Extended S-Band Synthesized Frequency Converter

Single / Dual / Triple / Quad
FCS501-S

Features

- 70 MHz or 140 MHz IF
- 1kHz step size
- Low Phase Noise
- Low Group Delay
- Cost effective solution
- S-Band 2000 – 2400 MHz option 2000 – 2500 MHz
- Fully compliant with IESS 308/309 requirements
- High linearity
- 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-70S	70MHz to S-Band up-converter (single)
ARUD-70S	70MHz to S-Band up-converter (dual)
ARUT-70S	70MHz to S-Band up-converter (triple)
ARUQ-70S	70MHz to S-Band up-converter (quad)

Down-Converters (non-inverting)

ARDN-S70	S-Band to 70MHz down-converter (single)
ARDD-S70	S-Band to 70MHz down-converter (dual)
ARDT-S70	S-Band to 70MHz down-converter (triple)
ARDQ-S70	S-Band to 70MHz down-converter (quad)

Down-Converters (inverting)

AREN-S70	S-Band to 70MHz down-converter (single)
ARED-S70	S-Band to 70MHz down-converter (dual)
ARET-S70	S-Band to 70MHz down-converter (triple)
AREQ-s70	S-Band to 70MHz down-converter (quad)

Up/Down-Converters

ARMT-70S	70MHz to S-Band up/Down-converter (Up/Down NINV)
ARMT-70S	70MHz to S-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)
- Input and Output Monitors
- Operating band to cover 2400 – 2500 MHz

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.

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Technical Specifications

Up-Converter		Down-Converter	
IF Input		**RF Input**	
Frequency range	70 ± 20 MHz 140 ± 40 MHz (optional)	Frequency range	2000 – 2400 MHz Option 2000 – 2500 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	18 dB
RF Output		**IF Output**	
Output power (P1dB)	+10 dBm	Frequency range	70 ± 20 MHz 140 ± 40 MHz (optional)
Frequency range	2000 – 2400 MHz Option 2000 – 2500 MHz		
IMD3 (two tone)	-40 dBc max @ 0 dBm output	Output level	+10 dBm at P1dB
Output connector	Type N (female)	Output Connector	BNC (female)
Connector Impedance	50 Ω	Connector Impedance	50 Ω (optional 75Ω)
Return loss	18 dB	Return Loss	18 dB
Transfer Characteristics			
Conversion Gain	30 dB @ max gain setting		
Gain adjustment	20 dB (0.1 dB step size)		
Gain flatness	0.8 dB p-p max. 40 MHz 1.0 dB p-p max. 80 MHz		
Gain stability	±0.25 dB max. /24 hours ±1 dB over temp. range		
Spurious (in band)	<-60 dBc carrier related @ 0 dBm <-70 dBm non-carrier related		
Noise Figure	15 dB		
		Image Rejection	-60 dBc
Group delay 70 MHz IF 140 MHz IF	Linear 0.03 ns/MHz 0.25 ns/MHz	Parabolic 0 .01 ns/MHz^2 0.003 ns/MHz^2	Ripple 1ns p-p Ripple 1ns p-p
Phase noise	5dB better than IESS 308/309	Image rejection	50 dB
Synthesizer step size	1 kHz		

Phase Noise @	10Hz	100Hz	1 kHz	10 kHz	100 kHz	1 MHz
dBm/Hz	-65	-80	-90	-95	-100	-115

Reference		Mechanical	
External Reference	10 MHz (optional)	Dimensions	Width 19" (482.6 mm)
Internal reference stability	± 2 x 10^{-8} over 0º to +50ºC		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 ºC to +50 ºC standard	Voltage	90 – 265 VAC (47 – 63 Hz)
Storage	-55 ºC to +85 ºC	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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