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

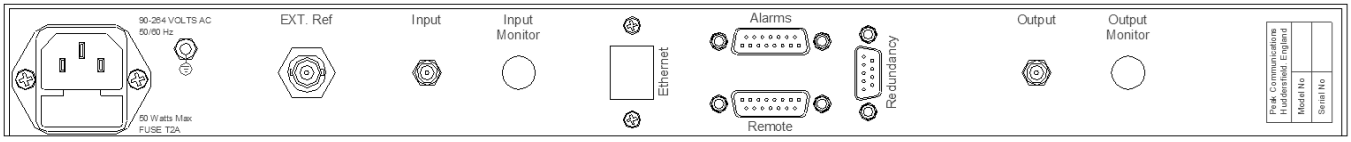
- High stability, low ripple and excellent phase noise, using PDRO technology
- 10MHz external reference fitted as standard with automatic internal reference back-up
- Electronically variable attenuator option for both local & remote control of gain
- Active & passive slope compensation options
- Integral 1+1 & 2+1 CANBUS® redundancy control & N+1 switch systems available
- L-Band monitor and fibre optic L-Band interface options 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
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
IBDH184	17.30-18.40 (Full DBS-Band)	950-1850

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 — >13dB
1dB GCP — +8dBm
- Option 5b; +16dBm

Typical 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),

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
Connector — 50Ω, SMA (f)

Note: Other connector styles available, please consult the factory

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

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 cross-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)

Note: Option 15b includes variable attenuation facility (option 10b), with nominal dynamic range of 30dB, stepped 0,1dB, reduced according to the following table for narrower L-Band frequency ranges

Fmax. (MHz)	Attenuator range (dB)
2150	30
1950	28
1700	25.5
1450	23

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 interface' — LO lock failure
PSU failure

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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 nominal LO monitor on rear panel (SMA)
2f) -13dBm nominal 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)
6) Fibre optic L-band interface connection
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) 0-8dB active, user settable, slope compensation

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

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