

# Up/Down Block Converters Series L-band to Ka-Band Indoor Up/Down Frequency Converters



## **The Advantech Wireless Advantages**

- Up converter or Down converter in a single enclosure
- L-band 950-1950 MHz IF Frequency
- Ka-Band TX: 27.0-31.0 GHz, RX: 18.1-21.2 GHz frequency, sub band selectable (1 GHz wide sub band)
- Cost effective solution
- Fully compliant with IESS 308/309 requirements
- High linearity
- Internal High Stability Reference
- Front panel control (local)
- Full remote control (remote)

#### Overview

The Advantech Wireless 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.

This converter model provides up converter and down converter in a single enclosure.

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 Ka-band 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 is fully synthesized with the PLL oscillators either locked to a highly stable internal 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.

## **Operating Bands**

Model Number	Output	Input
ARUN-LKa	27.0 - 31.0 GHz	950-1950 MHz
ARDN-KaL	950-1950 MHz	18.1 -21.2 GHz

- The operating band is software selectable in 1GHz segments
- Other operating bands are available upon request

#### **Major Options**

• Ethernet port and SNMP Interface

#### **Applications**

This type of converter is particularly well suited for wide band Ka installations. The Ka-band range of converters provides an industry leading MTBF of over 120,000 hours



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Input Level	Technical Specificatio	ns			
Frequency range   950-1950 MHz   Frequency range   18.1 - 21.2 GHz (sub band selectable 18.1-18.7 GHz or 18.7-19.2 GHz or 19.2-20.2 GHz or 20.2 11.2 GHz)   19.2 GHz or 19.2-20.2 GHz or 20.2 11.2 GHz)   19.2 GHz or 19.2-20.2 GHz or 20.2 11.2 GHz)   19.2 GHz or 19.2-20.2 GHz or 20.2 11.2 GHz)   19.2 GHz or 19.2-20.2 GHz or 20.2 11.2 GHz)   19.2 GHz or 19.2-20.3 GHz or 29.0-30.0 GHz or 29.0-30.	Up-Converter		Down-Converter		
Frequency range   950-1950 MHz   Frequency range   18.1 - 21.2 GHz (sub band selectable)   18.1 - 21.2 GHz or 18.7 - 19.2 GHz or 19.2 GHz o	IF Input		RF Input		
Impedance		950-1950 MHz		selectable 18.1-18.7 GHz or 18.7- 19.2 GHz or 19.2-20.2 GHz or 20.2-	
Input Connector   BNC (female)   Input Connector   SMA (female)   Return loss   16dB   Return loss   14dB   Return loss   Return loss   14dB   Return loss   Ret	Input Level	-25 dBm to -5 dBm	Input level	-60 dBm to -40 dBm	
Return loss   16 dB   Return loss   17 Output		50 Ω			
Produpt	Input Connector	BNC (female)	Input Connector	SMA (female)	
Prequency range	Return loss	16 dB	Return loss	16dB	
Frequency range   28.0-29.0 GHz or 29.0-30.0 GHz or 30.0-31.0 GHz software selectable   30.0-31.0 GHz software selectable   140 Bm	RF Output		IF Output		
MD3 (two tone)	Frequency range	28.0-29.0 GHz or 29.0-30.0 GHz or	Frequency range	950-1950 MHz	
Output connector         WR28         Connector Impedance         50 Ω           Connector Impedance         50 Ω         Return Loss         14 dB min           Transfer Characteristics           Conversion Gain         20 dB @ max gain setting         Conversion Gain         40 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         4.0 dB p-p max. ver 1 GHz         1.0 dB p-p max. ver 1 GHz         1.0 dB p-p max. ver 1 GHz           1.0 dB p-p max. ver 1 GHz         1.0 dB p-p max. ver 1 GHz         1.0 dB p-p max. ver 1 GHz           1.0 dB p-p max. ver 1 GHz         1.0 dB p-p max. ver 1 GHz           1.0 dB p-p max. ver 1 GHz         1.0 dB p-p max. ver 1 GHz           1.0 dB p-p max. ver 1 GHz         1.0 dB p-p max. ver 1 GHz           1.0 dB p-p max. ver 1 GHz         2.0 dB max. / 24 hours           ±1 dB over temp. range         55 dBc carrier related           Spurious         -55 dBc g@ 0 dBm output           Phase noise         Exceeds IESS 308/309 by 4 dBc           Reference         Image rejection         60 dB           Reference         Mechanical           External Reference         Width 19" (482.6 mm)           (optional)         Height 1U 1.75" (4	Output power (P1dB)	+10 dBm	Output power (P1dB)	+5 dBm at P1dB	
Return Loss	IMD3 (two tone)	-26 dBc max @ +7 dBm tot. output	Output Connector	BNC female	
Return loss	Output connector	WR28	Connector Impedance	50 Ω	
Return loss	Connector Impedance	50 Ω	Return Loss	14 dB min	
Conversion Gain 20 dB @ max gain setting Conversion Gain 40 dB min @ max gain setting Gain adjustment 20 dB (0.1 dB step size) Gain adjustment 20 dB (0.1 dB step size) 4.0 dB p-p max. over 1 GHz 1.0 dB p-p max. 40 MHz 4.0 dB p-p max. 40 MHz 1.0 dB p-p max. 40 MIT 1.0 dB p-max. 40 MIT 1.0 dB p-p max. 40 MIT 1.0 dB p-p ma	· ·	14 dB min			
Conversion Gain 20 dB @ max gain setting Conversion Gain 40 dB min @ max gain setting Gain adjustment 20 dB (0.1 dB step size) Gain adjustment 20 dB (0.1 dB step size) 4.0 dB p-p max. over 1 GHz 1.0 dB p-p max. 40 MHz 1.0 dB p-p max. 40 MIT 1.0 dB p-max. 40 MIT 1.0 dB p-p max. 40 MIT 1.0 dB p-p ma			Transfer Characteristics		
Gain adjustment         20 dB (0.1 dB step size)         Gain adjustment         20 dB (0.1 dB step size)           Gain flatness         4.0 dB p-p max. over 1 GHz 1.0 dB p-p max. 40 MHz         Gain flatness         4.0 dB p-p max. over 1 GHz 1.0 dB p-p max. 40 MHz           Gain stability         ±0.25 dB max. / 24 hours ±1 dB over temp. range         ±1 dB over temp. range         ±1 dB over temp. range           Spurious         -55 dBc carrier related          Spurious         -55 dBc @ 0 dBm output           Phase noise         Exceeds IESS 308/309 by 4 dBc         Image rejection 60 dB           Reference         Noise Figure 20 dB         20 dB           Phase noise         Exceeds IESS 308/309 by 4 dBc         Mechanical           External Reference (optional)         10 MHz, (5 MHz option)         Width 19" (482.6 mm)           Internal reference stability         +/-2 x 10-8 / day         Width 19" (482.6 mm)           Aging         +/-1 x 10-7 / year         Dimensions         Width 19" (482.6 mm)           Environmental         Power Supply         Power Supply           Operational         0°C to +50°C standard         Voltage         90 - 265 VAC (47 - 63 Hz)           Storage         -55°C to +85°C         Power         40W (typical)           Humidity         Non-condensing         Connector         IEC 603320 10A		20 dB @ max gain setting	Conversion Gain	40 dB min @ max gain setting	
Gain flatness	Gain adjustment		Gain adjustment		
Spurious ±1 dB over temp. range	-	4.0 dB p-p max. over 1 GHz	-	4.0 dB p-p max. over 1 GHz	
Spurious -70 dBc non-carrier related Spurious -55 dBc @ 0 dBm output -55 dBc @ 0 dBc @ 0 dBc & 0 dBcc & 0 dBccc & 0 dBcccc & 0 dBccccc & 0 dBccccccc & 0 dBccccccccccccccccccccccccccccccccccc	Gain stability	±1 dB over temp. range	Gain stability		
Noise Figure   20 dB	Spurious		Spurious	-55 dBc @ 0 dBm output	
Reference Mechanical  External Reference (optional)	Phase noise	Exceeds IESS 308/309 by 4 dBc	Image rejection	60 dB	
Reference External Reference (optional) Internal reference stability +/-2 x 10-8 / day Aging +/-1 x 10-7 / year  Environmental Operational Operational Storage Operational Huight 1U 1.75" (482.6 mm) Height 1U 1.75" (44.45 mm) Depth 20" (254 mm)  Power Supply  Voltage 90 - 265 VAC (47 - 63 Hz) Storage -55°C to +85°C Power Humidity Non-condensing Connector IEC 603320 10A  Altitude 3,000m AMSL  Monitor and Control  RS 485 DB9 RS232 DB9			Noise Figure	20 dB	
External Reference (optional)   10 MHz, (5 MHz option)   Dimensions   Dimensions   Width   19" (482.6 mm)   Height   1U 1.75" (44.45 mm)   Depth   20" (254 mm			Phase noise	Exceeds IESS 308/309 by 4 dBc	
(optional)       10 MHz, (5 MHz option)         Internal reference stability       +/-2 x 10-8 / day         Aging       +/-1 x 10-7 / year         Environmental       Power Supply         Operational       0°C to +50°C standard       Voltage       90 - 265 VAC (47 - 63 Hz)         Storage       -55°C to +85°C       Power       40W (typical)         Humidity       Non-condensing       Connector       IEC 603320 10A         Altitude       3,000m AMSL         Monitor and Control         RS 485       DB9         RS232       DB9	Reference		Mechanical		
Aging +/-1 x 10-7 / year    Power Supply		10 MHz, (5 MHz option)	Dimensions		
Aging         +7-1 x 10-7 / year           Environmental         Power Supply           Operational         0°C to +50°C standard         Voltage         90 - 265 VAC (47 - 63 Hz)           Storage         -55°C to +85°C         Power         40W (typical)           Humidity         Non-condensing         Connector         IEC 603320 10A           Altitude         3,000m AMSL           Monitor and Control         RS 485         DB9           RS232         DB9	Internal reference stability	+/-2 x 10-8 / day	Difficusions		
Operational         0°C to +50°C standard         Voltage         90 - 265 VAC (47 - 63 Hz)           Storage         -55°C to +85°C         Power         40W (typical)           Humidity         Non-condensing         Connector         IEC 603320 10A           Altitude         3,000m AMSL           Monitor and Control           RS 485         DB9           RS232         DB9	Aging	+/-1 x 10-7 / year		Берит 20 (234 ппп)	
Operational         0°C to +50°C standard         Voltage         90 - 265 VAC (47 - 63 Hz)           Storage         -55°C to +85°C         Power         40W (typical)           Humidity         Non-condensing         Connector         IEC 603320 10A           Altitude         3,000m AMSL           Monitor and Control           RS 485         DB9           RS232         DB9	Environmental		Power Supply		
Storage -55°C to +85°C Power 40W (typical) Humidity Non-condensing Connector IEC 603320 10A Altitude 3,000m AMSL  Monitor and Control  RS 485 DB9  RS232 DB9	Operational	0°C to +50°C standard		90 – 265 VAC (47 – 63 Hz)	
Humidity         Non-condensing         Connector         IEC 603320 10A           Altitude         3,000m AMSL           Monitor and Control           RS 485         DB9           RS232         DB9					
Altitude 3,000m AMSL  Monitor and Control  RS 485 DB9  RS232 DB9	-	Non-condensing	Connector		
Monitor and Control           RS 485         DB9           RS232         DB9		0		·	
RS 485 DB9 RS232 DB9					
RS232 DB9		DB9			
DISCRETE	Discrete	DB9			
Ethernet (optional) RJ45 F					

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