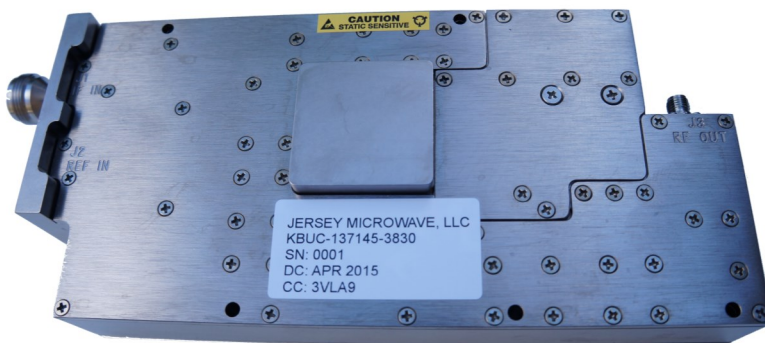


# “SMART BUC” BLOCK UP CONVERTERS



The **Jersey Microwave** “Smart BUC” is a full RF sub-system in a more compact package as compared to standard Block Up Converter sub-systems. The “Smart BUC” is supplied with full Monitor and Control functions (RS-485). The design utilizes surface mount components throughout to reduce parts count and achieve maximum repeatability, lowest production cost and highest reliability.

The “Smart BUCs” are specially designed to translate a block of L-Band frequencies into to RF frequencies for transmitting applications in satellite communications systems for Commercial and Military applications.

## Features/Options

- Fully Integrated M&C**
- 25 dB Gain Control at L-Band @ 0.1 dB Steps**
- Output Power @ Po(1dB) up to 1W**
- IF Band Slope Equalizer**
- Internal Reference**
- Internal/External Auto Switchover**
- Internal Reference with Electronic tuning**
- Mute Control**
- Summary Alarm**
- Monitor/Alarm**
- IF Input / RF Output Power Monitor**
- LO Lock Alarm**
- Voltage Monitor**
- Temperature Monitor**
- Reference Input Detector**
- Continuous verification of performance with alarm history**
- User defined Start-up/Shut-down of control functions**
- External Reference Input Port**

## Standard Frequency Bands

### C-Band Block Up Converter “Smart BUC” series

| Model Number     | Input Frequency | Output Frequency | LO Frequency |
|------------------|-----------------|------------------|--------------|
| CBUC-585642-3820 | 950 – 1525MHz   | 5850 - 6425 MHz  | 4900 MHz     |
| CBUC-585675-3820 | 950 – 1825 MHz  | 5850 – 6725 MHz  | 4900 MHz     |
| CBUC-585712-3820 | 950 – 2225 MHz  | 5850 – 7125 MHz  | 4900 MHz     |

### X-Band Block Up Converter “Smart BUC” series

| Model Number     | Input Frequency | Output Frequency | LO Frequency |
|------------------|-----------------|------------------|--------------|
| XBUC-790840-4530 | 950 – 1450 MHz  | 7900 – 8400 MHz  | 6950 MHz     |

### Ku-Band Block Up Converter “Smart BUC” series

| Model Number     | Input Frequency | Output Frequency  | LO Frequency |
|------------------|-----------------|-------------------|--------------|
| KBUC-127132-4530 | 950 – 1450 MHz  | 12.75 – 13.25 GHz | 11.80 GHz    |
| KBUC-140145-4530 | 950 – 1450 MHz  | 14.00 – 14.50 GHz | 13.05 GHz    |
| KBUC-137145-4530 | 950 – 1700 MHz  | 13.75 – 14.50 GHz | 12.80 GHz    |

### DBS-Band Block Up Converter “Smart BUC” series

| Model Number     | Input Frequency | Output Frequency  | LO Frequency |
|------------------|-----------------|-------------------|--------------|
| DBUC-173178-3820 | 950 – 1450 MHz  | 17.30 – 17.80 GHz | 16.35 GHz    |
| DBUC-173181-3820 | 950 – 1750 MHz  | 17.30 – 18.10 GHz | 16.35 GHz    |
| DBUC-173184-3820 | 950 – 2050 MHz  | 17.30 – 18.40 GHz | 16.35 GHz    |
| DBUC-247252-3820 | 950 – 2050 MHz  | 24.75 – 25.25 GHz | 23.80 GHz    |

### Ka-Band Block Up Converter “Smart BUC” series

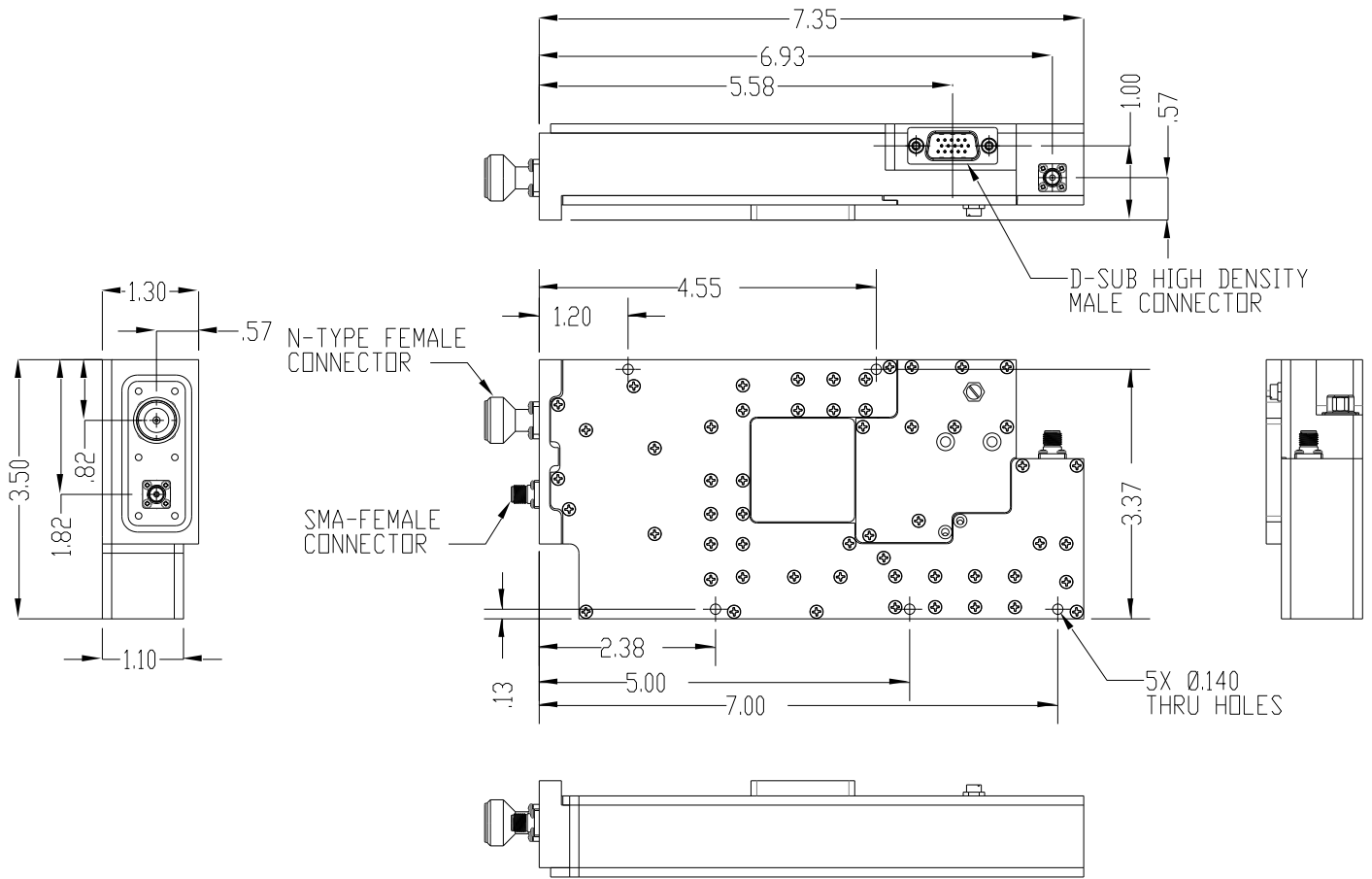
| Model Number       | Input Frequency | Output Frequency          | LO Frequency    |
|--------------------|-----------------|---------------------------|-----------------|
| KABUC-247252-2520  | 950 – 1450 MHz  | 24.75 – 25.25 GHz         | 23.80 GHz       |
| KABUC-275283-3820  | 950 – 1750 MHz  | 27.50 – 28.30 GHz         | 26.55 GHz       |
| KABUC-283291-3820  | 950 – 1750 MHz  | 28.30 – 29.10 GHz         | 27.35 GHz       |
| KABUC-276291-3820  | 950 – 2450 MHz  | 27.60 – 29.10 GHz         | 26.65 GHz       |
| KABUC-300310-2520  | 1000 – 2000 MHz | 30.00 – 31.00 GHz         | 29.00 GHz       |
| DKABUC-290310-4033 | 1000 – 2000 MHz | 29.0-30.0 / 30.0-31.0 GHz | 29.0 / 30.0 GHz |
| KABUC-275300-3020  | 1300 – 3800 MHz | 27.50 – 30.00 GHz         | 26.20 GHz       |

Custom bands and custom specifications can be provided.

| Parameter  | Up Converter   |                          |                |
|--|--|--------------------------|----------------|
| <b>IF Port Characteristics</b>                         | <b>Input</b>   |                          |                |
| Frequency Range  | - See Table -  |                          |                |
| Connectors / Impedance                                 | SMA-Female / 50 Ω  |                          |                |
| Return Loss  | 18 dB min. / 15 dB min. for bw > 1500 MHz  |                          |                |
| <b>RF Port Characteristics</b>                         | <b>Output</b>  |                          |                |
| Frequency Range  | - See Table -  |                          |                |
| Connectors / Impedance                                 | SMA-Female / 50 Ω  |                          |                |
| Return Loss  | 18 dB min. / 15 dB for bw > 1500 MHz   |                          |                |
| <b>LO Characteristics</b>                              |  |                          |                |
| Frequency  | - See Table -  |                          |                |
| Reference Input  | 10.00 MHz  |                          |                |
| Reference Input Level                                  | -10 to +5 dBm  |                          |                |
| Reference Port: Connector / Impedance                  | SMA-Female / 50 Ω  |                          |                |
| Return Loss  | 15 dB min.   |                          |                |
| Frequency Stability: External                          | Same as the reference unit   |                          |                |
| Internal   | ±1 ppm max. (±0.1 ppm max. is available as an option) over operating temperature |                          |                |
| Phase Lock Alarm: TTL                                  | "H" = Locked / "L" = Unlocked ( Open Collector: Option )                         |                          |                |
| Operating Temperature                                  | -40° C to +60° C   |                          |                |
| <b>Input to Output Performance</b>                     |  |                          |                |
| Transfer Type  | Single Conversion  |                          |                |
| Frequency Sense  | No Spectral Inversion  |                          |                |
| Gain   | 20 to 45 dB ( Depending on output power )  |                          |                |
| Gain Flatness: Over RF Band                            | ± 1.00 dB max. for bw ≤ 1000 MHz / ±1.50 dB max. for bw > 1000 MHz               |                          |                |
| Over any 40 MHz Segment                                | ± 2 dB for bw = 2.5GHz   |                          |                |
| Over any 40 MHz Segment                                | ± 0.25 dB max.   |                          |                |
| Gain Flatness Slope Adjustment                         | 6 dB typical range ( Only available for bw < 1500 MHz)                           |                          |                |
| Output Power Po (1dB)                                  | Up to 1W (+30 dBm )  |                          |                |
| IMD (two output carriers at 3 dB back-off total power) | -40 dBc max.   |                          |                |
| Gain vs. temperature                                   |  |                          |                |
| At constant temperature                                | ± 0.25 dB/day max. @ constant temperature 25°C                                   |                          |                |
| Over the operating temperature                         | ± 1.5 dB max.  |                          |                |
| Noise Figure   | 18 dB for low gain and 20 dB for high gain.                                      |                          |                |
| Group Delay  | 2.0 nsec p-p max over RF band  |                          |                |
| Spurious - In-band                                     |  |                          |                |
| Signal Independent                                     | -70 dBm max.   |                          |                |
| Signal Dependent (@ 6 dB back-off)                     | -70 dBc max.   |                          |                |
| LO Leakage   | -70 dBm max.   |                          |                |
| Image Rejection  | -70 dBc max.   |                          |                |
| SSB Phase Noise*                                       | <b>C &amp; X Band</b>  | <b>Ku &amp; DBS Band</b> | <b>Ka-Band</b> |
| 10 Hz  | -50 dBc/Hz   | -45 dBc/Hz               | -40 dBc/Hz     |
| 100 Hz   | -72 dBc/Hz   | -70 dBc/Hz               | -70 dBc/Hz     |
| 1 KHz  | -98 dBc/Hz   | -98 dBc/Hz               | -95 dBc/Hz     |
| 10 KHz   | -105 dBc/Hz  | -103 dBc/Hz              | -100 dBc/Hz    |
| 100 KHz  | -110 dBc/Hz  | -105 dBc/Hz              | -102 dBc/Hz    |
| 1 MHz  | -120 dBc/Hz  | -120 dBc/Hz              | -115 dBc/Hz    |
| Monitor and Control                                    | RS-485 Standard  |                          |                |
| Supply Voltage   | +12 Vdc @ 1000 mA / 1200 mA for Ka-Band  |                          |                |
| Connector:   | Solder Feedthru.   |                          |                |
| Operating Temperature Range                            | -40° to +60° C   |                          |                |
| Package Size (L x W x H)                               | Consult Factory for detail outline drawings.                                     |                          |                |

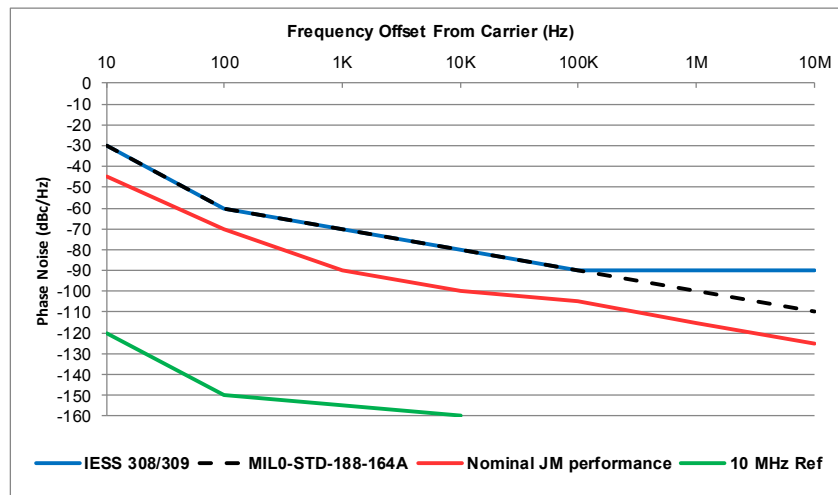
**Note - Specifications may change without notice, please consult the factory for your specific needs.**

# Standard Mechanical Outlines



Note: Dimensions are in inches.

# Phase Noise Characteristics (1.0 Hz Bandwidth)



DS-500-03