

# APKL-125W



THE SMALLEST OUTDOOR 125W Ku-Band BUC High Temp +70C

## FEATURES:

- Robust, Light Package Design Only 9.2 lbs (4.2 kg)
- Extreme Stability, Reliability and Performance
- Built-in HPA Overdrive Circuit Protection
- High Temperature Mode - up to + 70°C
- Built-in Optimized Linearization
- Built-in Receive Band Reject Filter
- Built-in Anti Vibration Technology
- Extreme GaN Linearity and Efficiency
- Exceeds ALL IESS-308/309 Phase Noise Standards
- Triple protection sealed waveguide output
- Field Replaceable IP68 (150,000 hr) Rated Fans
- Assembled and Rigorously Tested in California
- 3-Year Warranty



## DESIGN OVERVIEW:

The "PHANTOM" series Low (12.75 - 13.25GHz) Ku-Band BUCs are the next generation of the world's most efficient and compact size BUCs in the industry, weighing only 9.2 lbs (4.2 kg) and handling output power of 125W (min) at the Low Ku-Band frequencies.

## PERFORMANCE SPECIFICATIONS

|                                                                                                                                 |                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Operating RF Frequency                                                                                                          | APKL 12.75-13.25 GHz                                                      |
| Operating IF frequency                                                                                                          | 950-1450 MHz                                                              |
| Local Oscillator                                                                                                                | 11.8 GHz                                                                  |
| Rated Output Power PSAT                                                                                                         | 125W 51.0 dBm                                                             |
| Linear Power SR @-26 dBc PLIN                                                                                                   | 90W 49.5 dBm                                                              |
| IMD3 (two tones) 3 dB Back Off                                                                                                  | -25 dBc max.<br>2 signal 5 MHz apart at P-LINEAR                          |
| Spectral Regrowth at P-LINEAR<br>(QPSK at 1.5x and OQPSK at 1.0x<br>symbol rate offset with 2 dB back-<br>off from rated power) | -30 dBc                                                                   |
| 10 MHz External Ref.<br>(Internal High Stability Optional)                                                                      | 10 MHz Ref. Level: 0 dBm +/- 5 dBm<br>Internal Ref. Stability +/- 0.1 ppm |

## POWER CONSUMPTION

|                    |      |
|--------------------|------|
| 125W 51.0 dBm PSAT | 590W |
| 90W 49.5 dBm PLIN  | 440W |

## COMPLIANCE INFORMATION

|                  |         |                   |
|------------------|---------|-------------------|
| MIL-STD-188/164C | DO-160G | ROHS, REACH, WEEE |
| MIL-STD-461E     |         |                   |

## SPURIOUS & PHASE NOISE

|                                           |                                                                                                                                                                                           |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| In-Band/Out-band Spurious                 | -60 dBc max.                                                                                                                                                                              |
| Group Delay                               | Ripple 1 nsec point to point max.                                                                                                                                                         |
| AM/PM Conversion                          | 1.0°/dB max. at 3 dB output backoff                                                                                                                                                       |
| Noise Power Density (TX)                  | -85 dBm/Hz                                                                                                                                                                                |
| Noise Power Density (RX)                  | -155 dBm/Hz (10.95 - 12.75 GHz)                                                                                                                                                           |
| Phase Noise<br>(Up Converter) (Ext. Ref.) | -55 dBc/Hz @ 10 Hz    -115 dBc/Hz<br>-65 dBc/Hz @ 100 Hz    -135 dBc/Hz<br>-75 dBc/Hz @ 1 kHz    -150 dBc/Hz<br>-85 dBc/Hz @ 10 kHz    -155 dBc/Hz<br>-95 dBc/Hz @ 100 kHz    -160 dBc/Hz |

## GAIN

|                                   |                              |
|-----------------------------------|------------------------------|
| Gain (Temperature<br>Compensated) | 72 dB (min) 78 dB (typ.)     |
| TX Gain Flatness                  | ± 0.75 dB max. over 40 MHz   |
| TX Gain variation 50 MHz          | ± 0.5 dB                     |
| TX Gain variation 500 MHz         | ± 1.5 dB                     |
| Built-in Receive Reject Filter    | Suppression by +20 dB (min.) |

ENVIRONMENTAL SPECIFICATIONS

|                                |                                         |
|--------------------------------|-----------------------------------------|
| Environmental MIL-STD          | Compliant with MIL-STD810E              |
| Vibration MIL-STD              | MIL-STD810F, Method 514.5 C-2 Transport |
| Operating Temperature Range    | - 40°C to + 70°C                        |
| Storage Temperature Range      | - 60°C to + 85°C                        |
| Fan Rating / Field Replaceable | IP68, Field Interchangeable             |
| Humidity                       | 100% Condensing, IP67 Rated             |
| Shock                          | 20 g peak, 11 msec, 1/2 sine            |
| Altitude                       | 50,000 ft, 15,240 m                     |

M&C INTERFACE

|                             |                                                      |
|-----------------------------|------------------------------------------------------|
| Advanced Monitor & Control  | Ethernet Web Page Based, SNMP, RS232/485, FSK (opt.) |
| ALARMS                      | PLL LOCK, HPA, VSWR, MUTE, TX                        |
| Stealth PLIN Operation Mode | LED Shut-Off   Silenced fans                         |

MECHANICAL SPECIFICATIONS

|            |                                                            |
|------------|------------------------------------------------------------|
| Dimensions | 8.5" x 5.2" x 4.54" (215×132×114 mm)<br>Without Connectors |
| Weight     | 9.2 lbs (4.2 kg)                                           |

PART NUMBERING SYSTEM

AP - "PHANTOM" MODEL SERIES  
KL - Low Ku-Band 12.75 - 13.25 GHz  
80 | 100 | 125 | 150 - Rated Power in Watts  
N | F - 50 Ohm or 75 Ohm IF Input Connector Type  
M - M&C Option - RS232/485 + Ethernet + SNMP  
A - AC Power 85-260 VAC  
D - DC Power 36-76 VDC  
R - 10 MHz Ref. Auto Sense | Internal Reference  
K - FSK Option  
U - Universal Mounting Bracket  
J - Weatherproof DC/RJ45 Cable Dongle  
C xxxx - Custom RAL Color Code  
L - Custom Language  
P - Custom Part number  
B - Custom Label  
G - Custom Logo  
T- Redundancy Ready  
H - High Gain (+79 dB - 82 dB)  
W - Weatherproof Pelican Style Case  
O - Other Custom Option  
X - Custom Cable



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INPUT|OUTPUT INTERFACE

|                                                                               |                                                                                                                           |              |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------|
| IF Connector                                                                  | N-type (50 Ohm)   F-type (75 Ohm)                                                                                         |              |
| AC                                                                            | Universal Prime Power via 3pin Power Connector<br>Aphenol PT02E-12-3P,<br>Current protection<br>(depending on the option) | + 85-260 VAC |
| DC                                                                            | Universal Prime Power via 3pin Power Connector<br>Aphenol PT02E-12-4P,<br>Current protection<br>(depending on the option) | + 36-76 VDC  |
| Output VSWR                                                                   | 1.5:1                                                                                                                     |              |
| Output Interface                                                              | WR75 Sealed & Grooved                                                                                                     |              |
| Input VSWR                                                                    | 1.5:1                                                                                                                     |              |
| 10 MHz External Ref.<br>(Internal High Stability +/- 0.1ppm Option Available) | 10 MHz Ref. Level: 0 dBm +/- 5 dBm<br>Internal Ref. Stability +/- 0.1 ppm                                                 |              |

PROTECTION

|                         |             |         |
|-------------------------|-------------|---------|
| VOLTAGE                 | OVERTEMP    | VSWR    |
| SMART ALARMS IN THE M&C | MICROPHONIC | CURRENT |

