70/140 MHz to L-Band or L-Band to 70/140 MHz

Single / Dual / Triple / Quad Channel Converter

FCS500 Series

Features

- Up to 4 embedded converters in a single 1RU chassis
- Up or Down converters available
- 70 MHz or 140 MHz IF
- 125 kHz step size
- Cost effective solution
- 950 – 1750 MHz or 950 – 2150 MHz L-Band
- Fully compliant with IESS 308/309 requirements
- Internal/External 10 MHz Reference with Autosensing
- High linearity
- Low group delay
- Front panel control (local) via buttons, display and LEDs
- Full remote control via RS232, RS485 or optional Ethernet interface port
- Down-converters with inverted or non-inverted output spectrum available

Overview

The HP range of Advantech Wireless frequency 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 oscillator either locked to a highly stable internal 10 MHz reference or if the external 10 MHz reference signal with proper power level 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.

Options

- Ethernet port and SNMP Interface
- Redundant Ready for 1:N (N=1..12)
- 1:1 Hot Swap Redundancy in a single 1RU chassis for single-channel converters
- Rack mount set of slides

Up-Converters (non-inverting)

Model	Type	IF Input	RF Output
ARUN-70L	single	70 ± 18 MHz	950 – 1750 MHz
ARUD-70L	dual		
ARUT-70L	triple		
ARUQ-70L	quad		
ARUN-70LX	single	70 ± 20 MHz	950 – 2150 MHz
ARUD-70LX	dual		
ARUT-70LX	triple		
ARUQ-70LX	quad		
ARUN-140L	single	140 ± 36 MHz	950 – 1750 MHz
ARUD-140L	dual		
ARUT-140L	triple		
ARUQ-140L	quad		
ARUN-140LX	single	140 ± 40 MHz	950 – 2150 MHz
ARUD-140LX	dual		
ARUT-140LX	triple		
ARUQ-140LX	quad		

Down-Converters (non-inverting/inverting)

Model	Type	RF Input	IF Output
ARDN-L70	single	950 – 1750 MHz	70 ± 18 MHz
ARDD-L70	dual		
ARDT-L70	triple		
ARDQ-L70	quad		
ARDN-LX70	single	950 – 2150 MHz	70 ± 20 MHz
ARDD-LX70	dual		
ARDT-LX70	triple		
ARDQ-LX70	quad		
ARDN-L140	single	950 – 1750 MHz	140 ± 36 MHz
ARDD-L140	dual		
ARDT-L140	triple		
ARDQ-L140	quad		
ARDN-LX140	single	950 – 2150 MHz	140 ± 40 MHz
ARDD-LX140	dual		
ARDT-LX140	triple		
ARDQ-LX140	quad		

Redundancy

For customers requiring redundancy Advantech Wireless can provide 1:1, 1:2 and 1:N (up to 12) solutions. The 1:N redundancy is provided by the additional external 1:N Controller and 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. For more details please see information in a datasheet for the 1:N Switch Controller.

We also provide 1:1 redundant converters in a single 1RU chassis containing two hot swappable drawers (trays). Designed for easy removal and replacement, each of drawers includes independent frequency converter, power supply and 10 MHz reference source modules. For 1:1 redundancy operation, the chassis has embedded input & output switches controlled by an embedded M&C unit switching automatically to the backup drawer upon failure of any module inside of the primary one. For more details please see information in a datasheet for the 1:1 Redundant 70/140 MHz to L-Band or L-Band to 70/140 MHz Converter.

70/140 MHz to L-Band or L-Band to 70/140 MHz Single / Dual / Triple / Quad Channel Converter

Technical Specifications

Up-Converter		Down-Converter	
IF Input		**RF Input**	
Frequency range	(See table on front page)	Frequency range	(See table on front page)
Impedance	50 Ω standard (optional 75Ω)	Impedance	50 Ω
Input Connector	BNC (f) *other options available*	Input Connector	Type N (f) *other options available*
Return loss	18 dB	Return loss	16 dB
RF Output		**IF Output**	
Frequency range	(See table on front page)	Frequency range	(See table on front page)
Output power (P1dB)	+5 dBm (optional +10 dBm)	Output power (P1dB)	+5 dBm (optional +10 dBm)
IMD3 (two tone)	-40 dBc max @ -5 dBm output	Output Connector	BNC (f) *other options available*
Output connector	Type N (f) *other options available*	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. 40 MHz 2.0 dB p-p max. 80 MHz	Gain flatness	1.5 dB p-p max. 40 MHz 2.0 dB p-p max. 80 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 40 MHz)	10 -15 ns p-p	Group delay (over 40 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 Freq.	10 MHz ± 2 Hz, 0 ± 3 dBm	Dimensions	Width 19" (482.6 mm)
External Reference Input	BNC (f) *other options available*		Height 1U 1.75" (44.5 mm)
Internal reference stability	± 2 x 10^{-10} / day		Depth 22" (558.8 mm)
Aging	± 5 x 10^{-8} / year	Cooling	Forced-Air
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, triple, quad, 1:1 redundant in a single shelf (this option is not available with option 1, 2 & 3 above)		Ethernet (optional)	RJ45 F (optional)
		Buttons, display & LEDs	via Front Panel

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