Dual S-Band Block Frequency Converters
Phase Track Class

Dual S-Band converter with phase tracking and matching
FCB200 - Phase Track Class
Satellite Tracking and Navigation

Features

- Dual L to S or Dual S to L block converters in single 1RU
- Coherent Phase tracking between each channel over time
- Gain tracking between channels
- Phase matching between channels
- Low Phase Noise
- Low Spurious levels
- Independent Input and Output attenuators
- Internal/External 10 MHz with Autosensing
- Front panel control (local)
- Input / Output Monitoring ports for each channel
- Full remote control (remote) via Ethernet with SNMP V1

Operating Bands

Up-Converters			
Model Number	**Type**	**Input Frequency**	**Output Frequency**
ARUD-LS-PT	dual	1.05-2.05 GHz	2.75-3.75 GHz

Down-Converters			
Model Number	**Type**	**Input Frequency**	**Output Frequency**
ARDD-SL-PT	dual	2.2-2.3 GHz	1.5 – 1.6 GHz Non-inverted

Overview

The Advantech PT-series of converters are designed for specific applications that require dual channel, coherent signal processing as applicable to TT&C and LEO Satellite Tracking and Navigation (STAN).
Each 1RU shelf includes two independent Up (or Down) Block converters that are coherent in phase, and phase matched.

These new frequency converters use the latest technology in RF conversion, with outstanding performance in spectrum purity.

Independent Input and Output attenuators allow maximum flexibility in adjusting levels on each channel, as the application requires.
Sample ports are available for each channel, on both Input and Output ports.

The flexible and comprehensive monitor and control features on the PT-series converter ensure that it will fit into any network management system architecture. The user-friendly front panel or the Ethernet interface will provide full set-up and fault monitoring facilities.

The PLL oscillator used in the converter is 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 PT-series of S-Band converters is particularly suited for use in applications that require phase coherent signal processing, TT&C and new LEO Satellite Tracking and Navigation.

The PT-series of converters provides an industry leading MTBF of over 120,000 hours.

The converters are MIL STD-461F compliant

Options

- Rack Mount set of slides
  Note: Consult factory for detailed configuration

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Technical Specifications

Up-Converter		Down-Converter	
IF Input		**RF Input**	
Frequency range	1.05-2.05 GHz	Frequency range	2.2-2.3 GHz
Input Connector	SMA (female) 50 Ohm	Input Connector	SMA (female) 50 Ohm
Return loss	18 dB	Return loss	18 dB
RF Output		**IF Output**	
Output power (P1dB)	+13 dBm	Output power (P1dB)	+18 dBm
Frequency range	2.75-3.75 GHz	Frequency range	1500-1600 MHz
IMD3 (two tone)	-50 dBc max @ 0 dBm each carrier	IMD3 (two tone)	-50 dBc max @ 0 dBm output each carrier
Output connector	SMA (female)	Output connector	SMA (female)
Connector Impedance	50 Ω	Connector Impedance	50 Ω
Return loss	18 dB	Return loss	18 dB
Transfer Characteristics		**Transfer Characteristics**	
Conversion Gain	30 +/- 3 dB @ max gain setting	Conversion Gain	35 +/- 3 dB @ max gain setting
Gain adjustment Output and Input	30 dB at Output ; 15 dB at Input	Gain adjustment	30 dB at Output ; 15 dB at Input
Attenuator step size	0.2 dB	Attenuator step size	0.2 dB
Gain flatness	±1.0 dB p-p over any 500 MHz 0.5 dB p-p over 40 MHz	Gain flatness	±1.0 dB p-p over 100 MHz 0.5 dB p-p over 40 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
Channel to Channel gain tracking	±0.5 dB at constant temperature	Channel to Channel gain tracking	±1 dB at constant temperature
Channel to Channel Isolation	50 dB	Channel to Channel Isolation	50 dB
Spurious	<-65 dBc signal related @ dBm <-75 dBm signal independent	Spurious	<-65 dBc signal related@ Pout = 0dBm -75 dBm signal independent
Image rejection	60 dB	Image rejection	60 dB
LO Leakage	< -80 dBm		
Noise Figure	16 dB	Noise Figure	15 dB
Channel to Channel Phase Tracking	+/- 2 degrees/day at constant temperature, same attenuation	Channel to Channel Phase Tracking	+/- 2 degrees/day at constant temperature, same attenuation
Channel to Channel Phase matching	+/-10 degrees	Channel to Channel Phase matching	+/-10 degrees
Phase noise	--52 dBc/Hz @ 10Hz -80 dBc/Hz @ 100Hz -90 dBc/Hz @ 1kHz -100 dBc/Hz @ 10kHz -110 dBc/Hz @ 100KHz -125 dBc/Hz @ 1 MHz	Phase noise	-52 dBc/Hz @ 10Hz -80 dBc/Hz @ 100Hz -90 dBc/Hz @ 1kHz -100 dBc/Hz @ 10kHz -110 dBc/Hz @ 100KHz -125 dBc/Hz @ 1 MHz
Reference		**Mechanical**	
External Reference input	10 MHz, 7 +/- 3 dBm, high purity	Dimensions	Width 19" (482.6 mm) Height 1U 1.75" (44.5 mm) Depth 22" (558.8 mm)
Internal reference stability	± 1 x 10^{-7} over 0°C to +50°C		
Aging	± 5 x 10^{-9} / day ± 5 x 10^{-8} / year		
Environmental		**Power Supply**	
Operational	0°C to +50°Cstandard	Voltage	83 – 264 VAC (43 – 67 Hz)
Storage	-55°C to +85°C	Power	45W (typical)
Humidity	95% Non-condensing	Connector	IEC 603320 10A
Altitude	3,000m AMSL		
		Monitor and Control	
		Input Sample Port	SMA (female)
		Output Sample Port	SMA (female)
		Ethernet	RJ45 F

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