



70 MHz AND 140 MHz IF TO IF FREQUENCY CONVERTERS



This line of frequency converters are designed to provide a means of IF to IF frequency conversion. The converters can be used for applications with incompatible IF frequencies. For example, if a 70 MHz modulator has to be interfaced with a 140 MHz IF frequency upconverter, these converters can be used to provide the required frequency. These converters can also be used to provide IF frequency agility to modulators that have fixed outputs. The converters are supplied as combined up/downconverters with shared local oscillators, or as individual upconverters or downconverters.

FIXED TUNED CONVERTERS

Model Number	Input Frequency (MHz)	Output Frequency (MHz)	Bandwidth (MHz)	Description
U/D-70/140-40	70	140	40	Combined Up/Downconverter
	140	70	40	
U-70/140-40	70	140	40	Upconverter
D-140/70-40	140	70	40	Downconverter
U/D-70/140-54	70	140	54	Combined Up/Downconverter
	140	70	54	
U-70/140-54	70	140	54	Upconverter
D-140/70-54	140	70	54	Downconverter

SYNTHESIZED, 1 MHz STEP SIZE CONVERTERS

Model Number	Input Frequency (MHz)	Output Frequency (MHz)	Bandwidth (MHz)	Description
U/D-70/140-40-1M	70	100–180	40	Combined Up/Downconverter
	100–180	70	40	
U-70/140-40-1M	70	100–180	40	Upconverter
D-140/70-40-1M	100–180	70	40	Downconverter
U/D-70/140-54-1M	70	100–180	54	Combined Up/Downconverter
	100–180	70	54	
U-70/140-54-1M	70	100–180	54	Upconverter
D-140/70-54-1M	100–180	70	54	Downconverter
U/D-70/70-10-1M	70	50–90	10*	Combined Up/Downconverter
	50–90	70	10*	
U-70/70-10-1M	70	50–90	10*	Upconverter
D-70/70-10-1M	50–90	70	10*	Downconverter

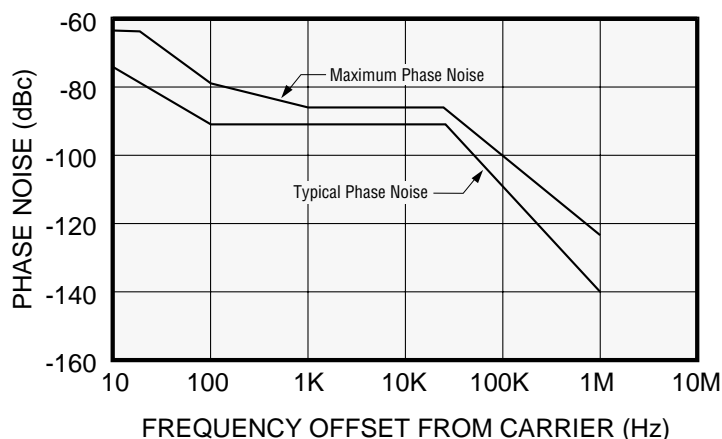
*Note: The bandwidth specified is only applicable to the guaranteed specifications. There are no bandwidth limitations within ± 20 MHz of center frequency.

SPECIFICATIONS

UPCONVERTER 70 MHz TO 140 MHz

Input frequency	See table
Output frequency.....	See table
Bandwidth	See table
Gain.....	0 \pm 2 dB
Gain flatness	\pm 0.25 dB, \pm 20 MHz (70/140 and 140/70 MHz converters), 0.3 dB, \pm 5 MHz (70/70 MHz converters)
Noise figure	20 dB maximum
Group delay.....	2.0 ns peak-to-peak, \pm 20 MHz (70/140 and 140/70 MHz converters), 1.2 ns peak-to-peak, \pm 5 MHz (70/70 MHz converters)
Spurious (inband, -20 dBm maximum input)	
Signal related	60 dBc minimum
Signal independent	-70 dBm maximum
Second harmonic (inband, 54 MHz bandwidth)	-50 dBc minimum at -20 dBm maximum input
Power output (1 dB compression).....	0 dBm minimum
Return loss	20 dB minimum/75 ohms
Intermodulation distortion.....	Third order intermodulation products -60 dBc minimum with two carriers at -20 dBm output
Frequency stability	\pm 2 Hz, 0 to 50°C, \pm 5 Hz/day typical (fixed temperature after 24 hour on time)
Gain stability.....	\pm 0.25 dB maximum/24 hours at constant temperature
External reference input	5 MHz or 10 MHz, +4 \pm 3 dBm. Unit will automatically switch to the internal reference for external reference input levels below +1 dBm nominal.

TYPICAL PHASE NOISE CHARACTERISTICS (1.0 Hz BANDWIDTH)



OPTION

15. 50 ohm IF impedance.

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

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GENERAL SPECIFICATIONS

PRIMARY POWER REQUIREMENTS

Voltage	90–250 VAC
Frequency	47–63 Hz
Power consumption.....	150 W typical

SUMMARY ALARM

Contact closure/open for DC voltage and/or LO alarm

PHYSICAL

Weight	30 pounds nominal
Overall dimensions.....	19" x 3.5" panel x 22" maximum (chassis depth 20")
IF connectors	BNC female
Summary alarm.....	DE-9P
Redundancy alarm	DE-9P
Test points.....	LO frequency/power (SMA female)

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 40°C
Atmospheric pressure	Up to 40,000 feet
Shock and vibration.....	Normal handling by commercial carriers



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