

NDR318

8 Receive Channel High Performance SDR

The NDR318 is an affordable standalone 8-Channel wideband high performance SDR that converts the HF/VHF/UHF spectrum to digital IF (I/Q or Real) data over 10 Gigabit Ethernet interfaces. The NDR318 includes 8 independent tuners that cover RF signals from 2 MHz to 6 GHz with a 40 MHz instantaneous bandwidth. Each channel can tune independently or the tuners can operate phase coherently for applications such as beam forming or direction finding (the unit supports both 4-channel and 8-channel phase coherent operation). To enable Geolocation applications, the NDR318 includes an on-board GPS receiver, an external 1PPS input, precision time-tagged digital IF data (formatted based on the VITA-49 standard) and a tunable calibration signal that covers 25 MHz to 6 GHz.

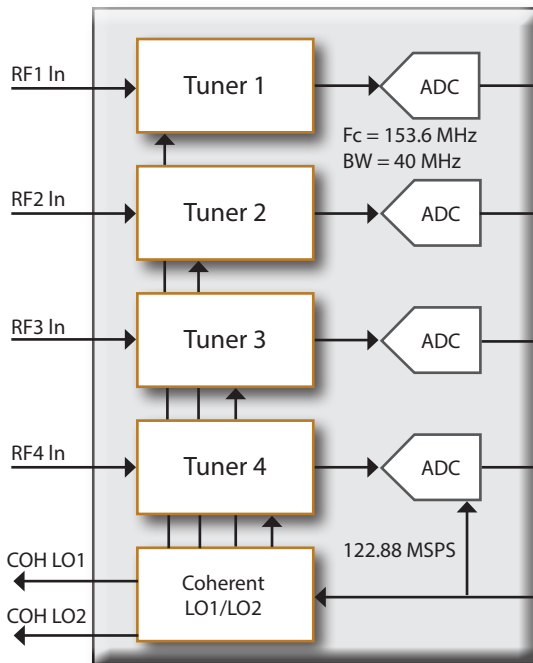
The NDR318 is packaged in an 8"W x 1.9"H x 12"D rugged aluminum chassis that provides RF shielding, thermal management, and protection suitable for harsh environments. The unit includes an FPGA-based digital processor board that receives 8 channels of wideband ADC data, performs narrowband filter and decimation, forms time-stamped digital IF data packets, and transmits streaming data over the two 10 Gigabit Ethernet output ports. The dual 10 Gigabit Ethernet output ports support full bandwidth (8 x 40 MHz) data streaming. The unit is powered via an external +12 VDC power supply and controlled via a 10/100 Ethernet interface. Multiple lower Digital IF bandwidths are also supported for applications that don't require the full 40 MHz.

KEY HIGHLIGHTS

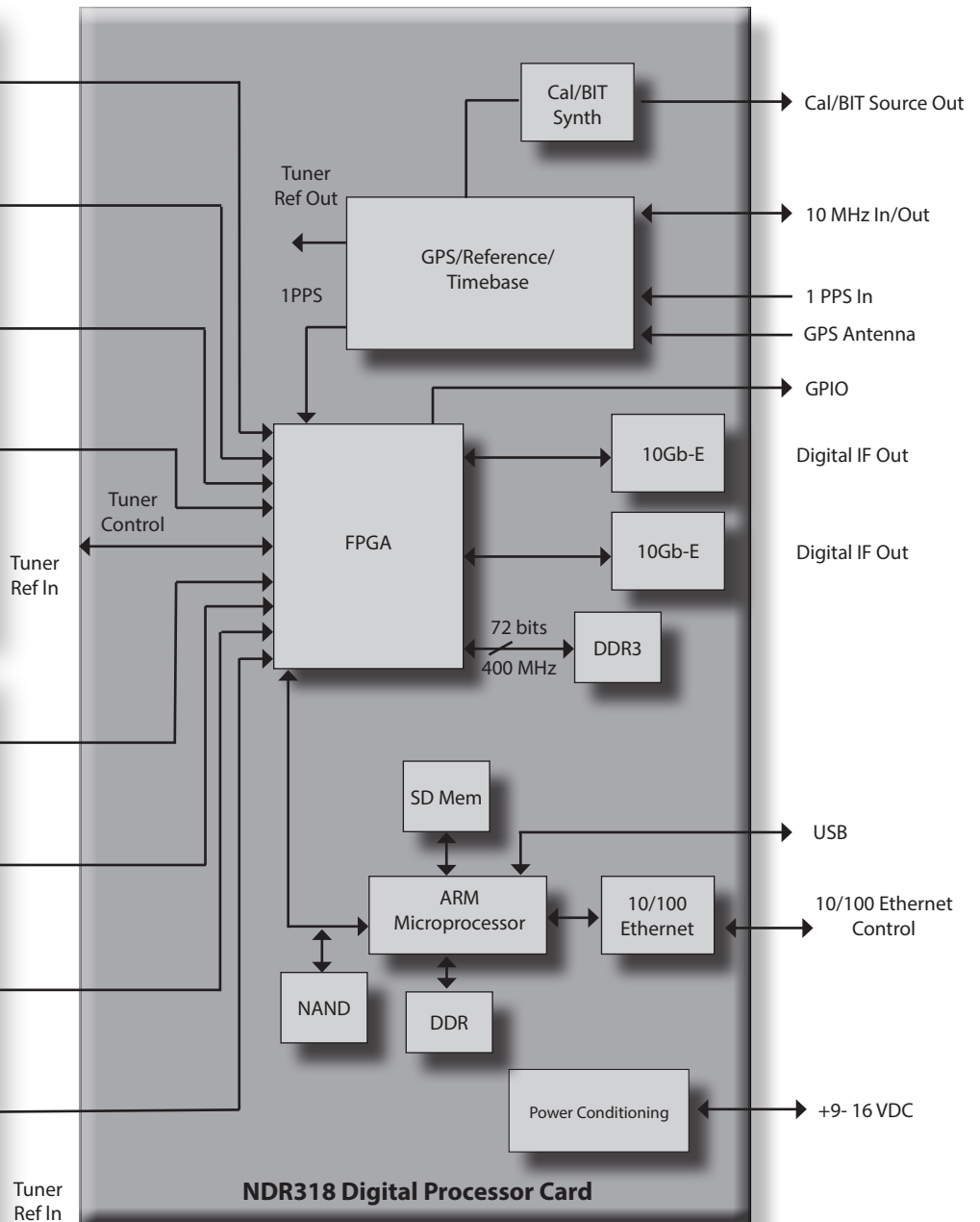
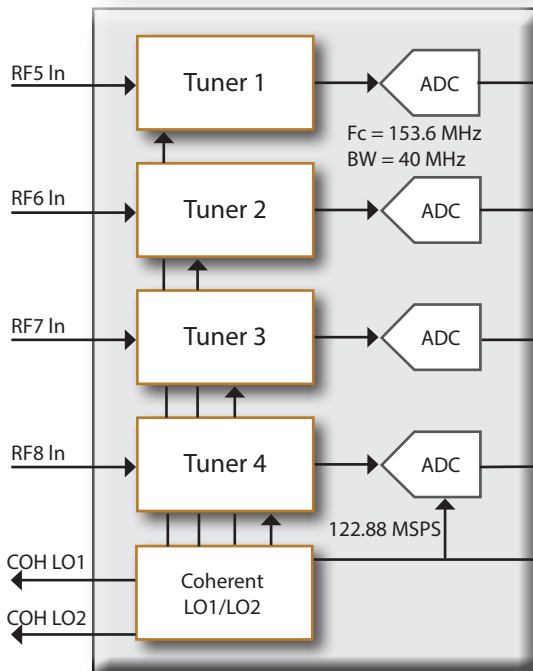
- 8 Channel High Performance RF SDR
- 2 MHz to 6 GHz Frequency Coverage
- 40 MHz Bandwidth
- Independent and Phase Coherent Tuning
- 2x 10GBE for Digital IF Data
- Integrated FPGA with Selectable DDCs
- Geolocation enabled with an Embedded GPS receiver
- 10/100 Ethernet for Command & Control
- VITA49 Formatting
- Software tools and API for easy integration
- 47W Power Consumption

BLOCK DIAGRAM

NDR318 Quad Tuner Card #1



NDR318 Quad Tuner Card #2



Specifications subject to change without notice.

Epiq Solutions is a business dedicated to advancing RF technology through products designed and manufactured in the U.S.A.

Epiq Solutions exports its products strictly in accordance with all US Export Control laws and regulations which shall apply to any purchase or order.



v(1) 1.0

SPECIFICATIONS

Specification	Preliminary Values		Comments
Number of RF Channels	8		
Frequency Coverage	2 MHz to 6 GHz		
Tuning Resolution	1 MHz		1 Hz tuning in DDCs
LO Switching Speed	700 microseconds	Typical, from receipt of command to within 1 kHz of final frequency	
IF Bandwidth	40 MHz (L-C filter)		
Size	8"W x 1.9"H x 12"D 183 cubic inches		
Weight	6.5 lbs. max		
Power	47 W max		
Noise Figure	10 dB typ., 20 MHz to 3GHz 14 dB typ., 3 GHz to 5.5 GHz		
IIP3 (in-band)	0 dBm typ.		
IIP2 (out-of-band)	+50 dBm typical		
SSB Phase Noise (typical)	Typical, 1 GHz		
1 kHz offset	-85 dBc/Hz		
10 kHz offset	-90 dBc/Hz		
200 kHz offset	-100 dBc/Hz		
1 MHz offset	-120 dBc/Hz -125 dBc/Hz		
Channel to Channel Isolation	80 dB typ, 60 dB min: 2 MHz to 3 GHz 70 dB typ, 50 dB min: 3 GHz to 6GHz		
RF Inputs			
Impedance	50 Ohms		
Connector Type	SMA (field replaceable)		
Maximum input without damage	+27 dBm		
Input Level for full scale	-27 dBm nominal, 2 MHz to 4 GHz -20 dB nominal, 4 GHz to 6 GHz		
Manual Gain Control Range	45 dB in 1 dB steps (if FNR disabled) 35 dB in 1 dB steps (if FNR enabled)		
Internal Reference			
Frequency	10 MHz		
Temp Stability	+/- 1.0 ppm over 0 to +50°C		
Phase lock range	+/- 5 ppm		
Ext input level (50 Ohms)	3 dBm min		

Specifications subject to change without notice.

Epiq Solutions is a business dedicated to advancing RF technology through products designed and manufactured in the U.S.A.

Epiq Solutions exports its products strictly in accordance with all US Export Control laws and regulations which shall apply to any purchase or order.



v(1) 1.0

SPECIFICATIONS CONTINUED

Specification	Preliminary Values		Comments
Control Interface	10/100 Ethernet TCP/IP		
Other control I/O	8-lines of GPIO to FPGA USB serial I/O to processor		
Digital IF Interface	Dual 10 Gigabit Ethernet UDP	SFP+ supporting 10GBase-SR, 10GBase-LR, or Direct Attach Copper	
Digital IF Data Format	16-bit complex I & Q or Real In VITA-49 compliant format		
Digital IF Filter Bandwidths	Bandwidth	Sample Rate	contact Sales@ cyberradiosolutions.com for additional variable rates available
	40 MHz	102.4 Msps (real)	
	40 MHz	51.2 Msps (complex)	
	20 MHz	25.6 Msps	
	10 MHz	12.8 Msps	
	1.2 MHz	1.6 Msps	
	640 kHz	800 ksps	
	320 kHz	400 ksps	
	160 kHz	200 ksps	
	80 kHz	100 ksps	
	40 kHz	50 ksps	
	20 kHz	25 ksps	
Snapshot/Delay Memory	51.2 Msamples per channel		
FPGA	Xilinx Kintex 7 325T		
Supply Voltage	+9V to +16VDC		
Power Control Modes	Yes, ability to disable individual SDR channels		
Full Spec Compliant Temp Range	+25°C to +35°C Ambient (<10,000 ft.)		Minimum 10 cfm airflow
Operating Temp Range	-20°C to +55°C Ambient (<10,000 ft.)		Minimum 10 cfm airflow
Humidity	5% to 95% non-condensing		
Vibration (Functional)	Mil-Std-810G, Table 514.6C-VII, Category 7, Jet aircraft general exposure		
Shock (Functional)	Mil-Std-810G Table 516.6 Proc I, 20G, 15ms saw-tooth pulse		
EMC/EMI	Mil-Std-461E CE101, CE102, RE101, RE102 (Navy fixed), RS103		

Specifications subject to change without notice.

Epiq Solutions is a business dedicated to advancing RF technology through products designed and manufactured in the U.S.A.

Epiq Solutions exports its products strictly in accordance with all US Export Control laws and regulations which shall apply to any purchase or order.



v(1) 1.0