

# Technical Service Note

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**Concerns:** Architect/Engineer Specifications

**Affects:** DS938Z PIR Intrusion Detector

**Dated:** January 7, 1998

*NOTE: Words/statements within square brackets [ ] may be included when appropriate, or when selection is required.*

The Intrusion Detector[s] shall operate on the Change of Thermal Energy principle using Passive Infrared Reception technology, and shall be Listed by Underwriters' Laboratories, Inc.

Each detector shall provide the detection, signal processing, alarm relay and operating power circuitry in the same enclosure, and shall provide an alarm relay actuation upon the detection of an intruder moving into and/or through its field of view, and shall be ceiling mounted at 8 to 18 feet.

Each detector shall be capable of operating from a DC power source rated within the range of 6 volts to 15 volts, and shall draw a nominal 18 milli-amps (ma) across the voltage range.

Each detector shall contain a sealed Pyroelectric sensor peaked for the detection of far-infrared energy in the 7 to 14 micron region. To guard against unwanted alarms caused by changes of infrared energy not associated with motion, the sensor shall utilize a balanced Dual-Opposed element.

Each detector shall have a mirror module with mirrored surfaces which shall focus received infrared energy onto the sensor. The sensor and module combined shall then construct a protection coverage field of view. There shall be a field selected choice of mirror modules depending on the ceiling height. The pattern shall consist of 64 zones grouped into 16 barriers, with one (1) sabotage zone looking straight down from the unit. The field of view shall be a 360° coverage pattern with four (4) multi-zone planes of protection. When mounted at 8 feet to 13 feet, the top plane shall consist of sixteen (16) sensor zones angled 13° downward from the horizontal, and spaced at 22.5° between each zone. The rated range of the top plane shall be sixty feet (60 ft.). The second plane shall be angled 22° downward from the horizontal,

and shall consist of sixteen (16) sensor zones spaced at 22.5° between each zone. The third plane shall consist of sixteen (16) sensor zones angled 35° downward from the horizontal, and spaced at 22.5° between each zone. The fourth plane shall be angled 53° downward from the horizontal, and shall consist of sixteen (16) sensor zones spaced at 22.5° between each zone. The sabotage zone shall look straight down from the detector. When mounted at 13 feet to 18 feet, the top plane shall be angled 23° downward, the second plane shall be angled 33° downward, the third plane shall be angled 45° downward, and the fourth plane shall be angled 58° downward.

A condition of alarm shall occur when a net amount of rapid thermal change detected on one (1) element finger exceeds two degrees Centigrade (2°C). Motion Analyzer II Processing circuitry must be employed to identify thermal signals having the required signature and timing for motion. To reduce the occurrence of unwanted alarms, simultaneous disturbances that occur in both element fingers shall not be cause for an alarm.

Each detector shall provide a condition of alarm using a Supervised Form "C" (NC/C/NO) Reed Relay with terminal strip terminations. In addition, an independent visual condition of alarm shall be provided by the output of three (3) red colored Light Emitting Diode (LED) indicators which shall be located around the unit to be seen throughout the pattern, and there shall be switch provisions for LED Disable when necessary.

Each detector shall provide for a cover and enclosure tamper using a Form "A" switch with separate terminals for connection to a Normally Closed Supervision/Monitor circuit.



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For accuracy in pattern placement, and to determine the amount of background thermal noise within the protected area, each detector shall provide a 3-pin connector for the connection of any standard volt-ohmmeter (VOM) of 20,000 ohms/volt or greater.

Each detector shall permit field switch selection of three (3) response sensitivity modes depending on type of coverage desired, and thermal harshness of the installation environment. Selections shall be labeled Standard for use in thermally hostile environments; Increased for faster responses of any coverage pattern in normal environments; and High for fastest response and use in thermally quiet environments.

Each detector shall provide a switch selectable [4] [32] day motion monitor to provide the detector with the ability to verify that there is a clear view of the protection area and it has not been blocked.

Each detector shall provide a solid state Trouble output which shorts to common (-) when a trouble condition occurs within the detector. The maximum current load of the Trouble output shall be 25 mA.

Electronic circuitry shall be mounted on an enclosure produced from the U.L. Component Recognized material "ABS", Grade T, Rated 94HB, and shall be connected to a separate wiring base of the same material, with two snap-in place positive-latch tabs. The cover shall be a polyethylene dome which is infrared transparent, and mounted to the enclosure with a twist- lock motion. When combined, the total package shall not exceed 5.25 inches in Diameter by 3.325 inches High and 6.5 ounces in Weight.

Each detector shall be rated to operate within the Temperature Range of [- 20° Fahrenheit to +120° Fahrenheit] [ 0° to + 50° C ].

The Passive Infrared Intrusion Detector shall be model DS938Z.