

LBC-4000 Up/Down Converter System

Converters



Overview

The LBC-4000 L-Band IF to 70 MHz IF (140 MHz optional) indoor converter is a 1RU 19-inch chassis with two front panel accessible up converter or down converter modules. It contains two diode “OR-ed” internal power supplies, for increased reliability and microprocessor-based Monitor & Control (M&C) functions.

The LBC-4000 up converter module translates a 70 MHz IF input signal (140 MHz optional) up to a user-selected frequency at L-Band (950 to 2000 MHz). The L-Band output can drive the input of the Comtech EF Data MBT-4000 block up converter or other RF equipment with an L-Band input.

The LBC-4000 down converter module translates an L-Band (950 to 2000 MHz) IF input signal down to a user selected frequency in the 70 MHz (140 MHz optional) IF band. The LBC-4000 can be locked to an internal reference or an external 5 or 10 MHz reference signal. The LBC-4000 is an excellent choice for interfacing legacy 70 or 140 MHz equipment to quad-band or tri-band block converters.

Typical Users

- Earth Stations
- Governmental Organizations

Common Applications

- Match legacy 70/140 MHz systems with L band based RF

Features

- Meets or exceeds MIL-STD-188-164A
- Low phase noise
- 1 kHz step size
- Field selectable spectral inversion
- 50 dB gain adjustment
- 70 ±18 MHz IF (140 ± 36 MHz optional)
- Flexible configuration
- Auto band sensing capability
- Redundant option available

Installation

The LBC-4000 is rack mounted in a standard 19-inch equipment rack. External equipment, such as a modem, is connected to each internal converter module by a low-cost coaxial cable. A coaxial cable is also used to connect the output of each module to RF equipment either in the same location or at the antenna location.

MBT-4000 Multi-Band RF Transceiver

A companion to the LBC-4000 is Comtech EF Data's Multi-Band RF Transceiver (MBT-4000), which is designed to perform C-, X-, or Ku-Band RF to L-Band down conversion and L-Band to C-, X-, or Ku-Band RF up conversion. The MBT-4000 features:

- RF Band switching in minimal time without requiring tools
- Automatic band identification for the BUC, BDC, and antenna feed (if the feeds provide an identifying connector)
- Easy system status verification via LEDs located behind a removable cover
- Flexible configuration:
 - 2 ups
 - 2 downs
 - 1 up and 1 down
- Minimal cost for a complete system including spares
- Easy expansion for providing a redundant system or other frequency bands
- Rugged construction for mobile and transportable applications

Please refer to the MBT-4000 datasheet for additional information.

Specifications

LBC-4000 L-Band Down Converter IDU

Input Frequency Range	950 to 2000 MHz, 1 kHz steps
Output Frequency	70 ± 18 MHz (140 ± 36 MHz optional)
Input/Output Impedance	50 Ω
Input Return Loss	15 dB minimum
Output Return Loss	20 dB minimum
Input Connector	Type N, Female
Output Connector	BNC, Female
Gain	35 dB nominal at min. attenuation
Ripple	± .5 dB over any ± 18 MHz for 70 MHz IF units ± .5 dB over any ± 36 MHz for 140 MHz IF units
Slope	.05 dB/MHz
User Attenuation Range	0 to 40 dB, in 0.25 dB steps (0.1 dB opt)
Output Power, P1dB	+13 dBm minimum
Third Order Intercept	+23 dBm minimum
Carrier Spurious	-60 dBc
Non-Carrier Spurious	-60 dBm
Stability Over Time	± 1 x 10 ⁻⁹ /Day
Stability Over Temp	± 1 x 10 ⁻⁸ 32 to 122°F (0 to 50°C)

LBC-4000 L-Band Up Converter IDU

Input Frequency	70 ± 18 MHz (140 ± 36 MHz optional)
Output Frequency	950 to 2000 MHz, 1 kHz steps
Input/Output Impedance	50 Ω
Input Return Loss	18 dB minimum
Output Return Loss	15 dB minimum
Input Connector	BNC, Female
Output Connector	N Female
Gain	25 ± 1 dB nominal at minimum attenuation
Ripple	± .5 dB over any ± 18 MHz for 70 MHz IF units ± .5 dB over any ± 36 MHz for 140 MHz IF units
Slope	.05 dB/MHz
User Attenuation Range	0 to 40 dB, in 0.25 dB steps (0.1 dB optional)
Input Power Level	To +10 dBm, maximum

Output Power, P1dB	+10 dBm minimum
Third Order Intercept	+20 dBm minimum
Carrier Spurious	-60 dBc
Non-Carrier Spurious	-75 dBm
Transmit Phase Noise	Exceeds MIL-STD-188-164A
Stability Over Time	± 1 x 10 ⁻⁹ /Day
Stability Over Temp	± 1 x 10 ⁻⁸ 32 to 122°F (0 to 50°C)

Phase Noise

Frequency Offset	Up Converter (Guaranteed / Typical)	Down Converter (Guaranteed / Typical)
100 Hz	-75/-78 dBc/Hz	-70/-73 dBc/Hz
1000 Hz	-80/-83 dBc/Hz	-78/-81 dBc/Hz
10000 Hz	-88/-91 dBc/Hz	-87/-90 dBc/Hz
100000 Hz	-108/-111 dBc/Hz	-105/-108 dBc/Hz
1 MHz	-120/-123 dBc/Hz	-119/-122 dBc/Hz

Physical & Environmental

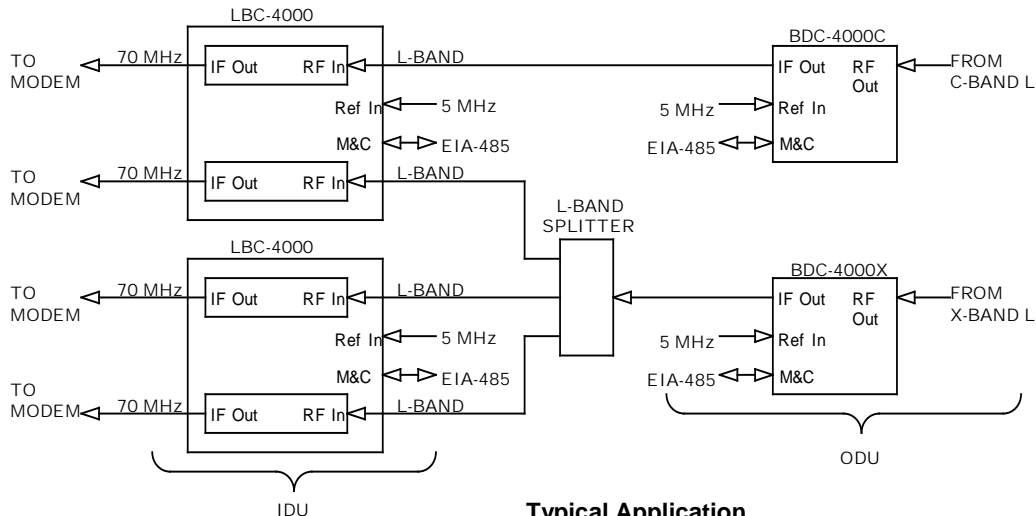
Operating Temperature	-0° to +50°C (32 to 122°F)
Operating Altitude	10,000 ft above sea level
Operating Humidity	5 to 95 non-condensing
Non-Operating Temperature	58° to 160°F (-50 to +71°C)
Dissipation	35 W total, 2 converters
Prime Power	90 to 260 VAC, 47 to 63 Hz
Dimensions (1RU) (height x width x depth)	1.75" x 19" x 22" (4.45 x 48.30 x 55.90 cm)
Weight	25 lbs (11.34 kg) maximum

External Reference

Input Frequency	5 or 10 MHz, Auto detect
Input Level	± 5 dBm
Input Impedance	50 Ω

Monitor & Control

Serial M&C Interface	TIA/EIA-232, TIA/EIA-485, 4-wire
Serial Connector	9-pin D, Female
Alarm Contacts	3 Form C summary
Alarm Connector	9-pin D, Female



Typical Application