

# MBT-5000 L-Band Up/Down Converter System



## INTRODUCTION

The RF marketplace has been transitioning from traditional 70/140 MHz IF-based networks to systems using L-Band (950 to 2000 MHz) for the modem/RF equipment link. The MBT-5000 Up/Down Converter System provides this frequency conversion between L-Band IF and C-/X-/Ku-Band RF frequencies. Featuring a drop down front panel providing access to two "hot swappable" frequency conversion modules, this unit offers either a mix of conversion functionality or 1:1 redundant system operation.

Designed for rack mounting, the MBT-5000's 1RU 19-inch chassis front panel contains all operator controls, indicators and displays for local and remote with RF, IF, power, and communications interfaces on the rear.

When configured with the redundancy option, the main chassis contains two diode "OR-ed" internal power supplies for increased reliability along with the necessary IF/RF switches.

Providing the level of RF frequency conversion performance that has historically been associated with 70/140 MHz rack mount converter systems, the MBT-5000 provides a smooth IF infrastructure upgrade path.

## KEY FEATURES

- Meets or exceeds IESS 308/309
- Facilitates 188-164A system compliance
- Low phase noise
- Powerful M&C support
- Ethernet/Telnet/SNMP
- EIA 232/485
- Flexible configuration
- RF Band switching in minimal time without requiring tools
- Available 1:1 redundancy in a 1RU chassis

## APPLICATIONS

The flexibility of the MBT-5000 makes it ideally suited for:

- Earth stations where L-Band IF products are being integrated into a 70/140 MHz IF infrastructure
- Reconfigurable Multi-Band requirements that are typically found in transportable / flyaway type installations

## BLOCK UP CONVERTER (BUC-5000)

The BUC-5000 field interchangeable module translates an L-Band input carrier to the desired output frequency (C, X, or Ku-Band) with an output level capable of driving an HPA. Available bands include:

C-Band: 5850 to 6425 MHz

C-Band: 5850 to 6425 MHz (Inverted)

X-Band: 7900 to 8400 MHz

Ku-Band: 13.75 to 14.50 GHz

## BLOCK DOWN CONVERTER (BDC-5000)

The BDC-5000 field interchangeable module translates a band specific input frequency block (C, X, or Ku), from the LNA, down to L-Band (950 to 2000 MHz). Available bands include:

C-Band: 3400 to 4200 MHz (Non-Invert Opt.)

C-Band: 3400 to 4200 MHz (Non-Inverted)

X-Band: 7250 to 7750 MHz

Ku-Band: 10.95 to 12.75 GHz

# MBT-5000 L-Band Up/Down Converter System

## BUC-5000 Block Up Converter IDU

Frequency Bands By Model:

Model	RF Output	IF Input	LO
BUC-5000C	5850-6425 MHz	950-1525 MHz	4900 MHz
-Option	-6650 MHz	-1750 MHz	
-Option	-6725 MHz	-1825 MHz	
BUC-5000CI			
-Optional	5850-6425 MHz	950-1525 MHz	7375 MHz
BUC-5000X	7900-8400 MHz	950-1450 MHz	6950 MHz
BUC-5000Ku	13.75-14.50 GHz	950-1700 MHz	12.80 GHz
BUC-5000KuN	14.00-14.50 GHz	950-1450 MHz	13.05 GHz

Input/Output Impedance	50Ω
Input Return Loss	15 dB minimum
Output Return Loss	18 dB minimum
Input Connector	N, Female (SMA for Redundancy option)
Output Connector	N, Female (SMA for Redundancy option)
Gain	30 dB nominal at minimum attenuation
- Full Band	+/- 1.0 dB
- Per 40 MHz	+/- 0.25 dB
- 0 to +50 C	+/- 1.0 dB
Mute	-60 dBc
User Attenuation Range	0 to 20 dB, in 0.25 dB steps
Output Power, P1dB	+15 dBm minimum
Noise Figure	15 dB at minimum attenuation
Intermodulation Distortion	-50 dBc at 0 dBm Total Output
Spurious (In-band)	
- Carrier Related	-60 dBc
- Non-Carrier Related	-60 dBm
Phase Noise	Meets or exceeds IESS 308/309

## MONITOR & CONTROL

Serial M&C Interface	TIA/EIA-232, TIA/EIA-485, 4-wire 9 pin D, Female
Alarm	Form C 9 pin D, Female
Redundant Switch Connections	SMA Female
Remote Interface	Ethernet RJ-45

## REFERENCE

External Input	5 or 10 MHz 0 ± 5 dBm optional BNC Female
Output	10 MHz Rear Panel BNC Female
Internal	
-Stability over Time	±1x10 <sup>-9</sup> /Day
-Stability over Temp	±1x10 <sup>-9</sup> /Day

## BDC-5000 Block Down Converter IDU

Frequency Bands By Model:

Model	RF Input	IF Output	LO
BDC-5000C	3400-4200 MHz	950-1750 MHz	5150 MHz
BDC-5000CNI			
-Optional	3625-4200 MHz	1325-1900 MHz	2300 MHz
BDC-5000X	7250-7750 MHz	950-1450 MHz	6300 MHz
BDC-5000K	10.95-11.70 GHz	950-1700 MHz	10.00 GHz
-Switched LO	11.70-12.20 GHz	950-1450 MHz	10.75 GHz
	12.25-12.75 GHz	950-1450 MHz	11.30 GHz

Input/Output Impedance	50Ω
Input Return Loss	18 dB minimum
Output Return Loss	15 dB minimum
Input Connector	N, Female (SMA for Redundancy option)
Output Connector	N, Female (SMA for Redundancy option)
Gain	35 dB nominal at minimum attenuation
- Full Band	+/- 1.0 dB
- Per 40 MHz	+/- 0.25 dB
- 0 to +50 C	+/- 1.0 dB
Mute	-60 dBc
User Attenuation Range	0 to 20 dB, in 0.25 dB steps
Output Power, P1dB	+ 15 dBm minimum
Noise Figure	15 dB at minimum attenuation
Intermodulation Distortion	-50 dBc at 0 dBm Total Output
Spurious (In-band)	
- Carrier Related	-60 dBc
- Non-Carrier Related	-60 dBm
Phase Noise	Meets or exceeds IESS 308/309

## PHYSICAL & ENVIRONMENTAL

Operating Temp.	0 to 50 °C
Non-Operating Temp.	-50 to 70 °C
Humidity	5 to 95% non-condensing
Operational Altitude	10,000 ft above sea level
Weight	15 pounds nominal
Dimensions	19" x 1.75" x 15"

## PRIME POWER

Voltage	90 – 260 VAC -48VDC Optional
Frequency	47 to 63 Hz
Dissipation	60 Watts, typical



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