# ALKA-10

10 Ka-Band BUC 27.5 - 31.0 GHz

## FEATURES:

- Hyper-Light yet Robust Package: 3.5 lbs (1.6 kg)
- Superior Quality, Efficiency, Reliability and Performance
- Built-in HPA Overdrive Circuit Protection
- High Temperature Mode - up to + 70°C
- OPEN-BMIP Ready to Work with iDirect X7 and 950MP
- Complies with MIL-STD-188-164C, RTCA DO-160G, WGS
- Industry Leading Over Temperature Performance
- Field Replaceable IP68 Long Life Rated Fans
- Assembled and Rigorously Tested in the USA
- 3-Year Warranty

## DESIGN OVERVIEW:

The "LIGHTWEIGHT" series 27.5 - 31.0 GHz Frequency 10W Full Ka-Band BUCs are the next generation of the World's Smallest feed-horn & boom-arm mountable BUCs in the industry, weighing-in only at 3.5 lbs (1.6 kg) and working at high temp up to 70°C.

## PERFORMANCE SPECIFICATIONS

| | | |
|---|---|---|
| **Operating RF Frequency** | ALKA 27.5 - 31.0 GHz | |
| **Operating IF frequency** | 950 - 1950 \| 1000 - 2000 MHz | |
| **Local Oscillator** | Selectable | |
| **Rated Output Power PSAT**<br>**Linear Power SR @ -26 dBc PLIN** | ALKA-10 | 10W 40.0 dBm<br>6W 37.8 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 symbol rate offset with 3 dB back-off from rated power)** | -30 dBc | |
| **10 MHz or 50 MHz External Ref.**<br>**0 dBm +/- 5 dBm** | 10 MHz or 50 MHz | |

## PROTECTION

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

## COMPLIANCE INFORMATION

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

## SPURIOUS & PHASE NOISE

| | | |
|---|---|---|
| **In-Band/Out-band Spurious** | -60 dBc max. | |
| **Group Delay** | Ripple 1 nsec point to point max. | |
| **AM/PM Conversion** | 2.0°/dB max. at 3 dB output backoff | |
| **Noise Power Density (TX)** | -80 dBm/Hz | |
| **Noise Power Density (RX)** | -150 dBm/Hz | |
| **Phase Noise**<br>**(Up Converter)\|(Ext. Ref.)** | -33 dBc/Hz @ 10 Hz<br>-63 dBc/Hz @ 100 Hz<br>-73 dBc/Hz @ 1 kHz<br>-83 dBc/Hz @ 10 kHz<br>-93 dBc/Hz @ 100 kHz | -115 dBc/Hz<br>-135 dBc/Hz<br>-150 dBc/Hz<br>-155 dBc/Hz<br>-160 dBc/Hz |

## POWER CONSUMPTION

| | | |
|---|---|---|
| **ALKA-10** | **10W 40.0 dBm PSAT** | 95W |
| | **6W 37.8 dBm PLIN** | 45W |

## 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 |

## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| **Environmental MIL-STD**<br>**Vibration MIL-STD** | Compliant with MIL-STD-810E<br>MIL-STD-810F, Method 514.5 |
| **Operating Temperature Range** | - 40°C to + 70° C |
| **Storage Temperature Range** | - 60° C to + 85° C |
| **Fan Rating / Field Replaceable** | IP68, Long Life |
| **Humidity** | 100% Condensing, IP67 Rated |
| **Shock** | 20 g peak, 11 msec, 1/2 sine |
| **Altitude** | 50,000 ft, 15,240 m |
| **Built-in Receive Reject Filter** | Suppression by +60 dB (min) |

## MECHANICAL SPECIFICATIONS

| | |
|---|---|
| **Dimensions (DC Powered)** | 6.5" x 3.94" x 3" (165 × 100 × 76 mm)<br>Without Connectors |
| **Weight (DC Powered)** | 3.5 lbs (1.6 kg) |

## PART NUMBERING SYSTEM

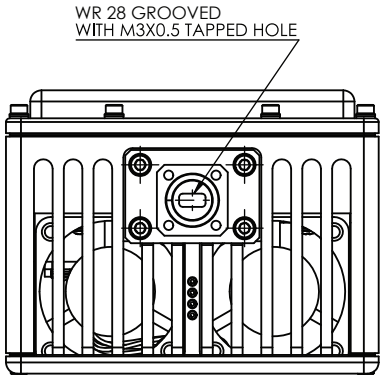
AL - "LIGHTWEIGHT" MODEL SERIES
KAF - Full Ka-Band 27.5 - 31.0 GHz
KAC - Commercial Ka-Band 29.0 - 30.0 GHz
KAM - Military and Commercial Band 29 - 31.0 GHz
KAO - O3B Bands 27.652 - 28.388 GHz, 28.172 - 29.071 GHz
10 | 13 | 16 | 20 | 25 | 30 | 40 - Rated PSAT Power in Watts
N - 50 Ohm IF Input Connector (other interface options available)
I - Isolator for VSWR Improvement to 1.35:1
M - M&C Option - RS232/485 + Ethernet + SNMP
O - OPENBMIP Protocol Ready
R - Auto Sense Ref Detector| Internal +/- 0.05ppm Stability
C - Custom color, housing or other options available
X - Custom option

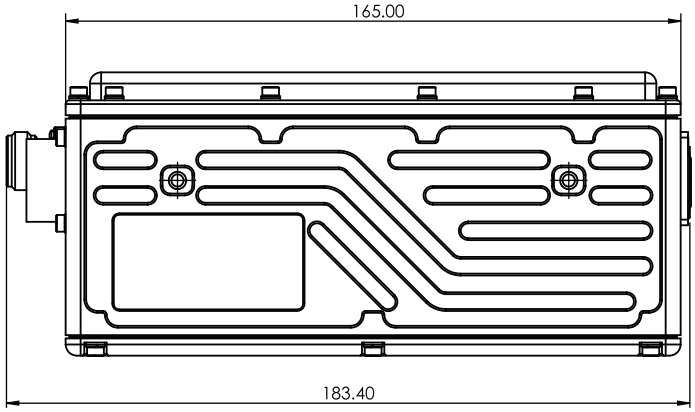
## INPUT|OUTPUT INTERFACE

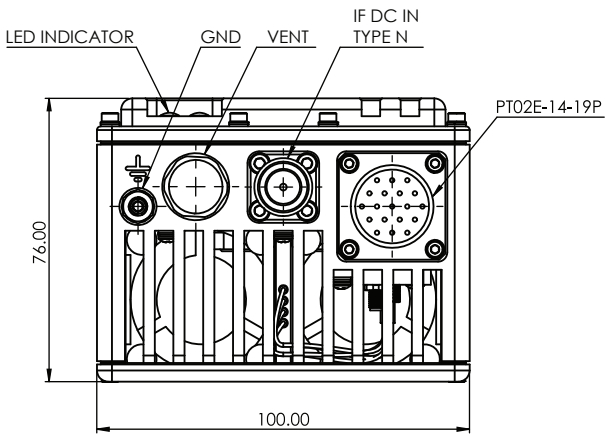
| | |
|---|---|
| **IF Connector** | N-type (50 Ohm) |
| **Universal Prime Power via IF or MS/M&C Connector (7.0 A Current Limit Protection Through Coax)** | + 22 - 55 VDC |
| **Output VSWR** | 1.5:1 (1.35:1 with optional Isolator) |
| **Output Interface** | WR28 Grooved |
| **Input VSWR** | 1.5:1 |

## 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 |

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