



# HIGH VALUE RACK-MOUNTED BLOCK CONVERTERS

For Satellite Communications



This equipment is designed for applications where frequency translation is needed from L-band to transponder frequencies.

Input Frequency (GHz)	Output Frequency (GHz)	LO Frequency (GHz)	Model Number
<b>UPCONVERTERS</b>			
0.95 – 1.525	5.85 – 6.425	7.375	UPB-6.1S-LC-IN*
0.95 – 1.75	5.85 – 6.65	4.9	UPB-6.25S-LC
0.95 – 1.35	6.7 – 7.1	5.75	UPB-6.9S-LC
0.95 – 1.45	7.9 – 8.4	6.95	UPB-8.15S-LC
0.95 – 1.45	12.75 – 13.25	11.8	UPB-13S-LC
0.95 – 1.7	13.75 – 14.5	12.8	UPB-14.125S-LC
0.95 – 1.45	14 – 14.5	13.05	UPB-14.25S-LC
0.95 – 2.05	17.3 – 18.4	16.35	UPB-17.85S-LC
<b>DOWNCONVERTERS</b>			
3.4 – 4.2	0.95 – 1.75	5.15	DNB-3.8S-LC-IN*
3.4 – 4.2	0.95 – 1.75	8.55/11	DNB-3.8S-LCD
3.7 – 4.2	0.95 – 1.45	8.55/11.3	DNB-3.95S-LCD
7.25 – 7.75	0.95 – 1.45	6.3	DNB-7.5S-LC
10.7 – 11.7	0.95 – 1.95	9.75	DNB-11.2S-LC
10.95 – 11.7	0.95 – 1.7	10	DNB-11.325S-LC
11.2 – 12	0.95 – 1.75	10.25	DNB-11.6S-LC
11.45 – 12.25	0.95 – 1.75	10.5	DNB-11.85S-LC
11.7 – 12.5	0.95 – 1.75	10.75	DNB-12.1S-LC
12.2 – 12.75	0.95 – 1.5	11.25	DNB-12.475S-LC

\* Model includes frequency inversion.

## FEATURES

- High frequency stability
- Low intermodulation distortion
- Low phase noise contribution
- Summary alarm
- Automatic 5/10 MHz and internal/external reference selection
- Mute function on alarm or external mute input control
- Test points
- CE Mark
- RF signal monitor port

## OPTIONS

- Higher frequency stability
- Gain adjustment

# SPECIFICATIONS

## INPUT CHARACTERISTICS

Return loss (50 ohms).....	18 dB minimum (upconverters), 20 dB minimum (downconverters)
LO leakage.....	-80 dBm maximum (downconverters)
Signal monitor .....	-20 dBc nominal (downconverters)

## OUTPUT CHARACTERISTICS

Return loss (50 ohms).....	18 dB minimum (downconverters), 20 dB minimum (upconverters)
Signal monitor .....	-20 dBc nominal (upconverters)
Power output (1 dB compression).....	+13 dBm minimum (upconverters), +18 dBm minimum (downconverters)

## TRANSFER CHARACTERISTICS

Gain	
Upconverters.....	30 dB, $\pm 3$ dB at 23°C
Downconverters .....	35 dB, $\pm 3$ dB at 23°C
Gain stability.....	$\pm 0.25$ dB/day maximum at constant temperature
Amplitude response .....	$\pm 0.25$ dB/40 MHz maximum, $\pm 1$ dB maximum over RF frequency band
Image rejection.....	60 dB minimum
Noise figure .....	15 dB maximum
Intermodulation distortion (third order) .....	With two inband signals at 0 dBm output, third order intermodulation products are less than 60 dBc minimum (downconverters) and 50 dBc minimum (upconverters)
Spurious outputs (inband)	
Signal related .....	65 dBc minimum at 0 dBm output
Signal independent .....	-75 dBm maximum
Phase noise .....	See graph
Frequency stability .....	$\pm 2 \times 10^{-8}$ , 0 to 50°C (higher stability options available), $\pm 5 \times 10^{-9}$ /day typical (fixed temperature after 24 hour on time)
Automatic reference configuration .....	External 5 or 10 MHz at +4 $\pm 3$ dBm. If external reference is below +1 dBm nominal, the converter will automatically lock to the internal reference.
Upconverter mute.....	60 dB minimum on summary alarm, external mute input control
Alarms, indicators and control	
LO out-of-lock .....	Red LED (front panel)
Internal reference.....	Amber LED (front panel)
Power ON indicator.....	Green LED (front panel)
Summary alarm.....	Contact closure status for DC voltage and local oscillator
Upconverter external mute control.....	Mute control by external closure on mute contact pins

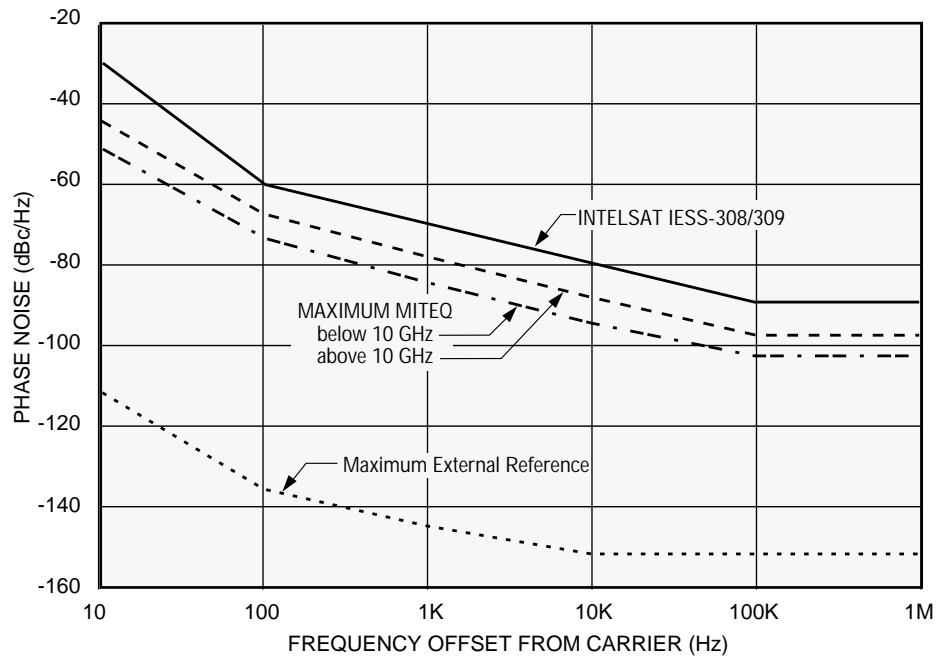
## OPTIONS

- Gain adjustment.  
20 dB minimum, continuously variable front panel control.
- Higher frequency stability reference.
  - $\pm 5 \times 10^{-9}$ , 0 to 50°C,  
1 x 10<sup>-9</sup>/day typical (fixed temperature after 24 hour on time).
  - $\pm 2 \times 10^{-9}$ , 0 to 50°C,  
1 x 10<sup>-9</sup>/day typical (fixed temperature after 24 hour on time).

Note: Missing option numbers are not applicable for this product.

## PHASE NOISE

**TYPICAL PHASE NOISE CHARACTERISTICS  
(1.0 Hz BANDWIDTH)**



# HIGH VALUE RACK-MOUNTED BLOCK CONVERTERS

## PRIMARY POWER REQUIREMENTS

Voltage .....	90–250 VAC
Frequency .....	47–63 Hz
Power consumption.....	30 W typical

## PHYSICAL

Weight .....	15 pounds nominal
Overall dimensions.....	19" x 1.75" panel height x 20" maximum
Connectors (rear panel)	
L-band .....	N female
RF .....	SMA female
External reference input .....	BNC female
Summary alarm.....	DE-9P
Test points	
DC voltage .....	Test point (internal)
LO frequency/power monitor.....	SMA female (front panel)

## ENVIRONMENTAL

Operating	
Ambient temperature.....	0 to 50°C
Relative humidity.....	Up to 95% at 30°C
Atmospheric pressure .....	Up to 10,000 feet
Nonoperating	
Ambient temperature.....	-50 to +70°C
Relative humidity.....	Up to 95% at 45°C
Atmospheric pressure .....	Up to 40,000 feet
Shock and vibration.....	Normal handling by commercial carriers



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