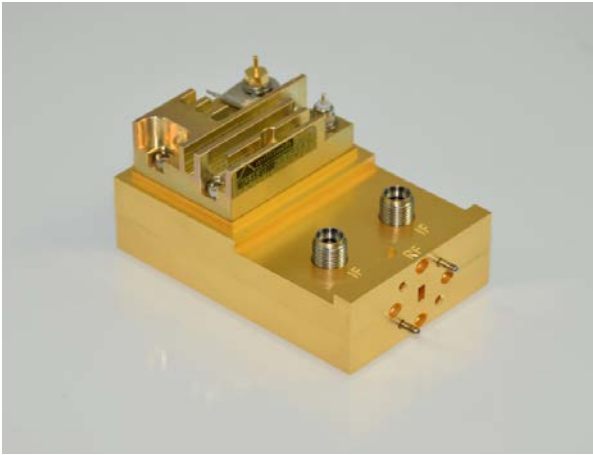


I/Q MIXER



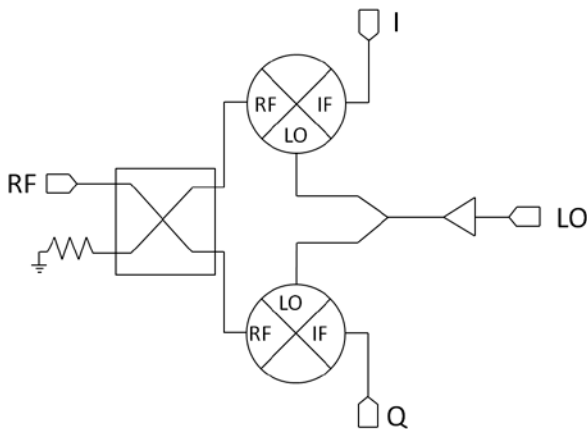
FEATURES:

- Low Conversion Loss
- Integrated LO Amplifier
- Internally Regulated
- Large selection of frequency bands

APPLICATIONS:

- Quadrature Radar Receiver
- Image Reject/SSB Downconverter
- FMCW Radar

DIAGRAM



DESCRIPTION:

Millitech I/Q mixers are ideal for Radar Receiver applications and Single-Sideband Mixers. The LO port is amplified and split to two mixers. The LO input buffer amplifier is present to lower the amount of LO power that is required for the mixer to operate. Models are available in WR-28, WR-15, WR-12, and WR-10.

In-phase and quadrature IF ports are 2.92 mm (SMA-compatible). The addition of an IF 90 degree hybrid separates the IF into upper sideband and lower sideband with > 25 dB of isolation between the sidebands.

ELECTRICAL SPECIFICATIONS

Model	RF (GHz)	LO (GHz)	IF (GHz)	Conversion Loss ¹ (dB, typ)	Amplitude Balance (dB, ±, typ)	Phase Balance (deg, ±, typ)	LO Input ³ (dBm)	DC Current (A, typ)
MIQ-28-01900²	26.5-40	26.5-36	DC-13.5	8.5	0.5	5	-4.5	0.4
MIQ-15-01900	57-66	57-66	DC-9	6.5	1.2	10	5	0.35
MIQ-12-01900	71-86	71-86	DC-15	7.5	1	8	-3	0.35
MIQ-12-02900	80-90	80-90	DC-10	6.5	1	8	12	0.7
MIQ-10-01900	80-90	80-90	DC-10	7	1	8	6	0.3
MIQ-10-02900	90-98	90-98	DC-10	7	1	6	6	0.3

1. When used as an image reject mixer with lossless external hybrid (typ).
2. Stated performance only valid for RF/LO = 26.5 – 36 GHz (IF DC – 9.5 GHz). Device is operational over entire stated frequency range with variable conversion loss and amplitude and phase balance.
3. Alternate LO drive levels available for some models. Contact Millitech for details

Notes:

Amplitude and phase balance improve for narrower bandwidths than those shown – consult Millitech for details

RF Input P1dB is +5 dBm typ, +8 dBm for MIQ-28-01900

DC voltage is 8 to 15 V

Image rejection is > 25 dB typ for all models

OUTLINE DRAWINGS

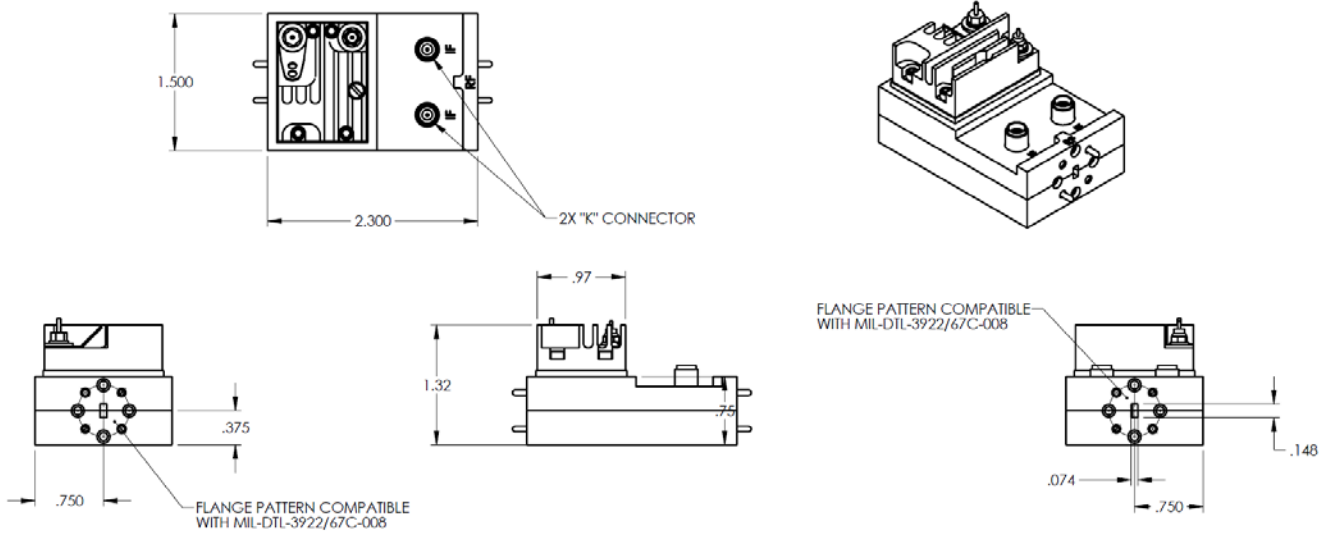


FIGURE 1: OUTLINE DRAWING FOR MIQ-15-01900

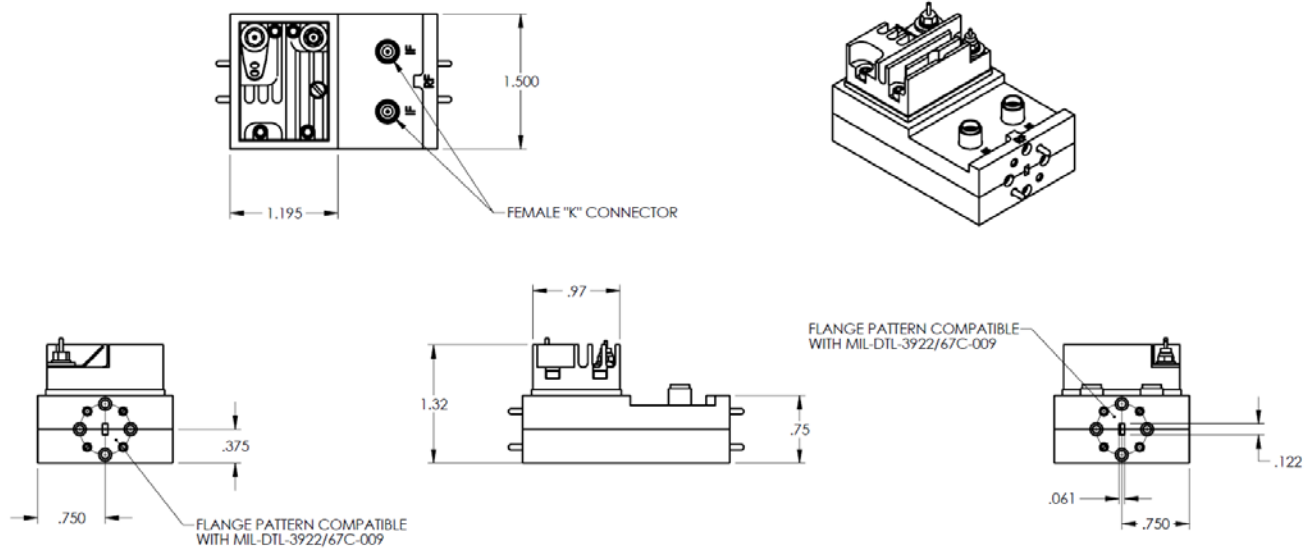


FIGURE 2: OUTLINE DRAWING FOR MIQ-12-01900 AND MIQ-12-02900

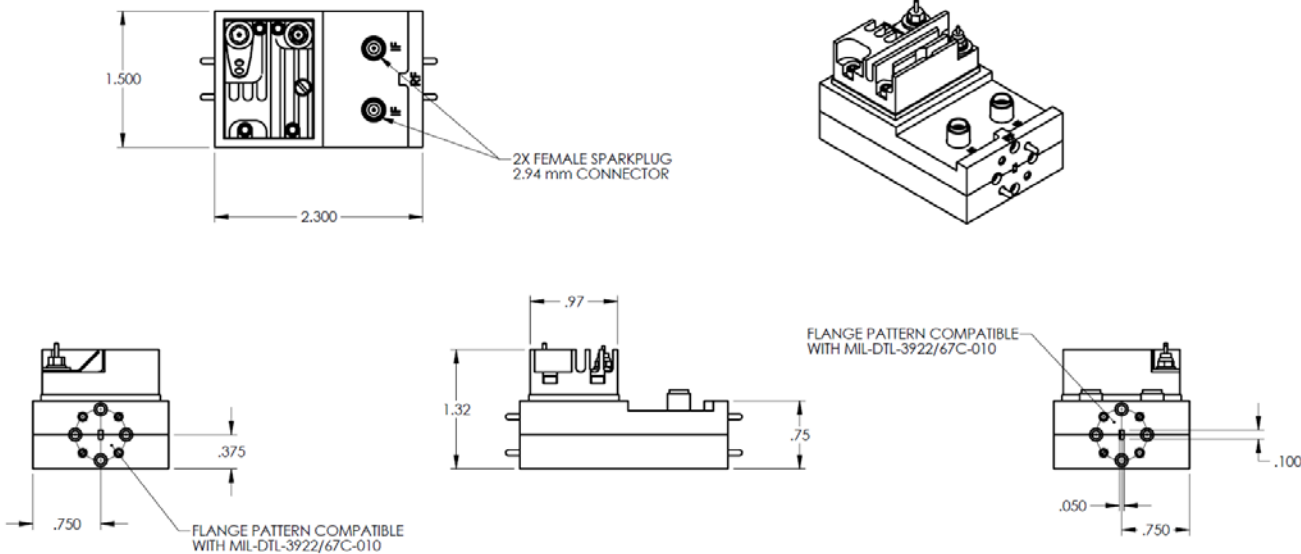
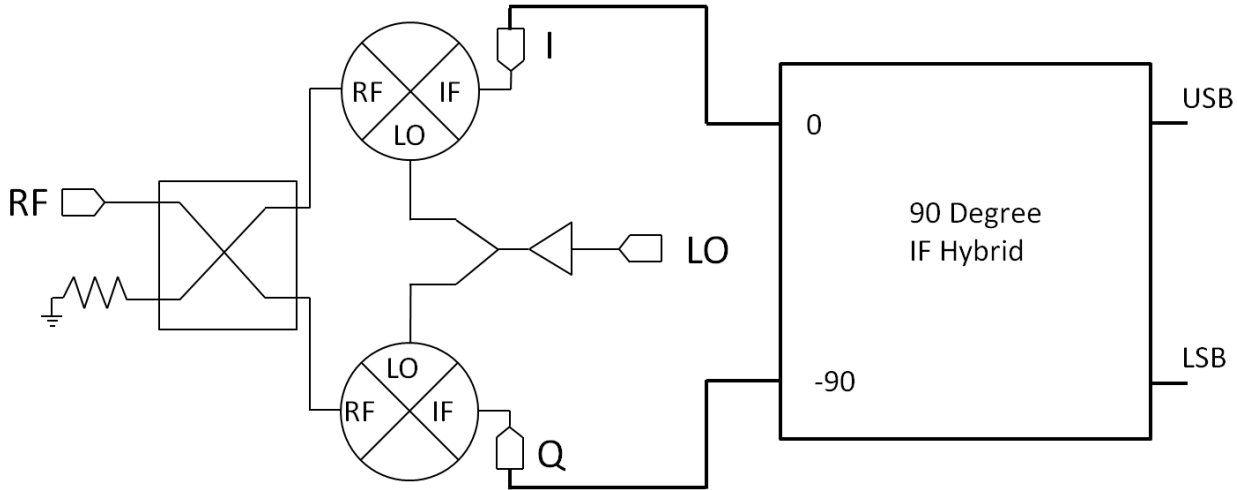


FIGURE 3: OUTLINE DRAWING FOR MIQ-10-01900 AND MIQ-10-02900

IMAGE-REJECT MIXER APPLICATION



By connecting an IF 90 degree hybrid to the I and Q mixer outputs, the IF combines into either the upper sideband (USB) or lower sideband (LSB) IF signal.

HOW TO ORDER

Specify Model Number MIQ-XX-AAAØ
XX = RF waveguide size See table above (Electrical Specifications)
AAA = Model Selection See table above (Electrical Specifications)
Ø = Special Options 0 - standard N - nonstandard (specify requirements)