WAVEGUIDE TRANSCEIVERS

Fixed Frequency

MDU19xx Series

Features

- Low cost
- Standard Waveguide output
- Rugged, Reliable Construction
- Low Power Consumption
- High Sensitivity

Description

The MDU (Motion Detector Unit) is an X-Band microwave transceiver that utilizes the Doppler shift phenomenon to "sense" motion.

The unit, contained in a rugged diecast housing, features a dielectric resonator stabilized FET oscillator, which provides stable operation over a broad temperature range in either CW or low duty cycle pulse mode. The unit is available as a “transmit only” unit, with a single mixer or with a pair of orthogonal mixers for direction sensing applications.

Applications

- Traffic Control
- Automatic Door Openers
- Speed Measurement
- Direction of motion detection
- Energy Management Systems
- Sports Radar Guns

This document only gives a general description of the product and shall not form part of any contract.
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Microsemi
Microwave Products
75 Technology Drive, Lowell, MA. 01851, 978-442-5600, Fax: 978-937-3748

MDU19xx Series

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 MDU1900 unit produces two low level output signals which can be amplified and processed to provide an audible or visual alarm. These signals are nominally orthogonal in phase and the direction of the detected target can be ascertained from the lead/lag between the two outputs

The MDU1910 unit produces a single low level output signal which can be amplified and processed to provide an audible or visual alarm.

The MST1950 unit includes the transmitter only and can be used with a separate receiver as one end of a microwave link.

All the units employ low cost surface mount manufacturing techniques which are field proven as being rugged

Electrical Characteristics

Transmitter

Operating Voltage	:	+5V ±0.25V
Operating Current (CW)	:	60mA max.
	:	50mA typ.
Frequency	:	see table
Frequency Setting Accuracy	:	3MHz
Frequency Pushing (Max)	:	3MHz/V
Power Output		
MDU1900/MDU1910	:	+7dBm (Typ)
MDU1900/MDU1910	:	+10dBm (Typ)
Power Variation	:	3dB/v (Max)
Harmonic Emissions	:	< -7dBm

Pulse Mode Operation

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

Receiver

Output Signal*	: >1000µV p-p Noise
	: <150µV p-p

(Both in 3Hz to 80Hz bandwidth)
* With standard test system

Output Connection

Waveguide	:WG16/WR90/R100
Waveguide Flange	:UBR100

Mechanical Characteristics

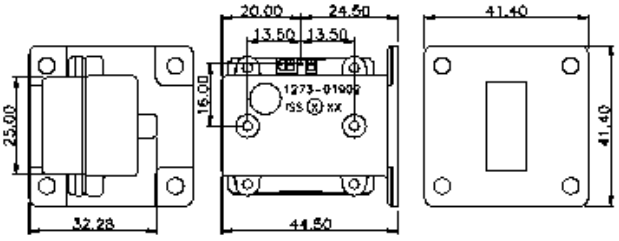
Weight	:	85 grams
Tab Connections	:	0.1” spacing

Environmental Characteristics

Power Drift		
(over operating temp. range)	:	3dB
Frequency Drift		
(over operating temp. range)	:	10MHz Operating
Temperature	:	-10ºC to +55ºC Storage
Temperature	:	-30ºC to +70ºC

NOTES Detection range is dependent on size and reflectivity of target and S/N ratio Doppler shift at 10.587GHz is 31Hz/m.p.h. Unit functions over -30ºC to +70ºC with reduced performance

Outline Drawing



Model	Application	Order Code	Frequency	Comments
MDU1900	Dual Orthogonal Mixers	C950503 C950501	10.525GHz 10.587GHz	Holland, Belgium, Italy, USA UK
MDU1910	Single Mixer	C960503 C960501	10.525GHz 10.587GHz	Holland, Belgium, Italy, USA UK
MST1950	Transmit Only	C970503 C970501	10.525GHz 10.587GHz	Holland, Belgium, Italy, USA UK

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