

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

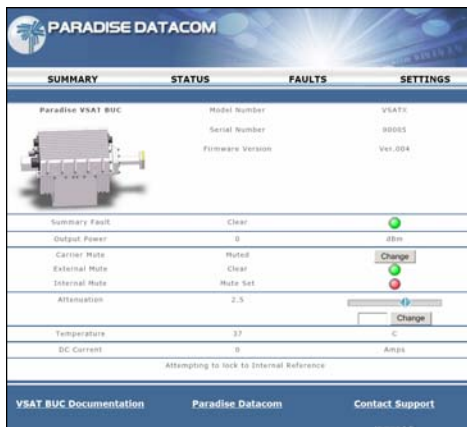
PARAMETER	NOTES	LIMITS	UNITS
Gain Flatness	full band	± 2.0	dB
Gain Slope	per 40 MHz	± 0.75	dB
Gain variation vs. Temperature	Two-tone @ $P_{\text{Linear}} = 30$ dBm total output power	0 ± 1.0	dB
Intermodulation Distortion	3dB back off relative to $P_{1\text{dB}}$	-25	dBc
Spurious	In-Band Signal Related	-50	dBc
	Close to Carrier Spurious (≤ 20 MHz)	-70	dBc
	Local Oscillator	-30	dBm
	Non-Signal Related	-50	dBm
Harmonics	2 nd 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 ²
	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 ¹ Diplexed on L-Band Input	Center Frequency	650	KHz
	Deviation	± 60	KHz
	Locking Range	± 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 ²	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.)

¹ FSK Communication protocol, document # 201410

² 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.

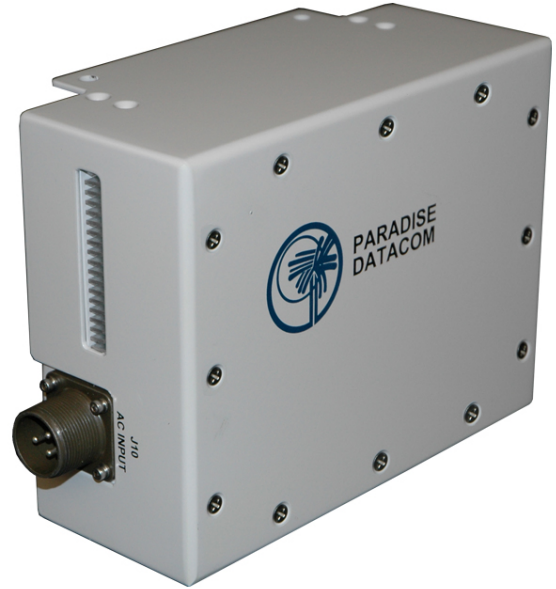
The user may adjust the attenuation of the vBUC and mute/unmute the unit. In addition, the web-based status screen shows the fault condition, mute state, current and temperature.

AC Power Supply option

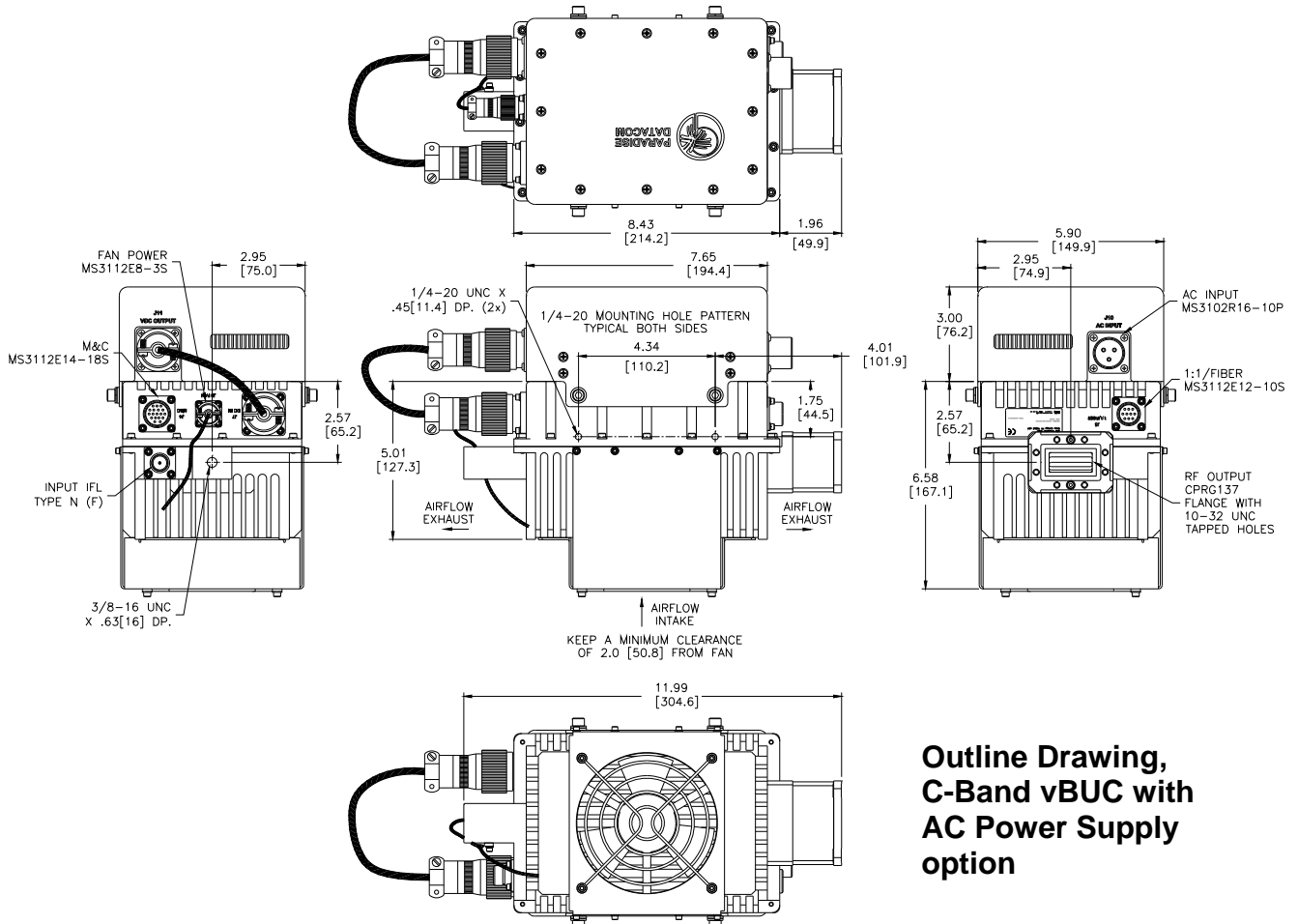
The vBUC is available with an optional AC Power Supply, which attaches to the top of the BUC, opposite the fan. An optional stand-alone mounting assembly is also available.

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