

TSA-216052

Ka-Band BUC

Airborne
Applications

29 - 31 GHz
Ka-Band Block
Up-Converter



EXPORT RESTRICTIONS MAY APPLY

Description

This Ka-Band Block Upconverter (BUC) is designed to operate over a single or dual output frequency range. The unit can be factory configured for a single output frequency range typically 1 GHz wide or to be switched via a TTL control between two bands each with a 1 GHz or lower band. The standard switched unit is configured with the first band operating over 29-30 GHz and the second band operating over the 30-31 GHz range.

Other Products

- Low Noise Block Converters (Ku & X-Band)
- Block Up Converters (Ku & X-Band)
- Low Noise Amplifiers (Ku & K-Band)
- Solid State Power Amplifiers (X, Ku & Ka-Band)
- Synthesizers (L, C or X-Band)

Teledyne Microwave Solutions
Aerospace & Defense Electronics



Specifications

Parameter	Value
Operating Frequency Range	(Switchable) 29 to 31 GHz
Input Power with No Damage ¹	5 dBm
Input Frequency Range	Switched LO, Non-Inversion 1.0 to 2.0 GHz
Output Power, Linear	+10 dBm min
Modulation Spectrum at Linear Power	OQPSK FSymbol = 10 Msps
Group Delay Variation Over Full Band ¹	2nsec Max
Gain	28 dB Min
VSWR Input	2:1
VSWR Output	1.7:1
Gain Variation vs Frequency at Fixed Temperature • Over any 40 MHz IF BW • Over full IF BW	±0.75 dB ±2.0 dB
Gain Variation vs. Temperature at Fixed Frequency	±2.0 dB
Output Spurious @ Linear Power	2nd Harmonic (2xIF)+LO Fc> ±20 MHz -60 dBc
LO Frequency	Switched LO, Low Side 28 GHz 29 GHz
Phase Noise (with 10 MHz external reference) • 100 Hz Offset • 1 kHz Offset • 10 kHz Offset • 100 kHz Offset • 1 MHz Offset • 10 MHz	-62 dBc/Hz -72 dBc/Hz -78 dBc/Hz -92 dBc/Hz -112 dBc/Hz -115 dBc/Hz
External Reference Clock Input Frequency	10 MHz
External Reference Clock Input Level ¹	25°C 0 dBm ±3 dB
External Reference Clock Phase Noise Requirement • 10 Hz Offset • 100 Hz Offset • 1 kHz Offset	-120 dBc/Hz -145 dBc/Hz -165 dBc/Hz
Input Voltage ¹	+15 to +36 VDC
Output Connector	2.92 mm (Female)
IF Input Connector	SMA(F) or N(F)
Direct LO Injection Connector, if applicable	SMA(F)
DC, Monitor & Control Connector	9 Pin Micro-D
Ref Input Connectdor, if applicable	SMA(F)
Size	4.0" x 4.0" x 1.15"
Weight	1 lbs max
Finish • Body • Mounting Surface	Electroless Nickel Chem Film
Altitude ^{1,2} , Operational	≤60,000 ft
Relative Humidity	Fully Hermetic
Shock ^{1,2} , RTCA DO-160G	6g, 11ms Half Sine
Operating Temperature Range	-55°C to +85°C

Table 1: J5 Pin Connectors

J5 PIN CONNECTIONS		
PIN NO.	FUNCTION	COLOR
J5-1	+VIN	BLACK
J5-2	LOCK	BROWN
J5-3	BAND SEL	RED
J5-4	SCK	ORANGE
J5-5	GND	YELLOW
J5-6	+VIN	GREEN
J5-7	MUTE	BLUE
J5-8	SDA	VIOLET
J5-9	GND	GRAY

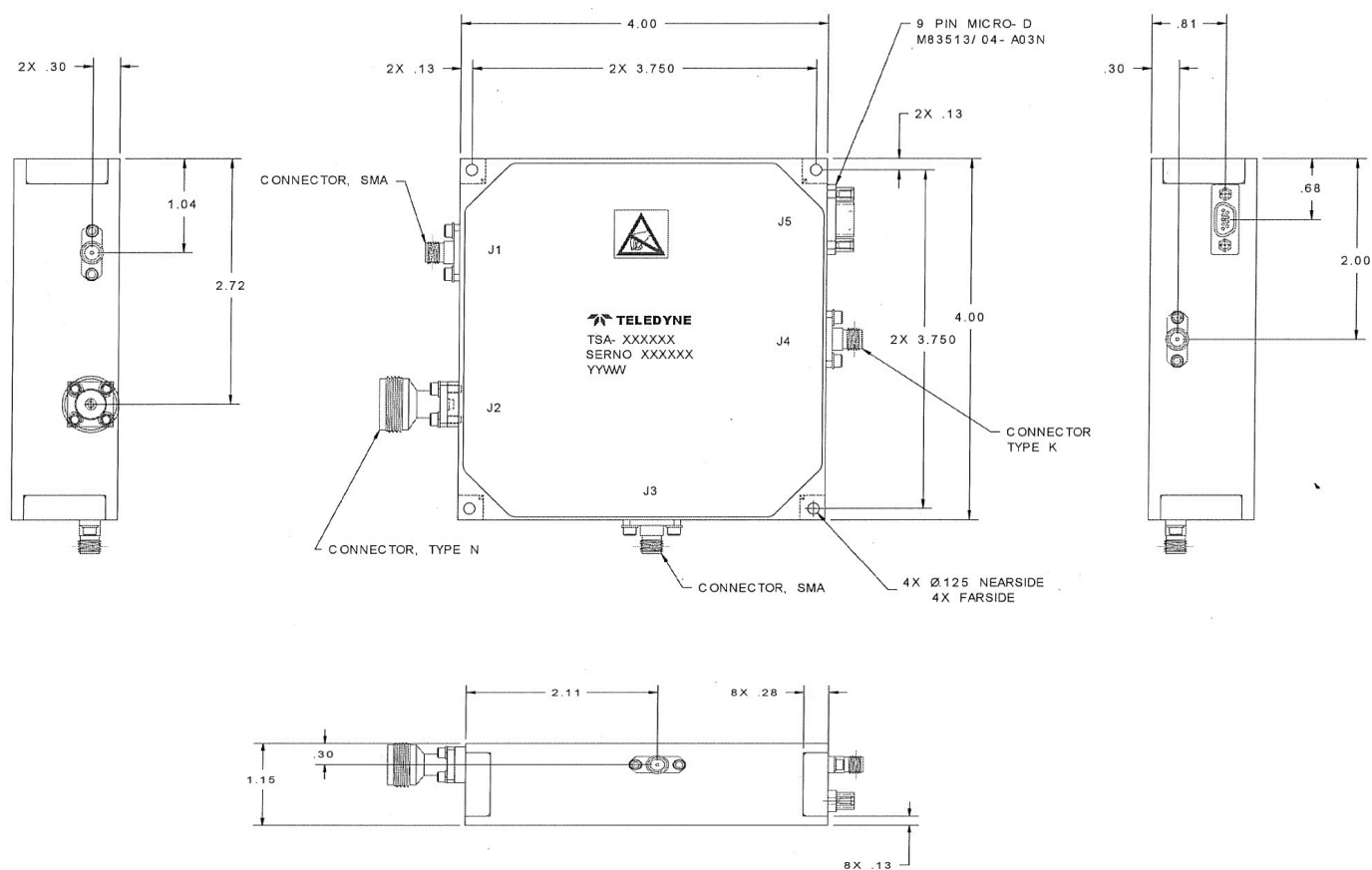
Table 2: Connector Functions

J* CONNECTOR FUNCTIONS	
J*	FUNCTION
J1	EXTERNAL REFERENCE INPUT
J2	IF INPUT/OPTIONAL MULTIPLEXED EXTERNAL REFERENCE INPUT
J3	OPTIONAL EXTERNAL LO INPUT
J4	RF OUTPUT
J5	DC, MONITOR AND CONTROL

Digital Protocols

Control of the BUC is done through standard TTL level logic. MUTE is a hardwired TTL controlled pin for disabling RF power in case of emergency. This pin is high through an internal pull-up. To disable the unit, simply ground this pin.

Outline Drawing



Notes (unless otherwise specified):

1. Dimensions are in inches.
2. Tolerances: .XXX $\pm$.010 .XX $\pm$.02
3. Marking as shown shall be permanent and legible per MIL-STD-130 using black epoxy base ink.
4. Case material: Aluminum
5. Finish: All surfaces except top and bottom cover are electroless nickel plate per MIL-C-26074. Top and bottom covers are chem film per MIL-DTL-5541, Class 3, yellow.