C-Band Synthesized Frequency Converter

Single / Dual
FCS100

Features

- Outperforms IESS 308/309 phase noise by 5dB
- Superior linearity
- 125 kHz step size
- On-site reference aging correction capability
- Autosensing Internal /External Reference
- Intuitive front panel user interface
- RS232 terminal and RS485 packet mode remote interface

Overview

The Advantech FCS 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 FCS 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.

Options

- 140 MHz IF Frequency
- 75 ohms IF Impedance
- Ethernet port and SNMP Interface
- Single or Dual in 1 RU shelf
- Group Delay Equalization
- Input and Output Monitors
- 1kHz step size

Operating Bands

Up-Converters			
Model Number	**Config**	**RF Output**	**IF Input**
ARUN-70CS	Single	5.850 – 6.425 GHz	70 MHz
ARUD-70CS	Dual		
ARUN-70CX	Single	5.850 – 6.725 GHz	70 MHz
ARUD-70CX	Dual		
ARUN-70CI	Single	6.725-7.025 GHz	70 MHz
ARUD-70CI	Dual		

Down-Converters			
Model Number	**Config**	**RF Input**	**IF Output**
ARDN-CS70	Single	3.600 – 4.200 GHz	70 MHz
ARDD-CS70	Dual		
ARDN-CX70	Single	3.400 – 4.200 GHz	70 MHz
ARDD-CX70	Dual		
ARDN-CI70	Single	4.500 – 4.800 GHz	70 MHz
ARDD-CI70	Dual		

Up/Down-Converters		
Model Number	**RF Frequencies**	**IF Frequencies**
ARMT-CS70	Up 5.850 – 6.425 GHz Down 3.600 – 4.200 GHz	70 MHz
ARMT-CX70	Up 5.850 – 6.725 GHz Down 3.400 – 4.200 GHz	70 MHz
ARMT-CI70	Up 6.725 – 7.025 GHz Down 4.500 – 4.800 GHz	70 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.

Application

The FCS 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.

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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 (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**	
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	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			**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
Group delay option 72MHz	Linear 0.025 ns/MHz		Parabolic 0.003 ns/MHz^2	Ripple 1 ns p-p
Phase noise (dBc/Hz)	100Hz -65	1kHz -75	10kHz -85	100kHz -95
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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