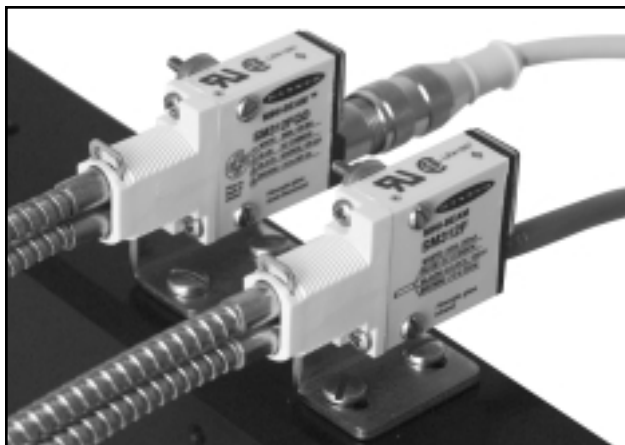
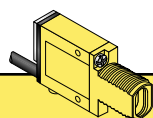




- Compact, modulated, self-contained infrared fiber optic sensors for 10-30V dc operation
- Useable in opposed, retroreflective, and diffuse fiberoptic modes with Banner glass fiber optic assemblies
- Switch-selectable for light operate or dark operate
- Includes Banner's exclusive **AID™** alignment system; US patent number 4356393
- Highly-repeatable 1 millisecond response
- Both sourcing and sinking outputs (150 mA max. each); continuous overload and short-circuit protected



Infrared, 880 nm



### MINI-BEAM Glass Fiber Optic

| Models                           | Range                                              | Cable*                        | Supply Voltage | Output Type        | Excess Gain                                                       | Beam Pattern |
|----------------------------------|----------------------------------------------------|-------------------------------|----------------|--------------------|-------------------------------------------------------------------|--------------|
|                                  |                                                    |                               |                |                    | Diffuse mode performance based on 90% reflectance white test card |              |
| <b>SM312F</b><br><b>SM312FQD</b> | Range varies by sensing mode and fiber optics used | 2 m (6.5 ft)<br>4-Pin Euro QD | 10-30V dc      | Bipolar<br>NPN/PNP |                                                                   |              |
|                                  |                                                    |                               |                |                    |                                                                   |              |

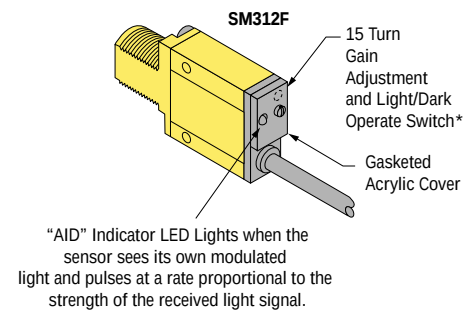
**NOTES:**

- 9 m (30') cables are available by adding suffix "**W/30**" to the model number of any cabled sensor (e.g., **SM312F W/30**).
- A 150 mm (6") long pigtail cable with attached QD connector is available by adding suffix "**QDP**" to the model number of any MINI-BEAM sensor (e.g., **SM312FQDP**). See page 5 for more information.
- A model with a QD connector requires an accessory mating cable. See page 5 for more information.
- May be ordered with 0.3 millisecond on/off response by adding suffix "**MHS**" to the model numbers (e.g., **SM312FMHS**). This modification reduces sensing range (and excess gain).

## MINI-BEAM Features

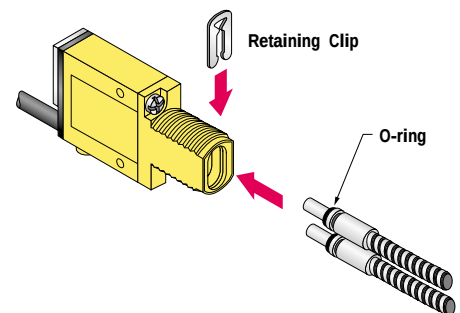
### \* Note regarding Light/Dark operate switch:

- Turn switch *fully* clockwise for light operate (sensor outputs conduct when sensing light is received)
- Turn switch *fully* counterclockwise for dark operate (sensor outputs conduct when sensing light is not received)



## MINI-BEAM Fiber Information

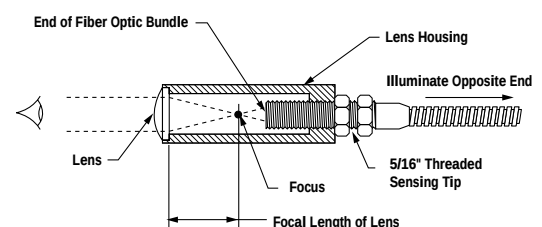
- 1) Install the O-ring (supplied with the fiber) on each fiber end, as shown in the drawing.
- 2) While pressing the fiber ends firmly into the ports on the front of the sensor, slide the U-shaped retaining clip (supplied with the sensor) into the slot in the sensor's barrel, until it snaps into place.



## Lens Attachment

Lenses are sometimes added to fiber optic assemblies for extending opposed mode sensing range. Banner offers the following lens assemblies for use with fiber optic assemblies which have 5/16" -24 threaded sensing tips (e.g. fiber model IT23S):

| Model  | Lens Size      | Focal Length   | Housing         | Notes                                              |
|--------|----------------|----------------|-----------------|----------------------------------------------------|
| L9     | 12.5 mm (0.5") | 12.5 mm (0.5") | Aluminum        | Suitable for all but highly corrosive environments |
| L16F   | 25 mm (1")     | 44 mm (1.7")   | Delrin          | Maximum operating temperature is 100° C (212° F)   |
| L16FAL | 25 mm (1")     | 44 mm (1.7")   | Aluminum        | Suitable for all but highly corrosive environments |
| L16FSS | 25 mm (1")     | 44 mm (1.7")   | Stainless Steel | Suitable for all environments                      |



Lenses are most efficient when they are located slightly beyond their focal length distance from the sensing end of the fiber optic bundle. The easiest way to focus a lens is to treat it like a magnifying glass.

Illuminate the fiber optic bundle at the threaded end of the fiber optic assembly by directing the opposite end toward a visible light source (e.g. - an incandescent bulb, visible LED, sunlight, etc.). Thread the lens onto the fiber optic assembly until the end of the fiber optic bundle comes into sharp focus under the lens. Then, back off (unthread) the lens assembly from the point of sharpest focus by one to three full turns. The illuminated bundle should now appear slightly blurred. This is the optimum setting, and the lens may be secured in position using one of the jam nuts provided. Refer to the drawing above.