

Features

- Low cost
- Small and Flat Profile
- Rugged, Reliable Construction
- Low Power Consumption
- High Sensitivity
- Meet FCC Part 15 reqts.

Description

The MDU (Motion Detector Unit) is an X-Band microwave transceiver that utilizes the Doppler shift phenomenon to "sense" motion. The unit is available with either of two physically interchangeable forms; A rugged cast metal housing or a lightweight plastic housing.

The circuit features a dielectric resonator stabilized FET oscillator, which provides stable operation over a broad temperature range in either CW or low duty cycle pulse mode and a balanced mixer for enhanced sensitivity and reliability.

Applications

- Intrusion Alarms (Room, Vehicle)
- Automatic Door Openers
- Speed Measurement
- Collision Avoidance
- Traffic Control
- Presence Sensing

This document only gives a general description of the product and shall not form part of any contract.
Microwave Solutions pursue a policy of continuous product improvement and reserve the right from time to time to amend the specifications of products.

MDU1020 Series
Operation

The basic principle of operation consists of detecting the frequency shift between a transmitted and a received signal reflected back from a moving object within the field of view of the unit.

The unit produces a low level output signal which can be amplified and processed to provide an audible or visual alarm signal and employs low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

Electrical Characteristics
Transmitter

Frequency : see table
 Frequency Setting Accuracy : 3MHz
 Power Output (Min.) : 13dBm EIRP
 Operating Voltage : +5V \pm 0.25V
 Operating Current (CW) : 60mA max.
 : 40mA typ.
 Harmonic Emissions : < -7dBm

Pulse Mode Operation

Average Current (5% DC) : 2mA typ.
 Pulse Width (Min.) : 5 μ Sec
 Duty Cycle (Min.) : 1%

Receiver

Sensitivity (10dB S/N ratio) : -86dBm
 Noise : 10 μ V
 (Both in 3Hz to 80Hz bandwidth)

Antenna

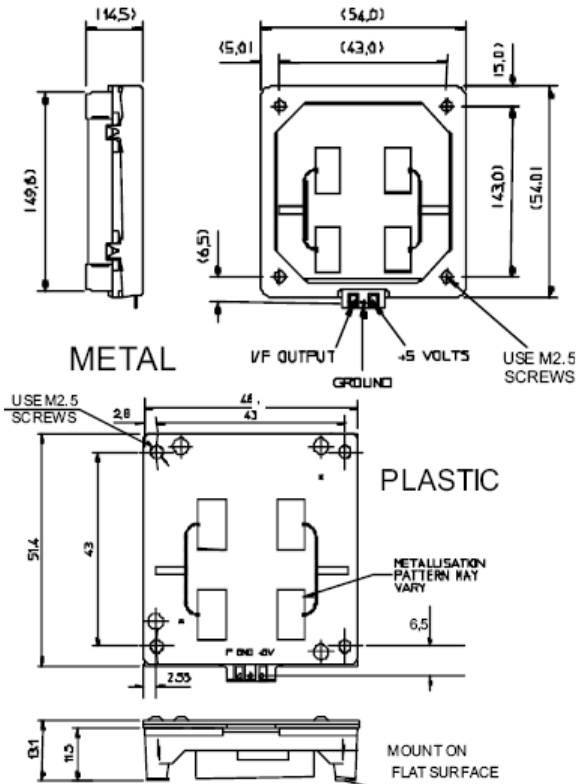
Gain : 8dBi
 -3dB Beamwidth
 E Plane : 72 $^{\circ}$
 H Plane : 36 $^{\circ}$

Mechanical Characteristics

Weight : see table
 Tab Connections : 0.1" spacing

Environmental Characteristics

Power/Temp. Coefficient
 (over operating temp. range) : 3dB
 Frequency/Temp. Coefficient
 (over operating temp. range) : 6.5MHz
 Operating Temperature : -10 $^{\circ}$ C to +55 $^{\circ}$ C
 Storage Temperature : -30 $^{\circ}$ C to +70 $^{\circ}$ C

Outline Drawings


NOTES Detection range is dependent on size and reflectivity of target and S/N ratio
 Doppler shift at 10.687GHz is 31Hz/m.p.h.
 Unit functions over -30 $^{\circ}$ C to +70 $^{\circ}$ C but harmonics may exceed specified levels.

Model	Application	Order Code	Frequency	Weight	Comments
MDU1020	USA, Canada etc.	C900505 C900503 C900506	10.515GHz 10.525Ghz 10.535GHz	80 grams	USA FCC Part 15 Indoors Metal Housing
MDU1020	USA, Canada etc.	C900605 C900603 C900606	10.515GHz 10.525Ghz 10.535GHz	15 grams	USA FCC Part 15 Indoors Plastic Housing