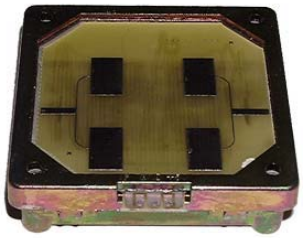
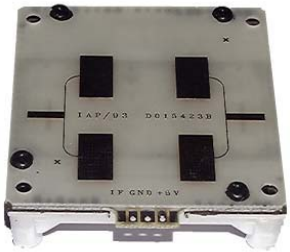
PLANAR TRANSCEIVERS

Fixed Frequency

MDU1020 Series





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

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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 ±0.25V
Operating Current (CW)	:	60mA max.
	:	40mA typ.
Harmonic Emissions	:	< -7dBm

Pulse Mode Operation

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

Receiver

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

Antenna

Gain	:	8dBi
-3dB Beamwidth		
E Plane	:	72º
H Plane	:	36º

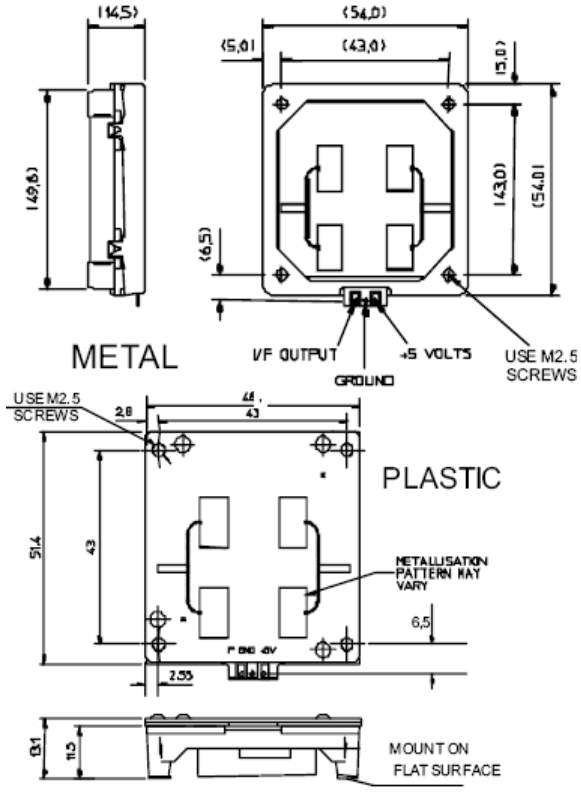
Mechanical Characteristics

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	:	-10ºC to +55ºC
Storage Temperature	:	-30ºC to +70ºC

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 -30ºC to +70ºC 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