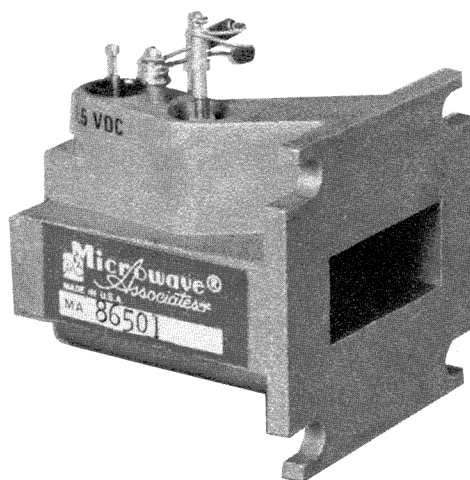


MA-86501

DOPPLER TRANSCEIVER

Bulletin 7614 B



FEATURES

- LOW COST
- HIGH SENSITIVITY
- INTEGRATED ASSEMBLY (INCLUDES MIXER DIODE)
- MEETS FCC PART 15 AND/OR PART 89 AND 93 REQUIREMENTS

DESCRIPTION

The MA-86501 microwave Doppler transceiver is a low cost sensor designed for any speed measurement or motion sensing application. It provides an audio output signal whose frequency is proportional to the velocity of an object moving toward or away from the antenna.

Each transceiver consists of a Gunn oscillator and mixer assembled into a compact waveguide package. The standard model employs a fixed tuned CW oscillator and Schottky Barrier mixer diode. The mixer diode is field replaceable.

APPLICATIONS

This transceiver is specifically designed for applications in CW Doppler radar systems, speed radars, intrusion alarms, traffic control, braking systems, industrial process controls and other motion detecting systems.



Microwave Associates, Inc. Burlington, Massachusetts Tel. (617) 272-3000

Western Union Fax
TWX: 710-332-6789
Telex: 94-9464

SPECIFICATIONS

Electrical Characteristics

Center Frequency	10.525 GHz	Spurious, harmonic	-35 dBm
Mechanical Tuning Range	±25 MHz	non-harmonic	-50 dBm
Power Output	5 to 10 mW typical @ 25°C Flange Temp;	Detector Sensitivity	-95 dBc minimum for an IF bandwidth of 10 Hz to 150 Hz
Frequency Stability	40 PPM/°C Max. between end points	Operating Voltage	+7.5 Volts typical
		Operating Current	120 mA Typical 150 mA Max.

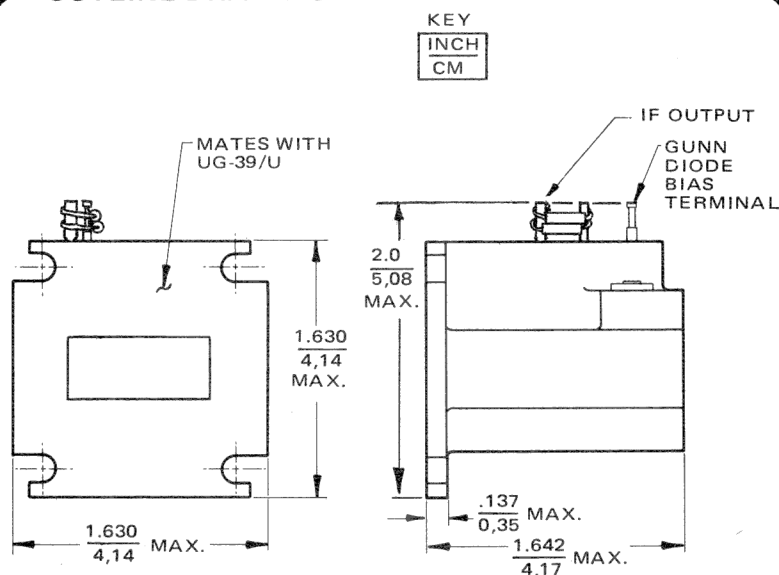
Mechanical Characteristics

Input Connector	Solder Lug
RF Output	To mate with UG-39/U

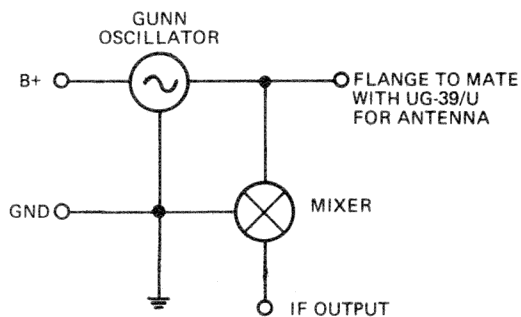
Environmental Characteristics

Operating Temperature	-30° to +70°C
-----------------------	---------------

OUTLINE DRAWING



BLOCK DIAGRAM



APPLICATION NOTES

1. Optimum IF load impedance is 500 ohms. All units are supplied with a 1000 ohm load resistor in place to protect the mixer diode. The recommended input impedance of the IF amplifier is 1000 ohms. The two 1000 ohm resistors in parallel provide the optimum load.
2. RF power for the L.O. signal is obtained directly from the transmitter signal as it "passes" the detector diode near the output flange. However, a large antenna mismatch will reflect sufficient power to alter the detector bias. The detector bias is factory adjusted to be suitable for an antenna VSWR up to 1.5:1. If the desired antenna has a larger VSWR it is recommended a simple matching screw be placed in the antenna structure to reduce its VSWR.
3. Each unit is factory tuned to the specified frequency within ±5 MHz. Operating frequency can be mechanically adjusted over a range of ±25 MHz.
4. Scale factor is 31.4 Hz per mile/per hour of radial velocity.
5. An operating voltage of -7.5 volts typical is available.
6. Spurious and harmonic emission levels are determined in a radiative measurement as required under part 15 of the FCC rules and regulations.
7. An electrolytic capacitor (between 1 and 10 μF) is required between the Gunn bias terminal and ground.