

## ***BDC813 SERIES***

### ***Ku BAND PLL BLOCK DOWN CONVERTER***



20 dB gain, 250 to 1050 MHz bandwidth, any Ku satellite

#### **How to order an 813 Series BDC**

Frequencies (GHz):

LO	Input	Output	Bandwidth
9.75S	- 10.70 to 11.70	.95 to 1.95	1.000
10.00S	- 10.95 to 11.70	.95 to 1.70	0.750
10.15S	- 11.70 to 12.20	1.55 to 2.05	0.500
10.25S	- 11.20 to 11.70	.95 to 1.45	0.500
10.50S	- 11.45 to 11.95	.95 to 1.45	0.500
10.50S	- 11.45 to 12.20	.95 to 1.70	0.750
10.60S	- 11.70 to 12.20	1.10 to 1.60	0.500
10.75S	- 11.70 to 12.20	.95 to 1.45	0.500
10.75S	- 11.70 to 12.75	.95 to 2.00	1.050
11.25S	- 12.20 to 12.75	.95 to 1.50	0.550
11.30S	- 12.25 to 12.75	.95 to 1.45	0.500

Bandwidth in MHz

'P' Signifies PLL - Phase Lock Loop

Input Connector  
Ku BDC is SMA, 50Ω

**BDC1075S-500P-SF20**

Output Connector

F - F, 75 ohm  
N - N, 50 ohm  
S - SMA, 50 ohm  
T - TNC, 50 ohm

Gain  
20 - 20 dB

#### **Orbital Flexibility:**

With an LNA that covers your satellite, simply order a custom Orbital BDC to cover the bandwidth that you need. You can even cover from 10.7 to 12.75 with just two Orbital BDCs. Or stack the output: 950 to 2000. Specify input and output connector types, and external DC input, coaxial DC input, or dual power option. Most importantly, we can customize your gain to optimize compression point and noise distribution. Just tell us your needs and we will build a mass-custom solution in a unique, cost effective way.

#### **"Mass-Custom" Solution**

Orbital starts with a proven performance product that is extremely well engineered with the development costs amortized over hundreds of thousands of units and the parts costs reduced by volume discounts. We then customize the mass produced LNB into what you want at 1/100 the cost of designing and building from scratch.

#### **Orbital Features:**

##### **Custom Engineering**

- Begin with the low noise figure of a proven quality LNB
- Optimize Input and Output for superior VSWR
- Modify LO frequencies preserving phase noise and stability
- Modify and tune RF & IF filters for optimum response
- Tune for very low bandpass ripple
- Optimize Gain distribution for your system parameters

##### **Environmental**

- O ring sealed connectors for weather resistant operation
- Preserve the environmental engineering of the original LNB

##### **Options**

- External DC connector - F, N, BNC or Feedthrough
- External DC connector to Crystal for rackmount installation
- Custom alarm options for redundant switch operations
- Full test documentation available
- External Reference models available for ultimate stability
- Custom design and labeling requirements welcomed

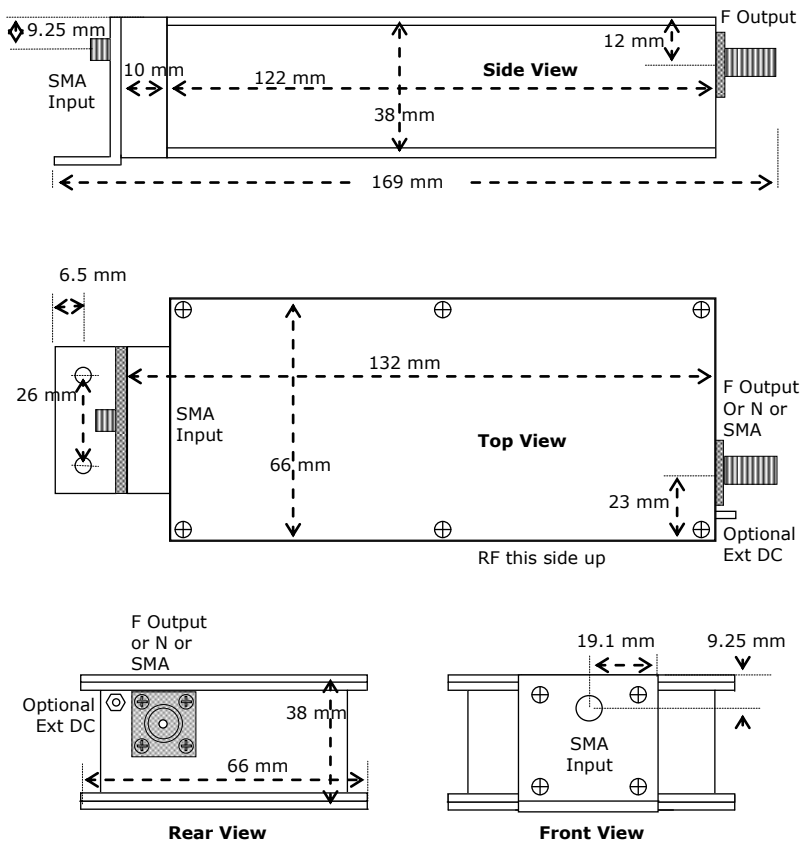
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# Orbital 813 Series Ku Band PLL BDC Specifications

## Mechanical Drawing



Note - Optional external DC can be a side mounted F or BNC connector, or an end mount feedthrough c/w ground lug.

## Electrical Specifications

### Input

Frequency: Various, over range: 10.7 to 12.75 GHz  
 Bandwidth: up to 1.05 GHz  
 Noise Figure: 6 dB typical  
 Ripple:  $\pm 0.5$  dB max /27 MHz segment  
 Input VSWR: 1.5 : 1 typical

### Transitive

LO Stability:  $\pm 25$  kHz,  $\pm 2.5$  ppm maximum over temperature range.  
 LO to IF Leakage: -45 dBm typical  
 LO to RF Leakage: -60 dBm typical  
 LO Phase Noise: -75dBc/Hz@1 kHz max.  
 Gain options: 20 dB  
 Gain Flatness over Frequency range:  $\pm 1$  dB maximum  
 Gain Flatness per 40 MHz segment:  $\pm 0.5$  dB maximum  
 Internal Spurious Non Signal Related: -95 dBm within IF output band  
 Internal Spurious Signal Related: -85 dBc within IF output band

### Output

Bandpass: 950 up to 2050 MHz  
 Output VSWR: 1.5 : 1 typical  
 Compression: +9 dBm minimum, 3rd Order  
 Intercept: +19 dBm minimum,

### Power

DC Input: 12 to 24 VDC, 310 mA nominal  
 Filtering: Transient, over and reverse voltage protected

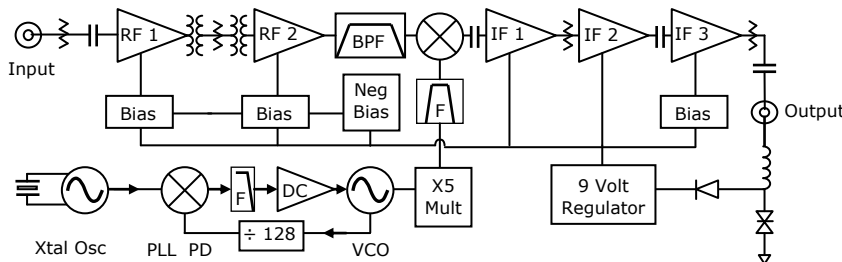
## Mechanical Specifications

Size: 169 x 66 x 38 mm  
 Weight: 482 grams  
 Paint: Brilliant White Enamel

## Environmental Specifications

Operating Temp: -40 to +55 °Celsius  
 Relative Humidity: Up to 100% condensation & frost

## Block Diagram



## Enhancing Standard Product

Mass-production means low-cost, reliable, repeatable products. Engineers design these products well within margins on component specifications so that individual tuning is not required to meet desired specifications.

As we modify product, we also tweak the design and components to optimize them for their inherent capabilities. Effectively, we bring out the full potential of the product by adjusting components to their full capability.

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