

10W Ka-Band BUC

Paradise Datacom's second generation **VSAT Block Up Converters** is a completely new design based on the new ZBUC™ intelligent technology and the reliability of the Paradise Datacom SSPA product line.

For system compatibility, the package size and footprint have been maintained from the first generation VSAT BUC.

A wide range of monitor and control is standard and includes:

- Legacy FSK protocol
- Standard Paradise Datacom RS485
- Ethernet Interface supporting:
  - UDP
  - SNMP
  - Internal Web Browser

The vBUC is available in 1:1 redundant configurations, 1:2 redundant configurations with the addition of a RCP2-1200 Redundant System Controller. Chain 1:1 redundancy is available with the use of a RCPD-1100 Dual Redundant Controller.

#### FEATURES

- Single box BUC output power levels to:  
10W Ka-Band
- Wide Range of Interface Capability including:  
FSK Control  
RS 485  
Ethernet
- Output Power Detection
- Adjustable Gain
- Automatic detection of external reference power and frequency
- Multiple external reference frequency operation including:  
5, 10, 20, 25 & 50 MHz
- 13 lbs (5.9 kg)  
12.00 x 5.90 x 6.58 in  
305 x 150 x 167 mm

#### OPTIONS

- 6 Amp External Bias Tee for IFL Bias feed
- High Stability internal 10 MHz reference
- AC Power Supply
- System Options including:
  - 1:1 & 1:2 and 1:1 Chain Redundancy
  - TX & RX Reject Filters
  - LNB Power & Reference Port

#### ENVIRONMENTAL LIMITS

- -40 to +60 °C
- Humidity:  
100% condensing



**Ka-Band Output Power Levels**

PARAMETER	MODEL NUMBER	NOTES	LIMITS	UNITS
Frequency Range			30.0 to 31.0	GHz
Output Power @: Saturation/ $P_{Linear}$ (Typical/Guaranteed minimum)	VBUCKA10AAXXXXX	<u>Gain</u> 70 dB	$P_{sat} / P_{Linear}$ 40.0 / 38.0 (10 / 6)	dBm (W)
Power Requirements 48 VDC Input @ max current draw	VBUCKA10AAXXXXX		<u>48 VDC current</u> 4.0	Amps

**Frequency Bands**

Band	Frequency Plan*	IF Input	LO Frequency	RF Output
Ka	Standard Ka-Band	1.0 - 2.0 MHz	29.0 GHz	30.0 - 31.0 GHz

\* Custom frequency plans available upon request.

**Local Oscillator Phase Noise**

Offset	Guaranteed Max.	Ka-Band Typical	Units
10 Hz	-30	-50	dBc/Hz
100 Hz	-60	-65	dBc/Hz
1 KHz	-65	-76	dBc/Hz
10 KHz	-75	-85	dBc/Hz
100 KHz	-90	-105	dBc/Hz
1 MHz	-90	-120	dBc/Hz



**Specifications**

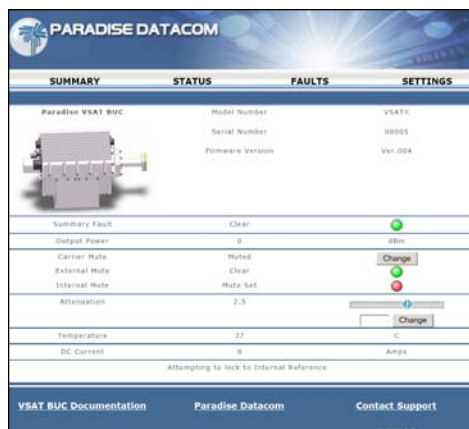
PARAMETER	NOTES	LIMITS	UNITS
Gain Flatness	full band	$\pm 2.0$	dB
Gain Slope	per 40 MHz	$\pm 0.75$	dB
Gain variation vs. Temperature	Two-tone @ $P_{Linear} = 30$ dBm total output power	$0 \pm 1.0$	dB
Intermodulation Distortion	3dB back off relative to $P_{1dB}$	-25	dBc
Spurious	In-Band Signal Related	-50	dBc
	Close to Carrier Spurious ( $\leq 20$ MHz)	-70	dBc
	Local Oscillator	-30	dBm
	Non-Signal Related	-50	dBm
Harmonics	2 <sup>nd</sup> harmonic measured at $P_{sat}$	-40	dBc
Output Spectrum	Low side Local Oscillator	Non Inverted	
Input VSWR		1.43:1	
Output VSWR		1.67:1	
Noise Figure		15	dB
Group Delay (per 40 MHz segment)	Linear	0.02	ns/MHz
	Parabolic	0.005	ns/MHz <sup>2</sup>
	Ripple	1.0	ns p-p
User Adjustable Gain	In 0.1 dB steps	+15	dB
Reference Input Frequency	Diplexed on L-Band Input Connector	5, 10, 20, 25, 50 MHz	MHz
Reference Input Power	Diplexed on L-Band Input Connector	-10 to +5	dBm
Input Voltage	+48 VDC nominal	+36 to +60	VDC
FSK Communication <sup>1</sup> Diplexed on L-Band Input	Center Frequency	650	KHz
	Deviation	$\pm 60$	KHz
	Locking Range	$\pm 32.5$	KHz
	Input Power Range	-15 to -5	dBm
	Start Tone Time	10	msec
Alarm Output	Phase Lock Alarm Internal BUC Voltages BUC Current +48 Input Voltage Case Temperature LNB Current	Form C Summary Contacts	
Internal Reference Option <sup>2</sup>	Reference Frequency	10	MHz
	Freq. Stability over temperature range	$< \pm 1 \cdot 10^{-8}$	
	Aging per day	$< \pm 1 \cdot 10^{-9}$	
	Aging per year	$< \pm 5 \cdot 10^{-8}$	
	Frequency Accuracy	$\pm 1 \cdot 10^{-8}$	
Warm up time	20 minutes	$< \pm 1 \cdot 10^{-8}$	
Internal Reference Phase Noise	10 Hz	-120	dBc/Hz
	100 Hz	-140	dBc/Hz
	1 kHz	-145	dBc/Hz
	10 kHz	-152	dBc/Hz
	100 kHz	-155	dBc/Hz
LNB Power & Reference Port	Power Output - TNC	15	VDC
	Reference Output	1 +10	A (Max.) dBm (Nom.)

<sup>1</sup> FSK Communication protocol, document # 201410

<sup>2</sup> Internal reference option units will automatically detect and switch to an applied external reference.

### Interfaces

Port	Connector	Description	Details	
J1	L Band Input	IF, 10 MHz, FSK Input DC must be tapped off using external Bias Tee	Type N	female
J7	DC Input MS3102R18-4P	+48 VDC Optional +24 VDC	A B C D	+ VDC + VDC - VDC - VDC
J4	Monitor & Control MS3112E14-18S	Serial Communication Serial Communication Serial Communication Summary Alarm Contacts Summary Alarm Contacts Summary Alarm Contacts TX Inhibit Ethernet Ethernet Ethernet Ethernet Ground Ground Ground Serial Override Ethernet Override	U R L B F D J H G C A E K M S N	RS-485 (-) RS-485 (+) Isolated Ground Form C - Closed on Fault Form C - Common Form C - Open on Fault Ground Enable TX TX - TX + RX - RX + Chassis Ground Chassis Ground Chassis Ground Ground resets to Serial Comms Ground resets to Ethernet Comms
J5	Link Connector MS3112E12-10S	Reserved Ground Ground +15 VDC for LNB Reserved Redundancy Switch Drive Link In Link Out Redundancy Switch Common	J C H A B G E F K	Closure to Ground Ground Ground Current Sensed +15 VDC +15 VDC @ 1A +48 Current Sink  +48 VDC (Vin+)
J8	Fan Voltage MS3112E8-3S	V+ V-	A B	+48 VDC Return
TNC	LNB Power & Reference	Power  Reference	+15 1 +10	VDC A (Max.) dBm (Nominal)



### Universal M&C Software

The Paradise Datacom Universal Monitor & Control software provides a remote view of the state of the vBUC via a web browser.

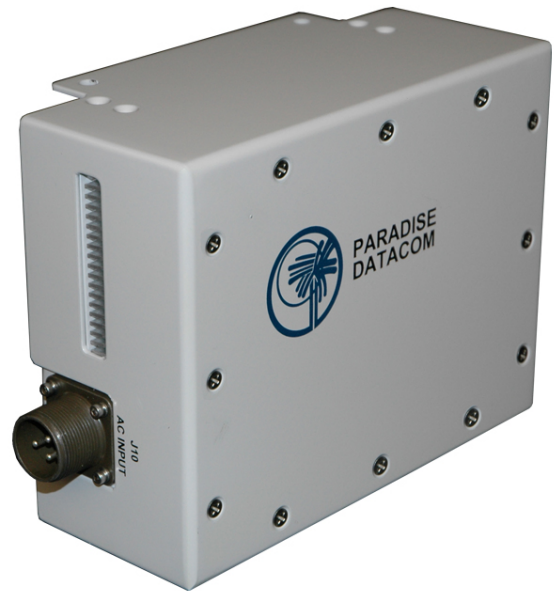
The user may adjust the attenuation of the vBUC and mute/unmute the unit. In addition, the web-based status screen shows the fault condition, mute state, current and temperature.

### AC Power Supply option

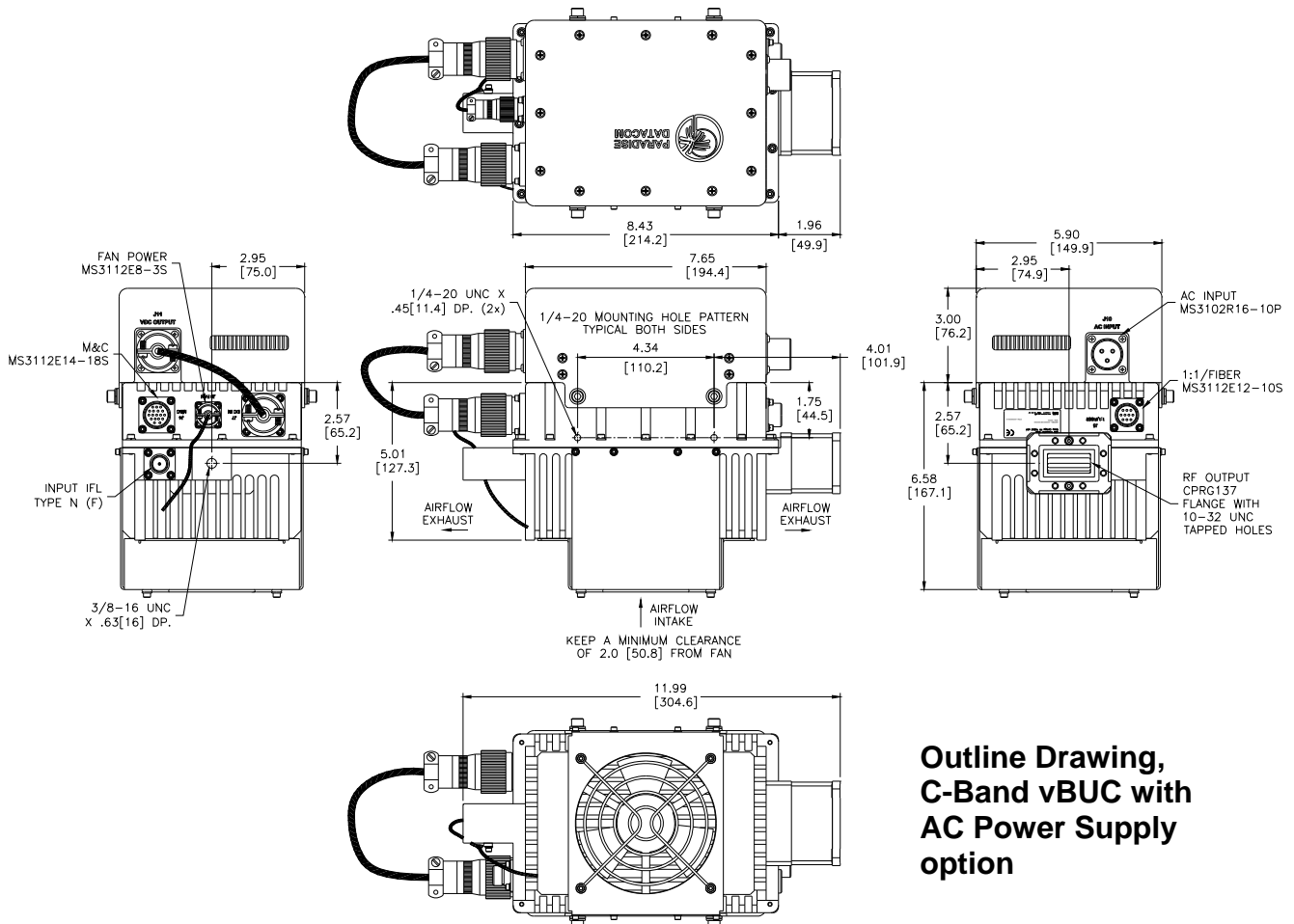
The vBUC is available with an optional AC Power Supply, which attaches to the top of the BUC, opposite the fan. An optional stand-alone mounting assembly is also available.

The AC Power Supply provides up to 500 Watts of power at 48VDC output. The AC Power Supply adds 5 lbs. (2.3 kg) to the overall weight of the unit.

Input power requirements: 85-265VAC, 47-63Hz.



	Pin-outs			
	A	B	C	D
AC Input	Line	GND	Neutral	--
DC Output	+48V	+48V	48V Return	48V Return





**Part Number Configuration**

V B U C K A 1 0 A A

**Band**  
KA - Ka-Band

**Power Level  
(in Watts)**  
Ka-Band  
10

**Frequency Sub Band**  
Ka-Band  
A - 30.0 - 31.0 GHz

**Input Voltage**  
A = +48 V

**Configuration Modifier**  
XXX = Standard  
WXX = Waveguide Isolator  
XAX = LNB Power & Reference Port

**System Configuration Options**  
X = Single Thread (Stand Alone)  
See Drawing Number 203614 for redundant system configurations.

**Reference Signal**  
X = Standard External Reference  
R = Internal 10 MHz Reference Oscillator

**Input Power Configuration**  
X = Input Voltage on Circular Connector (Standard)  
A\* = AC Power Supply mounted to BUC  
B\* = AC Power Supply with DC connectors only  
C\* = AC Power Supply with custom-length DC cable  
T\* = External IFL Bias Tee  
  
\* Available with +48V Input Voltage only

Specifications listed in this document are subject to change without notice.  
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