IBD(A) series

Single-Range, Single & Multi-Channel, Rack Mount, Block Down Converters

The 19-inch 1U rack mounted **IBD(A) series** of 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(A) 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 BDC designs.
High rejection performance filtering techniques are employed to ensure unrivalled spurious response.

These converters use a single-stage topology apart from the **IBD340**, which is dual-stage.

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
- Full alarm monitoring
- Fully compatible with **RCU100/ RCU200 & RCUH100/ RCUH200 series** 1+1/ 2+1 redundancy controllers and **RCU1001 series** N+1 redundancy units
- Available in dual, triple & quad-channel versions

High grade block down converter products;

BDC Model	SHF Input Frequency (GHz)	L-Band Output Frequency (MHz)
Traditional receive band coverage;		
IBD250	2.0-2.5 (S-Band)	950-1450
IBD370	3.7-4.2 (C-Band)	950-1450
IBD340, IBD342(dual), IBD344 (quad)	3.4-4.2 (full C-Band)	950-1750
IBD420, IBD422(dual), IBD424 (quad)	3.4-4.2 (full C-Band)	1750-950 (inverted spectrum)
IBD450, IBD452(dual), IBD454 (quad)	4.5-4.8 (INSAT C-Band)	950-1250
IBD725	7.25-7.75 (X-Band)	950-1450
IBD1070	10.7-11.7 (low Ku-Band)	950-1950
IBD1095	10.95-11.70 (mid Ku-Band)	950-1700
IBD1120	11.2-11.7 (mid Ku-Band)	950-1450
IBD1145	11.45-12.20 (mid Ku-Band)	950-1700
IBD1170	11.7-12.2 (mid Ku-Band)	950-1450
IBD1171	11.70-12.75 (mid Ku-Band)	950-2000
IBD1225	12.25-12.75 (mid Ku-Band)	950-1450
Transmit band coverage for ground test & ranging applications (consult factory with any specific filtering requirements);		
IBD600	5.850-6.425 (C-Band)	950-1525
IBD665	5.85-6.65 (extended C-Band)	950-1750
IBD6725	5.85-6.725 (super extended C-Band)	950-1825
IBD7025	6.7-7.025 (INSAT C-Band)	950-1275
IBD7025B	6.725-7.025 (INSAT C-Band)	950-1250
IBD790	7.9-8.4 (X-Band)	950-1450
IBD1275	12.75-13.75 (low Ku-Band)	950-1950
IBD140	14.0-14.5 (Ku-Band)	950-1450
IBD137	13.75-14.50 (extended Ku-Band)	950-1700
IBD148	13.75-14.80 (super extended Ku-Band)	950-2000
IBD180	17.30-18.10 (DBS-Band)	950-1750
IBD184	17.30-18.40 (Full DBS-Band)	950-2050

For other 'non-standard' frequency requirements or multi-channel units, please contact the factory.
For multiple-range block down converters covering wider bandwidths please see IBD(B) series datasheet.
For Ka-Band block down converters please see IBD(Ka) series datasheet.
For equivalent units with full user interface, remote control and digital attenuation, please see IBDH(A) series datasheet.
For equivalent remote mount units, please see PBD(A) series datasheet.

Rear panel view (sample)

IBD(A) series - Typical Specification

SHF Input

Connector	50Ω, SMA (f)
Option 1a;	50Ω, N-Type (f)

Note: For multi-channel version, multiple connectors are provided.

Return loss	>18dB (>15dB for S-Band)

L-Band Output

Frequency	950 up to 2000MHz, depending on model
Spectrum sense	Non-inverting, apart from IBD420, 422, 424
Connector	50Ω, SMA (f)
Option 1b;	50Ω, N-Type (f)
Option 3;	75Ω, BNC (f)

Note: For multi-channel version, multiple connectors are provided.

Return loss	>15dB
1dB GCP	+8dBm
Option 5b;	+16dBm

Transfer Characteristics

Conversion gain	30dB ±1dB at band centre
Option 4b;	40dB ±1dB at band centre
Gain stability	±0.5dB from 0 to 50°C
Gain flatness	±1dB full band (±1.5dB for bandwidths ≥800MHz)
	±0.5dB across any 40MHz in band
LO frequency	dependant 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)

Note: IBD250 specified as <-70dBm.

	<-75dBc (in-band carrier related)

Notes: C-Band units specified as <-65dBc at input -40dBm.
IBDH340, 342, 344 units specified as <-60dBc at input -40dBm.

LO leakage	<-80dBm (always out of band)

Note: IBD250 specified as <-70dBm (in band).

3rd order intercept	>+18dBm
Channel isolation	-65dBc (for multi-channel versions only)

SHF & L-Band Monitor (Option 2)

Front or rear panel mounted

Option 2a;	-20dBc L-band monitor on rear panel
Option 2b;	-20dBc L-band monitor on front panel
Option 2c;	-20dBc SHF monitor on rear panel
Option 2d;	-20dBc SHF monitor on front panel
Option 2e;	-13dBm nominal LO monitor on rear panel
Option 2f;	-13dBm nominal LO monitor on front panel
Connector	50Ω, SMA (f)

Note: Other connector styles available, please consult the factory

Level	-20dBc ±3dB (-13dBm nominal for LO monitor)

L-Band Linear Passive Slope compensation (Option 15)

Compensates for internal circuitry & external primarily across-site cables.

Note: Unit options chosen will determine 'surplus' available for external compensation (for details contact factory).

Frequency	950-2150MHz
Slope	Passive, fixed 5dB nom., positive slope

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 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^{0}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^{0}C

Mechanical

Width	19" standard rack mountable
Height	1U (1.75")
Depth	~400mm (15.7"), plus connectors

Note: For multi-channel versions, a longer ~534mm (21") chassis may be provided, depending upon options selected.

Construction	Aluminium chassis
Weight	3.5-6kgs (8-13lbs) 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.
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)
2e) -13dBm LO monitor on rear panel (SMA)
2f) -13dBm LO 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
15) 5dB passive, fixed, slope compensation

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

PEAK COMMUNICATIONS

Peak Communications reserves the right to alter the specifications of this equipment without prior notice. IBD(A)series-120626.
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