# X-Band Doppler Motion Detector Units
## Model Numbers MDU1100/20/30

### 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

### 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 and 360° ceiling mount.

### Available Modules

| Model | Country | Frequency | Comments | Order Code |
|---|---|---|---|---|
| MDU 1100 | UK | 10.587 GHz | Tested to EN 300 440 | C900801 |
| | UK Indoor | 10.687 GHz | Tested to EN 300 440 | C900800 |
| | UK Ceiling Mount | 10.687 GHz | Tested to EN 300 440 | C900808 |
| MDU 1120 | Belgium, Holland, Italy | 10.525 GHz | Tested to EN 300 440 | C900802 |
| | Ceiling mount version | 10.525 GHz | Tested to EN 300 440 | C900810 |
| MDU 1130 | Italy, France | 9.90 GHz | Tested to EN 300 440 | C900807 |

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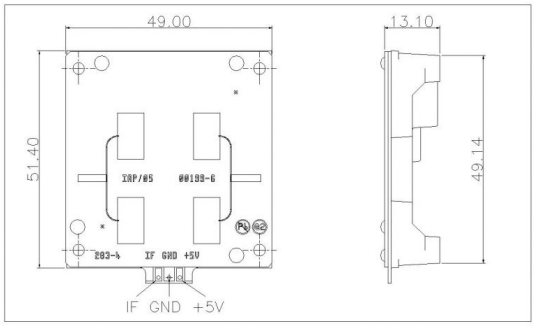



## Mechanical Characteristics

| | |
|---|---|
| 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) | 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.) | 13 dBm EIRP |
| Operating Voltage | +5 V ±0.25 V |
| Operating Current (CW) | 60 mA max. |
| | 45 mA typ. |
| Harmonic Emissions | < -30 dBm |

### Pulse Mode Operation

| | |
|---|---|
| Average Current (5% DC) | 2 mA typ. |
| Pulse Width (Min.) | 5 &#956 |
| Duty Cycle (Min.) | 1% |

### Receiver (3Hz to 80Hz bandwidth)

| | |
|---|---|
| Sensitivity (10 dB S/N ratio) | -86 dBm |
| Noise | < 10 micro V |

### Antenna : standard

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

### Antenna : ceiling mount

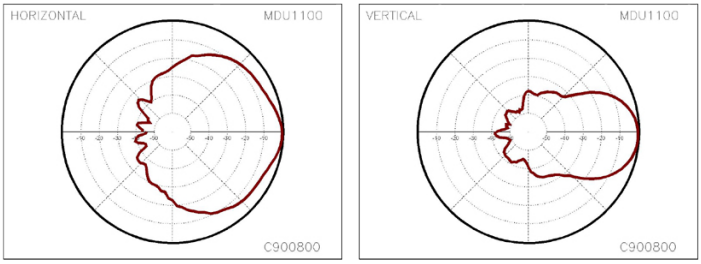
| | |
|---|---|
| Gain | 5 dBi |

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

**NOTES** Detection range is dependent on size and reflectivity of target and S/N ratio. Doppler shift at 10.687GHz 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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