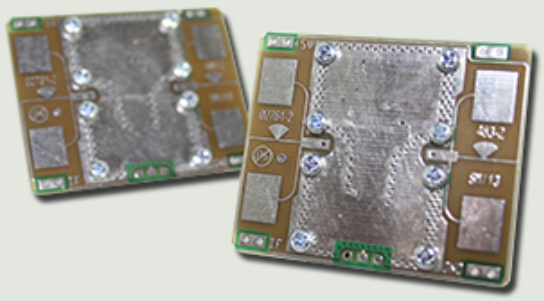
X-Band Doppler Motion Detector Units
Model Numbers MDU2750



Key Features

- Low Cost
- High Sensitivity
- High Stability
- Patch Antenna
- Small and Flat Profile
- Rugged, reliable construction
- Low Power consumption
- RoHS compliant
- Meets EN 300 440 v1.6.1 & FCC 15.245

Applications

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

The Microwave Solutions MDU2750 Motion Detector Unit is an X-Band microwave transceiver that utilises the Doppler shift phenomenon to "sense" motion.

The unit, contained in a cast metal housing, features a dielectric resonator stabilised 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.

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.

Available Modules

Model	Country	Frequency	Comments	Order Code
MDU 2750	UK	10.587 GHz	Meets RE Directive	**C920101**
MDU 2750	Belgium, Holland, Italy	10.525 GHz	Meets RE Directive	**C920102**
MDU2750	USA	10.525 GHz	FCC Grant ROO-MDU2750	**C920102**

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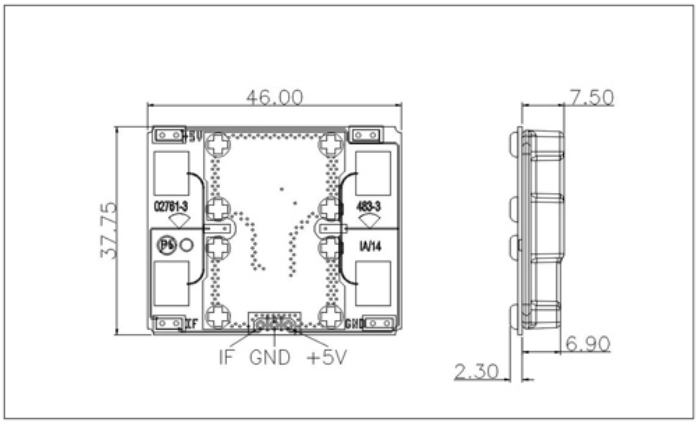


Mechanical Characteristics

Weight	16 g
Tab Connections	0.1" spacing
Metallisation	Sn+Ni+Cu
	JEDEC JESD97 (e2)

Environmental Characteristics

RoHS Compliant	
Power/Temp. Coefficient (over operating temp. range)	3 dB
Frequency/Temp. Coefficient (over operating temp. range)	5 MHz
Operating Temperature	-20° C to +55° C
Storage Temperature	-40° C to +80° C

Electrical Characteristics

Transmitter

Frequency	See table over
Frequency Setting Accuracy	3 MHz
Power Output (Min.)	10 dBm EIRP
Operating Voltage	+5 V ± 0.25 V
Operating Current (CW)	60mA (max)
	45mA (typ)
Harmonic Emissions	<-30dBm

Pulse Mode Operation

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

Receiver (Bandwidth DC - ~3KHz)

Sensitivity (for a 10 dB S/N ratio)	-86 dBm
Noise (measured in a 3Hz to 80Hz bandwidth)	< 10 µV

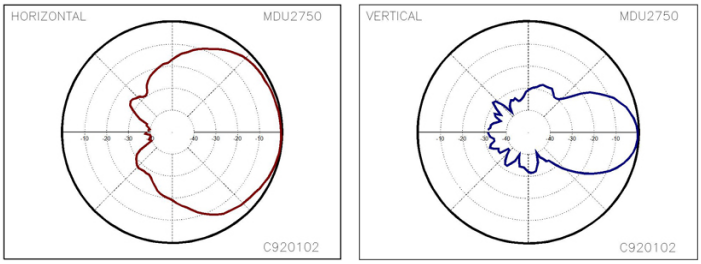
Antenna : standard

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

NOTES Detection range is dependent on size and reflectivity of target and S/N ratio. Doppler shift at 10.525GHz is 70 Hz per m/s target velocity.

Unit functions over - 30° C to +70° C, but performance may be degraded above +55° C

Coverage Pattern



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