

## Frequency Downconverter 2DC-70/4X

*The Rincon Research Corporation Model 2DC-70/4X is a two-channel, single-conversion frequency translator designed for interfacing standard 70-MHz intermediate frequency (IF) systems to high-speed, video analog-to-digital converter inputs.*



### Description

Each channel independently downconverts a block of frequencies centered at the 70 MHz IF input to a selectable baseband center frequency.

Each channel provides four selectable bandwidths of 5 MHz, 24 MHz, 30 MHz, or 36 MHz. The baseband output center frequency may be selected in 250-KHz steps from  $BW/2$  to  $BW/2 + 2.5$  MHz (where  $BW$  = the selected channel bandwidth). Output spectrum can be selected to be inverting or non-inverting.

A programmable gain amplifier/attenuator at the input of each channel provides adjustment of the input signal amplitude over a  $\pm 30$  dB range in 1 dB steps. An output attenuator allows the output level to be attenuated up to 30 dB in 1-dB steps. Nominal conversion gain is +30 dB with input and output attenuation set to 0 dB.

Each channel provides two isolated outputs, each capable of driving 2 Volts p-p into a 50-ohm impedance. The outputs are DC coupled and have an auto-zero circuit which reduces DC offset and drift to less than  $\pm 2$  mV. Frequency response of the baseband outputs extends down to 1 Hz.

Low phase-noise synthesizers, phase-locked to a (required) external 10-MHz reference, supply local oscillator (LO) power. Each channel is phase coherent with respect to the input reference. A buffered 10-MHz reference output is available on the rear panel for daisy-chaining the 10-MHz reference to other devices. Buffered LO output ports on the rear panel are available for monitoring purposes.

Instrument status is indicated on the 4 x 40 character LCD on the front panel. Operation is via the 4 x 5 front panel keypad, guided by easy-to-follow, menu-driven instructions from the front panel display. Non-volatile memory preserves the last instrument status selected to prevent power outages from disturbing instrument settings.

An RS-232 port allows control of the instrument from a remote console. Front panel controls remain active.

In the event of an interruption of the 10-MHz reference input, a loss-of-lock indication is provided on the LCD display.

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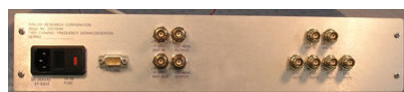
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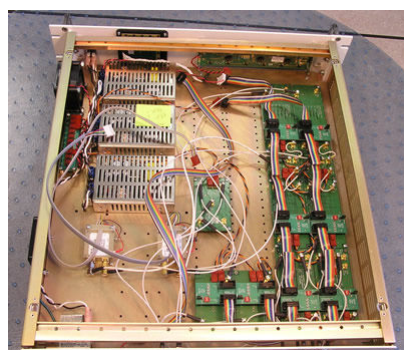
## Specifications

### General:

Number of Input Channels	2
Number of Output Channels	2 outputs per channel
Input Center Frequency	70 MHz
Output Baseband Center Frequency	Adjustable in 250-KHz steps from channel BW/2 to channel BW/2 + 2.5 MHz
3-dB Data Bandwidth	Four selectable bandwidths: 5 MHz, 24 MHz, 30 MHz, or 36 MHz
Conversion Gain	+10 dB to +70 dB adjustable in 1-dB steps. Gain is +30 dB, nominal +/- 2 dB with input and output attenuators set to 0 dB
Amplitude Variation	+/- 1.5 dB typical
Amplitude Ripple	+/- 0.25 dB typical
Group Delay Variations	TBD
Phase Noise	<3 degrees p-p, typical



Back Panel



Top View

### Input:

Input Level	0 dBm to -60 dBm
Input Port Impedance	50 ohms
Input Port Return Loss	TBD
Noise Figure	TBD

### Output:

Output Level	2 Volts p-p, max.
Output Port Impedance	50 ohms
Output Port Return Loss	TBD
DC Offset	< +/- 2 mVDC (output is auto-zeroing)
Harmonic Distortion	TBD
Two-Tone IMD	>35 dB down for two 2.0 Volts p-p output test tones (+10 dBm) with -30 dBm for each input signal with input and output attenuators set to 0 dB.
Spurious Outputs	TBD
Image Rejection	35 dB typical, 30 dB minimum

### External Reference:

Input Frequency	10 MHz
Input Level	0 dBm +/- 6 dB
Input Impedance	50 Ohms
Input Return Loss	TBD

**Physical Properties:**

Input / Output Connectors	BNC
Dimensions	17.07"W x 3.47"H x 19.5"D
Weight	12 pounds (4.5 Kg)
Temperature, Operating	0C to +50C
Power (Standard configuration)	85-264 Vac 47-63 Hz, 60W

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