

LP1000 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.

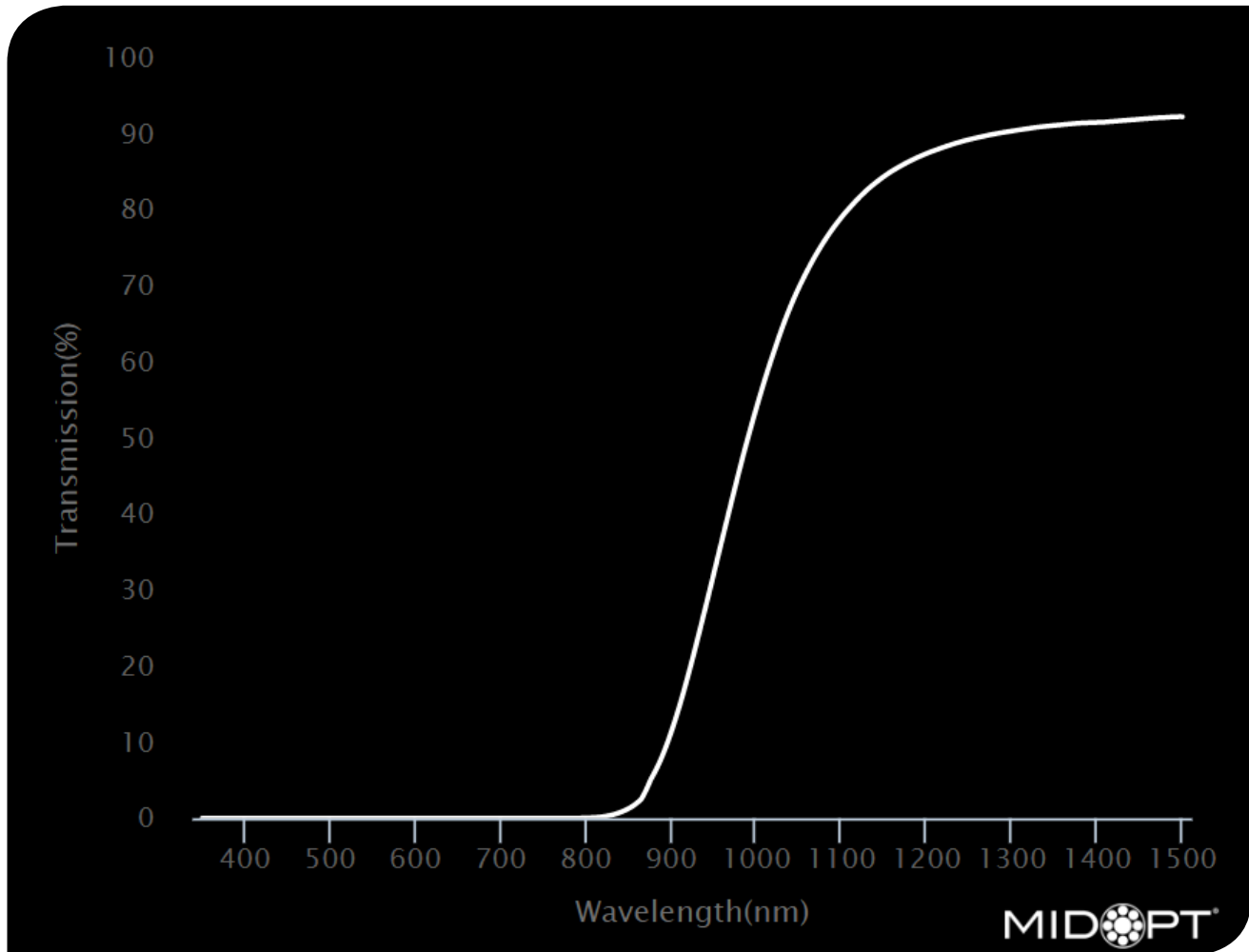
LP Series – Longpass Filters

- 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.

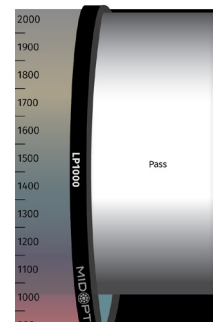
LP1000

Longpass Filter



Useful Range:	1010-2300nm
Cut-on Wavelength 50% T:	1000nm
Tolerance:	+/- 10nm
Peak Transmission:	≥90%
Surface Quality:	40/20
STABLEEDGE:	Yes

A LP1000 cuts on starting at 860nm and is most frequently used with infrared Vidicon or InGaAs cameras, where it generally cuts off wavelengths short of the 1550nm telecommunications band. This filter blocks almost all light that CCD/CMOS cameras are sensitive to.



LP1000

Longpass Filter

LP1000 TRANSMISSION DATA (TYPICAL)

Wavelength (nm)	Transmission (%)
1400	91.99
1390	91.91
1380	91.82
1370	91.65
1360	91.49
1350	91.31
1340	91.13
1330	90.90
1320	90.68
1310	90.42
1300	90.16
1290	89.89
1280	89.58
1270	89.28
1260	88.94
1250	88.55
1240	88.15
1230	87.72
1220	87.20
1210	86.69
1200	86.09
1190	85.46
1180	84.75
1170	83.98
1160	83.11
1150	82.15
1140	81.07
1130	79.88
1120	78.53
1110	77.05
1100	75.41

Wavelength (nm)	Transmission (%)
1090	73.64
1080	71.67
1070	69.54
1060	67.13
1050	64.51
1040	61.61
1030	58.34
1020	54.71
1010	50.88
1000	46.84
990	42.50
980	38.03
970	33.42
960	28.88
950	24.31
940	19.93
930	15.90
920	12.19
910	8.95
900	6.32
890	4.37
880	2.82
870	1.72
860	0.93
850	0.52
840	0.27
830	0.12
820	0.05
810	0.02
800	0.01

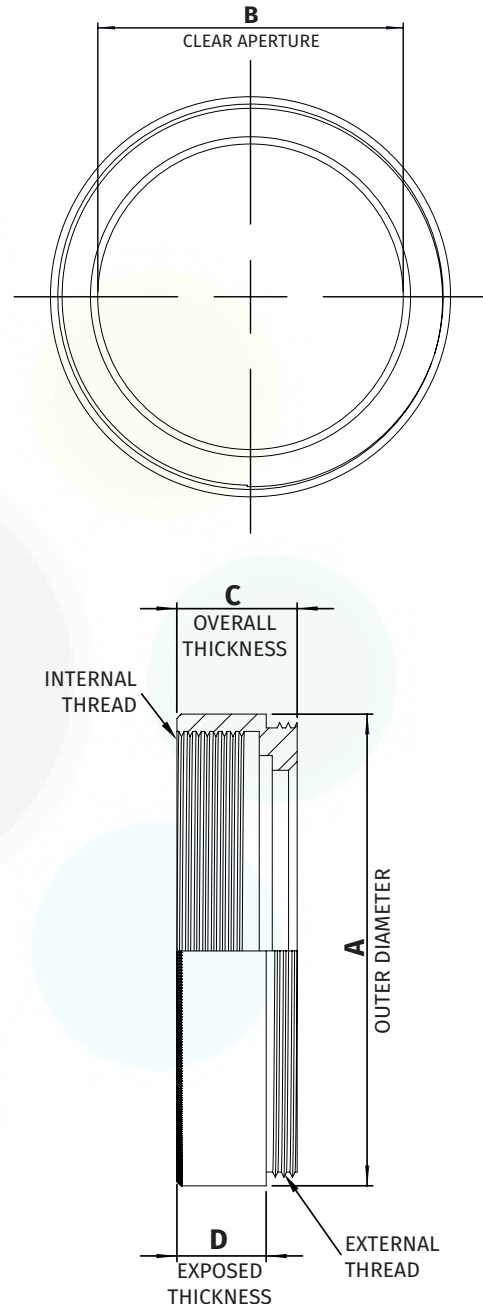


STANDARD THREADED MOUNT DIMENSIONS

NOTES:

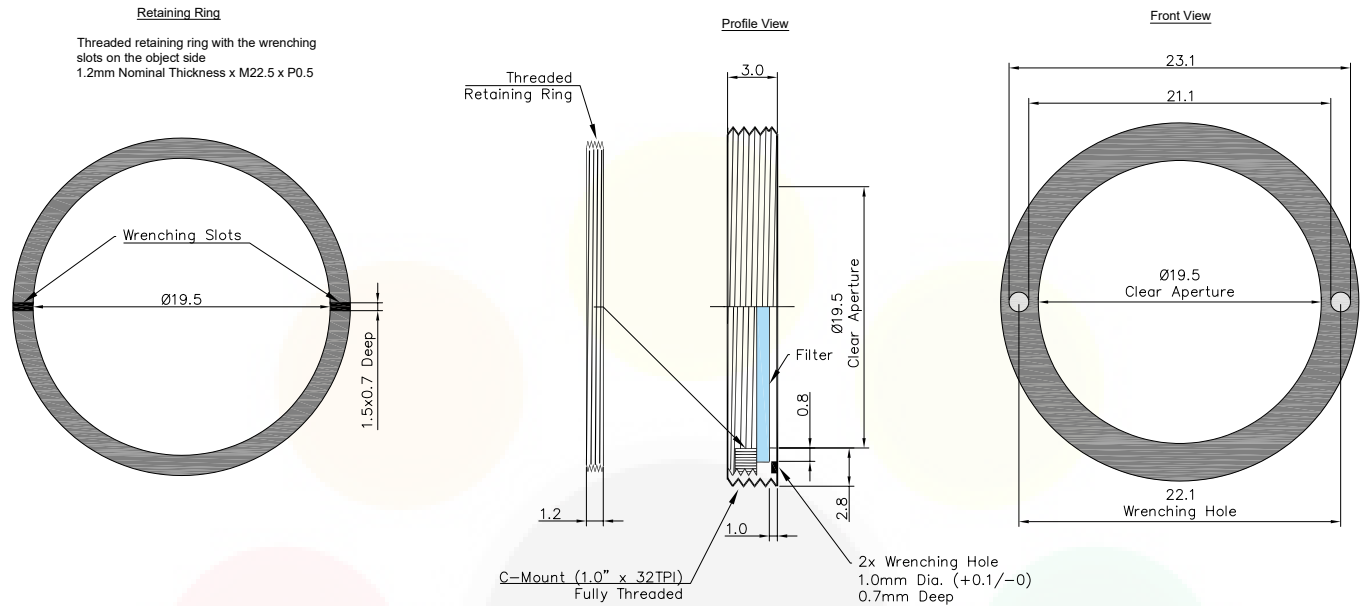
1. Inner and outer threads are of the same size and pitch.
2. Filter mount and retaining ring are black anodized aluminum.
3. All dimensions indicated in mm.
4. Tolerance: +/-0.3mm.

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



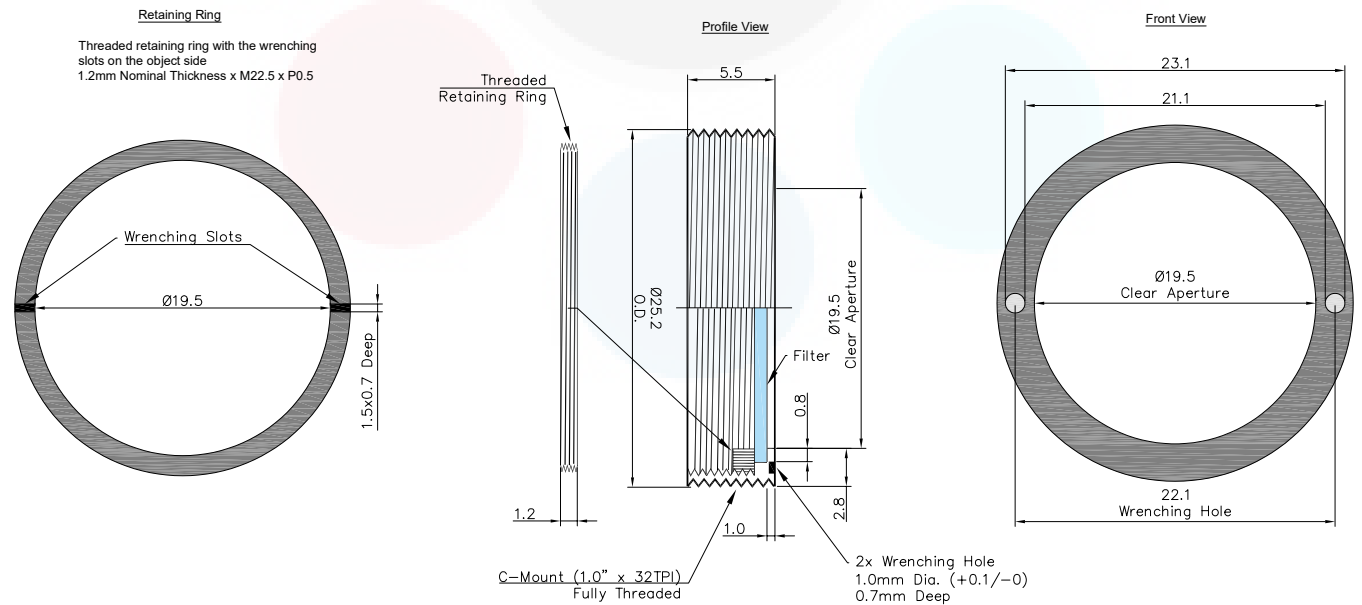
C-MOUNT DIMENSIONS (-25.4)

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).

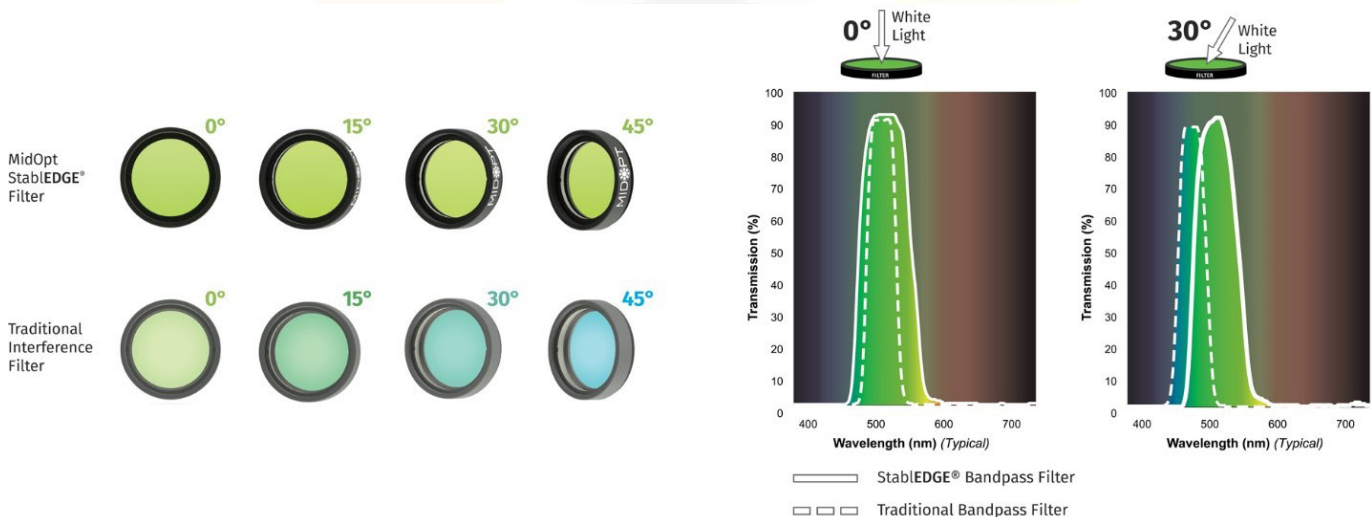


MIDOPT STABLEDGE®

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.

