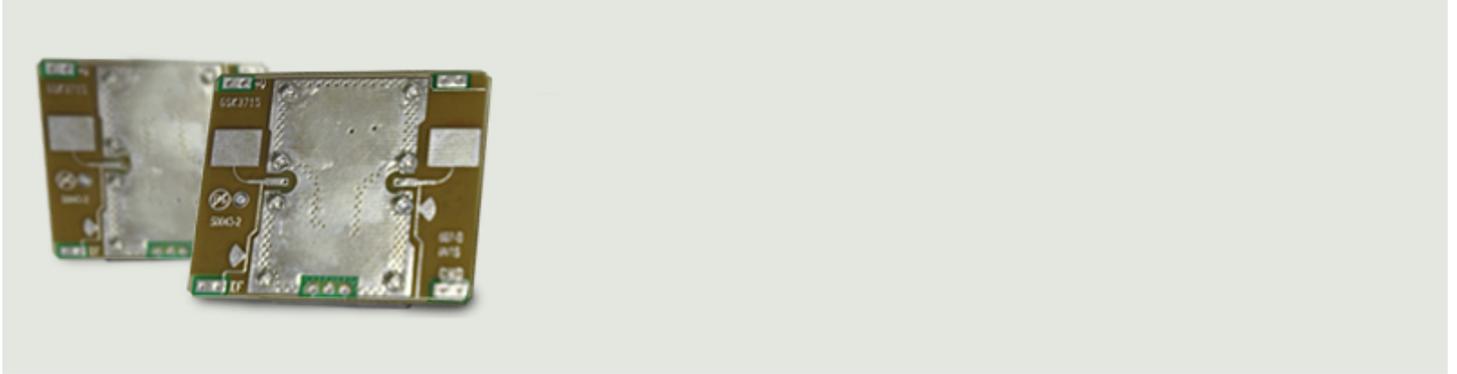


## X-Band Doppler Motion Detector Units

### Model Numbers MDU2750LCM (Ceiling Mount)



#### Key Features

- Low Current
- Low Cost
- High Sensitivity
- High Stability
- Ceiling Mount
- Small and Flat Profile
- Rugged, reliable construction
- 3V and 5V versions available
- 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 MDU2750LCM 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). These modules are optimised for Ceiling Mount applications.

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.

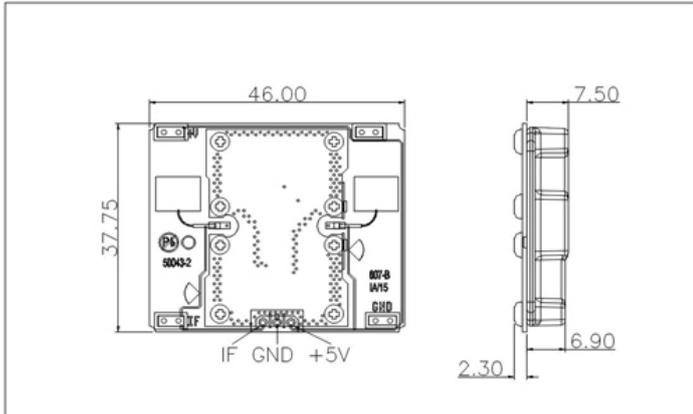
The unit produces a low level output signal which can be amplified and processed to provide an audible or visual alarm signal and employs low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

#### Available Modules

Model	Country	Frequency	Comments	Order Code
MDU 2750LCM	UK	10.587 GHz (5V)	Meets RE Directive	C920209
MDU 2750LCM	Belgium, Holland, Italy	10.525 GHz (5V)	Meets RE Directive	C920210
MDU2750LCM	USA	10.525 GHz (5V)	FCC Grant ROO-MDU2750L	C920210
MDU 2750LCM	UK	10.587 GHz (3V)	Meets RE Directive	C923209
MDU 2750LCM	Belgium, Holland, Italy	10.525 GHz (3V)	Meets RE Directive	C923210
MDU2750LCM	USA	10.525 GHz (3V)	Meets FCC 15.245 outdoor	C923210

# X-Band Doppler Motion Detector Units

## Model Numbers MDU2750LCM (Ceiling Mount)



### 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.)	9 dBm EIRP (min)
	12dBm 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)	-77 dBm (C920xxx)
	-76dBm (C923xxx)
Noise (measured in a 3Hz - 80Hz bandwidth)	< 10 µV

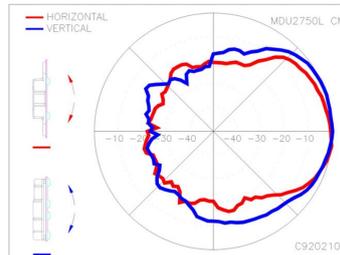
#### Antenna : standard

Gain	5 dBi
-3 dB Beamwidth	72° (E Plane)
	72° (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



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