**4116-31 Tri-Band Block Downconverter, Weather Resistant**

The 4116-31 Block Downconverter converts one of three RF bands to 0.95 - 2.05 GHz. Front panel LEDs provide indication of DC Power, and PLL Alarm. The RF to L-band gain is +30 dB. Connectors are Type N female for the L-band, RF and RF Monitor and SMA female for the external reference input and reference output. Gain, band select, and internal 10 MHz frequency are controlled by the Ethernet M&C or via the Status/Control connector. In AUTO, the 10 MHz reference stays in external if the external level is in the +2 to +8 dBm range.

The 4116 is powered by a 100-240 ± 10% VAC power supply, and mounted in a 8" W X 6" H X 16" D Weather Resistant* enclosure.

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**Equipment Specifications**

- **Input Characteristics**
  - Impedance/Return Loss: 50Ω/14 dB
  - Frequency (GHz): BAND 1 - 3.4 to 4.2
  - BAND 2 - 10.7 to 11.8
  - BAND 3 - 11.7 to 12.8
  - Noise Figure, Max.: 15 dB max gain
  - Input Level range: -50 to -30 dBm

- **Output Characteristics**
  - Impedance/Return Loss: 50 Ω/14 dB
  - Frequency (GHz): BAND 1 - 0.95 to 1.75
  - BAND 2 - 0.95 to 2.05
  - BAND 3 - 0.95 to 2.05
  - Output Level Range: -20 to 0 dBm
  - Output 1 dB compression: +10 dBm, at max gain

- **Channel Characteristics**
  - Gain at Fc: +30 ±3 dB, (+30 to 0 dB variable in 0.5 dB steps)
  - Image Rejection: > 60 dB, min
  - Spurious, Inband: SIGNAL RELATED < -50 dBc in band, -15 to 0 dBm out, SIGNAL INDEPENDENT, < -60 dBm
  - Spurious, Out of band: < -50 dBc spurious, signal independent; 0.5 to 3 GHz out
  - Harmonics, in band: < -40 dBc at 0 dBm out, 0.95 to Fmax out (1.75 or 2.05 GHz depending on band)
  - Intermodulation: < -50 dBc for two carriers at 4 MHz spacing, each at -5 dBm out
  - Frequency Response: ±2 dB, over RF band, ± 0.5 dB, 40 MHz BW
  - Frequency Sense: Non-inverting

- **LO Characteristics**
  - LO Frequency: Band Specific
  - Frequency Accuracy: ± 0.05 ppm max over temp internal reference; ext. ref. input
  - 10 MHz level in/Mon: Input=+2 to +8 dBm in; Monitor Output = Input Level ± 1.0 dB, 50 ohms

- **Phase Noise @ Fc (Hz)**
<table>
<thead>
<tr>
<th>100</th>
<th>1K</th>
<th>10K</th>
<th>100K</th>
<th>1M</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>78</td>
<td>83</td>
<td>100</td>
<td>110</td>
</tr>
</tbody>
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- **Controls, Indicators**
  - Gain, Band, 10M Freq.: Gain, band select, and internal 10 MHz frequency via Ethernet M&C or Status/Control Connector.
  - PLL Alarm: Red LED, External contact closure
  - Power: Green LED

- **Other**
  - RF In, Mon. Connector: Type N (female), 50Ω
  - L-Band Connector: Type N (female), 50Ω
  - 10 MHz Connectors: SMA (female), 50Ω
  - Status/Control Connector: Multipin MS3112E14-18S Weather Resistant Connector
  - Ethernet Connector: Standard RJ45 Weather Resistant* Ethernet Connector, RJF6G
  - Power: 100-240 ±10% VAC, 47 - 63 Hz, 25 watts max./ FCI Clipper Series CL1M1102 W/R* Connector

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**Weather Resistant** enclosures are designed to be water resistant for installation in an outdoor enclosure/antenna hut or mounted outdoors on an antenna assembly at their specified temperature ranges. They are designed to be located “out in the elements” (water, sleet, snow, etc.) but they are not designed to be “submerged under” water.

If an extended temperature range is required, there is an Extended Temperature option (Option W21: -30°C to +60°C) available at an additional cost. Contact Cross for quote.

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