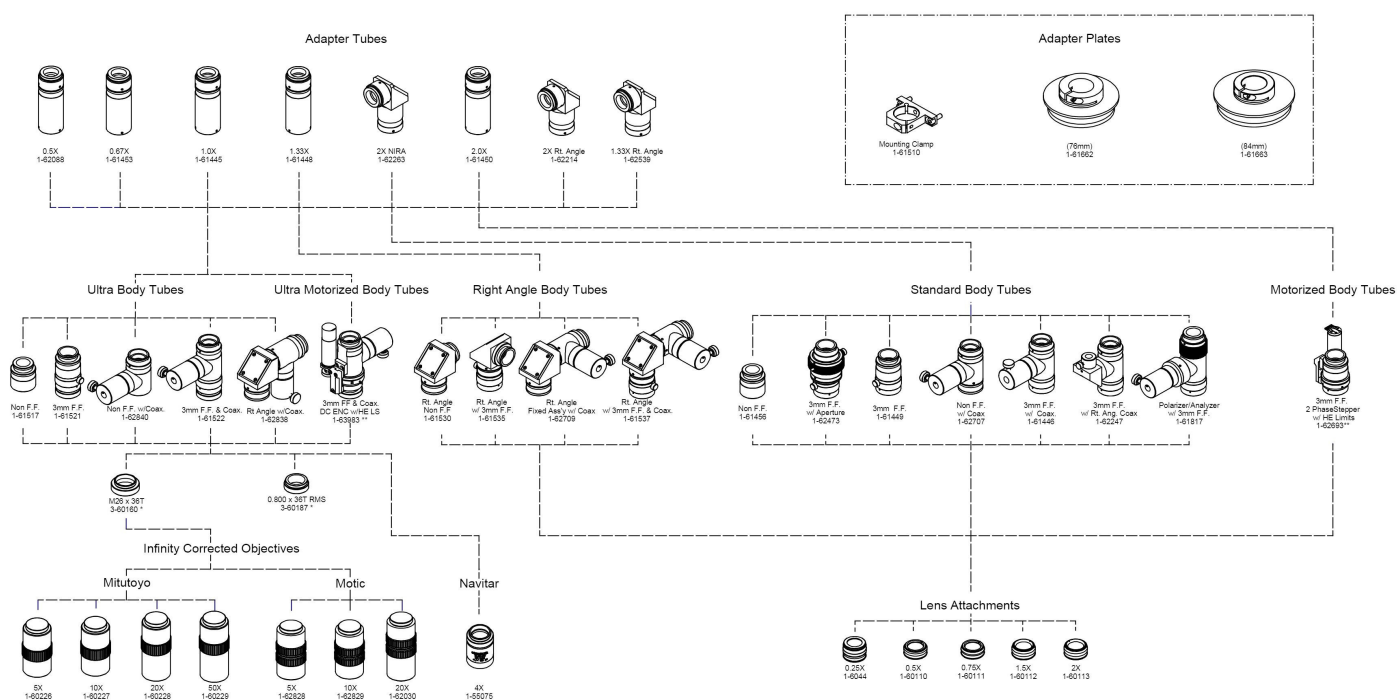
(1) Working distance range when using 3 mm fine focus. Field of view will change with shorter or longer working distance.



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Precise Eye
System Diagram



* Included with ULTRA PRECISE EYE
** Items are Special Order (Contact Navitar for Additional Information)

Rev. 010416



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