

## FLEXPOINT® DOE Series Laser Modules with Diffractive Optical Elements

With the help of diffractive optical elements (DOEs) it is possible to turn a simple laser dot into a variety of different beam patterns. LASER COMPONENTS offers a wide range of different patterns as crosses, parallel lines, dot lines, dot matrix and many more. The DOEs can be integrated into our standard FLEXPOINT® laser modules.

### Features

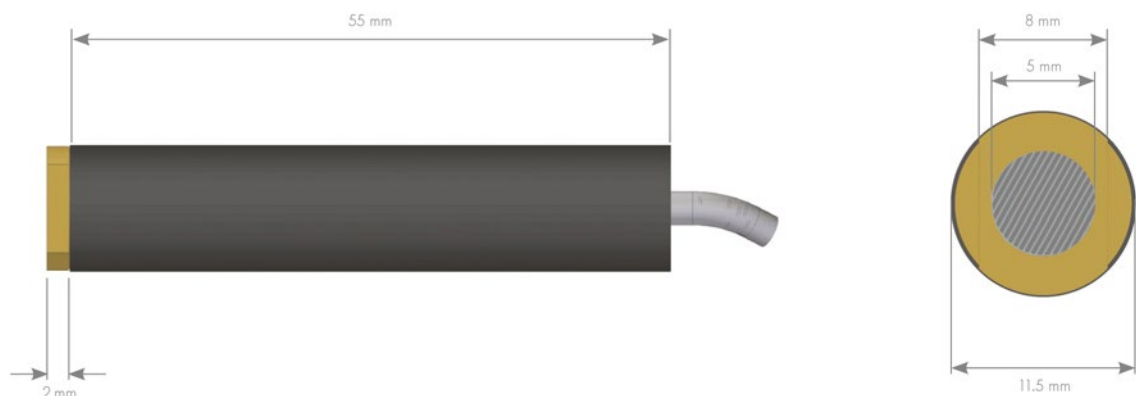
- Huge variety of different patterns
- Red or green laser
- Adjustable or preset focus
- Choice of small or ruggedized housing

### Applications

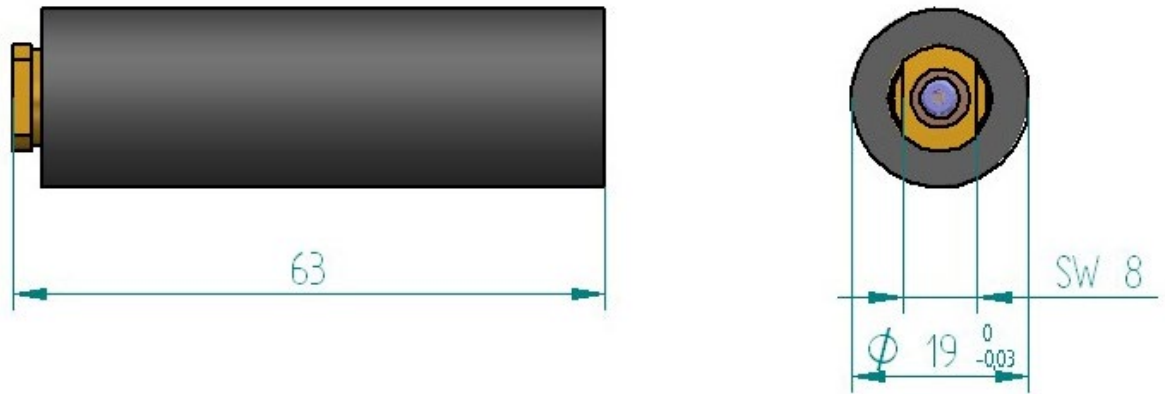
- Machine vision
- Measurement tasks
- Alignment, pointing and positioning
- Medical, Biophotonics



### Standard (small) housing



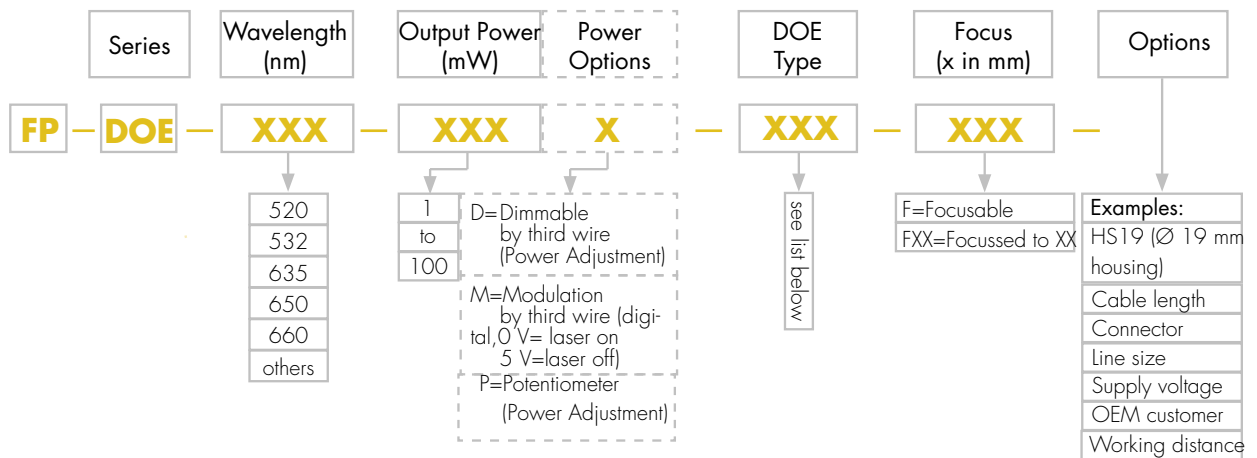
### Ruggedized housing



### Laser Module Specifications

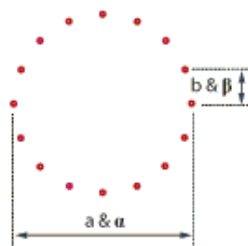
Wavelength	520 nm, 532 nm, 635 – 640 nm, 650 – 660 nm (other wavelengths on request)
Output power	From < 1 mW up to 100 mW, depending on wavelength
Power stability	Better +/- 5% (after warm up)
Bore sighting	< 0.5° (improved bore sighting on request)
Pointing stability	< 50 µrad/°C
Focussing options	Collimated / adjustable focus / focus preset
Focussing range	50 mm to collimation (shorter focussing range on request)
Operating voltage	4.5 – 6 VDC, reverse voltage protection (4.5 – 30 VDC as option), 10 - 30 VDC for 520 nm, 5 - 30 VDC for 532 nm
Power consumption	30 – 250 mA, depending on laser type
Operating temperature	0 – 50 °C (depending on used laser type, temperature range can be extended or limited)
Storage temperature	-10 °C to +60 °C
Housing size	Standard: 57 mm length, 11.5 +0/-0.03 mm diameter Ruggedized: 63 length, 19.0 +0/-0.3 mm
Housing materia	Black anodized aluminium, isolated (potential free)
Cable length	2.0 m
Options	Power adjustment by external potentiometer Power adjustment by control wire (0 – 5 V; active low) Digital modulation up to 10 kHz depending on laser type (0 – 5 V; active low), higher freq. on request Different housing style
Accessories	Mount, power supply, laser safety eyewear


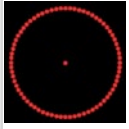
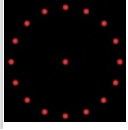
### Ordering Code FLEXPOINT® DOE Series



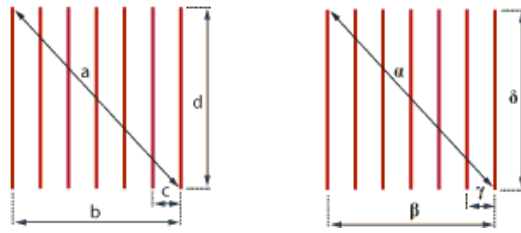
### List of available DOEs

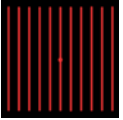
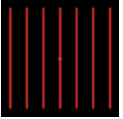


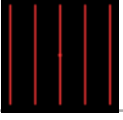
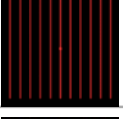


#### Circles & Dot Circles



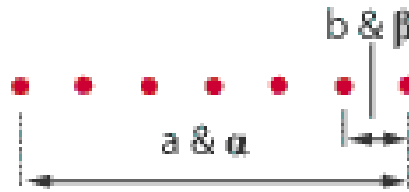
DOE Item #	Description	Optimum Wavelength Range	Pattern Size @ 100 mm Distance		Pattern Angles (@ 635 nm)		Image
			a	b	$\alpha$	$\beta$	
DOE-219	Solid Line Circle	480 - 600 nm	60 mm	-	34°	-	
DOE-221	1:72 Dot Circle	400 - 570 nm	44 mm	1.94 mm	25°	1.11°	
DOE-240	1:16 Dot Circle	530 - 700 nm	18.9 mm	3.7 mm	10.8°	2.1°	

Multi Lines



DOE Item #	Description	Optimum Wavelength Range	Pattern Size @ 100 mm Distance				Pattern Angles (@ 635 nm)				Image
			a	b	c	d	$\alpha$	$\beta$	$\gamma$	$\delta$	
DOE-213	11 Lines (Square)	530 - 670 nm	76.3 mm	54.1 mm	5.4 mm	54.1 mm	41.8°	30.3°	3°	30.3°	
DOE-233	7 Lines (Square)	530 - 670 nm	54 mm	38.2 mm	6.4 mm	38 mm	30°	22°	3.6°	22°	
DOE-250	5 Lines (Rectangular)	590 - 670 nm	53 mm	10.5 mm	2.6 mm	52 mm	30°	6°	1.5°	29°	
DOE-251	7 Lines (Rectangular)	590 - 730 nm	15.2 mm	8.8 mm	1.47 mm	12.3 mm	8.7°	5.1°	0.84°	7°	
DOE-252	5 Lines (Square)	530 - 670 nm	43 mm	30 mm	7.5 mm	30 mm	24°	17.2°	4.3°	17.2°	
DOE-253	11 Lines (Square, Thin Lines)	530 - 670 nm	76 mm	54 mm	5.4 mm	54 mm	42°	30°	3°	30°	
DOE-254	25 Lines (Square)	530 - 670 nm	66 mm	46 mm	1.93 mm	46 mm	36°	26°	1.09°	26°	
DOE-255	65 Lines (Square, Central Line Thicker)	530 - 670 nm	44 mm	31 mm	0.48 mm	31 mm	25°	17.6°	0.27°	17.6°	

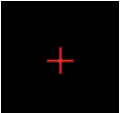
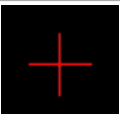

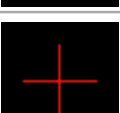

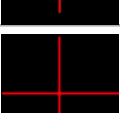

Lines & Dot Lines



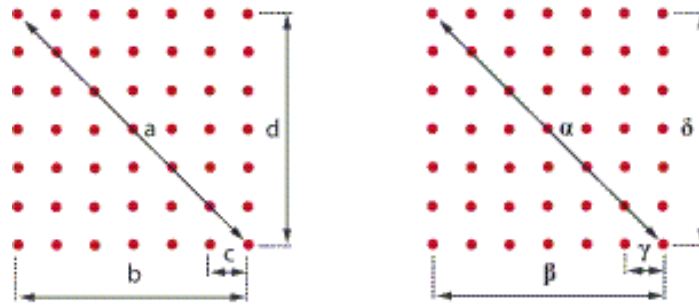
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			a	b	α	β	
DOE-227	Solid Line - 40	600 - 730 nm	73 mm	-	40°	-	
DOE-263	1:5 Dot Line	590 - 800 nm	10.5 mm	2.6 mm	6°	1.54°	
DOE-264	1:9 Dot Line	630 - 780 nm	1.49 mm	0.19 mm	0.85°	0.11°	
DOE-265	1:19 Dot Line	600 - 800 nm	24 mm	1.31 mm	13.4°	0.75°	
DOE-266	Solid Line - 5	690 - 810 nm	8.8 mm	-	5°	-	
DOE-281	1:11 Dot Line	600 - 730 nm	28 mm	2.8 mm	16°	1.6°	
DOE-282 NEW	1:99 Dot Line	600 - 700 nm	32 mm	0.33 mm	18.4°	0.19°	
DOE-283 NEW	Solid Line - 20	630 - 670 nm	35 mm	-	20°	-	


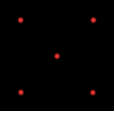
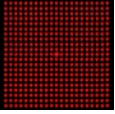
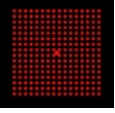
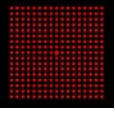
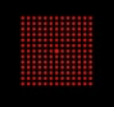

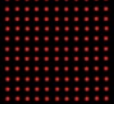
Crosshair



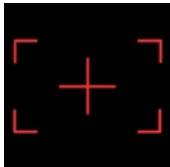
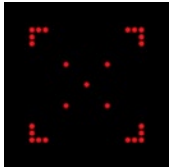


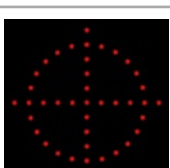
DOE Item #	Description	Optimum Wavelength Range	Pattern Size @ 100 mm Distance		Image
			a	$\alpha$	
DOE-201	Cross - 5	550 - 650 nm	8.5 mm	5°	
DOE-218	Cross - 15	500 - 640 nm	26 mm	15°	
DOE-245	Cross - 10	570 - 690 nm	17.6 mm	10°	
DOE-247	Cross - 25	600 - 800 nm	44 mm	25°	
DOE-248	Cross - 37	530 - 550 nm	66 mm	37°	
DOE-249	Cross - 45	500 - 640 nm	83 mm	45°	
DOE-280	Cross - 60	580 - 690 nm	116 mm	60°	

Dot Matrix



DOE Item #	Description	Optimum Wavelength Range	Pattern Size @ 100 mm Distance				Pattern Angles (@ 635 nm)				Image
			a	b	c	d	a	$\beta$	$\gamma$	$\delta$	
DOE-206	17 x 17 Dots	590 - 730 nm	37 mm	26 mm	1.6 mm	26 mm	21°	14.6°	0.9°	14.6°	
DOE-223	2 x 2 + 1 Dots	635 + 405 nm	28 mm	19.9 mm	19.9 mm	19.9 mm	16.1°	11.4°	11.4°	11.4°	
DOE-241	21 x 21 Dots	560 - 730 nm	11.9 mm	8.4 mm	0.42 mm	8.4 mm	6.8°	4.8°	0.24°	4.8°	
DOE-242	16 x 16 Dots	530 - 730 nm	12.4 mm	8.8 mm	0.59 mm	8.8 mm	7.1°	5°	0.34°	5°	
DOE-243	17 x 17 Dots	550 - 720 nm	12.4 mm	8.8 mm	0.55 mm	8.8 mm	7.1°	5°	0.31°	5°	
DOE-244	13 x 13 Dots	570 - 730 nm	9.3 mm	6.6 mm	0.55 mm	6.6 mm	5.3°	3.8°	0.31°	3.8°	
DOE-257	51 x 51 Dots	560 - 720 nm	55 mm	39 mm	0.77 mm	39 mm	31°	22°	0.44°	22°	
DOE-258	11 x 11 Dots	590 - 690 nm	71 mm	50 mm	5 mm	50 mm	39°	28°	2.8°	28°	

### Special Pattern

DOE Item #	Description	Optimum Wavelength Range	Pattern Size @ 100 mm Distance	Pattern Angles @ 635 nm	Image
DOE-215	Viewfinder	570 - 750 nm	Width: 27 mm Height: 17.7 mm Diagonal: 32 mm	Width: 15.5° Height: 10.1° Diagonal: 18.2°	
DOE-216	Viewfinder	405 - 488 nm	Width: 12.5 mm Height: 12.5 mm Diagonal: 17.6 mm	Width: 7.1° Height: 7.1° Diagonal: 10.1°	
DOE-234	Viewfinder (Lines Square)	530 - 670 nm	Width: 61 mm Height: 61 mm Diagonal: 86 mm	Width: 34° Height: 34° Diagonal: 47°	
DOE-256	Square Grid 51 x 51 Lines	530 - 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°	
DOE-259	5 Rings	530 - 700 nm	Width: 51 mm Line Spacing: 5.1 mm	Width: 29° Line Spacing: 2.8°	
DOE-260	Viewfinder (Circle + Cross)	570 - 750 nm	Width Cross: 37 mm Circle Ø: 18.3 mm	Width Cross: 21° Circle Ø: 10.5°	
DOE-261	Viewfinder (Dot Circle + Cross)	570 - 750 nm	Width Cross: 11 mm Circle Ø: 8.8 mm Dot Spacing: 1.1 mm	Width Cross: 6.3° Circle Ø: 5° Angle betw. Dots: 0.63°	
DOE-262	Viewfinder (Dot Square)	480 - 670 nm	Width: 14.7 mm Height: 14.7 mm Diagonal: 21 mm Dot Spacing: 0.63 mm	Width: 8.4° Height: 8.4° Diagonal: 11.9° Angle betw. Dots: 0.36°	