

# AFKU(S,D)-16W

THE WORLD'S SMALLEST Fan-less 16W Ku-Band BUC



## FEATURES:

- Hyper-Light Package Design Only 3.1 lbs (1.4 kg)
- Extreme Stability, Reliability and Performance
- Built-in HPA Overdrive Circuit Protection
- Built-in Optimized Linearization
- Built-in Receive Band Reject Filter
- Built-in Anti Vibration Technology
- Built-in DC Input Noise Suppression Filter
- Extreme GaN Linearity and Efficiency
- Exceeds ALL IESS-308/309 Phase Noise Standards
- Triple protection sealed waveguide output
- Fan-less Design
- Fully Assembled and Rigorously Tested in the USA
- 3-Year Warranty



## DESIGN OVERVIEW:

The "FANLESS BRICK" series Extended (13.75 - 14.5 GHz), Standard (14.0 - 14.5 GHz) and Dual (13.75 - 14.5 GHz | 14.0 - 14.5 GHz) Frequency 16W Ku-Band BUCs are the next generation of the World's Smallest feed-horn & boom-arm mountable BUCs in the industry, weighing-in only at 3.1 lbs (1.4 kg) and working at high temp up to 60°C.

## PERFORMANCE SPECIFICATIONS

|                                                                                                                          |                                                                           |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Operating RF Frequency                                                                                                   | AFKS 14.0 - 14.5 GHz                                                      |
|                                                                                                                          | AFKU 13.75 - 14.5 GHz                                                     |
|                                                                                                                          | AFKD 13.75 - 14.5   14.0 - 14.5 GHz                                       |
| Operating IF frequency                                                                                                   | 950 - 1450 MHz   950 - 1700 MHz                                           |
| Local Oscillator                                                                                                         | 13.05 GHz   12.80 GHz                                                     |
| Rated Output Power PSAT                                                                                                  | 16W 42.0 dBm PSAT                                                         |
| Linear Power SR @-26 dBc PLIN                                                                                            | 13W 41.0 dBm PLIN                                                         |
| IMD3 (two tones) 3 dB Back Off                                                                                           | -25 dBc max.<br>2 signal 5MHz apart at P-LINEAR                           |
| Spectral Regrowth at P-LINEAR<br>(QPSK at 1.5x and OQPSK at 1.0x symbol rate offset with 2 dB back-off from rated power) | -30 dBc                                                                   |
| 10 MHz External Ref. (Internal High Stability Optional)                                                                  | 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 |

## 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 |
|                                           | -65 dBc/Hz @ 100 Hz                 | -135 dBc/Hz |
|                                           | -75 dBc/Hz @ 1 kHz                  | -150 dBc/Hz |
|                                           | -85 dBc/Hz @ 10 kHz                 | -155 dBc/Hz |
|                                           | -95 dBc/Hz @ 100 kHz                | -160 dBc/Hz |

## POWER CONSUMPTION

|                   |     |
|-------------------|-----|
| 16W 42.0 dBm PSAT | 85W |
| 13W 41.0 dBm PLIN | 65W |

## COMPLIANCE INFORMATION

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

## ENVIROMENT 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 + 60°C                       |
| Storage Temperature Range   | - 60° C to + 85° C                      |
| 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 | 6.54" x 4.72" x 3.10"<br>(166 x 120 x 79 mm) Without Connectors |
| Weight     | 3.1 lbs (1.4 kg)                                                |

## PART NUMBERING SYSTEM

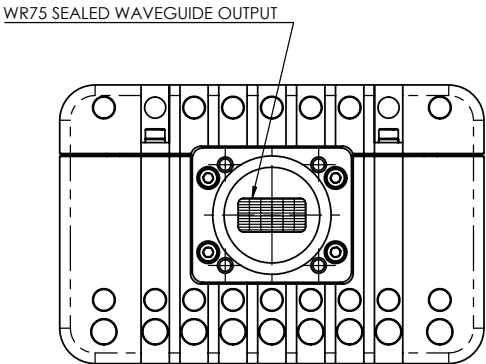
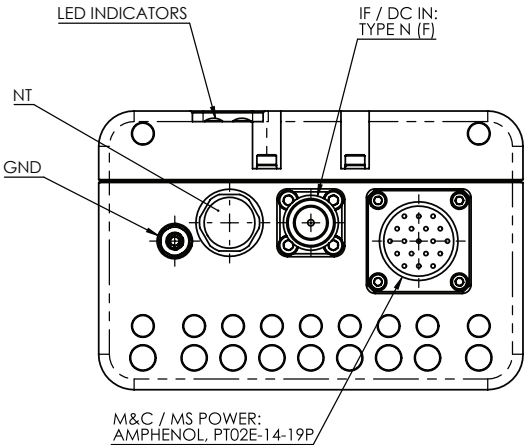
AF - "FAN-LESS BRICK" MODEL SERIES  
KU - Universal Ku-Band 13.75 - 14.50 GHz  
KS - Standard Ku-Band 14.0 - 14.50 GHz  
KL - Low Ku-Band 12.75 - 13.25 GHz  
KD - Dual Ku-Band 13.75 - 14.50 GHz | 14.0 - 14.50 GHz  
16 | 20 Rated Power in Watts  
N | F - 50 Ohm or 75 Ohm IF Input Connector Type  
R - 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

## INPUT|OUTPUT INTERFACE

|                                                                                                |                                                                           |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| IF Connector                                                                                   | N-type (50 Ohm)   F-type (75 Ohm)                                         |
| Universal Prime Power via IF or MS/M&C Connector (7.0 A Current Limit Protection Through Coax) | + 16 - 55 VDC                                                             |
| Output VSWR                                                                                    | 1.3:1                                                                     |
| Output Interface                                                                               | WR75 Sealed & Grooved                                                     |
| Input VSWR                                                                                     | 1.5:1                                                                     |
| 10 MHz External Ref. (Internal High Stability +/- 0.1 ppm Option Available)                    | 10 MHz Ref. Level: 0 dBm +/- 5 dBm<br>Internal Ref. Stability +/- 0.1 ppm |

## GAIN

|                                |                             |
|--------------------------------|-----------------------------|
| Gain (Temperature Compensated) | 64 dB (min) 68 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 +50 dB (min) |



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