

# Ka Band 20 W Linear GaN Block Up Converter



- **Industry's most compact and lightest 20 Watt Linear Ka Band BUC**
- **Directly mounts to antenna feed arm**
- **Single frequency agile model covers complete frequencyband from 29 GHz to 31 GHz**
- **Solid State technology provides highest reliability and lowest power consumption**

The SAGE SatCom Ka Band Block Up Converter provides 20 W of linear power in the most compact package available in the industry. The compactness and light weight of the solid state 20 W Linear Ka Band BUC allows for direct mounting to the antenna feed arm resulting in a superior end solution to larger competing products that require pedestal mounting. Simplifying system planning and logistics, a single frequency agile model covers the complete frequency band from 29 GHz to 31 GHz. Command and Monitoring is supported through RS-485 and Ethernet interfaces.

# Ka Band 20 W Linear GaN Block Up Converter



## Key Benefits

- Compact and energy efficient
- Solid State Reliability
- Frequency agile design covers complete frequency band
- Easy System Integration
- Thermally Efficient
- Low Thermal Noise
- Superior Harmonic and Spurious Suppression

## Ka Band 20 W Linear GaN BUC Specification

RF Characteristics	
Frequency	29.0 - 31.0 GHz (single model covers frequency range)
Psat	27 Watts (Typical)
Output Power P-Linear	20 Watts
IF Characteristics	
Frequency Range	1000-2000 MHz; 950-1450 MHz; 950-1950 MHz
Impedance	50 Ohms
Input VSWR	1.5:1 Max
Input Level	-10 dBm Nominal
External Reference	
Frequency	10 MHz
Frequency Stability	Per Mil-Std-188-115
Input Level	-10 to +10 dBm
Transfer Characteristics:	
Type	Single Conversion
Frequency Sense	Non-inversion
Gain	60 dB +/-2 dB
Gain Flatness @ Maximum Gain	Over RF Output band: $\pm 2$ dB. Max. Over any 10 MHz of instantaneous bandwidth $\pm 0.5$ dB Max. Over any 120 MHz or smaller instantaneous bandwidth to 10 MHz $\pm 1.5$ dB Max.
Gain Adjustment Range	30 dB. Min.
Mute	-60 dB relative to P-Linear
Gain Variation over operational temp	$\pm 2.0$ dB max.
Gain Step Size	0.25 dB max.
Group Delay variation	3.5 nsec over 36 MHz Meets Mil-Std 188-164B
Third Order IMD @ P-Linear	With two output carriers @ 43dBm total output power: -25 dBc referenced to total output power, Max.
Output Noise Density TX	-75 dBm/Hz
Output Noise Density in RX Band	-147 dBm/Hz
Spurious	-60 dBc max in-band @ P-linear (ETSI EN 301 390 compliant out-of-band)
Spectral Re-growth	-30 dBc at P-Linear, QPSK, 5 Ms/s, Alpha=30% at 1 x symbol rate away from the carrier.
SSB Phase Noise	10 Hz = -32 dBc/Hz max. 100 Hz = -63 dBc/Hz max. 1 KHz = -72 dBc/Hz max. 10 KHz = -82 dBc/Hz max. 100 KHz = -92 dBc/Hz max. 1 MHz = -112 dBc/Hz max. 10 MHz = -122 dBc/Hz max.
Output VSWR	1.5:1 Max
Max Load VSWR (no damage)	Infinite @ 20 Watts Linear Output Power

# Ka Band 20 W Linear GaN Block Up Converter



## Ka Band 20 W Linear GaN BUC Specification (continued)

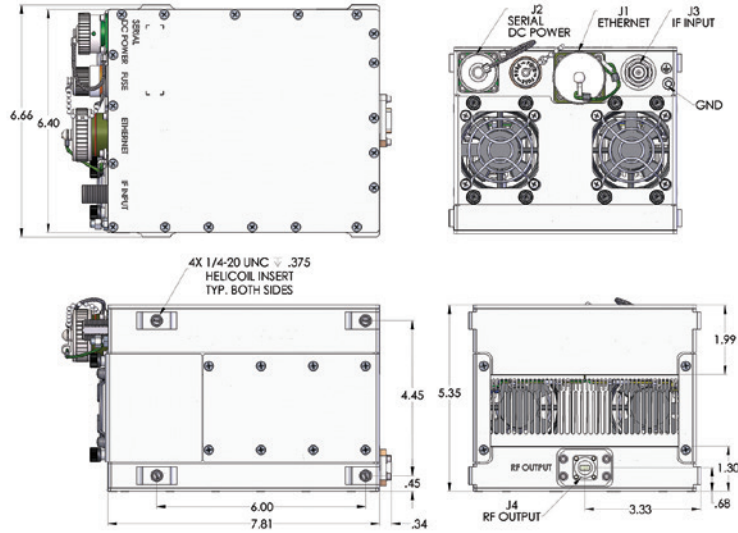
Power Requirement:	
Input voltage	+48VDC (prime), -48VDC (optional), +28VDC (optional), -28VDC (optional)
Power consumption (typical)	275W Prime Power at 20 W P-linear
Interface:	
IF Input	N-Female
Reference Input	Multiplexed with IF Input
RF Output	WR 28
Monitor & Control I/O	RS-485 or Ethernet (SNMP/HTTP)
Ethernet Connector	Weatherproof RJ-45
Serial Monitor & Control Connector	Mil-Circ- Bayonet
Power Connector	Mil-Circ- Bayonet
Environmental:	
Operating Temperature Range	-40°C to +60°C
Storage Temperature Range	-40°C to + 85°C
Humidity	100% Condensing
Altitude	10K ft.
Vibration	MIL-STD-810G
Shock	MIL-STD-810G
Physical:	
Size	(LxWxH): 7.8" x 6.7" x 5.4"
Weight	14 lbs
FAN	Field Replaceable



# Ka Band 20 W Linear GaN Block Up Converter

## Ka Band 20 W Linear GaN BUC Drawing

NOTE: Finish is GLOSS WHITE or SAND epoxy paint. No paint on connectors and heat sink.



INTERFACE			
Connector Designation	Description	Connector P/N	Mating Connector P/N
J1	ETHERNET	RJ45 TYPE (RJFTV21N)	RJ45 PLUG TYPE (JE19)
J2	DC POWER & SERIAL	PT02 (MS3112) E-14-12P	PT06 (MS3116) E-14-12S
J3	RF IN	N TYPE FEMALE	N TYPE MALE
J4	RF OUT	WR28, TAPPED GROOVED	WR28 THRU HOLE
GND	GROUND	M5 LUG	N/A

SAGE SatCom is a unique supplier of integrated RF, microwave and millimeter wave solutions for the commercial and military satellite communications market. The SAGE SatCom team has vast experience in design and integration of RF products including wideband frequency up/down converters, wideband low and high solid state power amplifiers, transceivers, LNBS, wideband driver modules, line driver modules, low power BUCs for TWTA drive, and various waveguide power combining technologies.

**SAGE Satcom**  
17034 Camino San Bernardo  
San Diego, CA 92127

Tel: + (1) 858-312-6974  
FAX: + (1) 858-312-6901

www.sagesat.com  
E-mail: sales@sagesat.com



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SAGE SatCom's Ka Band BUCs offer the highest energy density and best power efficiency of all competing solid state or TWTA based BUCs.