

# Minimize the Effects of Short Shifting

MidOpt StabLEDGE® optical filters are specifically designed to be less susceptible to effects from angular shifting seen when optical filters are placed in front of short focal length (<12 mm) camera lenses. This feature is becoming increasingly important as today's trend in machine vision imaging progresses towards more compact inspection layouts, which utilize less space – forcing the camera and lens closer to the subject. As a result, short focal length lenses are now more widely used than ever before.

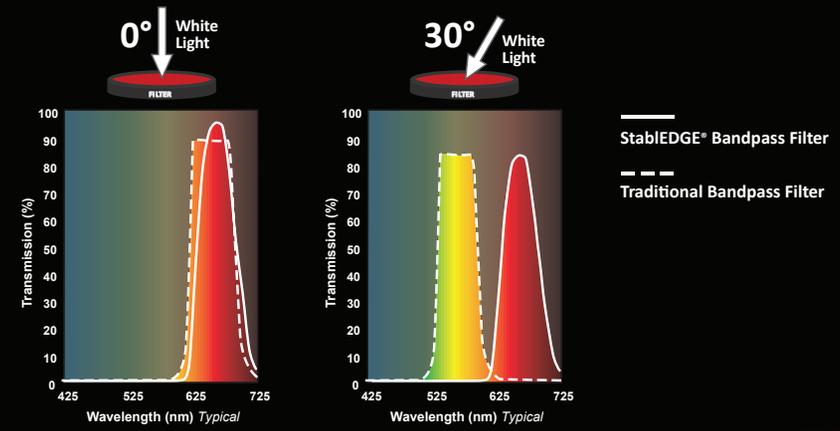
Using a traditional coated interference filter in these more compressed configurations results in contrast loss toward the edges of the image. Because of the angle imposed by the field of view (FOV) of the lens, the passband shifts and allows short wavelength ambient light to overwhelm the subject. Light from LED or laser diode lighting is also cut off. In contrast, peak transmission of MidOpt's StabLEDGE® filters is not significantly altered, and effects due to short shifting are minimized.



StabLEDGE® filters take advantage of absorptive filter glass to form the leading edge of the filter passband. This assures no shifting in this region, even when the lens FOV exceeds 100°. Filter glasses also offer far superior lower wavelength blocking of ambient light, sharp transition slopes and unmatched durability. MidOpt's StabLEDGE® Filter cut-off slopes utilize interference filter coatings, however the cut-off slope is positioned to be sufficiently broad, and the Gaussian passband profile ensures that excessive ambient light is not allowed to degrade image contrast. Thus, shifting will not significantly encroach into peak transmission, assuring angular insensitivity over the desired range.

Among all machine vision filter manufacturers, MidOpt is unique in incorporating StabLEDGE® technology across a full range of products. StabLEDGE® designs are less angle-of-incidence sensitive, inherently more rugged, and are environmentally stable.

Visit [midopt.com/stabledge](http://midopt.com/stabledge) for more information

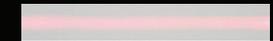


StabLEDGE® Filter

Traditional Filter



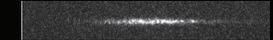
6mm Lens Imaging Red Line



Red Laser Line



StabLEDGE® Bandpass Filter



Traditional Bandpass Filter

Shown at left, a monochrome camera with 6mm FL lens looks at a red laser diode-generated line in a darkened room. When a StabLEDGE® bandpass filter is used, the entire line is visible. When a traditional bandpass filter is used, only the center of the line is visible. The angular FOV imposed by the lens causes the outer portion of the filter to "shift short". In the color photos above, when white light is projected through the lens and traditional filter, then imaged with a color camera, only green and orange light are seen at the edges of the projected circle. The StabLEDGE® filter exhibits little change and the projected circle appears red. However when red laser light is imaged with a monochrome camera, there is no longer any orange or green component to the light. Therefore with a traditional bandpass filter, the white line simply disappears at the edges.

## BANDPASS FILTERS

Part #	Useful Range	FWHM (nominal)
<b>BP SERIES — BROAD BANDWIDTH</b>		
● BP324	290-365nm	105nm
● BP365	335-400nm	80nm
● BP470	425-495nm	85nm
● BP485	380-585nm	285nm
● BP500	440-555nm	248nm
● BP505	485-550nm	90nm
● BP525	500-555nm	80nm
● PE530	495-565nm	120nm
● BP590	560-600nm	70nm
● BP635	615-645nm	60nm
● BP660	640-680nm	65nm
● BP695	680-720nm	65nm
● BP735	715-780nm	90nm
● BP800	745-950nm	315nm
● BP850	820-910nm	160nm
● BP880	845-930nm	130nm
<b>BN SERIES — NARROW BANDWIDTH</b>		
● BN470	460-490nm	45nm
● BN532	525-550nm	55nm
● BN595	580-610nm	45nm
● BN630	625-645nm	45nm
● BN650	638-672nm	50nm
● BN660	645-675nm	45nm
● BN740	730-755nm	50nm
● BN785	770-790nm	55nm
● BN810	798-820nm	50nm
● BN850	840-865nm	45nm

## DUAL BANDPASS FILTERS

Part #	Useful Range	FWHM (nominal)
<b>LP SERIES — LENS PROTECTION</b>		
● DB395/870	VIS 375-425nm, NIR 745-970nm	110nm, 375nm

## LIGHT BALANCING FILTERS

Part #	Useful Range	Mired Shift Value
<b>LA SERIES — MINUS BLUE</b>		
● LA080	400-700nm	+80
● LA120	400-700nm	+120
<b>LB SERIES — MINUS RED</b>		
● LB080	400-700nm	-80
● LB120	400-700nm	-120
<b>FL SERIES — MINUS GREEN</b>		
● FL550	400-700nm	N/A

Due to continuous product improvement, specifications are subject to change without notice.

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## LONGPASS FILTERS

Part #	Useful Range	Cut-on WL 50% T
<b>LP SERIES — LENS PROTECTION</b>		
● LP285	350-1100nm	285nm
● LP330	350-1100nm	330nm
● LP340	350-800nm	340nm
● LP390	410-1100nm	390nm
<b>LP SERIES — LONGPASS</b>		
● LP470	480-1100nm	470nm
● LP500	510-1100nm	495nm
● LP515	520-1100nm	515nm
● LP530	545-1100nm	530nm
● LP550	560-1100nm	550nm
● LP580	585-1100nm	580nm
● LP590	605-1100nm	590nm
● LP610	620-1100nm	610nm
● LP630	645-1100nm	630nm
● LP645	650-1100nm	645nm
● LP665	680-1100nm	665nm
● LP695	715-1100nm	695nm
● LP715	730-1100nm	715nm
● LP780	800-1100nm	780nm
● LP800	820-1100nm	800nm
● LP815	825-1100nm	815nm
● LP830	845-1100nm	830nm
● LP850	870-1100nm	850nm
● LP1000	1010-1500nm	1000nm

## SHORTPASS/NEAR-IR CUT FILTERS

Part #	Useful Range	Cut-Off WL 50% T
<b>SP SERIES — VIS PASS/NIR BLOCK</b>		
● SP635	380-585nm	635nm
● SP705	370-630nm	705nm

## ACRYLIC FILTERS

Part #	Useful Range	Cut-on WL 50% T
<b>AC SERIES — ACRYLIC LONGPASS</b>		
● AC370	380-850nm	370nm
● AC380	450-850nm	380nm
● AC685	710-1100nm	685nm
● AC760	780-1100nm	760nm
● AC800	815-1100nm	795nm
● AC850	880-1100nm	855nm
● AC900	930-1100nm	900nm



# StableEDGE®

FILTER DESIGN

SUPERIOR WAVELENGTH CONTROL AT ANY ANGLE



MidOpt StableEDGE® hybrid filter designs combine absorptive filter glass and interference filter coatings to provide superior out-of-band blocking and >90% peak transmission. Reduce the effects of short shifting while maintaining a stable passband; essential when using short focal length (<12mm) lenses.

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