

# 100 W GaN Block Upconverter SB50XOA Series

## CPI Quality

Based on GaN device technology, the SB50XOA series of GaN block upconverters utilizes proprietary RF techniques to provide high linear power and efficiency in small, lightweight, outdoor packages. This compact GaN BUC can be mounted directly at the antenna for maximum efficiency of operation. Full-featured network and serial interfaces are provided to support monitoring and control of the BUC.

## Worldwide Support

Backed by over four decades of satellite communications experience, and CPI's worldwide 24-hour customer support network which includes more than 20 regional factory service centers.



## Model SB50XOA

100 watt X-band GaN block upconverter for **satellite uplink applications**

### FEATURES

- 50 watts linear output power
- Exceptional power efficiency
- 30 dB gain adjustment range
- Internal filtering included
- Weatherproof package
- Integrated network and serial M&C interfaces
- Designed to support SATCOM terminal certification per requirements set forth in MIL-STD-188-164B



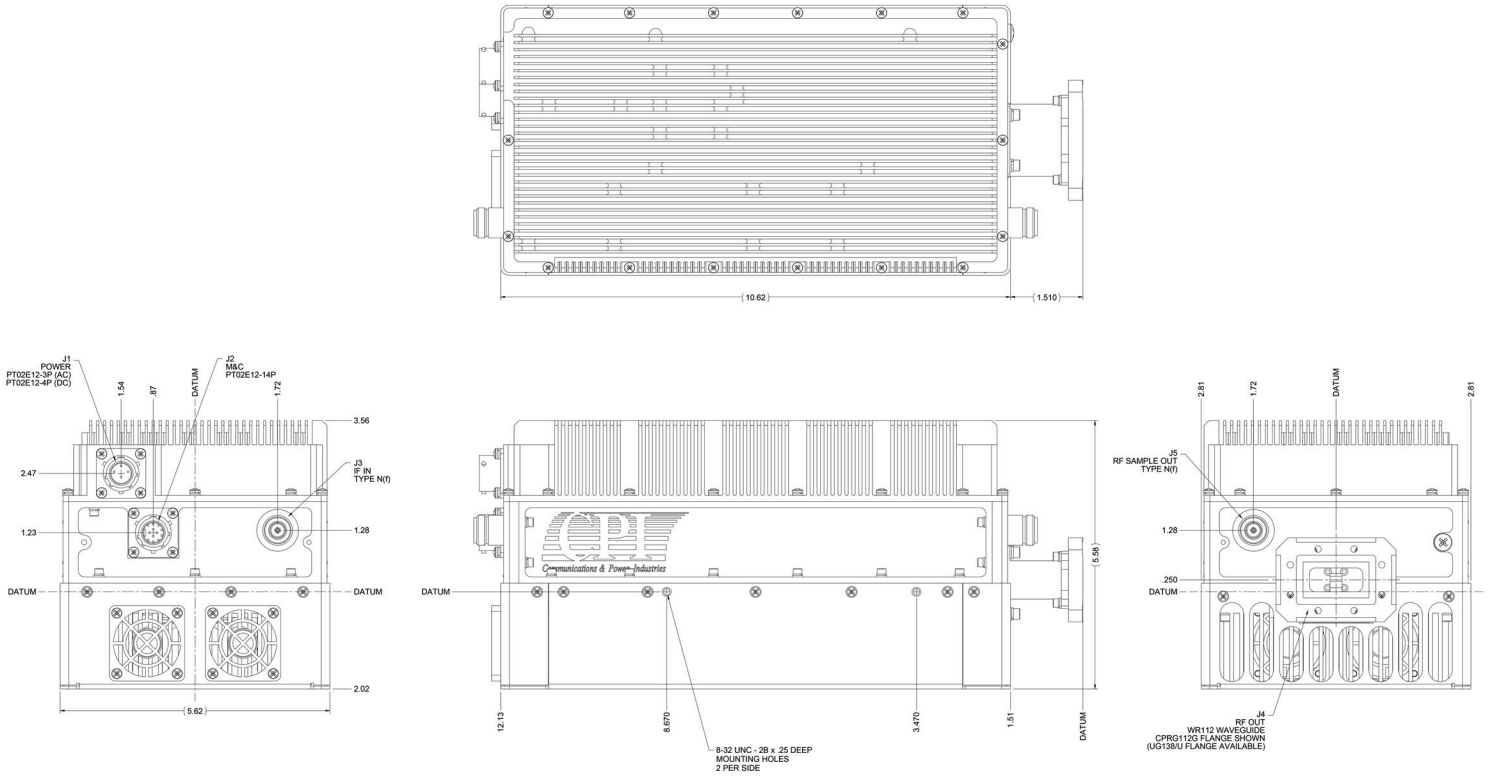
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## 100 W GaN Block Upconverter SB50XOA Series

Specification	
IF Input Frequency	950 to 1450 MHz
RF Output Frequency	7.90 to 8.40 GHz (6.95 GHz LO)
External/Internal Reference Frequency	10.0 MHz $\pm$ 1 ppm/10.0 MHz (0.1ppm over -40°C to +60°C)
Phase Noise (SSB)	
@ 100 Hz offset	-63 max. dBc/Hz
@ 1 kHz offset	-73 max. dBc/Hz
@ 10 kHz offset	-83 max. dBc/Hz
@ 100 kHz offset	-93 max. dBc/Hz
@ 1 MHz offset	-103 max. dBc/Hz
Gain	70 min. dB at min. attenuation
Gain Flatness	$\pm$ 1.50 dB max. full band
Gain Slope	$\pm$ 0.5 dB max. per 40 MHz
Gain Stability vs Temperature	$\pm$ 1.5 dB
Gain Adjustment Range	30 dB (0.5 dB steps through M&C interface)
$P_{SAT}/P_{LINEAR}$	+50.0 dBm typ / +47.0 dBm min.
Spectral Regrowth	-30 dBc max.
$P_{LINEAR}$ (Two Carrier Intermodulation Distortion)	+47.0 dBm min, combined two-carrier output power
Third Order Intermodulation Distortion	-25 dBc max, relative to the combined power of two carriers with 1.6 MHz spacing
Group Delay (per 40 MHz)	
Linear	0.05 ns/MHz
Parabolic	0.002 ns/MHz <sup>2</sup>
Ripple	1.0 ns
AM-PM Conversion at $P_{LINEAR}$	2.0°/dB max.
Output Noise Power Density	
7.9 - 8.4 GHz	-75 dBm/Hz max.
7.25 - 7.75 GHz	-125 dBm/Hz max.
VSWR (Input/Output)	1.25:1 typ, 1.5:1 max; 1.25:1 typ, 1.35:1 max.
Overdrive	0 dBm max, max. input level (no damage)
Spurious, Signal Related	-60 dBc max, at rated $P_{LINEAR}$ within output band
Spurious, Signal Independent	-60 dBm max, outside band
Harmonics	-60 dBc max, second harmonic, at $P_{LINEAR}$
LO Leakage	-60 dBm max. (6.95 GHz)
DC Power Option Input Voltage	40-60 VDC
AC Power Option Input Voltage	90-264 VAC (47-63 Hz)
Power Consumption	90 W at no signal / 260 W typical at $P_{lin}$ .
M&C Interface	Serial Network: RS232/422/485; Ethernet: 10/100 Base T
Size and Weight	Refer to outline drawing on page 3 12.1" x 5.62" x 5.58" (L x W x H) 11.5 lbs (AC); 10.5 lbs (DC)
Finish	White epoxy paint (NATO green or desert tan optional)
Connectors	
IF Input/Ext Ref, RF Sample	Type N female
RF Output	WR112 Waveguide CPR112G or UG-138/U flange
Power	PT02E12-3P (AC); PT02E12-4P (DC)
M&C	PT02E12-14P
Operating Temperature	-40°C to +60°C
Humidity	100% Condensing

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SB50XOA Series Outline Drawing 12506, rev 3, dated 18 April 2018

Please consult CPI before using this drawing for system design in order to ensure that the latest revision is used. Specifications and drawings are subject to change without notice.