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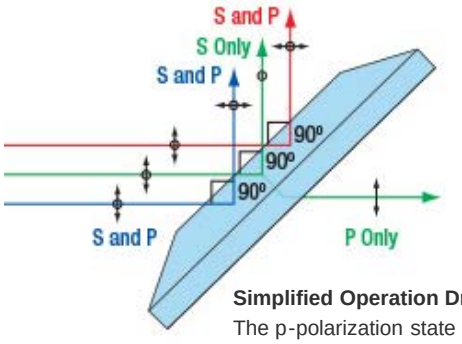
THORLABS

FPB405-10 - November 2, 2020

Item # FPB405-10 was discontinued on November 2, 2020. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

POLARIZING BANDPASS FILTERS

- **Wavelength Pass Band Only Contains P-Polarization**
- **Pass Band Transmission >85%**
- **10^6:1 Extinction Ratio**
- **Center Wavelength Options at 355 nm or 405 nm**



Simplified Operation Drawing
The p-polarization state is passed within the designed pass band, while the s-polarization state is rejected.

FPB405-10
Polarizing Bandpass Filter, CWL = 405 nm

Polarizing Bandpass Filter Mounted in a CM1-DCH Cage Cube Filter Mount

Hide Overview

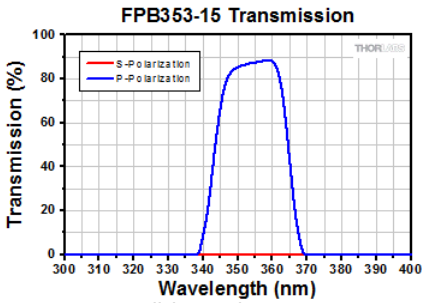
OVERVIEW

Features

- Extinction Ratio: 1 000 000:1
- 25.2 mm x 35.6 mm x 2.0 mm Unmounted Filters
- >85% Transmission Within the Pass Band
- Excellent Suppression in Blocking Regions (OD > 6)
- UV Fused Silica Substrate
- Two Center Wavelength Options at Popular Laser Lines:
  - 355 nm +6 nm / -9 nm

Common Specifications	
Extinction Ratio[a]	1 000 000:1
Optic Size	25.2 mm x 35.6 mm
Optic Thickness	2 mm
Dimensional Tolerance	±0.1 mm
Clear Aperture	>21.41 mm x 30.26 mm
Acceptance Angle[b]	45° ± 0.5°
Surface Quality	60-40 Scratch-Dig
Coating	Polarizing Bandpass Filter
Substrate	UV Fused Silica[c]
Mass	4 g

- a. The extinction ratio (ER) is the ratio of maximum to minimum transmission of a sufficiently linearly polarized input. When the transmission axis and input polarization are parallel, the transmission is at its maximum; rotate the polarizer by 90° for minimum transmission.
- b. The acceptance angle is wider at the center wavelength



Click to Enlarge
Transmission plot for the FPB353-15 Filter. Click the info icons ( ) below for each filters plots and downloadable data.

- 405 nm ± 5 nm

of the optic; see the table below for details.

- c. Click Link for Detailed Specifications on the Substrate

Thorlabs' Polarizing Bandpass Filters are designed to isolate key laser lines while also separating out the s- and p-polarization states. The p-polarized component is transmitted over a defined pass band and reflected (rejected) outside of the band, while the s-polarized component is reflected over the entire blocking region of the optic. Each filter offers a high extinction ratio of $T_p:T_s > 10^6:1$, high p-polarized transmission in the pass band (>85% for FPB353-15 and >95% for FPB405-10), and excellent suppression (OD > 6) in the blocking region.

Each filter is 25.2 mm x 35.6 mm and has a thickness of 2 mm. They are designed to be used at a 45° AOI; however, when used at the center wavelength, the incident angle can be widened without loss of performance. See the table below for details. The item number is engraved on the coated side of the filter, on which we recommend the beam be incident.

These items will be retired without replacement when stock is depleted. If you require this part for line production, please contact our OEM Team.

The unique design of these filters allows them to be used as a laser line filter, as an analyzer within a DIC microscopy system, or as wavelength selectors within harmonic generation setups or fluorescence imaging systems.

Hide BS Selection Guide

BS SELECTION GUIDE

Thorlabs' portfolio contains many different kinds of beamsplitters, which can split beams by intensity or by polarization. We offer plate and cube beamsplitters, though other form factors exist, including pellicle and birefringent crystal. Many of our beamsplitters come in premounted or unmounted variants. Below is a complete listing of our beamsplitter offerings. To explore the available types, wavelength ranges, splitting/extinction ratios, transmission, and available sizes for each beamsplitter category, click *More [+]* in the appropriate row below.

Non-Polarizing Beamsplitters

Plate Beamsplitters	More [+]
Cube Beamsplitters	More [+]
Pellicle Beamsplitters	More [+]

- a. 45° AOI Unless Otherwise Noted

Polarizing Beamsplitters

Plate Beamsplitters	More [+]
Cube Beamsplitters	More [+]
Birefringent Crystal Beamsplitters	More [+]

- a. Mounted in a protective box, unthreaded ring, or cylinder.
- b. Available unmounted or mounted in a protective box or unthreaded cylinder.

Other Beamsplitters

Other Beamsplitters	More [+]

Hide Polarizer Guide

POLARIZER GUIDE

Polarizer Selection Guide

Thorlabs offers a diverse range of polarizers, including wire grid, film, calcite, alpha-BBO, rutile, and beamsplitting polarizers. Collectively, our line of wire grid

polarizers offers coverage from the visible range to the beginning of the Far-IR range. Our nanoparticle linear film polarizers provide extinction ratios as high as 100 000:1. Alternatively, our other film polarizers offer an affordable solution for polarizing light from the visible to the Near-IR. Next, our beamsplitting polarizers allow for use of the reflected beam, as well as the more completely polarized transmitted beam. Finally, our alpha-BBO (UV), calcite (visible to Near-IR), rutile (Near-IR to Mid-IR), and yttrium orthovanadate (YVO_4) (Near-IR to Mid-IR) polarizers each offer an exceptional extinction ratio of 100 000:1 within their respective wavelength ranges.

To explore the available types, wavelength ranges, extinction ratios, transmission, and available sizes for each polarizer category, click *More [+]* in the appropriate row below.

Wire Grid Polarizers	More [+]
Film Polarizers	More [+]
Beamsplitting Polarizers	More [+]
alpha-BBO Polarizers	More [+]
Calcite Polarizers	More [+]
Quartz Polarizers	More [+]
Magnesium Fluoride Polarizers	More [+]
Yttrium Orthovanadate (YVO_4) Polarizers	More [+]
Rutile Polarizers	More [+]

- a. Click on the graph icons in this column to view a transmission curve for the corresponding polarizer. Each curve represents one substrate sample or coating run and is not guaranteed.
- b. Mounted in a protective box, unthreaded ring, or cylinder.
- c. Available unmounted or in an SM05-threaded (0.535"-40) mount that indicates the polarization axis.
- d. Available unmounted or in an SM1-threaded (1.035"-40) mount that indicates the polarization axis.
- e. Available unmounted or mounted in cubes for cage system compatibility.
- f. Calcite's transmittance of light near 350 nm is typically around 75% (see *Transmission* column).
- g. Available unmounted or in an unthreaded Ø1/2" housing.
- h. The transmission curves for calcite are valid for linearly polarized light with a polarization axis aligned with the mark on the polarizer's housing.
- i. The 1064 nm V coating corresponds to a -C26 suffix in the item number.
- j. Available unmounted or mounted in a protective box or unthreaded cylinder that indicates the polarization axis.

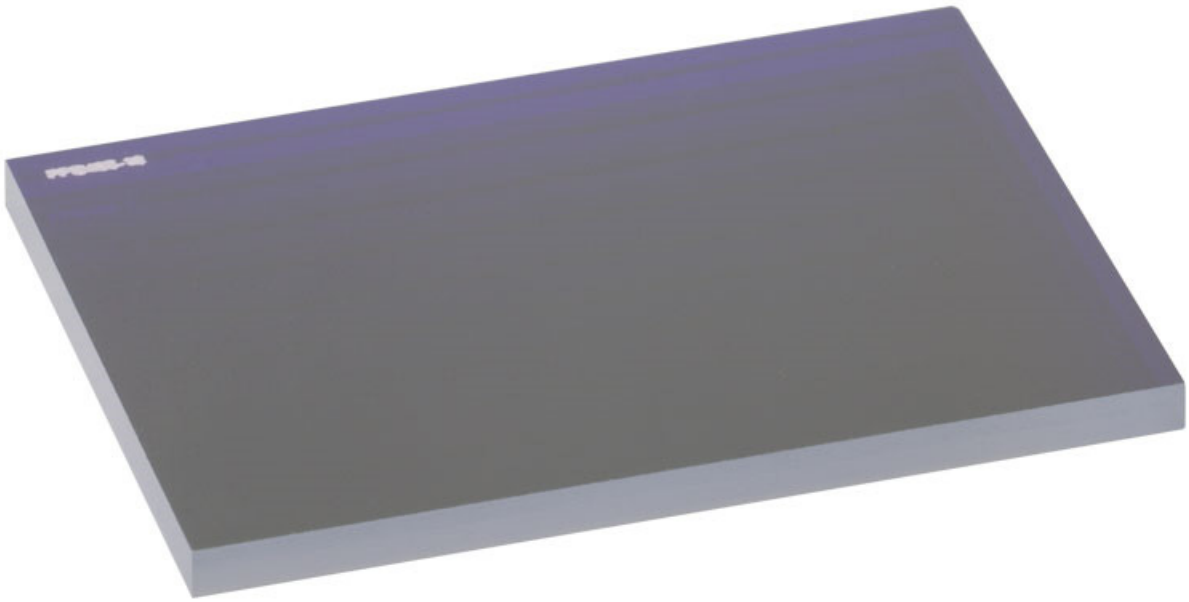
Hide Polarizing Bandpass Filters

Polarizing Bandpass Filters

Item #	Center Wavelength	Bandwidth	Transmission (P-Pol., over Bandwidth)	Blocking (Reflection) Regions		Transmission/ OD Data[a]	Acceptance Angle	Laser Lines
				P-Pol.	S-Pol.			
FPB353-15	355 nm	+6 nm / -9 nm	>85%	300 - 339 nm: OD > 6 369 - 434 nm: OD > 6	300 - 455 nm: OD > 6		45° ± 0.5° 45° ± 7° at 355 nm	Nd:YAG
				434 - 1100 nm: OD > 2				
FPB405-10	405 nm	±5 nm	>95%	322 - 388 nm: OD > 6 422 - 490 nm: OD > 6	320 - 516 nm: OD > 6		45° ± 0.5° 45° +6° / -4° at 405 nm	Diode
				300 - 332 nm: OD >2 490 - 1100 nm: OD > 2				

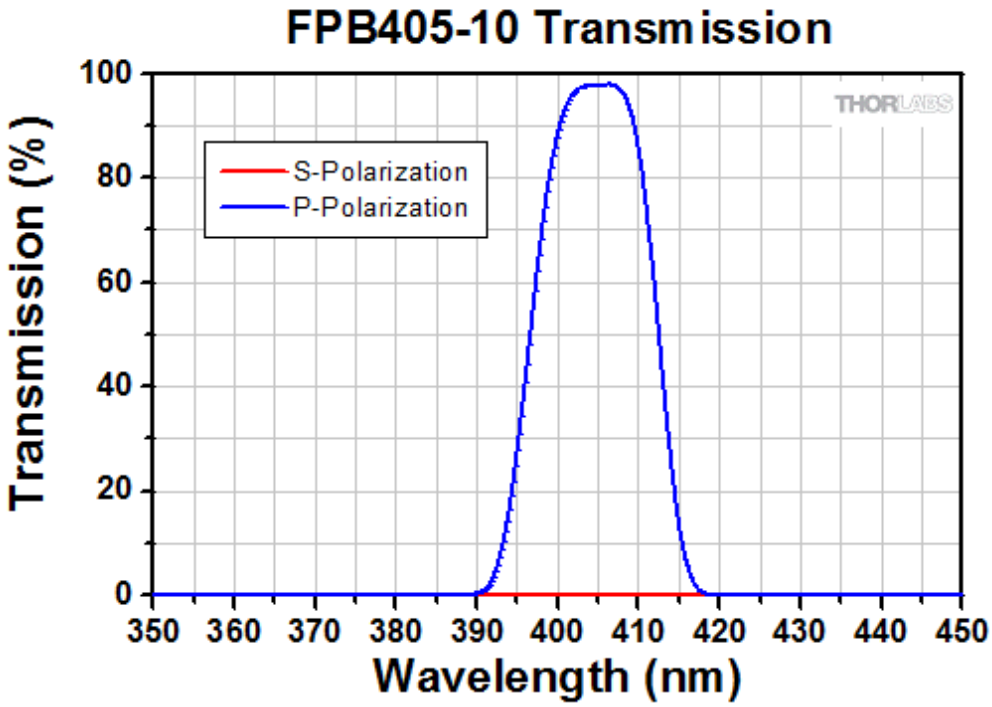
- a. Click on for a plot and downloadable data.

Part Number	Description	Price	Availability
FPB353-15	Polarizing Bandpass Filter, CWL = 355 nm, Bandwidth = +6 nm / -9 nm	$896.46	Today
FPB405-10	Polarizing Bandpass Filter, CWL = 405 nm, Bandwidth = ±5 nm	$896.46	Lead Time



FPB405-10 - Polarizing Bandpass Filter, CWL = 405 nm, Bandwidth = ±5 nm

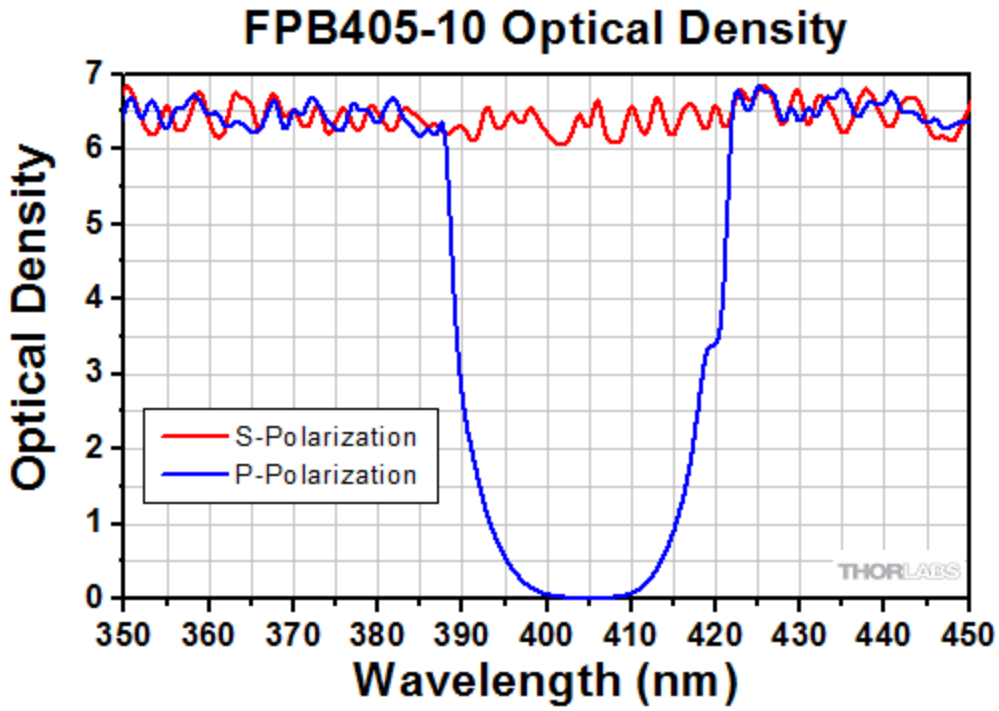
Transmission | Optical Density



To view an excel file that lists all of the measured transmission values for this filter, please click here.

FPB405-10 - Polarizing Bandpass Filter, CWL = 405 nm, Bandwidth = ±5 nm

Transmission | Optical Density



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