

# Plastic Fiber Optics

- Provide an economical alternative to glass fiber optics for piping photoelectric sensing light to and from confined areas with suitable environments
- Ideal for detecting small objects
- Withstand repeated flexing and bending
- Available in individual or bifurcated styles\*
- Available with optional DURA-BEND™ fibers for improved flexibility for difficult-to-access locations, without the decreased performance to which excessively bent standard plastic fibers optics are prone
- Available with core diameters of 0.25, 0.50, 0.75, 1.0 and 1.5 mm



## Plastic Fiber Optic Model Key

**P B P 4 6 U C X**

**PLASTIC FIBER FAMILY designator**

Same for all plastic fibers

**ASSEMBLY STYLE designator**

- B = Bifurcated fiber
- I = Individual fiber\*
- DI = Dual Individual fiber\*

**SENSING END designator**

- A = 90° Angle
- AT = 90° Angle/Thread
- CF = Coaxial Ferrule
- CT = Coaxial Thread
- E = Encapsulated
- EFP = Extended Ferrule Probe
- F = Ferrule
- FM = Ferrule Miniature
- FMP = Ferrule Miniature Probe
- L = Lensed
- P = Probe
- PF = Probe Ferrule
- PMSB = Probe Miniature Side-view Bendable
- PS = Probe Side-view
- PSB = Probe Side-view Bendable
- PSM = Probe Side-view Miniature
- R = Rectangular
- RS = Rectangular Side-view
- T = Thread
- TA = Thread/90° Angle
- TP = Thread/Probe

**MODIFICATIONS designator**

"MXX" = Sensing end tip modification

**CONTROL END designator**

- T5 = Terminated
- TMB5 = STEELSKIN™ braiding over monocoil reinforcement
- U = Underterminated straight cable\*\*
- UC = Underterminated Coiled cable
- UHF = Underterminated DURA-BEND™ multi-core cable

**FIBER LENGTH designator**

- 3 = 1 m (1000 mm)
- 6 = 2 m (2000 mm)
- 100 = 30 m (30480 mm)

**FIBER CORE DIAMETER designator**

- 1 = 0.25 mm
- 2 = 0.50 mm
- 3 = 0.75 mm
- 4 = 1.00 mm
- 6 = 1.50 mm
- 1X4 = 4 x 0.25 mm
- 1X16 = 16 x 0.265 mm
- 1X32 = 32 x 0.265 mm

\* All individual plastic fiber optics are sold and used in pairs. Bifurcated fibers are two-way fibers with a single sensing end that both emits and receives light and with dual-control sensor ends that attach separately to the sensor's LED and photodetector.

\*\* Plastic fibers with "U" in the suffix of the model numbers have unterminated control ends; cut them to the required length. Use supplied cutter.

## Plastic Fiber Optics Specifications

<b>Construction</b>	<b>Optical Fiber:</b> acrylic (PMMA) monofilament, except as noted <b>Protective Jacket:</b> black polyethylene, except as noted <b>Threaded End Tips and Hardware:</b> nickel-plated brass, except as noted <b>Probe End Tips:</b> annealed (bendable) 304 stainless steel <b>Angled End tips:</b> hardened 304 stainless steel <b>Ferrule End Tips:</b> 303 stainless steel
<b>Sensing Range</b>	Refer to the specific fiber optic/sensor combination
<b>Implied Dimensional Tolerance</b>	<b>All dimensions are in millimeters:</b> x = $\pm 2.5$ mm, x.x = $\pm 0.25$ mm and x.xx = $\pm 0.12$ mm, unless specified. "L" = $\pm 40$ mm per meter
<b>Minimum Bend Radius</b>	8 mm for 0.25 mm diameter fibers 12 mm for 0.5 mm diameter fibers (except DURA-BEND™) 25 mm for 1.0 mm diameter fibers (except DURA-BEND™) 38 mm for 1.5 mm diameter fibers
<b>Repeat Bending/Flexing</b>	Life expectancy of plastic fiber optic cable is in excess of one million cycles at bend radii of no less than the minimum and a bend of 90° or less. Avoid stress at the point where the cable enters the sensor ("control end") and at the sensing end tip. Coiled plastic fiber optic assemblies are recommended for any application requiring reciprocating fiber motion.
<b>Chemical Resistance</b>	The acrylic core of the monofilament optical fiber will be damaged by contact with acids, strong bases (alkalis) and solvents. The polyethylene jacket will protect the fiber from most chemical environments. However, materials may migrate through the jacket with long term exposure. Samples of fiber optic material are available from Banner for testing and evaluation.
<b>Temperature Extremes</b>	Temperatures below -30° C will cause embrittlement of the plastic materials but will not cause transmission loss. Temperatures above +70° C will cause both transmission loss and fiber shrinkage.
<b>Operating Temperature</b>	-30° to +70° C, unless otherwise specified

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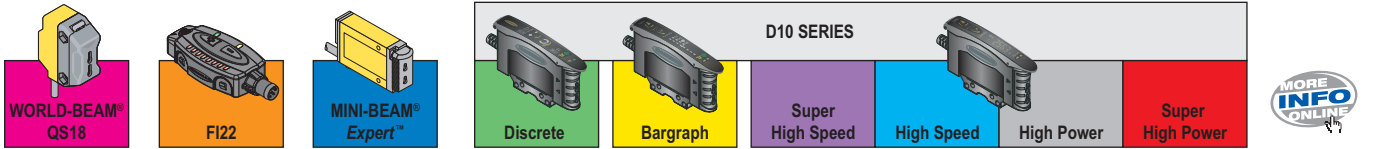
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### ⚠ APPLICATION NOTES AND WARNINGS ⚠

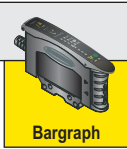
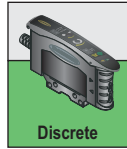
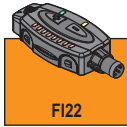
- 1** Plastic fiber assemblies with "U" in the suffix of the model numbers have unterminated control ends (the end that is coupled to the photoelectric sensor). The customer can cut these fiber optic assemblies to the required length using the supplied cutter. Use only the supplied cutter to ensure optimal light coupling efficiency.
- 2** Terminated plastic fiber assemblies are optically ground and polished and cannot be shortened, spliced or otherwise modified.
- 3** Do not subject the plastic fibers to sharp bends, pinching, high tensile loads or high levels of radiation.
- 4** When ordering fiber lengths in excess of 2 m, take into account light signal attenuation due to the additional length.
- 5** Due to their light transmission properties, plastic fiber optics are recommended for use only with visible light fiber optic sensors.
- 6** Use caution when applying fiber optics in hazardous locations. Although fiber optic assemblies are, by themselves, intrinsically safe, the sensor and associated electronics must be LOCATED IN A SAFE ENVIRONMENT. Alternatively, fiber optics may be used with NAMUR sensor model Q45AD9FP (page 157). Fiber optics do not necessarily provide a hermetic seal between a hazardous environment and the safe environment.

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Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)
PBF16U		0.25	8	• Smooth ferrule	✓	NA 5 10 15 20 25 30 <a href="#">Details Online</a>
PBF26U		0.5	12	• Smooth ferrule	✓	NA 20 40 60 80 100 120 140 160 <a href="#">Details Online</a>
PBF46U		1.0	25	• Smooth ferrule	✓	50 100 150 200 250 300 <a href="#">Details Online</a>
PBF46UM3MJ1.3		1.0	25	• Smooth ferrule; thin jacket (ø 1.3)	✓	50 100 150 200 250 300 <a href="#">Details Online</a>
PBF66U		1.5	38	• Smooth ferrule; long range	✓	100 200 300 400 500 <a href="#">Details Online</a>
PBFM16U		0.25	8	• Non-bendable miniature tip	✓	NA 5 10 15 20 25 30 <a href="#">Details Online</a>
PBFM46U		1.0	25	• Smooth ferrule	✓	50 100 150 200 250 300 <a href="#">Details Online</a>
PBT16U		0.25	8	• Thread	✓	NA 5 10 15 20 25 30 <a href="#">Details Online</a>
PBT26U		0.5	12	• Thread	✓	NA 20 40 60 80 100 120 140 160 <a href="#">Details Online</a>
PBT46U		1.0	25	• Thread	✓	50 100 150 200 250 300 <a href="#">Details Online</a>
PBT66U		1.5	38	• Thread; long range	✓	100 200 300 400 500 <a href="#">Details Online</a>

NA: WORLD-BEAM QS18 not recommended.  
\* Fibers can be free cut using fiber cutter (see page 203).



D10 SERIES

Super High Speed

High Speed

High Power

Super High Power

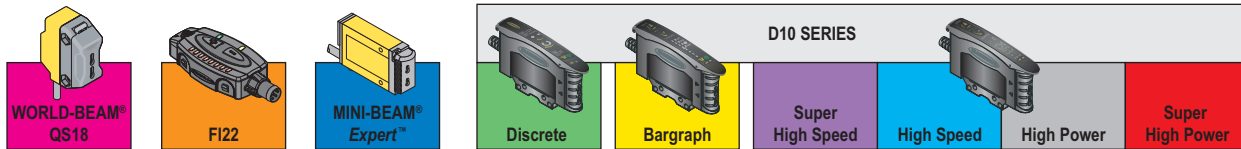


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Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)
Probe		0.5	12	• Smooth ferrule; non-bendable tip	✓	
		0.25	8	• Smooth ferrule; non-bendable tip	✓	
		0.25	8	• Thread; bendable tip	✓	
		0.5	12	• Thread; bendable tip	✓	
		1.0	25	• Thread; bendable tip	✓	
		0.5	12	• Thread; bendable tip	✓	
Diffuse		0.5	12	• Thread; bendable tip	✓	
		0.5	12	• Thread; bendable tip	✓	
		0.5	12	• Thread; bendable tip	✓	
		0.5	12	• Thread; bendable tip	✓	
		0.5	12	• Thread; bendable tip	✓	
		0.5	12	• Thread; bendable tip	✓	
Side-view		0.75	20	• Smooth ferrule; bendable tip	✓	
		0.5	12	• Smooth ferrule; bendable tip	✓	
		1.0	25	• Smooth ferrule; bendable tip	✓	
		1.0	25	• Thread; non-bendable tip	✓	
		1.5	38	• Smooth ferrule; non-bendable tip	✓	
		1.5	38	• Smooth ferrule; non-bendable tip	✓	

NA: WORLD-BEAM QS18 not recommended.  
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 More information online at [bannerengineering.com](http://bannerengineering.com) 191

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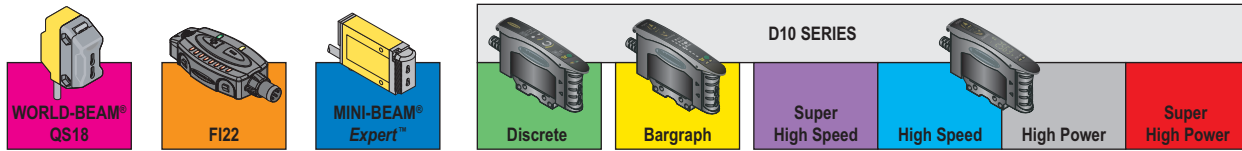
Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)	
Coaxial	PBCF21X46U 	0.5 4X 0.25	12	• Miniature probe tip	✓	 Details Online	
	PBCF46U 	1.0 16X 0.265	25	• Smooth ferrule	✓	 Details Online	
	PBCT21X46U 	0.5 4X 0.25	12	• Miniature thread	✓	 Details Online	
	PBCT26U 	0.5 9X 0.25	12	• Thread	✓	 Details Online	
	PBCT26UM3 	0.5 9X 0.25	12	• Miniature thread	✓	 Details Online	
	PBCT26UM4M2.5 	0.5 9X 0.25	12	• Thread	✓	 Details Online	
	PBCT46U 	1.0 16X 0.265	25	• Thread	✓	 Details Online	
	High-Flex	PBFM1X43T5 	4X 0.25	8	• Best for repetitive flexing (1,000s of cycles)		 Details Online
		PBP46UC 	1.0	25	• For applications involving reciprocating motion	✓	 Details Online
		PBT46UC 	1.0	25	• For applications involving reciprocating motion	✓	 Details Online
Convergent Beam Spot	PLI-A10 	0.5 9X 0.25	12	• Anodized AL tip; • Glass lens	✓		

NA: WORLD-BEAM QS18 not recommended.

NA: MINI-BEAM Expert not recommended.

Indicates lens available for model. See page 195 for details.

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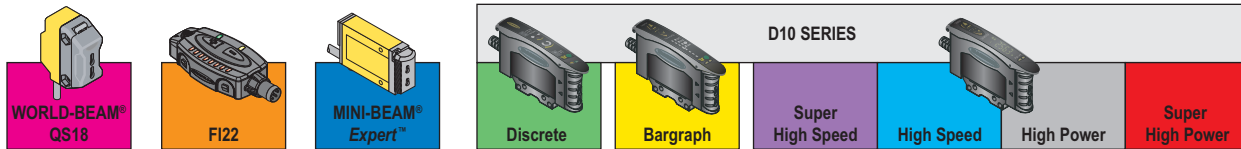
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Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)	
<b>DURA-BEND</b>	<b>Diffuse</b>	<b>PBF46UHF</b> 	1.0	1	• Smooth ferrule	✓	 Details Online
		<b>PBFM46UHF</b> 	1.0	1	• Smooth ferrule	✓	 Details Online
		<b>PBP46UHF</b> 	1.0	1	• Thread; bendable tip	✓	 Details Online
		<b>PBPS46UHF</b> 	1.0	1	• Smooth ferrule; non-bendable tip	✓	 Details Online
		<b>PBT26UHF</b> 	0.5	1	• Thread	✓	 Details Online
		<b>PBT46UHF</b> 	1.0	1	• Thread	✓	 Details Online
<b>Area Sensing (Array)</b>	<b>PBR1X326U</b> 	32X 0.265	25	• Rectangular tip	✓	 Details Online	
	<b>PBRS1X326U</b> 	32X 0.265	25	• Rectangular tip; side sensing	✓	 Details Online	
<b>Mechanical Convergent</b>	<b>P22-C1</b> 	0.5	12	• Straight exit with lenses; 3 mm range; DURA-BEND fiber	✓		
	<b>P12-C1</b> 	0.5	12	• Side exit with lenses; 3 mm range; DURA-BEND fiber	✓		
	<b>P32-C2</b> 	1.0	12	• Flat mount; 2 mm range; DURA-BEND fiber	✓		

NA: WORLD-BEAM QS18 not recommended.

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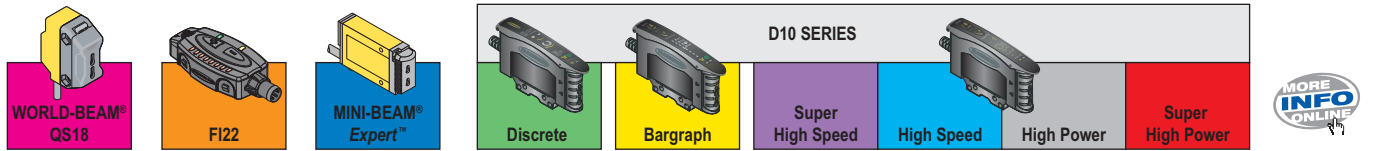


Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)
Diffuse STEELSKIN		1.0	12	• 90° Angle/Thread		 <a href="#">Details Online</a>
		0.5 9X 0.25	12	• Miniature thread		 <a href="#">Details Online</a>
		0.5 9X 0.25	12	• Thread		 <a href="#">Details Online</a>
		1.0	12	• Smooth ferrule		 <a href="#">Details Online</a>
		1.0	12	• Smooth ferrule; non-bendable tip		 <a href="#">Details Online</a>
		1.0	12	• Thread		 <a href="#">Details Online</a>
		1.0	12	• Thread/90° Angle		 <a href="#">Details Online</a>
		1.0	12	• Thread; bendable tip		 <a href="#">Details Online</a>
High Temp		1.0	25	• Thread; withstands 105° C	✓	 <a href="#">Details Online</a>

NA: WORLD-BEAM QS18 not recommended.

Indicates lens available for model. See page 195 for details.

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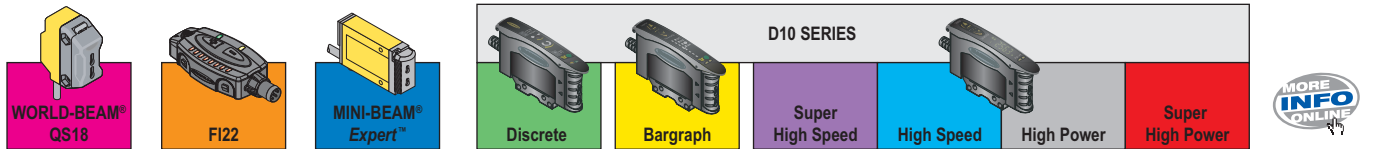
Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)		
Diffuse	Liquid Level	PBE46UTMLLP		1.0	25	<ul style="list-style-type: none"> <li>Fluoropolymer encapsulated</li> <li>Sensor switches when tip of fiber is immersed in liquid</li> </ul>	✓	
		PBE46UTMLLPH1		1.0	25	<ul style="list-style-type: none"> <li>Fluoropolymer encapsulated; with-stands 105° C</li> <li>Sensor switches when tip of fiber is immersed in liquid</li> </ul>	✓	
		PBT26UM6M.1		0.5	12	<ul style="list-style-type: none"> <li>Quartz probe; polypropylene housing</li> <li>Sensor switches when tip of quartz is immersed in liquid</li> </ul>	✓	
		TGR38MPFMQ		0.5	12	<ul style="list-style-type: none"> <li>Quartz probe; polypropylene housing</li> <li>Sensor switches when tip of quartz is immersed in liquid</li> </ul>	✓	
		PDI46U-LLD		1.0	1	<ul style="list-style-type: none"> <li>Clear tube mount; DURA-BEND fiber</li> <li>Sensor switches when liquid meniscus reaches optical axis</li> </ul>	✓	
Diffuse	Flat Pack	PBRS26U		0.5	12	<ul style="list-style-type: none"> <li>3.2 mm thickness; DURA-BEND fiber</li> </ul>	✓	
		PBE46UTMNL		1.0	25	<ul style="list-style-type: none"> <li>Fluoropolymer encapsulated tip</li> </ul>	✓	
Diffuse	Convergent Spot Lens	L4C6		ref. model PBCT26U	ref. model PBCT26U	<ul style="list-style-type: none"> <li>Anodized AL housing; 0.25 mm beam spot @ 6 mm</li> <li>Fixed focus</li> </ul>		
		L4C20		ref. model PBCT26U	ref. model PBCT26U	<ul style="list-style-type: none"> <li>Anodized AL housing; 4 mm beam spot @ 20 mm</li> <li>Fixed focus</li> </ul>		
		LZ3C8		ref. model PBCT26UM3	ref. model PBCT26UM3	<ul style="list-style-type: none"> <li>Anodized AL housing; 0.5 - 3.2 mm adj. beam spot</li> <li>Adjustable focus</li> </ul>		

NA: WORLD-BEAM QS18 not recommended.  
 NA: D10-Discrete not recommended.  
 \* Fibers can be free cut using fiber cutter (see page 203).

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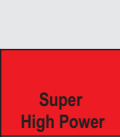
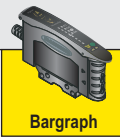
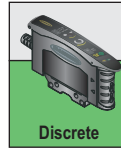
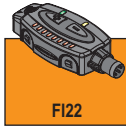


Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)
PIA16U		0.25	8	• 90° Angle	✓	NA, 5-40 (Details Online)
PIA26U		0.5	12	• 90° Angle	✓	NA, 20-180 (Details Online)
PIAT16U		0.25	8	• 90° Angle/Thread	✓	NA, 20-100 (Details Online)
PIAT26U		0.5	12	• 90° Angle/Thread	✓	NA, 50-300 (Details Online)
PIAT46U		1.0	25	• 90° Angle/Thread	✓	200-1000 (Details Online)
PIAT46UM-4X-4MT		10.0	25	• 90° Angle/Thread	✓	200-1000 (Details Online)
PIAT66U		1.5	38	• 90° Angle/Thread; long range	✓	500-2000 (Details Online)
PIF16U		0.25	8	• Smooth ferrule	✓	NA, 10-90 (Details Online)
PIF26U		0.5	12	• Smooth ferrule	✓	NA, 50-400 (Details Online)
PIF26UMLS		0.5	12	• Smooth ferrule; thick jacket (ø 2.2 mm)	✓	NA, 50-400 (Details Online)

NA: WORLD-BEAM QS18 not recommended.

Indicates lens available for model. See page 201 for details.

\* Fibers can be free cut using fiber cutter (see page 203).



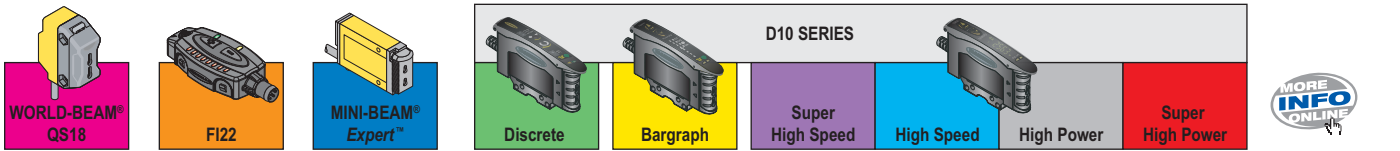
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Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)	
Standard	PIF46U 	1.0	25	• Smooth ferrule	✓	Details Online	
	PIF66U 	1.5	38	• Smooth ferrule; long range	✓	Details Online	
	PIFM46U 	1.0	25	• Smooth ferrule; miniature tip	✓	Details Online	
	PIL46U 	1.0	25	• Plastic lens; ultra-long range • Lens available separately, see page 201.	✓	Details Online	
	PIT16U 	0.25	8	• Thread	✓	Details Online	
	PIT26U 	0.5	12	• Thread	✓	Details Online	
	PIT46U 	1.0	25	• Thread	✓	Details Online	
	PIT66U 	1.5	38	• Thread; long range	✓	Details Online	
	Probe	PIP16U 	0.25	8	• Smooth ferrule; non-bendable tip	✓	Details Online
		PIP26U 	0.5	12	• Thread; bendable tip	✓	Details Online
PIP46U 		1.0	25	• Thread; bendable tip	✓	Details Online	

NA: WORLD-BEAM QS18 not recommended.

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Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)	
Opposed	Side-View	PLIS-1		0.5	12	<ul style="list-style-type: none"> <li>Low beam divergence angle of 2°</li> <li>Ideal for wafer mapping</li> </ul>	<a href="#">Details Online</a>
		PIPS26U		0.5	12	<ul style="list-style-type: none"> <li>Smooth ferrule; non-bendable tip</li> </ul>	<a href="#">Details Online</a>
		PIPS46U		1.0	25	<ul style="list-style-type: none"> <li>Smooth ferrule; non-bendable tip</li> </ul>	<a href="#">Details Online</a>
		PIPS66U		1.5	38	<ul style="list-style-type: none"> <li>Smooth ferrule; non-bendable tip</li> </ul>	<a href="#">Details Online</a>
		PIPSB46U		1.0	25	<ul style="list-style-type: none"> <li>Smooth ferrule; bendable tip</li> </ul>	<a href="#">Details Online</a>
		PIPSM26U		0.5	12	<ul style="list-style-type: none"> <li>Miniature smooth ferrule; non-bendable tip</li> </ul>	<a href="#">Details Online</a>
		L2RA		ref. model PIT46U	ref. model PIT46U	<ul style="list-style-type: none"> <li>Compact glass prism</li> <li>M2.5 thread</li> </ul>	
High-Flex	Side-View	PIFM1X46U		4X 0.25	8	<ul style="list-style-type: none"> <li>Best for repetitive flexing (1,000s of cycles)</li> </ul>	<a href="#">Details Online</a>
		PIT1X46U		4X 0.25	8	<ul style="list-style-type: none"> <li>Best for repetitive flexing (1,000s of cycles)</li> </ul>	<a href="#">Details Online</a>
		PIP46UC		1.0	25	<ul style="list-style-type: none"> <li>For applications involving reciprocating motion</li> </ul>	<a href="#">Details Online</a>
		PIT46UC		1.0	25	<ul style="list-style-type: none"> <li>For applications involving reciprocating motion</li> </ul>	<a href="#">Details Online</a>

NA: WORLD-BEAM QS18 not recommended. Indicates lens available for model. See page 201 for details.  
 \* Fibers can be free cut using fiber cutter (see page 203).

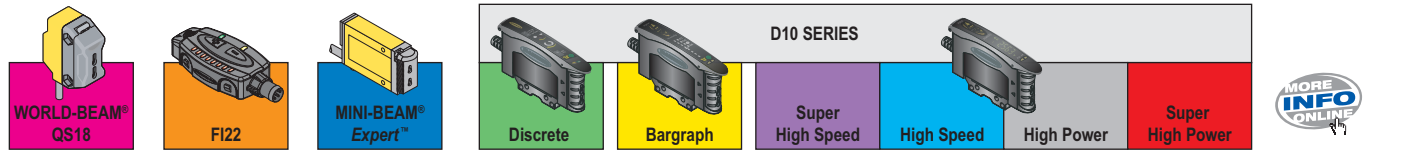


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Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)
<b>DURA-BEND</b>	<b>PIAT46UHF</b> 	1.0	1	• 90° Angle/Thread	✓	Details Online 
	<b>PIF46UHF</b> 	1.0	1	• Smooth ferrule	✓	Details Online 
	<b>PIFM46UHF</b> 	1.0	1	• Smooth ferrule; miniature tip	✓	Details Online 
	<b>PIP46UHF</b> 	1.0	1	• Thread; bendable tip	✓	Details Online 
	<b>PIPS46UHF</b> 	1.0	1	• Smooth ferrule; non-bendable tip	✓	Details Online 
	<b>PIPSB46UHF</b> 	1.0	1	• Smooth ferrule; bendable tip	✓	Details Online 
	<b>PIT26UHF</b> 	0.5	1	• Thread	✓	Details Online 
	<b>PIT46UHF</b> 	1.0	1	• Thread	✓	Details Online 
<b>Chemical Resistant</b>	<b>PIE46UT</b> 	1.0	25	• Fluoropolymer encapsulated; lens	✓	Details Online 
	<b>PIE66UTMNL</b> 	1.5	38	• Fluoropolymer encapsulated; lens	✓	Details Online 
	<b>PIES46UT</b> 	1.0	25	• Fluoropolymer encapsulated; side-view prism	✓	Details Online 

NA: WORLD-BEAM QS18 not recommended. Indicates lens available for model. See page 201 for details.  
\* Fibers can be free cut using fiber cutter (see page 203).

SENSORS  
PLASTIC FIBERS  
GLASS FIBERS



Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)	
Opposed	Area Sensing (Array)	PIR1X166U	16X 0.265	25	• Ultra-compact head; straight exit; 5.25 mm width	✓	Details Online
		PIRS1X166U	16X 0.265	25	• Ultra-compact head; side exit; 5.25 mm width	✓	Details Online
		PIRS1X166UM4	16X 0.265	25	• Compact head; side exit; 10 mm width	✓	Details Online
		PIRS1X166UMPM.75	16X 0.265	25	• Side exit; 19 mm width	✓	Details Online
		PIRS1X166UMPMAL	16X 0.265	25	• Side exit; 34 mm width	✓	Details Online
High Temp	Slot	PIT46UHT1	1.0	25	• Thread; withstands 105° C	✓	Details Online
		PDIS46UM12	1.0	25	• Easy mount "fork" head; DURA-BEND fiber	✓	
Slot	Slot	PDISM46UM5MA	1.0	25	• 90° Angle; compact "fork" head; DURA-BEND fiber	✓	

NA: WORLD-BEAM QS18 not recommended.

Indicates lens available for model. See page 201 for details.

\* Fibers can be free cut using fiber cutter (see page 203).



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Model Number	Drawing & Dimensions	Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)
<b>STEELSKIN</b>	<b>PIA43TMB5</b> 	1.0	12	• 90° Angle/Thread		 Details Online
	<b>PIF43TMB5</b> 	1.0	12	• Smooth ferrule		 Details Online
	<b>PIPS43TMB5</b> 	1.0	12	• Smooth ferrule; non-bendable tip		 Details Online
	<b>PIT43TMB5</b> 	1.0	12	• Thread		 Details Online
	<b>PITA43TMB5</b> 	1.0	12	• Thread/90° Angle		 Details Online
	<b>PITP43TMB5</b> 	1.0	12	• Thread; bendable tip		 Details Online
<b>Dual Individual</b>	<b>PDIT26T5</b> 	0.5	12	• Accomplish 2 inspections using only one sensor		 Details Online
	<b>PDIT4100U</b> 	1.0	25	• 30 m duplex fiber cable		✓ Contact factory for sensing range.
<b>Vacuum</b>	<b>PIF66UM.52M.19D</b> 	1.5	38	• For use with VFT-M8MVS (ambient side) See page 209.		✓ Contact factory for sensing range.
<b>Extended Range Lens</b>	<b>L2</b> 	ref. model PIT46U	ref. model PIT46U	• Range-extending lens • M2.5 thread		
	<b>LO8FP</b> 	ref. model PIL46U	ref. model PIL46U	• Ultra-long range-extending lens; use with raw plastic fiber		

NA: WORLD-BEAM QS18 not recommended. NA: MINI-BEAM Expert not recommended.  
\* Fibers can be free cut using fiber cutter (see page 203).

Indicates lens available for model. See page 201 for details.

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		D10 SERIES									
		WORLD-BEAM® QS18	FI22	MINI-BEAM® Expert™	Discrete	Bargraph	Super High Speed	High Speed	High Power	Super High Power	
	Model Number	Drawing & Dimensions		Core Dia. (mm)	Min. Bend Radius (mm)	Features	Free Cut*	Typical Range (mm)			
Diffuse	High-Temp	BMT.16.6S-HT			1.57	19	<ul style="list-style-type: none"> <li>High performance glass fiber optics for use with Banner D10 plastic fiber sensors</li> <li>Miniature thread; end tip withstands 315° C</li> </ul>				
	High-Temp	IMT.756.6S-HT†			1.27	19	<ul style="list-style-type: none"> <li>High performance glass fiber optics for use with Banner D10 plastic fiber sensors</li> <li>Miniature thread; end tip withstands 315° C</li> </ul>				



NA: WORLD-BEAM QS18 not recommended.


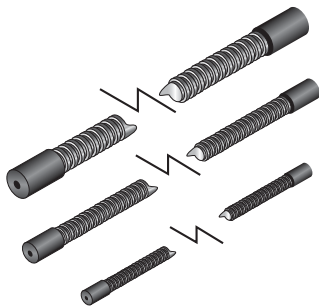
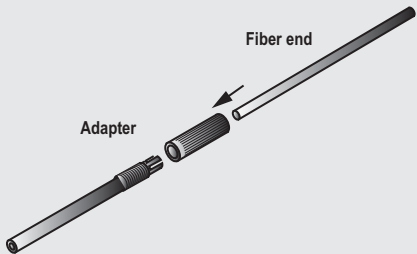
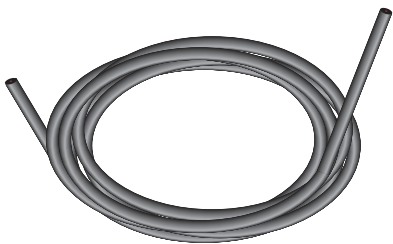
NA: MINI-BEAM Expert not recommended.

Indicates lens available for model. See page 201 for details.

\* Fibers can be free cut using fiber cutter (see page 203).

† Fibers are sold separately, must order two fibers to form a pair.

## Fiber Optic Accessories

Model Number		Model Specific Features	General Features		Drawings
Fiber Cutters	PFK20	• For use with 0.25 mm and 0.5 mm diameter cables.	<ul style="list-style-type: none"> <li>• These kits are used with unterminated plastic fiber cables.</li> <li>• Each kit contains 40 bushings and 10 cutter assemblies (cutters can be purchased separately in packages of 25 - reference model PFC-2-25).</li> </ul>		 NOTE: Bushings used with Q45, OMNI-BEAM, ECONO-BEAM, MAXI-BEAM and VALU-BEAM sensors only.
	PFK40	• For use with 1 mm and 1.5 mm diameter cables.			
Plastic Fiber Field-Installable Sheathing	PFS69S6T	• May be used with bifurcated fiber assemblies having M6 x 0.75 threaded end tips (e.g., PBCT46U, PBP46U, PBT46UHT1 and PBT66U).	<ul style="list-style-type: none"> <li>• Stainless steel sheathing with stainless steel end fittings (one end internally threaded to capture fiber end tips, other end non-threaded) is used in applications where protection is required for plastic fiber optic cables.</li> <li>• All models listed are 1.8 m in length.</li> <li>• Other lengths are available by contacting Banner Applications Department.</li> </ul>		
	PFS53S6T	• May be used with individual or bifurcated fiber assemblies having M4 x 0.7 threaded end tips (e.g., PBCT26U, PBP26U, PIP46U, PIT46U and PIT66U).			
	PFS44S6T	• May be used with individual fiber assemblies having M3 x 0.5 threaded end tips (e.g., PIP26U, PIT26U and PIT1X46U).			
Plastic Fiber Adapters	UPFA-1-100	• Use to adapt plastic fiber optic cables with outside jacket diameter of 1.0 mm, such as PIT26U and PBP16U.	<ul style="list-style-type: none"> <li>• Compression fitting adapters are used with small-diameter unterminated plastic fiber cables.</li> <li>• Use when interfacing small-diameter plastic fibers to D10, D11, D12, PC44, QM42, QS18, R55F, FI22 and MINI-BEAM plastic fiber sensor families.</li> <li>• Each kit contains 100 pairs of adapters. One pair will interface either one bifurcated fiber optic cable or a pair of individual cables to a fiber optic amplifier.</li> </ul>		
	UPFA-2-100	• Use to adapt plastic fiber optic cables with outside jacket diameter of 1.25 mm or 1.3 mm, such as PBCT26U and PBF46UM3MJ1.3.			
Model Number	Core		Length	Type	Drawing
Unterminated Individual and Bifurcated Plastic Fibers	PIU230U	0.5 mm	9 m	Single	
	PIU260U		18 m		
	PIU430U	1.0 mm	9 m	Single	
	PIU460U		18 m		
	PIU630U	1.5 mm	9 m	Single	
	PIU660U		18 m		
	PBU430U	1.0 mm	9 m	Duplex	
	PBU460U		18 m		