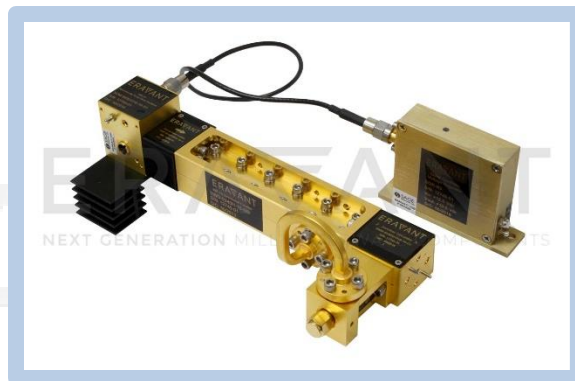


W Band Doppler Sensor Module, Single Channel, 110 GHz

Description:

Model SSM-11405-S2 is a W band Doppler sensor module that is designed and manufactured for medium range measurements of a moving target's speed. The sensor module has an operating frequency range of 109.5 to 110.5 GHz and takes a nominal bias of +12.0 V_{DC}/250 mA. The voltage regulator is included to provide the protection for the Gunn oscillator. An additional DC bias of +5 V_{DC} is required for external mixer. The sensor module is configured with a mechanically tuned oscillator, an isolator, a directional coupler, a circulator, and an externally biased balanced mixer. The directional coupler is used to sample the LO power to pump the mixer, and the circulator is used as a TX/RX diplexer. Various antennas can be integrated with the module to form sensor heads for many system applications.



Features:

- 110 GHz Operation
- Low FM/AM Noise and High Sensitivity
- Low Harmonic Emission
- Common Tx/Rx Port

Applications:

- Doppler Radar Systems
- Military Surveillance Systems

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Tx Frequency Range		110.0 GHz	
Tx Frequency Tuning Bandwidth*		±250 MHz	
Tx Output Power		+5 dBm	
Rx Frequency Range		110.0 GHz	
Rx IF Frequency Range	DC		3 GHz
Rx Conversion Loss		12 dB	
Frequency Stability		-6.0 MHz/°C	
Power Stability		-0.04 dB/°C	
Oscillator Bias Voltage**		+10 V _{DC}	+10.5 V _{DC}
Oscillator Bias Current		250 mA	350 mA
Mixer Bias Voltage		+5 V _{DC}	+6 V _{DC}
Mixer Bias Current		2 mA	3 mA
Specification Temperature		+25 °C	
Operating Temperature	0 °C		+50 °C

*The center frequency is factory preset per user's request. It can be set in the frequency range of 105 to 110 GHz. The new model number may be assigned. For example, the 107 GHz center frequency model would take the model number of SSM-11410-S3.

** If the SOR-R3 regulator is used, the required DC bias voltage to regulator input is +12 V_{DC}.



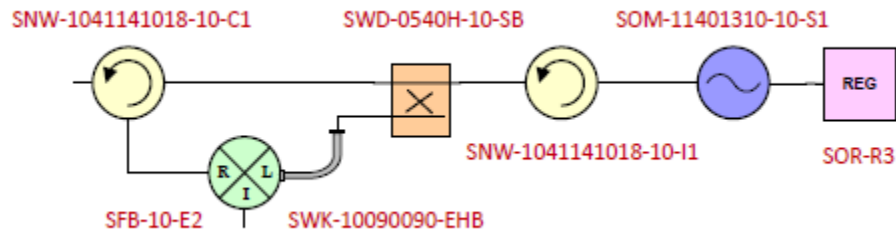


W Band Doppler Sensor Module, Single Channel, 110 GHz

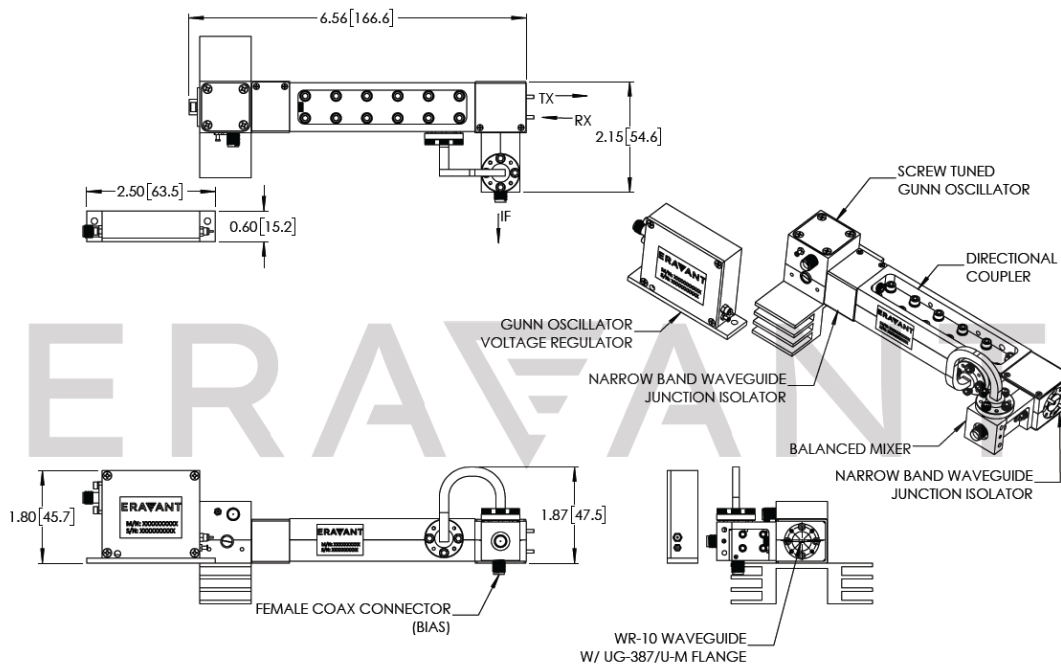
Mechanical Specifications:

Item	Specification
Tx/Rx Port	WR-10 Waveguide with UG-387/U-M Flange
IF Port	SMA (F)
Gunn DC Bias Port	SMA (F)
Mixer Bias Port	SMA (F)
Case Material	Aluminum and Brass
Finish	Gold Plated
Weight	5.0 Oz
Size	2.15" (W) X 1.87" (H) X 6.56" (L)
Outline	SM-NW-S-E

Block Diagram:



Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])





W Band Doppler Sensor Module, Single Channel, 110 GHz

Note:

- The voltage regulator is provided for Gunn oscillator protection.
- Eravant reserves the right to change the information presented without notice.

Caution:

- Exceeding absolute maximum ratings shown will damage the device.
- The bias to externally biased mixer shall not never exceed $+6 V_{DC}$ as the mixer diode will be over driven and damaged.
- The device is static sensitive. Always follow ESD rules when working with the device.
- Any foreign objects in the waveguide will cause performance degradation and possibly damage the device.
- The case temperature of the device shall never exceed $+50^{\circ}C$. Use a proper heatsink or fan if necessary.
- Proper torque, 8.0 ± 0.15 inch-pounds (0.92 ± 0.05 Nm), should be applied. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**

