IBD(B) series

Multi-Band/Range, Rack Mount, Block DownConverters

High Grade DownConverter Products;

IBD2000	Ku-Band (10.95-12.75GHz) to L-Band (950-2000MHz max) 2 ranges
IBD2001	Ku-Band (10.70-12.75GHz) to L-Band (950-2000MHz max) 2 ranges
IBD2003, 4	C-Band (3.4-4.8GHz) to L-Band (950-1750MHz max) 2 ranges
IBD3000	Ku-Band (10.95-12.75GHz) to L-Band (950-1700MHz max) 3 ranges
IBD3001	Ku-Band (10.70-12.75GHz) to L-Band (950-1750MHz max) 3 ranges
IBD3000-2	Ku-Band (10.95-11.70+12.25-12.75GHz) to L-Band (950-1700MHz max) 2 ranges
IBD3003, 3M	Dual-Band (C inverted, Ku-Hi, Ku-Lo) to L-Band (950-2000MHz max) 3 ranges
IBD3003b, bM	Dual-Band (C non-inverted, Ku-Hi, Ku-Lo) to L-Band (950-2000MHz max) 3 ranges
IBD3004, 4M	Tri-Band (C inverted, X, Ku-Hi, Ku-Lo) to L-Band (950-2000MHz max) 4 ranges
IBD4004, 4M	Dual-Band (full C-Band inverted and full Ku-Band) to L-Band (950-2000MHz max) 4 ranges

For other non-standard frequency requirements, please contact the factory.
For single-range block downconverters please see IBD(A) series datasheet.
For equivalent units with full user interface, remote control and digital attenuation, please see IBDH(B) series datasheet.
For equivalent remote mount units, please see PBD(B) series datasheet.

The 19-inch, 1U rack mounted **IBD(B) series** of multi-band/ range block frequency down converter units from Peak Communications are designed to take the incoming SHF signal and produce an output at L-Band that is suitable for direct connection to an L-band demodulator or for further conversion typically by a **P7001** synthesised down converter.

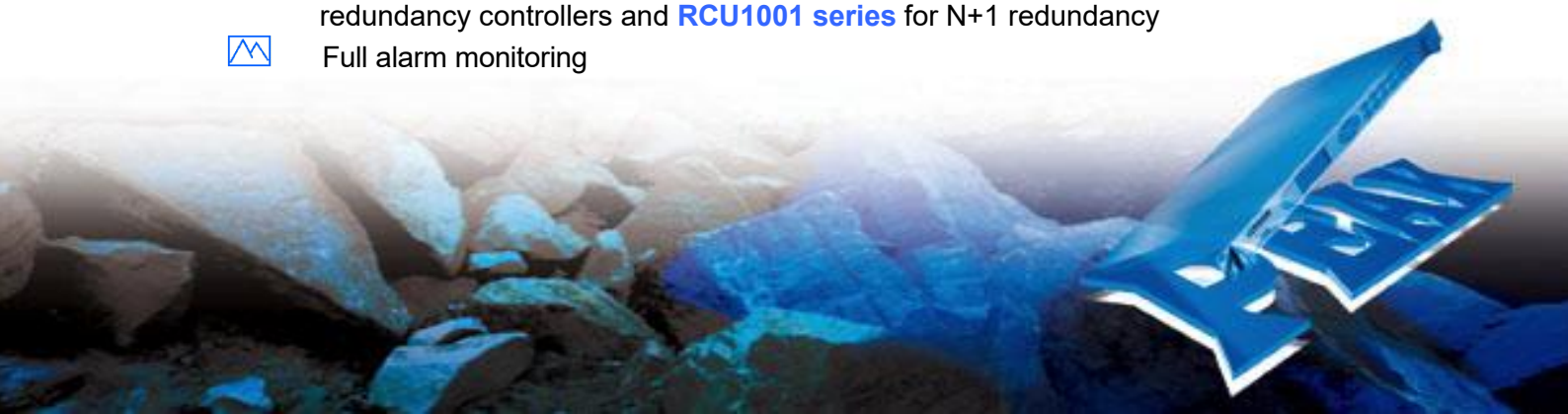
The **IBD(B) series** of units are mains powered and are constructed of high grade components to give the ultimate performance. They utilise externally phase locked dielectric resonator oscillators (XPDROs) and are far superior in stability and phase noise to voltage-controlled oscillators (VCOs), as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

These multi-band, multi-range converters are offered with either internal band switching (single input and output connections) or with 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
- Fully compatible with **RCU100/ RCU200 & RCUH100/ RCUH200 series** 1+1/ 2+1 redundancy controllers and **RCU1001 series** for N+1 redundancy
- Full alarm monitoring



IBD(B) series - Typical Specification

SHF Input

Frequency

IBD2000	Ku-band 10.95-11.70 & 11.70-12.75GHz
IBD2001	Ku-Band 10.70-11.70 & 11.70-12.75GHz
IBD2003	C-Band 3.4-4.2 (inverted output) & 4.5-4.8GHz
IBD2004	C-Band 3.4-4.2 (non-inverted) & 4.5-4.8GHz
IBD3000	Ku-band 10.95-11.70, 11.70-12.25 & 12.25-12.75GHz
IBD3001	Ku-band 10.70-11.45, 11.45-12.25 & 12.25-12.75GHz
IBD3000-2	Ku-band 10.95-11.70 & 12.25-12.75GHz
IBD3003, 3M	Dual-Band; C-Band 3.4-4.2GHz (inverted output), Ku-Band 10.70-11.70 & 11.70-12.75GHz
IBD3003b, bM	Dual-Band; C-Band 3.4-4.2GHz (non-inverted output), Ku-Band 10.70-11.70 & 11.70-12.75GHz
IBD3004, 4M	Tri-Band; C-Band 3.4-4.2GHz (inverted output), X-Band 7.25-7.75GHz, Ku-Band 10.70-11.70 & 11.70-12.75GHz
IBD4004, 4M	Dual-Band; C-Band 3.4-4.2 (inverted output) & 4.5-4.8GHz, Ku-Band 10.70-11.70 & 11.70-12.75GHz

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;	50 Ω, N-Type (f)
Return loss	>18dB

L-Band Output

Frequency	Up to 950-2000MHz, dependent upon model
Spectrum sense	Non-inverting unless specified above
Connector	50Ω, SMA (f)
Option 1b;	50Ω, N-Type (f)
Option 3;	75Ω, BNC (f)
Return loss	>15dB
1dB GCP	+8dBm
Option 5b;	+16dBm

Transfer Characteristics

Conversion gain	30dB ±1dB at band centre
Option 4b;	40dB ±1dB
Gain stability	±0.5dB from 0 to 50°C
Gain flatness	±1dB across each sub-band range (±1.5dB if bandwidth ≥800MHz) ±1.5dB across full Ku-band ±0.5dB across any 40MHz in-band
LO frequency	dependent on model

Manual Attenuation (Option 10)

Attenuation range	30dB nominal
Control	Continuously variable from front panel.

Note: Can degrade gain flatness performance.

Typical 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)

Notes: C-Band units specified as <-65dBc at input -40dBm.

3rd order intercept	>+18dBm
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

External Reference Input (with automatic detection)

Frequency	10MHz (5MHz factory settable)
Connector	50Ω, BNC (f)
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 50^0C

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 50^0C

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, IBD2004)
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

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)
4b)	10dB increase in gain to 40dB
5b)	1dB GCP increase to +16dBm (includes extra 10dB gain)
7)	Redundant power supply
8)	High stability internal reference option
10a)	Manual variable attenuator, 0-30dB, at L-band
10b)	Manual variable attenuator, 0-30dB, at SHF
11)	Separate inputs & outputs for simultaneous range operation

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

Rear panel view *(sample)*