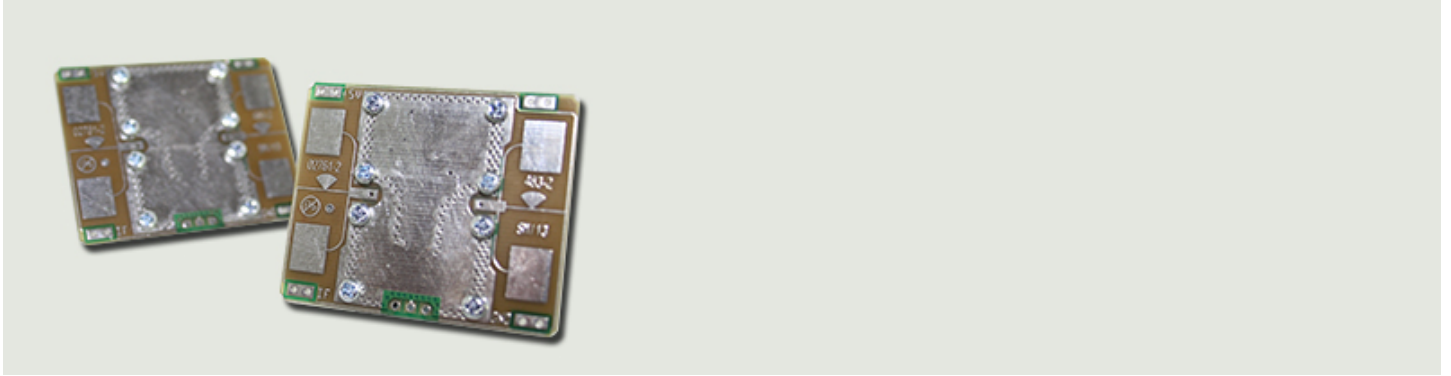


X-Band Doppler Motion Detector Units

Model Numbers MDU2750L



Key Features

- Low Current
- Low Cost
- High Sensitivity
- High Stability
- Patch Antenna
- Small and Flat Profile
- Rugged, reliable construction
- 3V and 5V versions available
- RoHS compliant
- Meets EN 300 440 & FCC 15.245

Applications

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

The Microwave Solutions MDU2750L Motion Detector Unit is a low power X-Band microwave transceiver that utilises the Doppler shift phenomenon to "sense" motion. The reduced current consumption enables the use of this module in battery powered applications (with suitable duty cycle management)

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.

This module family is available with either a +3V or +5V supply voltage.

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.

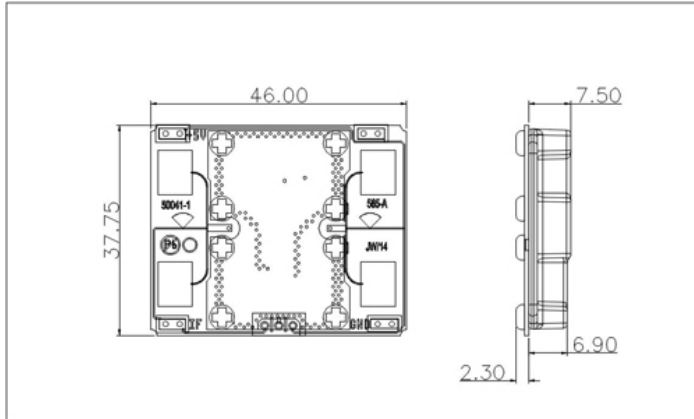
The unit produces a low level output signal which can be amplified and processed to provide an audible or visual alarm signal and employs low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

Available Modules

Model	Country	Frequency	Comments	Order Code
MDU 2750L	UK	10.587 GHz (5V)	Tested to EN 300 440	C920201
MDU 2750L	Belgium, Holland, Italy	10.525 GHz (5V)	Tested to EN 300 440	C920202
MDU2750L	USA	10.525 GHz (5V)	Tested to FCC 15.245 outdoor	C920202
MDU 2750L	UK	10.587 GHz (3V)	Meets EN 300 440	C923201
MDU 2750L	Belgium, Holland, Italy	10.525 GHz (3V)	Meets EN 300 440	C923202
MDU2750L	USA	10.525 GHz (3V)	Meets FCC 15.245 outdoor	C923202

X-Band Doppler Motion Detector Units

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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 (min)
	13dBm EIRP (max)
Operating Voltage	+5 V ± 0.25 V (C920xxx)
Operating Voltage	+3 V ± 0.15 V (C923xxx)
Operating Current (CW)	25mA (max)
	22mA (typ)
Harmonic Emissions	<-30dBm

Pulse Mode Operation

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

Receiver (Bandwidth DC - ~3KHz)

Sensitivity (for a 10 dB S/N ratio)	-83 dBm (C920xxx)
	-82dBm (C923xxx)
Noise (measured in a 3Hz - 80Hz bandwidth)	< 10 µV

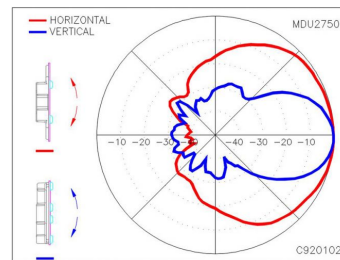
Antenna : standard

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

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



MICROWAVE SOLUTIONS LTD.

Hamilton House,
111 Marlowes, Hemel Hempstead, Herts., HP1 1BB,
UNITED KINGDOM

T : +44 (0)870 122 3346

F : +44 (0)208 929 0039

W : www.microwave-solutions.com

E : sales@microwave-solutions.com