

Ku-Band Synthesized Frequency Converter

Single / Dual
FCS300



Features

- Outperforms IESS 308/309 phase noise by 3dB
- Superior linearity
- 125 kHz step size
- On-site reference aging correction capability
- Intuitive front panel user interface
- RS232 terminal and RS485 packet mode remote interface

Overview

The Advantech HP range of converters uses the latest technology in conversion, local and remote control thus providing the ultimate in performance and user friendly operation at a very competitive price.

The spectral purity, low phase noise and stability exceed the requirements of all major international satellite network operators. The flexible and comprehensive monitor and control features on the HP converter ensure that it will fit into any network management system architecture. The user-friendly front panel or the RS485 remote interface will provide full set-up and fault monitoring facilities. The RS232 will provide the Monitor and Control functions via a PC and will also allow for software downloading.

The converter is fully synthesized with the PLL oscillators either locked to a highly stable internal 10 MHz reference or if the external reference option is fitted and the proper level of signal is present, the PLL will automatically lock to the external reference.

Application

The HP range of converters is particularly suited for use in VSAT, SCPC Networks, SNG, DVB-RCS and Hub systems. This makes them an ideal choice for large earth stations requiring cost effective solutions for frequency conversion. The lightweight, rugged and compact design also ensures that the HP converter provides the ideal solution for mobile truck or flyaway DSNG systems. With fully welded aluminum chassis and robust modular internal construction the converter can even meet the demands of military installations. The HP range of converters provides an industry leading MTBF of over 120,000 hours.

Redundancy

For systems requiring redundancy Advantech can provide 1:1, 1:2 and 1:N (up to 12) solutions. The 1:N redundancy is provided by the 1:N Controller and the Switch Panel. Each Switch Panel can handle up to four (4) converter units. A 1:12 system requires one Controller panel plus three Switch Panels. A complete 1:12 complete system occupies a space of 17U.

Operating Bands

Up-Converters			
Model Number	Config	RF Output	IF Input
ARUN-70KS	Single	14.00 – 14.50 GHz	70 MHz
ARUD-70KS	Dual		
ARUN-70KX	Single	13.75 – 14.50 GHz	70 MHz
ARUD-70KX	Dual		

Down -Converters			
Model Number	Config	RF Input	IF Output
ARDN-K1 70	Single	10.95 - 11.70 GHz	70 MHz
ARDD-K1 70	Dual		
ARDN-K2 70	Single	11.70 - 12.20 GHz	70 MHz
ARDD-K2 70	Dual		
ARDN-K3 70	Single	12.25 - 12.75 GHz	70 MHz
ARDD-K3 70	Dual		
ARDN-K4 70	Single	10.70 – 11.70 GHz	70 MHz
ARDD-K4 70	Dual		
ARDN-K5 70	Single	11.70 – 12.75 GHz	70 MHz
ARDD-K5 70	Dual		
ARDN-KF1 70	Single Only	10.95 – 12.75 GHz	70 MHz
ARDN-KF2 70		10.70 – 12.75 GHz	

Up/Down-Converters			
Model Number	Config	RF ports	IF ports
ARMT-70XY	Up and Down	See table	70 MHz
For X and Y values choose any of the following configs.			
K5 = 14.00 – 14.50 GHz		K2 = 11.70 – 12.20 GHz	
Kx = 13.75 – 14.5 GHz		K3 = 12.25 – 12.75 GHz	
K1 = 10.95 – 11.7 GHz		K4 = 10.70 – 11.70 GHz	
		K5 = 11.70 – 12.75 GHz	

Options

- 140 MHz IF Frequency
- 75 ohms IF Impedance
- Ethernet port
- Single or Dual in 1RU shelf
- Group Delay Equalization
- Autosensing External/Internal Reference
- Input and Output Monitors
- 1kHz step size

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Technical Specifications									
Up-Converter					Down-Converter				
IF Input					RF Input				
Frequency range		70 ± 18 MHz or 140 ± 36 MHz (optional)			Frequency range		(See table on front page)		
Impedance		50 Ω			Impedance		50 Ω		
Input Connector		BNC (female)			Input Connector		N-Type (female)		
Return loss		18 dB			Return loss		18 dB		
RF Output					IF Output				
Frequency range		(See table on front page)			Frequency range		70 ± 18 MHz 140 ± 36 MHz (optional)		
Output level		+10 dBm at P1dB			Output level		+5 dBm at P1dB		
Output connector		N-type (female)			Output Connector		BNC (female)		
Connector Impedance		50 Ω			Connector Impedance		50 Ω		
Return loss		18 dB			Return Loss		18 dB		
Transfer Characteristics					Transfer Characteristics				
Maximum Conversion Gain		20 dB (standard) 30 dB (option)			Conversion Gain		40 dB		
Gain adjustment		20 dB (0.1 dB step size)			Gain adjustment		20 dB (0.1 dB step size)		
Gain flatness		1.5 dB p-p max. 36 MHz 2.0 dB p-p max. 72 MHz			Gain flatness		1.5 dB p-p max. 36 MHz 2.0 dB p-p max. 72 MHz		
Gain stability		±0.25 dB max. /24 hours ±1 dB over temp. range			Gain stability		±0.25 dB max. / 24 hours ±1 dB over temp. range		
Spurious		< -55 dBc related @ 0 dBm output < -55 dBm non-related			Spurious		-55 dBc @ -5 dBm output		
IMD3 (two tone)		-40 dBc max @ 0 dBm output			IMD3 (two tone)		-40 dBc max @ -5 dBm output		
					Image rejection		60 dBc		
					Noise Figure		20 dB		
Group delay		8 ns p-p typical							
Group delay option	36MHz	Linear	0.03 ns/MHz		Parabolic	0.01 ns/MHz ²		Ripple	1 ns p-p
	72MHz	Linear	0.025 ns/MHz		Parabolic	0.003 ns/MHz ²		Ripple	1 ns p-p
Phase noise (dBc/Hz)		100Hz		1kHz		10kHz		100kHz	
		-63		-73		-83		-93	
Synthesizer step size		125k kHz							
Reference					Mechanical				
External Reference		10 MHz, +/- 5 dBm input level			Dimensions		Width 19" (482.6 mm)		
Internal reference stability		± 2 x 10 ⁻⁸ over 0°C to +50°C					Height 1U 1.75" (44.5 mm)		
Aging		± 2 x 10 ⁻¹⁰ / day ± 5 x 10 ⁻⁸ / year					Depth 22" (558.8 mm)		
Environmental					Power Supply				
Operational		0°C to +50°C standard			Voltage		90 – 265 VAC (47 – 63 Hz)		
Storage		-55°C to +85°C			Power		40W (typical, single converter)		
Humidity		Non-condensing			Connector		IEC 603320 10A		
Altitude		3,000m AMSL							
					Monitor and Control				
					RS 485		DB9		
					RS 232		DB9		
					Discrete		DB9		
					Ethernet (optional)		RJ45 F (optional)		

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