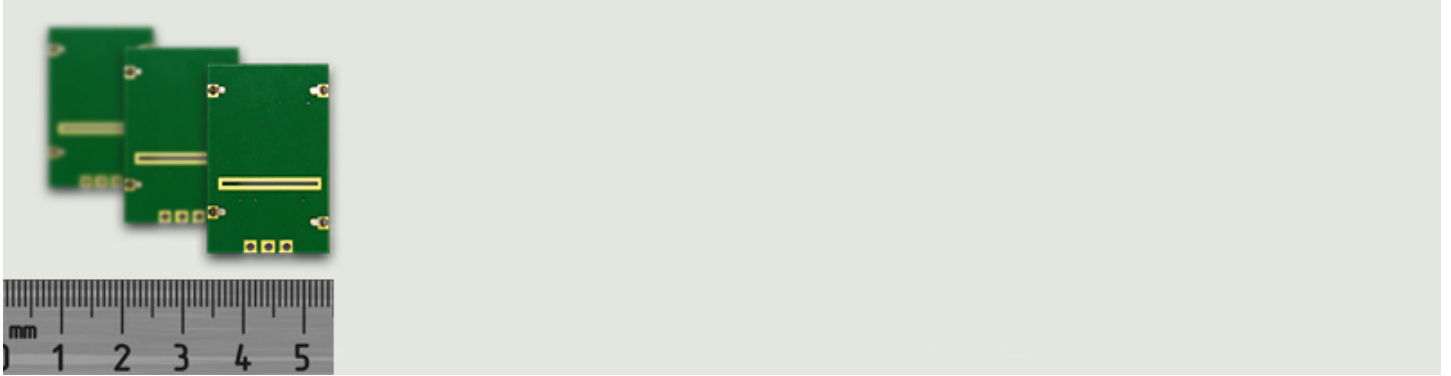


## X-Band Doppler Motion Detector Units

### Model Numbers MDU2000



#### Key Features

- Low Cost
- High Sensitivity
- Patch Antenna
- White mask for lighting apps.
- Small and Flat Profile
- Rugged, reliable construction
- Low Power consumption
- 3V and 5V versions available
- RoHS compliant
- Tested to EN 300 440 v1.3.1: 2009

#### Applications

- Intrusion Alarms (Room, Vehicle)
- Automatic Door Openers
- Speed Measurement
- Presence Sensing

The Microwave Solutions MDU2000 Motion Detector Unit is a miniature X-Band microwave transceiver that utilises the Doppler shift phenomenon to "sense" motion.

The unit, housed in a metal can, features a dielectric resonator stabilised oscillator, which provides stable operation over a broad temperature range in either CW or low duty cycle pulse mode and an integrated homodyne receiver for enhanced sensitivity and reliability.

This module family is available with either a +5v or +3v 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.

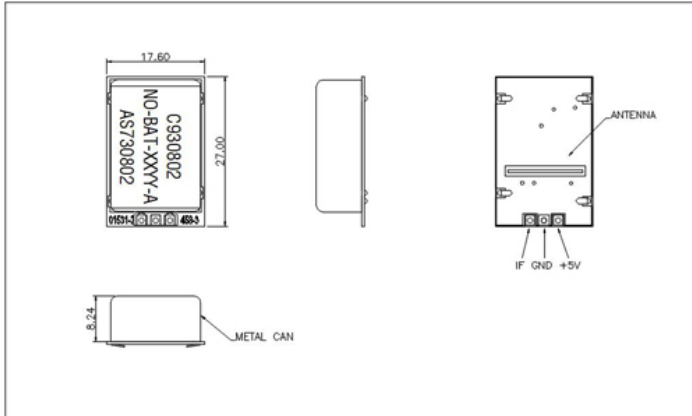
The unit produces a low level output signal which can be amplified and processed to provide an audible or visual alarm signal and employs low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

#### Available Modules

Model	Country	Frequency	Comments	Order Code
MDU 2000	UK	10.587 GHz (5V)	Meets R&TTE Directive	<b>C930801</b>
	Belgium, Holland, Italy	10.525 GHz (5V)	Meets R&TTE Directive	<b>C930802</b>
	USA	10.525GHz (5V)	FCC Grant ROO-MDU2000	<b>C930802</b>
MDU 2000	UK	10.587 GHz (3V)	Meets R&TTE Directive	<b>C933801</b>
	Belgium, Holland, Italy	10.525 GHz (3V)	Meets R&TTE Directive	<b>C933802</b>

# X-Band Doppler Motion Detector Units

## Model Numbers MDU2000



### Mechanical Characteristics

Weight	3 g
Tab Connections	0.1" spacing
Metallisation	Gold Flash
	JEDEC JESD97 (e4)

### Environmental Characteristics

RoHS Compliant	
Power/Temp. Coefficient (over operating temp. range)	3 dB
Frequency/Temp. Coefficient (over operating temp. range)	6.5 MHz
Operating Temperature	-10° C to +55° C
Storage Temperature	-30° C to +70° C

### Electrical Characteristics

#### Transmitter

Frequency	See table over
Frequency Setting Accuracy	3 MHz
Power Output (Min.)	5 dBm EIRP
Operating Voltage	+5 V $\pm$ 0.25 V (C930xxx) +3 V $\pm$ 0.15 V (C933xxx)
Operating Current (CW)	25mA (max) 20mA (typ)
Harmonic Emissions	<-30dBm

#### Pulse Mode Operation

Average Current (5% DC)	1 mA typ.
Pulse Width (Min.)	5 $\mu$ secs
Duty Cycle (Min)	1%

#### Receiver (Bandwidth 1Hz - ~3KHz)

Sensitivity (for a 10 dB S/N ratio)	-84 dBm
Noise (measured in a 3Hz to 80Hz bandwidth)	< 30 $\mu$ V

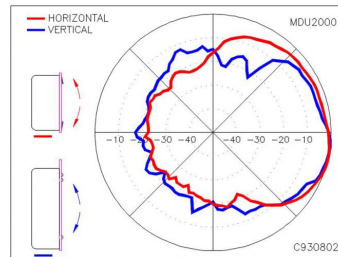
#### Antenna : standard

Gain	5 dBi
-3 dB Beamwidth	
E Plane	50°
H Plane	60°

**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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