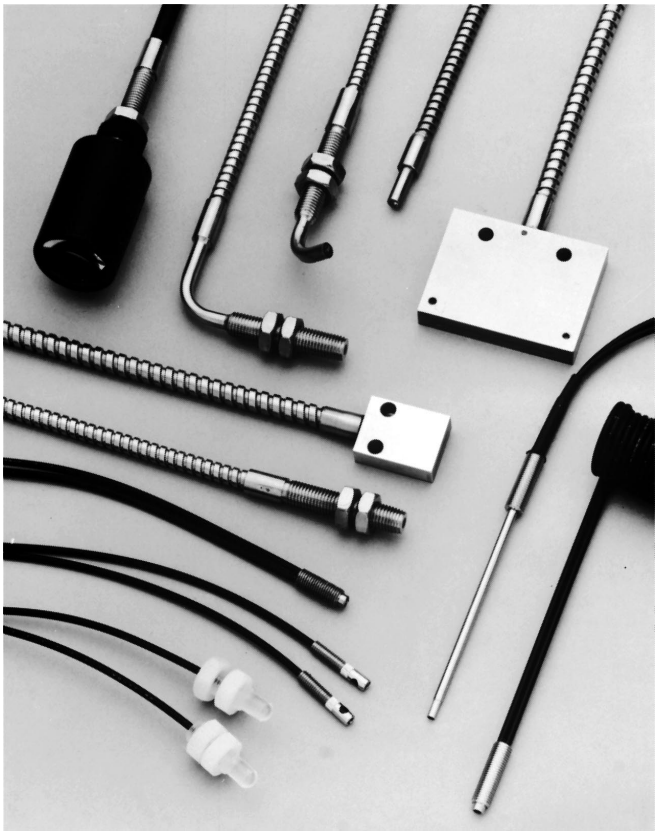
Fiber Optic Cables



MICRO SWITCH has greatly improved our fiber cable offering. We have developed a unique position in the marketplace by developing our local fiber optic manufacturing capability in the States and we continue to add the latest technological breakthroughs with cables supplied from our sister division in Japan, Yamatake Honeywell. You will find our offering has most of the breadth of the cables supplied by all of our competitors. We can also respond quickly to customer requests for special cables whether they be different lengths, end tip configurations, bundle sizes, or sheathing material. Please contact our application center for assistance.

Our glass bundle fiber cables offer many superior features over most others. Here are the most important ones:

1. Our vendor uses only the best raw glass available for the fiber material. Manufactured in Germany by Schott under the Fire-polish tradename, it has fewer impurities than the Ripple brand made in the States. This improves scan range by reducing attenuation.

2. Most manufacturers use glue, adhesive, cement, etc. to hold the end tip to the sheathing. Our vendor also puts a mechanical crimp in addition to the epoxy for greater retention and strength.

3. The epoxy used on our cables is rated for 585 degrees F. Most competitors use 480 degree epoxy.

4. 95% of our rectangular sensing tips are sandblasted for a nicer finish.

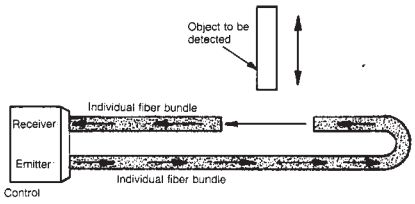
5. Our fiber tips are ground, belt sanded, then polished on both ends. Most competitors do not polish. This causes crosstalk between randomly sorted bifurcated cables.

6. All our tips are buffed to remove burrs.

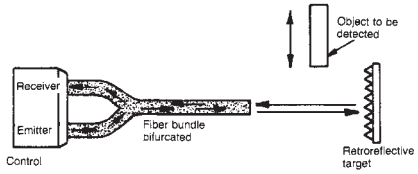
7. Almost all of our end tips are made out of stainless steel instead of brass.

Please ask our competitors how their cables are built and you will find there really is a difference.

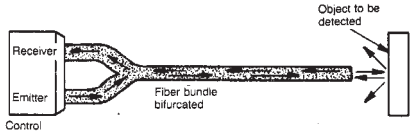
Thru Scan



Retroreflective Scan



Diffuse (Proximity) Scan



TYPE OF FIBER	ADVANTAGES	DISADVANTAGES
Plastic	Lowest cost. Works well with visible red LED. Easy to terminate. Cutable to length.	High loss for long lengths. Higher loss with infrared. Limited temperature.
Glass	Lower loss for long lengths. Higher temperature. Greater variety of end tips.	Higher cost. Not cutable to length.

TYPE OF CABLE	ADVANTAGES	DISADVANTAGES
Plastic	Small size. Easily cut/stripped. Good sealing	Less mechanical protection. Limited temperature range. Low chemical resistance.
PVC Monocoil	Mechanically strong. Wider temperature range. Good pull strength. Greater sealing.	Lower cable temperature range than armour grip. Provides conductive path. Larger bend radius vs. plastic. More expensive than plastic.
Stainless Steel Armour Grip	Most rugged. Widest temperature range. Good pull strength.	Provides conductive path. Larger bend radius vs. plastic. More expensive than plastic.

Fiber Optic Cables

PLASTIC CABLES

Plastic fiber optic cables can be cut to length in the field. Standard cables with 1 mm dia. core are suitable for most uses. Cables with a 0,5 mm diameter core are best for detection of tiny parts.

Adapters. Plastic cables require the following adapters for use with MHP, MPF, and MPFD heads:
MHPFOA for MHP
MPZFOADPT for MPF
MPZFOADPTHD for MPFHD

GLASS CABLES

Glass fiber optic cables consist of a bundle of many very small diameter glass fibers. These fibers are surrounded by a protective sheathing made of either stainless steel armour grip or PVC monocoil. Armour grip cables provide the best protection against physical abuse.

PVC monocoil cables provide good physical protection and are better sealed than armour grip cables. PVC monocoil is recommended for wet applications.

TEMPERATURE RANGE

Fiber Optic Sensor Head	–22°F to 158°F (–30°C to 70°C)
Plastic Cable	–22°F to 158°F (–30°C to 70°C)
Plastic Cable Lens Accessories	–22°F to 158°F (–30°C to 70°C)
Glass Cable (PVC Monocoil)	–40°F to 250°F (–40°C to 120°C)
Glass Cable (Armour Grip)	–40°F to 585°F (–40°C to 307°C)
Glass Cable (High-Temp.)	–40°F to 900°F (–40°C to 482°C)
Glass Cable End Tips	–40°F to 585°F (–40°C to 307°C)
Glass Cable Lens Accessory	–40°F to 450°F (–40°C to 232°C)

Standard armour grip cables have a maximum temperature range of 585°F (307°C).

NOTICE

Remember that the typical maximum operating temperature of a photoelectric is 158°F (70°C). The sensor must be mounted far enough away from the high temperature area to allow cables to cool below the control's maximum operating temperature.

FIBER OPTIC COMPATIBILITY

Fiber Optic Cable Type	Photoelectric Control Series FE7C-FO	MPF	MPG	MHP	HPX
HPF	**X (most)**	**X (most)**		**X (most)**	**X**
FEF-PLT1	**X**	**X**		**X**	**X**
FE-B2/B5/DB2P		**X**			
FE-T2/T5		**X**			
FE-BT/BA/BN/BP/BH/BR			**X**	**X**	
FE-IT/IA/IN/IP/IH/IR			**X**	**X**	

MINIMUM BEND RADIUS

To help prevent possible physical damage to fiber optic cables, do not exceed the minimum bend radius.

Cable Type	Minimum Bend Radius
Glass Armour Grip Cables	1 inch (25 mm)
Glass PVC Monocoil Cables	.75 inch (19 mm)
Plastic Cables	
1 mm dia. core	1 inch (25 mm)
.5 mm dia. core	.5 inch (12,5 mm)

NOTICE

1. Although these cables are flexible, internal glass fibers will break if flexed too far.
2. Avoid repeated cable flexing in your application.