

## Block Converters

The term Block Converter applies to fixed conversion sub-systems usually used for frequency translation from (to) L-band to (from) SHF (C, X, Ku and DBS bands). The single LO used in this translation has fixed frequency and has usually a frequency value below the SHF output (input) band. In some cases the LO frequency value may be above the SHF output (input) band.

DrawCom's Novella designed and manufactured Block Converters may be built inside the frequency converters, or located outside the main L-band converter chassis. In this case the L-band interconnect cable will carry L-band and, in many models 10MHz reference, alarm signaling and DC power provided by the converter chassis.

External Block Converters may be assembled in their own 1U 19" chassis, with or without independent PSU and/or 10MHz reference.

Or they may be assembled inside polycarbonate IP65 boxes, aluminium lightweight boxes to IP65 rating, or aluminium heavy duty ruggedised military type boxes to IP67. The size of these boxes is typically 220x145x55mm but smaller sizes are possible by further mechanical integration of components. The more standard sizes (around 220x145x55mm) are usually set by mechanical constraints and/or availability of third party standard size polycarbonate and aluminium boxes.

DrawCom also offers a variety of multiple C and Ku-band Block Downconverters in 1U 19" chassis, mainly for use in monitoring downlink stations where the monitoring devices are L-band demodulators or TV receivers. These units may be configured with redundant mains supply, including dual mains input connector.

DrawCom also supplies modified and re-engineered commercially available C and Ku-band LNBS (Low Noise Block converters) to take external 10MHz references, to improve overall phase-noise performance or to reduce the overall gain. Gain reduction of LNBS is often quite important as the usually very high gain of LNBS, in the region of 60dB to 65dB, is not compatible with the gain of large antennas and the aggregate power received from Ku-band DBS satellites, with EIRPs of 52dBW per 40MHz transponder.



## Block Converters (cont.)

Selection Guide: Block Upconverters						
Model	Input band, MHz	Output band, GHz	LO, GHz	Gain, dB	Output 1dB compression	
BU50	950 to 1,525	5.850 to 6.425	4.9	15	› +10	
BU501	950 to 1,525	5.850 to 6.425	4.9	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU51	965 to 1,845	5.845 to 6.725	4.880	15	› +10	
BU55	955 to 1,450	5.850 to 6.425	7.300	15	› +10	Spectrum invert
BU56	955 to 1,830	5.850 to 6.725	7.680	15	› +10	Spectrum invert
BU561	955 to 1,830	5.850 to 6,725	7.680	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU57	955 to 1,955	5.725 to 6.725	7.680	15	› +10	Spectrum invert
BU571	955 to 1,955	5.725 to 6,725	7.680	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU65	950 to 1,450	7.9 to 8.4	6.950	15	› +10	
BU651	950 to 1,450	7.9 to 8.4	6.950	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU66	950 to 1,450	7.9 to 8.4	9.350	15	› +10	Spectrum invert
BU661	950 to 1,450	7.9 to 8.4	9.350	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU70	950 to 1,450	14.0 to 14.5	13.05	15	› +10	
BU701	950 to 1,450	14.0 to 14.5	13.05	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU71	950 to 1,450	12.75 to 13.75	11.8	15	› +10	
BU711	950 to 1,450	12.75 to 13.75	11.8	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU73	950 to 1,750	13.75 to 14.5	12.8	15	› +10	
BU731	950 to 1,750	13.75 to 14.5	12.8	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU75	950 to 1,450 and 950 to 1,750	12.75 to 13.25 and 13.75 to 14.5	11.8 and 12.8	15	› +10	BUC71 and BUC73 assembled within a single box or chassis
BU751	950 to 1,450 and 950 to 1,750	12.75 to 13.25 and 13.75 to 14.5	11.8 and 12.8	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU80	950 to 1,450	17.3 to 17.8	16.35	15	› +10	
BU801	950 to 1,450	17.3 to 17.8	16.35	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU81	1,000 to 2,100	17.3 to 18.4	16.30	15	› +10	
BU811	1,000 to 2,100	17.3 to 18.4	16.30	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference
BU85	1,000 to 1,800	17.3 to 18.1	16.30	15	› +10	
BU851	1,000 to 1,800	17.3 to 18.1	16.30	15	› +10	Packaged in a 1U chassis, with own PSU and 10MHz reference

All Block Upconverters available in 1U 19" chassis, with or without independent PSU, with or without independent 10MHz reference. Also available in Polycarbonate IP65 box, compact Aluminium box, or heavy Aluminium ruggedised military type IP67 box.

## Block Converters (cont.)

Selection Guide: Block Downconverters						
Model	Input band, GHz	Output band, MHz	LO, GHz	Gain, dB	Output 1dB compression	
BD50	3.625 to 4.200	950 to 1,525	5.150	25	>-5	Spectrum invert
BD501	3.625 to 4.200	950 to 1,525	5.150	25	>-5	Packaged in a 1U chassis, with own PSU and 10MHz reference
BD51	3.4 to 4.200	950 to 1,750	5.150	25	>-5	Spectrum invert
BD511	3.4 to 4.200	950 to 1,750	5.150	25	>-5	Packaged in a 1U chassis, with own PSU and 10MHz reference
BD65	7.25 to 7.75	950 to 1,450	6.300	25	>-5	
BD651	7.25 to 7.75	950 to 1,450	6.300	25	>-5	Packaged in a 1U chassis, with own PSU and 10MHz reference
BD66	7.25 to 7.75	950 to 1,450	8.700	25	>-5	Spectrum invert
BD661	7.25 to 7.75	950 to 1,450	8.700	25	>-5	Packaged in a 1U chassis, with own PSU and 10MHz reference
BD70	10.95 to 11.7	950 to 1,700	10.00	25	>-5	
BD701	10.95 to 11.7	950 to 1,700	10.00	25	>-5	Packaged in a 1U chassis, with own PSU and 10MHz reference
BD702	11.45 to 11.95	950 to 1,450	10.50	25	>-5	Packaged in a 1U chassis, with own PSU and 10MHz reference
BD71	11.70 to 12.25	950 to 1,500	10.75	25	>-5	
BD711	11.70 to 12.25	950 to 1,500	10.75	25	>-5	Packaged in a 1U chassis, with own PSU and 10MHz reference
BD72	12.25 to 12.75	950 to 1,450	11.30	25	>-5	
BD721	12.25 to 12.75	950 to 1,450	11.30	25	>-5	Packaged in a 1U chassis, with own PSU and 10MHz reference
BD731	10.70 to 11.70 OR 11.70 to 12.75	950 to 2,050 OR 950 to 2,100	9.75 OR 10.75	25dB	>-5dBm	Two high stability BDCs in a single chassis.
BD732	10.70 to 11.70 AND 11.70 to 12.75	950 to 2,050 AND 950 to 2,100	9.75 AND 10.75	25dB	>-5dBm	Two high stability BDCs in a single chassis.

Most Block Downconverters are available in 1U 19" chassis, with or without independent PSU, with or without independent 10MHz reference. Also available in Polycarbonate IP65 box, compact Aluminium box, or heavy Aluminium ruggedised military type IP67 box.

Block Downconverters are also available in multiple packages, in 1U 19" chassis, with or without independent PSU, with internal or external frequency reference, also with redundant mains input.



Our series of high power BUCs are designed for use primarily in VSAT applications.

Other frequency ranges are also available to customer specification.

These units include an L-band up-converter powered by 24 VDC along with L-Band input and 10 MHz reference all in one cable. There is also a high power booster with AC or DC supply and a customizable Monitor and Control interface.

## High power block up-converters

### Key features

- Frequency range options available
- Can be provided with 10MHz and/or 24VDC option
- Redundancy option for 1:1 configuration available for all power levels
- RS485, RS232, RS422 or Analog M&C interface
- High thermal dissipation efficiency resulting in "Best in Class" Mean Time Before Failure (MTBF)
- Summary alarm
- Over temperature shutdown
- RF power detection
- Mute control
- RF monitor



## High power block up-converters (cont.)

Electrical Characteristics	Specifications (typical)	
	L to KU Band BUC 8-200W	L to C Band BUC 10-200W
Input Frequency range – IF	950 -1450 MHz	950 – 1525 MHz
Output Frequency range – RF	14.0 – 14.5 GHz (13.75 – 14.25 GHz optional)	5.85 – 6.425 GHz (other options are available)
System Gain	70dB nominal	
Gain Flatness over full band	± 1.0 dB nom.	
Gain variation	± 2.5 dB over operating temperature range	± 1.5 dB over operating temperature range
Input/Output Return loss	18 dB min.	
Spurious at rated power	- 50 dBc max.	
Third order IMD (2 equal tones 5 MHz apart)	- 25 dBc max. @ 3 dB back off SCL 6 dB back off from P1dB	
<b>Phase Noise</b>		
@ 300 Hz offset	- 60 dBc/Hz	
@ 1 KHz offset	- 70 dBc/Hz	
@ 10 KHz offset	- 80 dBc/Hz	
@ 100 KHz offset	- 90 dBc/Hz	
@ 1 MHz offset	- 100 dBc/Hz	
Supply Voltage for BUC	24 VDC & 10 MHz (other options available)	
For Booster	110/220 VAC (47 – 63 Hz) Auto Ranging (48 VDC optional)	
<b>Mechanical Characteristics</b>		
<b>Interfaces (Basic)</b>		
IF input	<b>Type N (F), (F-Type Optional)</b>	
RF output	<b>WR75 (other options available)</b>	<b>CPR 137 (other options available)</b>
M&C – Analogue of RS-485	Military Specification Weatherised Connector	
Power	Military Specification Weatherised Connector	
Operating Temperature	- 40°C to + 55°C	
Storage	- 55°C to + 85°C	
Humidity	100%, considering rain 2 inches per hour	
Altitude	1000 foots AMSL	
<b>Interfaces (Optional)</b>		
RF output sample optional	Type N (F)	

## High power block up-converters (cont.)

L to KU Band BUC 8-200W				
Model #	Output Power @ P1dB min (Watts/dBm)	Weight (KG/ LBS)	Dimensions (inches)	Power Consumption For Booster (Watts)
WTX-14014539-70-ES-XX	8/39	7/15	12x10x8	120
WTX-14014540-70-ES-XX	10/40	7/15	12x10x8	150
WTX-14014541-70-ES-XX	12/41	7/15	12x10x8	170
WTX-14014542-70-ES-XX	16/42	11/25	13x12x8	250
WTX-14014543-70-ES-XX	20/43	11/25	13x12x8	300
WTX-14014544-70-ES-XX	25/44	11/25	13x12x8	400
WTX-14014545-70-ES-XX	30/45	11/25	13x12x8	500
WTX-14014546-70-ES-XX	40/46	15/34	16x13x8	600
WTX-14014547-70-ES-XX	50/47	15/34	16x13x8	700
WTX-14014549-75-ES-XX	80/49	33/72	21x15x12	1200 - 220 VAC only
WTX-14014550-75-ES-XX	100/50	33/72	21x15x12	1300 - 220 VAC only
WTX-14014551-75-ES-XX	125/50.7	33/72	21x15x12	1400 - 220 VAC only
WTX-14014552-75-ES-XX	150/52	50/110	21x15x16	2000 - 220 VAC only
WTX-14014553-75-ES-XX	200/53	50/110	21x15x16	2300 - 220 VAC only

L to C Band 10-200W				
Model #	Output Power @ P1dB min (Watts/dBm)	Weight (KG/ LBS)	Dimensions (inches)	Power Consumption For Booster (Watts)
WTX-596440-70-ES-XX	10/40	10/22	14x8x11	120
WTX-596443-70-ES-XX	20/43	10/22	14x8x11	180
WTX-596446-70-ES-XX	40/46	10/22	14x8x11	250
WTX-596448-70-ES-XX	60/48	12/27	30x8x12	500
WTX-596449-70-ES-XX	80/49	12/27	30x8x12	600
WTX-596450-70-ES-XX	100/50	17/37	22x10x12	800
WTX-596451-70-ES-XX	125/51	17/37	22x10x12	900
WTX-596452-70-ES-XX	150/52	17/37	22x10x12	1000
WTX-596453-70-ES-XX	200/53	17/37	22x10x12	1100