



μBUC X-Band or Ku-Band Block Up Converter

Description

Paradise Datacom's μBUC is a Block Up Converter available in X and Ku -Band. The module is designed specifically for highly mobile commercial and military satellite communication applications. The μBUC is ideal for use in any Fly-away or Manpack application where miniature form factor and light weight are a requirement.

The converter locks to a 10 MHz external reference signal of -10 dBm to +5 dBm. The external reference must be diplexed on the L-Band Input Connector.

The unit requires a customer designed heatsink.

FEATURES

- Ku-Band Output:
10, 20 and 25 W
- X-Band Output:
10, 20 and 25 W
- Multiple reference
frequency operation
- L-Band Input
- Miniature and light
weight
- Ideal for fly-away and
manpack applications



Ku-Band Specifications

| PARAMETER | NOTES | LIMITS | UNITS |
|---|---|---|---------------------|
| Input Frequency | Option 950-1700 | 950 - 1450 | MHz |
| Output Frequency | Option 13.75-14.50 | 14.0 - 14.5 | GHz |
| LO Frequency | At 14.0-14.5 GHz | 13.05 | GHz |
| | At 13.75-14.50 GHz | 12.80 | GHz |
| Gain | | 50 | dB |
| Gain Flatness | full band | ± 2.0 | dB |
| Gain Slope | per 40 MHz | ± 0.25 | dB |
| Gain variation vs. Temperature | -30 to +60 °C baseplate | 0 ± 2.0 | dB |
| Output Power | | P_{sat} / P_{1dB} | |
| | 10W | 40.5 / 40.0 | dBm |
| | 20W | 43.0 / 42.0 | dBm |
| | 25W | 44.0 / 43.0 | dBm |
| Intermodulation Distortion | 3dB back off relative to P_{1dB} | -25 | dBc |
| Spurious | In-Band Signal Related | -60 | dBc |
| | Close to Carrier Spurious (≤ 20 MHz) | -60 | dBc |
| | Local Oscillator | -50 | dBm |
| | Non-Signal Related | -60 | dBm |
| Harmonics | 2 nd harmonic measured at P_{1dB} | -40 | dBc |
| Output Spectrum | Low side Local Oscillator | Non Inverted | |
| Input Return Loss | | 12 | dB |
| Output Return Loss | | 12 | dB |
| Noise Figure | | 15 | dB |
| Group Delay (per 40 MHz segment) | Linear | 0.01 | ns/MHz |
| | Parabolic | 0.003 | ns/MHz ² |
| | Ripple | 1.0 | ns p-p |
| Reference Input Frequency | Diplexed on L-Band Input Connector | 10 | MHz |
| Reference Input Power | Diplexed on L-Band Input Connector | -10 to +5 | dBm |
| Input Voltage | +48 VDC nominal | +36 to +60 | VDC |
| | +24 VDC nominal | +24 ±10% | VDC |
| | +12 VDC nominal | -12 ±10% | VDC |
| Input Power | 10W @ 48 VDC | 130 | W |
| | 10W @ 24 VDC | 150 | W |
| | 20W @ 48 VDC | 200 | W |
| | 20W @ 24 VDC | 220 | W |
| | 25W @ 48 VDC | 230 | W |
| | 25W @ 24 VDC | 250 | W |
| Monitor & Control Functions | Tx Inhibit (GND for Unmute) Temperature Fault Summary Fault | | |
| Alarm Output | Open Collector Output (requires external pull-up) | Open = Fault | |
| Weight | | 4.5 (2.0) | lb. (kg) |
| Dimensions | L x W x H | 7.98 x 4.0 x 2.25 (203.2 x 101.6 x 57.1) | in (mm) |
| Heatsink (must meet thermal resistance specification) | 10W μBUC | 0.230 | °C/W |
| | 20W μBUC | 0.150 | °C/W |
| | 25W μBUC | 0.125 | °C/W |



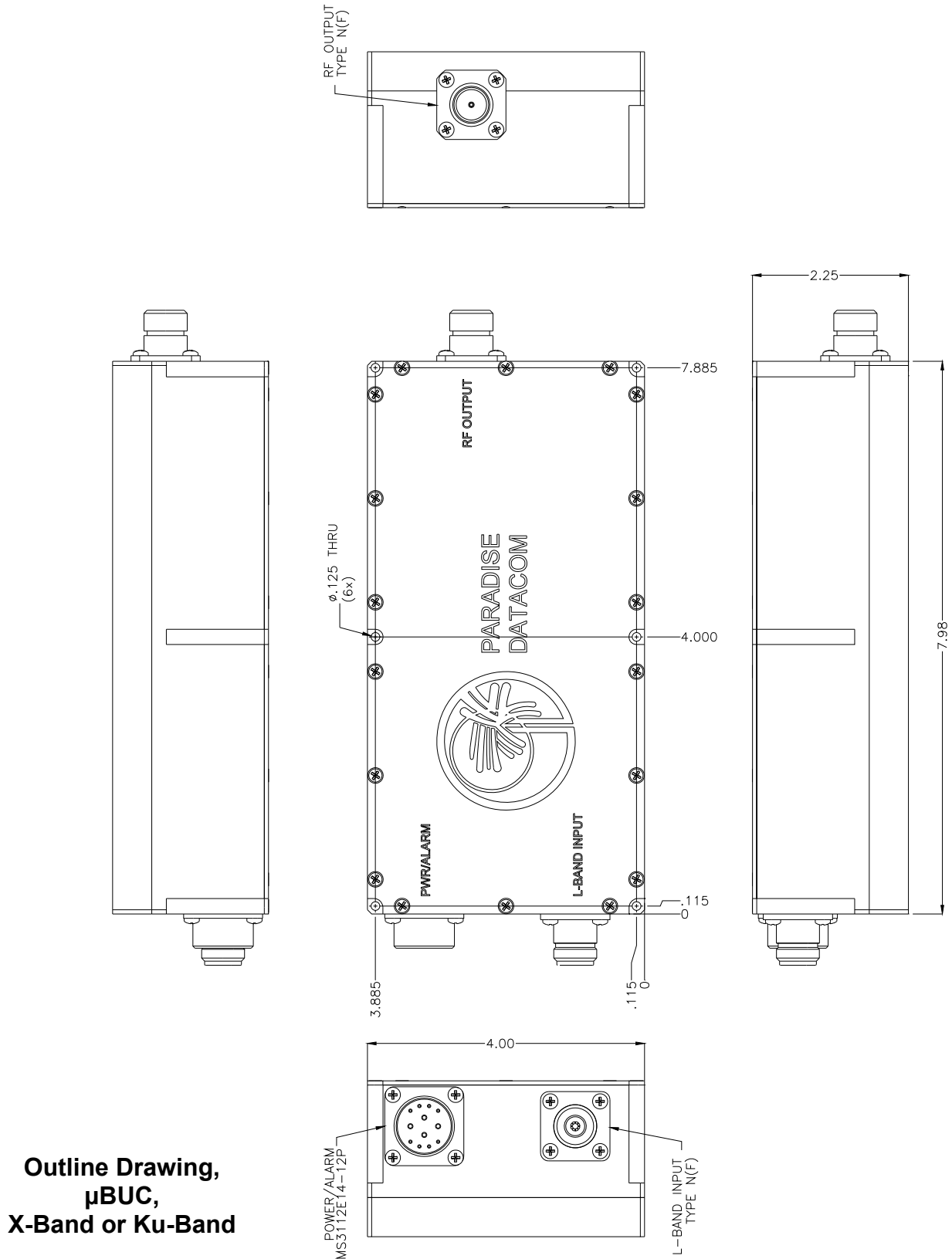
X-Band Specifications

| PARAMETER | NOTES | LIMITS | UNITS |
|---|---|--|---------------------|
| Input Frequency | | 950 - 1450 | MHz |
| Output Frequency | | 7.90 - 8.40 | GHz |
| LO Frequency | | 6.95 | GHz |
| Gain | | 60 | dB |
| Gain Flatness | full band | ± 2.0 | dB |
| Gain Slope | per 40 MHz | ± 0.25 | dB |
| Gain variation vs. Temperature | -40 to +60 °C baseplate | 0 ± 2.0 | dB |
| Output Power | | P_{sat} / P_{1dB} | |
| | 10W | 40.5 / 40.0 | dBm |
| | 20W | 43.5 / 43.0 | dBm |
| | 25W | 44.5 / 44.0 | dBm |
| Intermodulation Distortion | 3dB back off relative to P_{1dB} | -25 | dBc |
| Spurious | In-Band Signal Related | -60 | dBc |
| | Close to Carrier Spurious (≤ 20 MHz) | -60 | dBc |
| | Local Oscillator | -50 | dBm |
| | Non-Signal Related | -60 | dBm |
| Harmonics | 2 nd harmonic measured at P_{1dB} | -40 | dBc |
| Output Spectrum | Low side Local Oscillator | Non Inverted | |
| Input Return Loss | | 12 | dB |
| Output Return Loss | | 12 | dB |
| Noise Figure | | 15 | dB |
| Group Delay (per 40 MHz segment) | Linear | 0.01 | ns/MHz |
| | Parabolic | 0.003 | ns/MHz ² |
| | Ripple | 1.0 | ns p-p |
| Reference Input Frequency | Diplexed on L-Band Input Connector | 10 | MHz |
| Reference Input Power | Diplexed on L-Band Input Connector | -10 to +5 | dBm |
| Input Voltage | +48 VDC nominal | +36 to +60 | VDC |
| | +24 VDC nominal | +24 ±10% | VDC |
| | +12 VDC nominal | -12 ±10% | VDC |
| Input Power | 10W @ 48 VDC | 95 | W |
| | 10W @ 24 VDC | 110 | W |
| | 20W @ 48 VDC | 110 | W |
| | 20W @ 24 VDC | 130 | W |
| | 25W @ 48 VDC | 180 | W |
| | 25W @ 24 VDC | 200 | W |
| Monitor & Control Functions | Tx Inhibit (GND for Unmute) Temperature Fault Summary Fault | | |
| Alarm Output | Open Collector Output (requires external pull-up) | Open = Fault | |
| Weight Dimensions | L x W x H | 4.5 (2.0) 7.98 x 4.0 x 2.25 (203.2 x 101.6 x 57.1) | lb. (kg) in (mm) |
| Heatsink (must meet thermal resistance specification) | 10W μBUC | 0.275 | °C/W |
| | 20W μBUC | 0.230 | °C/W |
| | 25W μBUC | 0.150 | °C/W |



**PARADISE
DATACOM**
A Teledyne Technologies Company

μBUC
Ku- & X-Band
Micro Block Up Converter



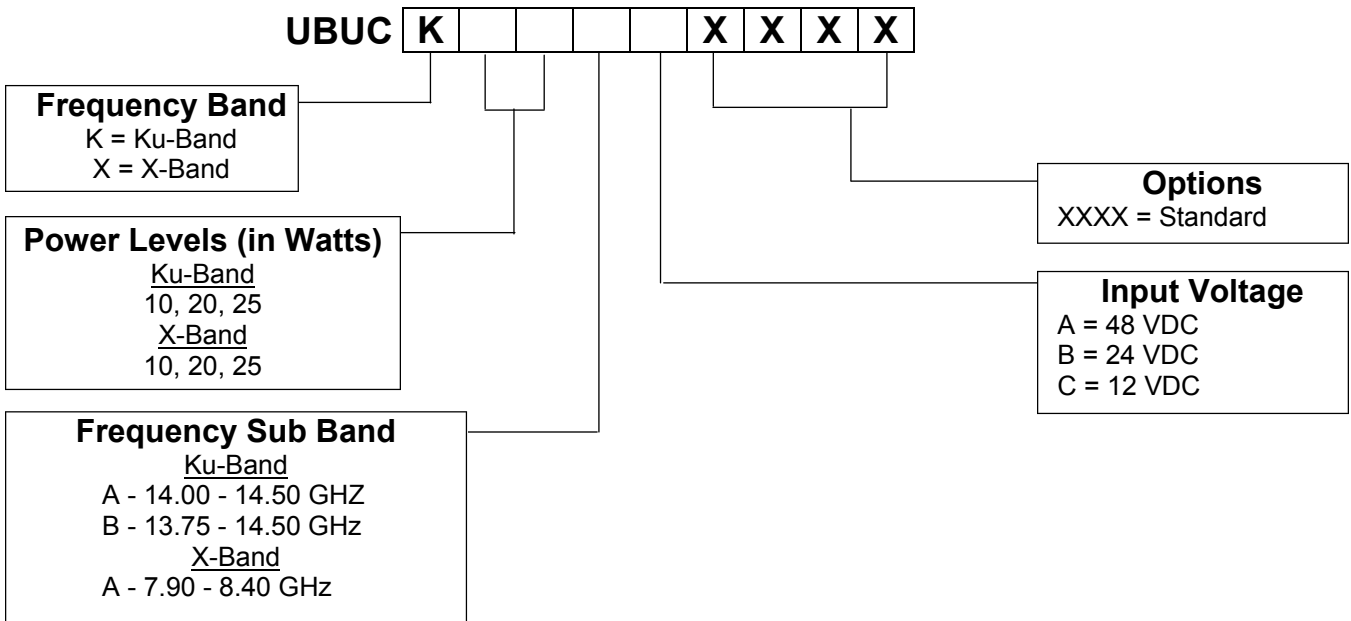
**Outline Drawing,
μBUC,
X-Band or Ku-Band**



Local Oscillator Phase Noise

| Offset | Guaranteed Max. | X-Band or Ku-Band (Typical) | Units |
|---------|-----------------|-----------------------------|--------|
| 10 Hz | -30 | -60 | dBc/Hz |
| 100 Hz | -60 | -75 | dBc/Hz |
| 1 KHz | -70 | -75 | dBc/Hz |
| 10 KHz | -80 | -100 | dBc/Hz |
| 100 KHz | -90 | -110 | dBc/Hz |
| 1 MHz | -90 | -122 | dBc/Hz |

Part Number Configuration



Specifications listed in this document are subject to change without notice.

X-Band products may be subject to ITAR restrictions and should not be exported from the U.S. without obtaining proper licensing from the appropriate government agencies.