3116-7984-720-400# Block Downconverter, 7.9 - 8.4 GHz to 720 ± 200 MHz

The 3116-7984-720-400# Downconverter converts 7.9 - 8.4 GHz to 720 ±200 MHz (non-inverted) in 125 kHz steps, $F_c = 8.05-8.355$ GHz. The gain is $+30$ to $+50$ dB and is adjustable in $0.5 \pm 0.5$ dB steps. Front panel LEDs provide indication of Remote operation, PLL Alarm and DC Power. Gain, $F_c$ frequency ($8.05-8.355$ GHz) and internal/external/Auto reference frequency selection are controlled by front panel switches or remote selection (via RS-232C/485, standard; Ethernet Optional) and are viewable on the LCD Display. Connectors are Type N female for the RF In and BNC female for the RF Out and external reference input and reference output. In AUTO, the 10 MHz reference stays in external if the external level is $+3$ dBm, $\pm 3$ dB. The 3116 is powered by a 100-240 ± 10% VAC power supply, and housed in a 1 3/4” X 19” X 14” rack mount chassis.

**EQUIPMENT SPECIFICATIONS**

**Input Characteristics (RF In)**
- Impedance/Return Loss: $50\Omega/14$ dB
- Frequency: $7.9$ to $8.4$ GHz, ($F_c = 8.05-8.355$ GHz)
- Noise Figure, Max.: $15$ dB max gain
- Input Level range: $-70$ to $-40$ dBm

**Output Characteristics (RF Out)**
- Impedance/Return Loss: $50\Omega/14$ dB min.
- Frequency: $720$ ±$200$ MHz
- Output Level Range: $-20$ to $0$ dBm
- Output 1 dB compression: $+10$ dBm at max. gain

**Channel Characteristics**
- Gain, max. adjustment: $+50$ dB $\pm 2$ dB, max. at $F_c$; $+30$ to $+50$ dB, $0.5 \pm 0.5$ dB steps
- Image Rejection: $> 50$ dB, min.
- Spurious, In Band: $-55$ dBc, typical; $-50$ dBc, maximum, inband; (720 ±$200$ MHz Out)
- Frequency Response: $\pm 1.5$ dB, 400 MHz BW, $F_c = 8.05-8.355$ GHz
- Group Delay, max: $10$ ns total (parabolic + linear + ripple), 400 MHz band, $F_c = 8.05-8.355$ GHz
- Frequency Sense: Non-inverting

**LO Characteristics**
- Frequency Accuracy: $\pm 0.01$ ppm internal reference; External reference input
- LO Frequency: $7.33 - 7.635$ GHz ($F_c = 8.05-8.355$ GHz)
- Frequency Step: $125$ kHz min, $F_c = 8.05-8.355$ GHz; (1 kHz steps, X1006)
- 10 MHz In/Out Level: $3$ dBm, $\pm 3$ dB, w/ Auto-detect

**Phase Noise @ Freq**

<table>
<thead>
<tr>
<th>dBc/Hz</th>
<th>100 Hz</th>
<th>1kHz</th>
<th>10kHz</th>
<th>100kHz</th>
<th>1 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-70</td>
<td>-80</td>
<td>-85</td>
<td>-100</td>
<td>-120</td>
</tr>
</tbody>
</table>

**Controls, Indicators**
- Freq/Gain/Ext Ref Select: Direct readout LCD; pushbutton switches or remote
- Pwr; Alarm; Rem; Mute: Green LED; Red LED; Yellow LED; Yellow LED
- Remote: RS232C/RS485/422, 9600 baud (Ethernet Optional)

**Other**
- RF Out, RF In Connector: RF Out - BNC (female), 50Q, RF In - Type N (female), 50Q
- 10 MHz Connectors: BNC (female), 75Q, works with 50 or 75 ohms
- Alarm/Remote Conn.: DB9 - NO or NC contact closure on Alarm
- Size: 19 inch standard chassis 1.75” high X 14.0” deep
- Power: $100-240 \pm 10\%$ VAC, 47 - 63 Hz, 30 watts max.

*10°C to 40°C; Specifications subject to change without notice