



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 DSN 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.

## 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			
<b>KS</b> = 14.00 – 14.50 GHz		<b>K2</b> = 11.70 – 12.20 GHz	
<b>Kx</b> = 13.75 – 14.5 GHz		<b>K3</b> = 12.25 – 12.75 GHz	
<b>K1</b> = 10.95 – 11.7 GHz		<b>K4</b> = 10.70 – 11.70 GHz	
		<b>K5</b> = 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

## 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.

# Ku-Band Synthesized Frequency Converter

Technical Specifications							
Up-Converter			Down-Converter				
<b>IF Input</b>			<b>RF Input</b>				
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			
<b>RF Output</b>			<b>IF Output</b>				
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			
<b>Transfer Characteristics</b>			<b>Transfer Characteristics</b>				
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 <sup>2</sup>	Ripple	1 ns p-p
	72MHz	Linear	0.025 ns/MHz	Parabolic	0.003 ns/MHz <sup>2</sup>	Ripple	1 ns p-p
Phase noise (dBc/Hz)		100Hz		1kHz		10kHz	
		-63		-73		-83	
Synthesizer step size	125k kHz						
<b>Reference</b>			<b>Mechanical</b>				
External Reference	10 MHz, +/- 5 dBm input level		Dimensions	Width 19" (482.6 mm)			
Internal reference stability	± 2 x 10 <sup>-8</sup> over 0°C to +50°C			Height 1U 1.75" (44.5 mm)			
Aging	± 2 x 10 <sup>-10</sup> / day ± 5 x 10 <sup>-8</sup> / year			Depth 22" (558.8 mm)			
<b>Environmental</b>			<b>Power Supply</b>				
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						
			<b>Monitor and Control</b>				
			RS 485	DB9			
			RS 232	DB9			
			Discrete	DB9			
			Ethernet (optional)	RJ45 F (optional)			

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