

## PBD(A) Series

### Single-Range, C, X & Ku-Band, Remote Mounted, Block Down Converters



The **PBD(A) series** remote mounted, block down converter units from Peak Communications are designed to be fully compatible with a wide range of L-Band modulators and frequency converters. This high-grade range of **PBD(A)** outdoor units will accept the SHF input from an LNA system and provide a frequency conversion to L-Band.

The **PBD(A) series** utilise externally phase locked dielectric resonator oscillators (XPDRs) 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 supply, the units accept a wide range of DC voltages. They can be offered with the remote mounted **OPS series** AC to DC PSU's, alternatively the **D400** rack mounted DC & reference driver units are available.








For 1+1 & 2+1 redundancy, two configurations are available;

a/ rack mounted **RCU50 /RCUH50** redundancy controllers (with L-Band switching) are offered, along with options for outdoor weatherproof SHF switching units and PBD unit DC & reference drive capability.

b/ a complete 'outdoor solution' comprising remote mounted **R1000HR /R2000HR** switching units with direct redundancy control via IP (requires PBD units to be fitted with Ethernet option).

**The unit has a highly stable internal reference source and will automatically detect and lock to an external 10MHz signal, when applied.**

### Peak Features

-  External reference locking with automatic high stability internal reference back-up
-  Temperature compensated for thermal stability and fast warm-up
-  High stability, low ripple and excellent phase noise, using PDRO technology
-  Optional electronically variable 0 to 30dB attenuator, with Ethernet based remote control
-  Rugged weatherproof housing
-  1+1 & 2+1 redundancy systems available
-  Indoor rack mount & outdoor weatherproof AC to DC PSU's available



## High grade block down converter products;

BDC Model	SHF Input Frequency (GHz)	L-Band Output Frequency (MHz)
<b>Traditional receive band coverage;</b>		
PBD420	3.4-4.2 (full C-Band)	1750-950 (inverted spectrum), for non-inverted design please see PBD(B)series.
PBD450	4.5-4.8 (INSAT C-Band)	950-1250
PBD725	7.25-7.75 (X-Band)	950-1450
PBD1070	10.7-11.7 (low Ku-Band)	950-1950
PBD1095	10.95-11.70 (mid Ku-Band)	950-1700
PBD1120	11.2-11.7 (mid Ku-Band)	950-1450
PBD1145	11.45-12.20 (mid Ku-Band)	950-1700
PBD1170	11.7-12.2 (mid Ku-Band)	950-1450
PBD1171	11.70-12.75 (mid Ku-Band)	950-2000
PBD1225	12.25-12.75 (mid Ku-Band)	950-1450
<b>Transmit band coverage for ground test &amp; ranging applications (consult factory with any specific filtering requirements);</b>		
PBD600	5.850-6.425 (C-Band)	950-1525, offered in larger chassis size
PBD665	5.85-6.65 (extended C-Band)	950-1750, offered in larger chassis size
PBD790	7.9-8.4 (X-Band)	950-1450
PBD1275	12.75-13.75 (low Ku-Band)	950-1950
PBD140	14.0-14.5 (Ku-Band)	950-1450
PBD137	13.75-14.50 (extended Ku-Band)	950-1700
PBD148	13.75-14.80 (super extended Ku-Band)	950-2000
PBD184	17.30-18.40 (Full DBS-Band)	950-1850

For other non-standard frequency requirements, please contact the factory.

For Ka-Band block down converters please see PBD(Ka) series datasheet.

For multi-range block down converters covering wider bandwidths please see PBD(B) series datasheet.

For equivalent rack mount units, please see IBD(A) & IBDH(A) series datasheets.

## PBD(A) series – Typical Specification

### SHF Input

Connection	N-type (f), 50Ω
Return loss	>18dB
RF input power	-25dBm max

### L-Band Output

Frequency	950 up to 2000MHz, dependent upon model
<i>Note: PBD420 provides inverted output spectrum (1750-950MHz).</i>	
Connection	N-type (f), 50Ω
Return loss	>15dB
1dB GCP	+8dBm

### 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
Spurious	<-80dBm (in band non-carrier related) <-75dBc (in band carrier related)
<i>Note: C-Band units specified as &lt;-65dBc at input -40dBm.</i>	
3rd order Intercept	>+18dBm

### Transfer Characteristics

Conversion gain	30dB ±1dB at band centre
Gain stability	±0.5dB from 0 to 40°C (-0.026dB per +°C)
Gain flatness	±1dB full band ±0.5dB across any 40MHz in band
Noise figure	3-4dB typ., 7dB max

### External Reference Input, with automatic detection

Frequency	10MHz
Connection	Fed in on L-band cable
Level	Option 1; Separate TNC (f), 50Ω input 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	$5 \times 10^{-11}$ over 1s
Ageing	$<5 \times 10^{-9}$ per day, $<5 \times 10^{-7}$ per year
Temp stability	$<5 \times 10^{-8}$ over 0 to 60°C

### Variable L-Band Attenuation (Option 3)

Attenuation range	30dB nominal
Step size	0.1dB or 0.5dB
Control	Remote via Ethernet (with option 9)

### Additional Filtering (Option 14)

Additional filtering for mounting locations within close proximity to UHF transmitters (up to 5W), as often encountered on mobile vehicle installations.

### Mechanical

Width	123mm (4.85")
Height	172mm (6.8"), plus connections & mounting flanges
Depth	48mm (1.89")
<i>Note: for PBD600, PBD665 or with options 3 &amp; 9, size increases to H290x W230x D95mm.</i>	
Construction	Die-cast Aluminium, weatherproof, IP66 rated
Weight	1.4kgs (3lbs) approx.

### Environmental

Operating temp	-25°C to +55°C (less solar gain)
Option 12;	-40°C to +55°C (less solar gain), with extended warm-up time for cold start & higher current
Humidity	0-100% condensing
EMC	EN 55022, part B & EN 50082-1
Safety	EN 60950

### Power Supply

Voltage	+16.5 to +35VDC
<i>Note: voltage increases with options 3 &amp; 9 to +27 to +36VDC.</i>	
Current	650mA max (option dependent)
<i>Note: lower current versions available (please consult the factory).</i>	
Connection	Fed in on L-band cable
Option 2a;	Fed in on control interface connection
Option 2b;	Fed in on the control interface connection as well as the L-Band cable

### Control Interface

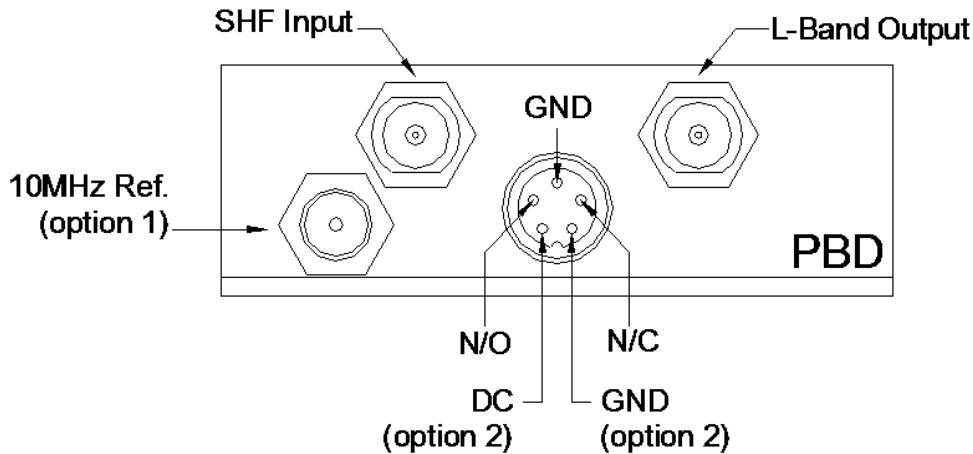
Alarms	Summary alarm contacts
Option 5;	Removal of 'Ext Ref lock' alarm
<i>Note: external reference 'lock' alarm is included in the summary alarm as standard, this can be removed if an external reference is not being provided.</i>	
Option 7;	Bi- coloured LED for '10MHz lock' and 'DC power' status indication
Connection	Multi-pin circular, weatherproof (mating part supplied)
Remote control (Option 9)	Ethernet; embedded web server & SNMP network management support
<i>Note: option 9 increases size of the unit to H290x W230x D95mm and voltage range to +27 to +36VDC.</i>	

## Options

- 1) Separate external 10MHz reference input (using a TNC connector), replacing the L-band feed system.
- 2a) DC input connection wired to control interface, replacing the L-band feed system.
- 2b) DC input connection wired to the control interface, as well as the standard DC feed system via the L-Band cable.
- 3a) 30dB L-Band electronic variable attenuator, 0.5dB step
- 3b) 30dB L-Band electronic variable attenuator, 0.1dB step
- 5) Removal of ext. ref. 'lock' alarm from summary alarm.
- 7) Bi-coloured ext. ref. 'lock' and 'DC power' status indication
- 9) Ethernet interface with embedded web server & SNMP
- 12) Low temperature operation to -40°C
- 14) Filtering for close proximity UHF transmitters

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

## Connector panel view (sample)



Peak Communications reserves the right to alter the specifications of this equipment without prior notice. PBD(A)series-070322.

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