

# Ku-Band Block Frequency Converter



Single / Dual / Triple / Quad  
FCB300

## Features

- L-Band IF
- Cost effective solution
- Fully compliant with IESS 308/309
- High linearity
- Low group delay
- 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 upgrades downloading.

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.

## Applications

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 a 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  | Type   | RF Output                         | IF Frequency |
| ARUN-LKu      | single | 14.00 - 14.50 GHz<br>Non-inverted | 950-1450 MHz |
| ARUD-LKu      | dual   |                                   |              |
| ARUT-LKu      | triple |                                   |              |
| ARUQ-LKu      | quad   |                                   |              |
| ARUN-LKL      | single | 12.75 - 13.25 GHz<br>Non-inverted | 950-1450 MHz |
| ARUD-LKL      | dual   |                                   |              |
| ARUT-LKL      | triple |                                   |              |
| ARUQ-LKL      | quad   |                                   |              |
| ARUN-LKx      | single | 13.75 - 14.50 GHz<br>Non-inverted | 950-1700 MHz |
| ARUD-LKx      | dual   |                                   |              |
| ARUT-LKx      | triple |                                   |              |
| ARUQ-LKx      | quad   |                                   |              |

| Down-Converters |        |                     |                                |
|-----------------|--------|---------------------|--------------------------------|
| Model Number    | Type   | RF Output           | IF Frequency                   |
| ARDN-K1L        | single | 10.95 - 11.70 GHz   | 950 - 1700 MHz<br>Non-inverted |
| ARDD-K1L        | dual   |                     |                                |
| ARDT-K1L        | triple |                     |                                |
| ARDQ-K1L        | quad   |                     |                                |
| ARDN-K2L        | single | 11.70 - 12.20 GHz   | 950 - 1450 MHz<br>Non inverted |
| ARDD-K2L        | dual   |                     |                                |
| ARDT-K2L        | triple |                     |                                |
| ARDQ-K2L        | quad   |                     |                                |
| ARDN-K3L        | single | 12.25- 12.75 GHz    | 950 - 1450 MHz<br>Non-inverted |
| ARDD-K3L        | dual   |                     |                                |
| ARDT-K3L        | triple |                     |                                |
| ARDQ-K3L        | quad   |                     |                                |
| ARDN-K4L        | single | 10.7- 11.7 GHz      | 950 - 1950 MHz<br>Non-inverted |
| ARDD-K4L        | dual   |                     |                                |
| ARDT-K4L        | triple |                     |                                |
| ARDQ-K4L        | quad   |                     |                                |
| ARDN-KFL        | Single | 10.95-12.75* GHz    | 950 - 1700 MHz<br>Non-inverted |
|                 |        | (10.70 - 12.75 GHz) | (950 - 1950 MHz)               |
| ARDN-K5L        | Single | 11.70-12.75 GHz     | 950-2000 MHz<br>Non-inverted   |

\*Note: 3 Selectable bands

A = 10.95-11.70 GHz or 10.70 - 11.45 GHz

B = 11.70-12.25 GHz 11.45-12.25 GHz

C = 12.25-12.75 GHz 12.25-12.75 GHz

| Up/Down-Converters          |         |                |                         |
|-----------------------------|---------|----------------|-------------------------|
| Model #                     | Type    | RF (GHz)       | IF (MHz)                |
| ARMT-LXY*<br>See note below | Up/Down | See Note below | 950-1450 or<br>950-1700 |

\*Note:

X and Y can be any of the following:

Ku = 14.00-14.50 GHz

Kx = 13.75-14.50 GHz

K1 = 10.95-11.70 GHz

K2 = 11.70-12.20 GHz

K3 = 12.25-12.75 GHz

K4 = 10.7 - 11.7 GHz

## Options

- Ethernet port and SNMP Interface
- External 10 MHz with Autosensing
- Spectrum INV or NINV on down converter
- Dual, quad, Up/Down, or 1:1 redundant hot swap converters in single 1RU chassis
- Redundant Ready (for 1:N, consult factory)

## Ku-Band Block Frequency 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 $\Omega$  | Impedance                | 50 $\Omega$                                   |
| Input Connector              | BNC (female)   | Input Connector          | Type N (female)                               |
| Return loss                  | 16 dB  | Return loss              | 18 dB   |
| RF Output                    |  | IF Output                |   |
| Output power (P1dB)          | +10 dBm  | Frequency range          | (See table on front page)                     |
| Frequency range              | (See table on front page)  | Output level             | +10 dBm at P1dB                               |
| IMD3 (two tone)              | -40 dBc max @ 0 dBm output                                       | Output Connector         | BNC female                                    |
| Output connector             | Type N (female)  | Connector Impedance      | 50 $\Omega$                                   |
| Connector Impedance          | 50 $\Omega$  | Return Loss              | 16 dB   |
| Return loss                  | 18 dB  |                          |   |
| Transfer Characteristics     |  | Transfer Characteristics |   |
| Conversion Gain              | 20 dB @ max gain setting   | Conversion Gain          | 30 dB @ max gain setting                      |
| Gain adjustment              | 20 dB  | Gain adjustment          | 20 dB   |
| Attenuator step size         | 0.1 dB   | Attenuator step size     | 0.1 dB  |
| Gain flatness                | $\pm 1.5$ dB p-p over the full operating band                    | Gain flatness            | $\pm 1.5$ dB p-p over the full operating band |
|                              | 1.0 dB p-p over 40 MHz   |                          | $\pm 0.5$ dB p-p over 36 MHz                  |
| Gain stability               | $\pm 0.25$ dB max. /24 hours                                     | Gain stability           | $\pm 0.25$ dB max. / 24 hours                 |
|                              | $\pm 1$ dB over temp. range                                      |                          | $\pm 1$ dB over temp. range                   |
| Spurious                     | -55 dBc carrier related @ 0 dBm<br>< -60 dBm non-carrier related | Spurious                 | -55 dBc @ 0 dBm                               |
|                              |  | Image rejection          | 60 dB   |
|                              |  | Noise Figure             | 20 dB   |
| Phase noise                  | Meets or Exceeds IESS 308/309                                    | Phase noise              | Meets or Exceeds IESS 308/309                 |
| Reference                    |  | Mechanical               |   |
| External Reference           | 10 MHz, +/- 3 dBm input level                                    | Dimensions               | Width 19" (482.6 mm)                          |
| Internal reference stability | $\pm 2 \times 10^{-10}$ / day                                    |                          | Height 1U 1.75" (44.5 mm)                     |
| Aging                        | $\pm 5 \times 10^{-8}$ / 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                    | 50W (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                   |   |

Ref.: PB-FCB300-Ku-18347

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