

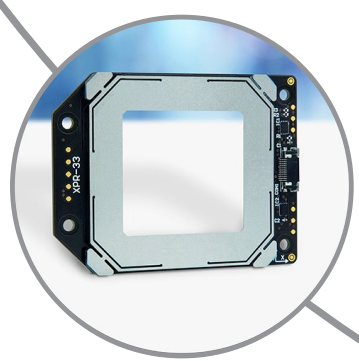
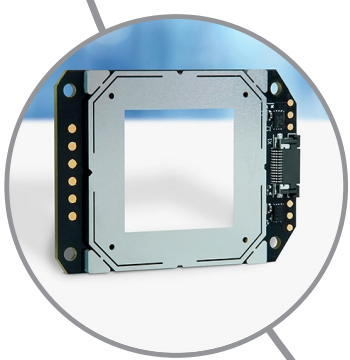


Beam shifting



XPR-Series

Optotune's XPRs are Extended Pixel Resolution 2- and 4-position actuators. By accurately tilting a glass window, light that passes through it is shifted laterally. In projection & imaging systems, this allows for increasing resolution by a factor of 2 or 4.



For more information please contact:

BOCK OPTRONICS INC.
14 Steinway Blvd., Unit 7
Toronto, Ontario M9W 6M6
Tel: (416) 674-2804
sales@bockoptronics.ca
www.bockoptronics.ca



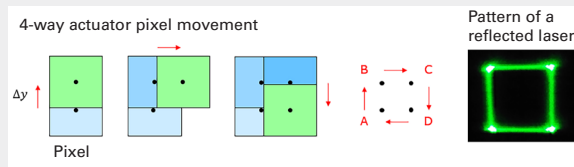
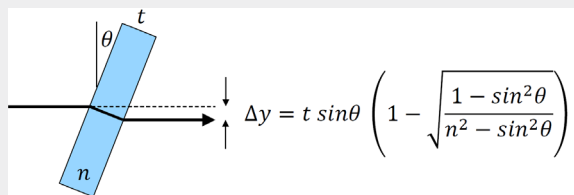
Pixel shifting for resolution enhancement

High native resolution can be costly, in particular when pixels need to be large. This holds true for DMD and micro-LED displays or thermal and high sensitivity CCD or CMOS sensors. Optotune's Pixel Shifters are an affordable and elegant way to double or quadruple resolution. Only a few millimeters thin, they can be placed between display/sensor and the projection/imaging optics.

Optotune's XPRs are ideally controlled by a bi-direction linear or PWM current source.

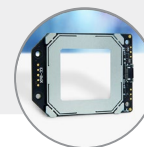
Advantages

- > Compact, light-weight
- > Fast transition times
- > Low acoustic noise
- > Fully pre-calibrated up to 75°C
- > Lower cost than higher native resolution



Applications

- > Projectors & Laser TV
- > Cameras (visible & thermal)
- > 3D printers
- > Head-up displays (HUDs)
- > Optical fiber-couplers



Key specifications	XPR-9-2P	XPR-20	XPR-33
Clear aperture	8.35 x 4.4 mm	20 x 20 mm	32 x 30 mm
Size (width x height x depth)	19 x 10 x 1.5 mm	47 x 35 x 3.3 mm	67 x 50.9 x 4 mm
Positions	2	4	4
Glass thickness	0.7 mm	2.0 mm	2.0 mm
Glass movement full angle	0.909° diagonal	0.225° in x and y	0.317° in x and y
Pixel shift	3.8 μm diagonal	2.7 μm in x and y	3.8 μm in x and y
Transition time	1.0 ms	1.2 ms	1.5 ms
Standard frame rate	50 & 60 Hz	50 & 60 Hz	50 & 60 Hz
Transmission	>98%	>98%	>98%
Power consumption (average)	<0.1 W	<1.5 W	<4 W
Compatible DMD	0.23"	0.47"	0.65"

Color camera enhancement

Pixel shifting is particularly interesting to get the most out of color cameras that use Bayer filters to separate the RGB colors. By shifting the image a full pixel in X and Y, it is possible to capture the full sensor resolution for each color channel.

