Ku-Band Synthesized Frequency Up-Converter

Single
FCS301

Standard Features

- **Built-in instrumentation RMS output detector**
- **Adjustable output power threshold alarms**
- Outperforms IESS 308/309 phase noise by 3dB
- Superior linearity
- 125 kHz step size
- 40dB attenuation control range
- On-site reference aging correction capability
- Intuitive front panel user interface
- RS232 terminal and RS485 packet mode remote interface
- 10 operating gain and frequency

Overview

Converters from FCS301 series are packaged in a compact standard 1RU enclosure.

Their built-in instrumentation detector associated with discrete power thresholds alarms allows evolved system monitoring configurations. The straightforward front panel operation, and RS232 terminal mode enables quick on-site setup

Offered remote management interfaces ensure complete flexibility of integration into existing or new installations. The user-friendly front panel or the RS485 remote interface will provide full set-up and fault monitoring facilities Ethernet option will allow the operator to pilot system operation either through SNMP or Web based interface.

Delivered spectral purity, low phase noise and stability exceed the requirements of all major international satellite network operators.

The system reference guaranteeing conversion function's accuracy can optionally be provided externally, internally as a highly stable temperature compensated oscillator, or with auto-detection capacity that will use internal reference only in the absence of an externally provided one.

Application

The FCS301 range of converters operates in VSAT, SCPC Networks, DSNG/SNG, DVB-RCS and Hub systems. This makes them an ideal choice for large earth stations requiring cost effective solutions while maintaining equipment configuration flexibility. The lightweight and compact design makes the FCB100 converter as an ideal solution for mobile truck or flyaway DSNG systems. Its rugged construction can even meet the demands of military installations. The FCB100 range of converters provides an industry leading MTBF of over 120,000 hours.

Operating Bands

Model Number	RF Output	IF Frequency
ARUN-70KS-A	14.0 – 14.5 GHz	70 MHz (36 MHz BW)
ARUN-70KX-A	13.75 GHz –14.5GHz	
ARUN-140KS-A	14.0 – 14.5 GHz	140 MHz (72 MHz BW)
ARUN-140KX-A	13.75 GHz –14.5GHz	

Options

- 1kHz step size
- 30dB maximum gain
- 75 ohms IF impedance
- Group Delay equalization
- Ethernet port with SNMP and Web interface
- Autosensing Internal /External Reference
- Input Monitor and Output Monitor
- 1:1 Redundant Ready
- 1:N Redundant Ready

Redundancy

The FCS-100 converter series redundancy options allow their incorporation in redundant system from 1:1 up to 1:12. 1:1 redundancy is performed with an additional redundancy shelf for a system size of 3RU. Higher order redundancy operates through a redundancy controller shelf with the extra benefit of a single bus for complete system M&C. Given each Switch Panel can handle up to four (4) converter units; a complete 1:12 system requires a space of 17U.

Associated documents

- 1:N Switch Controller for Frequency Converters
- 1:1 Redundancy for Frequency Converters.

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Technical Specifications

Up-Converter

IF Input

Impedance	50 Ω (75Ω *)
Input Connector	BNC (female)
Return loss	18 dB
Input monitor coupling*	20dB +/- 1dB
Input monitor connector*	BNC (female)

RF Output

Output level	0 dBm at P1dB
IMD3 (two tone)	-40 dBc max @ -10 dBm output
Output connector	Type N (female)
Connector Impedance	50 Ω
Return loss	18 dB
Output monitor coupling*	24 +/- 1dB
Output monitor connector*	SMA (female)
Power detection range	-25 to +11dBm, +/-1dB

Transfer Characteristics

Frequency range		(See table on front page)				
Conversion Gain		20 dB (30dB *)				
Gain adjustment		40 dB (0.1 dB step size)				
Gain flatness		1.2 dB p-p max. 36 MHz 1.8 dB p-p max. 72 MHz				
Gain stability		±0.25 dB max. /24 hours ±1 dB over temp. range				
Spurious		< -55 dBc related @ -10 dBm output < -60 dBm non-related				
Group delay		8 ns p-p typical				
Group delay equalization*	36MHz	Linear 0.03 ns/MHz	Parabolic 0.01 ns/MHz^2	Ripple 1 ns p-p		
	72MHz	Linear 0.025 ns/MHz	Parabolic 0.003 ns/MHz^2	Ripple 1 ns p-p		

Phase noise (dBc/Hz)	100Hz	1kHz	10kHz	100kHz
	-65	-75	-85	-100

Synthesizer step size	125k kHz (1kHz option)

Reference

External Reference	10 MHz, +/- 5 dBm input level
Internal reference stability	± 2 x 10^{-8} over 0°C to +50°C
Aging	± 2 x 10^{-10} / day ± 5 x 10^{-8}/ year

Mechanical

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

Environmental

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

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 *	RJ45 F

(*) offered as option

Ref.: PB-FCS301-Ku-19015

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