

# MODEL 310B-33456

## EXPLOSIONPROOF MICROWAVE INTRUSION LINK



## K-BAND VOLUMETRIC DETECTION PERFORMANCE FOR FLAMMABLE OR COMBUSTIBLE ENVIRONMENTS

Model 310B-33456 offers reliable intrusion detection in the presence of flammable, combustible or easily ignitable materials. The sensor is specifically designed to operate at oil refineries, chemical and petrochemical plants, petroleum or chemical storage facilities and other sites where hazardous materials are handled, processed or stored.

Each 310B-33456 transmitter and receiver is packaged in a weather-proof, explosionproof enclosure with front access to controls and test points.

The 310B-33456 operates at K-Band (24.125Ghz) frequency, achieving performance not possible with X-Band microwave links (10.5Ghz). Because antenna beam width is approximately 7.5 degrees in both the horizontal and vertical planes, the sensor will operate within very narrow corridors.

Because K-Band frequency is 2.5 times higher than X-Band, the multipath signal generated by an intruder is also 2.5 times higher and detection of slow-moving intruders is correspondingly better. With its superb beam control and higher multipath frequency, Model 310B-33456 provides unmatched detection performance.

Phased Locked Loop (PLL) signal processing in the receiver increases detection probability by alarming on partial or complete beam interruption, increase or decrease in signal level or jamming by other transmitters. Its Automatic Gain Control (AGC) circuit permits the receiver to compensate for varying site conditions or changes in the weather.

Operating at K Band frequency, Model 310B-33456 is inherently less susceptible to interference from airport landing systems, aircraft radar or other microwave intrusion systems. Four field-selectable modulation channels with narrow band PLL filters allow several Model 310B-33456 links to be used together without mutual interference.

### KEY FEATURES

- EXPLOSIONPROOF RATED  
NEC:
  - CLASS I (DIV. 1&2, GROUPS B,C,D)
  - CLASS II (DIV. 1&2, GROUPS E,F,G)
  - CLASS IIICSA STANDARD C22.2 NO. 30  
EN 50 018 (XCEX)  
CENELEC: EEXD IIB (XCEX)  
NEMA 4  
UL STANDARD 1203
- DETECTION TO 100 M (328 FT)
- K-BAND MULTIPATH DETECTION
- UNAFFECTED BY VIBRATION, WIND, FOG, RAIN, SNOW, DUST OR TEMPERATURE EXTREMES
- PHASE LOCKED LOOP (PLL) SIGNAL PROCESSING

# MODEL 310B-33456 SPECIFICATIONS

## OPERATION

Intrusion detection, using a modulated amplitude sensitive system (not Doppler), takes place within the invisible pattern of microwave energy existing between transmitter and receiver. Changes in signal amplitude at the receiver are directly related to an object's size and density, allowing the sensor to discriminate between objects. The Model 310B-33456 will alarm on average sized humans walking, running, or crawling on hands and knees through the pattern. Field adjustments can provide alarm on larger or smaller targets, depending on specific application.

The unit's solid state electronics and antenna are mounted in an explosionproof housing which meets the ratings required for hazardous areas\*. Heavy-duty steel pole mounting brackets with horizontal and vertical adjustment are provided as standard. Optional adjustable mounting hinges are available, providing +/- 20 degree adjustment (Part #01B46384).

For detailed information on application, installation and adjustment, consult Model 310B-33456 Technical Manual.

## SPECIFICATIONS

**Equipment Supplied:** Model 310B-33456T (Transmitter), Model 310B-33456R (Receiver), pole-mounting bracket.

**Certifications:** See "Key Features" on page 1

**Frequency:** 24.125Ghz (USA) conforms to F.C.C Part 15. FCC Identifier CA68H9310B.

**Output Power:** 10 mW peak, 5mW average, square wave modulated.

**Range:** 30.5 to 100m (100 to 328ft)

**Target Size:** 35kg (77 pound) human walking, running, hands and knees crawling or jumping, Prone crawling or rolling 35kg (77 pound) human or simulated with a 30cm diameter metal sphere detected at maximum range of 100m (328 ft).

**Target Velocity:** 30mm/sec to 15m/sec (0.1ft/sec to 50ft/sec).

**Probability of Detection:** 0.99 minimum.

**Automatic Range Adjustment:** Link automatically adjusts to slow changes in path loss.

**Modulation Channels:** Four, field selectable.

**False Alarm Rate:** 1/unit/year based on signal to noise ratio.

**Operating Environment:** -40°C to +66°C (-40°F to +150°F)  
0-100% Relative Humidity.

**DC Input:** 11.5 VDC to 14 VDC at 150 mA (Tx), 40 mA (Rx).

**Alarm Output:** SPDT-Form C, 2 amps at 28 VDC.

**Tamper Switch:** SPDT-Form C, 2 amps at 28 VDC.

**Self Supervision:** Alarm on failure and remote test.

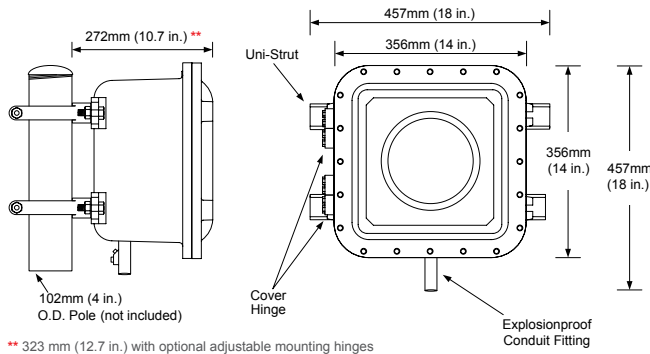
**Mounting:** Pole-mounting heavy-duty bracket with vertical and horizontal adjustment. Optional adjustable (+/- 20°) mounting hinges.

**LED Indicators:** Visible LED for alignment on receiver. Additional internal LED's at receiver for power on, alarm, jamming signal and wrong channel.

**Weight:** 21.8 kg (48 lbs) each unit (Tx, Rx).

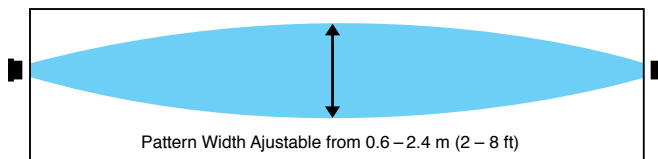
**How to Order:** Specify Model 310B-33456 Explosionproof Link. Transmitter: 310B-33456T Receiver: 310B-33456R Adjustable Mounting Hinges (Optional): 01B46384

## DIMENSIONS



## PATTERN

Detection pattern width is field adjustable from approximately 0.6 to 2.4m (2 to 8 ft). Pattern height varies in conjunction with pattern width. Pattern width adjustment allows easy adaptation to the final installation site.



\*The unit housing and brackets are suitable for non-corrosive environments at oil refineries, chemical and petrochemical plants, petroleum or chemical storage facilities, and other sites where hazardous substances are handled. Consult Southwest Microwave for further details. Specifications subject to change without notice.



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