

## Triband Block Upconverter

The TBUC6814N is an outdoor triband block upconverter system that converts an L-band input signal via band selection to C (5.85–6.725 GHz), X (7.9–8.4 GHz), or Ku (14.00–14.50 GHz) band. Based around VertexRSI's field-proven BUC modules, the TBUC6814N features a modular architecture for ease of maintenance. Housed in a NEMA-4X weatherproof enclosure, the TBUC6814N is designed for use in military transportable terminals.

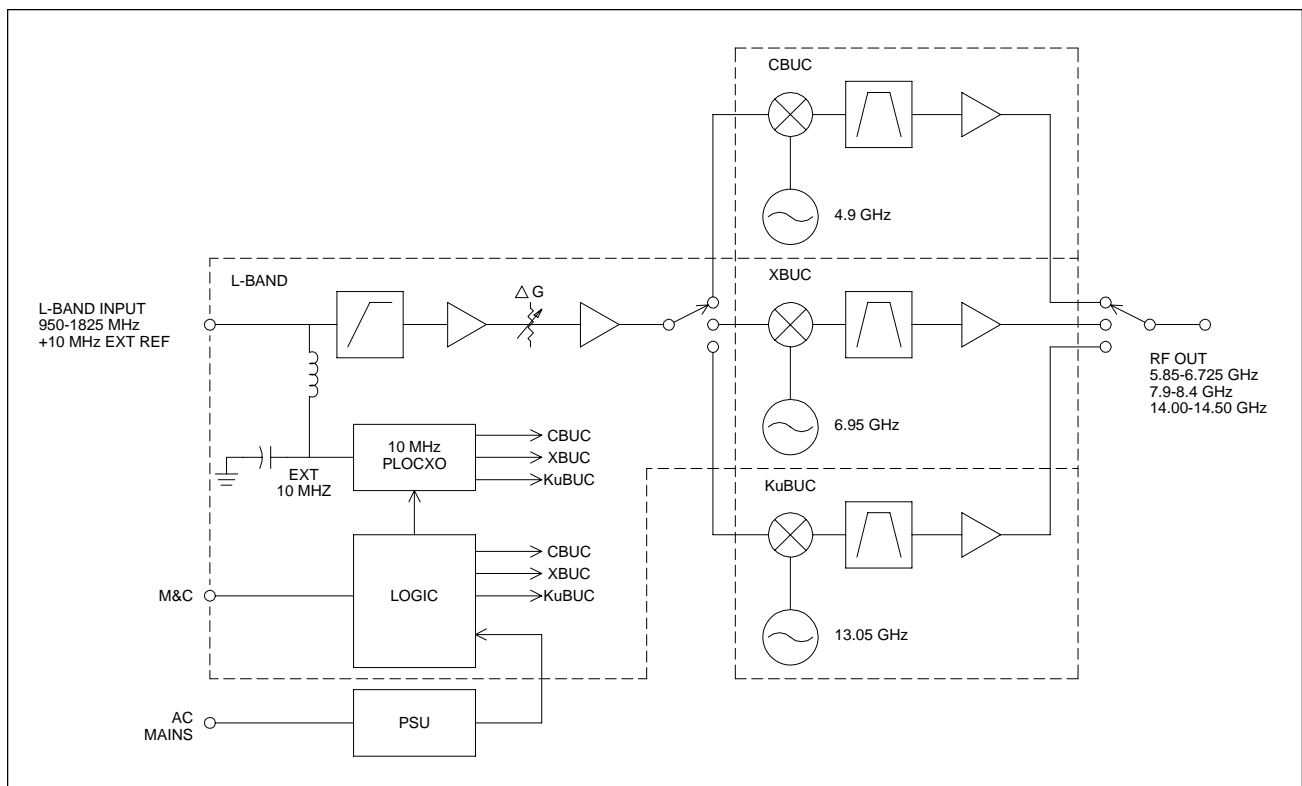
### Features

- Modular triband architecture
- Field-proven BUC modules
- 23 dB conversion gain
- Digital gain adjustment, 20 dB range in 0.2 dB steps
- Serial M&C interface (RS-232/-422/-485)

### Design Certifications

- EMC: MIL-STD-461E and CE mark
- Environmental: MIL-STD-810F (Rain, Sand, Dust, Salt Spray, Humidity, Shock & Vibration)

### Block Diagram



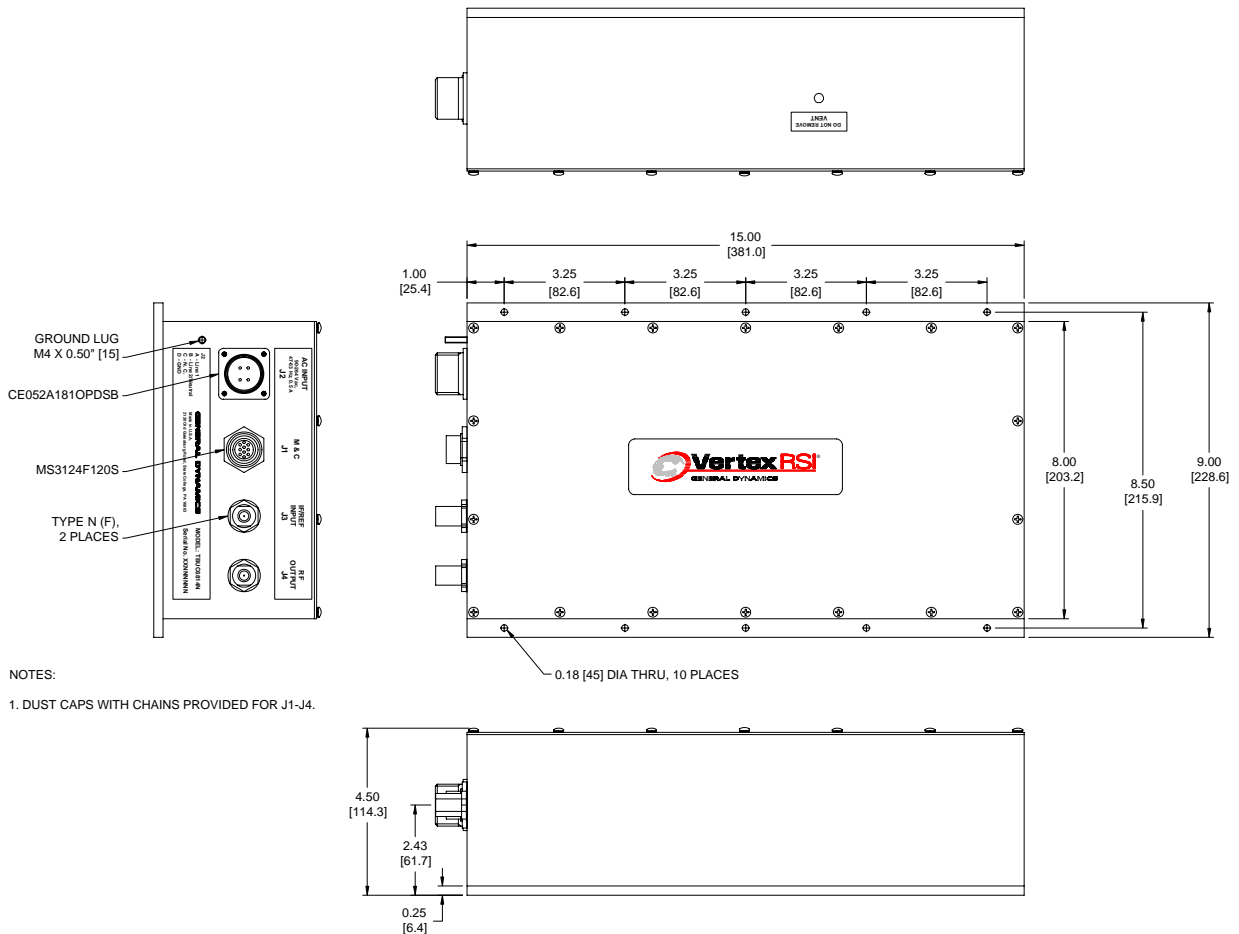
# GENERAL DYNAMICS

## SATCOM Technologies

Parameter	Notes	Min	Nom./Typ.†	Max	Units
Input Frequency	C-Band	950		1825	MHz
	X-Band	950		1450	MHz
	Ku-Band	950		1450	MHz
Output Frequency	C-Band	5.850		6.725	GHz
	X-Band	7.90		8.40	GHz
	Ku-Band	14.00		14.50	GHz
Local Oscillator Frequency (Locked to reference)	C-Band		4.90		GHz
	X-Band		6.95		GHz
	Ku-Band		13.05		GHz
Output Spectrum			Non-inverted		
Internal Reference	Frequency		10		MHz
	Stability vs. Temperature			$\pm 1 \times 10^{-8}$	
	Aging per day			$\pm 1 \times 10^{-9}$	
External Reference	0 to +10 dBm, $\pm 1.5$ ppm		10		MHz
LO Phase Noise	10 Hz		-40	-33	dBc/Hz
	100 Hz		-70	-63	dBc/Hz
	1 kHz		-80	-73	dBc/Hz
	10 kHz		-85	-83	dBc/Hz
	100 kHz		-95	-93	dBc/Hz
	1 MHz		-120	-103	dBc/Hz
Spurious	In-band, carrier-related; $P_{out} \leq 0$ dBm			-60	dBc
	In-band, non-carrier-related			-70	dBm
	LO leakage; RF out			-70	dBm
Gain	Maximum	20	23	25	dB
Gain Flatness	Full-band			$\pm 1$	dB
	Per 40 MHz			$\pm 0.25$	dB
Gain Adjustment Range	0.2 dB steps	20			dB
Gain Stability	Per week, constant temp vs. temp.			$\pm 0.5$	dB
				$\pm 1$	dB
Power Output	At 1 dB compression	+10	+12		dBm
3rd Order Output Intercept Point	Two tones @ -3 dBm ea.	+20	+22		dBm
Noise Figure	Max. gain, @ +23 °C		13	15	dB
Group Delay				1	ns p-p
VSWR	Input (50 ohms)			1.35	:1
	Output (50 ohms)			1.35	:1
Fault Alarm	Summary fault		Form-C Contact (100 V/50 mA)		
Serial I/O			RS-232/-422/-485		
Connectors	L-Band/Ref In		Type N (F)		
	RF Out		Type N (F)		
	AC In		4-pin CE-05 (leading earth ground)		
	M&C/SIO/Alarm/Fast Mute		10-pin MS-style		
Power Requirements	Voltage	90		264	Vac
	Frequency	47		63	Hz
	Power		15		W
Operating Temperature	$T_{AMB}$	-40		+60	°C
Dimensions			15 x 9 x 4.5		in
			381 x 230 x 114		mm
Weight			15 (7)		lb (kg)

† When there is only one entry on a line, the Nom./Typ. column is a nominal value; otherwise it is a typical value.  
Typical values are intended to illustrate typical performance, but are not guaranteed.

## Outline Drawing



**NOTES:**

1. DUST CAPS WITH CHAINS PROVIDED FOR J1-J4.

Outline 19482

## External Reference Requirements

Parameter	Notes	Min	Nom./Typ.	Max	Units
Reference Frequency			10.00		MHz
Reference Input Level		0	+3	+10	dBm
Reference Input Impedance			50		ohms
Reference Phase Noise	Offset Frequency ( $f_m$ )				
	10 Hz			-105	dBc/Hz
	100 Hz			-135	dBc/Hz
	1 kHz			-145	dBc/Hz
	10 kHz			-150	dBc/Hz

**Part Number/Ordering Information**

**TBUC6814N.0002**

Triband (C, X, and Ku) Block Upconverter system in a weatherproof enclosure.

**OTHER VertexRSI PRODUCTS**

- **Low Noise Amplifiers and LNA Systems**
- **Solid-State Power Amplifiers and SSPA Systems**
- **General Purpose Converters**
- **Satellite Communications Equipment**
- **Custom Subsystems**



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Specifications are subject to change at VertexRSI's discretion.