Redundant Dual with Trays
FCS300R

Features
- Two hot swappable converters in 1U
- 70 MHz IF
- Cost effective solution
- 1:1 Redundancy included
- 125 kHz step size
- 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 1:1 redundancy 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.

Operating Bands

<table>
<thead>
<tr>
<th>Up-Converters</th>
<th>Model Number</th>
<th>RF Output</th>
<th>IF Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ARUD-70KSR</td>
<td>14.00 – 14.50 GHz</td>
<td>70 MHz</td>
</tr>
<tr>
<td></td>
<td>ARUD-70KXR</td>
<td>13.75 – 14.50 GHz</td>
<td>70 MHz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Down-Converters</th>
<th>Model Number</th>
<th>RF Output</th>
<th>IF Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ARDD-K1 70 R</td>
<td>10.95 – 11.70 GHz</td>
<td>70 MHz</td>
</tr>
<tr>
<td></td>
<td>ARDD-K2 70 R</td>
<td>11.70 – 12.20 GHz</td>
<td>70 MHz</td>
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<tr>
<td></td>
<td>ARDD-K3 70 R</td>
<td>12.25 – 12.75 GHz</td>
<td>70 MHz</td>
</tr>
<tr>
<td></td>
<td>ARDD-K4 70 R</td>
<td>10.70 – 11.70 GHz</td>
<td>70 MHz</td>
</tr>
</tbody>
</table>

Application
The HP range of converters is particularly suited for use in VSAT, SCPC Networks, SNG, DVB-RCS and Hub systems were 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.

Options
- 140 MHz IF Frequency
- Ethernet port and SNMP Interface
- Low Group Delay (option)
- 10 MHz External/Internal Reference with Autosensing
## Technical Specifications

### Up-Converter | Down-Converter
--- | ---
**IF Input** | **RF Input**
Frequency range | Frequency range
70 ± 18 MHz | (See table on front page)
140 ± 36 MHz (optional) | 140 ± 36 MHz (optional)
Impedance | Impedance
50 Ω (optional 75 Ω) | 50 Ω
Input Connector | Input Connector
BNC (female) | Type N (female)
Return loss | Return loss
18 dB | 18 dB

### RF Output | IF Output
--- | ---
Output power (P1dB) | Output level
0 dBm | +5 dBm at P1dB
Frequency range | Output Connector
(See table on front page) | BNC female
IMD3 (two tone) | Connector Impedance
-40 dBc max @ -10 dBm output | 50 Ω (optional 75 Ω)
Output connector | Return Loss
Type N (female) | 18 dB
Connector Impedance | Connector Impedance
50 Ω | 50 Ω (optional 75 Ω)
Return loss | Return loss
18 dB | 18 dB

### Transfer Characteristics

#### Up-Converter
- **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
- **Gain stability**: ±0.25 dB max. /24 hours
- **Spurious**: -55 dBc carrier related @ -10 dBm < -50 dBm non-carrier related
- **Group delay (over 36 MHz)**: 10 -15 ns p-p
- **Group delay (with optional group delay equalizer)**: Linear 0.03 ns/MHz, Parabolic 0.01 ns/MHz2, Ripple 1 ns p-p
- **Phase noise**: Meets or Exceeds IESS 308/309
- **Synthesizer step size**: 125k kHz
- **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**: 3,000 m AMSL
- **Monitor and Control**
  - RS 485
  - RS 232
  - Discrete
  - Ethernet (optional)

#### Down-Converter
- **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
- **Gain stability**: ±0.25 dB max. /24 hours
- **Spurious**: -55 dBc @ -5 dBm output
- **Group delay (over 36 MHz)**: 10 -15 ns p-p
- **Group delay (with optional group delay equalizer)**: Linear 0.03 ns/MHz, Parabolic 0.01 ns/MHz2, Ripple 1 ns p-p
- **Image rejection**: 50 dBc
- **Noise Figure**: 20 dB
- **Synthesizer step size**: 125 kHz
- **Dimensions**: Width 19" (482.6 mm), Height 1U 1.75" (44.5 mm), Depth 28" (711.2 mm)
- **Power Supply**: Voltage 90 – 265 VAC (47 – 63 Hz), Power 50W (typical), Connector IEC 603320 10A

Specifications are subject to change without notice.