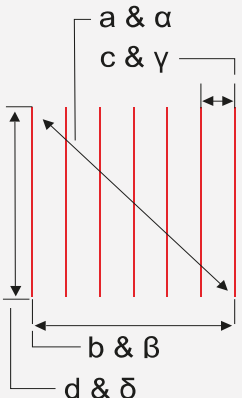


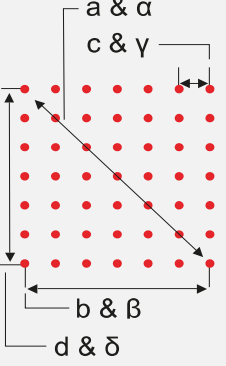
Standard Diffractive Optical Elements - Polymer

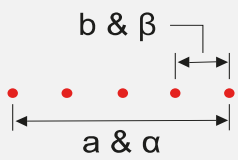
Polymer DOEs - DOE Category I:

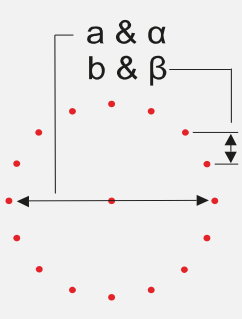
Size: Circular 8 mm diameter, thickness between 0.6mm and 1.2mm

Mounted version: 12.7 mm x 2.2 mm stainless steel adapter ring

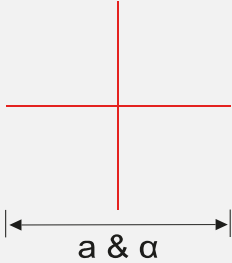
Multi Lines	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance, Values: mm				Pattern Angles (@ Design Wavelength)				Recommended Wavelength Range
				a	b	c	d	α	β	γ	δ	
 <p>The diagram illustrates a multi-line diffractive optical element. It shows a series of vertical lines of varying heights and spacings. Parameters are labeled: 'a & alpha' for the top height and angle, 'c & gamma' for the middle height and angle, 'b & beta' for the bottom height and angle, and 'd & delta' for the total height and angle. The lines are shown in red and black.</p>	DE-R 198	31 Lines (Square)	450 nm	72.8	51.5	1.7	51.5	40.0°	28.9°	0.96°	28.9°	425-490 nm
	DE-R 213	11 Lines (Square)	635 nm	76.7	54.4	5.4	54.4	42.0°	30.4°	3.0°	30.4°	530-670 nm
	DE-R 233	7 Lines (Square)	635 nm	54.0	38.2	6.4	38.2	30.2°	21.6°	3.6°	21.6°	530-670 nm
	DE-R 250	5 Lines (Rectangular)	660 nm	55.0	10.9	2.7	53.9	30.8°	6.2°	1.6°	30.2°	590-670 nm
	DE-R 251	7 Lines (Rectangular)	650 nm	15.5	9.0	1.5	12.6	8.9°	5.2°	0.8°	7.2°	590-730 nm
	DE-R 252	5 Lines (Square)	635 nm	42.7	30.2	7.5	30.2	24.1°	17.2°	4.3°	17.2°	530-670 nm
	DE-R 253	11 Lines (Square)	635 nm	76.4	54.0	5.4	54.0	41.8°	30.2°	3.0°	30.2°	550-700 nm
	DE-R 254	25 Lines (Square)	660 nm	68.4	48.3	2.0	48.3	37.7°	27.2°	1.1°	27.2°	530-670 nm
	DE-R 255	65 Lines (Square)	660 nm	45.6	32.2	0.5	32.2	25.7°	18.3°	0.3°	18.3°	530-670 nm
	DE-R 284	41 Lines (Rectangular)	660 nm	133.4	104.0	2.6	78.0	67.4°	54.9°	1.4°	42.6°	600-700 nm
	DE-R 348	10 Lines (Rectangular)	650 nm	125.5	90.0	10.0	87.5	64.2°	48.5°	5.4°	47.3°	600-700 nm
	DE-R 350	15 Lines (Rectangular)	520 nm	65.5	42.1	3.0	50.2	36.3°	23.8°	1.7°	28.2°	480-550 nm
	DE-R 381	11 Lines (Rectangular)	850 nm	155.6	41.5	4.15	150	75.8°	23.5°	2.3°	74.0°	830-880 nm
	DE-R 386	3 Lines (Rectangular)	520 nm	50.7	8.0	4.0	50.0	28.4°	4.6°	2.3°	28.1°	490-550 nm
	DE-R 387	5 Lines (Rectangular)	520 nm	50.7	8.0	2.0	50.0	28.4°	1.15°	3.1°	28.1°	490-550 nm
	DE-R 391	81 Lines (Rectangular)	650 nm	156.0	128.8	1.6	93.6	75.9°	63.9°	0.8°	50.2°	600-700 nm
	DE-R 392	3 Lines (Rectangular)	660 nm	54.7	10.8	5.4	53.6	30.6°	6.2°	3.1°	30.0°	600-700 nm

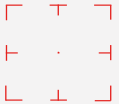


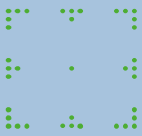
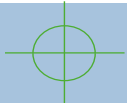

Dot Matrix	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance, Values: mm				Pattern Angles (@ Design Wavelength)				Recommended Wavelength Range
				a	b	c	d	α	β	γ	δ	
	DE-R 206	17 x 17 Dots	660 nm	38.0	26.6	1.7	26.6	21.5°	15.2°	0.9°	15.2°	590-730 nm
	DE-R 223	2 x 2 + 1 Dots	635 nm	28.3	19.9	19.9	19.9	16.1°	11.4°	11.4°	11.4°	635 & 405 nm
	DE-R 231	101 x 101 Dots	660 nm	12.8	9.1	0.1	9.1	7.4°	5.2°	0.05°	5.2°	635-680 nm
	DE-R 241	21 x 21 Dots	635 nm	11.9	8.4	0.4	8.4	6.8°	4.8°	0.2°	4.8°	590-730 nm
	DE-R 242	16 x 16 Dots	635 nm	12.4	8.8	0.6	8.8	7.1°	5.0°	0.3°	5.0°	590-730 nm
	DE-R 243	17 x 17 Dots	635 nm	12.4	8.8	0.5	8.8	7.1°	5.0°	0.3°	5.0°	550-720 nm
	DE-R 244	13 x 13 Dots	635 nm	7.4	5.3	0.4	5.3	4.3°	3.0°	0.3°	3.0°	590-670 nm
	DE-R 257	51 x 51 Dots	660 nm*	56.9	40.3	0.8	40.3	31.8°	22.8°	0.5°	22.8°	560-720 nm
	DE-R 258	11 x 11 Dots	635 nm*	71.2	50.3	5.0	50.3	39.2°	28.2°	2.8°	28.2°	590-690 nm
	DE-R 339	6 x 6 Dots	635 nm	16.6	11.7	2.3	11.7	9.5°	6.7°	1.3°	6.7°	590-690 nm
	DE-R 351	10 x 10 Dots	532 nm	21.1	14.9	3.3	14.9	23.8°	17.0°	1.9°	17.0°	510-600 nm
	DE-R 352	4 x 6 Dots	532 nm	26.6	13.7	4.6	22.8	15.1°	7.8°	2.6°	13.6°	500-580 nm
	DE-R 353	5 x 5 Dots	690 nm	1.1	0.75	0.19	0.75	0.61°	0.43°	0.11°	0.43°	630-750 nm
	DE-R 388	51 x 51 Dots	532 nm*	46.8	33.1	0.66	33.1	26.4°	18.8°	0.38°	18.8°	500-560 nm
	DE-R 389	21 x 21 Dots	520 nm*	46.8	33.1	1.66	33.1	26.4°	18.8°	0.95°	18.8°	480-600 nm

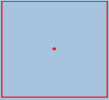
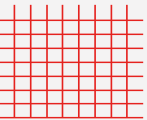

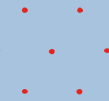
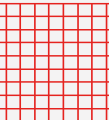
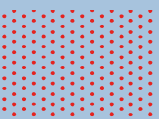
Lines & Dot Lines	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance, Values: mm		Pattern Angles (@ Design Wavelength)		Recommended Wavelength Range
				a	b	α	β	
	DE-R 199	QC-Line-45@450	450 nm	84	—	45°	—	440-480 nm
	DE-R 263	1:5 Dot Line	635 nm	10.5	2.6	6°	1.5°	630-780 nm
	DE-R 264	1:9 Dot Line	670 nm	1.6	0.2	0.9°	0.1°	630-780 nm
	DE-R 265	1:19 Dot Line	650 nm	24	1.3	13.7°	0.8°	500-540 nm / 630-690 nm
	DE-R 266	QC-Line-5@633	633 nm	8.7	—	5°	—	630-690 nm
	DE-R 267	QC-Line-30@532	532 nm	53.8	—	30.1°	—	560-570 nm
	DE-R 281	1:11 Dot Line	650 nm	28.9	2.9	16.5°	1.6°	440-490 nm / 600-730 nm
	DE-R 282	1:99 Dot Line	660 nm	33.7	0.3	19.1°	0.2°	600-700 nm
	DE-R 283	QC-Line-20@633	633 nm	35.2	—	20°	—	630-670 nm
	DE-R 286	QC-Line-30@660	660 nm	54.6	—	30.5°	—	600-700 nm
	DE-R 287	QC-Line-45@660	660 nm	83.9	—	45.5°	—	600-700 nm
	DE-R 337	1:99 Dot Line	635 nm	49.3	0.5	27.7°	0.3°	600-700 nm
	DE-R 364	QC-Line-45@940	940 nm	83.0	—	45.0°	—	850-1050 nm
	DE-R 369	QC-Line-36@640	639 nm	65.0	—	36.0°	—	600-700 nm
	DE-R 383	QC-Line-51@840	840 nm	95.0	—	50.6°	—	790-880 nm

Circles & Dot Circles	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance, Values: mm		Pattern Angles (@ Design Wavelength)		Recommended Wavelength Range
				a	b	α	β	
	DE-R 219	Solid Line Circle	592 nm	55.8 mm	—	31.2°	—	■ 480-600 nm
	DE-R 220	1 : 16 Dot Circle	515 nm	81.9 mm	16.1 mm	44.5°	9.2°	■ 480-532 nm
	DE-R 221	1:72 Dot Circle	532 nm	36.9 mm	1.6 mm	20.9°	0.9°	■ 400-570 nm
	DE-R 229	1:36 Dot Circle	532 nm	6.1 mm	0.5 mm	3.5°	0.3°	■ 480-560 nm
	DE-R 238	Solid Line Circle	520 nm	6.0 mm	—	3.4°	—	■ 520-532 nm
	DE-R 240	1:16 Dot Circle	635 nm	18.9 mm	3.7 mm	10.8°	2.1°	■ 530-700 nm
	DE-R 268	Solid Line Circle	488 nm	77.0 mm	—	42.1°	—	■ 488-532 nm

Random Dot Patterns	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance, Values: mm			Pattern Angles (@ Design Wavelength)			Recommended Wavelength Range
				a	b	c	α	β	γ	
	DE-R 332	33000-Dot Pseudo-Random	830 nm*	136.9	114.6	76.3	68.8°	59.6°	41.7°	820-850 nm
	DE-R 335	33000-Dot Pseudo-Random	645 nm*	101.3	84.8	56.4	53.7°	45.9°	31.5°	630-660 nm
	DE-R 372	40100-Dot Pseudo-Random	850 nm*	135.6	114.9	72.0	68.3°	59.7°	39.6°	825-870 nm
	DE-R 373	31806-Dot Truly-Random	830 nm*	146.9	118.5	86.9	72.6°	61.3°	47.0°	820-860 nm
	DE-R 374	47708-Dot Truly-Random	830 nm*	146.9	118.5	86.9	72.6°	61.3°	47.0°	820-860 nm
	DE-R 375	29594-Dot Pseudo-Random	830 nm*	146.7	118.5	86.5	72.5°	61.3°	46.8°	810-850 nm
	DE-R 384	51978-Dot Truly-Random	640 nm*	162.8	97.5	130.4	78.3°	52.0°	66.2°	610-660 nm
	DE-R 385	101050-Dot Truly-Random	640 nm*	167.4	100.4	133.9	79.9°	53.3°	67.6°	610-660 nm

Crosshair	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance, Values: mm		Recommended Wavelength Range
				a	α	
	DE-R 197	Cross – 45@450	450 nm	83	45°	425-590 nm
	DE-R 205	Cross – 5@650	650 nm	8.7	5°	580-660 nm
	DE-R 212	Cross – 25@532	532 nm	45.1	25.4°	500-640 nm
	DE-R 214	Cross – 2@645	650 nm	3.4	2.0°	600-645 nm
	DE-R 218	Cross – 15@640	640 nm	26.3	15.0°	500-640 nm
	DE-R 239	Cross – 5@520	520 nm	8.7	5.0°	488-600 nm
	DE-R 245	Cross – 10@633	633 nm	17.5	10.0°	570-690 nm
	DE-R 246	Cross with surrounding high contrast area -@633	633 nm	17.5	10.0°	530-670 nm
	DE-R 247	Cross – 25@645	645 nm	44.3	25.0°	600-800 nm
	DE-R 248	Cross – 37@645	645 nm	66.8	37.0°	630-700 nm
	DE-R 249	Cross – 45@633	633 nm	83.0	45.0°	620-700 nm
	DE-R 270	Cross – 30@640	640 nm	53.6	30.0°	590-690 nm
	DE-R 280	Cross – 60@635	635 nm	115.5	60.0°	580-690 nm
	DE-R 289	Cross – 15@520	520 nm	26.4	15.0°	480-550 nm
	DE-R 299	Cross – 75@650	650 nm	153.5	75.0°	580-690 nm
	DE-R 340	Cross – 60@450	450 nm	116.1	60.3°	420-520 nm
	DE-R 342	Cross – 52@515	515 nm	97.6	52.0°	440-540 nm
	DE-R 382	Cross – 30@450	450 nm	53.6	30.0°	440-480 nm

Viewfinder	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance, Values: mm	Pattern Angles (@ Design Wavelength)	Recommended Wavelength Range
	DE-R 215	Viewfinder	645 nm	Width (=b): 27mm Height (=c): 17.7 mm Diagonal (=a): 32 mm	Width (=β): 15.5° Height (=γ): 10.1° Diagonal (=α): 18.2°	570-750 nm
	DE-R 234	Viewfinder (Lines Square)	633 nm*	Width (=b): 61 mm Height: 61 mm Diagonal (=a): 86 mm	Width (=β): 34° Height: 34° Diagonal (=α): 47°	590-730 nm
	DE-R 260	Viewfinder (Circle + Cross)	645 nm	Width Cross (=a): 37 mm Circle Ø (=b): 18.3 mm	Width Cross (=α): 21° Circle Ø (=β): 10.5°	570-750 nm
	DE-R 261	Viewfinder (Dot Circle + Cross)	635 nm	Width Cross (=a): 11 mm Circle Ø (=b): 8.8 mm Dot Spacing (=c): 1.1 mm	Width Cross (=α): 6.3° Circle Ø (=β): 5° Angle betw. Dots (=γ): 0.63°	570 -750 nm
	DE-R 262	Viewfinder (Dot Square)	532 nm	Width (=b): 12.3 mm Height (=c): 12.3 mm Diagonal (=a): 17.4 mm Dot Spacing: 0.5 mm	Width: 7.0° Height: 7.0° Diagonal: 10.0° Angle betw. Dots: 0.3°	480-670 nm
	DE-R 288	Viewfinder	650 nm	Width: 83.0 mm Height: 53.7 mm Diagonal: 98.9 mm	Width: 43.7° Height: 27.9° Diagonal: 52.6°	590-730 nm
	DE-R 345	Viewfinder (Circle + Cross)	520 nm	Width Cross: 49.9 mm Circle Ø: 24.6 mm	Width Cross: 28.0° Circle Ø: 14.0°	500-540 nm
	DE-R 394	Viewfinder	520 nm	Width: 65.9 mm Height: 65.9 mm Diagonal: 93.2 mm	Width: 36.5° Height: 36.5° Diagonal: 50.0°	500-540 nm

Special Pattern	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance, Values: mm	Pattern Angles (@ Design Wavelength)	Recommended Wavelength Range
	DE-R 236	Solid Line Square	633* nm	Width: 60.2 mm Height: 60.2 mm Diagonal: 85 mm	Width: 33.5° Height: 33.5° Diagonal: 46°	530-650 nm
	DE-R 256	Square Grid 51 x 51 Lines	660 nm*	Width: 39 mm Height: 39 mm Diagonal: 55 mm Line Spacing: 0.77 mm	Width: 22° Height: 22° Diagonal: 31° Angle betw. Lines: 0.44°	530-660 nm
	DE-R 259	5 Rings	645 nm	Width: 51 mm Line Spacing: 5.1 mm	Width: 29° Lines Spacing: 2.8°	530-700 nm
	DE-R 269	10 Rings	515 nm	Width: 96.2 mm Line Spacing: 4.8 mm	Width: 51.4° Lines Spacing: 2.6°	488-532 nm
	DE-R 285	Hexagon	780 nm	Width: 13.1 mm	Width: 7.5°	520-800 nm
	DE-R 354	Square Grid 10x10 Lines	658 nm	Width: 72.8 mm Height: 72.8 mm Diagonal: 102.9 mm Line Spacing: 8.1 mm	Width: 40.0° Height: 40.0° Diagonal: 51.4° Angle betw. Lines: 4°	620-680 nm
	DE-R 396	21x11 Hexagonal Array	660 nm*	Width: 61.1 mm Height: 35.3 mm Diagonal: 70.5 mm Dot Spacing: 3.5 mm	Width: 34.0° Height: 20.0° Diagonal: 38.8° Angle betw. Lines: 2.0°	600-730 nm
	DE-R 397	11x10 Hexagonal Array	660 nm*	Width: 44.4 mm Height: 46.2 mm Diagonal: 64.1 mm Dot Spacing: 5.1 mm	Width: 25.1° Height: 26.0° Diagonal: 35.5° Angle betw. Lines: 2.9°	600-730 nm



DE-R 399

5 Rings

450 nm

Width: 51 mm
Line Spacing: 7.3 mm

Width: 40.0°
Line Spacing: 4.0°

400-500 nm