Installation Instructions—6235A-6501 Glass Fiber Optic Adapter

Document 108631 (Rev —)

INTRODUCTION

The 6235A-6501 Fiber Optic Adapter allows standard diffuse reflective Prism or Comet sensors to use glass fiber optic cables for thru-beam or diffuse reflective detection. Fiber optic cables transmit light from the sensor to the sensing position and back to the sensor for detection. They are ideal for applications in which space is restricted, temperatures are high, or tight viewing angles are required.

This manual provides instructions on attaching the adapter and fiber optic cables to the sensor. It also covers mounting of the sensor/adapter combination.

Sensors and Fiber optic cables are purchased separately and include their own instruction manuals with full specifications and details on important topics such as electrical connection. Please refer to them in conjunction with this manual during installation.

PARTS LIST

The following parts are included as part of the Glass Fiber Optic Adapter:

1. Adapter with two 6-32 stainless steel hex-head set screws installed
2. Gasket
3. 0.063 hex wrench
4. Installation instructions

If all parts are not present, please return package to point of sale for replacement.

COMPATIBILITY

The Glass Fiber Optic Adapter can be used with the following sensor and fiber optic cable models:

Prism Sensors

13150A 8-inch diffuse reflective models

Comet Sensors

13100A 24-inch diffuse reflective models
13106A 8-inch diffuse reflective models

Fiber Optic Cables

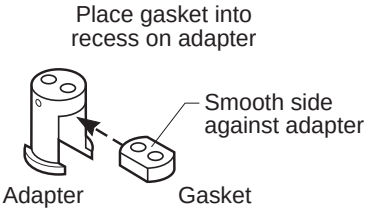
All E51KF model glass fiber optic cables
All 622X model glass fiber optic cables

SET-UP AND MOUNTING

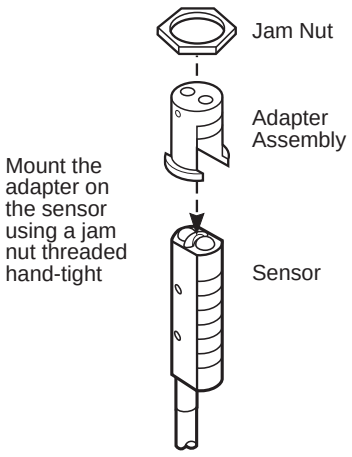
The Adapter is mounted on the threaded body of the Prism or Comet sensor using a jam nut supplied with the sensor. Since mounting of the sensor is also accomplished using the jam nuts and threaded body, it is important to follow the proper sequence of assembly to ensure ease of installation.

Adapter and Fiber Optic Cable Mounting

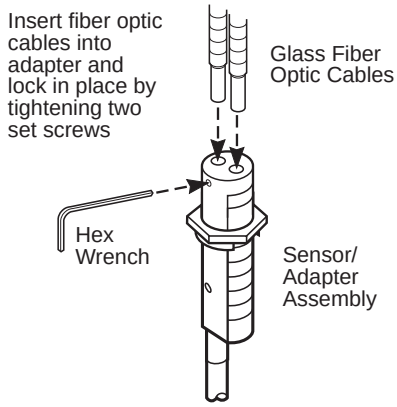
Step 1—Insert the gasket into the recess on the adapter as shown below.



Step 2—Slide the adapter assembly onto the end of the sensor as shown below. Hand-tighten the jam nut onto the sensor (use caution to avoid cross-threading) until you just start to encounter resistance from the adapter meeting the sensor. Hand-tighten an additional 1/3 to 1/2 turn. A minimal deflection of the gasket is all that is required to form a seal—DO NOT USE EXCESSIVE FORCE OR TOOLS TO TIGHTEN JAM NUT.



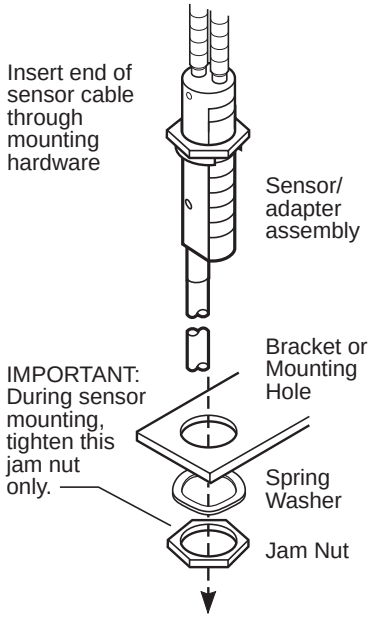
Step 3—Insert the fiber optic cable ends into the holes in the adapter as shown in the illustration at the top of the next column. Push the ends through the gasket until the cables seat against the lenses of the sensor. Tighten both of the set screws using the hex wrench to hold the fibers in place—tighten set screws to between 3 and 5 in.-lbs. torque.



Sensor Mounting

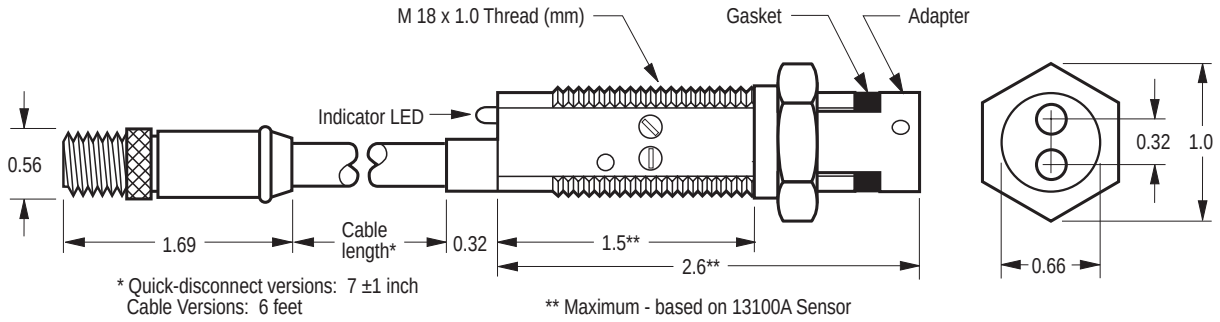
Step 4—Determine the desired location for mounting the sensor. Choose a location that is protected from direct liquid spray, heat or chemicals that may be present at the sensing location (refer to the Enclosure Rating specification of the reverse side of this sheet). The sensor can be mounted in one of our accessory brackets or in any 0.75 inch hole.

Step 5—Insert the sensor cable through the mounting hole and place the sensor in the hole so that the underside of the adapter rests against the mounting surface. Slide a spring washer onto the cable and onto the sensor. Likewise slide a jam nut onto the cable and thread the nut onto the sensor to secure the sensor in place in the mounting hole—tighten nut to less than 4 N•m (36 in.-lbs. or 3 ft.-lbs.) torque to avoid stripping threads. Be sure to tighten only the bottom jam nut and not the jam nut that is holding the adapter.



Sensor electrical and output connections can now be completed (refer to the appropriate sensor instruction manual).

APPROXIMATE DIMENSIONS (Shown in inches except where noted)
Adapter assembly is shown assembled to sensor (sensor sold separately)



SPECIFICATIONS

Temperature Range	-40° to +70° C (-40° to +158° F)
Material of Construction	Adapter: Brass; Gasket: Silicone; Set Screw: Stainless Steel
Vibration	10 g over 10 Hz to 2 kHz
Enclosure Ratings	NEMA 1; The adapter will resist the entrance of moisture in the area between the lenses and the fiber ends when properly assembled. However, moisture entry is possible during direct high pressure sprays. Since the Prism and Comet sensors are rated NEMA 1, 2, 3, 4, 4X, 6, 6P, 11, 12, and 13, this will not result in damage to the unit. Micro connector is rated NEMA 1 only.

SENSING RANGE

The "Optical Performance" section at right shows ranges for each sensor model when using typical 3-foot long fiber optic cables. The range of a fiber optic sensor is affected by the following:

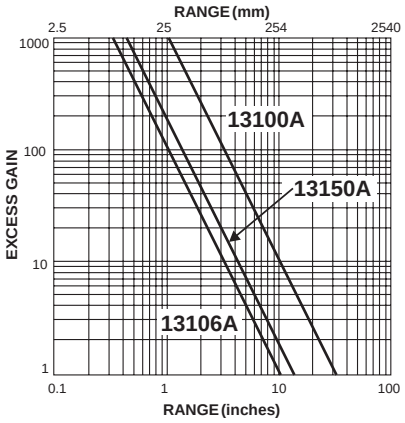
1. **Sensor power**—Several sensor models can be used with this adapter and each sensor has a different degree of sensing power or excess gain. A 24-inch range diffuse reflective Comet has more excess gain than a 8-inch range diffuse reflective Comet and will provide longer ranges when used with fiber optic cables.
2. **Fiber optic cable length**—Excess gain is reduced as the total length of fiber optic cable is increased. A special 6-foot cable will have slightly less range than a standard 3-foot cable. Likewise, a special 1.5-foot cable will have slightly more range than a 3-foot cable.
3. **Fiber bundle diameter—**A glass fiber optic cable is made up of many strands of tiny glass fibers. Each individual fiber can carry a certain amount of light. The more strands that are present, the more light that can be carried by that cable. Because of this, a cable with a larger bundle diameter (more individual fiber strands) will provide longer ranges than a cable with a smaller bundle diameter.
4. **Lenses**—using accessory lenses with thru-beam fibers will increase sensing range.

OPTICAL PERFORMANCE

All optical specifications are guaranteed to be the minimum performance under clean conditions of any product delivered from stock. Typical performance may be higher.

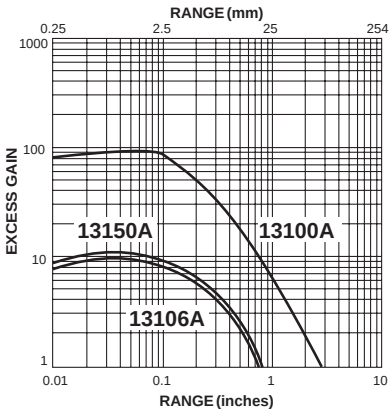
Dirt in the environment will affect optical performance by reducing the amount of light the control receives. For best results, sensors should be used at distances where excess gain is higher than 1.5 (1.5 times the amount of sensing power required to detect an object under ideal conditions). Higher excess gain will allow the sensor to overcome higher levels of contamination on the end of the fiber.

Thru-Beam mode Using E51KF823 (6221B-6501) Fibers.



Diffuse Reflective mode using E51KF723 (6222B-6501) Fibers.

Based on a 90% reflectance, white test card



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