

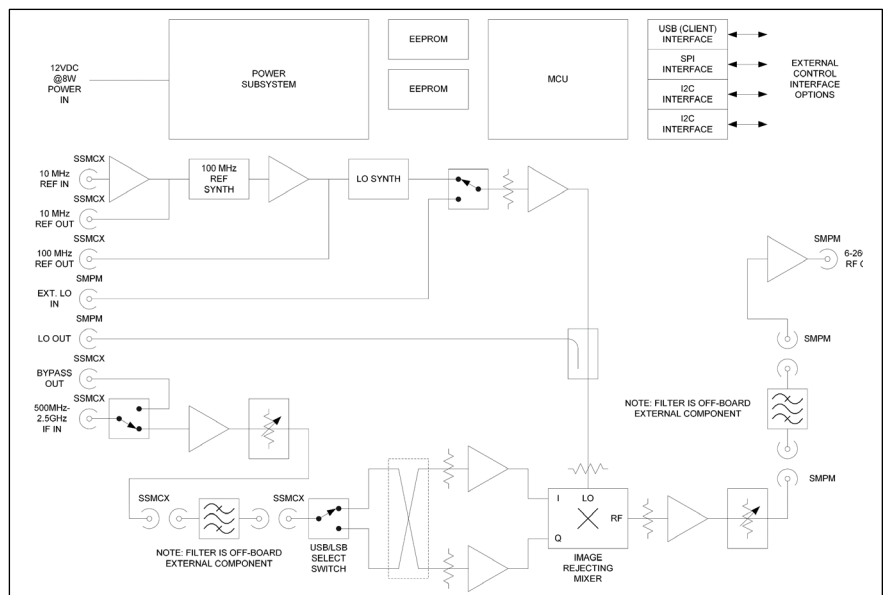
WASP BLOCK UP CONVERTER

CONVERTS L-BAND TO 6-GHZ TO 26.5-GHZ

- WASP board upconverts a 500-MHz to 2500-MHz frequency block to any portion of the 6-GHz to 26.5-GHz frequency range
- Low phase noise local-oscillator (LO) synthesizer has available LO output
- Onboard reference conditioning is available for 10-MHz external reference with 10-MHz and 100-MHz reference outputs
- Optional output buffer delivers up to +10 dBm to drive power amplifiers
- Onboard power distribution accepts any input voltage between +8 VDC and +34 VDC
- Onboard microcontroller unit (MCU) provides external USB, SPI, and I2C communication interfaces for communication and control

- HIGH-PERFORMANCE, SELF-CONTAINED UNIT** includes a low phase noise LO synthesizer, reference input conditioning, high-efficiency power conditioning, and a powerful MCU for communications and control
- IMAGE-REJECTING MIXER DESIGN** has digital attenuators on the input and output side of the mixer to obtain maximum dynamic range for any configuration
- OFF-BOARD CONNECTORS** break the input and output signal paths to provide access for optional external filters
- Unit can be used with the WASP Block Downconverter to make phase-coherent frequency translation systems

UP CONVERTER BLOCK DIAGRAM



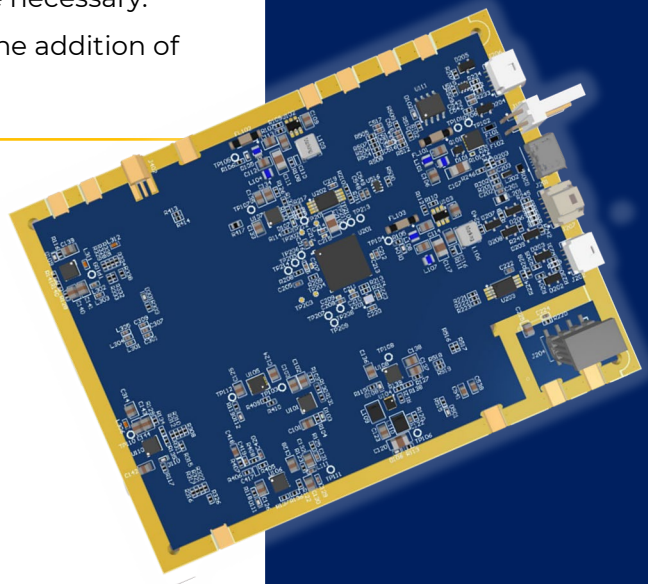
SPECIFICATIONS

- Input frequency range: 500 MHz to 2500 MHz (“standard” L-band IF range)¹
- LO tuning range: 8.5 GHz to 24 GHz²
- Input impedance: 50 Ohms
- Input return loss: 20 dB typical
- LO leakage: -8 dBm
- Output RF: 6 GHz to 26.5 GHz
- Output impedance: 50 Ohms
- Output return loss: 15 dB minimum
- Power output: -8 dBm (+10 dBm with optional post amplifier)
- Conversion gain: -25 dB to +35 dB in 0.5 dB steps
- Noise figure: TBD dB typical
- Image rejection: 30 dB typical 20 dB minimum³
- Group delay: TBD (depends on off-board IF filter)
- Phase noise: TBD
- IP3: TBD dBm (third-order ≤ 50 dBc for two tones @ +0 dBm)
- AM/PM conversion: TBD
- Gain slope: TBD (adjusted by choice of onboard equalizer)
- Spurious outputs:
 - Signal related: TBD
 - Signal independent: TBD
- Power: ~8 W @ 7-36 VDC
- Size: 80 mm x 106 mm x 12.8 mm

¹Upconverter input frequency range can be extended to cover 500 MHz to 6 GHz by changing the hybrid.

²LO can be commanded to tune from 8 GHz to 32 GHz, but other components limit useful range. Step size can be as small as 1 kHz, but for best phase noise, a larger step size might be necessary.

³Image rejection can be improved to >60 dB with the addition of an optional switched filter bank board.



ADDRESS
101 N. Wilmot Rd. Ste. 101
Tucson, AZ 85711

ORDER LINE
520.519.3131
sales@rincon.com

TECH SUPPORT
520.519.3132
tech-line@rincon.com

FAX/WEB
520.519.3120
www.rincon.com

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