



APPLICATION

The DT-4503/X Down Converter is the ultimate in high performance and cost effective C-Band frequency conversion. The DT-4503/X 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-4503/X 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-4503/X exceeds the Intelsat phase noise mask for IBS and IDR services by more than 18 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. All configuration control, status retrieval, and adjustments are available as simple ASCII commands through the serial interface or through the front panel menu. The remote control command structure can be customized in order to accommodate existing network control software.

DETACHABLE RF/IF CONNECTOR MODULE

Each DT-4503/X 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 Type N connectors for the RF path and BNC connectors at 50 or 75Ω for the IF path.

1+12 PROTECTION SWITCHING

With our patented Daisy Chain protection switching architecture, the signal paths are chained in and out of adjacent converters, finally terminating in the backup converter. The Daisy Chain capability is implemented by replacing the converter's RF/IF connector module with a detachable Receive Switching Module (RSM). The RSM contains the required connectors and switching relays for chaining IF signal paths. The RF signals are derived from the main earth station splitting network and are not switched. Upon detection of a fault, the backup reconfigures itself in frequency and gain to replace the faulted unit. The faulted unit is then removed, leaving the detachable RSM in place in the chain. The Daisy Chain can serve up to 12 converters, as well as provide polarity switching for the backup.

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-4503/X 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.



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Comtech EF Data reserves the right to make changes to specifications of products described in this data sheet at any time without notice and without obligation to notify any person of such changes.

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Frequency Range

DT-4503	3625 to 4200 MHz
DT-4503/D	3400 to 3700 MHz

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	$\pm 1 \times 10^{-8}$ 0 to 50°C (32 to 122°F)

RF Input

Input Level	-45 dBm Typical
Return Loss	20 dB Minimum with RF/IF Connector Module
Impedance	50 Ohms
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
Non-carrier Spurious	-80 dBm
Carrier Spurious	-65 dBc at +3 dBm Output
Intermodulation	-60 dBc at 0 dBm Output SCL
Impedance	50 or 75 Ohms
Return Loss	23 dB Min. with RF/IF Connector Module or SW Module

Transfer

Gain	45 dB \pm 2 dB
Gain 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), 0.75 dB (± 36 MHz)
Slope	0.05 dB/MHz
Image Rejection	-80 dB Inband
AM to PM	0.1°/dB for Output up to -5 dBm

External Reference

5 or 10 MHz @ +3dBm
Optional 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

Phase Noise	Limit (dBc/Hz)	Typical (dBc/Hz)
100 Hz	-80	-83
1 KHz	-89	-92
10 KHz	-95	-97
100 KHz	-105	-109
1 MHz	-120	-124

Remote Control (Rear Panel)

Comm Port RS-485 or RS-232C

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 Autoranging, optional -48 VDC
Frequency	47 to 63 Hz
Dissipation	60 Watts

Environmental

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

Physical

Width	19 Inches	48.30 cm
Height	1.75 Inches	4.45 cm
Depth	22 Inches	55.90 cm
Weight	15 Pounds	7.00 kg

MTBF

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

Summary Alarm

Relay Closure	Form C
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