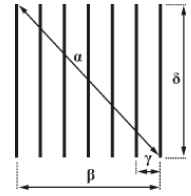
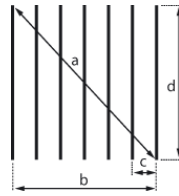


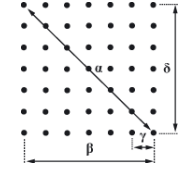
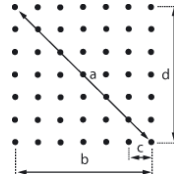
# >> Standard Diffractive Optical Elements

## Multi-Lines:



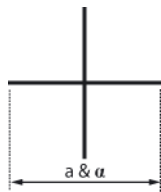
DOE Item #	Description	Material / Size (Ø x Thickness)	Pattern Size @ 100 mm Distance				Pattern Angles (@ 633 nm)			
			a	b	c	d	$\alpha$	$\beta$	$\gamma$	$\delta$
DE-R 213	11 Lines ( Square)	PC / 8 x 1.2 mm	76 mm	54 mm	5.4 mm	54 mm	42 °	30°	3.0°	30°
DE-R 233	7 Lines ( Square)	PC / 8 x 1.2 mm	53 mm	38 mm	6.3 mm	38 mm	30°	21.4°	3.6°	21.4°
DE-R 250	5 Lines (Rectangular)	PC / 8 x 1.2 mm	52 mm	10.4 mm	2.6 mm	51 mm	29.3°	6.0°	1.50°	28.8°
DE-R 251	7 Lines (Rectangular)	PC / 8 x 1.2 mm	15 mm	8.7 mm	2.2 mm	12.2 mm	8.6°	5.0°	0.83°	7.0°
DE-R 252	5 Lines ( Square)	PC / 8 x 1.2 mm	42 mm	29.9 mm	7.5 mm	29.9 mm	23.9°	17.0°	4.3°	17.0°
DE-R 253	11 Lines ( Square, Thin Lines)	PC / 8 x 1.2 mm	76 mm	53 mm	5.3 mm	53 mm	41°	29.9°	2.99°	29.9°
DE-R 254	25 Lines ( Square)	PC / 8 x 1.2 mm	68 mm	48 mm	2.0 mm	48 mm	37°	27.0°	1.12°	27.0°
DE-R 255	65 Lines (Square, Central Line Thicker)	PC / 8 x 1.2 mm	46 mm	32 mm	0.51 mm	32 mm	25.8°	18.4°	0.28°	18.4°

## Dot Matrix:



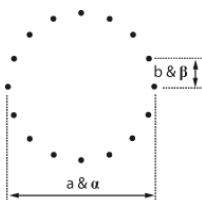
DOE Item #	Description	Material / Size (Ø x Thickness)	Pattern Size @ 100 mm Distance				Pattern Angles (@ 633 nm)			
			a	b	c	d	$\alpha$	$\beta$	$\gamma$	$\delta$
DE-R 206	17 x 17 Dots	PMMA / 8 x 1 mm	38 mm	25.4 mm	1.59 mm	25.4 mm	20.5°	14.5°	0.91°	14.5°
DE-R 241	21 x 21 Dots	PC / 8 x 1.2 mm	11.7 mm	8.4 mm	0.42 mm	8.4 mm	6.7°	4.8°	0.24°	4.8°
DE-R 242	16 x 16 Dots	PC / 8 x 1.2 mm	12.2 mm	8.7 mm	0.58 mm	8.7 mm	7.0°	5.0°	0.33°	5.0°
DE-R 243	17 x 17 Dots	PC / 8 x 1.2 mm	12.2 mm	8.7 mm	0.51 mm	8.7 mm	7.0°	5.0°	0.33°	5.0°
DE-R 244	13 x 13 Dots	PC / 8 x 1.2 mm	9.3 mm	6.5 mm	0.54 mm	6.5 mm	5.3°	3.7°	0.31°	3.7°
DE-R 257	51 x 51 Dots	PC / 8 x 1.2 mm	56.4 mm	40 mm	0.8 mm	40 mm	31.5°	22.5°	0.45°	22.5°
DE-R 258	11 x 11 Dots	PC / 8 x 1.2 mm	70.4 mm	49.8 mm	4.98 mm	49.8 mm	38.8°	28°	2.8°	28°

## Crosshair:



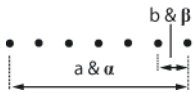
DOE Item #	Description	Material / Size (Ø x Thickness)	Pattern Size	Pattern Angle
			@ 100 mm Distance	(@ 633 nm)
DE-R 201	Cross - 5	PMMA / 8 x 1 mm	a	$\alpha$
DE-R 218	Cross - 15	PMMA / 8 x 1 mm	9 mm	5°
DE-R 245	Cross - 10	PC / 8 x 1.2 mm	26 mm	15°
DE-R 246	Cross with surrounding high contrast area	PC / 8 x 1.2 mm	18 mm	10°
DE-R 247	Cross - 25	PC / 8 x 1.2 mm	44 mm	25°
DE-R 248	Cross - 37	PC / 8 x 1.2 mm	66 mm	37°
DE-R 249	Cross - 45	PC / 8 x 1.2 mm	83 mm	45°

## Circles & Dot Circles:



DOE Item #	Description	Material / Size (Ø x Thickness)	Pattern Size		Pattern Angles	
			@ 100 mm Distance	@ 633 nm	$\alpha$	$\beta$
DE-R 219	Solid Line Circle	PMMA / 8 x 1 mm	a	b	$\alpha$	$\beta$
DE-R 221	1 : 72 Dot Circle	PMMA / 8 x 1 mm	60 mm	--	34°	--
DE-R 240	1 : 16 Dot Circle	PC / 8 x 1.2 mm	45 mm	1.96 mm	25°	1.09°
			19 mm	3.6 mm	11°	2.1°

## Lines & Dot-Lines:



DOE Item #	Description	Material / Size ( $\varnothing$ x Thickness)	Pattern Size @ 100 mm Distance		Pattern Angles (@ 633 nm)	
			a	b	$\alpha$	$\beta$
DE-R 227	Solid Line - 40	PC / 8 x 1.2 mm	73 mm	--	40°	--
DE-R 263	1 : 5 Dot Line	PC / 8 x 1.2 mm	10.4 mm	2.6 mm	5.9°	1.48°
DE-R 264	1 : 9 Dot Line	PC / 8 x 1.2 mm	1.5 mm	0.19 mm	0.85°	0.11°
DE-R 265	1 : 19 Dot Line	PC / 8 x 1.2 mm	23.4 mm	1.3 mm	13.3°	0.74°
DE-R 266	Solid Line - 5	PC / 8 x 1.2 mm	8.7 mm	--	5°	--

## Special Patterns:

DOE Item #	Description	Material / Size ( $\varnothing$ x Thickness)	Pattern Size @ 100 mm Distance	Pattern Angles (@ 633 nm)	Image
DE-R 215	Viewfinder	PC / 8 x 1.2 mm	Width: 26.2 mm Height: 17.6 mm Diagonal: 31.6 mm	Width: 15° Height: 10° Diagonal: 18°	
DE-R 234	Viewfinder (Lines Square)	PC / 8 x 1.2 mm	Width: 60.2 mm Height: 60.2 mm Diagonal: 85 mm	Width: 33.5° Height: 33.5° Diagonal: 46°	
DE-R 256	Square Grid 51 x 51 Lines	PC / 8 x 1.2 mm	Width: 40 mm Height: 40 mm Diagonal: 56.4 mm Line Spacing: 0.8 mm	Width: 22.6° Height: 22.6° Diagonal: 31.5° Angle betw. Lines: 0.45°	
DE-R 259	5 Rings	PC / 8 x 1.2 mm	Width: 50.2 mm Line Spacing: 5 mm	Width: 28.2° Line Spacing: 2.82°	
DE-R 260	Viewfinder (Circle + Cross)	PC / 8 x 1.2 mm	Width Cross: 36.4 mm Circle $\varnothing$ : 18.2 mm	Width Cross: 20.2° Circle $\varnothing$ : 10.4°	
DE-R 261	Viewfinder (Dot Circle + Cross)	PC / 8 x 1.2 mm	Width Cross: 10.9 mm Circle $\varnothing$ : 8.7 mm Dot Spacing: 1.1 mm	Width Cross: 6.2° Circle $\varnothing$ : 5.4° Angle betw. Dots: 0.62°	
DE-R 262	Viewfinder (Dot Square)	PC / 8 x 1.2 mm	Width: 14.6 mm Height: 14.6 mm Diagonal: 20.6 mm Dot Spacing: 0.6 mm	Width: 8.3° Height: 8.3° Diagonal: 11.8° Angle betw. Dots: 0.36°	