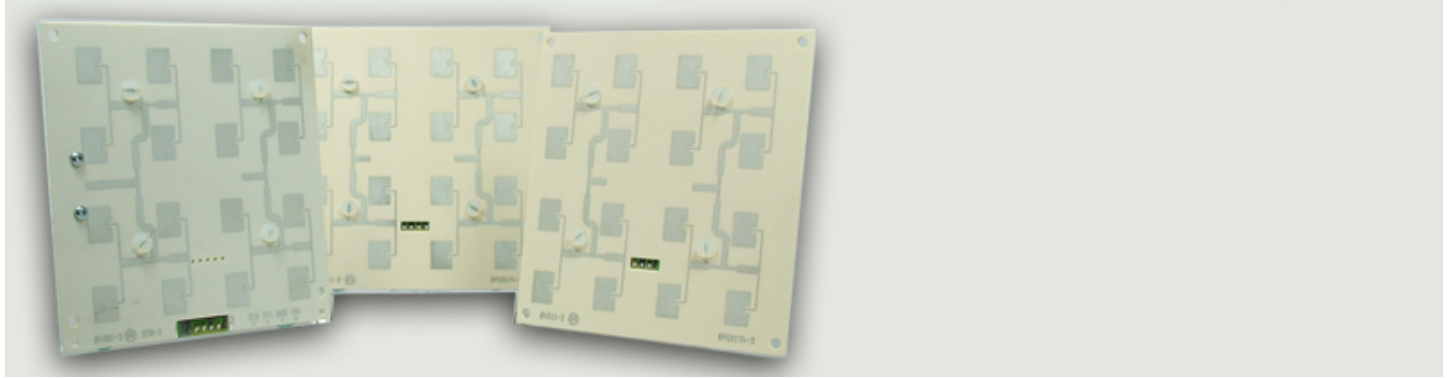


# X-Band Doppler Motion Detector Units

## Model Numbers MDU4210 Tuneable



### Key Features

- Low Cost
- High Sensitivity
- Electronically tuneable
- Patch Antenna
- 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 MDU4210 Motion Detector Unit is an X-Band microwave transceiver that utilises the Doppler shift phenomenon to "sense" motion. The unit is supplied with an integral high gain/narrow beam antenna array making it suitable for long range focussed detection.

The unit, contained in a lightweight plastic housing, features an electronically tuneable 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. The unit employs low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

### 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 tuneable transceiver incorporates provision for electronically tuning the unit over a frequency range of approximately 5MHz at room temperature. This enables frequency modulation to be applied to the transceiver or fsk ranging to be performed.

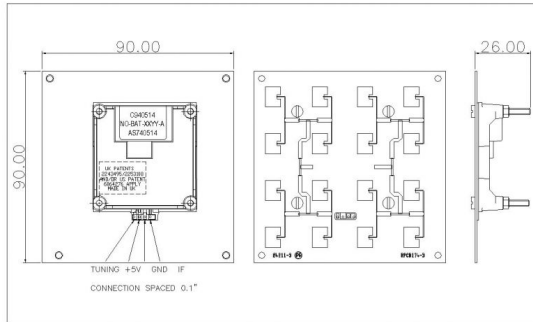
The following patents (and others) apply to the MDU4210 family of products: US Patents 6,064,276, 5,262,783, 5,208,567

### Available Modules

Model	Country	Frequency	Comments	Order Code
MDU 4210	Belgium, Canada,	10.525 GHz	Meets R&TTE Directive	C941802
	Holland, Italy USA etc	10.525GHz		
	UK	10.587 GHz	Meets R&TTE Directive	C941801

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### 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)
	40mA (typ)
Harmonic Emissions	<-30dBm
Electronic Tuning Range	> -3MHz min.
(0v to +5v on tuning input)	>-4MHz typ.

#### Pulse Mode Operation

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

#### Receiver 3Hz to 80Hz bandwidth

Sensitivity (10 dB S/N ratio)	-92 dBm
Noise	< 10 µV

#### Antenna : standard

Gain	14 dBi
-3 dB Beamwidth	
E Plane	36°
H Plane	18°

### Mechanical Characteristics

Weight	25 g
Tab Connections	0.1" spacing
Metallisation	Sn+Ni+Cu
	JEDEC JESD97 (e2)

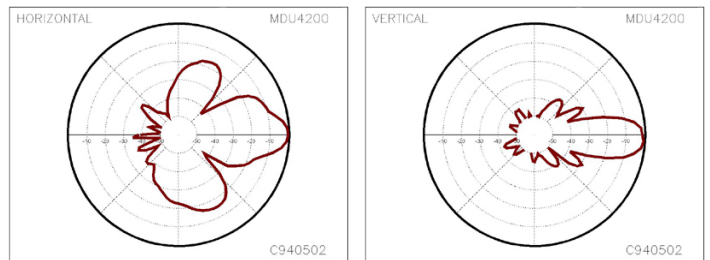
### Environmental Characteristics

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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