

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.

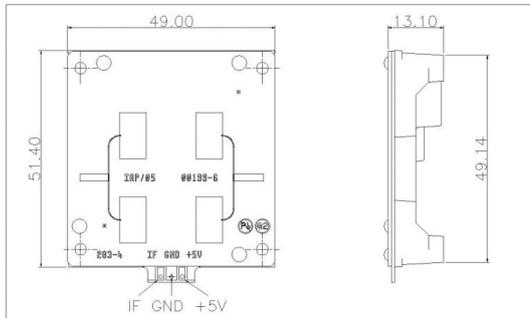
The MDU1100 series transceivers are available with a range of integral antennas to provide various coverage patterns including 90° corner mount or 360° ceiling mount.

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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Electrical Characteristics

Transmitter

Frequency	See table over
Frequency Setting Accuracy	3 MHz
Power Output (Min.)	13 dBm EIRP
Operating Voltage	+5 V ± 0.25 V
Operating Current (CW)	60mA (max) 40mA (typ)
Harmonic Emissions	<-30dBm

Pulse Mode Operation

Average Current (5% DC)	2 mA typ.
Pulse Width (Min.)	5 µsec. *
Duty Cycle (Min)	1%
* C900881 has 50 µsec min. pulse width	

Receiver (3Hz to 80Hz bandwidth)

Sensitivity (10 dB S/N ratio)	-86 dBm
Noise	< 10 µV

Antenna : standard

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

Antenna : ceiling mount

Gain	5 dBi
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COVERAGE PATTERN: circle on floor of same radius as mounting height above floor.

Mechanical Characteristics

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

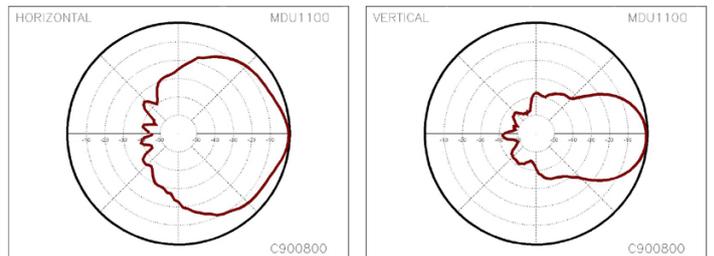
Environmental Characteristics

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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