DBS-Band Synthesized Frequency Converter

Single / Dual
FCS200-DBS

Features

- 70 MHz IF
- Cost effective solution
- Fully compliant with IESS 308/309 requirements
- High linearity
- 125 kHz step size
- 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 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	RF Output (GHz)	IF Input (MHz)
ARUN-70DBS (single converter)	17.3 – 18.1	70
ARUD-70DBS (dual converter)	17.3 – 18.1	70

Down-Converters

Model Number	RF Input (GHz)	IF Output (MHz)
ARDN-DBS70 (single converter)	17.3 – 18.1 GHz	70
ARDD-DBS70 (dual converter)	17.3 – 18.1 GHz	70

Up/Down -Converters

Model	Type	RF (GHz)	IF (MHz)
ARMT-70DBS	Up/Down	17.3-18.1	70

Options

- 140 MHz IF Frequency
- Ethernet port and SNMP Interface
- Single or Dual in 1 RU shelf
- Low Group Delay (option)
- Redundant Ready (for 1:N)
- 10 MHz Internal /External Reference with Auto-sensing

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

IF Input	
Frequency range	70 ± 18 MHz or 140 ± 36 MHz (optional)
Impedance	50 Ω (optional 75Ω)
Input Connector	BNC (female)
Return loss	18 dB

RF Output	
Output power (P1dB)	5 dBm
Frequency range	17.3 - 18.1 GHz
IMD3 (two tone)	-40 dBc max @ -5 dBm output
Output connector	Type N (female)
Connector Impedance	50 Ω
Return loss	16 dB

Transfer Characteristics	
Conversion Gain	20 dB @ max gain setting
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 stability	±0.25 dB max. /24 hours ±1 dB over temp. range
In band Spurious	<-55 dBc carrier related @ -5 dBm < -60 dBm non-carrier related
Group delay (over 36 MHz)	8 ns p-p typical
Group delay (with optional group delay equalizer)	Linear 0.03 ns/MHz Parabolic 0.01 ns/MHz^2 Ripple 1 ns p-p
Phase noise	Meets or Exceeds IESS 308/309
Synthesizer step size	125k kHz

Reference	
External Reference	10 MHz (optional)
Internal reference stability	± 2 x 10^{-10} / day
Aging	± 5 x 10^{-8} / year

Environmental	
Operational	0°C to +50°C standard
Storage	-55°C to +85°C
Humidity	Non-condensing
Altitude	3,000m AMSL

Down-Converter

RF Input	
Frequency range	17.3 - 18.1 GHz
Impedance	50 Ω
Input Connector	Type N (female)
Return loss	16 dB

IF Output	
Frequency range	70 ± 18 MHz 140 ± 36 MHz (optional)
Output level	+5 dBm at P1dB
Output Connector	BNC female
Connector Impedance	50 Ω (optional 75Ω)
Return Loss	18 dB

Transfer Characteristics	
Conversion Gain	40 dB min @ max gain setting
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 stability	±0.25 dB max. / 24 hours ±1 dB over temp. range
Spurious	-55 dBc @ -5 dBm output
Group delay (over 36 MHz)	8 ns p-p typical
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 dBc
Noise Figure	20 dB
Phase noise	Meets or Exceeds IESS 308/309
Synthesizer step size	125 kHz

Mechanical	
Dimensions	Width 19" (482.6 mm) Height 1U 1.75" (44.5 mm) Depth 22" (558.8 mm)

Power Supply	
Voltage	90 – 265 VAC (47 – 63 Hz)
Power	40W (typical, single converter)
Connector	IEC 603320 10A

Monitor and Control	
RS 485	DB9
RS 232	DB9
Discrete	DB9
Ethernet (optional)	RJ45 F (optional)

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