IBUH(B) series

Multi-range, Rack Mounted, Block UpConverters with full user interface and remote control

High Grade UpConverter Products;

IBUH2000	L-Band (950-1950MHz max) to full Ku-Band (12.75-14.50GHz), 2 range
IBUH2000b	L-Band (950-1700MHz max) to wide Ku-Band (13.00-14.50GHz), 2 range
IBUH2001	L-Band (950-1825MHz max) to full C-Band (5.85-7.10GHz), 2 range
IBUH2002, 2M	L-Band (950-1750MHz max) to dual-Band (Ku & DBS-Band), 2 range
IBUH2002b, bM	L-Band (950-2050MHz max) to dual-Band (Ku & full DBS-Band), 2 range
IBUH3000	L-Band (950-1700MHz max) to full Ku-Band (12.75-14.50GHz), 3 range
IBUH3003, 3M	L-Band (950-1700MHz max) to dual-Band (C & extended Ku-Band), 2 range
IBUH3003b, 3bM	L-Band (950-1750MHz max) to dual-Band (extended C & extended Ku-Band), 2 range
IBUH3004, 4M	L-Band (950-1700MHz max) to tri-Band (C, X & extended Ku-Band), 3 range
IBUH3004b, bM	L-Band (950-1750MHz max) to tri-Band (extended C, X & extended Ku-Band), 3 range
IBUH3005, 5M	L-Band (950-1950MHz max) to dual-Band (C & full Ku-Band), 3 range
IBUH3006, 6M	L-Band (950-1950MHz max) to tri-Band (C, X & full Ku-Band), 4 range

For other 'non-standard' frequency requirements, please contact the factory.
For single-range block up converters please see IBUH(A) series datasheet.
For equivalent lower cost BUC units without the full user interface please see IBU(B) series datasheet.
For equivalent remote mount units, please see PBU(B) series datasheet.

The 19-inch 1U rack mounted **IBUH(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 **IBUH(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 or via remote control.

For redundancy the **IBUH(B)** uses a simple CANBUS® interface and has an integral redundancy controller for 1+1 & 2+1 operation (for use with external **T1000HH**, **T2000HH series** switch units), also compatible with the **RCUH100 series** 1+1 'standalone' redundancy controller. For N+1 systems the **RCU1002 series** is offered.

The unit incorporates a graphics display module, membrane keyboard and features a clear and intuitive control and configuration menu fully utilising the unique graphics display.

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
- Electronically variable attenuator option for both local & remote control of gain
- Integral 1+1 & 2+1 CANBUS® redundancy control & N+1 switch systems available
- Integral test loop translator option available for transmit signal path monitoring
- L-Band monitor and RF mute options available

IBUH(B) series - Typical Specification

SHF Output

IBUH2000	Full Ku-Band 12.75-13.75 & 13.75-14.5GHz
IBUH2000b	Wide Ku-Band 13.00-13.75 & 13.75-14.5GHz
IBUH2001	Full C-Band 5.85-6.725 & 6.70-7.10GHz
IBUH2002, 2M	Dual-Band; Ku-Band 13.75-14.5GHz, DBS-Band 17.3-18.1GHz
IBUH2002b, bM	Dual-Band; Ku-Band 13.75-14.5GHz, full DBS-Band 17.3-18.4GHz
IBUH3000	Full Ku-Band 12.75-13.50, 13.00-13.75 & 13.75-14.5GHz
IBUH3003, 3M	Dual-Band; C-Band 5.85-6.425GHz, extended Ku-Band 13.75-14.5GHz
IBUH3003b, 3bM	Dual-Band; extended C-Band 5.85-6.65GHz, extended Ku-Band 13.75-14.5GHz
IBUH3004, 4M	Tri-Band; C-Band 5.85-6.425GHz, X-Band 7.90-8.40GHz, extended Ku-Band 13.75-14.5GHz
IBUH3004b, bM	Tri-Band; extended C-Band 5.85-6.65GHz, X-Band 7.90-8.40GHz, extended Ku-Band 13.75-14.5GHz
IBUH3005, 5M	Dual-Band; C-Band 5.85-6.425GHz, full Ku-Band 12.75-13.75 & 13.75-14.5GHz
IBUH3006, 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	SMA (f), 50Ω
Option 1a;	N-Type (f), 50Ω
Return loss	>15dB
1dB GCP	+8dBm
Option 5;	+18dBm

L-Band Input

Frequency	950 up to 1950MHz, dependent upon model
Connector	SMA (f), 50Ω
Option 1b;	N-Type (f), 50Ω
Option 3;	BNC (f), 75Ω
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	dependent on model

Electronically Variable L-Band Attenuation (Option 10)

Note: For SHF attenuation options please consult the factory

Attenuation range	30dB nominal
Step size	
Option 10a;	0.5dB
Option 10b;	0.1dB
Control	Local & remote

Note: Attenuation options can degrade the flatness performance

RF Performance

LO phase noise (typical with good phase noise ext. 10MHz ref)	-55dBc/Hz at 10Hz -75dBc/Hz at 100Hz -92dBc/Hz at 1kHz -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)

Input Power Detector & Alarms (Option 14)

Detection range	0 to -50dBm
Display	Actual input and calculated output power, graphical via front panel and available via remote control
Low input power alarm	User settable via front panel interface
Compression alarm	Automatic 'pre-set' warning alarm for input/output compression point. User settable via front panel interface

RF Mute (Option 13)

Isolation	60dB min

L-Band & SHF Monitor (Option 2)

L-Band or SHF monitor ports, front or rear panel mounted

Connector	50Ω, SMA (f)

Note: Other connector styles available, please consult the factory

Level	-20dBc ±3dB

External Reference Input (with automatic detection)

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

Internal Back-up Reference Stability

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

High stability (Option 8)

Allan deviation	3 x 10^{-12} over 1s
Ageing	<2 x 10^{-10} per day, <2 x 10^{-8} per year
Temp stability	<3 x 10^{-9} over 0 to 50°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	4-6.5kgs (9-15lbs) approx., unit & 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.

Control System Interface

Remote control	RS232/ 485 port
Option 9;	Ethernet; embedded web server & SNMP network management support
Redundancy	CANBUS® interface for N+1 system In-built 1+1 & 2+1 controller
Discrete 'alarms interface'	LO lock failure PSU failure Amplifier failure
Option 13;	Mute input control

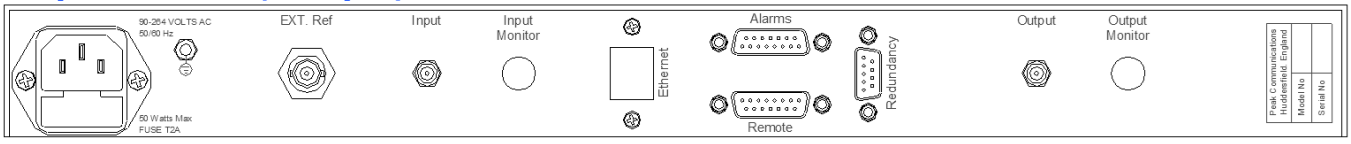
Options

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)	10db increase in gain to 27dB
5)	1dB GCP increase to +18dBm (includes extra 10dB gain option)
8)	High stability internal reference option
9)	Ethernet interface with embedded web server & SNMP
10a)	Attenuator L-Band, 30dB range, stepped 0.5dB
10b)	Attenuator L-Band, 30dB range, stepped 0.1dB
11)	Separate inputs & outputs for simultaneous range/ band operation
13)	RF mute option
14)	Input signal power detector and alarms

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

PEAK COMMUNICATIONS

Rear panel view (sample)



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