



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 \pm 18 MHz IF (140 \pm 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 0.10 dB steps |
| 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 ⁻⁵ /Day |
| Stability Over Temp | ± 1 x 10 ⁻⁶ 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 50 dB, in 0.10 dB steps |
| 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 ⁻⁵ /Day |
| Stability Over Temp | ± 1 x 10 ⁻⁶ 32 to 122°F (0° to 50°C) |

Phase Noise

| Frequency Offset | Up Converter (Guaranteed / Typical) | Down Converter (Guaranteed / Typical) |
|------------------|-------------------------------------|---------------------------------------|
| 100 Hz | -76/-79 dBc/Hz | -75/-78 dBc/Hz |
| 1000 Hz | -79/-82 dBc/Hz | -76/-79 dBc/Hz |
| 10000 Hz | -86/-89 dBc/Hz | -87/-90 dBc/Hz |
| 100000 Hz | -107/-110 dBc/Hz | -110/-113 dBc/Hz |
| 1 MHz | -122/-125 dBc/Hz | -126/-129 dBc/Hz |

Physical & Environmental

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|--|--|
| 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 | 60 W typical |
| 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

| | |
|------------------------|---|
| Ethernet M&C/Connector | Ethernet, Telnet, SNMP/RJ-45 |
| Serial M&C/Connector | TIA/EIA-232, TIA/EIA-485, 4-wire, 9-pin D, Female |
| Alarm Contacts | 3 Form C summary |
| Alarm Connector | 9-pin D, Female |

