PBU(A) Series

Single-Range, Remote Mounted, Block Up Converters

The **PBU(A) series** remote mounted, block up 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 **PBU** outdoor units will accept the L-band output of a **P7000 series** up converter or modem and provide the frequency conversion to SHF bands.

The **PBU(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 BUC 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 **D600** 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 PBU unit DC & reference drive capability.
b/ a complete 'outdoor solution' comprising remote mounted **T1000HR /T2000HR** switching units with direct redundancy control via IP (requires PBU units to be fitted with Ethernet option).

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
- Integral TLT options for TX signal monitoring (from BUC output, HPA output or antenna coupler)
- 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
- Indoor rack mount & outdoor weatherproof AC to DC PSU's available

High grade standard product range;

BUC Model	L-Band input (MHz)	SHF output (GHz)
PBU600	950-1525	5.85-6.425 (C-Band)
PBU665	950-1750	5.85-6.65 (extended C-Band)
PBU6725	950-1825	5.85-6.725 (super extended C-band)
PBU7025	950-1275	6.70-7.025 (INSAT C-band)
PBU710	950-1350	6.70-7.10 (INSAT C-band)
PBU790	950-1450	7.90-8.40 (X-Band)
PBU1275	950-1700	12.75-13.50 (low Ku-band)
PBU1275B	950-1950	12.75-13.75 (low Ku-Band)
PBU130	950-1700	13.00-13.75 (low Ku-band)
PBU137	950-1700	13.75-14.50 (extended Ku-Band)
PBU140	950-1450	14.00-14.50 (Ku-Band)
PBU145	950-1250	14.50-14.80 (INSAT Ku-Band)
PBU148	950-2000	13.75-14.80 (wide Ku-Band)
PBU180	950-1750	17.30-18.10 (DBS-Band)
PBU184	950-2050	17.30-18.40 (extended DBS-band)

For other non-standard frequency requirements, please contact the factory.
For multi-range block up converter's covering a wider bandwidth please see PBU(B) series datasheet.
For Ka-Band block up converters please see PBU(Ka) series datasheet.
For equivalent rack mount units, please see IBU(A) & IBUH(A) series datasheets.

PBU(A) series – Typical Specification

SHF Output

Frequency	Model dependant (see front page)
Connection	N-type (f), 50Ω
Return loss	>18dB
1dB GCP	+8dBm

L-Band Input

Frequency	950 up to 2050MHz, dependent upon model
Connector	N-type (f), 50Ω
Return loss	>15dB

RF Performance

Note; for PBU180, PBU184 spurious, harmonics and LO leakage performance please consult the factory.

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

Note; see table below for band specific typical performance.

Spurious	<-80dBm (in band non-carrier related)
	<-75dBc (in band carrier related)
3rd order intercept	>+18dBm
LO leakage	<-80dBm (always out of band)

Transfer Characteristics

Conversion gain	17dB ±1dB at band centre
Option 4;	27dB ±1dB

Note; other gain options available, please contact the factory.

Gain stability	±0.5dB from 0 to 40°C
	(-0.026dB per +°C)
Gain flatness	±1dB full band (±1.5dB if bandwidth >800MHz)
	±0.5dB across any 40MHz in band

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	to be better than 50dBc/Hz of output phase noise
Locking delay	<2 minutes to stabilise from cold

Internal back-up reference;

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)

RF Mute (Option 13)

Activation	remote control via Ethernet (with option 9)
Option 13a;	discrete control input
Isolation	60dB min

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.

Integral Test Loop Translator (Option 15)

TX sample input	50Ω, N-Type (f), 0dBm max.
L-Band output	50Ω, N-Type (f)
Translation loss	15dB

Mechanical

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

Note; size increases with options 3, 9 & 15 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 +35VDC

Note; voltage increases with options 3, 9 & 15 to +27 to +36VDC

Current	650mA max (option dependent)
PBU180/ 184;	750mA 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

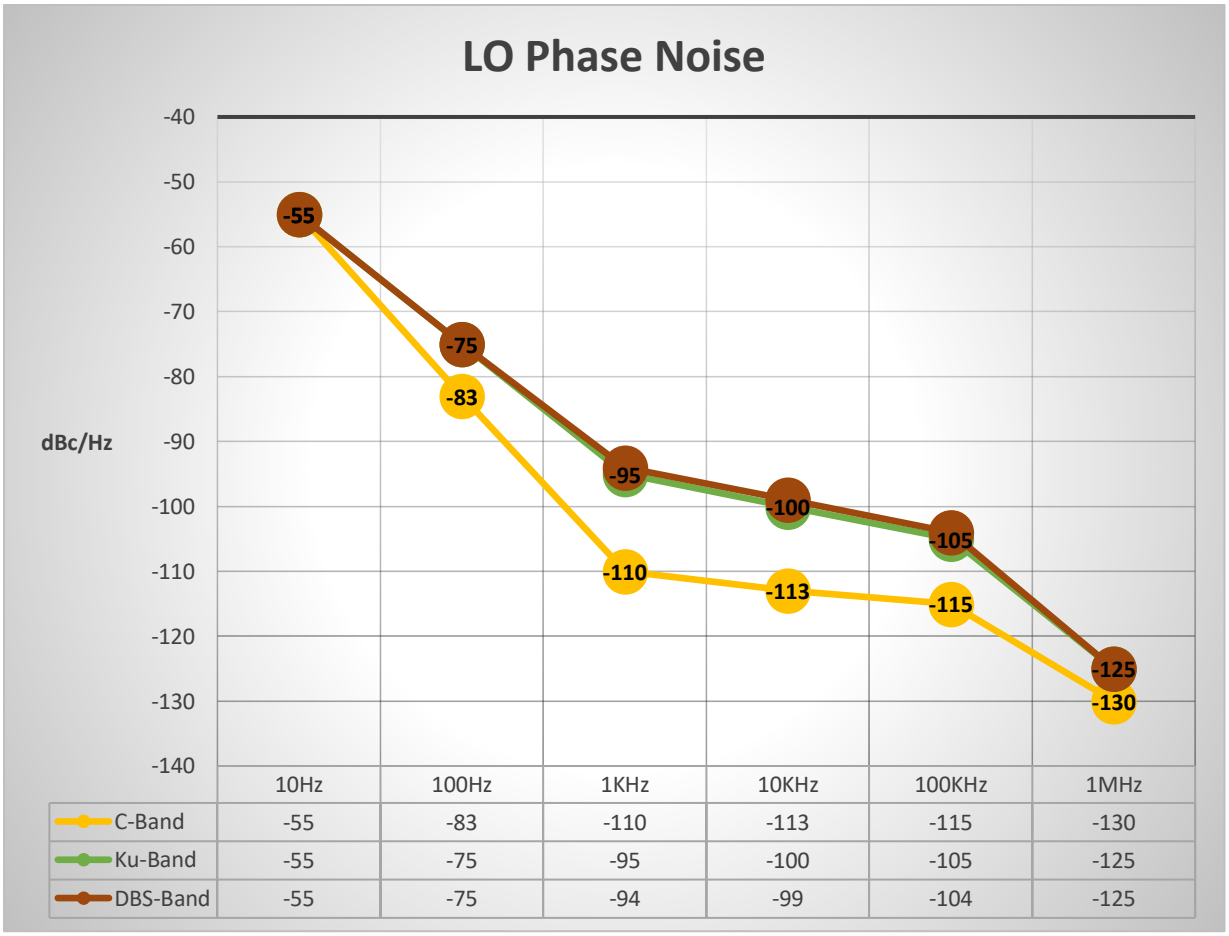
Option 7;	Bi- coloured LED for '10MHz lock' and 'DC power' status indication
Connection	Multi-pin circular, weatherproof (mating part supplied)
Remote control (Option 9)	Ethernet; embedded web server & SNMP network management support

Note; option 9 increases size of the unit to H290x W230x D95mm and voltage range to +27 to +36VDC.

Options

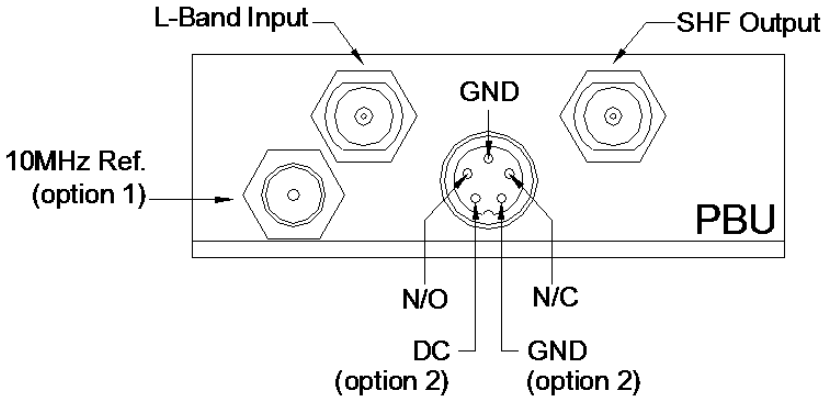
1) Separate external 10MHz reference input (using a TNC connector), replacing the L-band feed system.
2a) DC input connection wired to control interface, replacing the L-band feed system.
2b) DC input connection wired to the control interface, as well as the standard DC feed system via the L-Band cable.
3a) 30dB L-Band electronic variable attenuator, 0.5dB step
3b) 30dB L-Band electronic variable attenuator, 0.1dB step
4) 10dB increase in gain, to +27dB
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^{0}C
13) RF mute option with remote control
13a) Mute discrete control input
14) Filtering for close proximity UHF transmitters
15) Integral TLT for TX signal monitoring (increases size of chassis)

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



	10Hz	100Hz	1KHz	10KHz	100KHz	1MHz
C-Band	-55	-83	-110	-113	-115	-130
Ku-Band	-55	-75	-95	-100	-105	-125
DBS-Band	-55	-75	-94	-99	-104	-125

Connector panel view *(sample, showing separate ext. ref. connection & DC via alarms connection)*



Peak Communications reserves the right to alter the specifications of this equipment without prior notice. PBU(A)series-140521.
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