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 (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 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)
Traditional receive band coverage;		
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
Transmit band coverage for ground test & ranging applications (consult factory with any specific filtering requirements);		
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
PBD6725	5.85-6.725 (super extended C-Band)	950-1825, offered in larger chassis size
PBD7025	6.7-7.025 (INSAT C-Band)	950-1275, 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
PBD180	17.30-18.10 (DBS-Band)	950-1750
PBD184	17.30-18.40 (Full DBS-Band)	950-2050

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

Note: PBD420 provides inverted output spectrum (1750-950MHz).

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
Harmonics	Better than -50dBc
Spurious	<-80dBm (in band non-carrier related) <-75dBc (in band carrier related)

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

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 (±1.5dB for bandwidths ≥800MHz) ±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
Option 1;	Separate TNC (f), 50Ω input
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 60^0C

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

L-Band Linear Slope compensation (Option 17)

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
Type	Passive, fixed 5dB nom., positive slope

Mechanical

Width	123mm (4.85")
Height	172mm (6.8"), plus connections & mounting flanges
Depth	48mm (1.89")

Note: For PBD600/ 665/ 6725/ 7025 or with options 3 & 9, size increases to H290x W230x D95mm.

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;	-40^0C to $+55^0$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 +24VDC

Note: For PBD600/ 665/ 6725/ 7025 or with options 3 & 9, Voltage range changes to +27 to +36VDC.

Current	650mA max (option dependent)

Note: Lower current versions available (please consult the factory).

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

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.

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

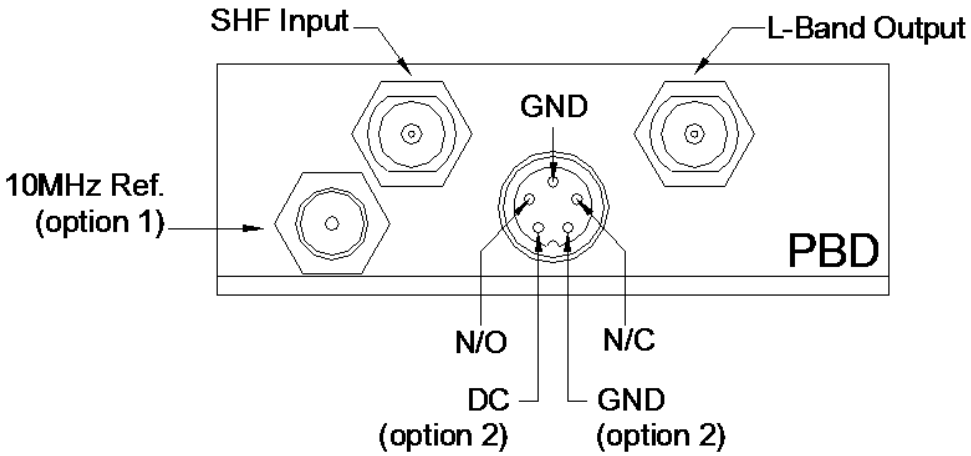
Note: Option 9 increases size of the unit to H290x W230x D95mm and voltage range changes to +27 to +36VDC.

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 -40^0C
14) Filtering for close proximity UHF transmitters
17) 5dB passive, fixed, slope compensation

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-120626.
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