

Product Specifications

MODEL 455B ACTIVE INFRARED INTRUSION LINK SPECIFICATIONS

1.0 SPECIFICATION REQUIREMENTS

1.1 Intent

The intent of this specification is to provide a detailed description of an infrared photoelectric beam intrusion detector covering 165ft (50m) so that it may be confidently specified as part of an intrusion detection system.

1.2 Scope

The quad infrared photoelectric beam intrusion detector described in this specification shall be self-contained, serviceable in the field, and designed for ease of installation and adjustment. The sensor shall be compatible with other Southwest Microwave Sensors and Alarm Reporting Systems.

2.0 GENERAL REQUIREMENTS

2.1 Principle of Operation

The quad infrared beam set shall include one transmitter and one receiver. Each transmitter shall consist of two paired infrared LED's. Each pair, one upper and one lower, shall be double pulse modulated to reinforce range and stability. Each receiver shall have two paired photosensors that incorporate phase lock loop circuitry. Simultaneous blockage of both pairs of beams at any point, line of sight between the transmitter and receiver, shall cause a reduction in signal strength. When the signal hovers between 0.7 to 0.6 VDC, for approximately five seconds, the environmental trouble relay shall open/ close. When the signal drops below 0.52 VDC the alarm relay will open/ close.

2.2 Detection Area

2.2.1 The quad infrared beam set shall have a clear air protection distance of 165ft (50m). Maximum vertical separation between the upper and lower beam pairs at the transmitter and receiver shall be 11.5" (29 cm). Beam spread at the receiver end shall be approximately 4.75ft (1.4m) in diameter at the maximum protection distance.

2.2.2 The quad infrared beam set shall have an ultimate beam travel distance 10 times that of the specified protection distance, or 1,650ft (0.5Km).

2.3 Response Time

The quad infrared beam set shall have a response time setting adjustable by potentiometer from a minimum 50 mSec up to 700 mSec. Objects that travel faster than the set response time and break both pairs of beam will be ignored. Objects slower than the set response time and that break both pair of beams will cause an alarm.

2.4 Light Source

The light source for each beam shall be an infrared light emitting diode (LED). The wavelength shall be 8,900 angstrom.

2.5 Beam Modulation (INTELLIGENCE)

The quad infrared beam set shall be equipped with four double pulsed modulated channels. These shall be selectable by dipswitch to avoid interference from alien light sources and cross-talk conditions from the same or similar technologies. These channels shall be as follows:

	Carrier Frequency	Signal Frequency
Channel 1	13.25 kHz	356 Hz
Channel 2	15.55 kHz	417 Hz
Channel 3	20.00 kHz	500 Hz
Channel 4	25.00 kHz	625 Hz

2.6 Beam Characteristics

- 2.6.1 The transmitter shall be adaptable to long and short distance applications, using a high and low power switch for both interior and exterior applications.
- 2.6.2 The quad infrared photoelectric beam shall employ an auto-gain lock. It will set optimum intensity level and sensitivity tolerance at 40 dB. The baseline is set upon alignment, mandating adherence to proper procedure. Auto-gain lock shall engage when the receiver's cover is secured in place.
- 2.6.3 The quad infrared beam shall employ automatic gain control (AGC). It shall function to compensate for the beam's loss of intensity level by increasing the receiver's gain. Activation shall occur when deteriorating weather conditions are present and the environmental trouble is engaged.
- 2.6.4 The quad infrared beam shall have an environmental monitoring system that shall trigger a trouble output during gradual degradation of environmental conditions. The trouble output shall engage five seconds after the transmitted signal falls below the activation threshold of 0.6 to 0.7 VDC. The monitor shall be controlled by a logic circuit that prevents the trouble output from activating upon a rapid decrease in signal strength.

2.7 Tamper Warning

A normally closed switch that shall cause an open circuit shall protect the removable cover of the receiver enclosure.

2.8 Walk Test LED/Test Port

The receiver shall have a walk test LED and test ports for use in installation and maintenance of the beam set. The test ports shall allow the inserting of voltmeter leads to determine beam strength during alignment and checkout procedures. The range for proper alignment shall be 2.0 to 2.7 VDC.

2.9 Alignment Aids

The receiver shall have an audible tone generator that produces a tone that increases in pitch level as alignment is brought into focus. An LED shall be located on the receiver adjacent to the walk test LED and will emit a light when the front cover of the sensor is attached if the beam is improperly aligned.

2.9.1 The quad infrared beam shall provide an audible tone indication for walk testing upon completion of setup. A beep shall indicate blockage of the IR beam at any point between transmitter and receiver. This feature shall activate upon replacement of the receiver's cover and shall cease after approximately five minutes.

2.10 Warranty

The quad infrared photoelectric beam shall be covered by a minimum of 3 year manufacturer's warranty commencing on the date of shipment from the manufacturer.

3.0 Electrical Requirements

3.1 Power Requirements

3.1.1 The quad infrared beam shall operate on a supply voltage of 12 to 30 VDC (non-polarity) at terminals 1 and 2. Power shall be supplied to both transmitter and receiver. Power consumption shall be 390 mA for the Transmitter and 395 mA for the Receiver. This power consumption includes powering the integrated heaters on both sensors.

3.2 Alarm Signal

The quad infrared beam shall generate an alarm signal upon simultaneous blockage, at 99% or more, of both pair of beams. Objects moving at a rate slower than or equal to the set response time shall cause a SPDT (From C) contact to open/close. The alarm duration will be until the blockage is removed plus a 1 second reset. Contact rating shall be 0.5 A at 30 VAC/ DC.

4.0 Mechanical Requirements

4.1 Enclosure

The body for both the transmitter and receiver shall be of a two part black ABS plastic material to house the electronics and support the optical assembly. The body shall be mounted to a stainless steel plate. The cover shall be made of a dark red polycarbonate resin with two anti-condensation channels to resist moisture buildup on critical surfaces.

4.2 Mounting

The transmitter and the receiver shall mount to either a flat surface or a pole. One pair of pole mounting brackets shall be provided with each transmitter and receiver for a 1.6875" (4.286 cm) OD pole [typically 1.5" (3.81 cm) ID].

4.3 Aiming/Optics

The quad infrared beam transmitter and receiver shall each contain two optical assemblies having 180° horizontal and ± 10 vertical aiming adjustments. Sighting mirrors shall be located one at the top and one at the bottom of the transmitter and of the receiver for initial visual alignment.

4.4 Weight

The transmitter shall weigh 2.6 lb. (1.18 Kg), and the receiver 2.8 lb. (1.27 Kg).

4.5 External Dimensions

4.5.1 External dimensions in surface mount configuration shall be 15.21" H x 4.08" W x 3.82" D (390 x 104 x 98 mm).

4.5.2 External dimensions in pole mount configuration shall be 15.21" H x 4.08" W x 5.65" D (390 x 104 x 145 mm).

5.0 Environmental Requirements

5.1 The quad infrared photoelectric beam shall be capable of operation in an ambient temperature range of -31° F to +151° F (-35° C to +66° C).