

NDR374

4 Channel SOSA Aligned 3U VPX SDR

4 CHANNEL SUPERHETERODYNE 3U VPX SDR

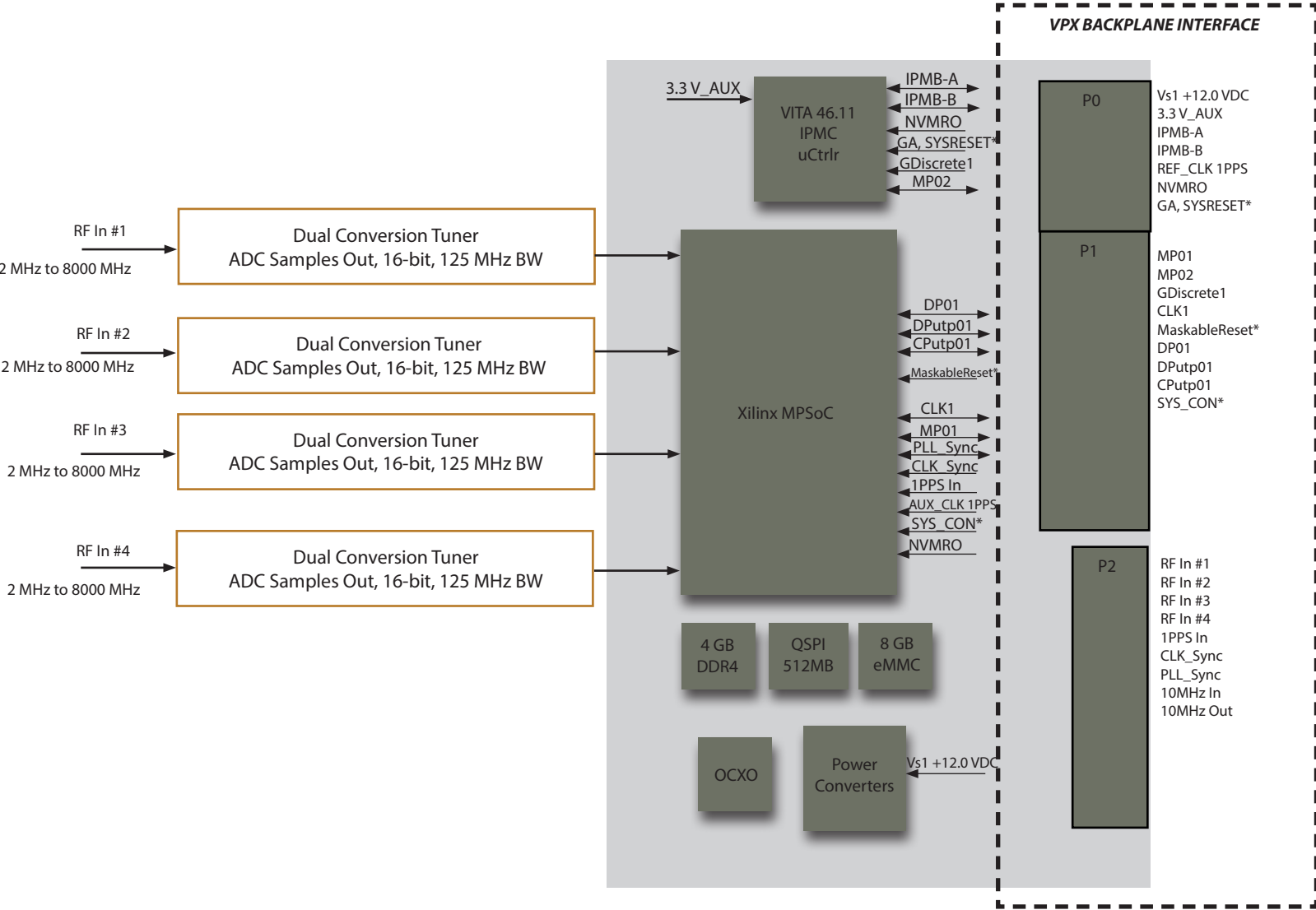
The NDR374 is a 4 channel SOSA Aligned 3U VPX SDR that covers RF signals from 2 MHz to 8 GHz . It is a rugged conduction cooled 3U VPX module, per VITA 46/48/65/67. The NDR374 is designed as a 3U open architecture version of the existing NDR358 RF SDR to include RF performance, command set and multiple DSP-based modes of operation (the NDR374 enables efficient system integration for existing NDR358 users). The VPX module supports both independent and phase coherent tuning and two units can support 8 Channel coherent operation. Integrated high dynamic range 16-bit Analog-to-Digital converters (ADC's) are utilized to digitize an 125 MHz wide IF at 368 Msps sample rate.

Command and control of the digital tuner are via a 1G/10G Ethernet interface and power is derived from the PO 12V power supply input (60W power consumption). An on-board Xilinx MPSoC UltraScale FPGA is used for the channelizer, VITA-49 formatter, data multiplexer and the Digital IF data interface. The Data Plane Digital IF output simultaneously provides both full bandwidth Digital IF data along with multiple narrow bandwidth DDC outputs.

KEY HIGHLIGHTS

- 4 Channel SOSA Aligned 3U VPX SDR
- 2 MHz to 8 GHz RF Coverage
- 125 MHz BW Per Channel
- Independent and Phase Coherent Tuning
- 16-bit internal ADC, 368 Msps
- Full bandwidth Digital IF Output over P1 data plane
- Internal FPGA-based signal processing with variable rate DDCs
- 1G/10G Ethernet command and control
- Time-tagged Digital IF output (based on 1PPS input)
- Command set based on existing NDR358 command set
- Fast Scan Control Interface
- Four DSP modes of operation
- 60W Power Consumption

BLOCK DIAGRAM



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SPECIFICATIONS

Specification	Value	Notes
Number of RF Channels	4	
Frequency Range	2 MHz to 8 GHz	
Bandwidth	125 MHz	
Tuning Resolution	1 MHz	1 Hz tuning resolution provided by internal DDCs
Tuning	Independent and Phase Coherent	Supports any combination of independent and phase coherent channels including multiple sets of coherent channels. Two NDR374 modules can operate as 8 coherent channels.
LO Switching Speed	100 microseconds max	50 microseconds typical, from receipt of command to within 1 kHz of final frequency
Size	single-slot 1" 3U VPX	
Weight	2.5 lbs.	
Power	60 Watts	
IIP3	+5 dBm, typ	Input, in-band IP3. Measured from RF input to 10 GigE Digital IF Output
Noise Figure	15 dB, typ	
SSB Phase Noise (typical)		
1 kHz	-90 dBc/Hz	
10 kHz	-100 dBc/Hz	
100 kHz	-103 dBc/Hz	
1 MHz	-115 dBc/Hz	
10 MHz	-130 dBc/Hz	
Internal Spurious		
20 MHz to 8 GHz	-100 dBm input equivalent level, typ	
RF Input		
Impedance	50 Ohms	
Connector Type	VITA 67.3	
Maximum input without damage	+24 dBm max	
Input Level for full scale	-15 dBm nominal	
Manual Gain Control Range	40 dB in 1 dB steps	

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SPECIFICATIONS CONTINUED

Specification	Value	Notes
Internal Reference		
Frequency	100 MHz	
Temperature stability	+/- 0.1 ppm over 0 to +50degC	
External reference	10 or 100 MHz	
External input level (50 Ohms)	0 dBm +/- 3 dB	
Control Interface	Gigabit Ethernet	Optional 10 Gigabit Ethernet
Digital IF Interface	10 Gigabit Ethernet	Two 10 Gigabit Ethernet interfaces that can stream all 4 tuners at the full 125 MHz bandwidth (each). Optional four 10 Gigabit Ethernet interfaces. Optional 40 Gigabit Ethernet.
Digital IF Data Format	16-bit complex I&Q or Real	VITA 49 compliant format
Digital IF Filter Bandwidths	33 user-selectable BW's from 12.8 kHz to 125 MHz	Up to 36 DDC's depending on the DSP mode of operation
Supply Voltage	+12 VDC (60 Watts)	SOSA compliant
Operating Temp Range	-40degC to +70degC Ambient (<10,000 ft.)	rail temperature
Slot Profile	SLT3-PAY-1F1U1S-1S1U1U2F1H-14.6.11-4	

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