

Plastic and Glass Fibers

An unmatched selection of standard & custom designs.

The broadest line.

Banner fiber optics allow you to “pipe” light into otherwise inaccessible or hostile environments. Banner has the broadest, most readily available line of fibers in the world. Choose from a huge selection of standard fibers in virtually all shapes and sizes. Custom fibers can also quickly and easily be designed for your unique applications, and built to your exact specifications. Choose from two general styles: individual fibers, used in pairs in the opposed sensing mode, and bifurcated fibers that emit and receive light signals in the same assembly.

Plastic fibers.

Banner plastic fibers offer hundreds of affordable solutions. These inexpensive fibers can be easily cut to length during installation using the cutting device supplied with each fiber. They bend easily to fit precisely where you want them. They are also extremely flexible; in fact, coiled versions are available for use in a variety of applications requiring articulated or reciprocating motion. Choose diameters of 0.01", 0.02", 0.03", 0.04" or 0.06". The larger the fiber diameter, the higher the excess gain attainable.



Glass fibers.

Banner glass fibers solve numerous challenging sensing requirements in the most hostile environments, including high temperatures up to 480° C (900° F), corrosive materials, and extreme moisture. And because of their low mass, these fibers



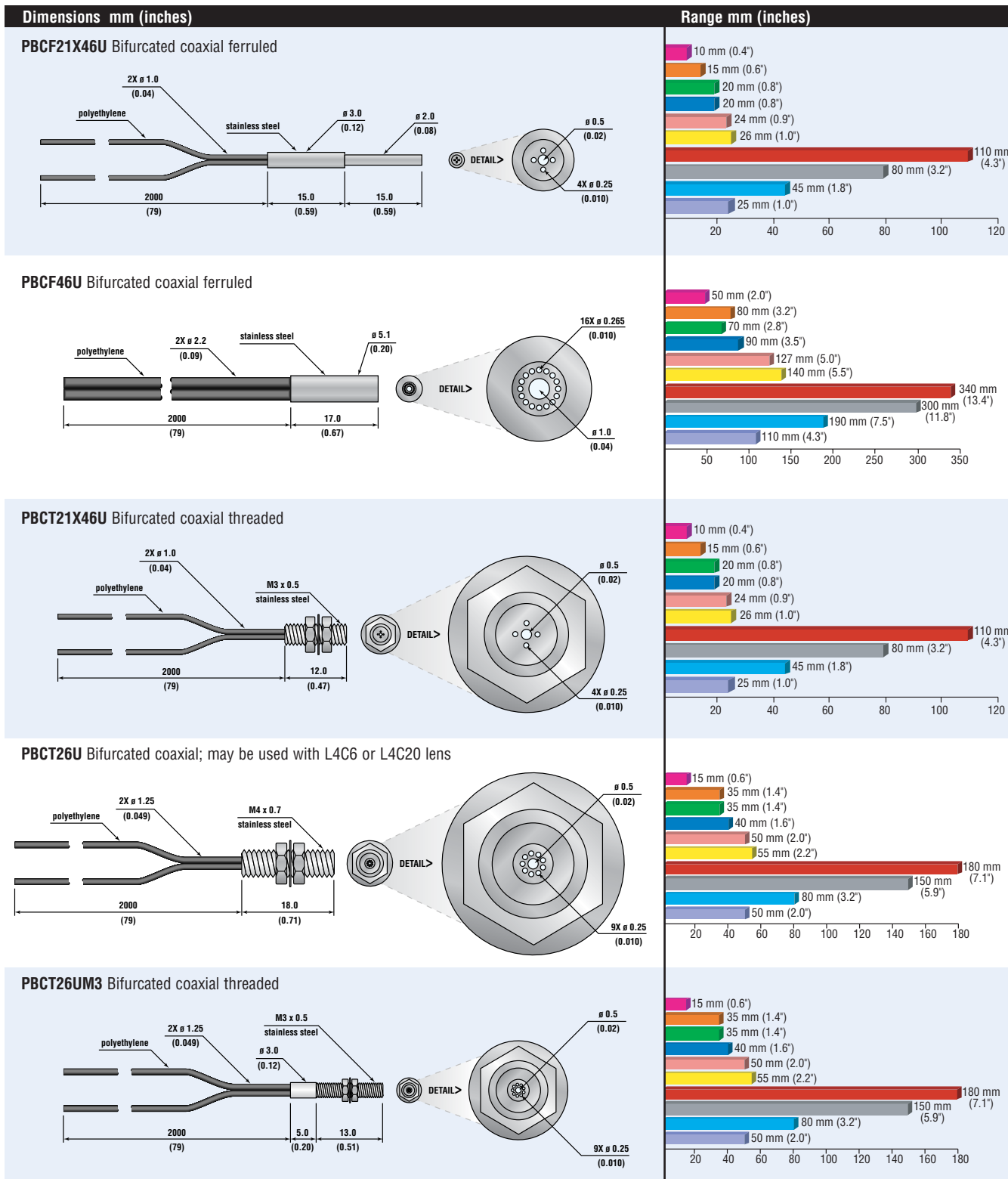
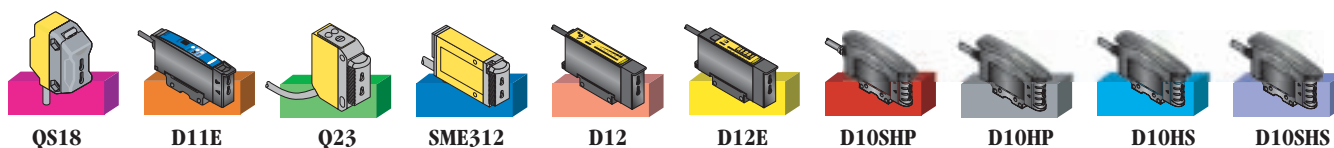
can withstand high levels of shock and vibration. They are also inherently immune to extreme electrical noise. Our unique vacuum feedthrough assembly provides an easy way to access vacuum chambers. Banner glass fibers can be quickly custom-designed and built for your unique applications, including fibers to create a beam that precisely profiles the object you need to detect.

D10 sensors have four different response speeds. Maximum sensing distance is dependent upon response speed settings. Icons listed on top reflect the four different power settings.

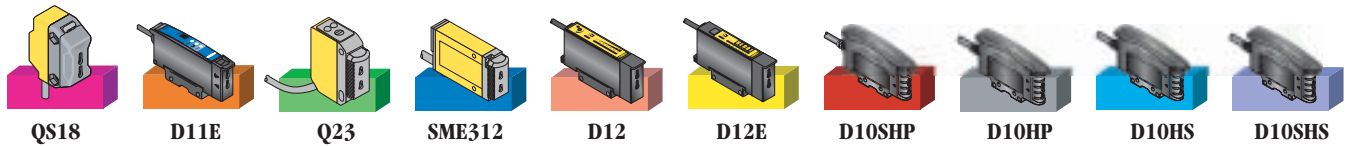
				
Power setting display:	D10SHP	D10HP	D10HS	D10SHS
Setting description:	Super High Power	High Power	High Speed	Super High Speed
Response time:	2.5 millisecond	1 millisecond	200 microsecond	50 microsecond

See sensor specification sections for all sensor response speeds and other information.

For complete listing of Banner's extensive selection of glass and plastic fibers, go to www.bannerengineering.com



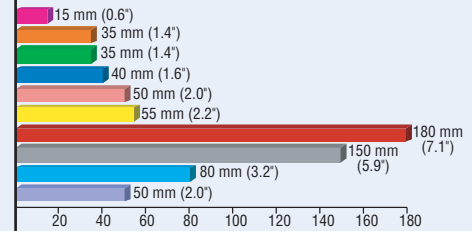
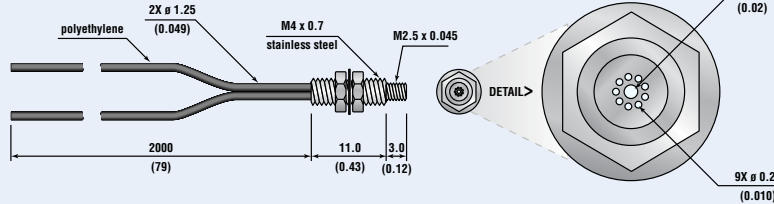
Plastic Fibers



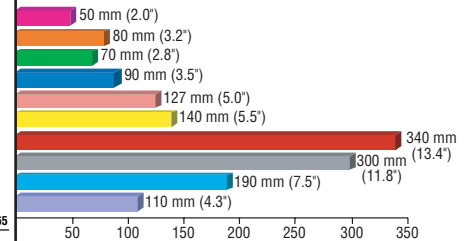
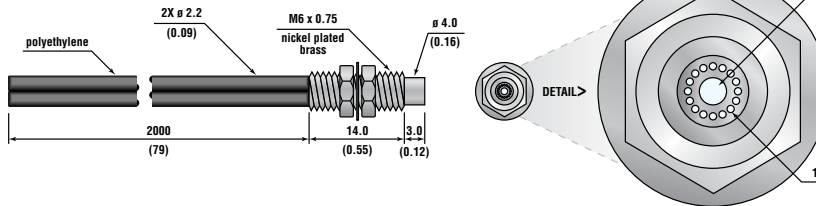
Dimensions mm (inches)

Range mm (inches)

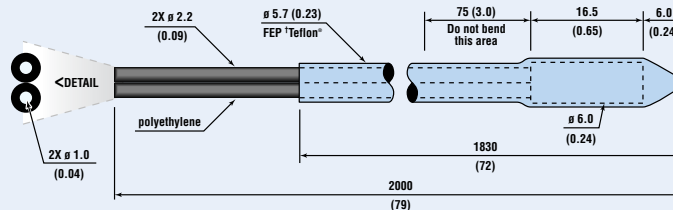
PBCT26UM4M2.5 Bifurcated coaxial threaded



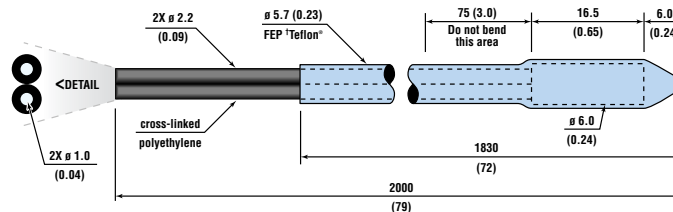
PBCT46U Bifurcated coaxial threaded



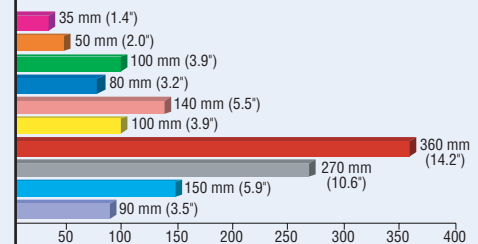
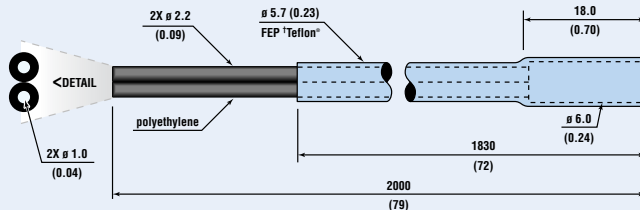
PBE46UTMLLP Bifurcated encapsulated liquid-level probe



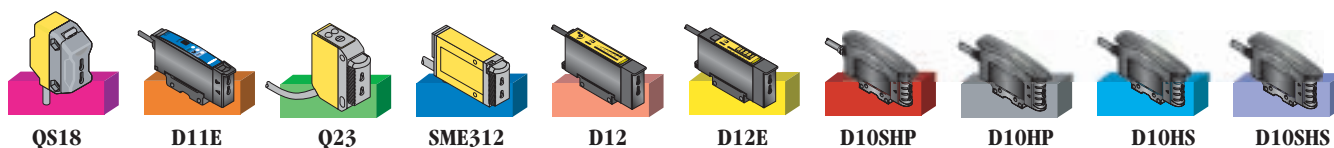
PBE46UTMLLPHT1 Bifurcated encapsulated liquid-level probe, high-temperature 125° C (257° F)



PBE46UTMNL Bifurcated encapsulated

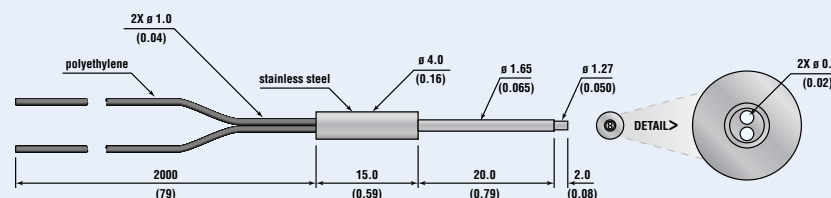


† Teflon® FEP is a registered trademark of Dupont Co.

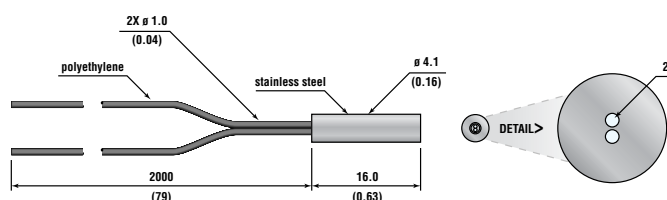


Dimensions mm (inches)

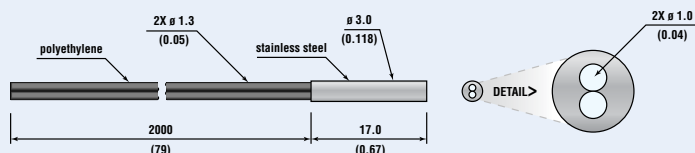
PBEFP26U Bifurcated extended ferrule



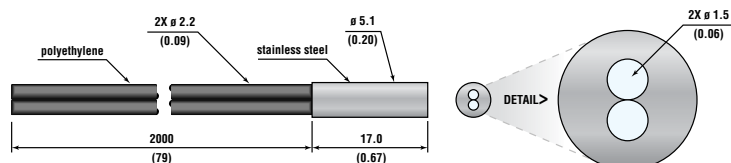
PBF26U Bifurcated ferruled



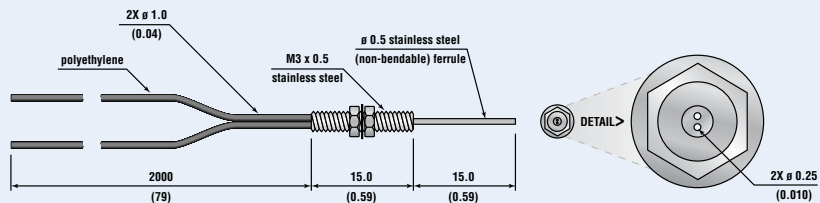
PBF46UM3MJ1.3 Bifurcated ferruled



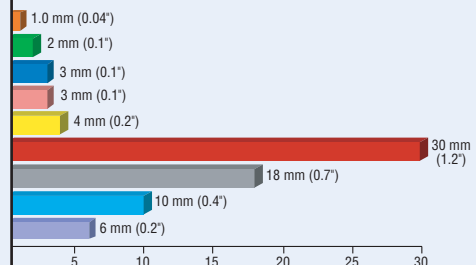
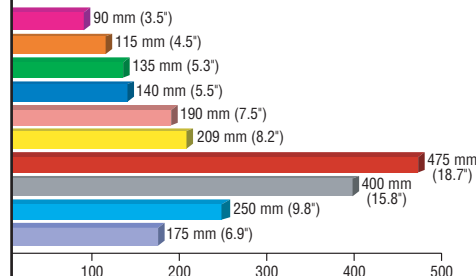
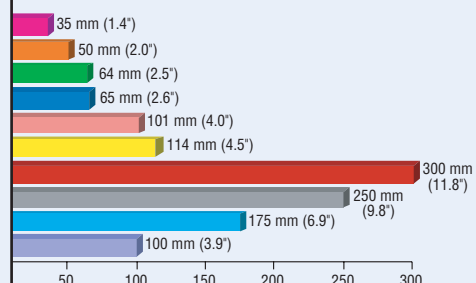
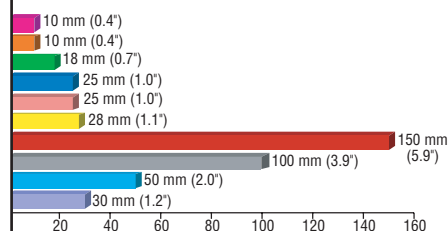
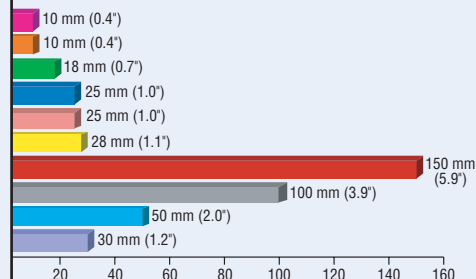
PBF66U Bifurcated ferruled



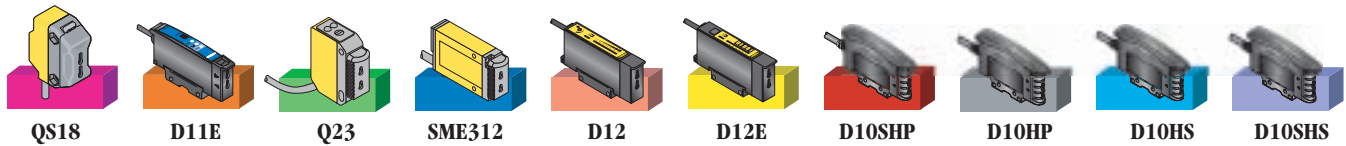
PBFM16U Bifurcated ferruled, miniature



Range mm (inches)



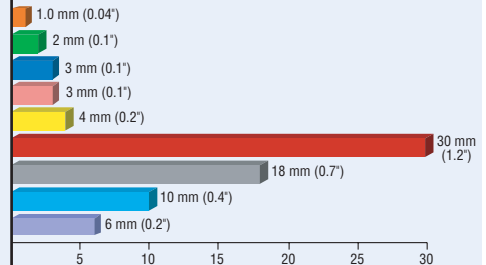
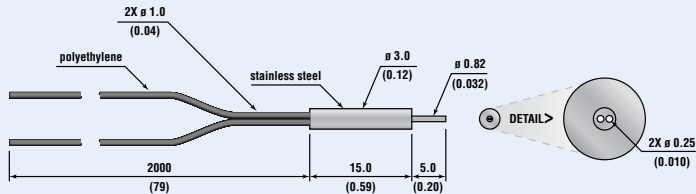
Plastic Fibers



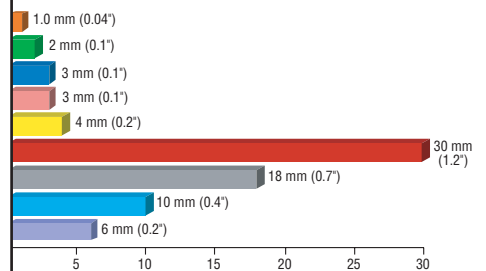
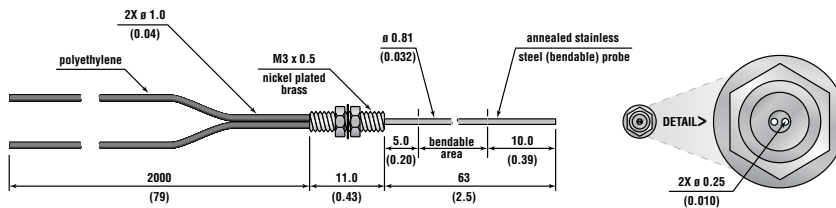
Dimensions mm (inches)

Range mm (inches)

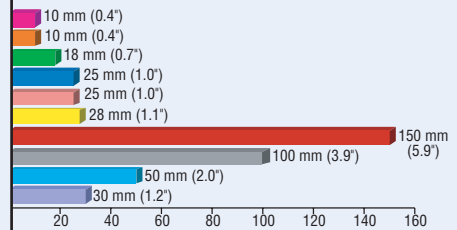
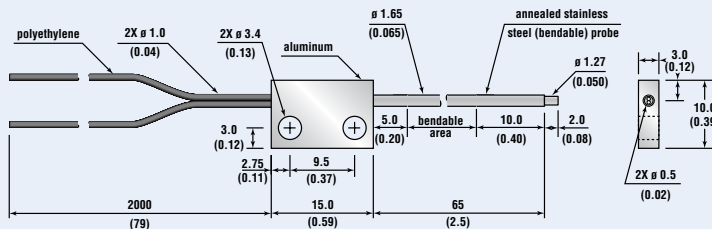
PBFMP16UMP.2 Bifurcated ferruled miniature probe



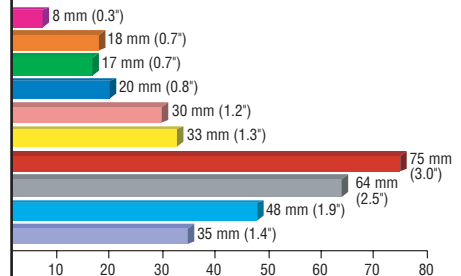
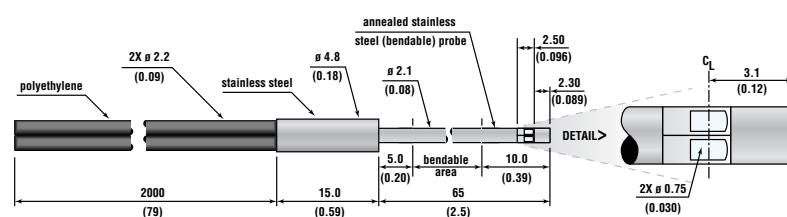
PBP16U Bifurcated probe, bendable



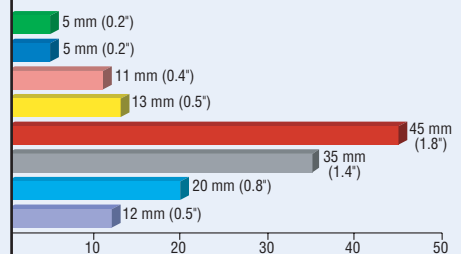
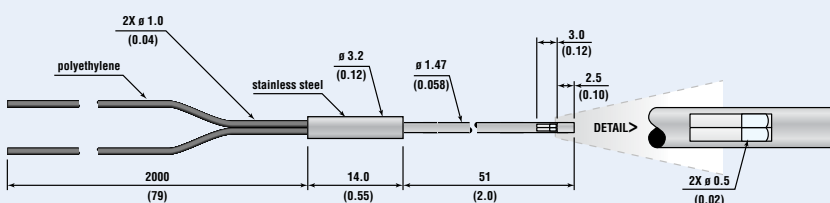
PBPF26UMB Bifurcated probe, bendable

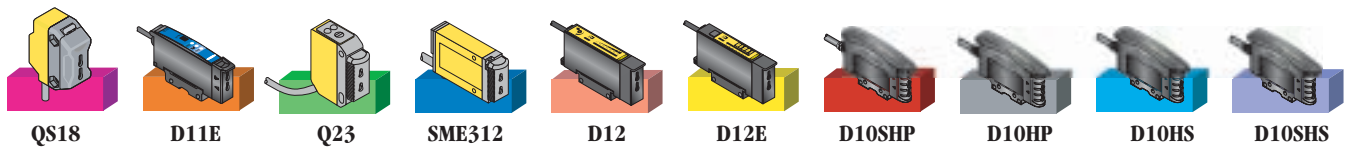


PBPMSB36U Bifurcated probe, miniature, side-view bendable



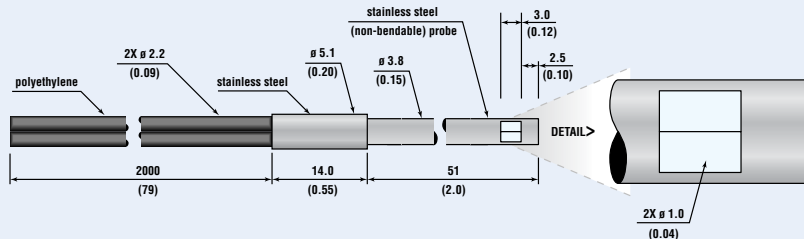
PBPS26U Bifurcated probe, side-view



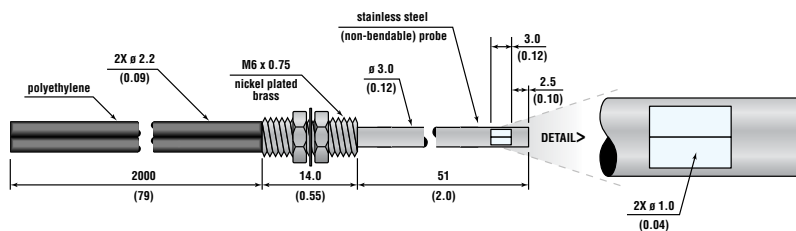


Dimensions mm (inches)

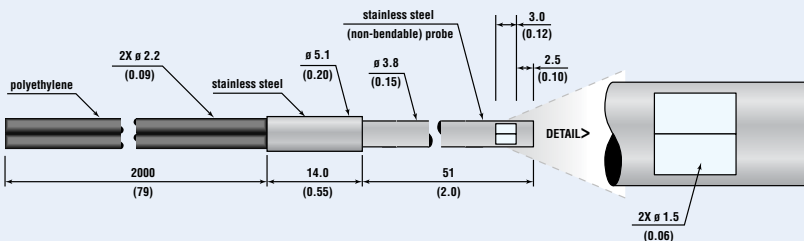
PBPS46U Bifurcated probe, side-view



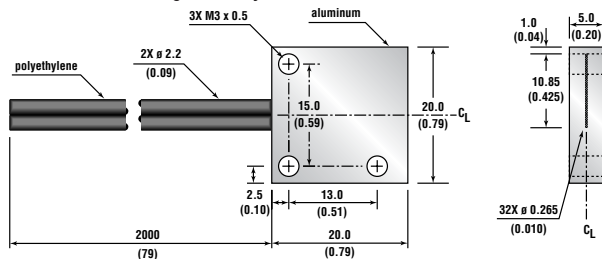
PBPS46UMT Bifurcated probe, side-view



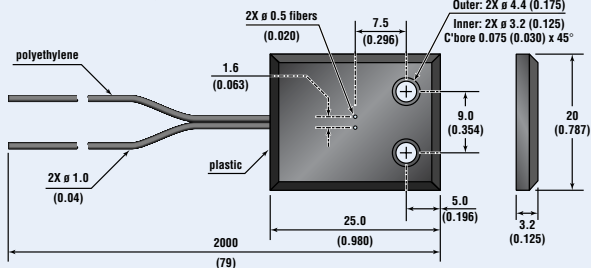
PBPS66U Bifurcated probe, side-view



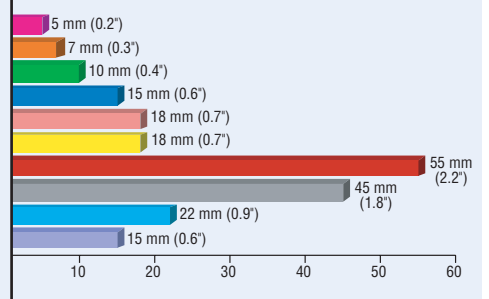
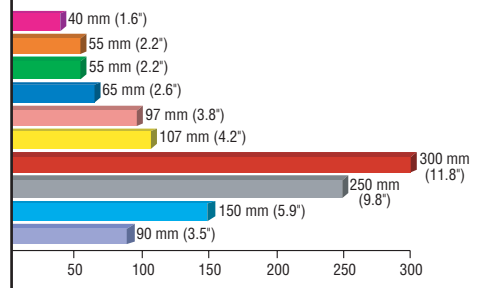
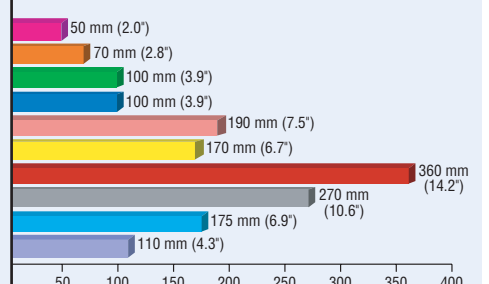
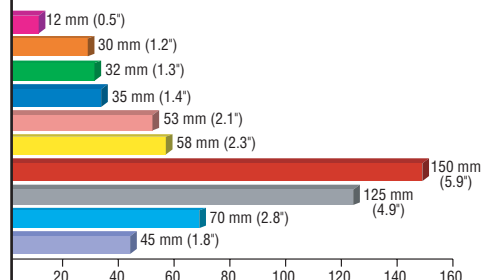
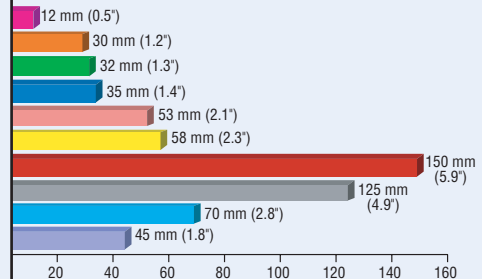
PBR1X326U Bifurcated rectangular array



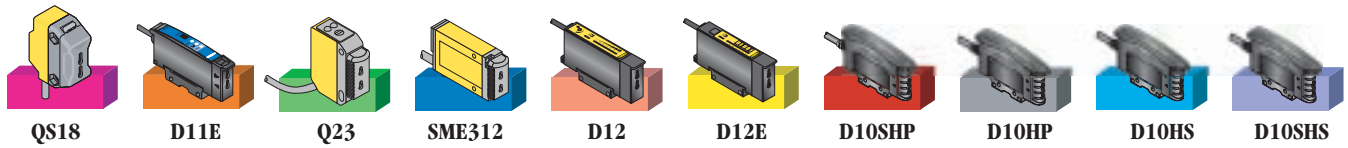
PBRS26U Bifurcated rectangular, side-view



Range mm (inches)



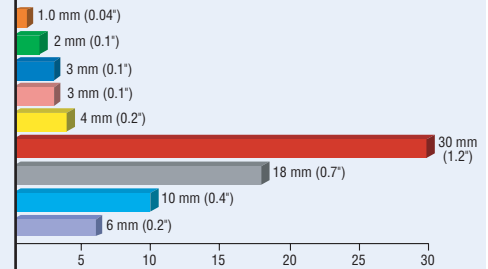
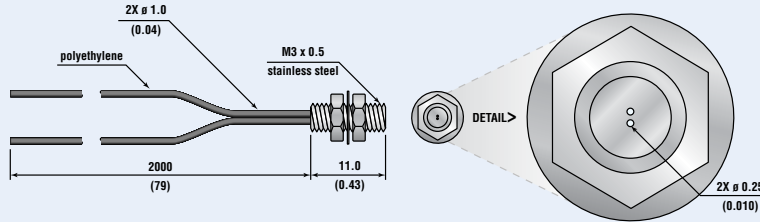
Plastic Fibers



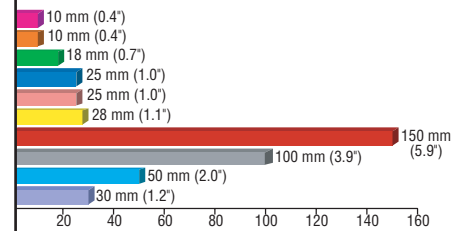
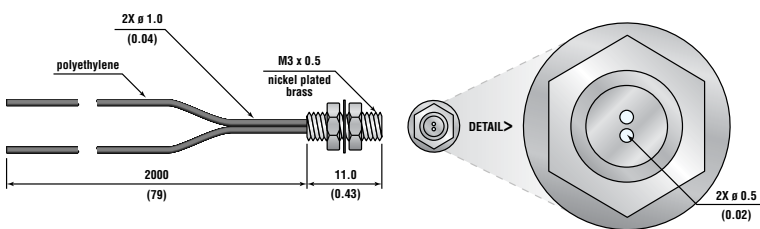
Dimensions mm (inches)

Range mm (inches)

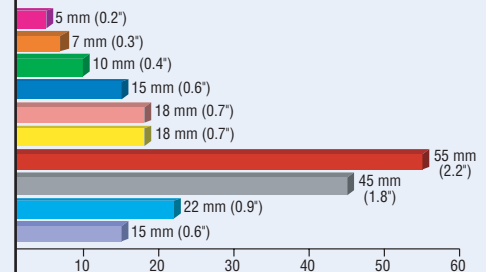
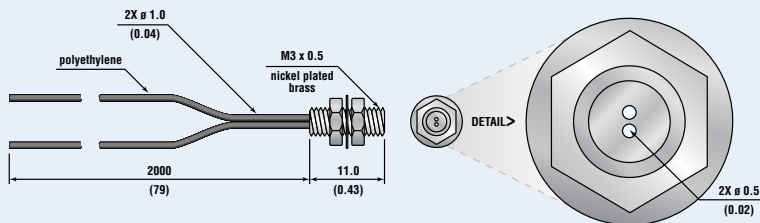
PBT16U Bifurcated threaded



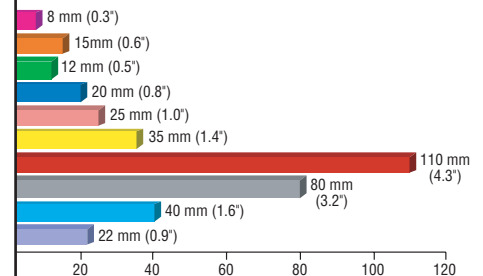
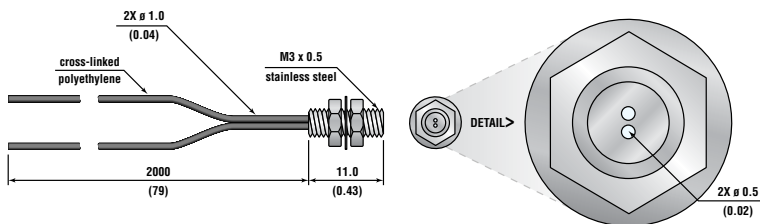
PBT26U Bifurcated threaded



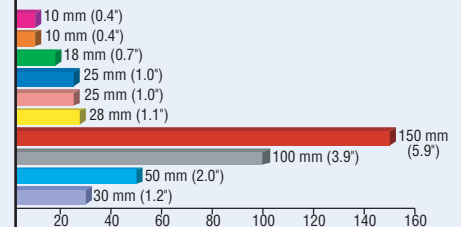
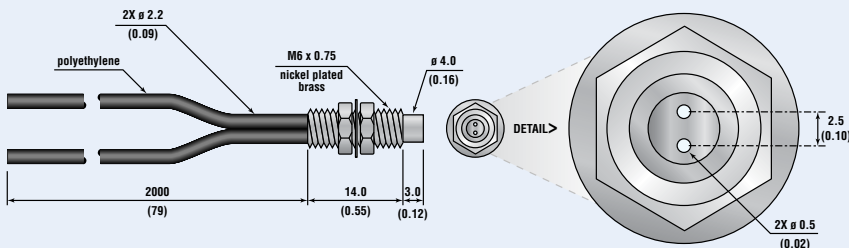
PBT26UHF Bifurcated threaded, high-flex Dura-Bend™ cable

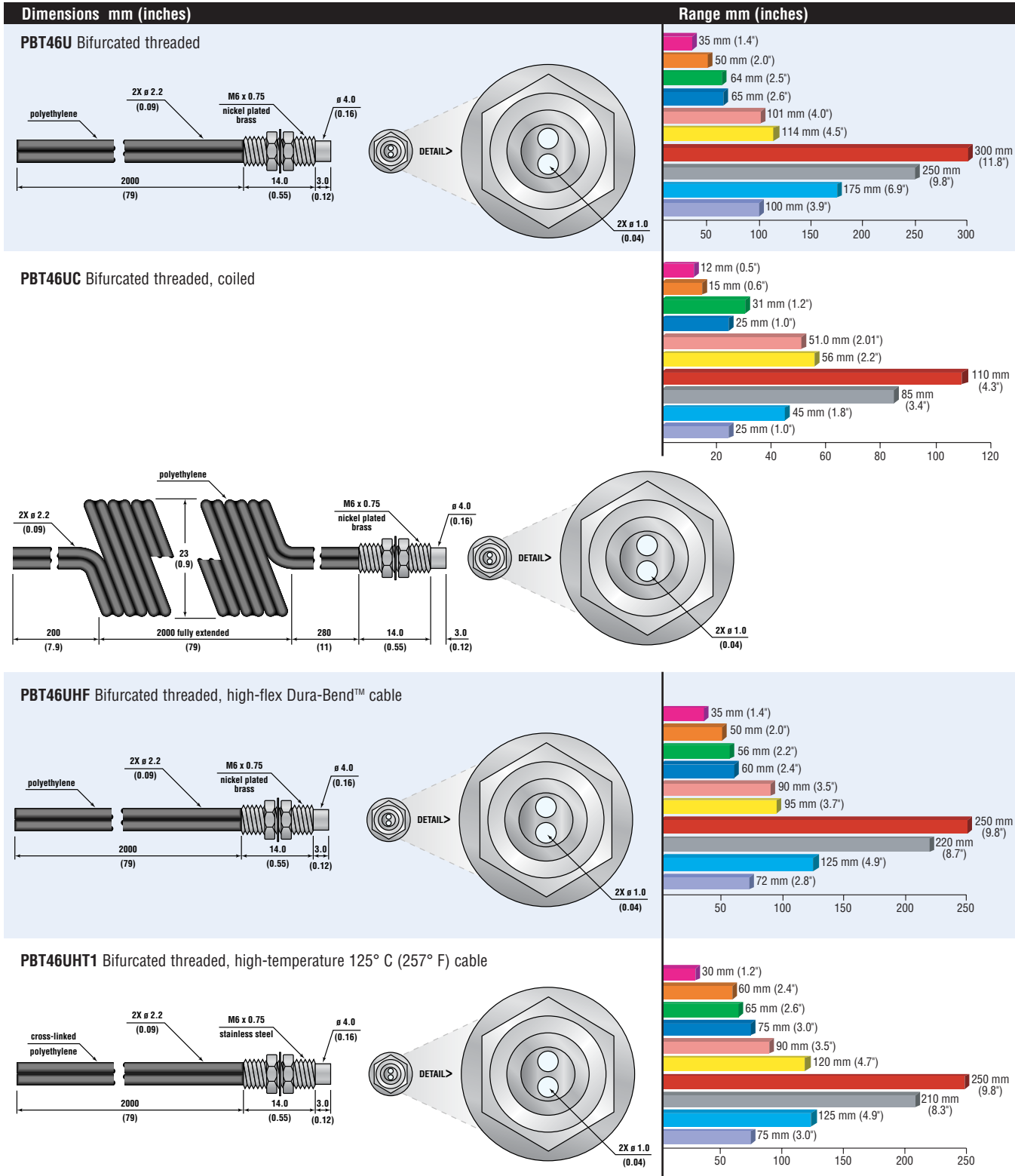
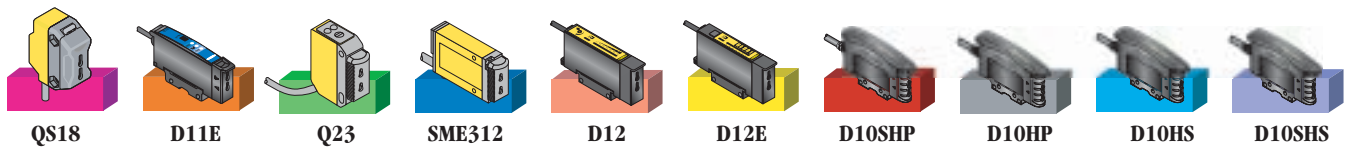


PBT26UHT1 Bifurcated threaded, high-temperature 125° C (257° F) cable

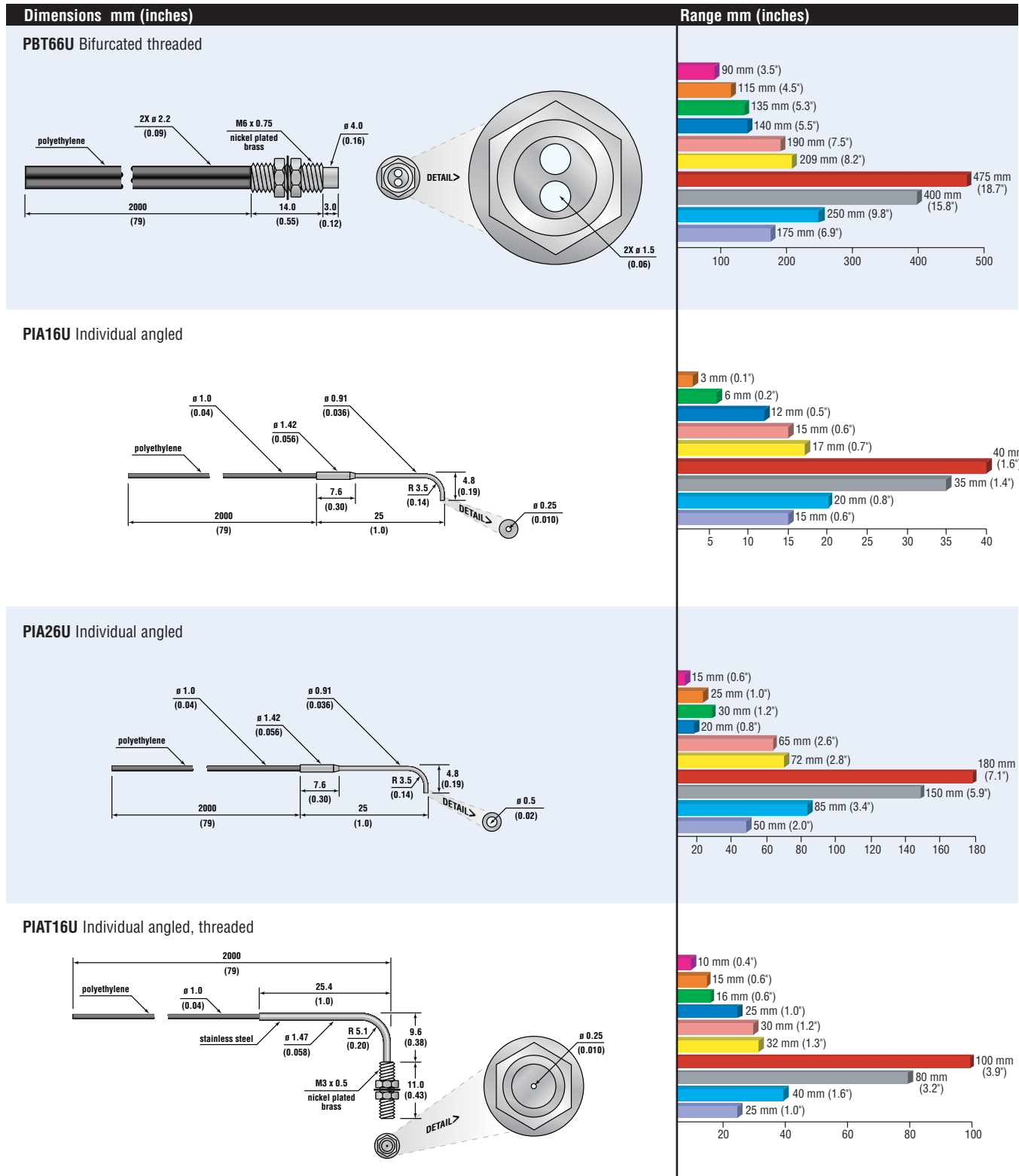
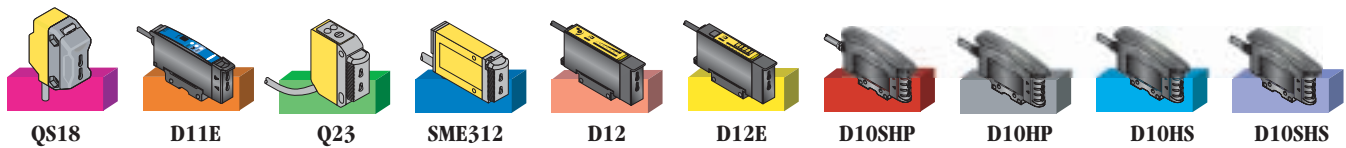


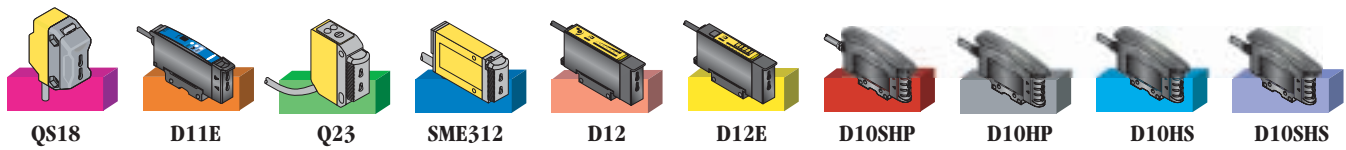
PBT26UM6M.1 Bifurcated threaded, 2.5 mm (0.1") fiber spacing





Plastic Fibers

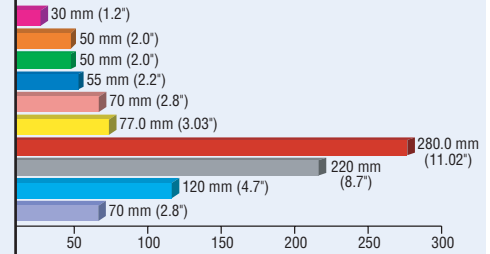
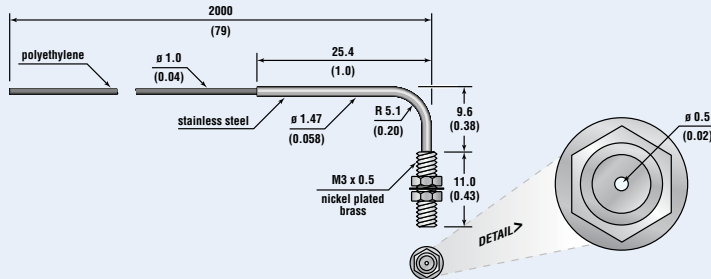




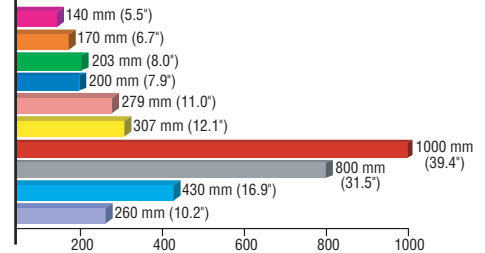
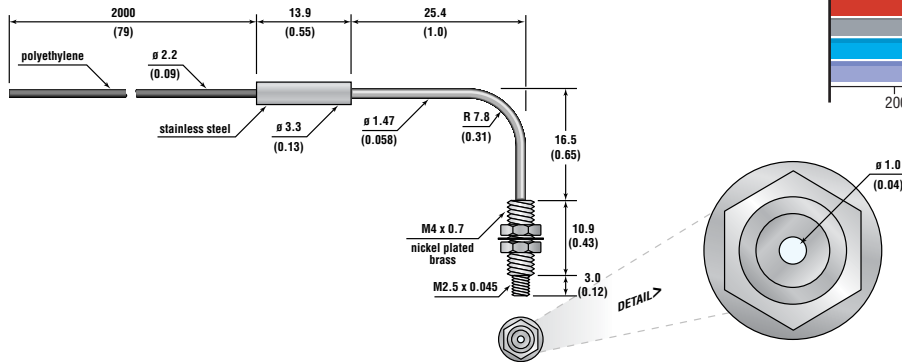
Dimensions mm (inches)

Range mm (inches)

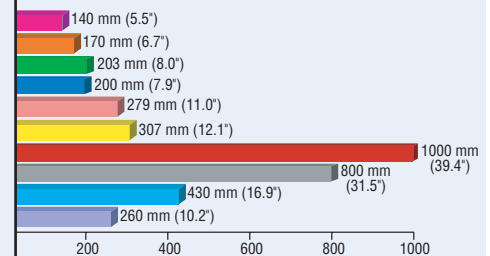
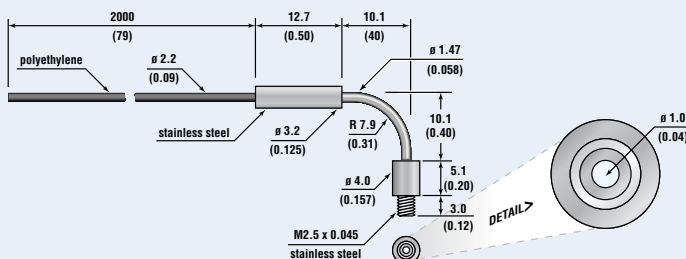
PIAT26U Individual angled, threaded



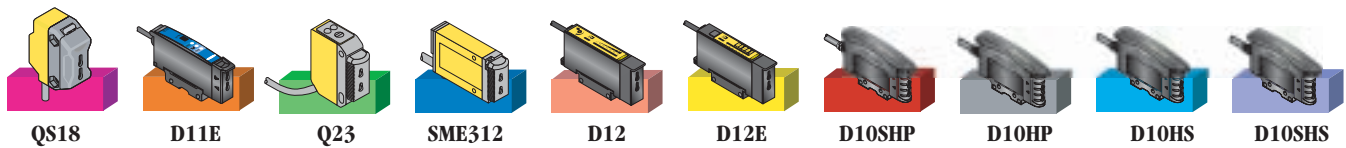
PIAT46U Individual angled, threaded; may be used with L2 or L2RA lens



PIAT46UM.4X.4MT Individual angled, threaded; may be used with L2 or L2RA lens

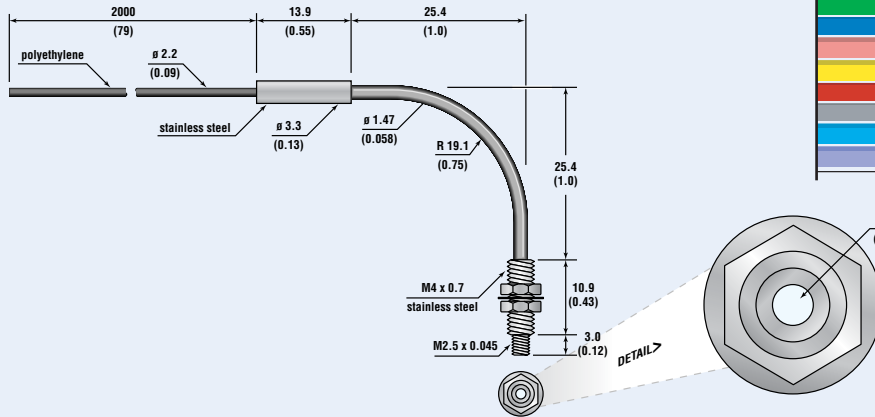


Plastic Fibers

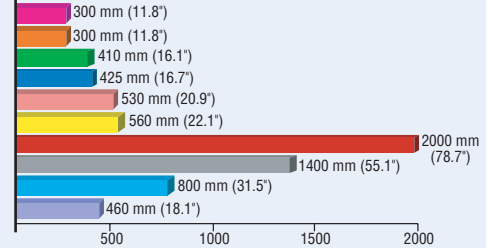


Dimensions mm (inches)

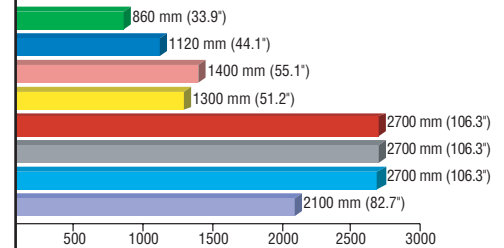
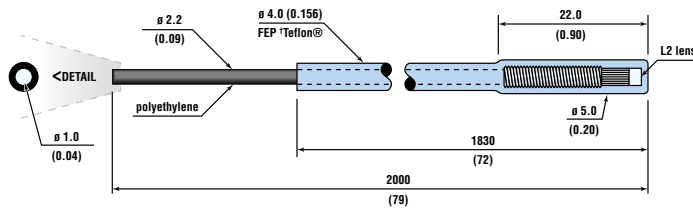
PIAT66U Individual angled, threaded



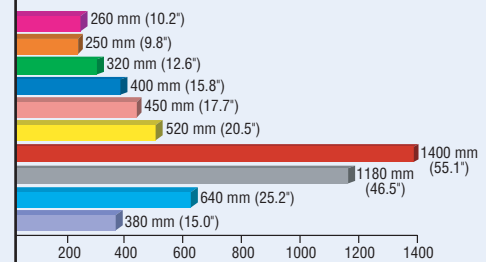
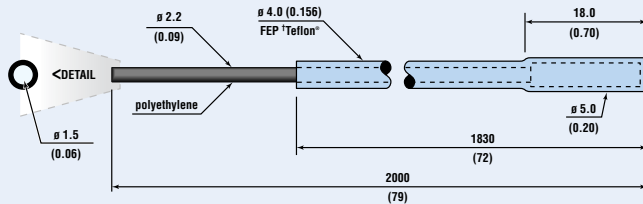
Range mm (inches)



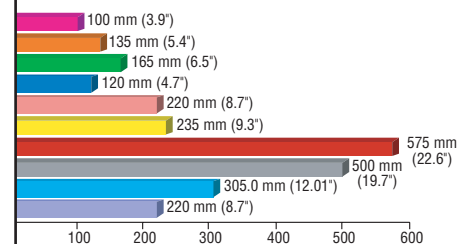
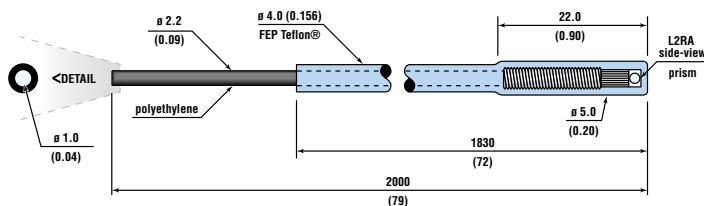
PIE46UT Individual encapsulated; L2 lens added internally



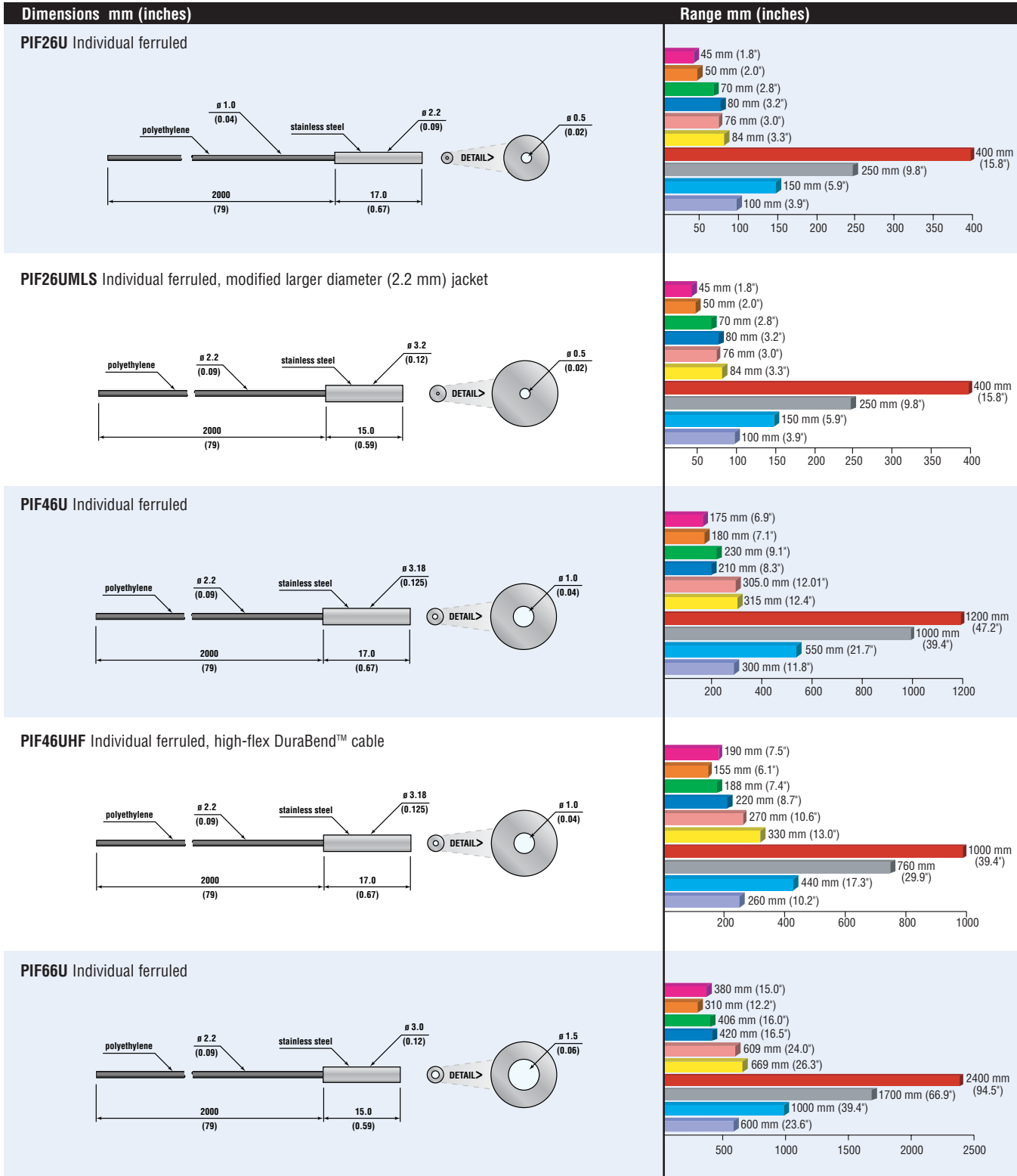
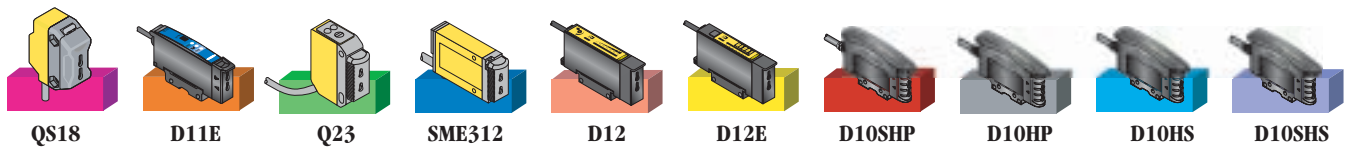
PIE66UTMNL Individual encapsulated



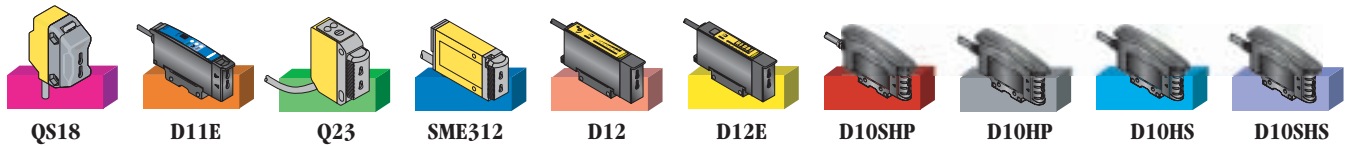
PIES46UT Individual encapsulated; L2RA side-view prism added internally



† Teflon® FEP is a registered trademark of Dupont Co.



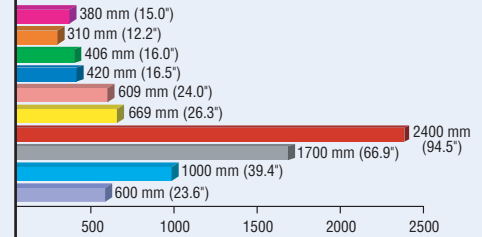
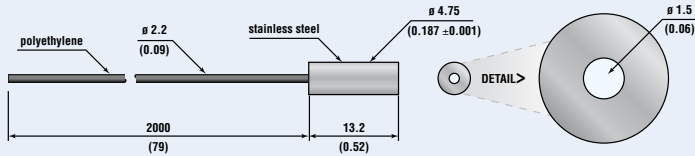
Plastic Fibers



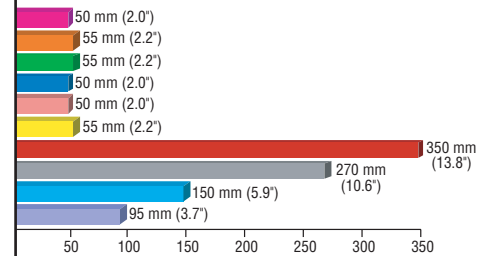
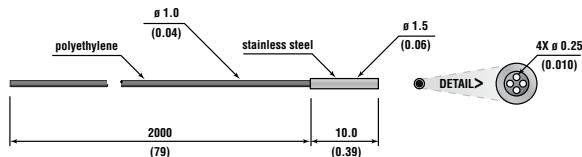
Dimensions mm (inches)

Range mm (inches)

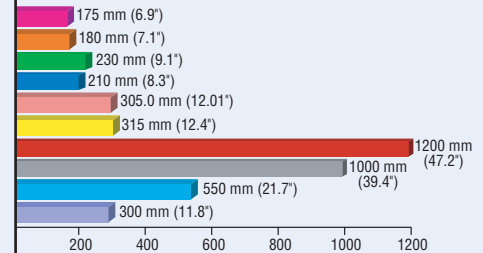
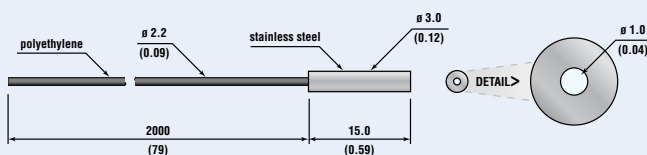
PIF66UM.52M.19D Individual ferruled; use with VFT on ambient side of flange



PIFM1X46U Individual ferruled

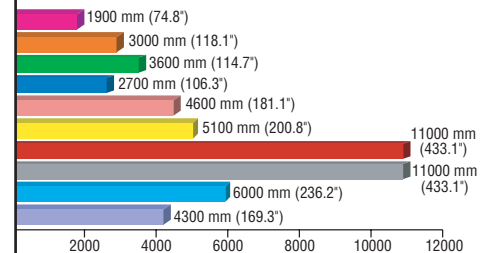
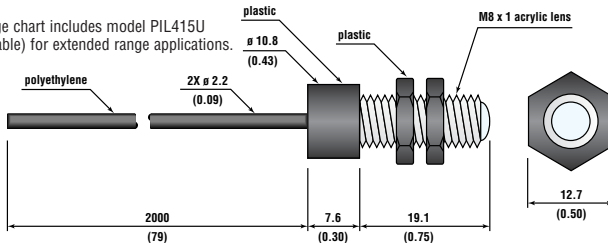


PIFM46U Individual ferruled

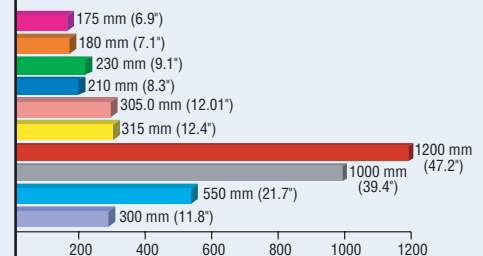
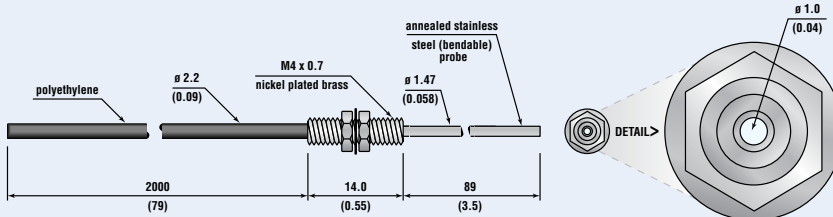


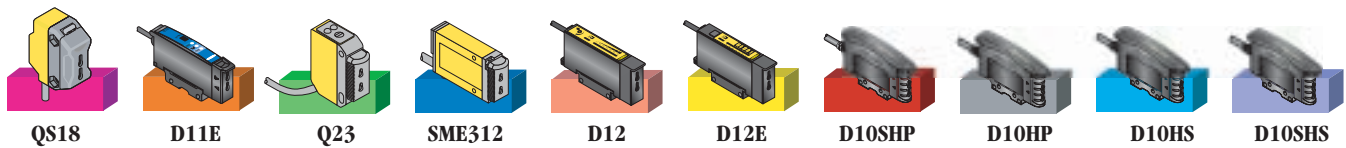
PIL46U Individual lensed

NOTE: Range chart includes model PIL415U (5 m, 15' cable) for extended range applications.



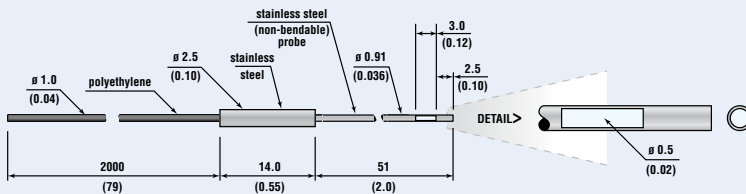
PIP46U Individual probe



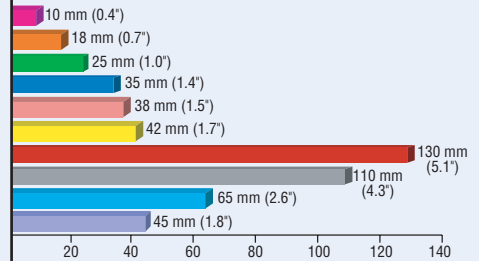


Dimensions mm (inches)

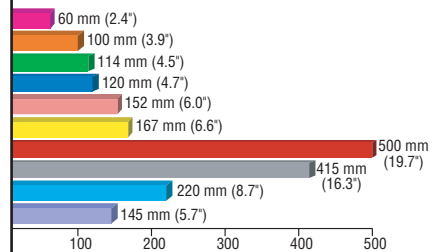
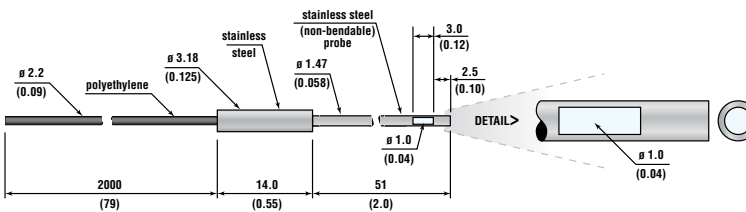
PIPS26U Individual probe, side-view



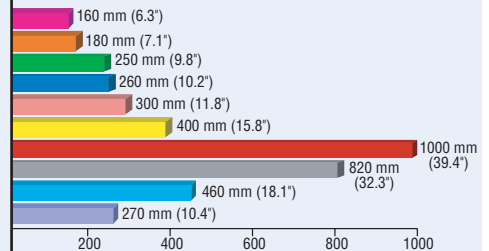
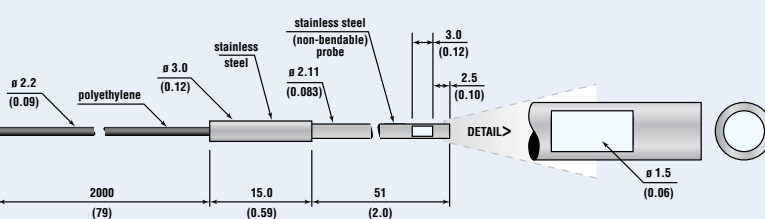
Range mm (inches)



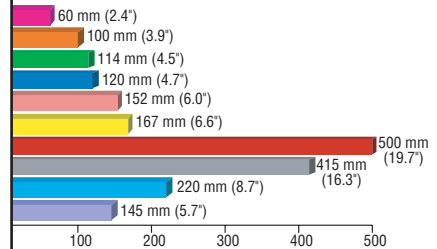
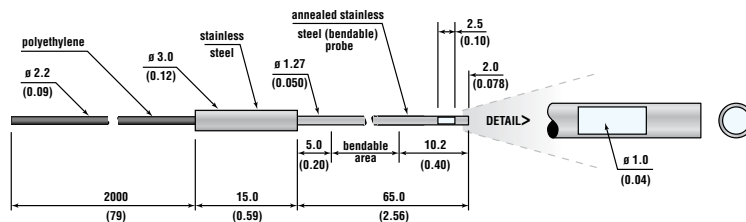
PIPS46U Individual probe, side-view



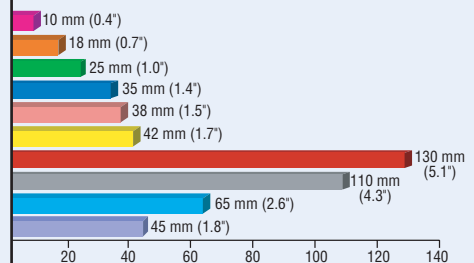
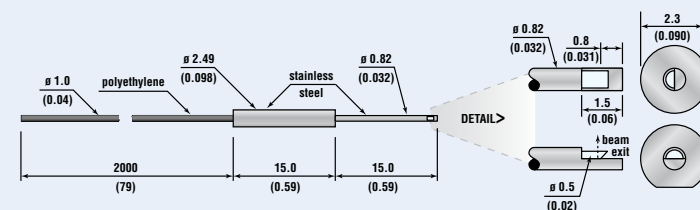
PIPS66U Individual probe, side-view



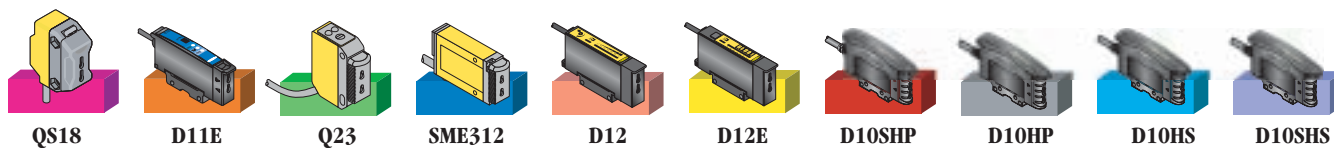
PIPSB46U Individual probe, side-view bendable

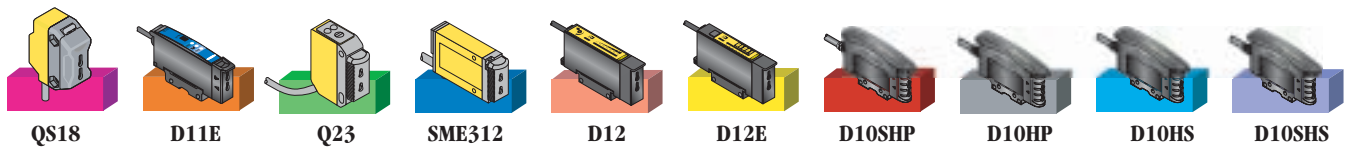


PIPSM26U Individual probe, side-view miniature



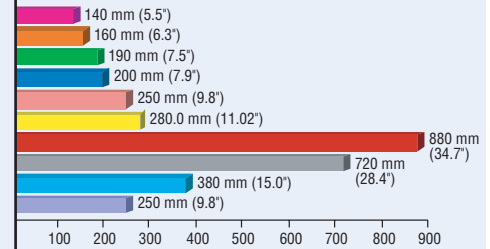
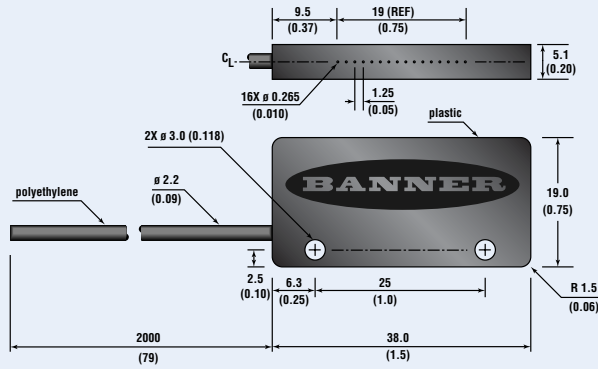
Plastic Fibers

[illegible]

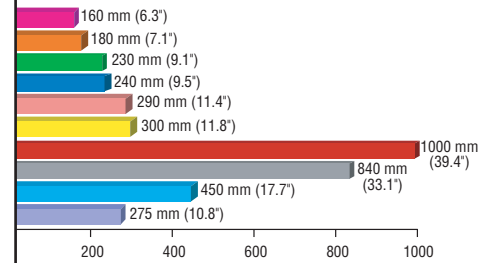
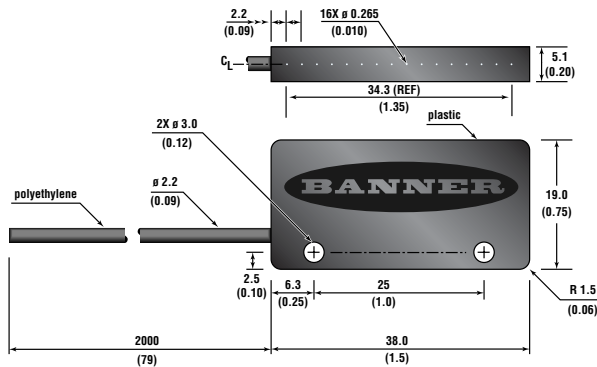


Dimensions mm (inches) Range mm (inches)

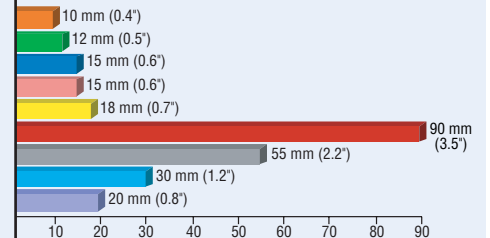
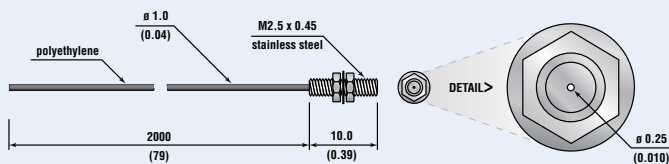
PIRS1X166UMPM.75 Individual rectangular array



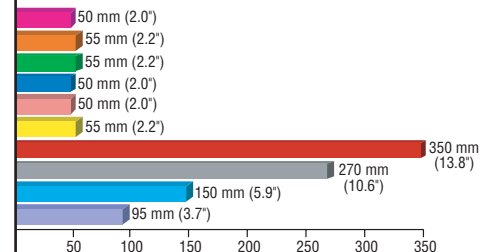
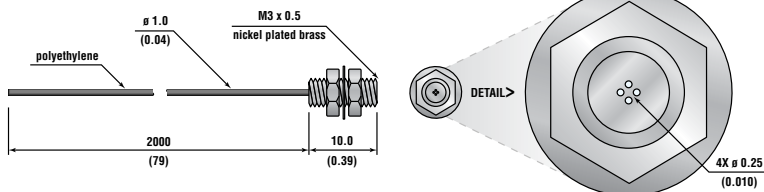
PIRS1X166UMPMAL Individual rectangular array



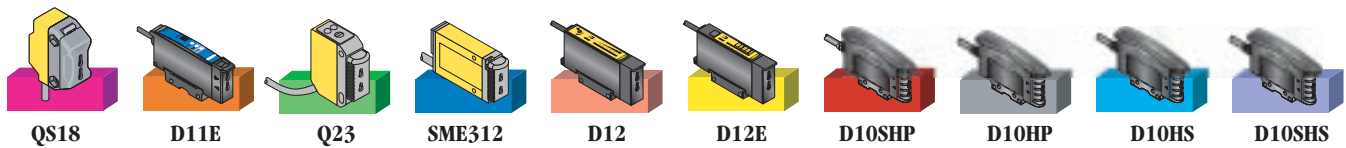
PIT16U Individual threaded



PIT1X46U Individual threaded

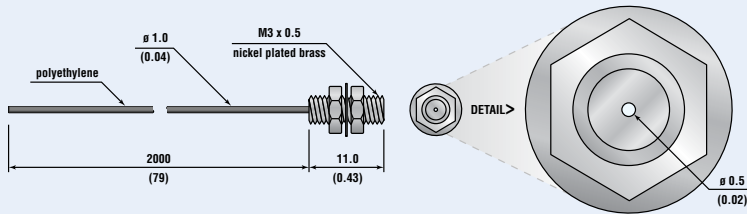


Plastic Fibers

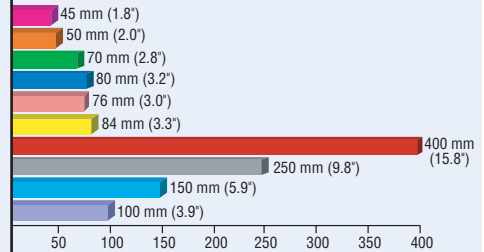


Dimensions mm (inches)

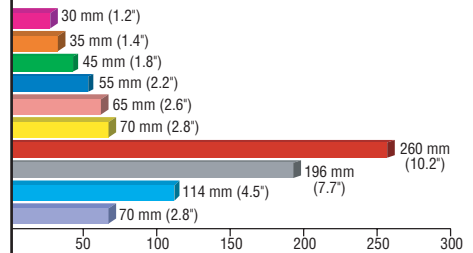
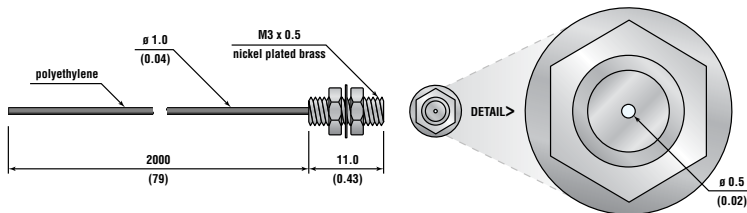
PIT26U Individual threaded



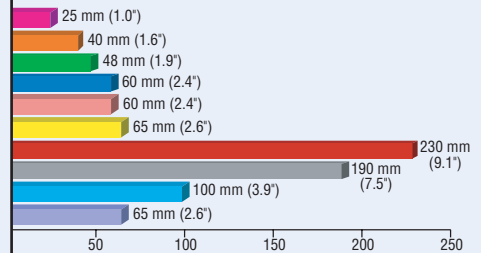
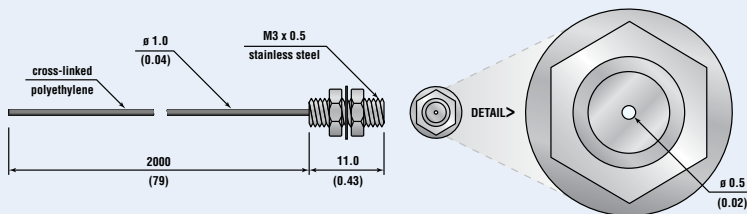
Range mm (inches)



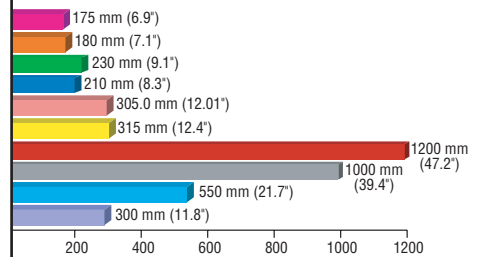
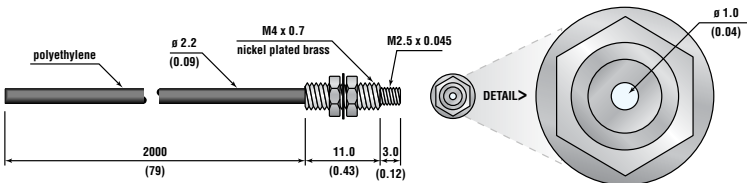
PIT26UHF Individual threaded, high-flex DuraBend™ cable

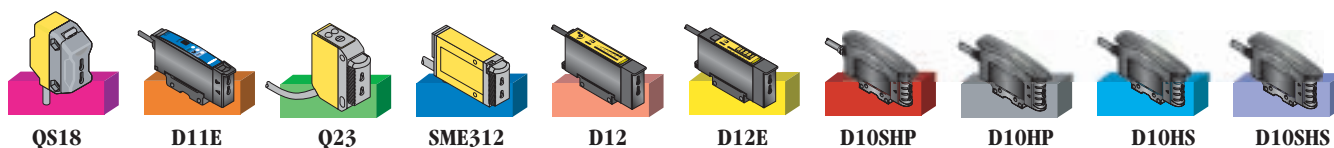


PIT26UHT1 Individual threaded, high-temperature 125° C (257° F) cable



PIT46U Individual threaded; may be used with L2 or L2RA lens

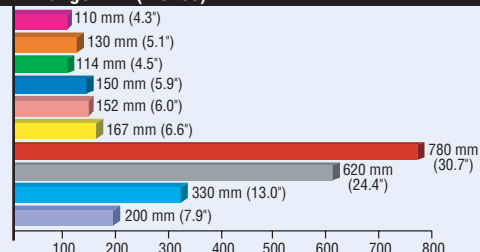
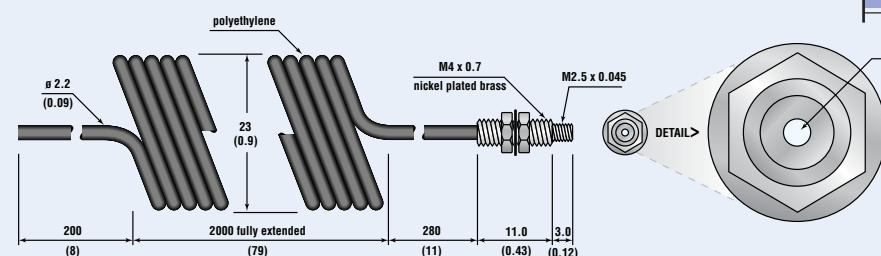




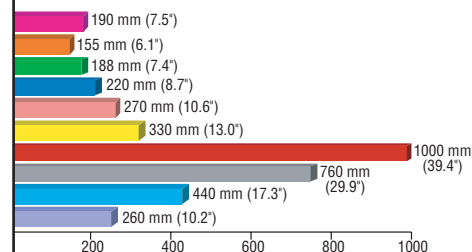
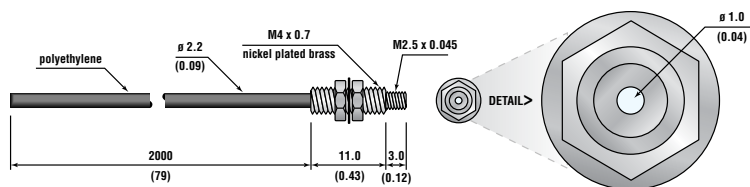
Dimensions mm (inches)

Range mm (inches)

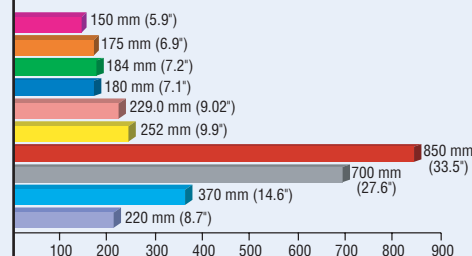
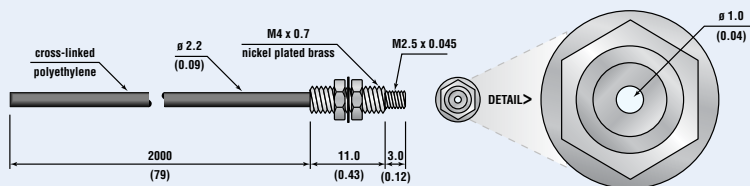
PIT46UC Individual threaded, coiled; may be used with L2 or L2RA lens



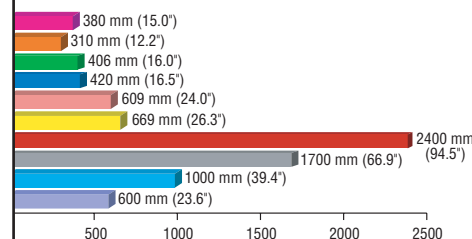
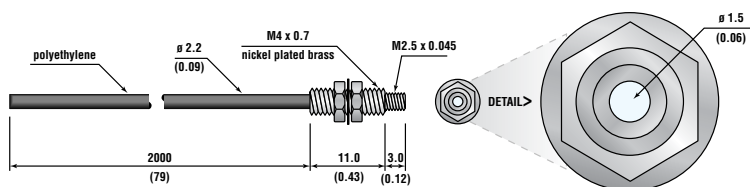
PIT46UHF Individual threaded, high-flex DuraBend™ cable; may be used with L2 or L2RA lens

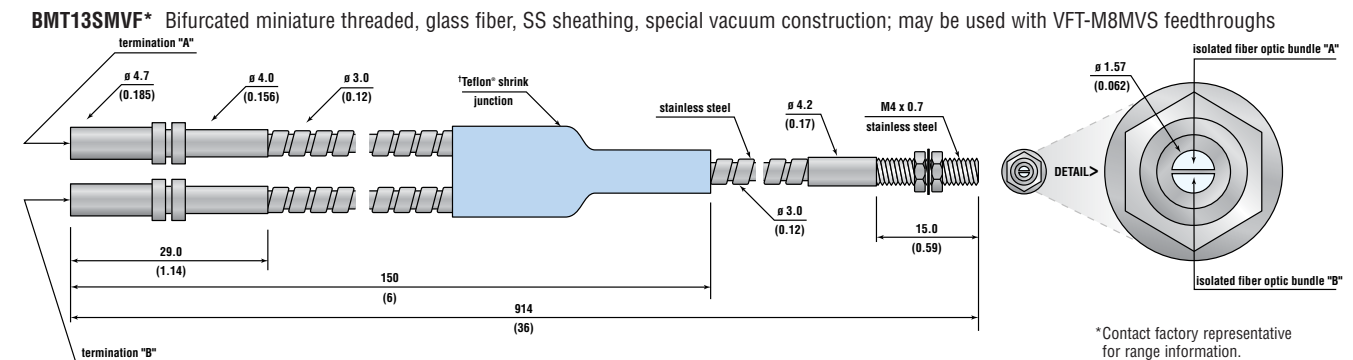
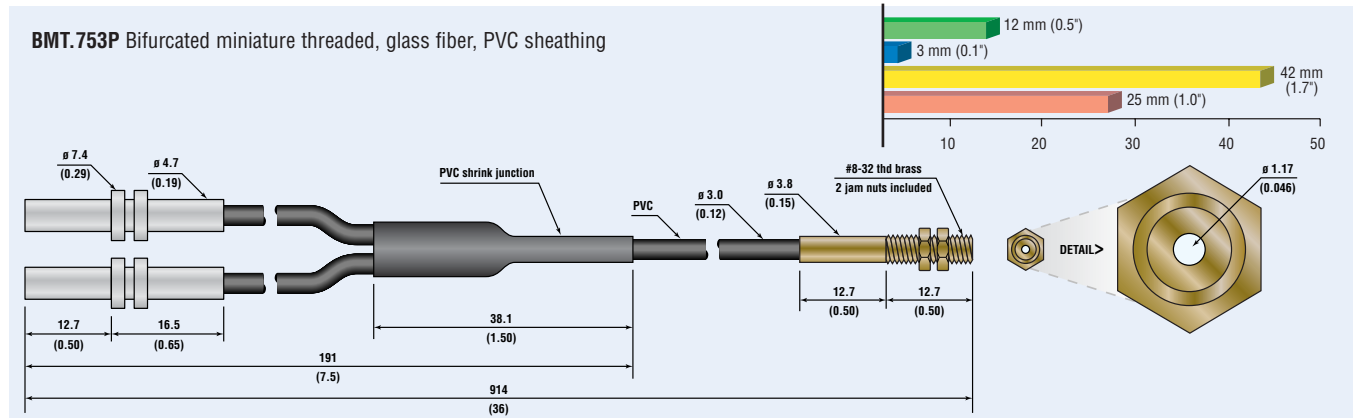
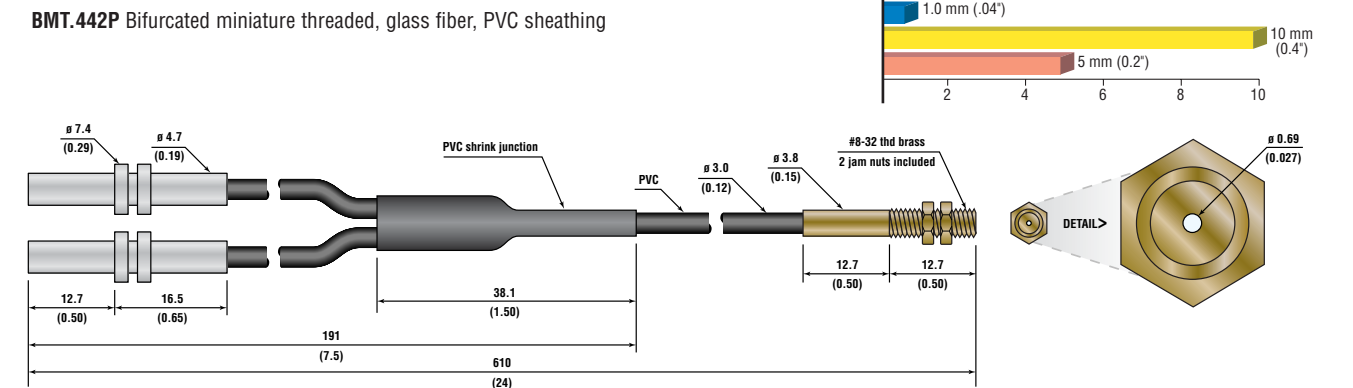
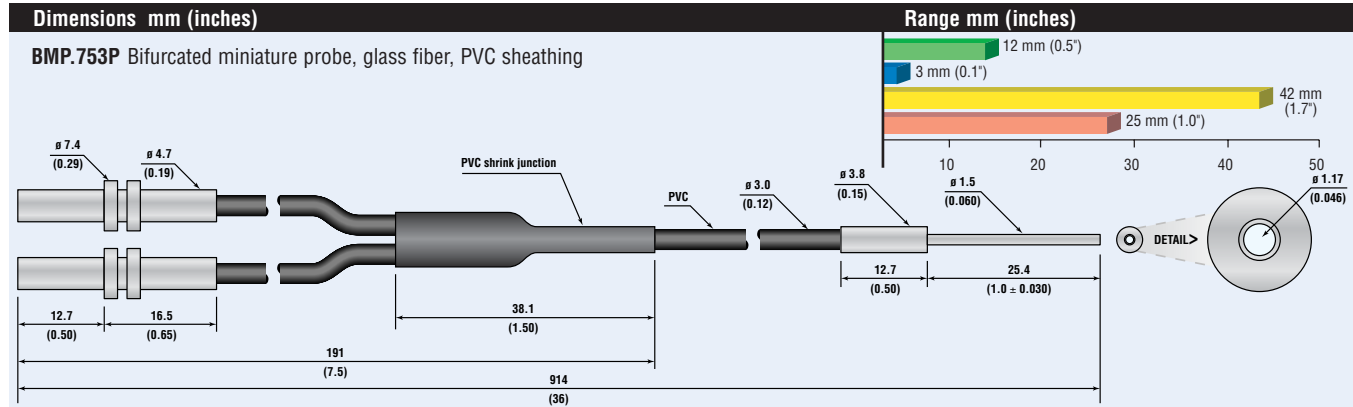
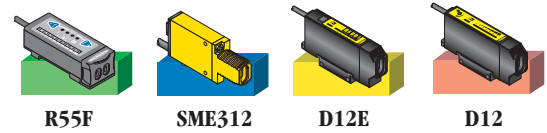


PIT46UHT1 Individual threaded, high-temperature 125° C (257° F) cable; may be used with L2 or L2RA lens



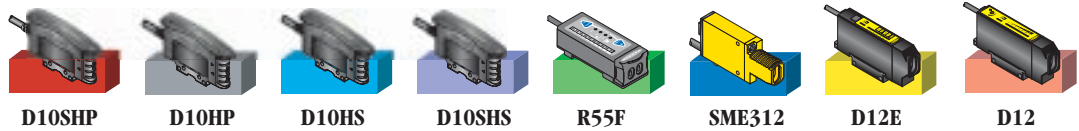
PIT66U Individual threaded; may be used with L2 or L2RA lens





* Teflon® FEP is a registered trademark of Dupont Co.

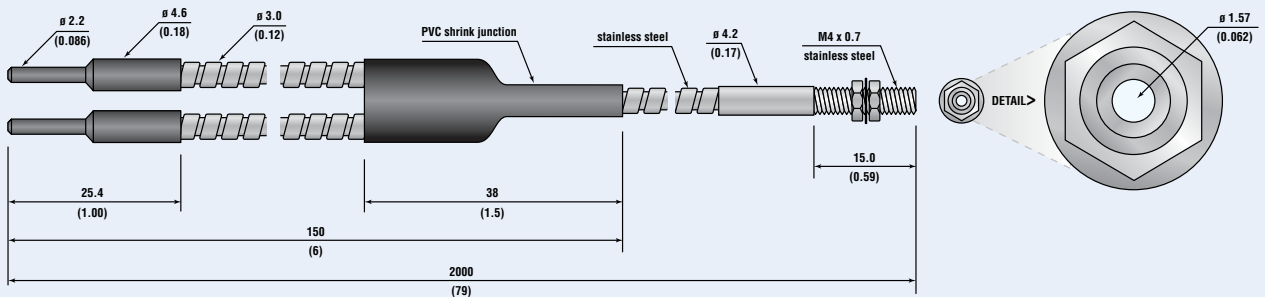
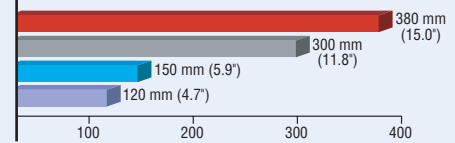
*Contact factory representative for range information.



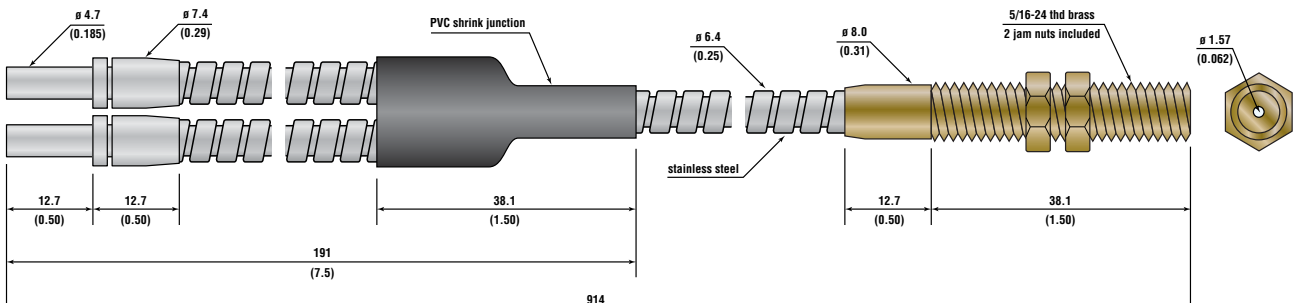
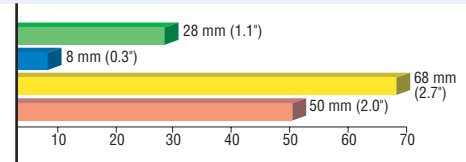
Dimensions mm (inches)

Range mm (inches)

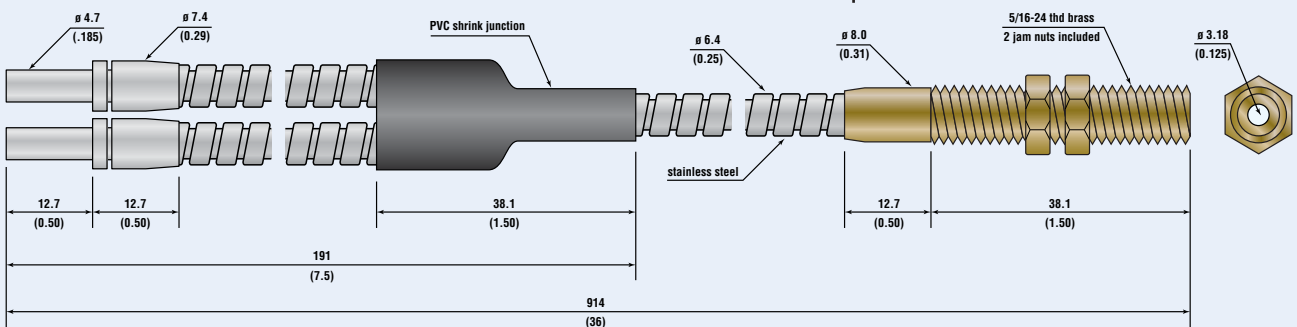
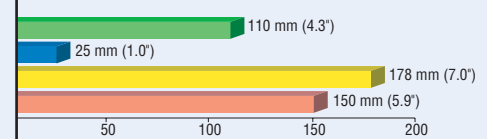
BMT16.6S-HT Bifurcated miniature threaded, glass fiber, SS sheathing, special high-temperature 315° C (600° F) end tip construction; D10 sensors ONLY

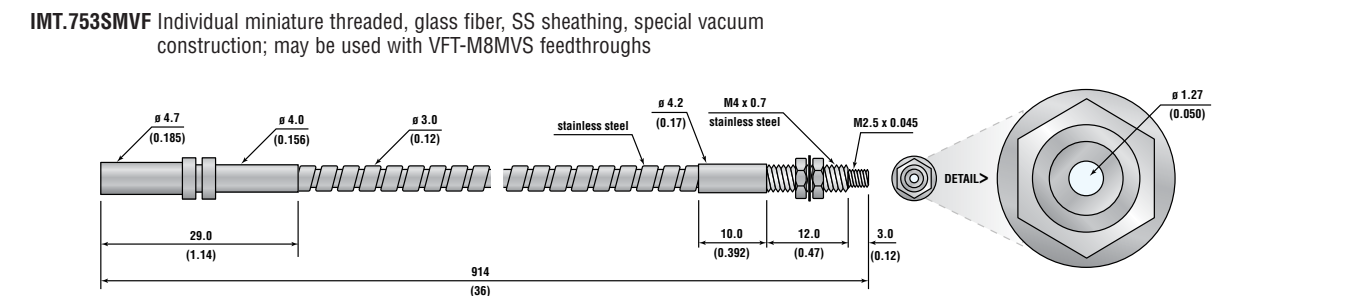
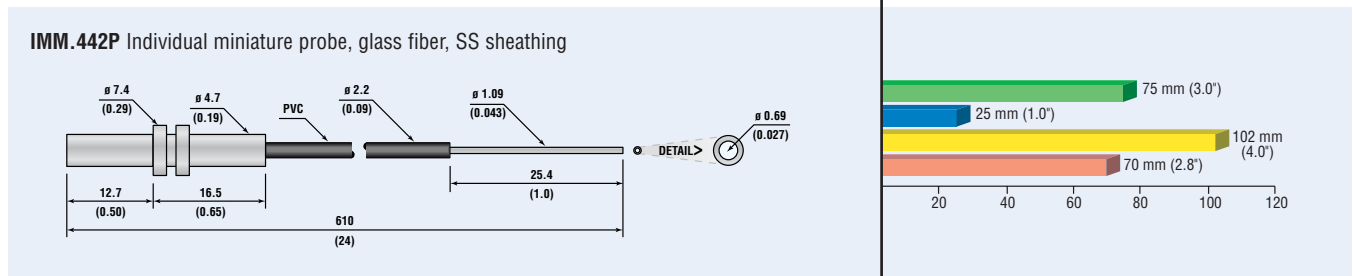
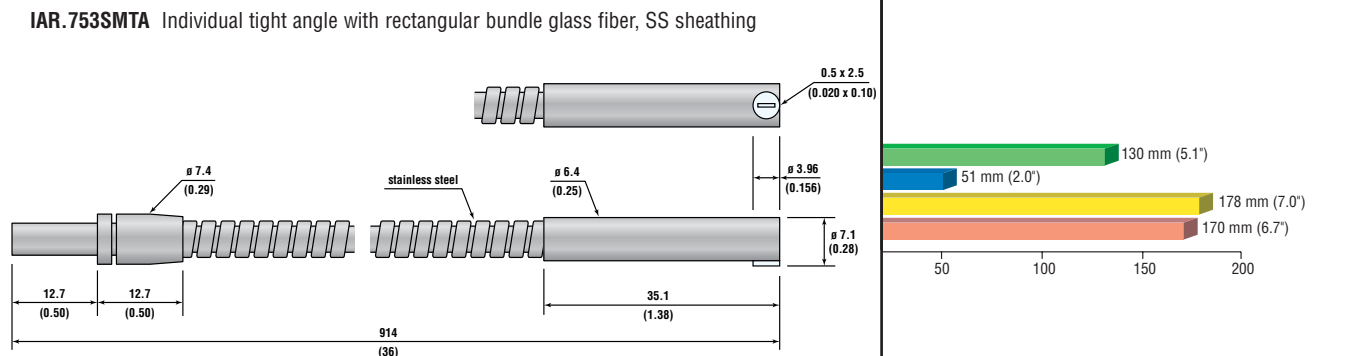
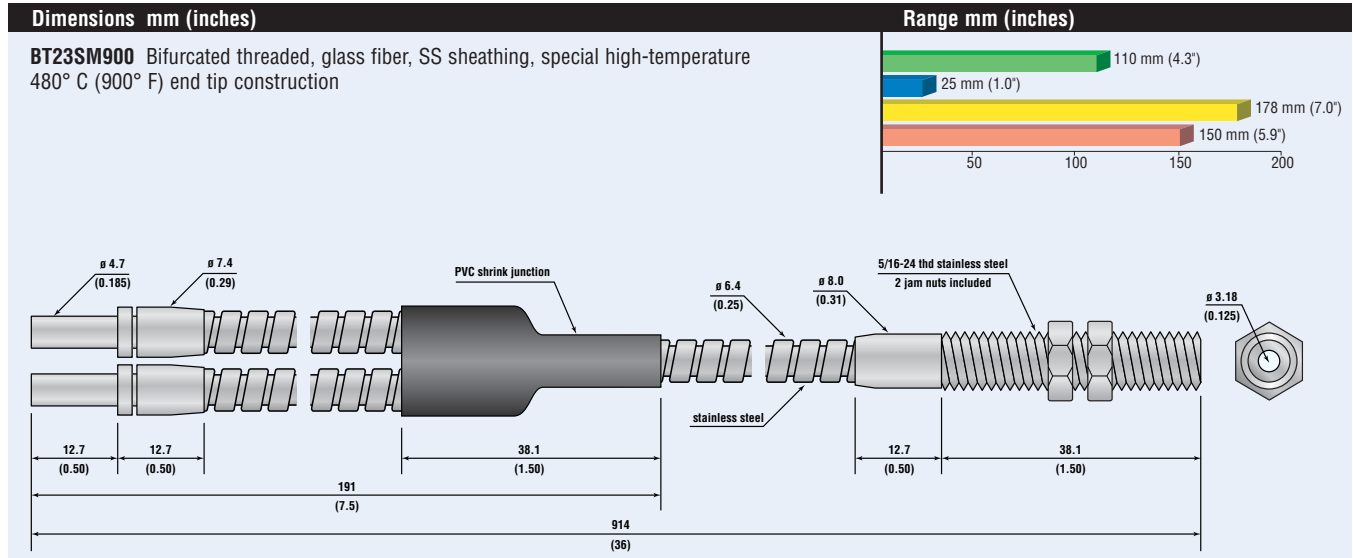
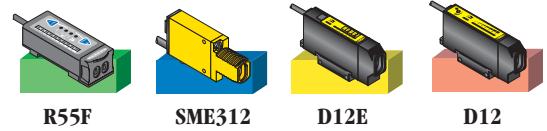


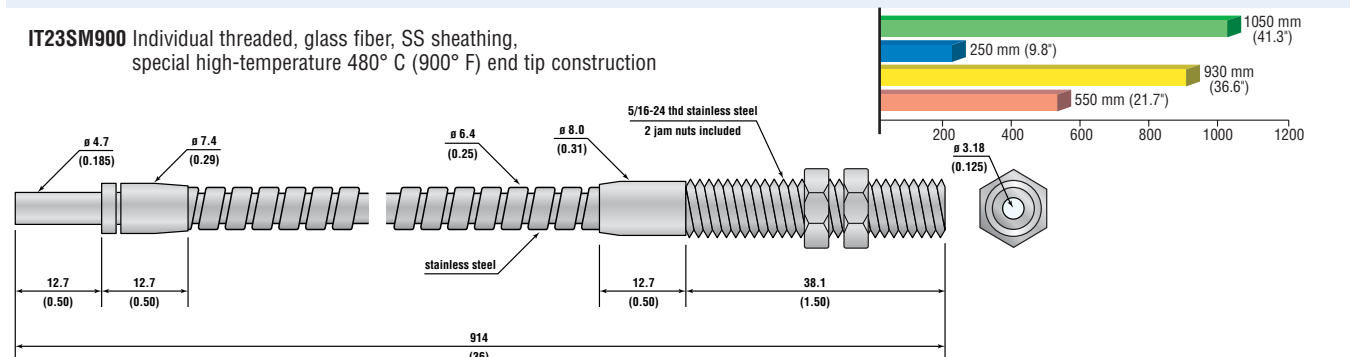
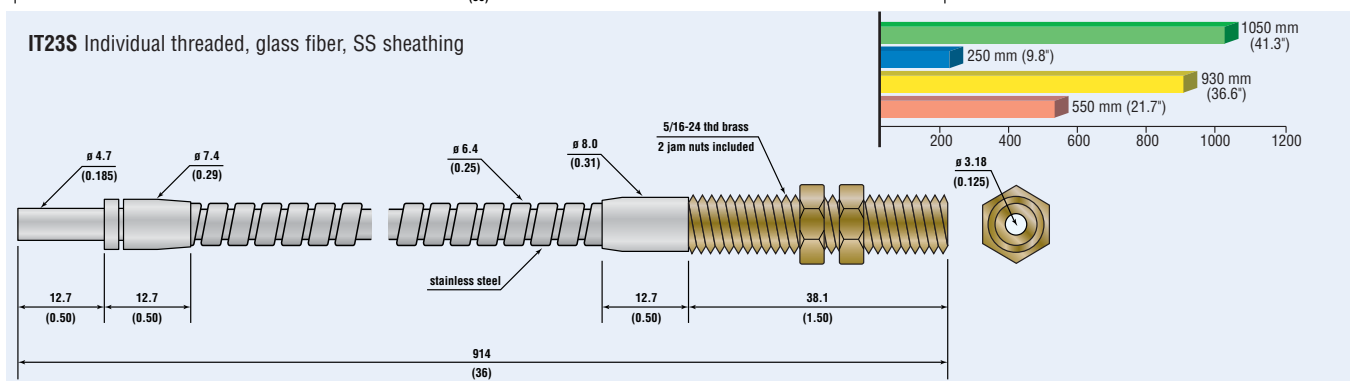
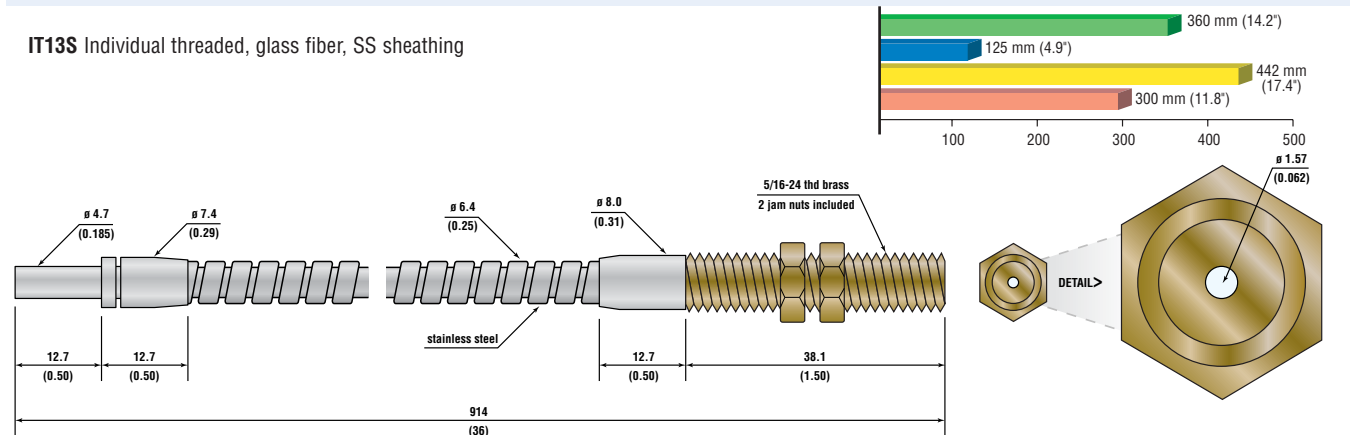
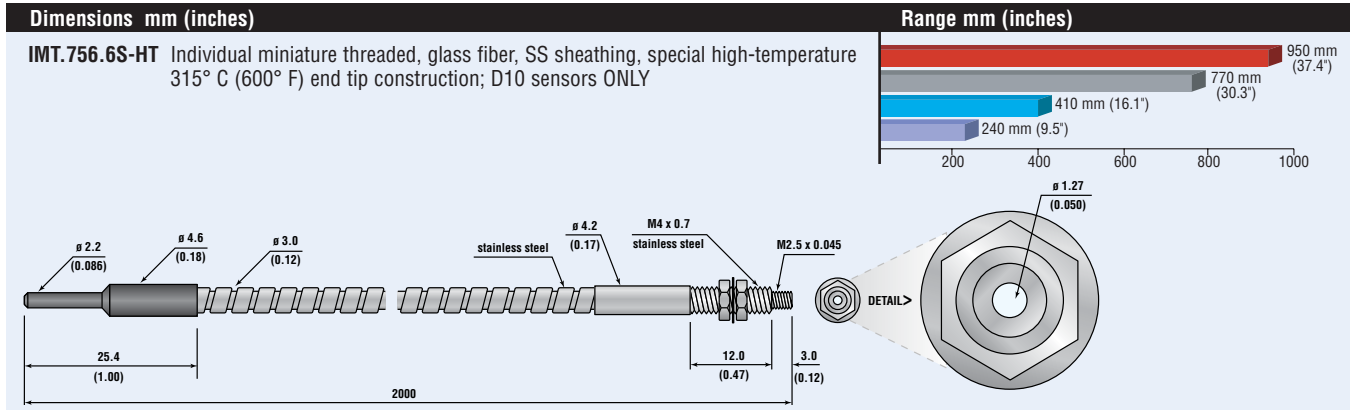
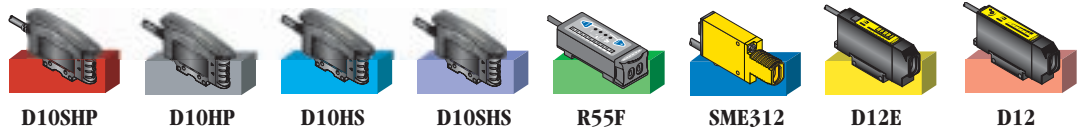
BT13S Bifurcated threaded, glass fiber, SS sheathing

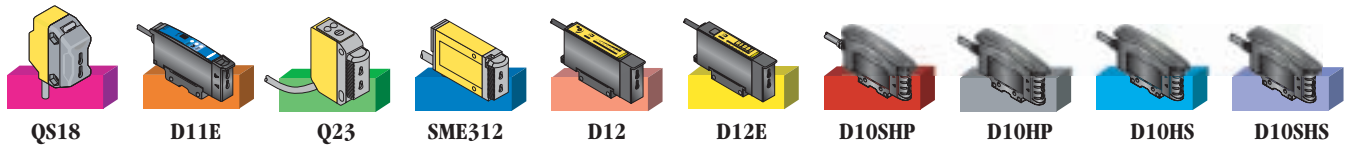


BT23S Bifurcated threaded, glass fiber, SS sheathing



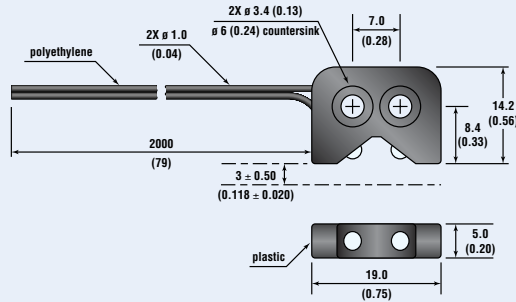




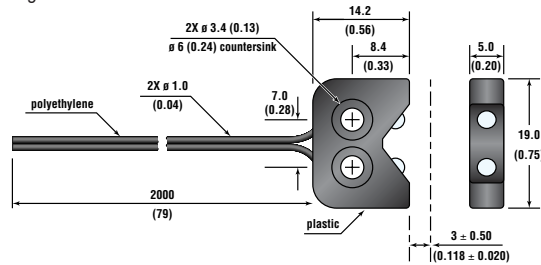


Dimensions mm (inches)

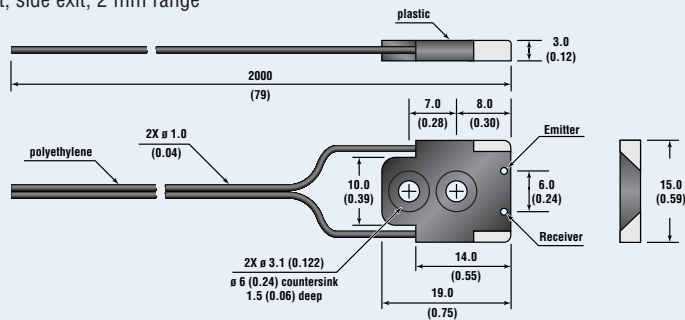
P12-C1 Mechanical convergent, 3 mm range



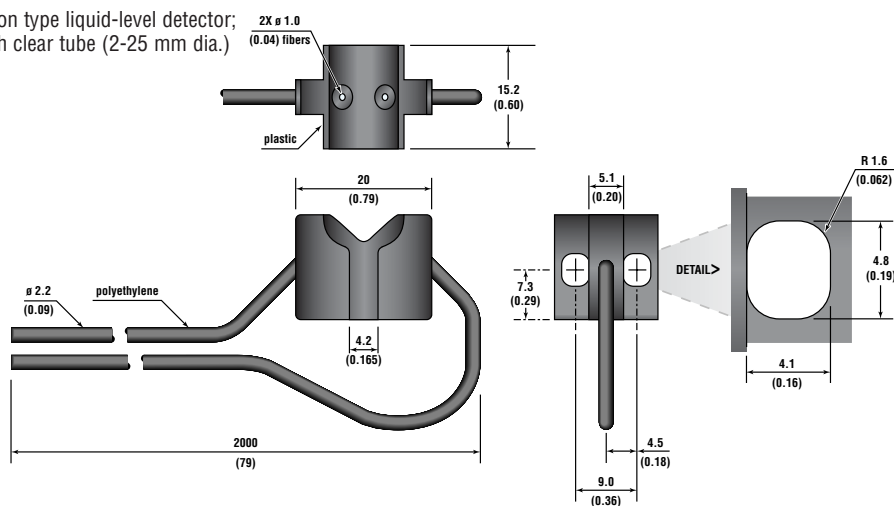
P22-C1 Mechanical convergent, 3 mm range

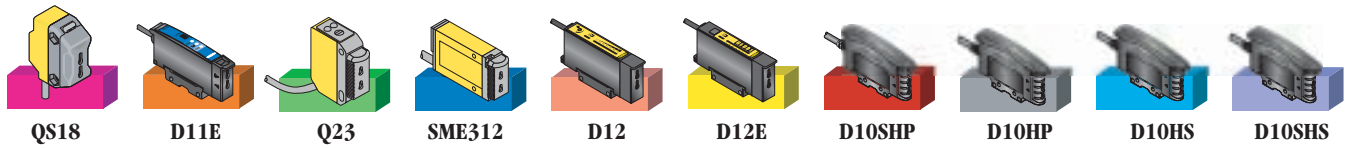


P32-C2 Mechanical convergent, side exit, 2 mm range



PDI46U-LLD Clamp-on type liquid-level detector; use with clear tube (2-25 mm dia.)

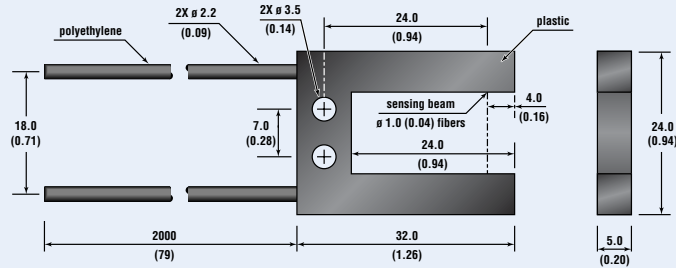




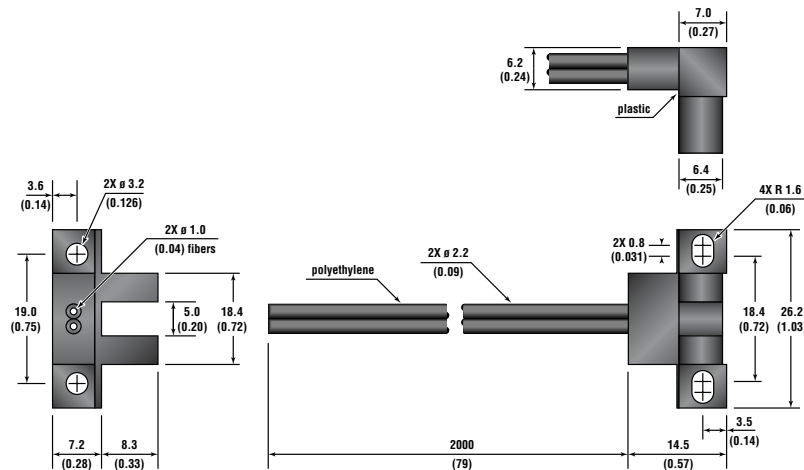
Dimensions mm (inches)

Range mm (inches)

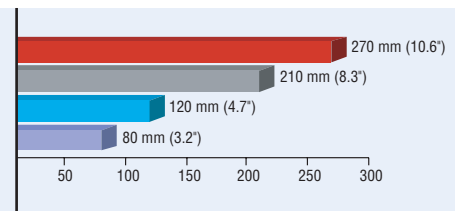
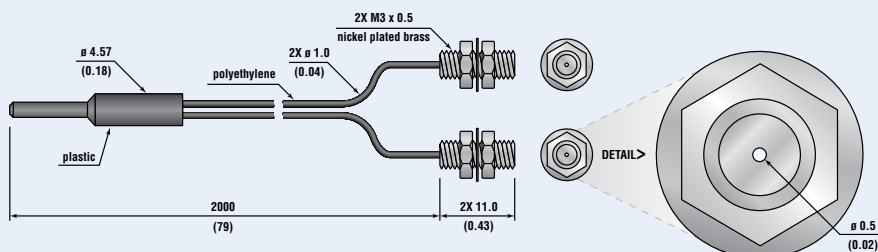
PDIS46UM12 "Slot sensor" fiber, 12 mm gap



PDISM46UM5MA "Slot sensor" right-angle fiber, 5 mm gap



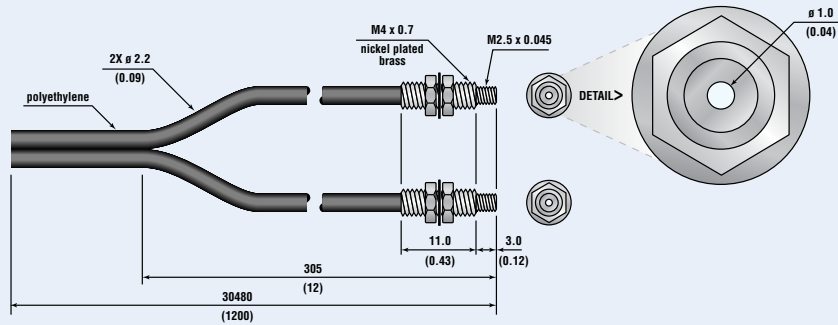
PDIT26T5 Dual individual threaded, D10 sensors ONLY



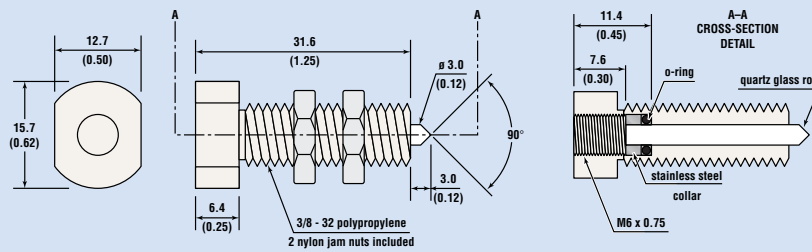
Specialty Fibers

Dimensions mm (inches)

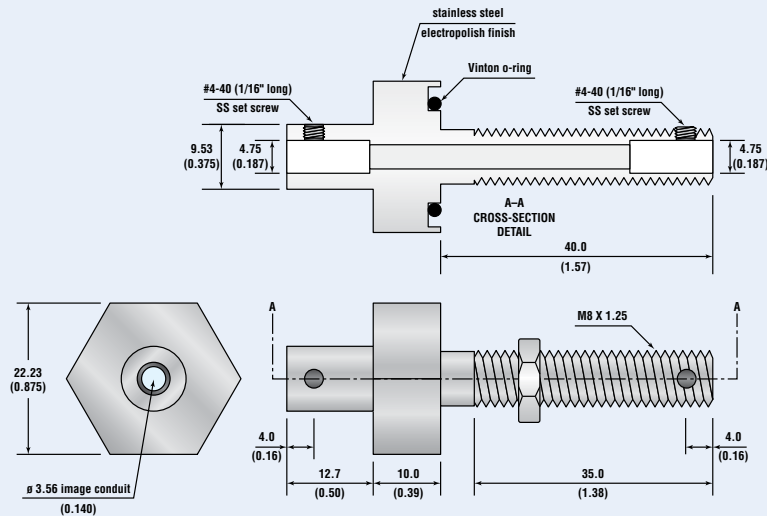
PDIT4100U Dual individual threaded, 30 m (100') duplex plastic fiber cable



TGR3/8MPFMQ Quartz liquid-level probe, 3/8" threaded body; use with PBT46U or PBT26UM6M.1



VFT-M8MVS Individual vacuum feedthrough, 8 mm threaded body; use with "MVF" glass fibers; seals to 1×10^{-9} torr up to 120° C



Convergent Spot Lens Attachments

Use with coaxial plastic fiber optic assemblies with M4 threaded tips

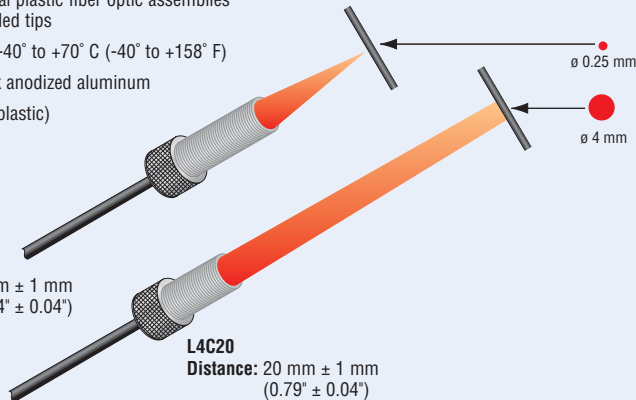
Temperature: -40° to +70° C (-40° to +158° F)

Housing: black anodized aluminum

Lens: acrylic (plastic)

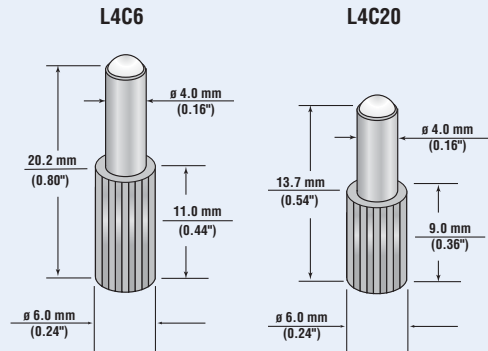
L4C6

Distance: 6 mm ± 1 mm
(0.24" ± 0.04")



L4C20

Distance: 20 mm ± 1 mm
(0.79" ± 0.04")



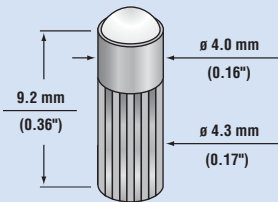
Range—Extending Lens Attachments

L2

Temperature: -60° to +350° C
(-76° to +662° F)

Housing: nickel plated brass

Lens: glass



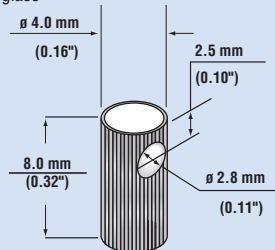
90° Right-Angle Attachment

L2RA

Temperature: -60° to +300° C
(-76° to +572° F)

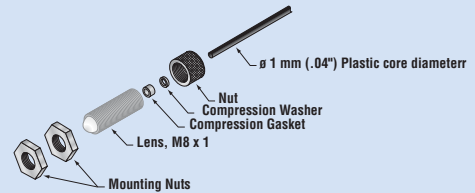
Housing: nickel plated brass

Prism: glass



L08FP, PIL46U & PIL415U

- The easily installed **L08FP** lens assembly may be used to extend the opposed-mode sensing range of 1 mm (0.04") unterminated plastic fiber optic models **PIU430U** or **PIU460U**.
- A pair of 6' long 1 mm (0.04") diameter individual fibers with factory-installed model **L08FP** lenses is available as plastic fiber optic assembly model **PIL46U**. A 15' version is also available, use model **PIL415U**.

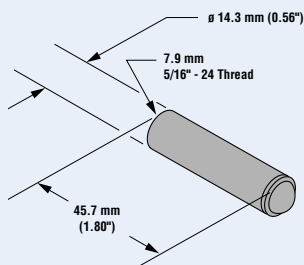


(Use L2 and L2RA with M2.5 threaded fiber tips, such as PIT46U and PIT46UC)

Glass Fiber Optic Lens Attachments

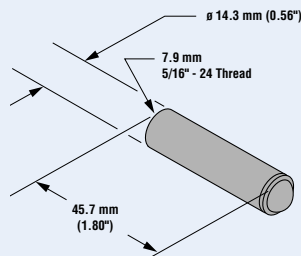
L9

- Glass lens with anodized blue aluminum housing
- Used to extend the range of opposed mode glass fiber optics systems
- Used also with a bifurcated fiber (BT13S) for short-range retroreflective sensing
- The smaller fiber bundle 1.5 mm (0.06" diameter) is desirable for retroreflective use
- Maximum temperature: 315° C (600° F)



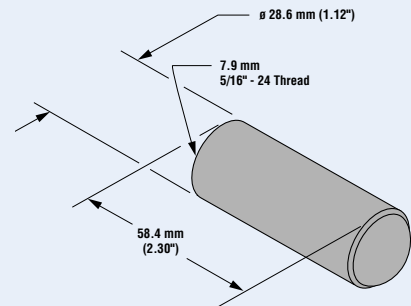
L10

- Glass convergent lens with anodized red aluminum housing
- Used with bifurcated threaded glass fibers
- The L10 lens focuses the light to a point as small as 0.8 mm (0.031") when used with a 1.5 mm diameter fiber bundle
- Maximum temperature: 315° C (600° F)
- Focal distance is 5 mm ± 1 mm (0.20" ± 0.04")



L16FSS

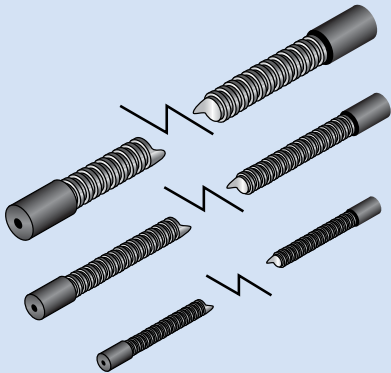
- Glass lens with stainless steel housing
- Used for long-range opposed or retroreflective sensing
- Maximum temperature: 480° C (900° F)



Fiber Optic Accessories

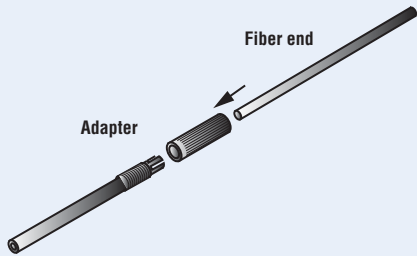
Plastic Fiber Field-Installable Sheathing

- PFS69S6T** • 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.
- PFS53S6T**
- PFS44S6T**
- PFS69S6T may be used with bifurcated fiber assemblies having M6 x 0.75 threaded end tips (e.g., PBCT46U, PBP46U, PBT46UHT1, and PBT66U).
 - PFS53S6T may be used with individual or bifurcated fiber assemblies having M4 x 0.7 threaded end tips (e.g., PBCT26U, PBP26U, PIP46U, PIT46U, PIT46UHT1, and PIT66U).
 - PFS44S6T may be used with individual fiber assemblies having M3 x 0.5 threaded end tips (e.g., PIP26U, PIT26U, PIT1X46U, and PITF26U).
 - All models listed are 2 m (6') in length.
 - Other lengths are available by contacting Banner Applications Department.



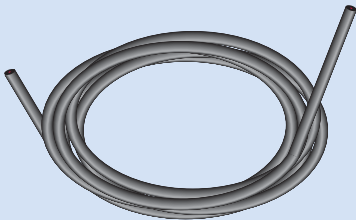
Plastic Fiber Adapters

- UPFA-1-100** • Compression fitting adapters used with small-diameter unterminated plastic fiber cables.
- UPFA-2-100**
- Use when interfacing small-diameter plastic fibers to QS18, Q23, R55F, D11, D12, D10, and MINI-BEAM plastic fiber sensor families.
 - Use UPFA-1 to adapt plastic fiber optic cables with outside jacket diameter of 1.0 mm (4.0"), such as PIT26U and PB16U.
 - Use UPFA-2 to adapt plastic fiber optic cables with outside jacket diameter of 1.25 mm or 1.3 mm (0.05"), such as PBCT26U and PBF46UM3MJ1.3.
 - 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.



Unterminated Individual and Bifurcated Plastic Fibers

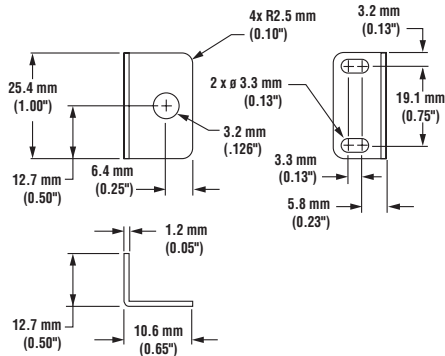
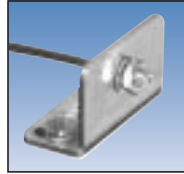
Model	Core	Length	Type
PIU230U	0.5 mm (0.02")	9 m (30')	Single
PIU260U	0.5 mm (0.02")	18 m (60')	Single
PIU430U	1.0 mm (0.04")	9 m (30')	Single
PIU460U	1.0 mm (0.04")	18 m (60')	Single
PIU630U	1.5 mm (0.06")	9 m (30')	Single
PIU660U	1.5 mm (0.06")	18 m (60')	Single
PBU430U	1.0 mm (0.04")	9 m (30')	Duplex
PBU460U	1.0 mm (0.04")	18 m (60')	Duplex



Fiber Optic Mounting Brackets

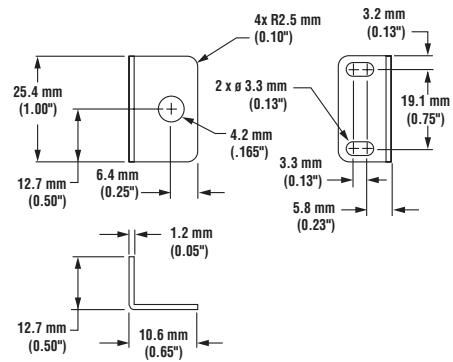
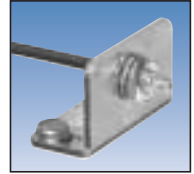
SMBFP3

- Right-angle bracket for plastic fiber optics with 3 mm threaded tip
- 18-gauge stainless steel



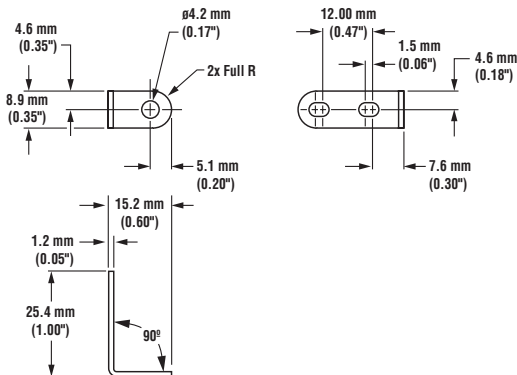
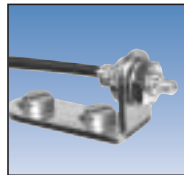
SMBFP4

- Right-angle bracket for plastic fiber optics with 4 mm threaded tip
- 18-gauge stainless steel



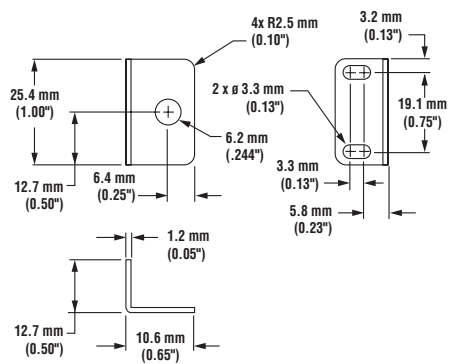
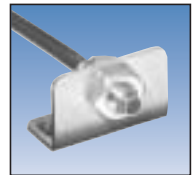
SMBFP4N

- Low-profile bracket for plastic fiber optics with 4 mm threaded tip
- 18-gauge stainless steel



SMBFP6

- Right-angle bracket for plastic fiber optics with 6 mm threaded tip
- 18-gauge stainless steel



SMBF

- Right-angle bracket for glass fiber optics with 5/16" x 24 threaded tip
- 18-gauge stainless steel

