

K-Band Doppler Motion Detector Units

Model Numbers MDU2400/2410



Key Features

- Low Cost
- High Sensitivity
- Patch Antenna
- Wall & Ceiling mount versions
- Small and Flat Profile
- Rugged, reliable construction
- Low Power consumption
- RoHS compliant

Applications

- Intrusion Alarms (Room, Vehicle)
- Door Openers
- Energy Management
- Home Automation
- Presence Sensing

The Microwave Solutions MDU2400/10 Motion Detector Unit is a K-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.

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.

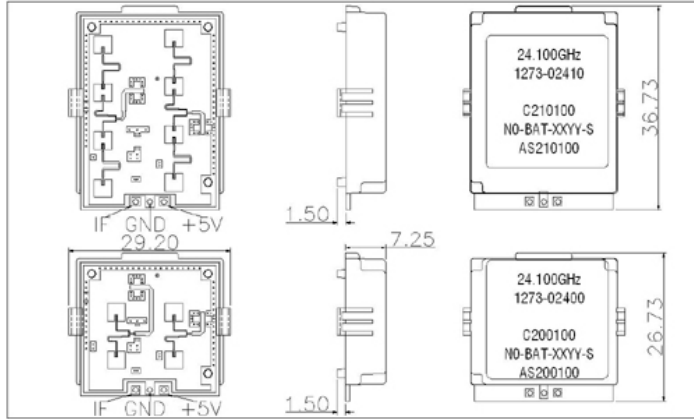
The unit produces a low level output signal which can be amplified and processed to provide an audible or visual alarm signal and employs low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

Available Modules

Model	Country	Frequency	Comments	Order Code
MDU 2400	General use	24.1 GHz	Meets EN 300 440	C200100
	UK	24.2 GHz	Meets EN 300 440	C200200
MDU 2410	General use	24.1 GHz	Meets EN 300 440	C210100
	UK	24.2 GHz	Meets EN 300 440	C210200

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Mechanical Characteristics

Weight	10 g
Tab Connections	0.1" spacing
Metallisation	Gold Flash
	JEDEC JESD97 (e4)

Environmental Characteristics

RoHS Compliant	
Power/Temp. Coefficient (over operating temp. range)	TBD dB
Frequency/Temp. Coefficient (over operating temp. range)	-25 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.)	13 dBm EIRP (MDU2400)
	15 dBm EIRP (MDU2410)
Operating Voltage	+5 V ± 0.25 V
Operating Current (CW)	60mA (max)
	50mA (typ)
Harmonic Emissions	<-10dBm

Pulse Mode Operation

Average Current (5% DC)	3 mA typ.
Pulse Width / Duty Cycle (Min.)	5 µsecs / 1%

Receiver 3Hz to 80Hz bandwidth

Sensitivity (10 dB S/N ratio)	-73 dBm (MDU2400)
	-75dBm (MDU2410)
Noise	< 10 µV

Antenna : MDU2400

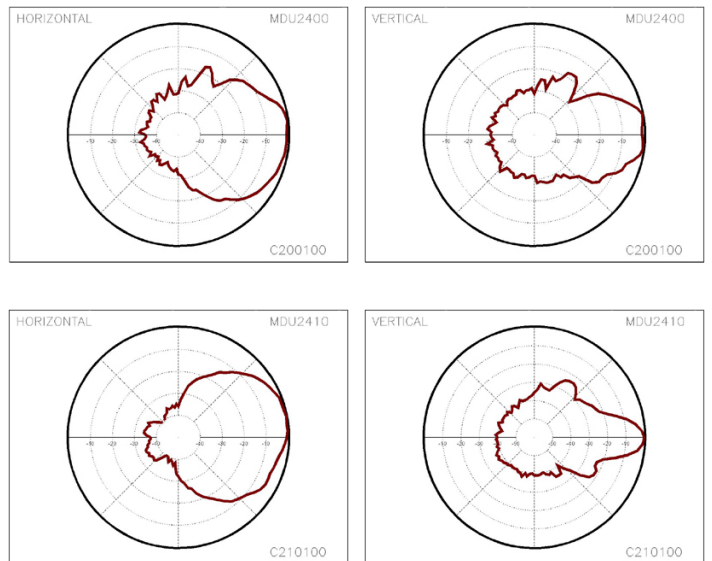
Gain	8 dBi
-3 dB Beamwidth	
E Plane / H Plane	72° / 36°

Antenna : MDU2410

Gain	10 dBi
-3 dB Beamwidth	
E Plane / H Plane	72° / 18°

NOTES Detection range is dependent on size and reflectivity of target and S/N ratio. Doppler shift at 24.2GHz is 160 Hz per m/s target velocity.

Coverage Pattern



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