

## 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 (typical with good phase noise ext. 10MHz ref) | -55dBc/Hz at 10Hz<br>-75dBc/Hz at 100Hz<br>-92dBc/Hz at 1kHz<br>-100dBc/Hz at 10kHz<br>-105dBc/Hz at 100kHz<br>-125dBc/Hz at 1MHz |
|---|---|

Note: See table below for band specific typical performance.

|                     |  |
|---------------------|--|
| Spurious            | <-80dBm (in band non-carrier related)<br><-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   |
| Gain stability  | ±0.5dB from 0 to 40°C<br>(-0.026dB per +°C)                                     |
| Gain flatness   | ±1dB full band (±1.5dB if bandwidth >800MHz)<br>±0.5dB across any 40MHz in band |

Note: Other gain options available, please contact the factory.

### 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 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                          |

### 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°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              |
| 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

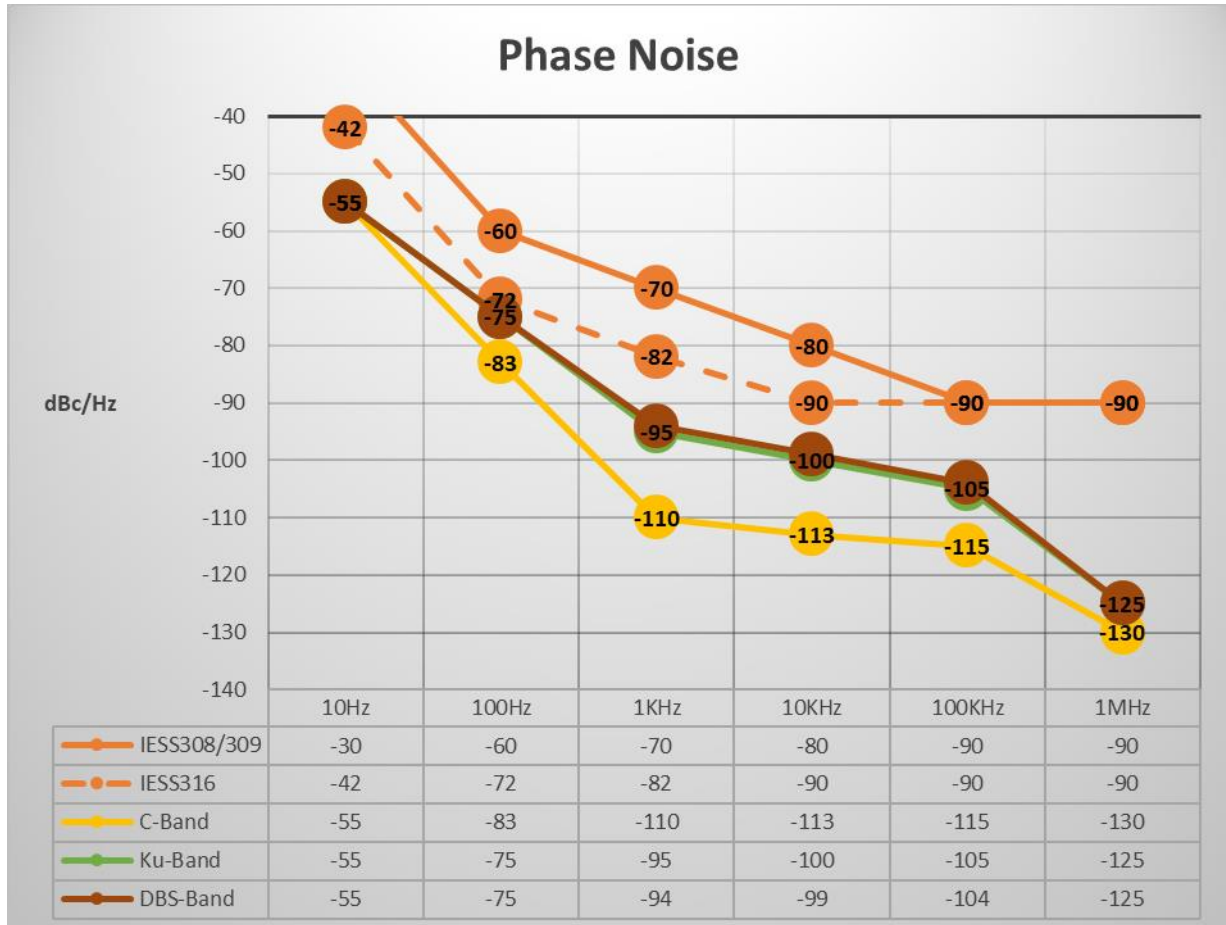
|  |  |
|--|--|
| Alarms   | Summary alarm contacts   |
| Option 5;  | Removal of 'Ext Ref lock' alarm                                    |
| Note: External reference 'lock' alarm is included in the summary alarm as standard, this can be removed if an external reference is not being provided |  |
| Option 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°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



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

