NuWaves
RF Solutions

ConvertaWave2™ RF Downconverter

200 - 2500 MHz RF Input
70 MHz IF Output

P/N: RF200-2500RV1

The ConvertaWave2™ is a robust broadband RF receiver front end / downconverter with high dynamic range performance from VHF to S band.

NuWaves' ConvertaWave2 covers the entire 200 MHz to 2500 MHz frequency range with unmatched precision — 1 Hz tuning resolution — and superior rejection of out-of-band interference. The output of the downconverter is a 70 MHz IF signal that has been band-limited to one of five user-selectable IF bandwidths between 500 kHz and 10 MHz. Custom IF filter bandwidths are also available (consult factory).

The ConvertaWave2 meets the demanding need for high performance RF receivers for applications involving signal exploitation, inclusive of SIGINT, COMINT, ELINT, and RF downconversion for intercept receivers.

Features

- Broadband Operation from 200 MHz to 2500 MHz
- Small Form Factor (7.00" x 4.00" x 1.35")
- High Intercept Point
- Low Phase Noise
- 70 MHz IF Output
- User-Selectable IF Bandwidths
- 1 Hz Tuning Resolution
- Manual and Automatic Gain Control (MGC / AGC)
- 50 dB RF Attenuation
- 50 dB IF Attenuation
- Excellent Out-of-Band Rejection
- Wide Supply Voltage Range
- Simple RS-232 Interface

Applications

- RF Signal Receivers
- RF Front-End for Tactical Receivers
- Software Defined Radios (SDR)
- Test Bed Developments
- Programmable RF Frequency Conversion
- Waveform Receivers

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ConvertaWave2™ RF Downconverter

Specifications

System Parameter		Specifications
Frequency Range		200 - 2500 MHz
Frequency Step Size (Tuning Resolution)		1 Hz
Frequency Stability (Internal Reference Oscillator)		±1.0 ppm over Temperature, ±1 ppm per Year Aging
Reference Oscillator		User Selectable – Internal/External 10 MHz
Noise Figure	200 – 500 MHz	≤ 8 dB (5 dB typical
	500 – 1300 MHz	≤ 9 dB (5 dB typical)
	1300 – 1800 MHz	≤ 12 dB (7 dB typical)
	1800 – 2500 MHz	≤ 11 dB (7 dB typical)
LO Phase Noise:	RX Tuned to 200-500 MHz	-135 dBc/Hz @ 1 MHz offset typical
	RX Tuned to 500-1088 MHz	-129 dBc/Hz @ 1 MHz offset typical
	RX Tuned to 1088-2500 MHz	-123 dBc/Hz @ 1 MHz offset typical
Gain Control		User Selectable: AGC / MGC
Gain Control Range		100 dB in 1 dB Steps
RF Input Level – No Damage		+20 dBm
OIP3:	200 – 500 MHz	≥ 7 dBm (15 dBm typical)
	500 – 1300 MHz	≥ 16 dBm (18 dBm typical)
	1300 – 1800 MHz	≥ 12 dBm (16 dBm typical)
	1800 – 2500 MHz	≥ 15 dBm (17 dBm typical)
IF Output Frequency		70 MHz
IF Output Level:	MGC Normal Mode	-20 dBm typical with -100 dBm applied to RF Input (all attenuators set to minimum attenuation)
	AGC Normal Mode	-20 dBm typical
	MGC High Gain Mode	0 dBm typical with -100 dBm applied to RF Input (all attenuators set to minimum attenuation)
	AGC High Gain Mode	0 dBm typical
Gain:	Normal Mode	80 dB typical
	High Gain Mode	100 dB typical [Units can be gain leveled to ± 2dB across entire frequency range – Consult Factory]
IF Bandwidth		User Selectable: 500 kHz, 1 MHz, 1.5 MHz, 2 MHz, 10 MHz
IF Rejection		≥ 80 dB (100 dB typical)
Image Rejection:	200 – 500 MHz	100 dB typical
	500 – 1300 MHz	80 dB typica
	1300 – 1800 MHz	68 dB typical
	1800 – 2500 MHz	80 dB typical

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Specifications

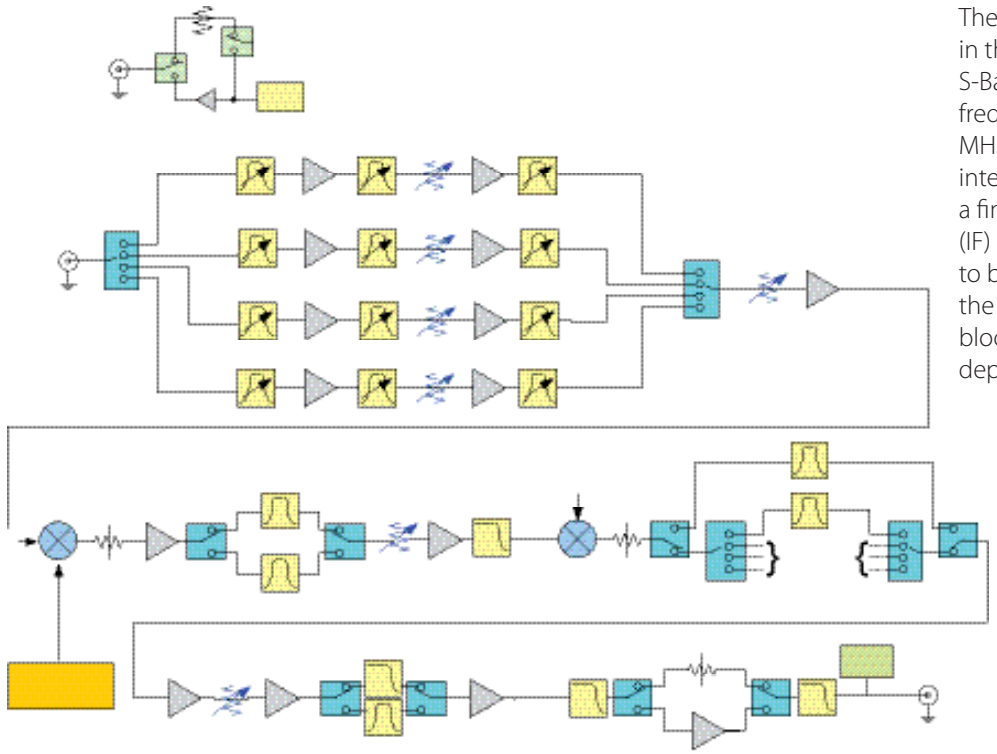
System Parameter		Specifications
3 dB Bandwidth:	200 – 500 MHz	5% BW typical
	500 – 1300 MHz	8% BW typical
	1300 – 1800 MHz	4% BW typical
	1800 – 2500 MHz	3% BW typical
10 dB Bandwidth:	200 – 500 MHz	9% BW typical
	500 – 1300 MHz	15% BW typical
	1300 – 1800 MHz	7% BW typical
	1800 – 2500 MHz	6% BW typical
20 dB Bandwidth:	200 – 500 MHz	13% BW typical
	500 – 1300 MHz	23% BW typical
	1300 – 1800 MHz	11% BW typical
	1800 – 2500 MHz	9% BW typical
Dimensions (Nominal)		7.0″ x 4.0″ x 1.35″ (L x W x H)
Power Supply		12 VDC typical (9 – 16 VDC)
Receive Current (@ 12VDC):	Normal Mode	400 mA typical
	High Gain Mode	425 mA typical
	Sleep Mode	15 mA typical
Operating Temperature		-20° C to +50° C
Storage Temperature		-40° C to +85° C
Digital Interface		RS-232 Standard (no flow control)
Supply Voltage		+9 to +16 VDC (+12 VDC Nominal)
Interface Connector		9 pin Micro-D (Socket)
RF Connectors		SMA (Female)
Reference Frequency Connector		SMA (Female)

Mechanical

Size	7.00″ x 4.00″ x 1.35″ (L x W x H)
Weight	18.6 oz.

ConvertaWave2™ RF Downconverter

ConvertaWave2™ Basic Receiver Block Diagram



The receiver intercepts signals in the VHF, UHF, L-Band, and S-Band providing continuous frequency coverage from 200 MHz to 2500 MHz. The signal of interest is down-converted to a final Intermediate Frequency (IF) of 70 MHz. The signal is then to be processed digitally by the host controller. A top-level block diagram of the receiver is depicted in the following figure.

For information on product disposal (end-of-life), please refer to this document:
https://nuwaves.com/wp-content/uploads/Product-Disposal-End-of-Life.pdf

Contact NuWaves

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