

HIGH STABILITY,
LOW/ULTRA LOW
NOISE
SYNTHESIZED
CONVERTERS

UCB & DCB/
UCBU & DCBU
SERIES



Key Features

- One rack unit high
- 1 kHz or 125 kHz steps
- 70 MHz or 140 MHz IF
- Non-inverting, dual-conversion
- Rugged integrated modular design for transportable environment
- Low phase noise or optional ultra low noise
- 1:1 through 1:8 RS and STARswitch™ compatible
- Non-volatile memory.
- 100 channel, user programmable memory for frequency and attenuator settings.
- Low noise figure.
- Excellent phase noise. Exceeds INTELSAT IESS 308/309
- High dynamic range/low intermodulation distortion.
- Group delay equalized.
- Excellent amplitude flatness.
- 25 dB minimum gain adjustment from front panel or remote. Additional 25 dB adjustment on upconverters.
- HPA output displayed on upconverter.
- Internal detectors provide display of output power levels.
- IF/RF monitor, -20 dBc.
- High MTBF and easy maintenance because of small number of modules.
- Low microphonic design.
- Full monitoring and control through front panel or remote (RS-422).
- Alarm history information.

DOWNCONVERTERS		UPCONVERTERS	
Input Freq.	Model No.*	Input Freq.	Model No.*
C Band		C Band	
3400-3700 MHz	DCB3-010-1/2	5800-6500 MHz	UCB5-016-1/2
3400-4200 MHz	DCB3-004-1/2	5845-6425 MHz	UCB5-002-1/2
3600-4200 MHz	DCB3-002-1/2	5850-6425 MHz	UCB5-004-1/2
3625-4200 MHz	DCB3-008-1/2	5850-6441 MHz	UCB5-008-1/2
3700-4200 MHz	DCB3-006-1/2	5850-6460 MHz	UCB5-014-1/2
4500-4800 MHz	DCB4-002-1/2	5850-6485 MHz	UCB5-010-1/2
		5850-6650 MHz	UCB5-018-1/2
X Band		5850-6725 MHz	UCB5-012-1/2
7250-7750 MHz	DCB7-002-1/2	5925-6425 MHz	UCB5-006-1/2
		6417.5-6457 MHz	UCB6-006-1/2
Ku Band		6425-6725 MHz	UCB6-004-1/2
10.70-11.80 GHz	DCB10-012-1/2	6700-7000 MHz	UCB6-008-1/2
10.70-12.75 GHz	DCB10-008-1/2	6725-7025 MHz	UCB6-002-1/2
10.95-11.70 GHz	DCB10-006-1/2		
10.95-12.20 GHz	DCB10-002-1/2	X Band	
10.95-12.75 GHz	DCB10-004-1/2	7900-8400 MHz	UCB7-002-1/2
10.95-12.90 GHz	DCB10-010-1/2	7900-8400 MHz	UCB7-002-3
11.70-12.20 GHz	DCB11-002-1/2	Ku Band	
12.20-12.75 GHz	DCB12-004-1/2	12.75-13.25 GHz	UCB12-002-1/2
12.25-12.75 GHz	DCB12-002-1/2	13.75-14.50 GHz	UCB13-004-1/2
		13.75-14.80 GHz	UCB13-002-1/2
		14.00-14.50 GHz	UCB14-002-1/2
		Kt Band	
		17.30-18.10 GHz	UCB17-002-1/2
		17.30-18.40 GHz	UCB17-004-1/2
		17.30-17.80 GHz	UCB17-006-1/2

* -1 Models are 140±40 MHz IF, -2 Models are 70±20 MHz IF, and -3 Models are 700±62.5 MHz IF.

(973) 627-5981

SYNTHESIZED CONVERTERS

General Specifications

Primary Power (18" Chassis) (Optional 22" Chassis)	
Voltage Range, AC Version:	85 to 265 VAC switching p/s
Frequency:	47 to 63 Hz
Power Consumption:	70 Watt max.
Connector:	IEC-320 connector
Options:	DC input PF correction
Summary Alarm	Form C Contact Closure, DB-9F connector
Physical (22" Chassis)	
Weight:	15.3 lbs. typical, AC or DC version
Overall Dimensions:	19" x 1.75" high x 22" deep
Physical (18" Chassis)	
Weight:	11 lbs. typical, 12 lbs. max.
Overall Dimensions:	19" x 1.75" high x 18" deep
Environmental	
Temperature Range:	
Operating:	0°C to +50°C
Non-Operating:	-50°C to +70°C
Humidity:	5% to 95%, non-condensing
Altitude:	
Operating:	Up to 10,000 ft.
Non-Operating:	Up to 40,000 ft.
Shock/Vibration:	As encountered in mobile trailer and commercial shipping environments

RF Characteristics Output (Up) and Input (Down)

Frequency range	Any frequency range listed on front page
Impedance	50 ohms SMA-Female (N-type, C-Band)
Return loss	21 dB min.
RF monitor	-20 dBc nominal, 50 ohms SMA-Female (Upconverter only)
Frequency selection	125 kHz steps (Optional 1 kHz step)
Frequency stability	$\pm 1.5 \times 10^{-7}$ /year $\pm 1 \times 10^{-9}$ /day $\pm 2 \times 10^{-8}$, 0°C to 50°C

IF Characteristics Input (Up) and Output (Down)

Frequency range	-1 Models 140 \pm 40 MHz -2 Models 70 \pm 20 MHz
Impedance	75 ohms BNC-Female (50 ohms, optional)
Return loss	26 dB min.
IF monitor	-33 dBm nominal (Input, Upconverter) -20 dBc nominal (Output, Downconverter) 50 ohms BNC-Female

Phase Noise Offset dBc/Hz Max

	C&X-Band Standard	Ku-Band Standard	Kt-Band Standard	C&X-Band Ultra-Low
at 10 Hz	-50	-50	-50	-57
at 100 Hz	-65	-68	-67	-72
at 1 kHz	-75	-78	-73	-82
at 10 kHz	-85	-88	-83	-92
at 100 kHz	-95	-98	-93	-102
at 1 MHz	-105	-105	-102	-112

RF/IF Performance

	Upconverter	Downconverter
Frequency sense	Positive (No spectrum inversion)	Positive (No spectrum inversion)
Gain at 0 dB attenuation	29 to 34 dB	46 to 50 dB
Gain adjustment: IF attenuation	0 to 25 dB min. in 0.1 dB steps (Local/Remote)	0 to 25 dB in 0.1 dB steps (Local/Remote)
L-Band attenuation	0 to 25 dB in 0.1 dB steps (Local/Remote)	
Output at 1 dB compression	+9 dBm min.	+15 dBm min.
Intermodulation distortion (third order)	50 dBc min. with two carriers at -5 dBm total output	60 dBc min. with two carriers at -5 dBm total output
Amplitude response across IF band	± 0.3 dB max.	± 0.3 dB max.
Amplitude response across RF band	± 0.75 dB max. (any 500 MHz) 2.0 dB p-p max.	± 0.75 dB max. (any 500 MHz) 2.0 dB p-p max.
Gain slope	0.02 dB/MHz max.	0.02 dB/MHz max.
Gain stability over any 10°C temp.	± 0.25 dB max.	± 0.25 dB max.
Group delay: linear	0.01 ns/MHz	0.02 ns/MHz
-2 Models parabolic ripple (residual)	0.007 ns/MHz ² 1 ns p-p max.	0.009 ns/MHz ² 1 ns p-p max.
AM/PM conversion	0.1°/dB max. to -5 dBm output	0.1°/dB max. to 0 dBm output
Noise figure		11 dB max.
Noise Power Density	-125 dBm/Hz max. @ 25 dB Gain	
Spurious, non-carrier related	-75 dBm max. @ Gain = 25 dB	-75 dBm max @ Gain = 40 dB
Spurious, carrier related	-60 dBc max at -5 dBm output @ Gain = 25 dB	-60 dBc max at -5 dBm output @ Gain = 40 dB
Second harmonic of input signal	-55 dBc max. at -5 dBm output	
Image rejection		80 dB min.
AC line spurs, fundamental	-50 dBc max.	-50 dBc max.
AC line spurs, sum of all harmonics	-53 dBc max.	-53 dBc max.
Maximum input power		-25 dBm max.

Options

- RS-485, RS-232 or IEEE M & C interfaces
- External reference locking
- 50 ohm IF impedance
- Power ON/OFF switch on front panel
- Rack mount slides
- Outdoor configuration
- Higher stability
- DC input
- PF correction



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