X-Band Doppler Motion Detector Units Model Numbers MDU1100





Key Features

- Low Cost
- High Sensitivity
- Patch Antenna
- Wall & Ceiling mount versions
- Small and Flat Profile
- Rugged, reliable construction
- Low Power consumption
- RoHS compliant
- Tested to EN 300 440 v1.3.1

Applications

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

The Microwave Solutions MDU1100 Motion Detector Unit is an X-Band microwave transceiver that utilises the Doppler shift phenomenon to "sense" motion.

The unit, contained in a lightweight plastic 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.

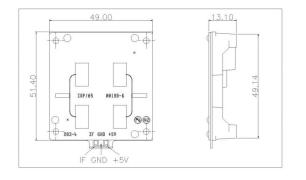
The unit produces a low level output signal which can be amplified and processed to provide an audible or visual alarm signal and employs low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

The MDU1100 series transceivers are available with a range of integral antennas to provide various coverage patterns including 90° corner mount or 360° ceiling mount.

Available Modules

Model	Country	Frequency	Comments	Order Code
MDU 1100	UK	10.587 GHz	Meet R&TTE Directive	C900881 *
	UK Ceiling Mount	10.587 GHz	Meet R&TTE Directive	C900809
MDU 1100	Belgium, Holland, Italy	10.525 GHz	Meet R&TTE Directive	C900802
	Ceiling mount version	10.525 GHz	Meet R&TTE Directive	C900810
MDU 1100	Italy, France	9.90 GHz	Meet R&TTE Directive	C900807

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See table over

13 dBm EIRP

+5 V ± 0.25 V

60mA (max) 40mA (typ)

<-30dBm

2 mA typ.

5 µsec. *

-86 dBm

< 10 µV

8 dBi

72°

36°

5 dBi

3 MHz

Electrical Characteristics

Frequency Setting Accuracy

Power Output (Min.) Operating Voltage

Operating Current (CW)

Harmonic Emissions

Pulse Mode Operation
Average Current (5% DC)

Pulse Width (Min.)

Duty Cycle (Min)

Antenna : standard

-3 dB Beamwidth

Antenna : ceiling mount

Noise

Gain

E Plane

H Plane

Gain

* C900881 has 50 µsec min. pulse width

Receiver (3Hz to 80Hz bandwidth) Sensitivity (10 dB S/N ratio)

Transmitter Frequency

Mechanical Characteristics

Weight	15 g
Tab Connections	0.1" spacing
Metallisation	Sn+Ni+Cu
	JEDEC JESD97 (e2)

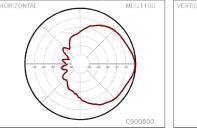
Environmental Characteristics

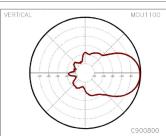
RoHS Compliant	
Power/Temp. Coefficient (over operating temp. range)	3 dB
Frequency/Temp. Coefficient (over operating temp. range)	15 MHz
Operating Temperature	-10° C to +55° C
Storage Temperature	-30° C to +70° C

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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COVERAGE PATTERN: circle on floor of same radius as mounting height above floor.

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