**Description**

The BDC-K-Ka-18-40 is for an 18-40GHz down-converter for use with a 2-20GHz tuned receiver. It is designed to be small in size, with low noise and spurious, and has a built-in phase-locked local oscillator. The local oscillator consists of a Dielectric Resonator Oscillator (DRO) which is phase locked to a 100MHz reference. The 100MHz reference may also be locked to an external 10 MHz reference. There are two separate lock detect signal provided from the module. One is from the DRO to indicate lock to the 100MHz reference signal and the second is from the 100MHz reference to indicate lock to the 10MHz externally applied reference. The two output signals are accessed through a 9-way D-Type connector.

The down-converter can operate in two bands, 18-26.5GHz and 26.5-40GHz, with the IF output in the range 2.5-17.5GHz to make it compatible with existing communications equipment. The unit is designed to fit into a 1U high rack chassis, with its own integral power supply.

**Features**

- Converts 18-40 GHz to 2-20 GHz in Switched bands
- Excellent Spurious performance
- Excellent SSB Phase Noise characteristics
- TTL Switching
- Internal or External Reference option
- Immediate availability
- Heavily discounted price for a limited period (until stock lasts)
**Frequency bands:**

<table>
<thead>
<tr>
<th>Input</th>
<th>10MHz-20GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 2</td>
<td>18-26.5 GHz (LO frequency 29GHz)</td>
</tr>
<tr>
<td>Input 3</td>
<td>26.5-40 GHz (LO frequency 43.5GHz)</td>
</tr>
</tbody>
</table>

**Maximum input power**
+12 dBm

**IF outputs Input 2 and Input 3**
2.5-17GHz

**VSWR**
2:1 max

**Output switching**
TTL control

**RF to IF Gain**
15dB +/-3dB

**Noise Figure**
13dB typical

**Phase locking**
Internal XCO or external 10MHz ref.

**LO Spurious Signals**
<-60dBc

**LO SSB Phase Noise**
-85dBc/Hz at 1kHz offset

**LO-RF leakage**
-65dBm max

**Connectors:**

<table>
<thead>
<tr>
<th>IF Output</th>
<th>SMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 1</td>
<td>SMA</td>
</tr>
<tr>
<td>Input 2</td>
<td>K</td>
</tr>
<tr>
<td>Input 3</td>
<td>K</td>
</tr>
<tr>
<td>External 10 MHz reference</td>
<td>BNC</td>
</tr>
<tr>
<td>TTL &amp; Signal interface</td>
<td>9-Way D-Type</td>
</tr>
</tbody>
</table>

**Power supply**
230VAC+/-10% 50/60 Hz power

**Operating temperature range**
0 - 50 deg C
Test Data:
CHANNEL 2

TYP. GAIN:

![Gain v Frequency Channel 2](image)

TYP. NOISE FIGURE:

![Noise Figure v Frequency Channel 2](image)
CHANNEL 3

GAIN:

Gain v Frequency Channel 3

Gain (dB)

Frequency (GHz)

25 degC
+50 degC

NOISE FIGURE:

Noise Figure v Frequency Channel 3

Noise Figure (dB)

RF Frequency (GHz)

Channel 3
HARMONICS/SPURIOUS:

Channel 3 spurious rejection

<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>2xRF-LO</th>
<th>2xIF</th>
<th>3xIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6000</td>
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<td>18000</td>
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</tbody>
</table>

VSWR:

TYP. HARMONICS/SPURIOUS:

Channel 2 spurious rejection

<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>2xRF-LO</th>
<th>2xIF</th>
<th>3xIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
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<td>10</td>
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<tr>
<td>12</td>
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</tbody>
</table>

TYP. VSWR:
BDC-K-Ka-18-40 : 18-40 GHz
Down-Converter

Datasheet

VSWR

0 0.5 1 1.5 2 2.5 3
0 5 10 15 20 25 30 35 40

Frequency (GHz)

Channel 2 IF Channel 3