



# Adapter Kit Installation Instructions Detector Electronics Fiber Optics to InSight Scanner

**P/N 129-181-1 (UV)**  
**P/N 129-181-2 (IR)**

## INSTALLATION INSTRUCTIONS

### Application

The 129-181 Adapter Kits allow users of Detector Electronics fiber optics to upgrade their C9503 and C9504 flame scanners to Fireye InSight scanners. Kit 129-181-1 is used with 95UVS2-2 ultraviolet InSight scanners. Kit 129-181-2 is used with 95IRS1-2 and 95IRS2-2 infrared InSight scanners.

### Installation Options

For proper light transmission, the fiber optics need to extend further into the InSight scanner than they do into the C9503 or C9504 scanners. Therefore, either the fiber optic bundle must be made slightly longer, or the inner and outer carrier assembly pipes must be made slightly shorter. To accommodate this, the installer has two options:

#### Installation Option 1

- a. This option requires that the fiber optic bundle be replaced per the table below.
- b. This option reuses the original inner and outer carrier assemblies without field-modification to their length.

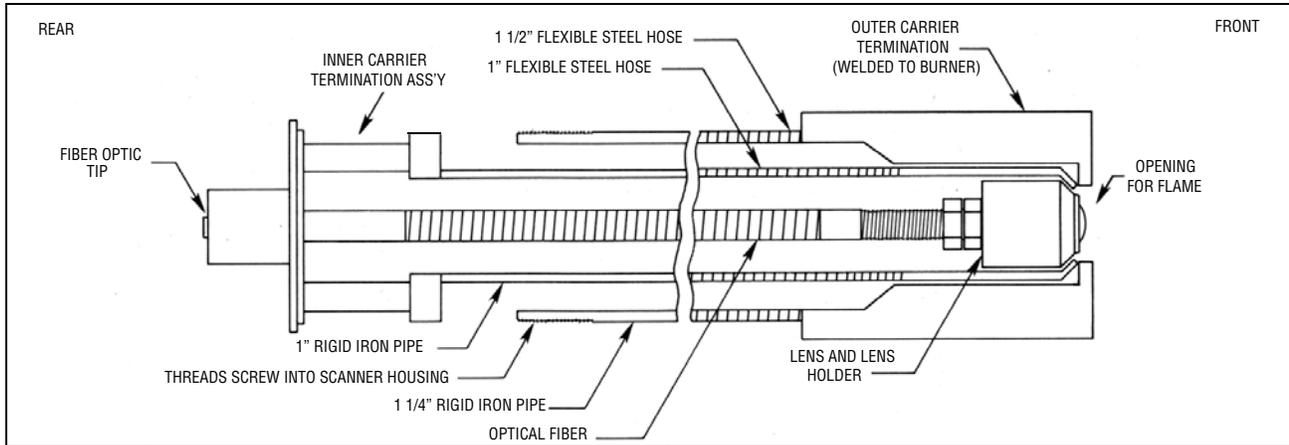
<b>Fiber Optic Bundle Replacement (Installation Option 1 ONLY)</b>			
<b>Original Fiber Optic Bundle P/N:</b>	<b>Original Length &amp; Material</b>	<b>New Fiber Optic Bundle P/N</b>	<b>New Length &amp; Material</b>
102531-001	(69 ½", quartz)	102531-005	(70 ¾", quartz)
102531-002	(81", quartz)	102531-006	(82 ¼", quartz)
102531-003	(117", quartz)	102531-007	(118 ¼", quartz)
102531-004	(97 ½", quartz)	102531-008	(98 ¾", quartz)
101806-001	(71", glass)	101806-005	(72 ¼", glass)
101806-002	(83", glass)	101806-006	(84 ¼", glass)
101806-003	(120", glass)	101806-007	(121 ¼", glass)
101806-004	(100", glass)	101806-008	(101 ¼", glass)

#### Installation Option 2

- a. This option reuses the original fiber optic bundle.
- b. This option requires field-modification (shortening and re-threading) of the inner carrier pipe.
- c. This option requires field-modification (shortening) of the outer carrier pipe.



**FIGURE 1. Detector Electronics Inner and Outer Carriers**



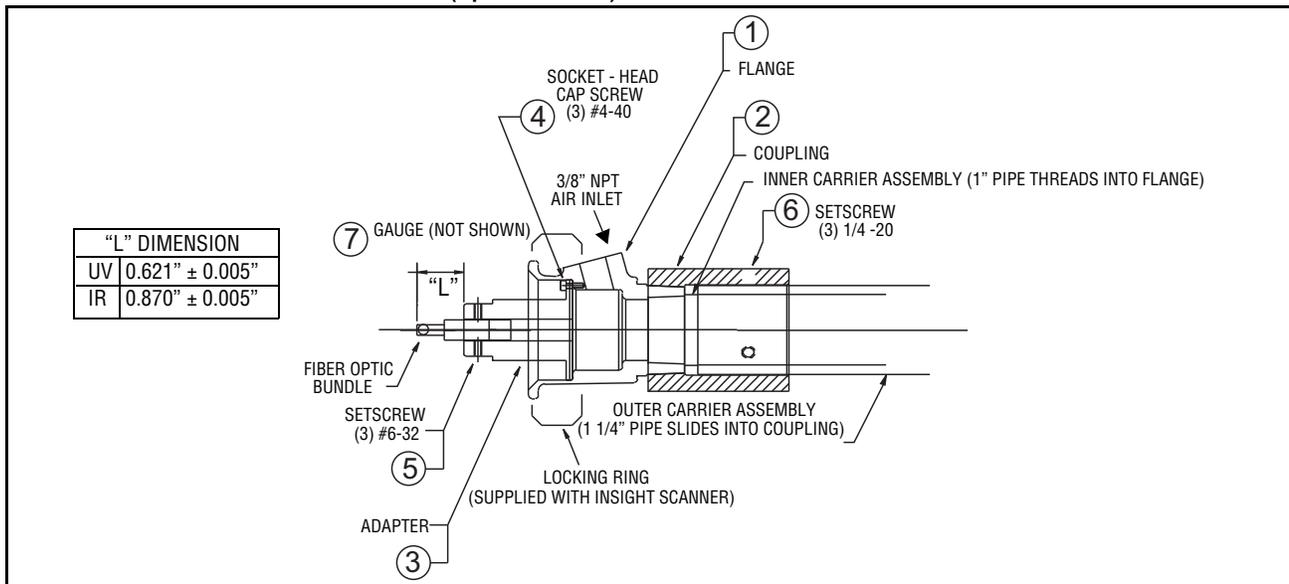
**1. Remove the Detector Electronics Flame Scanner**

**2. Inner Carrier Disassembly (refer to Fig. 1)**

*Note: When the Inner Carrier assembly is first removed from the burner, record the orientation (clock position) of the two lens mounting screws at the end of the inner carrier. When the inner carrier is finally re-inserted into the outer carrier, you want the lens mounting screws to be in their original orientation with respect to the burner.*

- a. Remove Inner Carrier assembly from the Outer Carrier assembly.
- b. If it is present, loosen the setscrew that secures the fiber optic bundle to the stainless steel inner carrier termination assembly.
- c. Remove the termination assembly from the inner carrier pipe. This part is not reused.
- d. Remove and save the two screws that secure the fiber optic lens to the end of the inner carrier assembly.
- e. Slide the fiber optics and lens out of the inner carrier.
- f. **Option 1 ONLY:** Loosen the lens assembly locking-nuts. Remove the lens assembly from the original fiber optic bundle and save.
- g. **Option 2 ONLY:** Cut 1.25" off the end of the inner carrier pipe. Retread with a 1" - 11 1/2 NPT die.

**FIGURE 2. Installation Procedure (Options 1 and 2)**





### 3. Inner Carrier and Adapter Kit Assembly (refer to Fig. 2)

- a. Install three ¼-20 setscrews (Item 6) into the 1 ¼" Coupling (Item 2).
- b. Thread the Coupling onto the Flange (Item 1) and tighten securely.
- c. Slide the Locking Ring (supplied with the InSight scanner) over the Coupling and onto the Flange.
- d. Thread the Coupling / Flange / Locknut assembly onto the Inner Carrier pipe. Tighten securely.
- e. Install three #6-32 setscrews (Item 5) into the new Adapter (Item 3).
- f. Slide the fiber optic bundle\* into the Adapter until it protrudes the appropriate length (see Figure 2). Use the gauge tube provided (Item 7).

**\*Option 1:** Use new fiber optic bundle

**\*Option 2:** Reuse original fiber optic bundle

- g. Tighten the #6-32 setscrews to secure the fiber optic bundle to the Adapter. Recheck the length of the protrusion.
- h. **Option 1 ONLY:** Install the lens assembly onto the new fiber optic bundle and secure with locking nuts.

*Note: For proper focal length, position the first locking nut so that the lens is 5/16" from the end of the fiber optics.*

- i. Slide the fiber optics and lens through the Flange and Coupling and into the Inner Carrier.

*Note: To keep dust from migrating into the InSight scanner, apply a very thin layer of silicone sealant (or RTV) to the back surface of the Adapter where it will contact the flange. See Step 3k, below.*

- j. Secure the lens and fiber optics to the end of the Inner Carrier assembly with the two screws from Step 2d.

- k. Carefully align the three holes in the Adapter with the three threaded holes in the Flange.

*Note: To avoid damage to the fiber optic bundle, do not twist the Adapter any further than necessary to align with the nearest threaded hole.*

- l. Secure the Adapter to the Flange with three #4-40 socket head screws (Item #4).

### 4. Outer Carrier Preparation

- a. Remove the Cooling air line from the ¾" connection on the Detector Electronics scanner base.
- b. Unthread and remove the Detector Electronics scanner base from the Outer Carrier pipe.

*Note: Because the end of the outer carrier assembly is permanently attached to the inside of the burner, the following step must be performed in place at the burner front.*

- c. **Option 2 ONLY:** Cut 1.00" off of the end of the outer carrier assembly. Deburr, but do not rethread.

### 5. Final Assembly

- a. Connect the cooling air line to the new flange, using a suitable ¾" to ⅜" thread reducer.

*Note: Keep enough slack in the cooling air line to allow the inner carrier to be rotated within the outer carrier. This is required when it is necessary to change the lens orientation.*

- b. Slide the Inner Carrier assembly into the Outer Carrier assembly until it seats.

*Note: Make sure the lens orientation is the same as when initially removed (Step #2). Observe the clock-position of the two lens mounting screws.*

*Note: Do not insert the inner carrier assembly into a hot furnace without first turning on the cooling air supply. Permanent damage to the fiber optics could result.*

- c. Slide the Adapter Coupling over the end of the outer carrier pipe and secure with the three ¼-20 setscrews (Item #6).



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FIREYE®  
3 Manchester Road  
Derry, New Hampshire 03038 USA  
[www.fireeye.com](http://www.fireeye.com)

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