



Block Up Converter (BUC)



Low Noise Block Converter (LNB)



Indoor Unit (IDU)

Introduction

The DST-Ku is an integrated, single thread, Single Channel Per Carrier (SCPC), Very Small Aperture Terminal (VSAT) system designed to meet the needs of single and/or multiple site installations. The DST-Ku system has three major components:

- Block Up Converter (BUC) is a weatherproof unit including an integral L-Band up converter and amplifier.
- Low Noise Block Converter (LNB) is a low noise receive element with an L-Band interface.
- The Indoor Unit (IDU) is a complete, variable data rate modem with a high stability reference. It includes Outdoor Unit (ODU) power supplies for the BUC and LNB in an integrated 1RU package. The TX and RX IF are L-Band.

Main Features

- Ku-Band Digital Satellite Terminal:
 - Comtech EF Data L-Band Modem
 - 2, 4, or 8 Watt Block Up Converter (BUC)
 - Low noise block converter (LNB)
- TX frequency: 14.0 to 14.5 GHz
- Selectable RX frequency: 10.95 to 12.75 GHz (three optional bands)
- Fully Accessible System Topology (FAST) software options

Block Up Converter (BUC)

The BUC translates the L-Band carrier from the IDU (modulator) to the output frequency of the terminal and boosts the power level of the carrier. The BUC also locks to a 10 MHz reference signal from the IDU. FSK enabled BUCs allow the modem to monitor the BUC's output level and maintain a constant output power. No additional cabling is required as the FSK signal is passed over the BUC IF cable.

LNB Assembly

The LNB assembly delivers an L-Band receive signal to the IDU. Optionally, a waveguide Transmit Reject Filter (TRF) is available. The standard LNB noise temperature is $\leq 65^{\circ}\text{K}$. DC power and 10 MHz is supplied through the IFL center conductor from the IDU.

Modem

The IDU for the DST-Ku features any Comtech EF Data L-Band modem (including the CDM-625, CDM-600L, CDM-570L, CDM-QxL, CDM-IP 300L, SDM-300L3 or SNM-1001L) operating at data rates below 32 kbps and up to 20 Mbps. Along with the L-Band signals between the IDU and ODU, these modems deliver BUC and LNB power supply voltage, 10 MHz and FSK communications. See the individual datasheets for complete modem capabilities.

Monitor & Control (M&C)

The DST-Ku employs a familiar, user-friendly M&C, which is accessible from either the front panel or the remote port of the modem. The M&C includes:

- Data rate and code rate
- BUC and LNB
 - Power supply On/Off
 - High and low current alarms
 - 10 MHz On/Off
- TX Carrier On/Off
- Ku-Band TX and RX frequency programming
- FSK and Power Leveling On/Off for FSK BUCs
- Link power control with AUPC

EDMAC

A special feature of the CDM-xxx series of modems is the Embedded Distant-end Monitor and Control (EDMAC). The proprietary EDMAC overhead channel provides the ability to monitor and control the distant end from the local earth station while transparently passing user data. This is done from the front panel of the local modem or via the remote port.

Specifications

Transmit Characteristics

| | |
|---|--|
| Frequency Range | 14.0 to 14.5 GHz |
| Frequency Resolution | 100 Hz |
| Max. Power (P _{1dB}) | |
| 2 W | +33 dBm at 25°C |
| 4 W | +37 dBm at 25°C |
| 8 W | +40 dBm at 25°C |
| Power Resolution | 0.1 dB steps |
| Power Stability (Over Temp.) | 4 dB p-p typical w/o ALC 1 dB p-p typical with ALC (future) |
| Spurious (Not Intermods) | < -15 dBm/4 kHz |
| Spectral Re-growth (P _{out} =6 dB below P _{1dB}) | < -33 dBc |
| TX Phase Noise (DSB) | < 2.8° RMS integrated 100 Hz to 1 MHz |
| Frequency Stability | ± 0.02 ppm |

Receive

| | |
|-----------------------|--|
| Input Frequency Range | 10.95 to 11.70 GHz or 11.70 to 12.20 GHz or 12.25 to 12.75 GHz |
| Frequency Resolution | 100 Hz |
| Frequency Stability | 100 Hz |
| Acquisition Range | ± 500 kHz in 1 Hz steps |
| Noise Temperature | 0.9 dB (65°K (typical @ 25°C [77°F])) |
| Rx Image Rejection | 45 dB, minimum |

Environmental and Physical

ODU - BUC

| | |
|-----------------------|--------------------------------|
| Operating Temperature | -40° to +55°C (-40° to +131°F) |
| Operating Humidity | 0 to 100% RH |
| Storage Temperature | -50° to +80°C (-58° to +176°F) |
| Connectors (In/Out) | Type N/WR75 |
| Weight | 10 lbs. (4.5 kg) maximum |

ODU - LNB

| | |
|-----------------------|--------------------------------|
| Operating Temperature | -40° to +55°C (-40° to +131°F) |
| Operating Humidity | 0 to 100% RH |
| Storage Temperature | -50 to +80°C (-58° to +176°F) |
| Connectors (In/Out) | Type N/WR75 or Type F/WE75 |
| Weight | 2 lbs. (0.9 kg) maximum |

IDU

| | |
|--|---|
| Operating Temperature | 0 to 50°C (32° to 122°F) |
| Operating Humidity | Up to 90%, non-condensing |
| Prime Power | 85 to 264 VAC, 47 to 63 Hz, 150 W max. |
| Dimensions (1RU) (height x width x depth) | 1.75" x 19" x 19.18" (4.45 x 48.26 x 48.72 cm) |
| Weight | 12 lbs (5.4 kg) maximum |

Remote Control Specifications

| | |
|-------------------------|----------------------------------|
| Serial Interface | EIA-232 or EIA-485 (2 or 4 wire) |
| M&C Items | |
| TX Freq. | TX Power |
| Scrambler On/Off | Plesiochronous Buffer |
| Data Rate Select | Data Loopback |
| Power Supply Voltages | FSK On/Off |
| RXFreq. | RX Carrier Detect |
| RX Signal Level | Transmitter On/Off |
| Fault Status | IF Loopback (L-Band) |
| Raw Error Rate | Error Threshold Alarm |
| Configuration Retention | |

Available Options

Modem Options (See modem datasheet for complete details):

- Variable Data Rate
- OQPSK, 8-PSK, or 16-QAM
- Asymmetrical Loop Timing
- 2 x ADPCM Audio in 64 Kbps IBS
- Add Viterbi or Sequential Decoder
- Turbo Product Codec
- Concatenated Reed-Solomon Codec
- G.703 Interface with DB-9 and BNC for Closed Network (requires OH card)
- Async/AUPC, with 50 Pin D Connector (requires OH card)
- ODU/BUC power supply for BUC (24 VDC at 100W), 2 and 4 W BUC
- ODU/BUC power supply for BUC (48 VDC at 150 W), 8 W BUC
- 25 Pin Female D Connector with EIA-530 (EIA-422), EIA-232 and V.35

ODU Options:

- LNB: 3.625 to 4.200 GHz
- LNB with external reference or internal ± 3 ppm
- LNB Type N or Type F connector
- Mounting Kits
- TX Reject Filter
- BUC power 2 W (24 VDC)
- BUC power 4 W (24 VDC)
- BUC power 8 W (48 VDC)
- IFL Cables (cables and connectors)
- BUC with Power Leveling and FSK communications
- Receive reject filter

