

**Ka Band Block Up Converter****Features**

- ◆ Broadband design
- ◆ High output power
- ◆ Very low phase noise
- ◆ Low spurious
- ◆ Excellent gain flatness
- ◆ Wide operating temperature
- ◆ Locks to an external 10 MHz reference

**Options**

- ◆ Internal reference
- ◆ 1 Watt output power
- ◆ Adjustable gain
- ◆ External reference 5 to 100 MHz
- ◆ Extended temperature range
- ◆ DC multiplexed on IF input connector
- ◆ Custom frequency plans

**Description**

Herley-CTI (HCTI) series BUC block upconverters offer broadband frequency coverage with very low phase noise in a compact package.

This series offers products specifically designed for commercial and military SatCom ground terminal applications in the Ka band frequency spectrum. The Herley-CTI series BUC utilizes HCTI's proprietary millimeter wave technology enabling excellent performance and ultra low phase noise. The phase noise for a 29 to 30 GHz BUC is typically -105 dBc/Hz at 10 kHz offset, and 1.7 degrees when integrated 10 Hz to 25 MHz.



The series BUC offers an optional adjustable conversion gain of 0 to 30 dB in 0.1 dB steps and an optional 60 dB mute function that operates on command or unit fault.

Several standard models are available that provide high quality signals for both military and commercial applications.

Herley-CTI can also custom tailor the BUC to specific applications. Contact the factory to discuss your special requirements.

## Series BUC

### Typical Performance Specifications

Input IF	
Input Frequency Range	1 to 2 GHz; other bands available, consult factory
Input Power Level	Up to -25 dBm/carrier, 10 carriers maximum (-10 dBm max)
IF Input Power No Damage	+10 dBm
Input Return Loss	>15 dB (VSWR 1.43:1)

RF Output	
Output Frequency Range	29 to 30 GHz; other bands available, consult factory
Output Return Loss	>18 dB (VSWR 1.29:1)
Output Power @ P1 dB	+25 dBm min
Output IP3	+35 dB typical
Spurious Signal Dependent	-65 dBc max
Spurious Signal Independent	-70 dBm max
LO Leakage	-80 dBm typical, -70 dBm max
Frequency Stability	Same as external reference

External Reference Input	
Input Frequency	10 MHz
Input Level	0 dBm nominal (-5 dBm min to +5 dBm max)
External Reference Impedance	50 ohm

Transfer Characteristics	
Conversion Gain	30 dB
Gain Flatness	±1.0 dB
Gain Variation Over Temperature	±0.75 dB typical
Gain Stability	±0.5 dB/24 hrs (at constant temperature after warm up)
Gain Adjust Range	30 dB
Gain Adjust Step Size	0.1 dB
Gain Adjust Linearity	±0.15 up to 1 dB ±0.15 up to 1 dB ±8% of attenuation up to 30 dB
Image Rejection	-80 dB min
Output Noise Density	-122 dBm/Hz at 30 dB gain
Output Mute	60 dB min on command & unit fault
Intermodulation distortion	- 35 dBc typical @ 18 dBm total output power
2 IF + LO	-65 dBc max @ +18 dBm output

## Typical Performance Specifications (cont'd)

<b>DC Power</b>	
Supply Voltage	+12 Vdc to +15 Vdc
Supply Current	1.5 A typical, 2.0 A max during warm up
Warm Up Time	5 minutes max

<b>Monitor and Control</b>	
RS 232 - 19200 baud, no parity, 8 data bits, 1 stop bit	
Temperature monitor	
Serial number query	
Alarm status	
Fault temperature	
Mute	
Gain control via parallel input, RS 232 optional	

<b>Environmental</b>	
Operating Temperature	-30°C to +70°C, -40°C to +80°C optional
Non-operating Temperature	-50°C to +90°C
Humidity	95% non-condensing to +60°C, Hermetic seal optional
Altitude	10,000 feet AMSL max

<b>Connectors</b>	
Input	SMA - female
Output	2.92 mm female
Reference input	Via L-band connector (multiplexed), optional dedicated SMA-F
Supply Voltage, Alarm	25 pin D-sub, optional 9 pin D-sub or feedthrus

## Typical Ka Band Output Phase Noise Performance

Frequency Offset	SSB Phase Noise
10 Hz	-45 dBc/Hz
100 Hz	-65 dBc/Hz
1 kHz	-95 dBc/Hz
10 kHz	-105 dBc/Hz
100 kHz	-105 dBc/Hz
1 MHz	-123 dBc/Hz
10 MHz	-130 dBc/Hz
40 MHz	-130 dBc/Hz
Integrated Phase Noise 10 Hz to 25 MHz	1.7 degrees

### Typical External Reference Phase Noise Performance

Frequency Offset	SSB Phase Noise
10 Hz	-120 dBc/Hz
100 Hz	-140 dBc/Hz
1 kHz	-145 dBc/Hz
10 kHz	-150 dBc/Hz

Note: All specifications subject to change without notice.

### Typical Outline Drawing

