Advantech Wireless

L-Band Synthesized Frequency Converter

Single / Dual / Triple / Quad
FCS500

Features

- 70 MHz or 140 MHz IF
- 125 kHz step size
- Cost effective solution
- L-Band 950 – 1750 MHz
- Fully compliant with IESS 308/309 requirements
- High linearity
- Low group delay
- Front panel control (local)
- Full remote control (remote)

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 aluminium 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.

Models

Up-Converters (non-inverting)

ARUN-70L	70MHz to L-Band up-converter (single)
ARUD-70L	70MHz to L-Band up-converter (dual)
ARUT-70L	70MHz to L-Band up-converter (triple)
ARUQ-70L	70MHz to L-Band up-converter (quad)

Down-Converters (non-inverting)

ARDN-L70	L-Band to 70MHz down-converter (single)
ARDD-L70	L-Band to 70MHz down-converter (dual)
ARDT-L70	L-Band to 70MHz down-converter (triple)
ARDQ-L70	L-Band to 70MHz down-converter (quad)

Down-Converters (inverting)

AREN-L70	L-Band to 70MHz down-converter (single)
ARED-L70	L-Band to 70MHz down-converter (dual)
ARET-L70	L-Band to 70MHz down-converter (triple)
AREQ-L70	L-Band to 70MHz down-converter (quad)

Up/Down-Converters

ARMT-70L	70MHz to L-Band up/Down-converter (Up/Down NINV)
ARMT-70LE	70MHz to L-Band up/Down-converter (Up-converter NINV, Down-converter INV)

Options

- 140 MHz IF Frequency
- Ethernet port and SNMP Interface
- 1:1 Hot Swap Redundancy in single 1RU
- Redundant Ready (for 1:N)

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.

L-Band Synthesized Frequency Converter

Technical Specifications

Up-Converter		Down-Converter	
IF Input		**RF Input**	
Frequency range	70 ± 18 MHz 140 ± 36 MHz (optional)	Frequency range	950 – 1750 MHz
Impedance	50 Ω standard (optional 75Ω)	Impedance	50 Ω
Input Connector	BNC (female)	Input Connector	Type N (female)
Return loss	18 dB	Return loss	16 dB
RF Output		**IF Output**	
Output power (P1dB)	+5 dBm	Frequency range	70 ± 18 MHz 140 ± 36 MHz (optional)
Frequency range	950 – 1750 MHz	Output level	+5 dBm at P1dB
IMD3 (two tone)	-40 dBc max @ -5 dBm output	Output Connector	BNC (female)
Output connector	Type N (female)	Connector Impedance	50 Ω (optional 75Ω)
Connector Impedance	50 Ω	Return Loss	18 dB
Return loss	16 dB		
Transfer Characteristics		**Transfer Characteristics**	
Conversion Gain	20 dB @ max gain setting	Conversion Gain	30 dB min @ max gain setting
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 1.5 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 carrier related @ -5 dBm < -60 dBm non-carrier related	Spurious	-55 dBc @ -10 dBm output
Group delay (over 36 MHz)	10 -15 ns p-p	Group delay (over 36 MHz)	10 -15 ns p-p
Group delay (with optional group delay equalizer)	Linear 0.03 ns/MHz Parabolic 0.01 ns/MHz^2 Ripple 1 ns p-p	Group delay (with optional group delay equalizer)	Linear 0.03 ns/MHz Parabolic 0.01 ns/MHz^2 Ripple 1 ns p-p
		Image rejection	50 dB
		Noise Figure	20 dB
Phase noise	Meets or Exceeds IESS 308/309	Phase noise	Meets or Exceeds IESS 308/309
Synthesizer step size	125k kHz	Synthesizer step size	125 kHz
Reference		**Mechanical**	
External Reference	10 MHz (optional)	Dimensions	Width 19" (482.6 mm)
Internal reference stability	± 2 x 10^{-10} / day		Height 1U 1.75" (44.5 mm)
Aging	± 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		
Other options		**Monitor and Control**	
1) 24V (4A) or 48V (2A) supply to BUC		RS 485	DB9
2) 20V supply to LNB		RS 232	DB9
3) 10 MHz reference for the BUC or LNB		Discrete	DB9
4) Dual, quad, 1:1 redundant in a single shelf (this option is not available with option 1, 2 & 3 above)		Ethernet (optional)	RJ45 F (optional)
5) 10MHz auto-sensing reference			

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Ref.: PB-FCS500-L-11039