

DESCRIPTION

The HHM series broadband harmonic mixers covers full waveguide bands from 18 – 110 GHz. They utilize a low loss finline structure mated to a GaAs Schottky beam lead diode for minimum conversion loss and maximum bandwidth. The millimeter wave RF frequency is down converted (using a low cost microwave LO) to a lower frequency, which can in turn interface with a spectrum analyzer or frequency counter.

Two terminal mixers (waveguide RF, combined coaxial LO/IF port) units are available for systems equipped with an internal diplexer.

Three terminal mixers (waveguide RF, coaxial IF port, coaxial LO port) units are available for systems without an internal diplexer.



Applications

- Spectrum Analyzer Mixers
- Signal Processing
- General RF Detection
- Phase Locked Loops
- Frequency Measurement

Features

- No Input Bias Required
- Full Waveguide Band Coverage
- Finline Planar Design
- Low Conversion Loss
- Optional IF Amplifiers

Specifications @ 35°C T_{CASE}, Specifications subject to change w/o notice.

| Part Number | Frequency (GHz) | Waveguide | Standard Flange | Conversion Loss (dB) (1,2) (typical) |
|-------------|-----------------|-----------|-----------------|--------------------------------------|
| HHM42 | 18.0 – 26.5 | WR – 42 | UG–595/U | 17 |
| HHM28 | 26.5 – 40.0 | WR – 28 | UG–599/U | 20 |
| HHM22 | 33.0 – 50.0 | WR – 22 | UG–599/U | 23 |
| HHM19 | 40.0 – 60.0 | WR – 19 | UG–599/U | 26 |
| HHM15 | 50.0 – 75.0 | WR – 15 | UG–385/U | 29 |
| HHM12 | 60.0 – 90.0 | WR – 12 | UG–387/U | 32 |
| HHM10 | 75.0 – 110.0 | WR – 10 | UG–387/U-M | 35 |

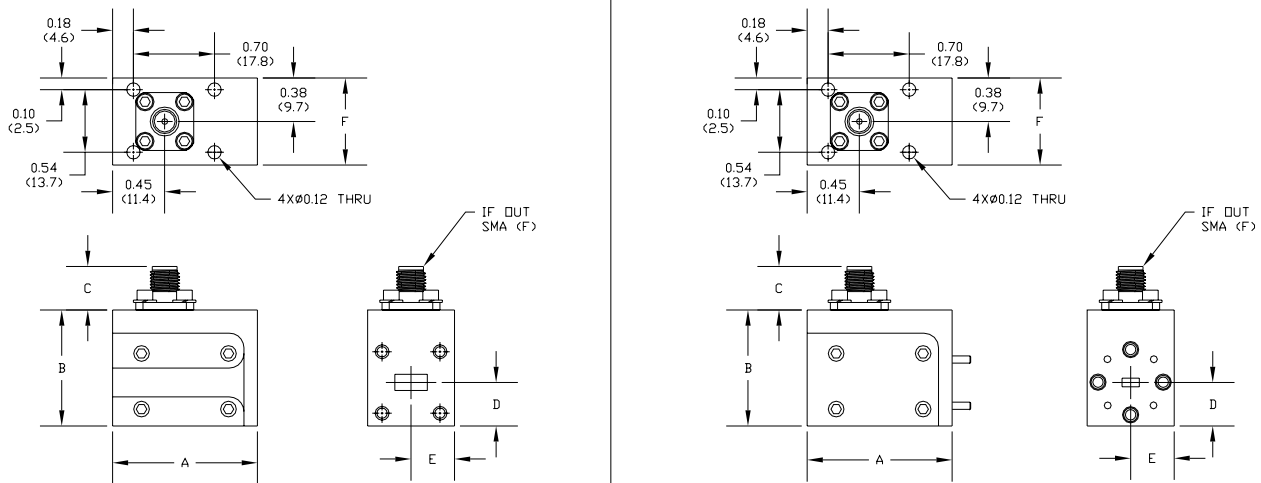
NOTES

1. Measured @ +13 dBm P_{LO}, center of RF band.
2. Measured at X band LO and 500 MHz IF.

GENERAL SPECIFICATIONS:

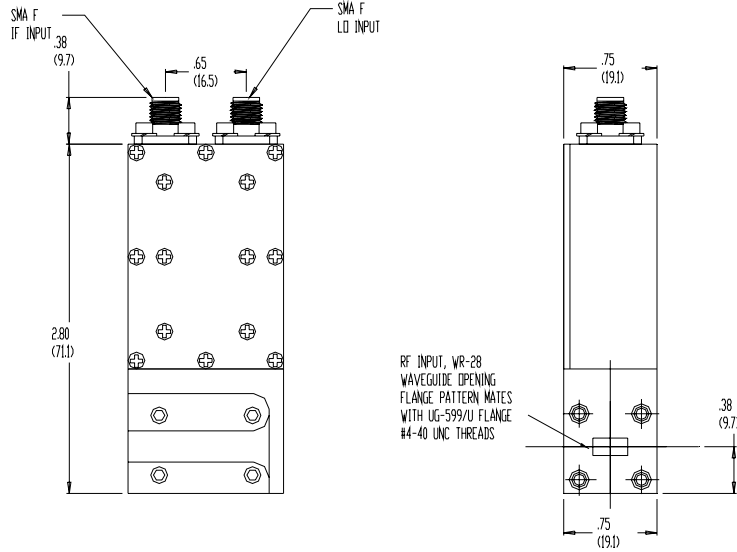
| | |
|------------------------|-------------|
| Maximum Input Power: | 80 mW |
| Operating Temperature: | 0 to +60° |
| LO & IF: | SMA Female |
| VSWR: | 3:1 typical |

Outline Drawings—2-Port Harmonic Mixers

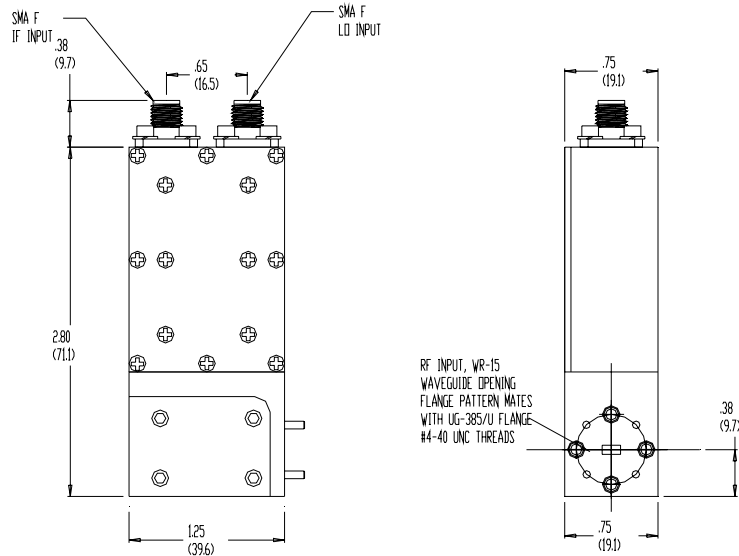


| FREQUENCY BAND | WAVEGUIDE SIZE | FLANGE PATTERN | MIXER DIMENSIONS (inches) | | | | | |
|----------------|----------------|----------------|---------------------------|------|------|------|------|------|
| | | | A | B | C | D | E | F |
| K | WR-42 | UG-5959/U | 1.75 | 1.08 | 0.38 | 0.44 | 0.44 | 0.88 |
| Ka | WR-28 | UG-599/U | 1.25 | 1.00 | 0.38 | 0.38 | 0.38 | 0.75 |
| Q | WR-22 | UG-599/U-M | 1.25 | 1.00 | 0.38 | 0.38 | 0.38 | 0.75 |
| | | UG-383/U | 1.25 | 1.19 | 0.38 | 0.57 | 0.57 | 1.13 |
| U | WR-19 | UG-599/U-M | 1.25 | 1.00 | 0.38 | 0.38 | 0.38 | 0.75 |
| | | UG-383/U-M | 1.25 | 1.19 | 0.38 | 0.57 | 0.57 | 1.13 |
| V | WR-15 | UG-385/U | 1.25 | 1.00 | 0.38 | 0.38 | 0.38 | 0.75 |
| E | WR-12 | UG-387/U | 1.25 | 1.00 | 0.38 | 0.38 | 0.38 | 0.75 |
| W | WR-10 | UG-387/U-M | 1.25 | 1.00 | 0.38 | 0.38 | 0.38 | 0.75 |

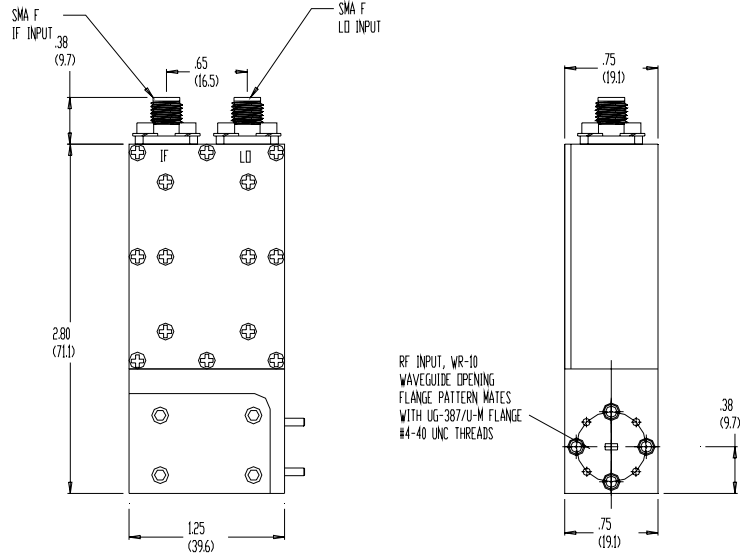
Note: Miniature designs available in some bands. Contact factory for details.



Ka-Band 3-Port Harmonic Mixer



V-Band 3-Port Harmonic Mixer



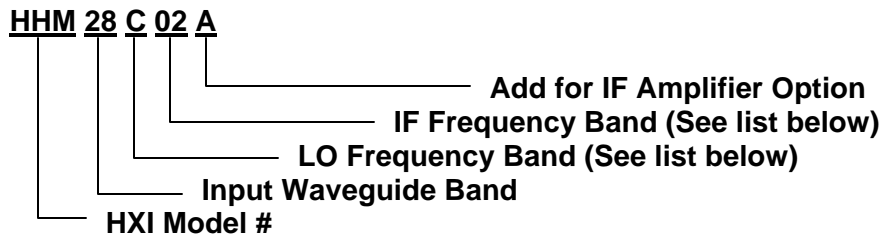
W-Band 3-Port Harmonic Mixer

Part Number Guide

2-Port Mixer without Diplexer



3-Port Mixer with Diplexer



LO Frequency Band Options:

L (1-2 GHz) S (2- 4 GHz) C (4- 8 GHz) X (8-12.4 GHz) Ku (12.4-18)

IF Frequency Band Options:

| | | | |
|-----------------|------------------|------------------|------------------|
| 01 (10-100 MHz) | 02 (10- 500 MHz) | 03 (10-1000 MHz) | 04 (10-1500 MHz) |
| L (1- 2 GHz) | S (2- 4 GHz) | C (4- 8 GHz) | X (8-12.4 GHz) |

Round flange for B & U bands - add /383 to end of part number