

# S-Band Synthesized Frequency Converter



1:1 Redundant High Performance Synthesized Frequency Converters

## Features

- Two hot swappable converters in 1U
- 70 MHz or 140 MHzIF
- 125 kHz step size
- Cost effective solution
- 1:1 Redundancy included
- Meets or exceeds IESS 308/309 requirements
- High linearity
- Front panel control (local)
- Full remote control (remote) RS485 or RS232

## Overview

The Advantech Dual - HP range of converters uses the latest technology in conversion, giving two independent conversion chains in 1 RU package, 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 hot swappable dual converter tray mount feature provides for the ultimate flexibility in a very compact package.

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 uses a PLL oscillator 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 oscillator will automatically lock to the external reference.

## Options

- Low Group Delay (option)
- External/Internal 10 MHz Reference with Auto-sensing
- 1 KHz step size
- Operating band 2.0-2.5 GHz

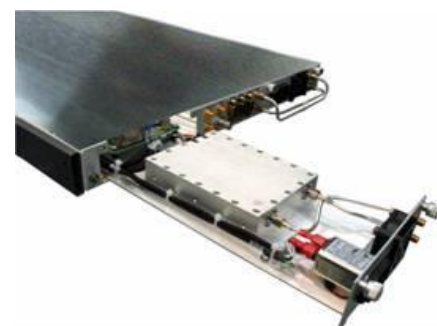
## Operating Bands

| Up-Converters |               |              |
|---------------|---------------|--------------|
| Model Number  | RF Output     | IF Frequency |
| ARUD-70-SR    | 2.0 - 2.4 GHz | 70 MHz       |
| ARUD-140SR    | 2.0 - 2.4 GHz | 140 MHz      |

| Down-Converters |               |              |
|-----------------|---------------|--------------|
| Model Number    | RF Input      | IF Frequency |
| ARDD-S70R       | 2.0 - 2.4 GHz | 70 MHz       |
| ARDD-S140R      | 2.0 - 2.4 GHz | 140 MHz      |

## Application

The HP range of converters is particularly suited for use in VSAT, SCPC Networks, SNG, DVB-RCS and Hub systems where compact redundancy is required. 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.



## S-Band Synthesized Frequency Converter

| Technical Specifications            |  |   |  |
|-------------------------------------|--|---|--|
| Up-Converter                        |  | Down-Converter  |  |
| <b>IF Input</b>                     |  | <b>RF Input</b>   |  |
| Frequency range                     | 70 ± 20 MHz or 140 ± 40 MHz                                      | Frequency range   | 2.0 – 2.4 GHz                                      |
| 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  |
| <b>RF Output</b>                    |  | <b>IF Output</b>  |  |
| Output power (P1dB)                 | +5 dBm   | Frequency range   | 70 ± 20 MHz or 140 ± 40 MHz                        |
| Frequency range                     | 2.0 – 2.4 GHz  | Output level  | +5 dBm at P1dB                                     |
| IMD3 (two tone)                     | -40 dBc max @ -5 dBm output                                      | Output Connector  | BNC female   |
| Output connector                    | Type N (female)  | Connector Impedance   | 50 Ω (optional 75Ω)                                |
| Connector Impedance                 | 50 Ω   | Return Loss   | 18 dB  |
| Return loss                         | 18 dB  |   |  |
| <b>Transfer Characteristics</b>     |  | <b>Transfer Characteristics</b>                                 |  |
| Conversion Gain                     | 25 dB @ max gain setting   | Conversion Gain   | 25 dB min @ max gain setting                       |
| Gain adjustment                     | 20 dB (0.1 dB step size)   | Gain adjustment   | 20 dB (0.1 dB step size)                           |
| Gain flatness                       | 1.0 dB p-p max. 40 MHz<br>1.0 dB p-p max. 80 MHz                 | Gain flatness   | 1.0 dB p-p max. 40 MHz<br>1.5 dB p-p max. 80 MHz   |
| Gain stability                      | ±0.25 dB max. /24 hours<br>±1 dB over temp. range                | Gain stability  | ±0.25 dB max. / 24 hours<br>±1 dB over temp. range |
| Spurious                            | -60 dBc carrier related @ -5dBm<br>< -50 dBm non-carrier related | Spurious  | -60 dBc @ -5 dBm output                            |
| Group delay 70 MHz IF<br>140 MHz IF | Linear 0.03 ns/MHz<br>0.25 ns/MHz                                | Parabolic 0.01 ns/MHz <sup>2</sup><br>0.003 ns/MHz <sup>2</sup> | Ripple 1 ns pk-pk<br>1 ns pk-pk                    |
|                                     |  | Image rejection   | 60 dBc   |
|                                     |  | Noise Figure  | 20 dB  |
| Phase noise                         | Meets or Exceeds by 5 dB IESS<br>308/309                         | Phase noise   | Meets or Exceeds by 5 dB IESS<br>308/309           |
| Synthesizer step size               | 125k kHz (optional 1 KHz)  | Synthesizer step size   | 125 kHz (optional 1 KHz)                           |
| <b>Reference</b>                    |  | <b>Mechanical</b>   |  |
| External Reference                  | 10 MHz (optional)  | Dimensions  | Width 19" (482.6 mm)                               |
| Internal reference stability        | +/-2 x 10 <sup>-8</sup> / day                                    |   | Height 1U 1.75" (44.5 mm)                          |
| Aging                               | +/-1 x 10 <sup>-7</sup> / year                                   |   | Depth 28" (711.2 mm)                               |
| <b>Environmental</b>                |  | <b>Power Supply</b>   |  |
| Operational                         | 0°C to +50°C standard  | Voltage   | 90 – 265 VAC (47 – 63 Hz)                          |
| Storage                             | -55°C to +85°C   | Power   | 80W (typical)                                      |
| Humidity                            | Non-condensing   | Connector   | IEC 603320 10A                                     |
| Altitude                            | 3,000m AMSL  |   |  |
|                                     |  | <b>Monitor and Control</b>                                      |  |
|                                     |  | RS 485  | DB9  |
|                                     |  | RS 232  | DB9  |
|                                     |  | Discrete  | DB9  |
|                                     |  | Ethernet (optional)   | RJ45 F (optional)                                  |

Ref.: PB-FCS200R-001-21018

### NORTH AMERICA

**USA**  
info.usa@advantechwireless.com

**CANADA**  
Info.canada@advantechwireless.com

### EUROPE

**UNITED KINGDOM**  
info.uk@advantechwireless.com

### SOUTH AMERICA

info.latam@advantechwireless.com

**BRAZIL**  
info.brazil@advantechwireless.com

### ASIA

info.asia@advantechwireless.com

**INDIA**  
info.india@advantechwireless.com