



Application

The Comtech EF Data (CEFD) DT-4513 Down Converter is the ultimate in high performance and cost effective Ku-Band frequency conversion. The DT-4513 can be used for SCPC, DAMA, and TDMA, as well as full transponder HDTV and analog TV. Spectral purity and stability characteristics fully meet or exceed the requirements of all domestic, international, and regional commercial satellite networks. Wideband units are available.

High Gain

The DT-4513 has +20 dBm minimum output level at the 1 dB compression point and 45 dB of gain as a standard. This capability permits longer cable runs to the modem rack or compensates for elaborate splitting networks without adding expensive options such as external line amplifiers.

Low Phase Noise

The phase noise performance of the DT-4513 exceeds the Intelsat phase noise mask for IBS and IDR services by more than 6 dB. This allows phase dependent demodulators to perform better. The close-in phase noise is very low, making the converter ideal for low bit rate digital circuits such as those used in DAMA hub earth stations.

Remote Control

The remote control interface is selectable between EIA-232 and EIA-485, as well as full Ethernet including Telnet, SNMP and pre-loaded HTML GUI. All configuration control, status retrieval, and adjustments are available as simple ASCII commands through the serial interface or through the front panel menu. As a cost option, the remote control command structure can be customized in order to accommodate existing network control software.

Detachable RF/IF Connector Module

Each DT-4513 is equipped with a detachable module that establishes input and output connections for the RF and IF paths. The module inserts into a rear compartment of the converter, and requires no additional outside space. The module includes SMA connectors for the RF path and BNC connectors at 50 or 75 Ω for the IF path.

Daisy Chain Redundancy Switching

The converter uses our patented "Daisy Chain" integrated switching technology. The Daisy Chain design removes the relays associated with a centralized protection switch tray and distributes them across the individual converters. Daisy Chain technology successfully eliminates a central switching chassis, two power supplies, a microprocessor, and several long, costly cables. Widely accepted in the industry, CEFD's Daisy Chain provides both pricing and marketing advantages.

Minimum Rack Space

Due to its small rack height (1.75 inches) and the elimination of the space penalty paid for a separate 1+N switch chassis, the DT-4513 and the Daisy Chain switch architecture provide the most compact and cost effective converter subsystem available. The units are ideal for the construction of transportable systems such as "flyaways," and high capacity earth stations where space utilization and economy are prime considerations.



Typical Back Panel

Specifications

| | |
|---------------------|----------------------------------|
| Frequency Range | |
| DT-4513 | 10.95 to 12.75 GHz |
| DT-4513/E | 10.70 to 12.75 GHz |
| Conversion | Dual, No Inversion |
| Step Size | 125 kHz standard, 1 kHz optional |
| Preset Channels | 32 frequencies and gains |
| Stability Over Time | $\pm 1 \times 10^{-9}$ /Day |
| Stability Over Temp | $\pm 1 \times 10^{-8}$ /Day |

RF Input

| | |
|--------------|---|
| Input Level | -45 dBm Typical |
| Return Loss | 20 dB Minimum with RF/IF Connector Module |
| Impedance | 50 Ω |
| Noise Figure | 11 dB Maximum at 0 dB Attenuation |

IF Output

| | |
|----------------------|---|
| Level | +20 dBm at 1 dB Compression |
| Range | 52 to 88 or 104 to 176 MHz Optional 50 to 90 MHz or 100 to 180 MHz (Contact factory with specific requirements) |
| Non-Carrier Spurious | -80 dBm |
| Carrier Spurious | -65 dBc at 0 dBm Output |
| Intermodulation | -60 dBc at 0 dBm Output SCL |
| Impedance | 50 or 75 Ω |
| Return Loss | 23 dB Minimum |

Transfer

| | |
|--------------------|--|
| Gain | 45 dB \pm 2 dB |
| Attenuation Adjust | 0 to 20 in 0.25 dB Steps 0.1 dB Steps Optional |
| Gain Stability | ± 0.25 dB/Day |
| Ripple | ± 0.25 dB (± 18 MHz) Optional ± 20 MHz 0.75 dB (± 36 MHz) Optional ± 40 MHz (Contact factory with specific requirements) |
| Slope | 0.05 dB/MHz |
| Image Rejection | -80 dB In-Band |
| AM to PM | 0.1°/dB for Output up to -5 dBm |
| IF Bandwidth | 36 or 72 MHz, Optional 40 or 80 MHz (Contact factory with specific requirements) |

External Reference

Input, either 5 or 10 MHz Option @ +3 dBm
Optional 10 MHz Rear Panel Reference Output

Group Delay

| | |
|-----------|--------------------------|
| Linear | 0.03 ns/MHz |
| Parabolic | 0.01 ns/MHz ² |
| Ripple | 1.0 ns Peak-to-Peak |

Phase Noise

| Frequency Offset | Limit (dBc/Hz) | Typical (dBc/Hz) |
|------------------|----------------|------------------|
| 100 Hz | -66 | -69 |
| 1 KHz | -76 | -79 |
| 10 KHz | -86 | -89 |
| 100 KHz | -96 | -99 |
| 1 MHz | -106 | -109 |

Remote Control (Rear Panel)

Comm Port RS-485 or RS-232C, RJ-45 for Ethernet

Indicators (Front Panel)

| | |
|--------------|------------|
| Power On | Green LED |
| Mute | Yellow LED |
| Remote | Yellow LED |
| Reference | Yellow LED |
| Stored Fault | Red LED |
| Fault | Red LED |

Test Points (Front Panel)

| | |
|----------------------|----------------------|
| RF Sample | SMA, -20 dBc Nominal |
| IF Sample | BNC, -20 dBc Nominal |
| Optional L.O. Sample | |

Power

| | |
|-------------|---|
| Voltage | 90 to 250 VAC Auto ranging, optional -48 VDC |
| Frequency | 47 to 63 Hz |
| Dissipation | 60 W |

Environmental

| | |
|-------------|----------------------------|
| Temperature | 32 to 122°F (0 to 50°C) |
| Altitude | 10,000 Feet MSL |
| Humidity | 0 to 95% Relative Humidity |

Physical

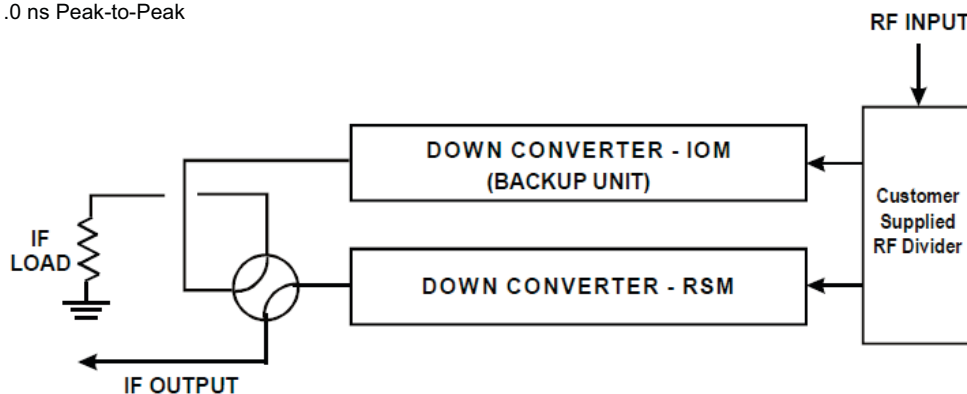
| | |
|--------------------------|---------------------------|
| Dimensions (1RU) | 1.75" x 19" x 22" |
| (height x width x depth) | (4.45 x 48.30 x 55.90 cm) |
| Weight | 15 lbs (7.0 kg) |

MTBF

49,740 hrs (calculated)
> 100,000 hrs. (field experience)

Summary Alarm

Relay Closure | Form C



1:1 Redundant Configuration Diagram - Single Source IF Output RSM-XX Installed