



25W C-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 and RS485 protocol
- Standard Paradise Datacom RS485
- Ethernet Interface supporting:
 - UDP
 - SNMP
 - Internal Web Browser

The vBUC is available in 1:1 and 1:2 redundant or dual 1:1 redundant configurations. The BUC can also be used with the OFM-1000 Fiber Optic to L-Band converter for fiber IFL capability.

FEATURES

- Single box BUC output power levels to:
 - 50W C-Band
 - 35W X-Band
 - 25W Ku-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
- 11 lbs (5.0 kg)
12.00 x 5.68 x 6.57 in
305 x 144 x 167 mm

OPTIONS

- 6 Amp External Bias Tee for IFL Bias feed
- High Stability internal 10 MHz reference
- Fiber Optic Interface
- AC Power Supply
- 24 VDC operation on selected models
- System Options including:
 - 1:1 & 1:2 Redundancy
 - TX & RX Reject Filters

ENVIRONMENTAL LIMITS

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

C-Band Output Power Levels

PARAMETER	MODEL NUMBER	NOTES	LIMITS	UNITS
Frequency Range			5.850 to 6.425	GHz
Output Power @: Saturation/P _{1dB} (Typical/Guaranteed minimum)	VSATC25AAXXXXX VSATC50AAXXXXX	<u>Gain</u> 74 dB 77 dB	P _{sat} / P _{1dB} 44.5/44.0 (28/25) 47.5/47.0 (56/50)	dBm (W) dBm (W)
Power Requirements 48 VDC Input @ max current draw	VSATC25AAXXXXX VSATC50AAXXXXX	<u>24 VDC current</u> 6.5 11.5	<u>48 VDC current</u> 3.0 5.6	Amps Amps

X-Band Output Power Levels

PARAMETER	MODEL NUMBER	NOTES	LIMITS	UNITS
Frequency Range			7.90 to 8.40	GHz
Output Power @: Saturation/P _{1dB} (Typical/Guaranteed minimum)	VSATX10AAXXXXX VSATX25AAXXXXX VSATX35AAXXXXX	<u>Gain</u> 70 dB 74 dB 75 dB	P _{sat} / P _{1dB} 40.5/40.0 (11/10) 44.5/44.0 (28/25) 45.5/45.0 (35/32)	dBm (W) dBm (W) dBm (W)
Power Requirements 48 VDC Input @ max current draw	VSATX10AAXXXXX VSATX25AAXXXXX VSATX35AAXXXXX	<u>24 VDC current</u> 3.3 7.3 11.0	<u>48 VDC Current</u> 2.0 4.7 5.2	Amps Amps Amps

Ku-Band Output Power Levels

PARAMETER	MODEL NUMBER	NOTES	LIMITS	UNITS
Frequency Range			14.0 to 14.5	GHz
Output Power @: Saturation/P _{1dB} (Typical/Guaranteed minimum)	VSATK10AAXXXXX VSATK16AAXXXXX VSATK25AAXXXXX	<u>Gain</u> 70 dB 72 dB 73 dB	P _{sat} / P _{1dB} 40.5/40.0 (11/10) 43.0/42.0 (20/16) 44.0/43.0 (25/20)	dBm (W) dBm (W) dBm (W)
Power Requirements 48 VDC Input @ max current draw	VSATK10AAXXXXX VSATK16AAXXXXX VSATK25AAXXXXX	<u>24 VDC current</u> 4.5 8.5 11.0	<u>48 VDC Current</u> 2.0 4.0 5.3	Amps Amps Amps

Specifications

PARAMETER	NOTES	LIMITS	UNITS
Gain Flatness	full band	± 2.0	dB
Gain Slope	per 40 MHz	± 0.5	dB
Gain variation vs. Temperature		0 ± 1.0	dB
Intermodulation Distortion	3dB back off relative to P_{1dB}	-25	dBc
Spurious	In-Band Signal Related (C-/Ku-Band)	-50	dBc
	(Extended C-Band)	-40	dBc
	Close to Carrier Spurious (≤ 20 MHz)	-70	dBc
	Local Oscillator	-70	dBm
	Non-Signal Related	-50	dBm
Harmonics	2 nd harmonic measured at P_{1dB}	-40	dBc
Output Spectrum	Low side Local Oscillator	Non Inverted	
Input VSWR		15	dB
Output VSWR		12	dB
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
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 or +24 VDC Input Voltage Case Temperature LNB Current	Form C Summary Contacts	
Internal Reference Option ²	Reference Frequency	10	MHz
	Freq. Stability over temperature range	$< \pm 1 \cdot 10^{-9}$	
	Aging per day	$< \pm 1 \cdot 10^{-10}$	
	Aging per year	$< \pm 5 \cdot 10^{-9}$	
	Frequency Accuracy	$\pm 1 \cdot 10^{-8}$	
Warm up time	5 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

¹ FSK Communication protocol, document # 201410

² Internal reference option units will automatically detect and switch to an applied external reference.

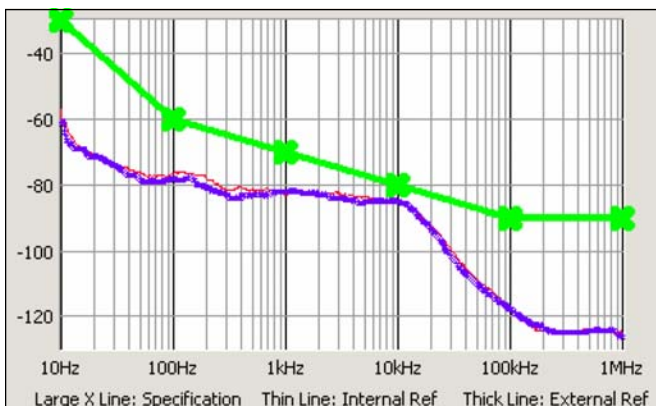
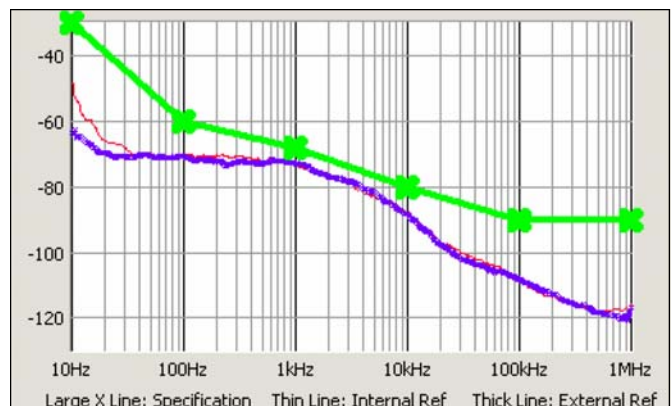
Frequency Bands

Band	Frequency Plan*	IF Input	LO Frequency	RF Output
C	Standard C-Band	950 - 1525 MHz	4.900 GHz	5.850 - 6.425 GHz
C	Extended C-Band	950 - 1825 MHz	4.900 GHz	5.850 - 6.725 GHz
C	Palapa Band	950 - 1250 MHz	5.475 GHz	6.425 - 6.725 GHz
C	Insat Band	950 - 1250 MHz	5.775 GHz	6.725 - 7.025 GHz
X	Standard X-Band	950 - 1450 MHz	6.950 GHz	7.900 - 8.400 GHz
Ku	Standard Ku-Band	950 - 1450 MHz	13.050 GHz	14.00 - 14.50 GHz
Ku	Extended Ku-Band	950 - 1700 MHz	12.800 GHz	13.75 - 14.50 GHz

* Custom frequency plans available upon request.

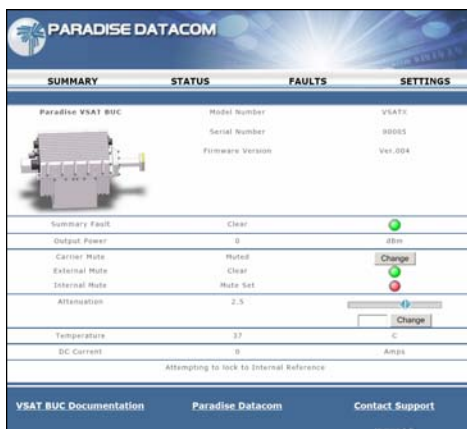
Local Oscillator Phase Noise

Offset	Guaranteed Max.	C-Band <i>Typical</i>	X-Band <i>Typical</i>	Ku-Band <i>Typical</i>	Units
10 Hz	-30	-60	-60	-50	dBc/Hz
100 Hz	-60	-80	-75	-65	dBc/Hz
1 KHz	-70	-80	-75	-72	dBc/Hz
10 KHz	-80	-85	-100	-80	dBc/Hz
100 KHz	-90	-120	-110	-100	dBc/Hz
1 MHz	-90	-125	-122	-115	dBc/Hz


Typical C-Band Phase Noise Plot

Typical Ku-Band Phase Noise Plot

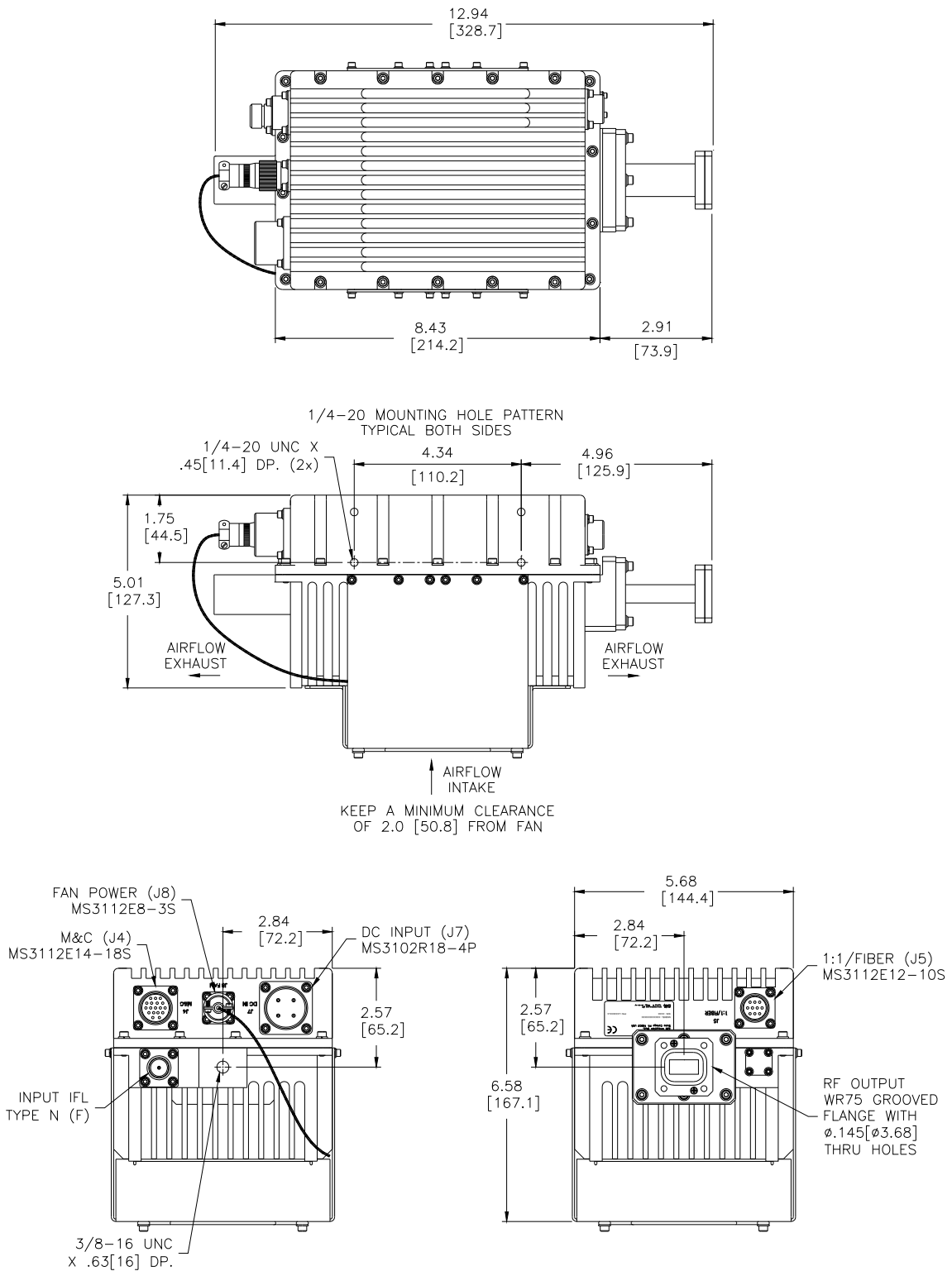
Interfaces

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 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	Fiber Optic Module Alarm Ground Ground +15 VDC for LNB +15 VDC for Fiber Optic Module Redundancy Switch Drive Link In Link Out Redundancy Switch Common	J C H A B G E F K	Closure to Ground Ground Ground Ground Current Sensed +15 VDC +15 VDC @ 1A +48 or +24 Current Sink +48 or +24 VDC (Vin+)
J8	Fan Voltage MS3112E8-3S	V+ V-	A B	+48 or +24 VDC Return


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.



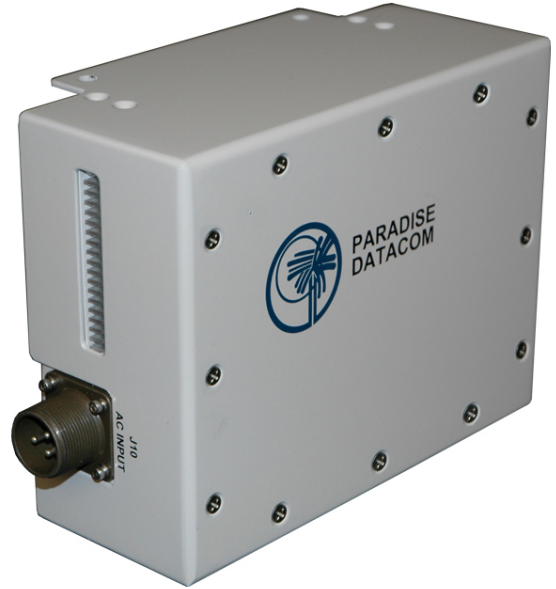
Outline Drawing (Ku-Band unit shown - all units have the same footprint with frequency specific waveguide output)

AC Power Supply option

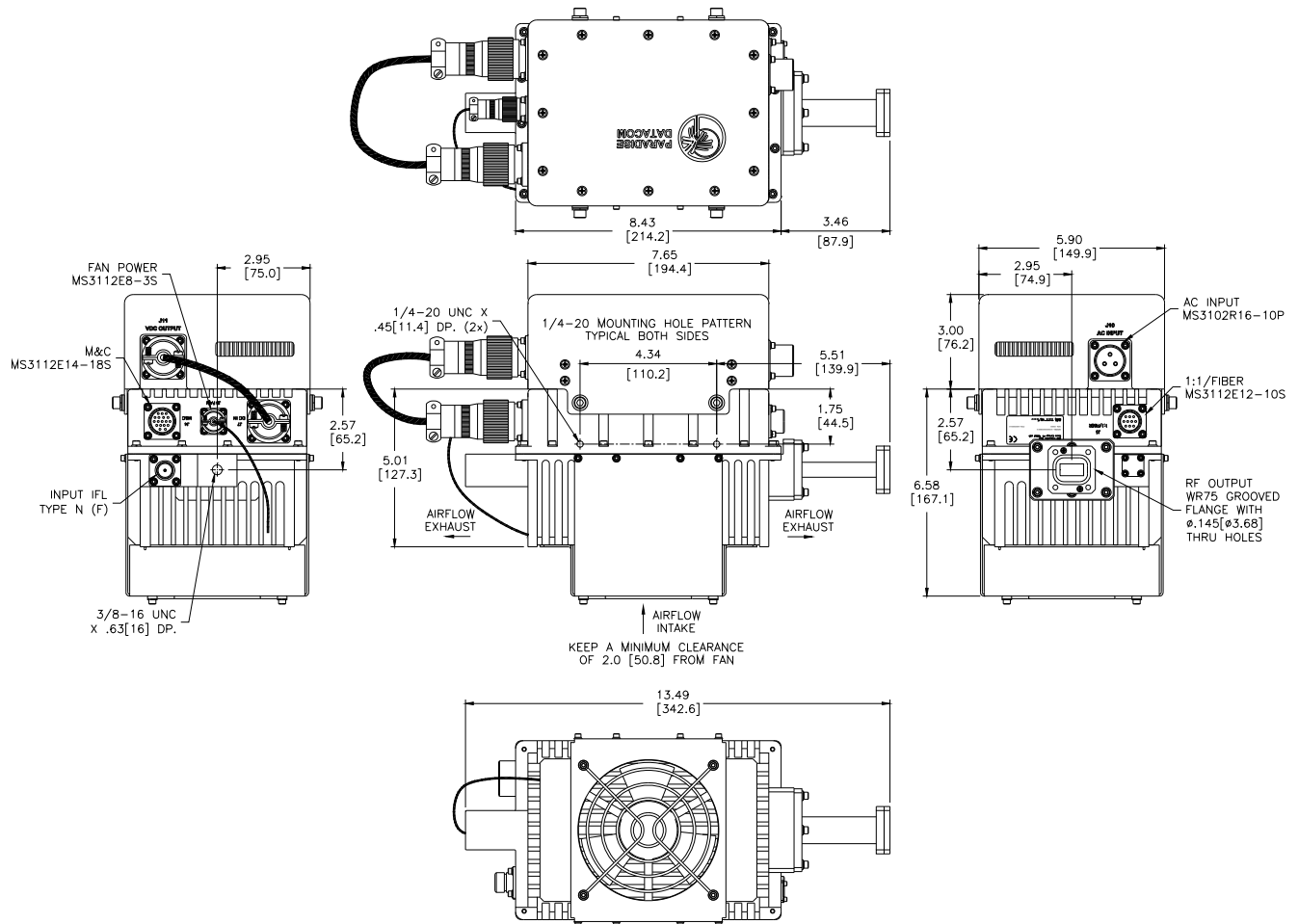
The vBUC is available with an optional AC Power Supply, which attaches to the top of the BUC, opposite the fan. An optional stand-alone mounting assembly is also available.

The AC Power Supply provides up to 500 Watts of power at 48VDC output.

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

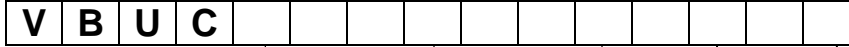


	Pin-outs			
	A	B	C	D
AC Input	Line	GND	Neutral	--
DC Output	+48V	+48V	48V Return	48V Return





Part Number Configuration



Band

C - C-Band
X - X-Band
K - Ku-Band

**Power Level
(in Watts)**

C-Band
25, 50

X-Band
10, 25, 35

Ku-Band
10, 16, 25

Frequency Sub Band

C-Band
A - 5.85 - 6.425 GHz
B - 5.85 - 6.725 GHz
C - 5.75 - 6.670 GHz
E - 6.425 - 6.725 GHz (Palapa)
F - 6.725 - 7.025 GHz (Insat)
G - 5.750 - 6.475 GHz

X-Band
A - 7.90 - 8.40 GHz

Ku-Band
A - 14.00 - 14.50 GHz
B - 13.75 - 14.50 GHz

Input Voltage

A = +48 V
B = +24 V

Configuration Modifier

XXX = Standard

System Configuration Options

A = 1:1 w/ Input Switching, Internal Control
B = 1:1 w/ Input Splitter, Internal Control
C = 1:2 w/ Input Switching & RCP2-1200*
F = 1:1 w/ Input Splitter & RCP2-1100*
H = 1:1 w/ Input Switching & RCP2-1100*
X = Single Thread (Stand Alone)

* Standard Cable Length of 100 ft. (30m) with RCP2

Block Up Converter

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 within this document are subject to change without notice.