Features

- The C9707A is capable of detecting flames from many burning fuels used in today's boilers and furnaces, making both flexibility and reliability its biggest features.
- Self-checking feature.
- Automatic gain control compensates for varying firing rates to decrease the risk of unwanted actuation caused by radiation from adjacent burners.
- Weatherproof NEMA 4 housing. Once installed, two quarter-turn fasteners allow easy accessibility to electronics.

Application

The Fireye C9707A All Fuel Scanner is used with specific Fireye controllers to provide continuous monitoring of burner flames in industrial and utility boilers and furnaces.

The C9707A uses sensors that respond to radiation in the range of 1,850 to 11,000 angstroms, making it suitable for monitoring the flames of natural gas, No. 2 oil, No. 6 oil, pulverized coal and bark. The C9707A is a versatile flame scanner that is capable of sensing flames from a variety of burning fuels, overcoming the limitations of standard scanners that are more fuel specific.

Description

The scanner consists of a two piece weatherproof cast aluminum enclosure. The cover contains the sensor and an electronics package to process the flame signals. The base has a 1 inch NPT (National Pipe Thread) tapping for mounting onto a threaded 1 inch API (American Petroleum Industry) standard sight pipe. The base also includes a 1/2 inch NPSM (American National Standard straight pipe thread for free fitting mechanical joints) tapping for an electrical connector and a 3/4 inch NPT tapping for connecting a purge/cooling air line.

Two alignment pins guide the base and cover together, which are secured with spring-loaded half-turn fasteners. A five contact spring-mounted plug electrically connects the base to the cover. A silicone rubber gasket at the housing separation plane assures a weatherproof enclosure.
of an adjacent burner. The AGC circuit can be set “on” or “off,” depending on the application and the level of extraneous radiation.

A HI/LO gain switch that represents fixed values is used for applications where IR radiation reaching the scanner may be attenuated. For example, during coal burning, coal dust can obscure the signal reaching the scanner so the HI/LO switch would be set on HI to compensate.

A UV gain potentiometer is used to adjust ultraviolet (UV) radiation signals to a level that is usable for the controller to process. The amount of UV radiation reaching the scanner can vary greatly with the distance, sighting and size of the flame. As a result, the flame signal can also vary greatly. In order for the flame controller to properly process the UV flame signal, it must fall within certain parameters. The UV Gain adjustment does this, making the system as reliable with a small flame as with a large flame, regardless of distance and sighting.

Scanner Testing (Self-Check)

Scanner testing is initiated by a test signal from the controller that causes a mechanical light blocking chopper in the scanner to block the flame radiation from reaching the sensors for one out of every 10 seconds. The system must respond to this absence of a flame signal or the controller will indicate a fault condition.

Specifications

- **Electrical.** Power for the flame scanners is provided by the supervising flame controller. The scanner uses a 5 conductor military cable connector.
- **Mechanical.** 1 inch NPT to sight pipe, 3/4 inch NPT purge air, 1/2 inch NPSM tap for electrical fitting.
- **Operating Temperature Range.** - 4°F to +185°F (-20°C to 85°C) measured at mounting hub, housing ambient air not to exceed 160°F (71°C)
- **Purge Air Required.** 10 standard cubic feet per minute at 13 inches water column over wind box or furnace pressure which ever is higher.
- **Spectral Response Range.** 1,850 to 11,000 angstroms.
- **Shipping Weight.** 7 pounds (3.2 kilograms)
- **Dimensions.** See Figure 2.
- **Instructions.** See Form 65-8065

### How to Order Scanner

<table>
<thead>
<tr>
<th>C9707A</th>
<th>C9707 Flame Scanner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1012</td>
<td>Standard Model</td>
</tr>
<tr>
<td>1023</td>
<td>Conformally Coated</td>
</tr>
</tbody>
</table>

To order Scanner base only: ORDER: DE601-104G for both models.

To order scanner head assembly only ORDER: DE701-007A for Standard Model
OR DE701-007C for Conformally coated model.

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**Figure 2**

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3 Manchester Road
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