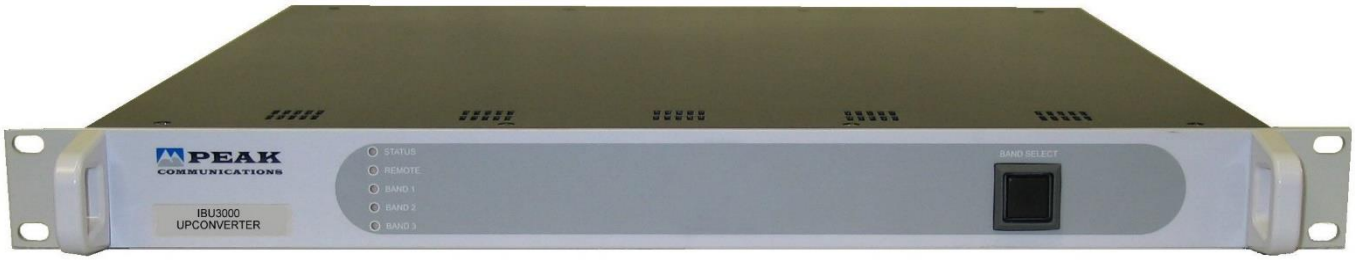
IBU(B) Series

Multi-Range, Rack Mounted, Block UpConverters



High Grade UpConverter Products;

IBU2000	L-Band (950-1950MHz max) to full Ku-Band (12.75-14.50GHz), 2 ranges
IBU2000b	L-Band (950-1700MHz max) to wide Ku-Band (13.00-14.50GHz), 2 ranges
IBU2001	L-Band (950-1825MHz max) to full C-Band (5.85-7.10GHz), 2 ranges
IBU2002, 2M	L-Band (950-1750MHz max) to dual-Band (Ku & DBS-Band), 2 ranges
IBU2002b, bM	L-Band (950-2050MHz max) to dual-Band (Ku & Full DBS-Band), 2 ranges
IBU3000	L-Band (950-1700MHz max) to full Ku-Band (12.75-14.50GHz), 3 ranges
IBU3003, 3M	L-Band (950-1700MHz max) to dual-Band (C & extended Ku-Band), 2 ranges
IBU3003b, 3bM	L-Band (950-1750MHz max) to dual-Band (extended C & extended Ku-Band), 2 ranges
IBU3004, 4M	L-Band (950-1700MHz max) to tri-Band (C, X & extended Ku-Band), 3 ranges
IBU3005, 5M	L-Band (950-1950MHz max) to dual-Band (C & full Ku-Band), 3 ranges
IBU3006, 6M	L-Band (950-1950MHz max) to tri-Band (C, X & full Ku-Band), 4 ranges

For other non-standard frequency requirements, please contact the factory.
For single-range block up converters please see IBU(A) series datasheet.
For equivalent units with full user interface, remote control and digital attenuation, please see IBUH(B) series datasheet.
For equivalent remote mount units, please see PBU(B) series datasheet.

The 19-inch 1U rack mounted **IBU(B) series** of block frequency up converter units from Peak Communications are designed to take the output of an up converter or modem at L-Band and produce an output at SHF.

The **IBU(B) series** of units are mains powered and are constructed of high grade components to give the ultimate performance. They utilise externally phase locked dielectric resonator oscillators (XPDROs) and are far superior in stability and phase noise to voltage-controlled oscillators (VCOs), as commonly used in other BUC designs.

These multi-band, multi-range converters are offered with either internal band switching (single input & output connections) or separate inputs & outputs for each band allowing simultaneous band operation (see units with suffix 'M').
Sub-band ranges are internally switched as standard and can also be supplied with separate inputs & outputs allowing simultaneous range operation (see option 11).
Band/ range selection is performed manually from the front panel.

The unit has a highly stable internal reference source and will automatically detect and lock to an external 10MHz signal, when applied.

Peak Features

- High stability, low ripple and excellent phase noise, using PDRO technology
- 10MHz external reference fitted as standard with automatic internal reference back-up
- Integral test loop translator option available for TX signal path monitoring
- Fully compatible with **RCU100/ RCU200 & RCUH100/ RCUH200 series** 1+1/ 2+1 redundancy controllers and **RCU1001 series** for N+1 redundancy units
- L-Band monitor, RF mute and fibre optic L-Band interface options available

IBU(B) series - Typical Specification

SHF Output

Frequency

IBU2000	Full Ku-band 12.75-13.75 & 13.75-14.5GHz
IBU2000b	Wide Ku-band 13.00-13.75 & 13.75-14.5GHz
IBU2001	C-Band 5.85-6.725 & 6.70-7.10GHz
IBU2002, 2M	Dual-Band; extended Ku-Band 13.75-14.5GHz, DBS-Band 17.3-18.1GHz
IBU2002b, bM	Dual-Band; extended Ku-Band 13.75-14.5GHz, full DBS-Band 17.3-18.4GHz
IBU3000	Ku-Band 12.75-13.50, 13.00-13.75 & 13.75-14.5GHz
IBU3003, 3M	Dual-Band; C-Band 5.85-6.425GHz, extended Ku-Band 13.75-14.5GHz
IBU3003b, bM	Dual-Band; extended C-Band 5.85-6.65GHz, extended Ku-Band 13.75-14.5GHz
IBU3004, 4M	Tri-Band; C-Band 5.85-6.425GHz, X-Band 7.90-8.40GHz, extended Ku-Band 13.75-14.5GHz
IBU3005, 5M	Dual-Band; C-Band 5.85-6.425GHz, full Ku-Band 12.75-13.75 & 13.75-14.5GHz
IBU3006, 6M	Tri-Band; C-Band 5.85-6.425GHz, X-Band 7.90-8.40GHz, full Ku-Band 12.75-13.75 & 13.75-14.5GHz

Note; units with a suffix 'M' include separate input & output connections for each band allowing simultaneous band operation. For simultaneous sub-band 'range' operation see option 11.

Connector	50Ω, SMA (f)
Option 1a;	50Ω, N-Type (f)
Return loss	>15dB
1dB GCP	+8dBm
Option 5;	+18dBm

L-Band Input

Frequency	950 up to 2050MHz, dependent upon model
Connector	50Ω, SMA (f)
Option 1b;	50Ω, N-Type (f)
Option 3;	75Ω, BNC (f)
Return loss	>15dB

Transfer Characteristics

Conversion gain	17dB ±1dB at band centre
Option 4;	27dB ±1dB
Gain stability	±0.5dB from 0 to 40°C
Gain flatness	±1dB across each sub-band (±1.5dB if bandwidth >800MHz) ±1.5dB across full Ku-band ±0.5dB across any 40MHz in-band
LO frequency	dependant on model

RF Performance

LO phase noise	-55dBc/Hz at 10Hz
(typical with good	-75dBc/Hz at 100Hz
phase noise	-92dBc/Hz at 1kHz
ext. 10MHz ref)	-100dBc/Hz at 10kHz
	-105dBc/Hz at 100kHz
	-125dBc/Hz at 1MHz
Harmonics	Better than -50dBc
Spurious	<-80dBm (in-band non-carrier related) <-75dBc (in-band carrier related)
3rd order intercept	>+18dBm (standard unit)
LO leakage	-80dBm (always out of band)

SHF & L-Band Monitor (Option 2)

Connector	
Option 2a;	L-Band monitor, 50Ω, SMA (f) on rear panel
Option 2b;	L-Band monitor, 50Ω, SMA (f) on front panel
Option 2c;	SHF monitor, 50Ω, SMA (f) on rear panel
Option 2d;	SHF monitor, 50Ω, SMA (f) on front panel

Note; for other connector types please consult the factory

Level	-20dBc ±3dB

Manual Attenuation (Option 10)

Attenuation range	30dB nominal
Control	Continuously variable from front panel

Note; can degrade gain flatness performance

RF Mute (Option 13)

Isolation	60dB min

External Reference Input (with automatic detection)

Frequency	10MHz (5MHz factory settable)
Connector	50Ω, BNC
Level	0dBm ±5dB
Required phase noise	Better than 50dBc/Hz of output phase noise
Locking delay	<2 minutes to stabilise from cold

Internal Back-up Reference Stability

Allan deviation	5×10^{-11} over 1s
Ageing	$<5 \times 10^{-9}$ per day, $<5 \times 10^{-7}$ per year
Temp stability	$<5 \times 10^{-8}$ over 0 to 50^{0}C

High stability (Option 8)

Allan deviation	3×10^{-12} over 1s
Ageing	$<2 \times 10^{-10}$ per day, $<2 \times 10^{-8}$ per year
Temp stability	$<3 \times 10^{-9}$ over 0 to 50^{0}C

Mechanical

Width	19" standard rack mountable
Height	1U (1.75")
Depth	~400mm (15.7"), plus connectors (2 range) ~534mm (21"), plus connectors (3 & 4 range)
Construction	Aluminium chassis
Weight	4-6kgs (9-13lbs) approx., unit and option dependent

Environmental

Operating temp	0°C to +50°C
EMC	EN 55022, part B & EN 50082-1
Safety	EN 60950

Power Supply

Voltage	90-264VAC
Frequency	47-63Hz
Power	50 Watts max.

Note; rear panel on/off switch provided on 3 & 4-range units.

Option 7;	Redundant PSU; provides a 1+1 redundant power supply configuration with separate prime power inputs

Control System Interface

Alarms	LO lock failure PSU failure Amplifier failure
Controls	Mute input (Option 13)

Options

1a)	N-Type (f) SHF interface connection
1b)	N-Type (f) L-Band interface connection
2a)	-20dBc L-band monitor on rear panel (SMA)
2b)	-20dBc L-band monitor on front panel (SMA)
2c)	-20dBc SHF monitor on rear panel (SMA)
2d)	-20dBc SHF monitor on front panel (SMA)
3)	75Ω interface at L-band (6dB gain loss)
4)	Extra 10dB increase in gain, to +27dB
5)	1dB GCP increase to +18dBm (includes extra 10dB gain option)
6)	Fibre optic L-band interface connection
7)	Redundant power supply
8)	High stability internal reference option
10a)	Manual variable attenuator, 0-30dB, at L-band
11)	Separate inputs & outputs for simultaneous range operation.
13)	RF mute option

Note; the addition of options can modify the typical specification, for details please consult the factory

Rear panel view *(sample)*