

Southwest Microwave, Inc.
9055 S. McKerny Street
Tempe, Arizona 85284 USA
(480) 783-0201 • Fax (480) 783-0401

Product Specifications

MODEL 316-33474 ADVANCED STOP BAR CONTROL SENSOR

Purpose of document

This document is intended to provide performance specifications requirements for the MODEL 316-33474 Advanced Stop Bar Control Sensor. This specification may be copied to form a generic procurement specification.

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RANGE: 100 feet (30m) to 800 feet (244m).

BEAM DIAMETER: 2 feet to 22 feet (0.6-6.7m) depending on link length and sensitivity setting.

TARGET: 77-pound (35kg) human – walking or running.

TARGET VELOCITY: 0.1 ft/sec to 95 ft/sec (3cm/sec to 29m/sec).

FALSE ALARM RATE: 1/unit/year based on signal to noise ratio.

PROBABILITY OF DETECTION: 0.99 minimum on 77-pound (35kg) human – walking or running.

SELF SUPERVISION (Alarm on Failure): Fully self-supervised (inherent in design).

AUTOMATIC RANGE ADJUSTMENT: Receiver sensitivity automatically adjusts to slow changes in environment. AGC range 60dB.

CROSS MODULATION: When installed in accordance with following installation instructions cross modulation (interference) from adjacent links will be 25dB below primary signal.

SENSITIVITY ADJUST: Field adjustable by means of internal potentiometer.

TRANSMITTER OUTPUT POWER: +35dBm peak EIRP, square wave modulated.

CARRIER FREQUENCY: K-band (U.S.A. 24.162 GHz).

MODULATION CHANNELS: Six field-selectable modulation channels.

SIGNAL SOURCE: Mechanically tuned Gunn oscillator (Gunn diode mounted in a resonant cavity).

APPLICABLE SPECIFICATION (USA): Radiation characteristics conform to F.C.C. Rules & Regulations, Part 15.

POWER REQUIREMENTS:

Voltage:	10.5 to 60.0 VDC
Current:	12VDC: Tx @ 094mA – Rx @ 045mA
	24VDC: Tx @ 050mA – Rx @ 026mA
	48VDC: Tx @ 029mA – Rx @ 017mA
Fuses:	Transmitter and Receiver fused for 0.5 amps

ALARM INDICATION: Alarm Relay Contacts: Primary alarm indications provided by SPDT Form-C relay contacts rated 2.0 amps at 28VDC. Alarm Hold Time adjustable from 1 to 10 seconds.

Alarm LED: Secondary alarm indication provided by red LED on Receiver Board.

TAMPER SWITCH: Transmitter and Receiver: SPDT Form-C relay contacts rated 2.0 amps at 28VDC.

ALIGNMENT AND TEST AIDS:

Align Mode: Switch S4 on Receiver Board. “Align/Latch Mode” provides faster AGC action for alignment and constant alarm condition to prevent leaving link in Alignment Mode.

Wrong Channel LED: Red LED on Receiver Board lights when Transmitter and Receiver are set to different modulation channels.

Receiver “ON” LED: Red LED on Receiver circuit board indicates that power is on.

Channel Error LED: Red LED on Transmitter and Receiver circuit board indicated that no modulation channel or more than one modulation channel has been selected.

Receiver Jam LED: Red LED on Receiver circuit board indicates secondary signal present.

Transmitter "ON" LED: Red LED on Transmitter circuit board indicates that power is on.

DIAMETER EACH UNIT: 10.6 in. (27cm).

DEPTH EACH UNIT: 8.8 in. (23cm).

WEIGHT EACH UNIT: 4.5 lbs. (2.04kg).

SHIPPING WEIGHT: 18 lbs. (8.2kg), transmitter, receiver and mounting brackets.

MOUNTING: Model MB65 heavy duty, position locking, non-corroding mounting bracket. The anodized plate with stainless steel U-bolt fits a standard, 4.0-inch (101mm) O.D., mounting post. A stainless-steel swivel assembly at the center of the mounting plate allows for easy sensor mounting and alignment, while the four stabilizing bolts can be tightened to the back the sensor's baseplate to ensure the sensor maintains a rigid alignment. The swivel assembly allows for a 20-degree angle adjustment. The plate has additional holes for optional mounting using 2.5-inch (63.5mm) or 3.5-inch (89mm) U-bolts.

TEMPERATURE: -40°F to +158°F (-40°C to +70°C)

RELATIVE HUMIDITY: 0 to 100%

RFI/EMI PROTECTION: Transmitter and Receiver shall be fitted with fully EMI / RFI shielded radomes.

LIGHTNING / POWER SURGE PROTECTION: Circuit board shall contain on-board fuse and transient protection against lightning and power surges.

ALIGNMENT: Alignment voltage available. May be monitored with RM83 performance monitor or equivalent high impedance (100,000 ohm/volts) meter. Alignment voltage ranges from .5 to 5 VDC.

WIRE ACCESS: Supplied with ½" conduit entry to terminal strip area.

MODEL 316-33474

Microwave stop bar control sensors shall be Southwest Microwave Model 361-33474 or approved equal having a maximum range of 800 feet (244 m). The unit shall operate at a frequency of 24.162 GHz generated by a Gunn oscillator and must be certified by the Federal Communications Commission (FCC), USA. The devices shall be bistatic (Tx/Rx) and detect movement of aircraft, vehicles, or human traffic by sensing changes (increase and decrease) in the amplitude of the received signal. An automatic gain control (AGC) circuit shall be incorporated, which will adjust the receiver gain, as needed, for various distances from the transmitter and adjust the gain for slow changes in path loss, such as rain, snow, fog, etc. The range of the AGC circuit should be approximately 60dB. The sensor shall be fully self-supervised and will alarm if component failure will cause the link to be incapable of detection. Six field-selectable transmitter and receiver modulation channels, controlled by dipswitch, shall be available to minimize interference between adjacent units. The equipment must operate over a temperature range of -40°F to +158°F (-40°C to +70°C) and at relative humidity of up to 100%. A means will be provided to adjust the relay hold-in time between 1 and 10 seconds. The unit will also incorporate a means of latching the alarm relay into the constant alarm state, and an electronic reset circuit will be provided in the latch mode. An electronic remote test feature will be incorporated into the transmitter to allow manual remote testing. The receiver will incorporate an interference detector circuit which will be able to either cause an alarm in the presence of a jamming signal or ignore the interference and operate normally. Indicators will be provided on the receiver to indicate power, alarm, jamming signal present, channel error and wrong channel. The transmitter will have an indicator to indicate that power is on. The units will operate from a low voltage DC source (10.5-60.0 VDC) and will require 139 mA of current or less to operate the transmitter and receiver.