the photoelectric specialist

Banner Fiber Optic Update

Issue FO101

Fiber optics are often useful in photoelectric sensing applications where space is too "tight" to accommodate an entire sensor or where hazardous or hostile environmental conditions preclude the presence of a sensor at the sensing point.

Rectangular Fiber Optics

An added advantage is that fiber optic assemblies have the ability to "shape" a sensing beam to the profile of the object to be detected.

Banner has manufactured glass fiber optics with rectangular sensing heads for many years (glass fiber model IR23PM.5X.025, right). Customers can easily specify the size and shape of the long, thin sensing bundle, providing a solution for many unique and challenging sensing applications. With the increasing popularity of plastic fiber optics, Banner has added new plastic fiber models with rectangular sensing heads, where the "active sensing area" consists of multiple plastic fiber strands oriented in a line within the end tip (plastic fiber model PIR1X166U, right). Rectangular fibers can even be designed with special plastic housings, allowing the individual fiber strands to be moved farther apart, creating longer sensing windows (plastic fiber model PIRS1X166UMPMAL, right).

PIR1X166U

PIRS1X166UMPMAL

IR23PM.5X.025

PIE46UT

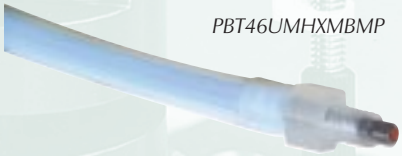
Fiber Optics for Special Sensing Environments

Teflon Encapsulated Fibers

Model PIE46UT (left) uses plastic fibers encapsulated in FEP Teflon® to withstand extremely harsh sensing environments; operating temperature is up to 125°C (257°F). This design is available in individual and bifurcated models, with or without glass lenses. A liquid-level probe is also offered.

Other Harsh Duty Fibers

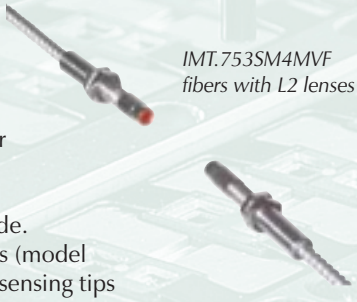
Banner can manufacture custom fibers for almost any harsh-duty application. Model PBT46UMHXMBMP (right) is an example. Tough engineering plastics such as polypropylene, Teflon®, and nylon can be machined into almost any form imaginable. Special sheathing materials can be integrated into the design to help protect the fiber optic cable.



PBT46UMHXMBMP

Vacuum Feedthrough (VFT) Fiber Optic Assemblies

Glass fibers can be designed for use in vacuum environments where out-gassing of the materials used in the fiber is unacceptable. Special stainless steel and copper components are used in place of epoxy to bond the strands together within the sensing tip. Banner manufactures several VFT assemblies (left) in various sizes to couple the fibers on the inside of the vacuum environment to the sensor on the outside. The photo (right) shows miniature "VF compatible" glass fibers (model IMT.752SM4MVF with L2 lenses). Many different fiber optic sensing tips are available in a VF compatible package.



IMT.753SM4MVF fibers with L2 lenses

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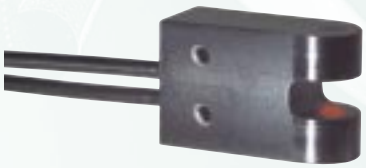
Fiber Optics for Slot Sensing Applications

Economical Plastic "Fork Style" Fiber Optic Assemblies
Dual individual ("fork" style) plastic fiber optic assemblies allow through-beam sensing with convenient designed-in mounting and alignment of the optical axis. Gap distance, as well as mounting hole placement, housing size and material, and beam diameter can easily be modified to a customer's exact requirements. The model PDIS46UM12 plastic fiber optic assembly (right) is ideal for label detection, edge guiding, or any other application where a thin flat target needs to be detected.

PDIS46UM12

Custom Designed "Fork Style" Fiber Optic Assemblies
The fork-style fiber optic assembly (below left) was designed to replace the inductive proximity sensor shown at the right, below. Custom fiber assemblies to suit your unique sensing application can be designed to your exact specifications.

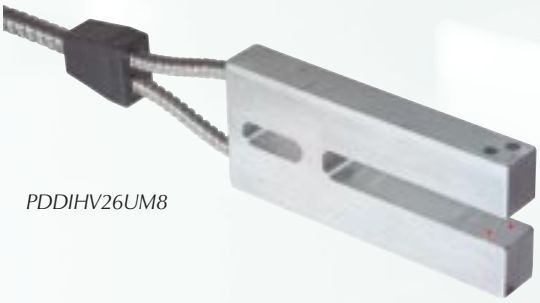


Fork-style fiber optic

Inductive proximity sensor

Application-specific Fiber Optic Systems

For heavy-duty edge guiding, this fork-style plastic fiber optic assembly was designed with two separate opposed sensing beams, offset to provide one dark operate beam and one light operate beam. In addition, specially-modified D11E2 sensors with different modulation frequencies are used to eliminate crosstalk. An aluminum housing and stainless steel sheathing were added for ruggedness.



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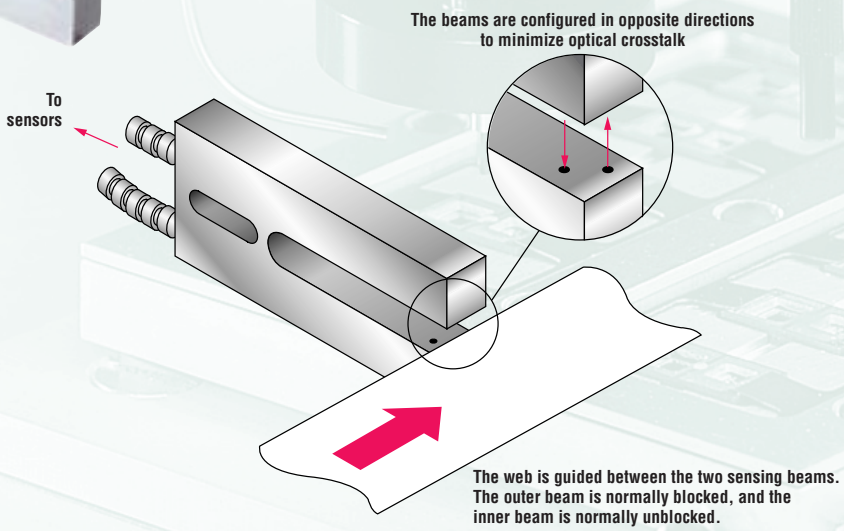

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