

LP920 VIS BLOCK SHORT-WAVE INFRARED LONGPASS FILTER

MidOpt Longpass (Sharp-Cut) Filters

- Available in VIS, NIR (Near-Infrared), and SWIR (Short-Wave Infrared) passbands
- Achieve optimal contrast
- Improve system control, repeatability and stability
- Block interfering wavelengths, eliminating the need for shrouds
- Increase resolution by reducing chromatic aberration
- Anti-reflection coated for maximum transmission
- Hard coated, single substrate fabrication
- Exceptional surface quality; 40/20 scratch/dig



Longpass Filter Applications

Often referred to as a "sharp-cut" filter, Longpass Filters are specifically designed to pass a broad spectrum of longer wavelength light while blocking shorter wavelengths.

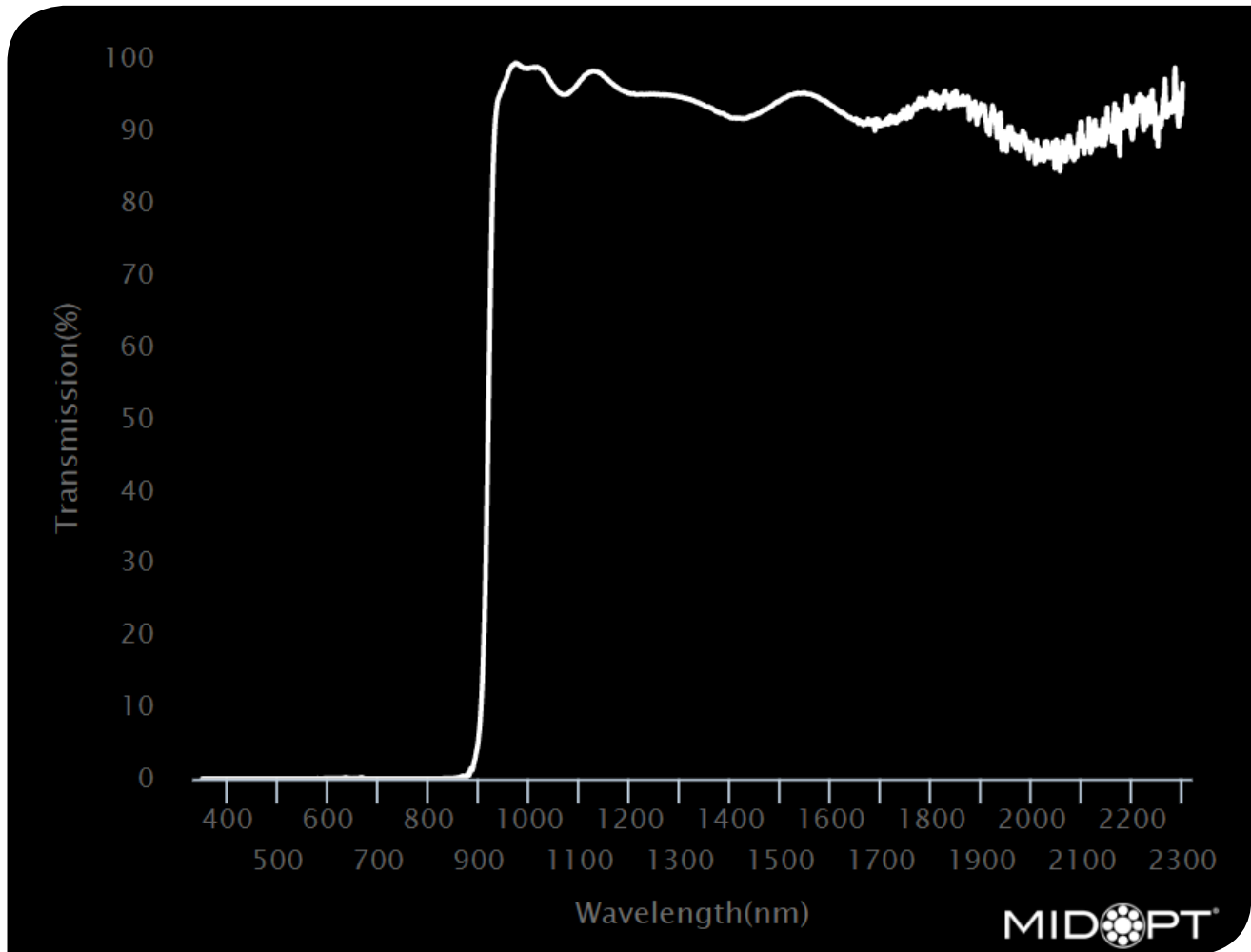
LP Series – Longpass Filters

- Economical solution for isolating specific spectral regions
- Peak transmission $\geq 90\%$
- StabLEDGE[®] design reduces angular dependency and minimizes short-shifting effects
- Anti-reflection coated for maximum transmission in VIS and NIR spectrums
- Can be used with Shortpass Filters for a custom, fine-tuned Bandpass Filter
- Double-side polished glass for exceptional parallelism and optical flatness
- Exceptional surface quality; 40/20 scratch/dig
- Available in wavelength ranges from 350nm to 1850nm

APPLICATIONS: Longpass Filters are often used in fluorescence applications to block an excitation light source or to pass multiple emission wavelengths, improving signal to noise ratio. Longpass Filters are also commonly used in photography and astronomy.

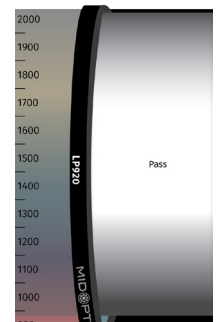
LP920

Longpass Filter



Useful Range:	930-2300nm
Cut-on Wavelength 50% T:	920nm
Tolerance:	+/- 10nm
Peak Transmission:	≥90%
Surface Quality:	80/50
Compatible LED:	940nm, 950nm

Designed to be used with 940nm LED illumination, LP920 filters block visible and unwanted near-IR wavelengths. It can also be placed in front of multi-spectral lighting used in semi-covered or photographic darkroom applications.



LP920 TRANSMISSION DATA (TYPICAL)

Wavelength (nm)	Transmission (%)
2300	96.47
2290	91.96
2280	93.87
2270	91.86
2260	92.71
2250	89.67
2240	95.53
2230	91.28
2220	94.48
2210	94.44
2200	88.71
2190	93.98
2180	91.46
2170	92.91
2160	88.44
2150	93.10
2140	89.75
2130	88.43
2120	88.38
2110	88.04
2100	87.97
2090	86.30
2080	86.22
2070	87.03
2060	87.47
2050	88.47
2040	87.59
2030	88.41
2020	86.21
2010	88.56
2000	87.18

Wavelength (nm)	Transmission (%)
1990	88.52
1980	88.60
1970	88.36
1960	90.15
1950	87.01
1940	87.55
1930	89.76
1920	92.34
1910	90.67
1900	93.12
1890	91.49
1880	93.65
1870	94.39
1860	93.54
1850	95.16
1840	93.75
1830	94.31
1820	94.56
1810	94.72
1800	95.10
1790	93.71
1780	93.22
1770	93.05
1760	92.00
1750	91.93
1740	91.89
1730	90.99
1720	91.34
1710	91.12
1700	90.71
1690	90.89

Wavelength (nm)	Transmission (%)
1680	91.23
1670	90.79
1660	90.93
1650	91.50
1640	91.66
1630	92.08
1620	92.48
1610	92.95
1600	93.45
1590	93.91
1580	94.23
1570	94.64
1560	94.95
1550	95.09
1540	94.99
1530	94.96
1520	94.83
1510	94.44
1500	94.10
1490	93.75
1480	93.24
1470	92.75
1460	92.38
1450	92.08
1440	91.85
1430	91.60
1420	91.63
1410	91.65
1400	91.71

LP920 TRANSMISSION DATA (TYPICAL)

Wavelength (nm)	Transmission (%)
1390	92.06
1380	92.28
1370	92.64
1360	93.06
1350	93.31
1340	93.66
1330	93.98
1320	94.21
1310	94.37
1300	94.55
1290	94.72
1280	94.80
1270	94.84
1260	94.89
1250	94.96
1240	94.96
1230	94.91
1220	94.93
1210	94.96
1200	95.04
1190	95.27
1180	95.66
1170	96.16
1160	96.75
1150	97.38
1140	97.89
1130	98.13
1120	98.01
1110	97.53
1100	96.71
1090	95.81

Wavelength (nm)	Transmission (%)
1080	95.16
1070	94.89
1060	95.13
1050	95.91
1040	96.94
1030	97.97
1020	98.59
1010	98.71
1000	98.59
990	98.57
980	99.06
970	99.10
960	98.13
950	96.42
940	94.57
930	87.36
920	54.11
910	19.20
900	6.02
890	2.07
880	0.67
870	0.20
860	0.14
850	0.07
840	0.04
830	0.03
820	0.01
810	0.01
800	0.00
790	0.00
780	0.00

Wavelength (nm)	Transmission (%)
770	0.00
760	0.00
750	0.00
740	0.00
730	0.00
720	0.00
710	0.00
700	0.01
690	0.00
680	0.01
670	0.09
660	0.06
650	0.03
640	0.09
630	0.09
620	0.03
610	0.04
600	0.05
590	0.02
580	0.02
570	0.02
560	0.01
550	0.01
540	0.00
530	0.00
520	0.01
510	0.00
500	0.00
490	0.01

LP920 TRANSMISSION DATA (TYPICAL)

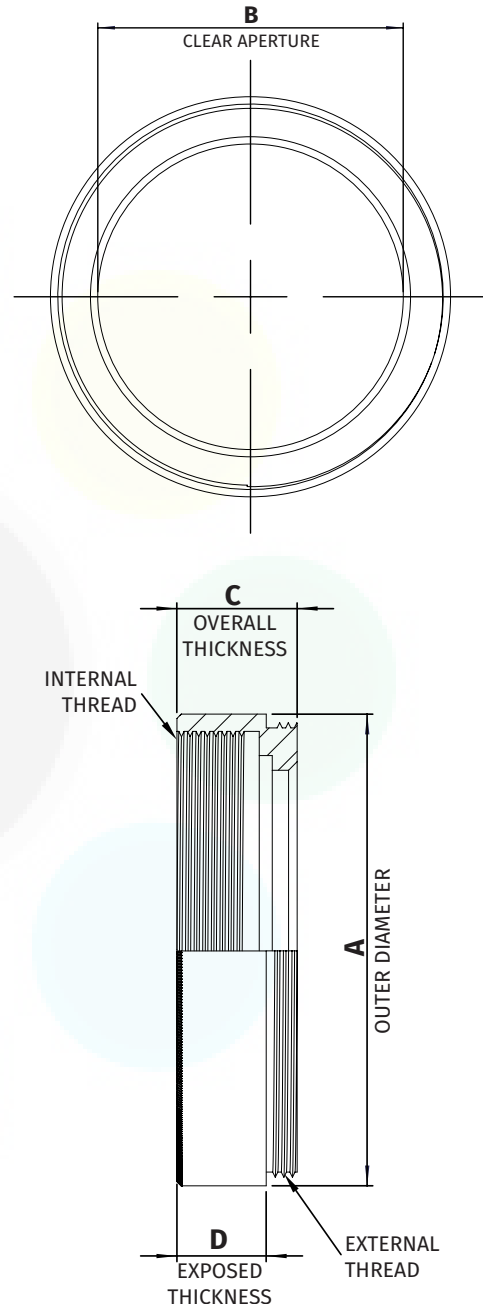
Wavelength (nm)	Transmission (%)
480	0.00
470	0.00
460	0.00
450	0.01
440	0.00
430	0.00
420	0.00
410	0.00
400	0.00
390	0.00
380	0.00
370	0.00
360	0.00
350	0.00

STANDARD THREADED MOUNT DIMENSIONS

NOTES:

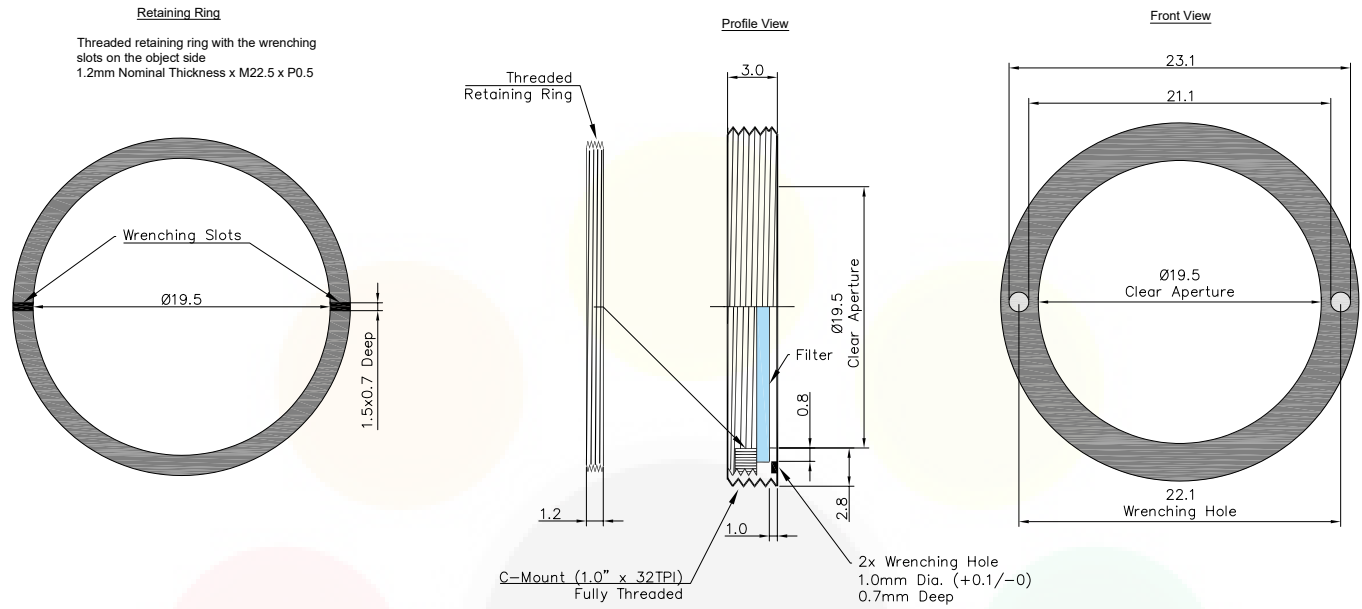
1. Inner and outer threads are of the same size and pitch.
2. Filter mount and retaining ring are black anodized aluminum.
3. All dimensions indicated in mm.
4. Tolerance: +/-0.3mm.

Mount Size	A	B	C	D
M13.25 x P0.5	14.3	10.6	7.5	5.7
M22.5 x P0.5	24	18.5	7	5.2
M25.5 x P0.5	27.5	21	7	5.2
M27 x P0.5	29	22.5	7	5.2
M30.5 x P0.5	32.5	25.5	7	5.2
M34 x P0.5	36	29	7	5.2
M35.5 x P0.5	37.5	30.5	7	5.2
M37 x P0.75	39	31.9	6.5	4.5
M37.5 x P0.5	39.5	32.5	7.2	5.2
M39 x P0.5	41	34	7	5.2
M40.5 x P0.5	42.5	35.5	7	5.2
M43 x P0.75	45	38	7	5.2
M46 x P0.75	48	41	7	5.2
M48 x P0.75	50	43	7	5.1
M49 x P0.75	51	44	7	5.2
M52 x P0.75	54	47	7	5.2
M55 x P0.75	57	50	7	5.2
M58 x P0.75	60	52.9	6.5	4.5
M62 x P0.75	64	57.1	7	5.2
M67 x P0.75	70	61.8	6.5	4.5
M72 x P0.75	75	66.9	6.5	4.5
M77 x P0.75	80	71.9	6.5	4.5
M82 x P0.75	85	76.8	6.5	4.5
M86 x P1.0	89	80.8	6.5	4.5
M95 x P1.0	98.2	89.9	10	7.1
M105 x P1.0	109.8	100	11	8



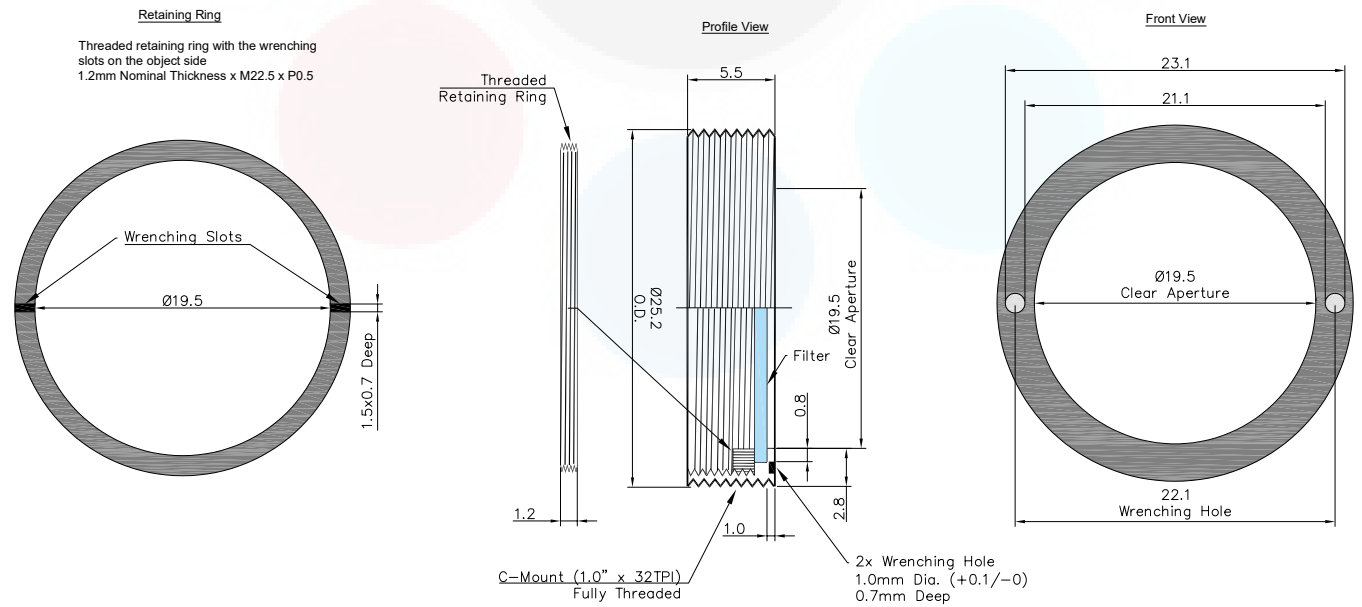
C-MOUNT DIMENSIONS (-25.4)

C-Mount is available on filters with a substrate thickness of 1mm or less



C-MOUNT SIS DIMENSIONS (-25.4-SIS)

C-Mount SIS is available on filters with a substrate thickness greater than 1mm and less than or equal to 3.5mm



MOUNTS FOR ANY SYSTEM



Midwest Optical Systems is the world's leading resource in machine vision filters and optical solutions. MidOpt's innovative filter designs ensure flawless control, dependable results and unmatched image quality. Mounting solutions are available for any system for lenses with and without filter threads, the exclusively designed 25.4™ C-Mount, and custom fabrication of unmounted shapes and sizes.

Mount Sizes

› **THREADED**

Mount Size	Pitch
M13.25	0.5
M22.5	0.5
M25.5	0.5
M27	0.5
M30.5	0.5
M34	0.5
M35.5	0.5
M37	0.75
M37.5	0.5
M39	0.5
M40.5	0.5
M43	0.75
M46	0.75
M48	0.75
M49	0.75
M52	0.75
M55	0.75
M58	0.75
M62	0.75
M67	0.75
M72	0.75
M77	0.75
M82	0.75
M86	1.0
M95	1.0
M105	1.0

› **C-MOUNT**

M25.4™

› **SLIP MOUNT**

Outside Diameter Range	Threaded Mount
15.1-19.0	M22.5
19.1-26.5	M30.5
26.6-31.9	M40.5
32.0-40.9	M46
41.0-50.9	M55
51.0-57.9	M62
58.0-68.0	M72
68.1-79.0	M82
79.1-101.0	M105

› **UNMOUNTED**

Custom Shapes & Sizes Available

› **M12 MOUNT**

Outside Diameter Range	Part #
13.2-14.2	S14A
14.3-15.0	S15A



› **THREADED MOUNT** *Designed for Lenses with Filter Threads*

- MidOpt offers the largest variety of filters in-stock and ready to ship
- Sizes available: M13.25-M105
- Black anodized aluminum
- Custom thread sizes are available upon request



CREATE PART #: Select a filter and add a mount size (e.g. M27) Example: BP470-27

› **25.4™ C-MOUNT** *Threads into all C-Mount Cameras*

- 25.4™ C-Mount Camera Filter exclusively designed by MidOpt to thread directly into any C-Mount Camera between the lens and sensor
- Recommended for use with wide angle lenses to prevent vignetting and angle shift
- Helpful in applications with space constraints and lenses without filter threads
- Custom installation wrench included



CREATE PART #: Select a filter and add "-25.4" Example: BP470-25.4

› **SLIP MOUNT** *Designed for Wide Angle Lenses Without Filter Threads*

- Accommodates standard threaded mounts
- Low profile and oversize diameter design prevents wide angle lens vignetting
- Includes black Delrin® Slip Mount adapter plus Threaded Mount Filter



CREATE PART #: Select a filter, use "S" for slip and add the outside diameter of lens in mm (e.g. 43mm) Example: BP470-S43

› **UNMOUNTED**

- Any MidOpt filter type can be provided as an Unmounted Filter
- Custom shapes and sizes are typically available within a two week lead time with many shipped same day



CREATE PART #

CIRCLE: Use "D" and add diameter in mm (e.g. 19mm) Example: BP470-D19

SQUARE: Use "R" and add side measurement in mm (e.g. 15mm) Example: BP470-R15

RECTANGLE: Use "R" and add length in mm (e.g. 30mm) x width in mm (e.g. 15mm) Example: BP470-R30x15

› **CUSTOM SOLUTIONS FOR M12 MOUNT LENSES**

- Offered in aluminum slip mount over the lens
- Can be optically cemented behind the lens



HOW TO ORDER

To order a filter with a threaded mount, first select a filter (e.g. BP470) and add the mount size (e.g. M27) to build your part number (e.g. BP470-27).

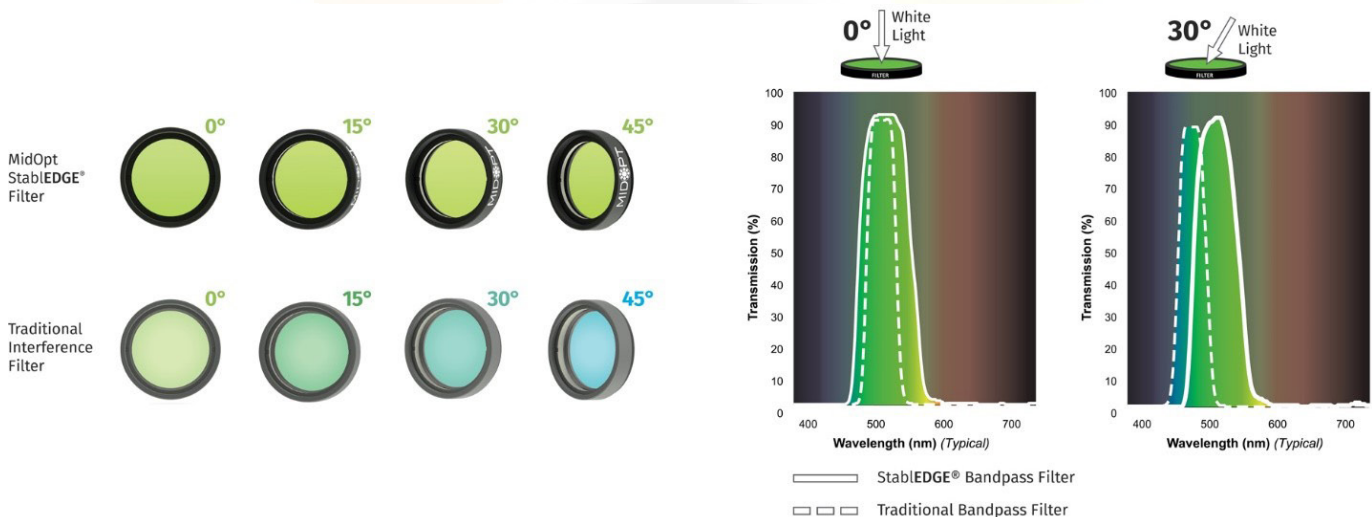


MIDOPT STABLEDGE®

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 (<12mm) 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.

