N210

Contents

The USRP Network Series offers high-bandwidth, high-dynamic range processing capability. The Gigabit Ethernet interface of the USRP Network Series allows high-speed streaming capability up to 50 MS/s in both directions (8-bit samples). These features, combined with plug-and-play MIMO capability make the USRP Network an ideal candidate for software defined radio systems with demanding performance requirements.

- 50 MHz of RF bandwidth with 8 bit samples
- 25 MHz of RF bandwidth with 16 bit samples
- Gigabit Ethernet connectivity
- MIMO capable - requires two or more USRP N200 devices as motherboard has one daughterboard slot (1 RX + 1 TX connectors)
- Onboard FPGA processing
- FPGA: Xilinx® Spartan® 3A-DSP XC3SD1800A
- ADCs: 14-bits 100 MS/s
- DACs: 16-bits 400 MS/s
- Ability to lock to external 5 or 10 MHz clock reference
- TCXO Frequency Reference (~2.5ppm)
- Optional internal GPS locked reference oscillator
- FPGA code can be changed with Xilinx® ISE® WebPACK? tools
- Frequency range: DC - 6 GHz with suitable daughterboard

- 50 MHz of RF bandwidth with 8 bit samples
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- Onboard FPGA processing
- FPGA: Xilinx® Spartan® 3A-DSP XC3SD3400A
- ADCs: 14-bits 100 MS/s
- DACs: 16-bits 400 MS/s
- Ability to lock to external 5 or 10 MHz clock reference
- TCXO Frequency Reference (~2.5ppm)
- Optional internal GPS locked reference oscillator
- FPGA code can only be changed with the paid version of the Xilinx® ISE® Design Suite tools
- Frequency range: DC - 6 GHz with suitable daughterboard

- SBX-40
- UBX-40
- WBX-40
- CBX-40
- LFRX / LFTX

- BasicRX / BasicTX
- DBSRX2 (EOL)
- RFX Series (EOL)
- TVRX2 (EOL)

- SSB/LO Suppression -35/50 dBc
- Phase Noise 1.8 GHz 10kHz -80 dBc/Hz
- Phase Noise 1.8 GHz 100kHz -100 dBc/Hz
- Phase Noise 1.8 GHz 1MHz -137 dBc/Hz
- Power Output 15 dBm
- IIP3 (@ typ NF) 0 dBm
- Typical Noise Figure 5 dB

- Ettus Research recommends to always use the latest stable version of UHD

- Current Hardware Revision: 4
- Minimum version of UHD required: 3.8.0

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22 x 16 x 5 cm

1.2 kg

- File:cu usrp-n2x0 motherboard.pdf
- File:cu ettus-usrp-n2x0.pdf

- Motherboard

- Enclosure

- N200/N210: 25 °C

- 10% to 90% non-condensing

N200/N210 Schematics

Part Number	Description	Schematic ID (Page)
AD9777	Dual Channel, 16-Bit DAC	U3 (1)
ADS62P4X	Dual Channel, 14-Bit ADC	U2 (1)
XC3SD3400AFG676	FPGA	U1 (2,8,9,10,11,12)
AD9510	Clock Distribution IC	U9 (4)
ET1011C2	Gigabit Ethernet Transceiver	U12 (6)
CY7C1354C	Pipelined SRAM	U19 (7)
MAX232	Drivers/Receiver	U25 (10)

- Utilization statistics are subject to change between UHD releases. This information is current as of UHD 3.9.4 and was taken directly from Xilinx Vivado 2014.4.

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Device utilization summary:
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Selected Device : 3sd1800afg676-5

 Number of Slices:                    18356  out of  16640   110% (*)
 Number of Slice Flip Flops:          20466  out of  33280    61%
 Number of 4 input LUTs:              32968  out of  33280    99%
    Number used as logic:             28511
    Number used as Shift registers:    3945
    Number used as RAMs:                512
 Number of IOs:                         338
 Number of bonded IOBs:                 331  out of    519    63%
    IOB Flip Flops:                     342
 Number of BRAMs:                        41  out of     84    48%
 Number of GCLKs:                         6  out of     24    25%
 Number of DCMs:                          1  out of      8    12%
 Number of DSP48s:                       31  out of     84    36%
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Device utilization summary:
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Selected Device : 3sd3400afg676-5

 Number of Slices:                    18349  out of  23872    76%
 Number of Slice Flip Flops:          20475  out of  47744    42%
 Number of 4 input LUTs:              32986  out of  47744    69%
    Number used as logic:             28529
    Number used as Shift registers:    3945
    Number used as RAMs:                512
 Number of IOs:                         338
 Number of bonded IOBs:                 331  out of    469    70%
    IOB Flip Flops:                     342
 Number of BRAMs:                        41  out of    126    32%
 Number of GCLKs:                         6  out of     24    25%
 Number of DCMs:                          1  out of      8    12%
 Number of DSP48s:                       31  out of    126    24%
```

- Gigabit Ethernet

As of December 1st, 2010 all Ettus Research products are RoHS compliant unless otherwise noted. More information can be found at http://ettus.com/legal/rohs-information

Management Methods for Controlling Pollution Caused by Electronic Information Products Regulation

Chinese Customers

National Instruments is in compliance with the Chinese policy on the Restriction of Hazardous Substances (RoHS) used in Electronic Information Products. For more information about the National Instruments China RoHS compliance, visit ni.com/environment/rohs_china.

Found on the NI Product Certifications lookup tool here.

For a detailed guide to recovering the N200/N210, please see the N200/N210 Device Recovery application note.

FPGA Resources

UHD Stable Binaries

UHD Source Code on Github