SYNTHESIZED, DUAL-CONVERSION
UPCONVERTER AND DOWNCONVERTER

**PRIMARY POWER REQUIREMENTS**
- Voltage: 90–250 VAC
- Frequency: 47–63 Hz
- Power consumption: 130 watts maximum

**PHYSICAL**
- Weight: 33 pounds (15 kg) nominal
- Overall dimensions: 19” x 3.5” x 22” (48.3 cm x 8.98 cm x 55.9 cm) maximum
- Rear panel connectors:
  - RF: SMA female
  - IF: N female
  - IF signal monitor: N female
  - Remote interface: 9-pin male, D connector for RS422, RS485 and RS232
  - Summary alarm: 15-pin male, D connector
- Front panel connectors:
  - RF, LO1 and LO2 monitors: SMA female

**ENVIRONMENTAL**
- Operating:
  - Ambient temperature: 0 to 50°C
  - Relative humidity: Up to 95% at 30°C, noncondensing
  - Atmospheric pressure: Up to 10,000 feet
- Nonoperating:
  - Ambient temperature: -50 to +70°C
  - Relative humidity: Up to 40% at 40°C, noncondensing
  - Atmospheric pressure: Up to 40,000 feet
  - Shock and vibration: Normal handling by commercial carriers

**FEATURES**
- Local or remote control
- Low intermodulation distortion
- Low phase noise
- Front panel/remote status monitoring
- Individual and summary alarm contact closure outputs
- 32 complete parameters setting save/recall
- Nonvolatile memory
- Password protection to prevent program tampering

**OPTIONS**
- Other frequency ranges
- 60 dB output level programming with 1 dB resolution
- RF mute
- Improved group delay

The DCC-50/1000-140/180 and DCC-140/180-50/1000 are high performance synthesized, dual-conversion up- and downconverter systems. The DCC-50/1000-140/180 accepts a 50 to 1000 MHz spectrum and converts up or down any ±20 MHz spectrum in 1 MHz steps to 160 ±20 MHz. The DCC-140/180-50/1000 accepts 160 ±20 MHz spectrum and converts up or down to anywhere from 50 to 1000 MHz in 1 MHz steps. The systems can be provided with fixed or programmable gain and RF mute. Signal monitors for system input and output and local oscillators are provided at the front panel. All functions are local and remote programmable.
## General Specifications

### Spurious Outputs
- Signal related: 60 dBc typical, 55 dBc minimum
- Signal independent: -80 dBm typical, -70 dBm maximum
- LO leakage: -65 dBm typical, -60 dBm maximum
- Frequency stability: ±2 x 10⁻⁸, 0 to 50°C, ±6 x 10⁻⁹/day maximum (fixed temperature after 24 hour on time)
- Phase noise: 55 dBc/Hz typical at 10 Hz offset, -70 dBc/Hz typical at 100 Hz offset, -70 dBc/Hz typical at 1 kHz offset, -80 dBc/Hz typical, -75 dBc/Hz maximum at 10 kHz offset

### Local Control
- All the system's parameters can be programmed from the front panel

### Local Alarms (LED/LCD display)
- Power supply status
- LO lock status
- LO level alarm

### Fault Alarms
- Dry contacts for DC voltage and LO alarms and user programmable summary alarm

### Remote Interface
- RS422, RS485, RS232 programmable
- All the local controls/alarm functions will be operated/monitored remotely

### IF/RF Monitor Ports
- IF signal
- RF LO
- IF LO

## Specifications

### Specifications

<table>
<thead>
<tr>
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<th>DCC-140/180-50/1000</th>
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<tbody>
<tr>
<td><strong>Input Frequency</strong></td>
<td>160 ±20 MHz</td>
<td>70 to 980 ±20 MHz</td>
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<tr>
<td><strong>Output Frequency</strong></td>
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<td><strong>Gain</strong></td>
<td>11 dB</td>
<td>27-30 dB</td>
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<td><strong>P1dB</strong>&lt;sup&gt;min&lt;/sup&gt;</td>
<td>0 dBm minimum</td>
<td>+10 dBm minimum</td>
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<tr>
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<td>+10 dBm minimum</td>
<td>+24 dBm minimum</td>
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</table>

Note: For other frequency bands, consult factory.

### Input Characteristics
- Frequency sense: No inversion
- Frequency programming: 1 MHz step size

### Output Characteristics
- Frequency sense: No inversion
- Frequency programming: 1 MHz step size

### Transfer Characteristics
- Gain: See table above
- Gain slope: ±0.3 dB/MHz maximum (±20 MHz)
- Gain programming: 10 dB, local and remote control
- Gain programming step size: ±1 db
- Image rejection: > 70 dB
- Level stability: ±0.5 dB/day maximum at constant temperature
- Noise figure: 15 dB maximum at minimum attenuation
- Amplifier response: ±0.5 dB/±15 MHz typical, ±1 dB maximum
- Group delay: (±12.5 MHz)
- Linear: 0.1 ns/MHz maximum
- Parabolic: 0.015 ns/MHz²
- Ripple: 1.5 ns peak-to-peak
- IP3<sup>out</sup> | See above

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### Model Numbers

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Note: For other frequency bands, consult factory.
GENERAL SPECIFICATIONS

SPURIOUS OUTPUTS
Signal related ................................................. 60 dBc typical, 55 dBc minimum
Signal independent ........................................ -80 dBm typical, -70 dBm maximum
LO leakage .................................................. -65 dBm typical, -60 dBm maximum
Frequency stability ........................................ ±2 x 10^-8, 0 to 50°C,
........................... ±6 x 10^-9/day maximum (fixed temperature after 24 hour on time)
Phase noise .................................................. -55 dBc/Hz typical at 10 Hz offset,
........................... -70 dBc/Hz typical at 100 Hz offset,
........................... -70 dBc/Hz typical at 1 kHz offset,
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LOCAL CONTROL
All the system’s parameters can be programmed from the front panel

LOCAL ALARMS (LED/LCD display)
Power supply status
LO lock status
LO level alarm

FAULT ALARMS
Dry contacts for DC voltage and LO alarms and user programmable summary alarm

REMOTE INTERFACE
RS422, RS485 and RS232 programmable
All the local controls/alarm functions will be operated/monitored remotely

IF/RF MONITOR PORTS
IF signal
RF LO
IF LO

INPUT CHARACTERISTICS
Frequency ...................................................... See table above
Impedance ..................................................... 50 ohms
Return loss ..................................................... 15 dB typical

OUTPUT CHARACTERISTICS
Frequency ...................................................... See table above
Impedance ..................................................... 50 ohms
Return loss ..................................................... 15 dB typical
Power output (1 dB compression) .......... See table above
Signal monitor ............................................. 20 dB below main output (nominal)

TRANSFER CHARACTERISTICS
Gain ............................................................... See table above
Gain slope ..................................................... 0.03 dB/MHz maximum (±20 MHz)
Gain programming ........................................ 10 dB, local and remote control
Gain programming step size ................. 1 dB
Image rejection ............................................... > 70 dB
Level stability ............................................... ±0.5 dB/day maximum at constant temperature
Noise figure ................................................... 15 dB maximum at minimum attenuation
Amplitude response ...................................... ±0.5 dB/±15 MHz typical, ±1 dB maximum
Group delay (±12.5 MHz) ......................... 1 ns/MHz maximum
Linear .......................................................... .1 ns/15 MHz maximum
Parabolic ....................................................... .015 ns/MHz^2
Ripple .......................................................... 1.5 ns peak-to-peak
IP3 (out) ....................................................... See table above

MODEL NUMBERS

SPECIFICATIONS
DCC-140/180-50/1000 DCC-50/1000-140/180

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Output frequency 70 to 980 ±20 MHz 160 ±20 MHz
Gain 11 dB 27–30 dB
Pm, dB 0 dBm minimum +10 dBm minimum
IP3 (out) +10 dBm minimum +24 dBm minimum

Note: For other frequency bands, consult factory.
SYNTHESIZED, DUAL-CONVERSION
UPCONVERTER AND DOWNCONVERTER

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Relative humidity............................. Up to 95% at 40°C, noncondensing
Atmospheric pressure....................... Up to 40,000 feet
Shock and vibration........................... Normal handling by commercial carriers