

## LP830 NEAR-IR 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.

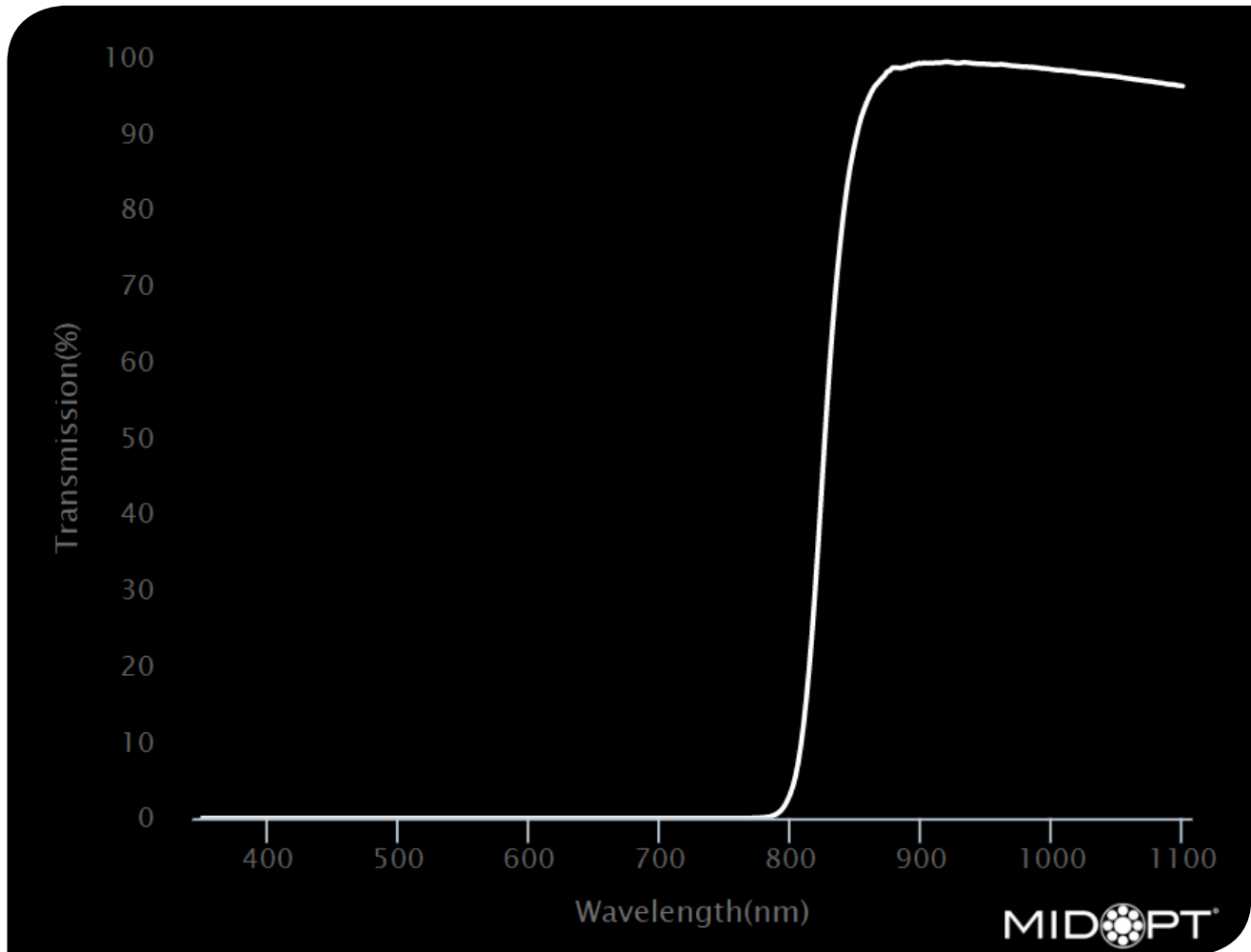
### LP Series – Longpass Filters

- 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.

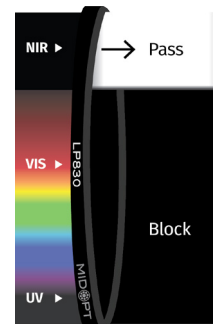
# LP830

Longpass Filter



|                                 |            |
|---------------------------------|------------|
| <b>Useful Range:</b>            | 845-1100nm |
| <b>Cut-on Wavelength 50% T:</b> | 830nm      |
| <b>Tolerance:</b>               | +/- 10nm   |
| <b>Peak Transmission:</b>       | ≥90%       |
| <b>Surface Quality:</b>         | 40/20      |
| <b>STABLEDGE:</b>               | Yes        |

LP830 is suggested for use with infrared LED lighting emitting at 880nm or 850nm when it is also desirable to transmit other longer infrared wavelengths as well. Otherwise we recommend our BP880 or BP850 filters not only for their longer wavelength blocking, but their overall higher peak transmissions.



**LP830 TRANSMISSION DATA (TYPICAL)**

| Wavelength (nm) | Transmission (%) |
|-----------------|------------------|
| 1100            | 96.29            |
| 1090            | 96.51            |
| 1080            | 96.77            |
| 1070            | 97.01            |
| 1060            | 97.26            |
| 1050            | 97.51            |
| 1040            | 97.70            |
| 1030            | 97.90            |
| 1020            | 98.09            |
| 1010            | 98.30            |
| 1000            | 98.47            |
| 990             | 98.68            |
| 980             | 98.83            |
| 970             | 98.95            |
| 960             | 99.14            |
| 950             | 99.18            |
| 940             | 99.26            |
| 930             | 99.31            |
| 920             | 99.47            |
| 910             | 99.32            |
| 900             | 99.23            |
| 890             | 98.94            |
| 880             | 98.69            |
| 870             | 97.33            |
| 860             | 94.79            |
| 850             | 89.30            |
| 840             | 78.63            |
| 830             | 59.49            |
| 820             | 32.84            |
| 810             | 12.26            |
| 800             | 3.24             |

| Wavelength (nm) | Transmission (%) |
|-----------------|------------------|
| 790             | 0.62             |
| 780             | 0.11             |
| 770             | 0.02             |
| 760             | 0.01             |
| 750             | 0.00             |
| 740             | 0.00             |
| 730             | 0.00             |
| 720             | 0.00             |
| 710             | 0.00             |
| 700             | 0.00             |
| 690             | 0.00             |
| 680             | 0.00             |
| 670             | 0.00             |
| 660             | 0.00             |
| 650             | 0.00             |
| 640             | 0.00             |
| 630             | 0.00             |
| 620             | 0.00             |
| 610             | 0.00             |
| 600             | 0.00             |
| 590             | 0.00             |
| 580             | 0.00             |
| 570             | 0.00             |
| 560             | 0.00             |
| 550             | 0.00             |
| 540             | 0.00             |
| 530             | 0.00             |
| 520             | 0.00             |
| 510             | 0.00             |
| 500             | 0.00             |
| 490             | 0.00             |

| Wavelength (nm) | Transmission (%) |
|-----------------|------------------|
| 480             | 0.00             |
| 470             | 0.00             |
| 460             | 0.00             |
| 450             | 0.00             |
| 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             | 0.01             |

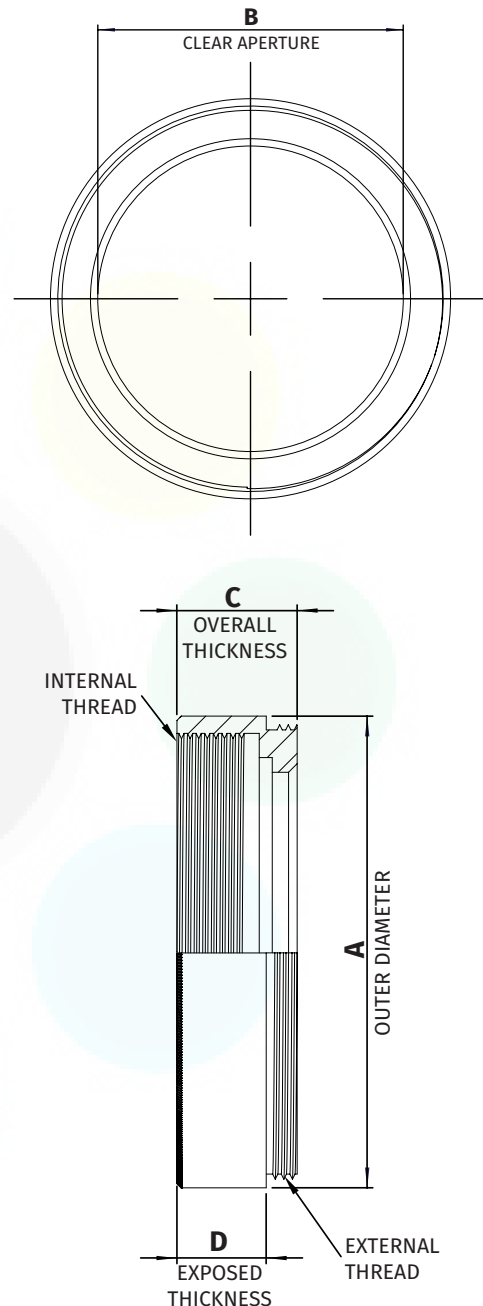


**STANDARD THREADED MOUNT DIMENSIONS**

**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).



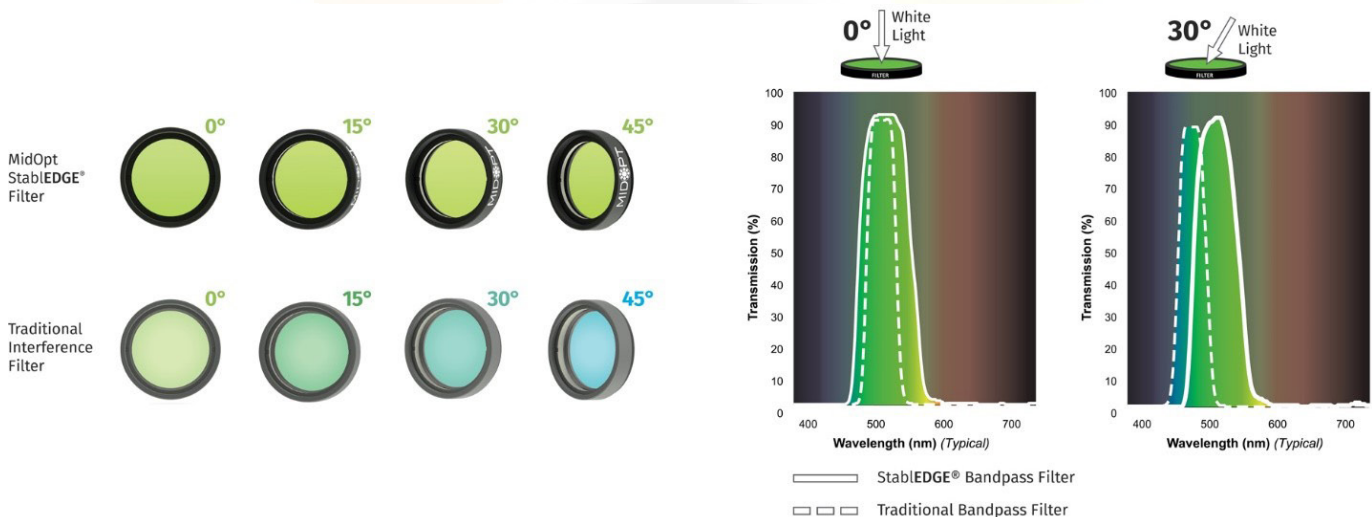


**MIDOPT STABLEEDGE®**

**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.

