UT-4500 Series Up Converters

Converters

Overview

Our Up Converters are the ultimate in high-performance and cost-effective frequency conversion. An Up Converter 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, including the Eutelsat Hotbird™ family.

Available Models

Band	*Up Converter*
C	UT-4505/X
Ku	UT-4514/X UT-4518
X	UT-4579

High Gain

Each Up Converter has +10 dBm minimum output level at the 1 dB compression point and 35 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 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.

Daisy Chain Redundancy Switching

The converters use 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, Comtech EF Data's Daisy Chain provides both pricing and marketing advantages.

Typical Back Panel

Remote Control

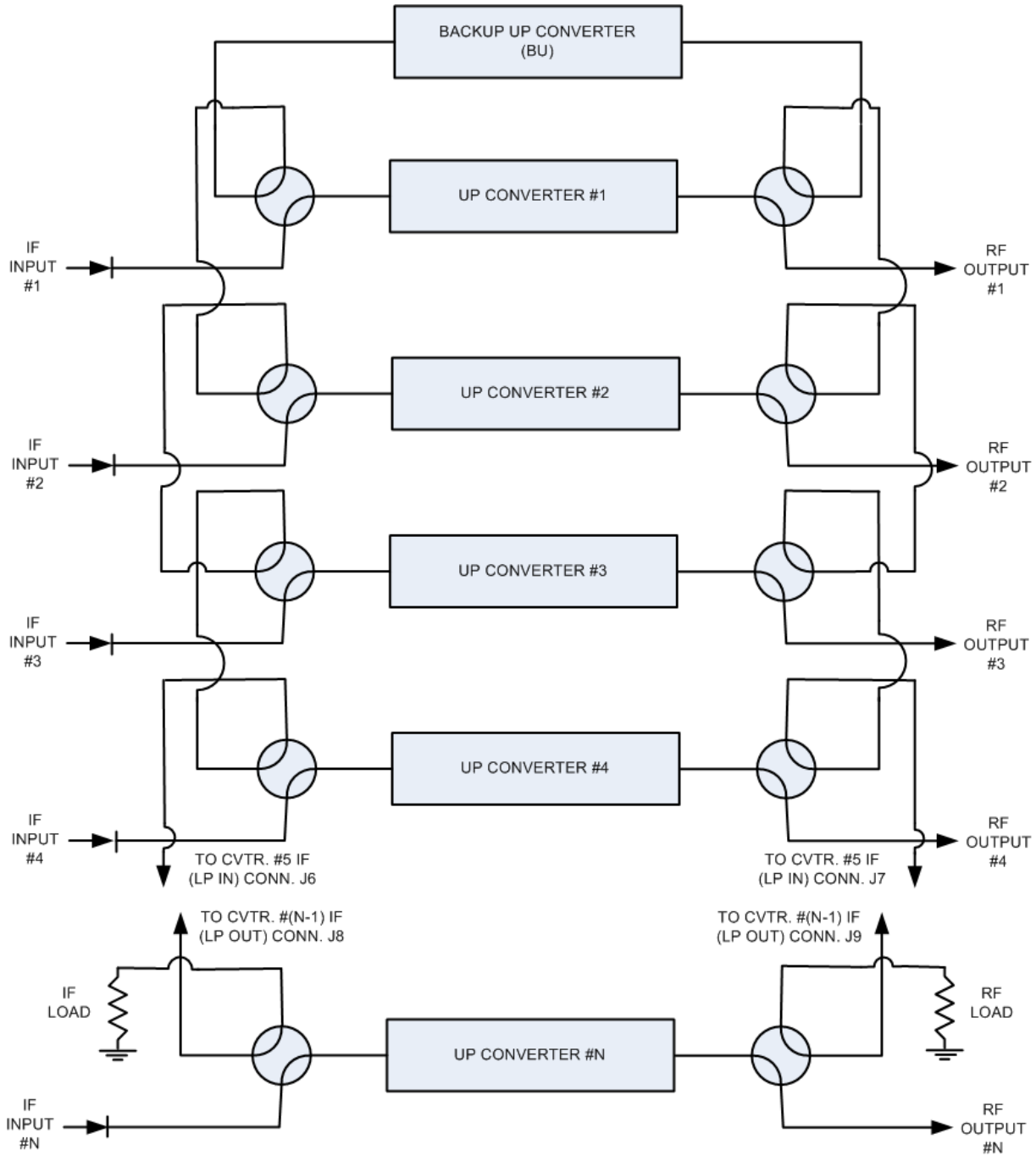
The remote control interface is selectable between EIA-232 and EIA-485, as well as full Ethernet including Telnet, SNMP and pre-loaded HTML GUI. All configuration control, status retrieval, and adjustments are available as simple ASCII commands through the serial interface or through the front panel 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 Up Converter is equipped with a detachable I/O Module (IOM) 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 a SMA connector for the RF path and a BNC connector at 50 or 75 Ω for the IF path.

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 UT-4518 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.



1:N Redundant Configuration Diagram with IOM-XX and TSM-XX Installed

Specifications

Available Models		Frequency Range
C-Band	UT-4505	5845 to 6425 MHz
	UT-4505/E	6725 to 7025 MHz
	UT-4505/F	6425 to 6725 MHz
	UT-4505/G	5925 to 6725 MHz
	UT-4505/H	5850 to 6650 MHz
	UT-4505/I	5845 to 6725 MHz
	UT-4505/J	7025 to 7075 MHz
	UT-4505/K	5725 to 6425 MHz
	UT-4505/M	5725 to 6725 MHz
	UT-4505/N	5845 to 6475 MHz
Ku-Band	UT-4514	14.00 to 14.50 GHz
	UT-4514/C	12.75 to 13.25 GHz
	UT-4514/D	13.75 to 14.50 GHz
	UT-4514/E	14.70 to 15.00 GHz
	UT-4514/F	12.75 to 14.50 GHz
	UT-4514/G	14.50 to 15.35 GHz
	UT-4518	17.30 to 18.10 GHz
	UT-4518/E	17.30 to 18.40 GHz
X-Band	UT-4579	7900 to 8400 MHz

Conversion	Dual, No Inversion
Step Size	125 KHz standard, 1 kHz optional
Preset Channels	32 Frequencies and Gains
Stability Over Time	± 1 x 10^{-9}/Day
Stability Over Temperature	± 1 x 10^{-8} 0 to 50°C

IF Input

Noise Figure	13 dB Maximum at 0 dB Attenuation
Level	-35 dBm Typical
Range	52 to 88 or 104 to 176 MHz Optional 50 to 90 MHz or 100 to 180 MHz (Contact factory with specific requirements
Impedance	50 or 75 Ω
Return Loss	23 dB Minimum with I/O Module or Switch Module

RF Output

Output Level	+10 dBm at 1 dB Compression (Ku-Band) +13 dBm at 1 dB Compression (X-Band) +17 dBm at 1 dB Compression (C- Band)
Intermodulation	-38 dBc at 0 dBm Output SCL (X- & Ku-Band) -50 dBc at 0 dBm Output SCL (C-Band)
Carrier Mute	-70 dBc
Non-Carrier Spurious	-80 dBm
Carrier Spurious	-65 dBc at 0 dBm Output
AM to PM	0.1°/dB at -5 dBm Out
Return Loss	20 dB Minimum with IO Module 18 dB Minimum with Switch Module
Impedance	50 or 75 Ω

Transfer

Gain	35 dB ± 2 dB
Attenuation Adjust	0 to 25 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
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/MHz2
Ripple	1.0 ns Peak-to-Peak

Phase Noise

	Limit (dBc/Hz)		Typical (dBc/Hz)	
	UT-4505	UT-4505/X	UT-4505	UT-4505/X
100 Hz	-80	-69	-83	-72
1 KHz	-89	-79	-92	-82
10 KHz	-95	-89	-97	-92
100 KHz	-105	-99	-109	-102
1 MHz	-120	-109	-124	-112

	Limit (dBc/Hz)		Typical (dBc/Hz)	
	UT-4514	UT-4514/F, UT-4518, & UT-4518/E	UT-4514	UT-4514/F, UT-4518, & UT-4518/E
100 Hz	-72	-66	-79	-69
1 KHz	-79	-76	-82	-79
10 KHz	-89	-86	-92	-89
100 KHz	-98	-96	-101	-99
1 MHz	-110	-106	-114	-109

	Limit (dBc/Hz)	Typical (dBc/Hz)
	UT-4579	UT-4579
100 Hz	-69	-79
1 KHz	-79	-82
10 KHz	-89	-92
100 KHz	-100	-102
1 MHz	-110	-112

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) (height x width x depth)	1.75” x 19” x 22” (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

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