

F021APC-2000 - July 6, 2015

Item # F021APC-2000 was discontinued on July 6, 2015. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

FIXED FOCUS COLLIMATION PACKAGES: FC/APC CONNECTORS

- ▶ Mates with FC/APC Connectors
- ▶ Simplifies Collimation of Output from Single Mode Fiber
- ▶ Collimated Beam Diameters Ranging from 0.7 mm to 4.05 mm
- ▶ Models Aligned at 12 Key Wavelengths from 405 nm to 4.55 μm



Fixed Focus Collimators Contain One Factory-Aligned Aspheric Lens



F240APC-A
Shown with Patch Cable



Back Front
F220APC-1064

[Hide Overview](#)

OVERVIEW

Features

- Fiber Collimation for Single Mode Patch Cables with FC/APC Connectors
- Aligned at Wavelengths from 405 nm to 4.55 μm (See Table to the Right)
- Each Collimation Package is Factory Aligned
- Simplifies Fiber-Coupled Detection Systems
- Non-Magnetic Stainless Steel Housing
- Compatible with Narrow and Wide Key FC/APC Connectors
- Custom Options, Including Custom Alignment Wavelengths, Available by Contacting Tech Support

These fiber collimation packages are pre-aligned to collimate light from an FC/APC-terminated fiber with diffraction-limited performance. Because these fiber collimators have no movable parts, they are compact and easy to integrate into an existing setup. Due to chromatic aberration, the effective focal length (EFL) of the aspheric lens is wavelength dependent. The design wavelength indicates the wavelength of ideal beam divergence (see the *Divergence Info* tab for more information).

The aspheric lens is factory aligned for collimation at the design wavelength when connected to its specified single mode fiber patch cable. In addition, the aspheric lens has an AR coating on both sides that minimizes surface reflections (see the *AR Coating Plots* tab). For some applications they may also be used at other wavelengths within the AR coating range; please refer to the theoretical divergence plot for each collimator to determine if it is appropriate for your application. The operating temperature range for these collimators is -40 °C to 93 °C. Please note that these collimation packages are not vacuum compatible. Collimation packages with custom alignment wavelengths, operating temperature ranges, or vacuum compatibility are available by contacting Technical Support.

We recommend using these collimators with our AR-coated single mode fiber optic patch cables. These cables feature an antireflective coating on one fiber end for increased transmission and improved return loss at the fiber-to-free-space interface. Alternatively, our large selection of standard fiber patch cables can also be used.

To mount these fiber collimation packages, we recommend using our collimator mounting adapters. In addition to $\text{\O}1/2"$ and $\text{\O}1"$ unthreaded versions, options are available with external SM05 (0.535"-40), RMS (0.800"-36), or SM1 (1.035"-40) threading. We also offer kinematic collimator mounting adapters that provide pitch and yaw adjustment.

Fixed Focus Collimation Packages

SMA905
FC/PC
FC/APC



Click for Details
 A mounted F671APC-405 Fiber Collimator. The LM1XY Translation Mount allows X and Y adjustments, while the KAD11F Kinematic Adapter provides tip and tilt control.

Quick Links to Available Wavelengths

405 nm
532 nm
543 nm
633 nm
780 nm
980 nm
1064 nm
1310 nm
1550 nm
2 μm
3.45 μm
4.55 μm

Mid-IR Collimators

For our collimators with an alignment wavelength of 3.45 μm and 4.55 μm , we recommend using our angle-polished fluoride fiber patch cables; these collimators include a tightly toleranced ceramic sleeve to protect the fluoride fiber tip during insertion and improve pointing stability. Although these collimators are factory aligned for a specific wavelength, they have low divergence angles over a broad range of wavelengths. Therefore, they may be used at other wavelengths within the AR coating range. Please refer to the theoretical divergence plot for each collimator to determine if it is appropriate for your application.

Alternatives

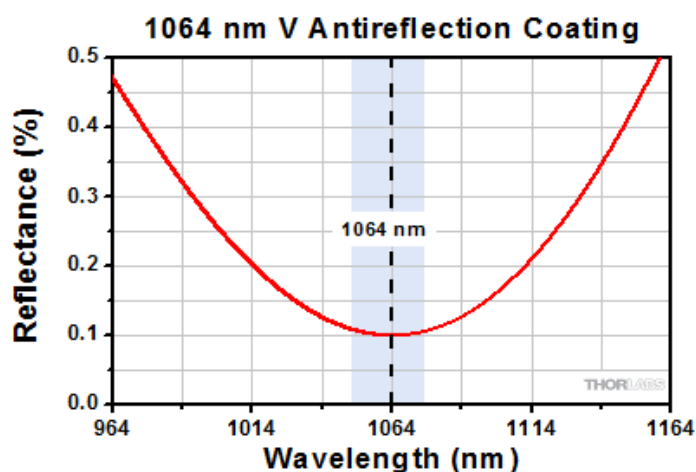
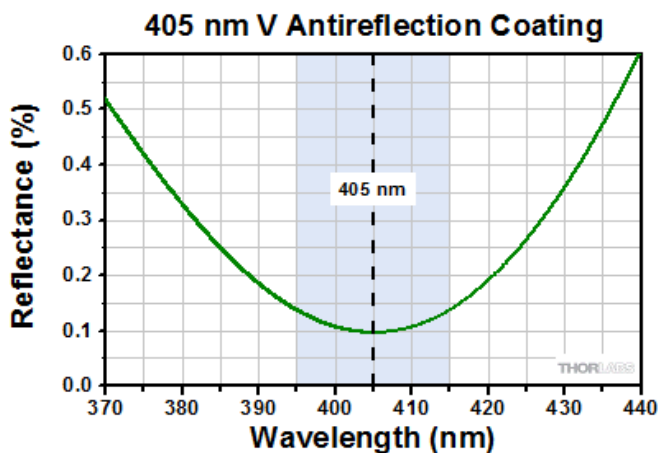
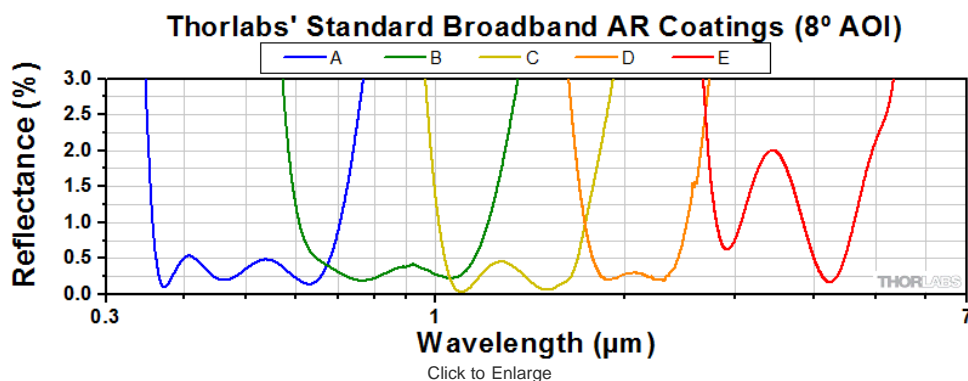
We also offer a line of adjustable collimation packages called FiberPorts that are well suited for a wide range of wavelengths. These are ideal solutions for adjustable, compact fiber couplers. For other collimation and coupling options, please see our *Collimator Guide* tab or contact Tech Support.

[Hide AR Coating Plots](#)

AR COATING PLOTS

Coating Information							
Coating Designation	405	A ^a	B ^a	1064	C	D	E
Coating Range	395 - 415 nm	350 - 700 nm or 400 - 600 nm	600 - 1050 nm or 650 - 1050 nm	1050 - 1075 nm	1050 - 1620 nm	1.8 - 3.0 μm	3 - 5 μm
Reflectance	<0.25% @ 405 nm	$R_{\text{avg}} < 0.5\%$ within Coating Range	$R_{\text{avg}} < 0.5\%$ within Coating Range	<0.25% @ 1064 nm	$R_{\text{avg}} < 0.5\%$ within Coating Range	$R_{\text{avg}} < 1.0\%$ within Coating Range	$R_{\text{avg}} < 1.0\%$ within Coating Range

- See the tables below for the designated coating ranges for specific collimators.



[Hide Divergence Info](#)

DIVERGENCE INFO

Theoretical Approximation of the Divergence Angle

The divergence angle listed in the specifications tables below is the theoretical beam divergence angle when using the fiber collimator at its design wavelength with the specific fiber denoted in the specifications table footnote. A plot of the theoretical divergence angle over a range of wavelengths is also available in the specifications table below. This divergence angle is easy to approximate theoretically using the formula shown below as long as the light emerging from the fiber has a Gaussian intensity profile. This works well for single mode fibers, but will underestimate the divergence angle for multimode fibers where the light emerging from the fiber has a non-Gaussian intensity profile.

The divergence angle (in Degrees)

θ	Divergence Angle
D	Mode-Field Diameter (MFD)
f	Focal Length of Collimator

$$\theta \approx \left(\frac{D}{f} \right) \left(\frac{180}{\pi} \right)$$

where D and f must be in the same units.

Example Calculation:


When the F220FC-A collimator is used to collimate 515 nm light emerging from a 460HP fiber with a mode field diameter (D) of 3.5 μm and a focal length (f) of approximately 11.0 mm (not exact since the design wavelength is 543 nm), the divergence angle is approximately given by

$$\theta \approx (0.0035 \text{ mm} / 11.0 \text{ mm}) \times (180 / 3.1416) \approx 0.018^\circ.$$

When the beam divergence angle was measured for the F220FC-A collimator, a 460HP fiber was used with 543 nm light. The result was a divergence angle of 0.018°.

[Hide 405 nm, FC/APC Fiber Collimation Package](#)

405 nm, FC/APC Fiber Collimation Package



Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ°	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F671APC-405	405 nm	395 - 415 (405)	0.7	0.052°	 Raw Data	0.60	4.02	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- R < 0.25% at the specified design wavelength.
- Collimated Beam Diameter: Theoretical $1/e^2$ diameter at 1 focal length from lens.
- Theoretical full-angle beam divergence; Fiber: S405-HP (405 nm).

Part Number	Description	Price	Availability
F671APC-405	405 nm, f=4.02 mm, NA=0.60 FC/APC Fiber Collimation Pkg.	\$195.00	Today

[Hide 532 nm, FC/APC Fiber Collimation Package](#)

532 nm, FC/APC Fiber Collimation Package




Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ ^c	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F240APC-532	532 nm	350 - 700 (A)	1.48	0.03 +0.01 / -0.00°	 Raw Data	0.51	7.86	M12 x 0.5	AD12BA, AD12F, AD12NT KAD12F, KAD12NT
F220APC-532	532 nm	350 - 700 (A)	2.1	0.02 +0.01 / -0.00°	 Raw Data	0.25	10.90	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- R_{avg} < 0.5% at the specified design wavelength.
- Collimated Beam Diameter: Theoretical 1/e² diameter at 1 focal length from lens.
- Measured full-angle beam divergence; Fiber: 460HP (532 nm)

Part Number	Description	Price	Availability
F240APC-532	NEW! 532 nm, f=7.86 mm, NA=0.51 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F220APC-532	NEW! 532 nm, f=10.90 mm, NA=0.25 FC/APC Fiber Collimation Pkg.	\$195.00	Today

[Hide 543 nm, FC/APC Fiber Collimation Package](#)






543 nm, FC/APC Fiber Collimation Package

Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ ^c	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F240APC-A	543 nm	350 - 700 (A)	1.5	0.027°	 Raw Data	0.51	7.86	M12 x 0.5	AD12BA, AD12F, AD12NT KAD12F, KAD12NT
F260APC-A	543 nm	400 - 600 (A)	2.8	0.014°	 Raw Data	0.17	15.01	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F280APC-A	543 nm	400 - 600 (A)	3.3	0.012°	 Raw Data	0.15	18.07	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- R_{avg} < 0.5% over the specified coating range.
- Collimated Beam Diameter: Theoretical 1/e² diameter at 1 focal length from lens.
- Theoretical full-angle beam divergence; Fiber: 460HP (543 nm)

Part Number	Description	Price	Availability
F240APC-A	543 nm, f=7.86 mm, NA=0.51 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F260APC-A	543 nm, f=15.01 mm, NA=0.17 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F280APC-A	543 nm, f=18.07 mm, NA=0.15 FC/APC Fiber Collimation Pkg.	\$195.00	Today






[Hide 633 nm, FC/APC Fiber Collimation Package](#)**633 nm, FC/APC Fiber Collimation Package**

Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F230APC-633	633 nm	350 - 700 (A)	0.84	0.055 +0.01 / -0.00° ^c	 Raw Data	0.56	4.46	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F240APC-B	633 nm	650 - 1050 (B)	1.5	0.031° ^d	 Raw Data	0.50	7.93	M12 x 0.5	AD12BA, AD12F, AD12NT, KAD12F, KAD12NT
F220APC-633	633 nm	350 - 700 (A)	2.06	0.022 +0.01 / -0.00° ^c	 Raw Data	0.25	11.00	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F260APC-B	633 nm	600 - 1050 (B)	2.8	0.016° ^d	 Raw Data	0.16	15.15	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F280APC-B	633 nm	600 - 1050 (B)	3.4	0.014° ^d	 Raw Data	0.15	18.24	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- $R_{avg} < 0.5\%$ over the specified coating range.
- Collimated Beam Diameter: Theoretical $1/e^2$ diameter at 1 focal length from lens.
- Measured full-angle beam divergence; Fiber: SM600 (635 nm).
- Theoretical full-angle beam divergence; Fiber: SM600 (635 nm).

Part Number	Description	Price	Availability
F230APC-633	NEW! Customer Inspired!633 nm, f= 4.46 mm, NA=0.56 FC/APC Collimation Pkg.	\$195.00	Today
F240APC-B	633 nm, f=7.93 mm, NA=0.50 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F220APC-633	NEW! Customer Inspired!633 nm, f= 11.00 mm, NA=0.25 FC/APC Collimation Pkg.	\$195.00	Today
F260APC-B	633 nm, f=15.15 mm, NA=0.16 FC/APC Collimation Pkg.	\$195.00	Today
F280APC-B	633 nm, f=18.24 mm, NA=0.15 FC/APC Fiber Collimation Pkg.	\$195.00	Today

[Hide 780 nm, FC/APC Fiber Collimation Package](#)**780 nm, FC/APC Fiber Collimation Package**






Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F230APC-780	780 nm	650 - 1050 (B)	0.98	0.06 +0.01 / -0.00° ^c	 Raw Data	0.55	4.51	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F240APC-780	780 nm	650 - 1050 (B)	1.5	0.036° ^d	 Raw Data	0.50	8.00	M12 x 0.5	AD12BA, AD12F, AD12NT, KAD12F, KAD12NT
F220APC-780	780 nm	650 - 1050 (B)	2.3	0.026° ^d	 Raw Data	0.26	11.07	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F260APC-780	780 nm	650 - 1050 (B)	3.33	0.02 +0.01 / -0.00° ^c	 Raw Data	0.16	15.29	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F280APC-780	780 nm	650 - 1050 (B)	4.00	0.01 +0.01 / -0.00° ^c	 Raw Data	0.15	18.40	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- $R_{avg} < 0.5\%$ over the specified coating range.
- Collimated Beam Diameter: Theoretical $1/e^2$ diameter at 1 focal length from lens.
- Measured full-angle beam divergence; Fiber: 780HP (780 nm).
- Theoretical full-angle beam divergence; Fiber: 780HP (780 nm).

Part Number	Description	Price	Availability
F230APC-780	Customer Inspired!780 nm, f = 4.51 mm, NA = 0.55 FC/APC Fiber Collimation Pkg.	\$195.00	Lead Time
F240APC-780	780 nm, f = 8.0 mm, NA = 0.50 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F220APC-780	780 nm, f = 11.07 mm, NA = 0.26 FC/APC Fiber Collimation Pkg.	\$191.25	Today
F260APC-780	Customer Inspired!780 nm, f = 15.29 mm, NA = 0.16 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F280APC-780	Customer Inspired!780 nm, f = 18.40 mm, NA = 0.15 FC/APC Fiber Collimation Pkg.	\$195.00	Today

[Hide 980 nm, FC/APC Fiber Collimation Package](#)

980 nm, FC/APC Fiber Collimation Package






Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ ^c	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F230APC-980	980 nm	600 - 1050 (B)	0.98	0.073 +0.01 / -0.00°	 Raw Data	0.49	4.55	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F240APC-980	980 nm	600 - 1050 (B)	1.7	0.04 +0.01 / -0.00°	 Raw Data	0.50	8.06	M12 x 0.5	AD12BA, AD12F, AD12NT, KAD12F, KAD12NT
F220APC-980	980 nm	600 - 1050 (B)	2.4	0.03 +0.01 / -0.00°	 Raw Data	0.25	11.16	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F260APC-980	980 nm	600 - 1050 (B)	3.31	0.022 +0.01 / -0.00°	 Raw Data	0.16	15.39	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F280APC-980	980 nm	600 - 1050 (B)	4.0	0.02 +0.01 / -0.00°	 Raw Data	0.15	18.53	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- R_{avg} < 0.5% over the specified coating range.
- Collimated Beam Diameter: Theoretical 1/e² diameter at 1 focal length from lens.
- Measured full-angle beam divergence; Fiber: SM980-5.8-125 (980 nm).

Part Number	Description	Price	Availability
F230APC-980	NEW! Customer Inspired!980 nm, f= 4.55 mm, NA=0.49 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F240APC-980	980 nm, f = 8.06 mm, NA = 0.50 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F220APC-980	980 nm, f = 11.16 mm, NA = 0.25 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F260APC-980	NEW! Customer Inspired!980 nm, f= 15.39 mm, NA=0.16 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F280APC-980	980 nm, f = 18.53 mm, NA = 0.15 FC/APC Fiber Collimation Pkg.	\$195.00	Today

[Hide 1064 nm, FC/APC Fiber Collimation Package](#)






1064 nm, FC/APC Fiber Collimation Package

Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F230APC-1064	1064 nm	650 - 1050 (B)	1.00	0.08 +0.01 / -0.00° ^c	 Raw Data	0.55	4.56	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F240APC-1064	1064 nm	650 - 1050 (B)	1.76	0.04 +0.01 / -0.00° ^c	 Raw Data	0.50	8.07	M12 x 0.5	AD12BA, AD12F, AD12NT, KAD12F, KAD12NT
F220APC-1064	1064 nm	1050 - 1075 (1064)	2.4	0.032° ^d	 Raw Data	0.25	11.17	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F260APC-1064	1064 nm	650 - 1050 (B)	3.37	0.02 +0.01 / -0.00° ^c	 Raw Data	0.16	15.43	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F280APC-1064	1064 nm	650 - 1050 (B)	4.05	0.02 +0.01 / -0.00° ^c	 Raw Data	0.15	18.60	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- R < 0.25% at the specified design wavelength.
- Collimated Beam Diameter: Theoretical 1/e² diameter at 1 focal length from lens.
- Measured full-angle beam divergence; Fiber: SM980-5.8-125 (1064 nm).
- Theoretical full-angle beam divergence; Fiber: SM980-5.8-125 (1064 nm).

Part Number	Description	Price	Availability
F230APC-1064	Customer Inspired!1064 nm, f = 4.56 mm, NA = 0.55 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F240APC-1064	Customer Inspired!1064 nm, f = 8.07 mm, NA = 0.50 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F220APC-1064	1064 nm, f = 11.17 mm, NA=0.25 FC/APC Fiber Collimation Pkg.	\$191.25	Today
F260APC-1064	Customer Inspired!1064 nm, f = 15.43 mm, NA = 0.16 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F280APC-1064	Customer Inspired!1064 nm, f = 18.60 mm, NA = 0.15 FC/APC Fiber Collimation Pkg.	\$195.00	Today






[Hide 1310 nm, FC/APC Fiber Collimation Package](#)**1310 nm, FC/APC Fiber Collimation Package**

Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F230APC-1310	1310 nm	1050 - 1620 (C)	0.83	0.055 +0.01 / -0.00° ^c	 Raw Data	0.54	4.59	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F240APC-C	1310 nm	1050 - 1620 (C)	1.5	0.065° ^d	 Raw Data	0.49	8.13	M12 x 0.5	AD12BA, AD12F, AD12NT, KAD12F, KAD12NT
F220APC-1310	1310 nm	1050 - 1620 (C)	2.04	0.047+0.01 / -0.00° ^c	 Raw Data	0.25	11.26	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F260APC-C	1310 nm	1050 - 1620 (C)	2.8	0.034° ^d	 Raw Data	0.16	15.52	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F280APC-C	1310 nm	1050 - 1620 (C)	3.4	0.028° ^d	 Raw Data	0.15	18.67	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- $R_{avg} < 0.5\%$ over the specified coating range.
- Collimated Beam Diameter: Theoretical $1/e^2$ diameter at 1 focal length from lens.
- Theoretical full-angle beam divergence; Fiber: SMF-28-J9 (1310 nm).
- Theoretical full-angle beam divergence; Fiber: SMF-28-J9 (1310 nm).

Part Number	Description	Price	Availability
F230APC-1310	NEW! Customer Inspired!1310 nm, f=4.59 mm, NA=0.54 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F240APC-C	1310 nm, f=8.13 mm, NA=0.49 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F220APC-1310	NEW! Customer Inspired!1310 nm, f=11.26 mm, NA=0.25 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F260APC-C	1310 nm, f = 15.36 mm, NA = 0.16, FC/APC Fiber Collimation Pkg.	\$195.00	Today
F280APC-C	1310 nm, f = 18.67 mm, NA = 0.15, FC/APC Fiber Collimation Pkg.	\$195.00	Today

[Hide 1550 nm, FC/APC Fiber Collimation Package](#)**1550 nm, FC/APC Fiber Collimation Package**



Item #	Alignment Wavelength	AR Coating ^a (nm)	D ^b (mm)	θ	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F230APC-1550	1550 nm	1050 - 1620 (C)	0.87	0.129 +0.01 / -0.00° ^c	 Raw Data	0.54	4.61	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F240APC-1550	1550 nm	1050 - 1620 (C)	1.6	0.073° ^d	 Raw Data	0.49	8.18	M12 x 0.5	AD12BA, AD12F, AD12NT, KAD12F, KAD12NT
F220APC-1550	1550 nm	1050 - 1620 (C)	2.15	0.053 +0.01 / -0.00° ^c	 Raw Data	0.24	11.32	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F260APC-1550	1550 nm	1050 - 1620 (C)	3.0	0.038° ^d	 Raw Data	0.16	15.58	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F280APC-1550	1550 nm	1050 - 1620 (C)	3.6	0.032° ^d	 Raw Data	0.15	18.75	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- $R_{avg} < 0.5\%$ over the specified coating range.
- Collimated Beam Diameter: Theoretical $1/e^2$ diameter at 1 focal length from lens.
- Theoretical full-angle beam divergence; Fiber: SMF-28-J9 (1550 nm).

Part Number	Description	Price	Availability
F230APC-1550	NEW! Customer Inspired!1550 nm, f=4.61 mm, NA=0.54 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F240APC-1550	1550 nm, f=8.18 mm, NA=0.49 FC/APC Fiber Collimation Pkg.	\$195.00	3-5 Days
F220APC-1550	NEW! Customer Inspired!1550 nm, f=11.32 mm, NA=0.24 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F260APC-1550	1550 nm, f=15.58 mm, NA=0.16 FC/APC Fiber Collimation Pkg.	\$195.00	Today
F280APC-1550	1550 nm, f=18.75 mm, NA=0.15 FC/APC Fiber Collimation Pkg.	\$195.00	Today

[Hide 2 μm FC/APC Fiber Collimation Package](#)

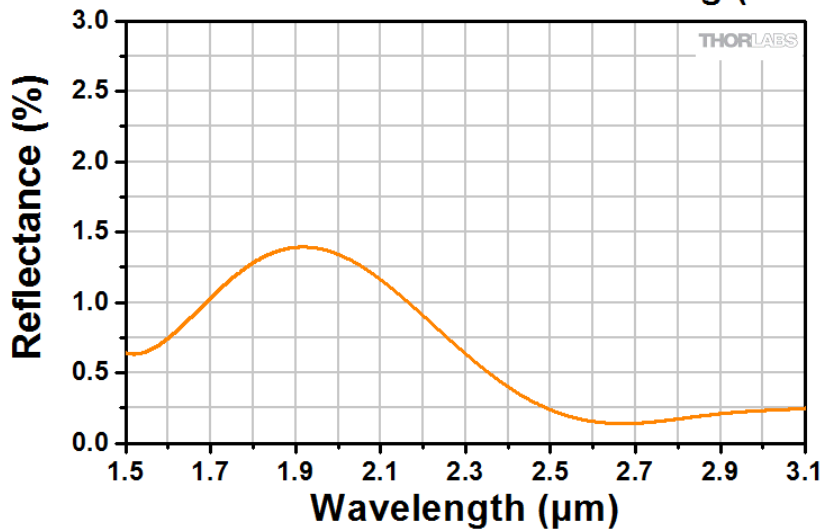
2 μm, FC/APC Fiber Collimation Package

Item #	Alignment Wavelength	AR Coating ^a (μm)	D ^b (mm)	θ ^c	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F028APC-2000	2 μm	1.8 - 3.0 (D)	1.2	0.13°	 Raw Data	0.56	5.95	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F021APC-2000	2 μm	1.8 - 3.0 (D)	2.88	0.056°	 Raw Data	0.18	11.00	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

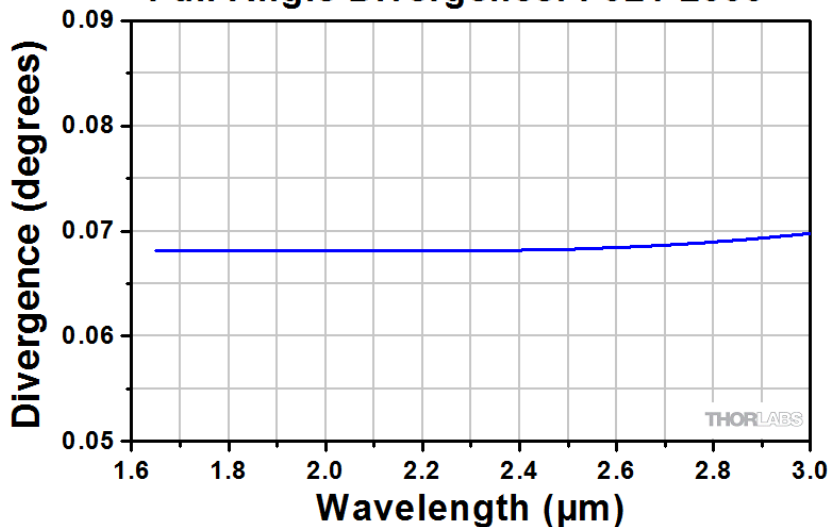
- R_{avg} < 1.0% over the specified coating range.
- Collimated Beam Diameter: Theoretical 1/e² diameter at 1 focal length from lens.
- Theoretical full-angle beam divergence; Fiber: SM2000 (2000 nm).

Part Number	Description	Price	Availability
F028APC-2000	2 μm, f = 5.95 mm, NA = 0.56 FC/APC Fiber Collimation Pkg.	\$552.00	Today
F021APC-2000	Customer Inspired! 2 μm, f = 11.00 mm, NA = 0.18 FC/APC Fiber Collimation Pkg.	\$552.00	Lead Time

-D Broadband Antireflection Coating (8° AOI)





Full-Angle Divergence: F021-2000



[Hide 3.45 \$\mu\text{m}\$ FC/APC Fiber Collimation Package](#)**3.45 μm FC/APC Fiber Collimation Package**

Although these collimators are factory aligned for a specific wavelength, they have low divergence angles over a broad range of wavelengths. They may be used at other wavelengths within the AR coating range. Please refer to the theoretical divergence plot for each collimator to determine if it is appropriate for your application.


Item # ^a	Alignment Wavelength	AR Coating ^b (μm)	D ^c (mm)	θ^d	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F028APC-3450	3.45 μm	3 - 5 (E)	1.00	0.125 \pm 0.01°	 Raw Data	0.56	5.95	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT
F021APC-3450	3.45 μm	3 - 5 (E)	1.86	0.068 \pm 0.01°	 Raw Data	0.18	11.00	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- These collimators contain a tightly toleranced ceramic ferrule that protects the tips of our fluoride fiber patch cables as they are being inserted and provides improved pointing repeatability.
- $R_{\text{avg}} < 1.0\%$ over the specified coating range.
- Collimated Beam Diameter: Theoretical $1/e^2$ diameter at 1 focal length from lens.
- Measured full-angle beam divergence; Fiber: ZrF₄ (3.45 μm), MFD = 13.0 μm .

Part Number	Description	Price	Availability
F028APC-3450	3.45 μm , f = 5.95 mm, NA = 0.56 FC/APC Fiber Collimation Pkg.	\$560.00	Today
F021APC-3450	3.45 μm , f = 11.00 mm, NA = 0.18 FC/APC Fiber Collimation Pkg.	\$560.00	Today

[Hide 4.55 \$\mu\text{m}\$ FC/APC Fiber Collimation Package](#)**4.55 μm FC/APC Fiber Collimation Package**

Although these collimators are factory aligned for a specific wavelength, they have low divergence angles over a broad range of wavelengths. They may be used at other wavelengths within the AR coating range. Please refer to the theoretical divergence plot for each collimator to determine if it is appropriate for your application.

Item # ^a	Alignment Wavelength	AR Coating ^b (μm)	D ^c (mm)	θ^d	Theoretical Divergence	NA _{Lens}	f (mm)	External Threading	Suggested Adapters
F028APC-4950	4.55 μm	3 - 5 (E)	1.08	0.15 +0.05 / -0°	 Raw Data	0.56	5.95	M11 x 0.5	AD11BA, AD1109F, RMS11P, AD11F, AD11NT, KAD11F, KAD11NT

- These collimators contain a tightly toleranced ceramic ferrule that protects the tips of our fluoride fiber patch cables as they are being inserted and provides improved pointing repeatability.
- $R_{\text{avg}} < 1.0\%$ over the specified coating range.
- Collimated Beam Diameter: Theoretical $1/e^2$ diameter at 1 focal length from lens.
- Measured full-angle beam divergence; MFD = 16.0 μm .

Part Number	Description	Price	Availability
F028APC-4950	NEW! 4.55 μm , f = 5.95 mm, NA = 0.56 FC/APC Fiber Collimation Pkg.	\$500.00	Today

http://www.thorlabs.com/newgrouppage9.cfm?objectgroup_id=1696