IBDH(A) series

Single-Range, Single & Multi-Channel, Rack Mount, Block Down Converters with full user interface & remote control

The 19-inch 1U rack mounted **IBDH(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 **IBDH(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.

For redundancy the **IBDH(A)** uses a simple CANBUS® interface and has an integral redundancy controller for 1+1 & 2+1 operation (for use with external **R1000HH**, **R2000HH series** switch units), also compatible with the **RCUH100/ RCUH200 series** 1+1/ 2+1 'stand-alone' redundancy controllers. For N+1 systems the **RCU1002 series** is offered.

These converters use a single-stage topology apart from the **IBDH340**, which is dual-stage. 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

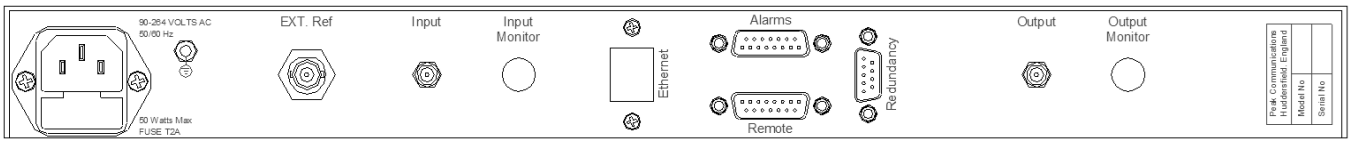
- High stability, low ripple and excellent phase noise, using PDRO technology
- 10MHz external reference fitted as standard with automatic internal reference back-up
- Electronically variable attenuator option for both local & remote control of gain
- Active & passive slope compensation options
- Integral 1+1 & 2+1 CANBUS® redundancy control & N+1 switch systems available
- Available in dual, triple & quad-channel versions

High grade, single & multi-channel block down converter products;

BDC Model	SHF Input Frequency (GHz)	L-Band Output Frequency (MHz)
Traditional receive band coverage;		
IBDH250	2.0-2.5 (S-Band)	950-1450
IBDH370	3.7-4.2 (C-Band)	950-1450
IBDH340, IBDH342(dual), IBDH344 (quad)	3.4-4.2 (full C-Band)	950-1750
IBDH420, IBDH422(dual), IBDH424 (quad)	3.4-4.2 (full C-Band)	1750-950 (inverted spectrum)
IBDH450, IBDH452(dual), IBDH454 (quad)	4.5-4.8 (INSAT C-Band)	950-1250
IBDH725	7.25-7.75 (X-Band)	950-1450
IBDH1070	10.7-11.7 (low Ku-Band)	950-1950
IBDH1095	10.95-11.70 (mid Ku-Band)	950-1700
IBDH1120	11.2-11.7 (mid Ku-Band)	950-1450
IBDH1145	11.45-12.20 (mid Ku-Band)	950-1700
IBDH1170	11.7-12.2 (mid Ku-Band)	950-1450
IBDH1171	11.70-12.75 (mid Ku-Band)	950-2000
IBDH1225	12.25-12.75 (mid Ku-Band)	950-1450
Transmit band coverage for ground test & ranging applications (consult factory with any specific filtering requirements);		
IBDH600	5.850-6.425 (C-Band)	950-1525
IBDH665	5.85-6.65 (extended C-Band)	950-1750
IBDH6725	5.85-6.725 (super extended C-Band)	950-1825
IBDH7025	6.7-7.025 (INSAT C-Band)	950-1275
IBDH7025B	6.725-7.025 (INSAT C-Band)	950-1250
IBDH790	7.9-8.4 (X-Band)	950-1450
IBDH1275	12.75-13.75 (low Ku-Band)	950-1950
IBDH140	14.0-14.5 (Ku-Band)	950-1450
IBDH137	13.75-14.50 (extended Ku-Band)	950-1700
IBDH148	13.75-14.80 (super extended Ku-Band)	950-2000
IBDH180	17.30-18.10 (DBS-Band)	950-1750
IBDH184	17.30-18.40 (Full DBS-Band)	950-2050

For other 'non-standard' frequency requirements or multi-channel units (dual, triple & quad units), please contact the factory.
For multiple-range block down converters covering wider bandwidths please see IBDH(B) series datasheet.
For equivalent lower cost BDC units without the full user interface please see IBD(A) series datasheet.
For Ka-Band block down converters please see IBDH(Ka) series datasheet.
For equivalent remote mount units, please see PBD(A) series datasheet.

Rear panel view (sample)



IBDH(A) series - Typical Specification

SHF Input

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

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 IBDH420
Connector	SMA (f), 50Ω
Option 1b;	N-Type (f), 50Ω
Option 1c;	BNC (f), 50Ω
Option 3;	BNC (f), 75Ω

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

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

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: IBDH250 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: IBDH250 specified as <-70dBm (in band).

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

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

LO, L-Band & SHF 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)

Electronically Variable L-Band Attenuation (Option 10)

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

L-Band Linear Slope compensation (Option 15, 15b)

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
Option 15;	Passive, fixed 5dB nom., positive slope
Option 15b;	Active, user settable 0 to 8dB nom., positive slope (reduces to 0 to 6dB nom., over 950-1750MHz & 0 to 5dB, over 950-1450MHz)

Note: Option 15b includes variable attenuation facility 25dB range, 0.1dB step.

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 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

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

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

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	LO lock failure
interface'	PSU failure

Options

1a) N-Type (f) SHF interface connection
1b) N-Type (f) L-Band interface connection
1c) BNC (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
9) Ethernet interface with embedded web server & SNMP
10a) Attenuator with local & remote control, 30dB stepped 0.5dB
10b) Attenuator with local & remote control, 30dB stepped 0.1dB
15) 5dB passive, fixed, slope compensation
15b) Active, user settable, slope compensation, including variable gain facility

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

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