

## PBD(Ka) Series

### Ka-Band, Single-Range, Remote Mounted Block DownConverters

#### Products;

<b>PBD1770</b>	Ka-Band (17.70-18.70GHz) to L-Band
<b>PBD1820</b>	Ka-Band (18.20-19.20GHz) to L-Band
<b>PBD1870</b>	Ka-Band (18.70-19.70GHz) to L-Band
<b>PBD1890</b>	Ka-Band (18.90-19.60GHz) to L-Band
<b>PBD1920</b>	Ka-Band (19.20-20.20GHz) to L-Band
<b>PBD1950</b>	Ka-Band (19.50-20.20GHz) to L-Band
<b>PBD1970</b>	Ka-Band (19.70-20.20GHz) to L-Band
<b>PBD2020</b>	Ka-Band (20.20-21.20GHz) to L-Band
<b>PBD2140</b>	Ka-Band (21.40-22.00GHz) to L-Band
<b>PBD2950</b>	Ka-Band (29.50-30.00GHz) to L-Band

For other non-standard frequency requirements and multi-band solutions, please contact the factory.  
For equivalent rack mount units, please see IBDH(Ka) series datasheets.



The **PBD(Ka) 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. The high-grade range of **PBD(Ka)** outdoor units will accept the SHF input from an LNA system and provide a frequency conversion to L-Band.








The **PBD(Ka) 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.

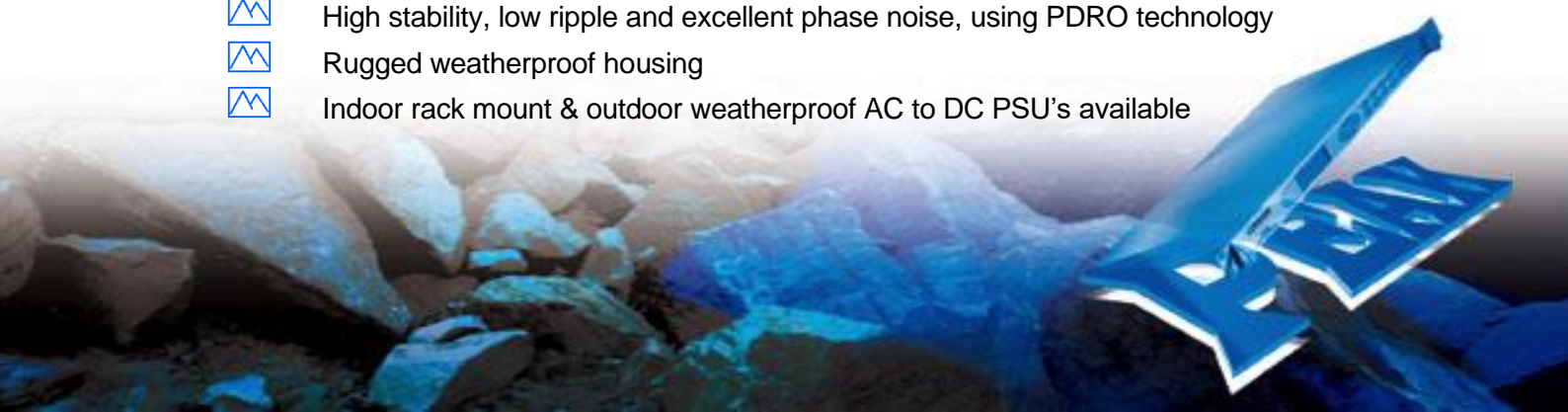
For redundancy, the **PBD(Ka)** uses a simple CANBUS® interface and has an integral redundancy controller for 1+1 & 2+1 operation (for use with remote mounted **R1000HR(Ka)**, **R2000HR(Ka)** switch units, that automatically configure the 'standby' unit during the switch-over process). Alternatively, traditional **RCUH50(Ka) /52(Ka)** rack mounted redundancy controllers are available (please contact the factory).

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.

**The unit has a highly stable internal 10MHz reference signal 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
-  Optional electronically variable 0 to 30dB attenuator, with Ethernet based remote control
-  Integral 1+1 & 2+1 CANBUS® redundancy control & external switch units available
-  High stability, low ripple and excellent phase noise, using PDRO technology
-  Rugged weatherproof housing
-  Indoor rack mount & outdoor weatherproof AC to DC PSU's available



# PBD(Ka) Series – Typical Specification

## SHF Input

Frequency	
PBD1770	17.7-18.7GHz
PBD1820	18.2-19.2GHz
PBD1870	18.7-19.7GHz
PBD1890	18.9-19.6GHz
PBD1920	19.2-20.2GHz
PBD1950	19.5-20.2GHz
PBD1970	19.7-20.2GHz
PBD2020	20.2-21.2GHz
PBD2140	21.4-22.0GHz
PBD2950	29.5-30.0GHz
Connection	K-Type (f), 50Ω or 2.92mm (f)
Return loss	>14dB
RF input power	-20dBm max

## L-Band Output

Frequency	950 up to 1950MHz, dependent upon model
Connection	N-type (f), 50Ω
Return loss	>15dB
1dB GCP	+8dBm

## RF Performance

LO Phase noise (typical with good phase noise ext. 10MHz ref)	-35dBc/Hz at 10Hz -70dBc/Hz at 100Hz -90dBc/Hz at 1kHz -95dBc/Hz at 10kHz -100dBc/Hz at 100kHz -115dBc/Hz at 1MHz
Spurious	<-65dBm (in band non-carrier related) <-60dBc (in band carrier related)
LO leakage	-70dB (always out of band)
3rd order intercept	>+18dBm

Note; 2<sup>nd</sup> harmonic of IF (2xIF) at -50dBc@0dBm output, if in-band

## Transfer Characteristics

Conversion gain	30dB ±1dB at band centre
Gain stability	±1dB over temperature range
Gain flatness	±1dB full band (±1.5dB for bandwidths ≥800MHz) ±0.5dB across any 40MHz in-band
Noise figure	7dB max

## Variable L-Band Attenuation (Option 3)

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

## External Reference Input

Frequency	10MHz
Connection	Separate TNC (f), 50Ω connection Option 1c; Fed in on L-band cable
Level	0dBm ±5dB
Required phase noise	to be better than 50dBc/Hz of output phase noise
Locking delay	<5 minutes to stabilise from cold

## Internal back-up reference;

Allan deviation	5 x 10 <sup>-11</sup> over 1s
Ageing	<5 x 10 <sup>-9</sup> per day, <5 x 10 <sup>-7</sup> per year
Temp stability	<5 x 10 <sup>-8</sup> over 0 to 60°C

## 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

Dimensions	290 x 230 x 95mm (11.4 x 9.1 x 3.7 inch)
Construction	Die-cast Aluminium, weatherproof, IP66 rated
Weight	Approx. 4kgs (9lbs)

## Environmental

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

## Power Supply

Voltage	+27 to +36VDC
Current	1.5A max (option dependent)
Connection	Fed via control system interface connection Option 2c; Fed in on L-band cable Option 2d; Fed in on the L-Band cable as well as the multi-pin circular control interface connection

## Control Interface

Alarms	Summary failure relay (form C) 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	RS232/ 485 port Ethernet; embedded web server & SNMP network management support.
Redundancy	CANBUS® interface & in-built 1+1 & 2+1 controller

## Options

- 1c) 10MHz reference input via L-Band interface, replacing the separate TNC connection feed system
- 2c) DC input via L-Band interface, replacing the control interface feed system
- 2d) DC input via the L-Band interface, as well as the standard DC feed system via the control interface
- 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
- 12b) Low temperature operation to -40°C
- 14) Filtering for close proximity UHF transmitters
- 16) Factory pre-set IP address

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

## Connector panel view (sample)

