

**CITY OF NEW YORK  
DEPARTMENT OF BUILDINGS**

Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use in accordance with the Report of the Material and Equipment Acceptance (MEA) Division.

Patricia J. Lancaster, A.I.A., Commissioner  
MEA 70-02-E

**Report of Material and Equipment Acceptance Division**

**Manufacturer - Fire Fighting Enterprises, 5 Wedgwood Court, Stevenage, Hertfordshire, SG1 4QR England.**

**Trade Name - Fire Fighting Enterprises.**

**Product - Reflective Beam Smoke Detector.**

**Pertinent Code Section(s) - New York City Building Code Reference Standard RS-17.**

**Tests - UL 268.**

**Laboratory - Underwriters Laboratories, Inc.**

**Test Report(s) - File S3417 Volume 2, Project 01NK32703 dated December 27, 2001.**

**Description - Fireray 50R and Fireray 100R detectors are reflective linear smoke detectors which comprises a transmitter and receiver contained within one enclosure.**

The detector installs to the building fabric between 1 and 2 feet from the ceiling. The transmitter emits an invisible infrared light beam that is reflected via a prism mounted directly opposite. The reflected infrared light is detected by the receiver and analyzed. The detector will operate up to ranges of 170 feet for the 50R and 330 feet for the 100R, both models have a maximum lateral detection of 300 feet either side of the beam.

Smoke in the beam path will reduce the received infrared light proportionally to the density of the smoke. The detector analyses this attenuation or obscuration of light and acts accordingly. Alarm thresholds of 25% , 35%, and 50% can be selected to suit the environment, where 25% is the most sensitive.

If the received infrared signal reduces to below the selected threshold and is present for approximately 10 seconds, the fire relay is activated.

There are two models to the operation of the fire relay. Auto reset mode will reset the fire relay 5 seconds after the received infrared signal has recovered to a level above the alarm threshold, Latching mode holds the fire relay active indefinitely after an alarm condition has occurred. To clear the latched mode, power must be removed from the detector for a minimum of 5 seconds.

If the infrared beam is obscured rapidly to a level of 90% or greater for approximately 10 seconds the fault relay is activated. This condition can be entered in a number of ways, for example, an object being placed in the beam path, transmitter failure, loss of the prism, or sudden misalignment of the detector. The fault relay will reset within 5 seconds of the condition being rectified.

The detector monitors long term degradation of signal strength caused by component aging or build up of dirt on optical surfaces. This operates by comparing the received infrared signal against a standard every 15 minutes; differences of more than 0.7dB/hour are corrected automatically.

It is important that the Fireray 50/100R detector is positioned correctly to minimize the detection time. Experiments have shown that smoke from a fire does not rise directly upwards, but fans out or mushrooms due to air currents and heat layering effects. The time to signal a fire condition depends on the location of the detector within the premises, the volume of smoke produced, construction of the roof, and ventilation arrangements.

Pursuant to "Promulgation of the Rules relating to Material and Equipment Application Procedures" dated November 5, 1992, the Bureau of Fire Prevention has no objections Letter dated April 10, 2002, F.P. Index No. 0203025A.

Recommendation - That the above reflective beam smoke detectors be accepted on conditions that all uses, configurations, arrangements and functions, application and installations comply with the provisions of New York City Building Code, specifically Subchapter 17 and Reference Standard 17-3, and the UL Listing. Further, the installation shall be in accordance with the manufacturer's recommendations and on further condition that:

1. The fire alarm signal shall be programmed to latch on and hold the fire relay active indefinitely until the condition is manually reset.
2. The trouble signal shall be self-restoring at the device. Such condition must be announced and indicated on the fire panel.

All shipments and deliveries of such equipment shall be provided with a metal tag, suitably placed, certifying that the equipment shipped or delivered is equivalent to that tested and accepted for use, as provided for in Section 27-131 of the Building Code.

Final Acceptance April 22, 2002

Examined by Mark Jacobus