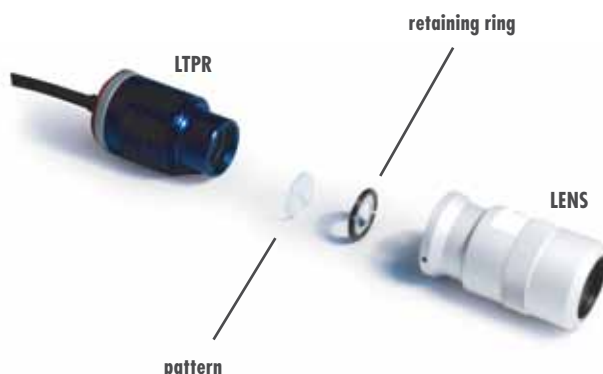


LTPR SERIES

The projection pattern can be easily integrated into the LTPR projection unit by unscrewing the retaining ring that holds the pattern itself. This simple procedure makes it easy to interchange different patterns on the same projection unit.

The pattern outer diameter is 21 mm, while the active projection area is a circle of 11 mm: all the significant features of the pattern are drawn inside such a circle. The projection area will show the same aspect ratio as the pattern. The projection accuracy depends both on the pattern manufacturing accuracy and lens distortion. The projection edge sharpness depends on both the lens resolution and the engraving technique: Laser-engraved patterns (part numbers ending in "L") or Photolithography-engraved patterns (part numbers ending in "P") can be chosen depending on the type of application.

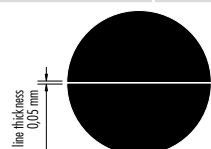
Pattern selection



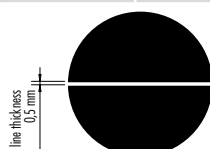
STANDARD PATTERN

photolithography patterns		laser engraved patterns	
Substrate	soda lime glass	Substrate	borofloat glass
Coating	Chrome	Coating	dichroic mirror
Geometrical accuracy	2 micron	Geometrical accuracy	50 micron
Edge Sharpness	1.4 micron	Edge Sharpness	50 micron

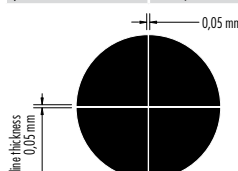
P/N: PT00000100P line pattern



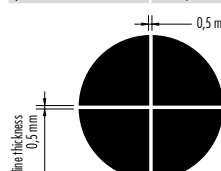
P/N: PT00000100L line pattern



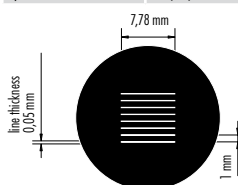
P/N: PT00000200P cross pattern



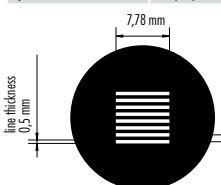
P/N: PT00000200L cross pattern



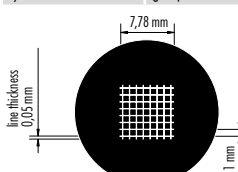
P/N: PT00000300P stripe pattern



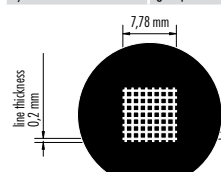
P/N: PT00000300L stripe pattern



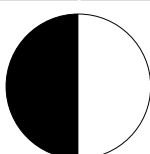
P/N: PT00000400P grid pattern



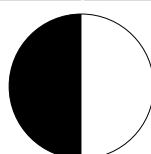
P/N: PT00000400L grid pattern



P/N: PT00000500P edge pattern



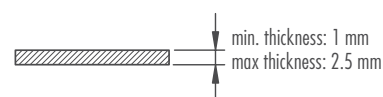
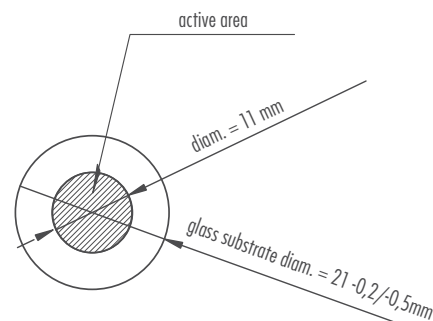
P/N: PT00000500L edge pattern



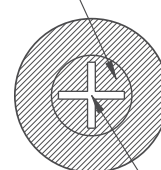
CUSTOM-MADE PATTERN

Custom-made patterns suitable for specific needs can be supplied on request.

A drawing with all the significant geometrical information must be submitted (please refer to the instructions here below).



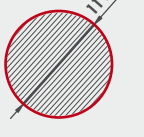
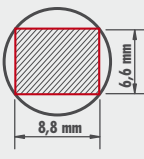
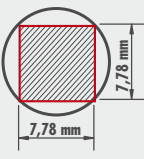
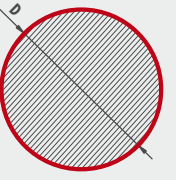
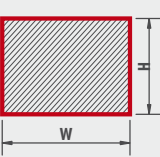
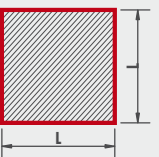
fill-in the opaque features

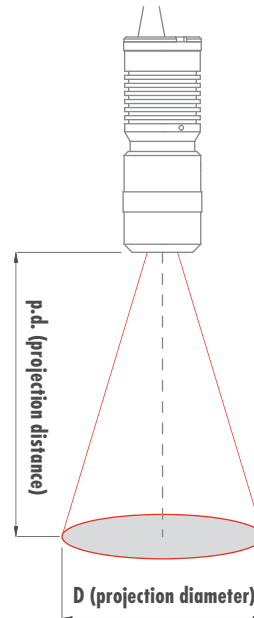


keep white the light-transmitting features

LTPR SERIES

Projection lens selection

	circle	4:3 (2/3") type	square
pattern size			
projection area size			



The pattern drawing that has to be projected must be inscribed in a circle whose diameter is 11 mm, same diagonal of a 2/3" detector.

For example, the pattern drawing could cover the entire 11 mm diameter area or be like a 8.8 x 6.6 mm rectangle (same size of a 2/3" detector) or, again, be a square whose side is 7.78 mm.

Unless the projection optics introduces significant distortion, the shape of the projection respects the same features and aspect ratio of the engraved area of the pattern. The projected area dimensions will be "M" times the original dimensions of the pattern, where M is the optical magnification at which the selected projection lens is operating.

LTPR units can integrate most types of high resolution lenses. Besides our OEPL optics, specifically tailored for this projection application, any high resolution C-mount lens can be used, provided it is tailored for 2/3" detectors (11 mm image diagonal). Telecentric lenses for 2/3" detector can also be interfaced, thus providing a parallel projection of the pattern scheme and enabling unparalleled performances in 3D measurement applications. C-mount lenses and telecentric optics can be connected to the unit by means of the mount adaptor included in the product package. Here below are listed the projection diameters and the recommended projection distances achievable by means of different types of optics.

OEPL projection optics

OEPL lens	lens description	minimum projection distance (p.d.) (mm)	maximum projection distance (p.d.) (mm)
VIS PROJECTION OPTICS			
OEPL18	18° projection, full angle	300	800
OEPL25	25° projection, full angle	250	600
OEPL38	38° projection, full angle	200	500
OEPL50	50° projection, full angle	100	300
UV PROJECTION OPTICS			
PEB2528-UV	25° projection, full angle	250	500



Telecentric lenses

VIS	TC 23 04	TC 23 07	TC 23 09	TC 23 16	TC 23 24	TC 23 36
p.d. (mm)	57,1	61,2	63,3	45,3	69,2	103,5
D (mm)	5,5	8,3	11,0	20,8	31,4	45,2
TC 23 48	TC 23 56	TC 23 64	TC 23 72	TC 23 80	TC 23 96	
p.d. (mm)	134,6	159,3	182,3	227,7	227,7	279,6
D (mm)	59,8	70,0	80,0	89,9	99,7	117,8
UV	TCUV2336	TCUV2348	TCUV2356	TCUV2364	TCUV2380	
p.d. (mm)	98,7	130,7	154,0	176,0	221,0	
D (mm)	45,7	60,0	70,1	80,1	99,6	



2/3" C-mount lenses

C-mount Lens	D (mm)								
	@50 mm	@75 mm	@100 mm	@150 mm	@200 mm	@250 mm	@300 mm	@400 mm	@500 mm
6 mm	81	127	172	264					
8 mm	58 (*)	92	127	195	264	333			
12 mm	35 (*)	58 (*)	81	127	172	218	264		
16 mm		41 (*)	58 (*)	92 (*)	127	161	195	264	333
25 mm				55 (*)	77 (*)	99 (*)	121 (*)	165	209 (*)
35 mm						68 (*)	83 (*)	115	146



(*) = spacers maybe needed to compensate back focal length