Altium NanoBoard NB2

Architectural highlights

- Innovative and reconfigurable hardware platform harnesses the power of today's high-capacity, low-cost programmable devices – allowing rapid system development and implementation
- Works seamlessly and in full synchronization with Altium's next-generation electronic design solution, Altium Designer
- Real-time on-board power monitoring and analysis for the entire system
- Supports range of swappable target-FPGA and processor daughter boards from all major chip vendors
- Automatic peripheral and daughter board detection and configuration for plug-and-play platform creation
- Powerful instrumentation reduces or eliminates the need to simulate
- Reprogrammability eliminates the need to build multiple prototypes during development

Main board specifications

- Integrated color TFT LCD panel (320x240) with touch screen that facilitates dynamic application interaction
- Stereo analog audio system with high-quality on-board amplifiers, mixer, line in/out and stereo speakers
- Variety of standard communication interfaces – RS-232 serial, CAN, PS/2 mini-DIN
- SD card reader – for additional I/O flexibility including the ability to download a variety of files
- Four channel, 8-bit ADC and 10-bit DAC, I2C-compatible
- User definable PDA-style push button switches that function as generic design inputs
- Variety of general purpose switches and LEDs
- Programmable clock, 6 to 200 MHz, available to target FPGA
- Power sensing system allows real-time monitoring of system and device power consumption
- SPI Real-Time Clock with 3V battery back-up
- Onboard memory accessible by NanoTalk Controller – 256K x 32-bit common-bus SRAM (1MB), 16M x 32-bit common-bus SDRAM (64MB), 16M x 16-bit common-bus 3.0V Page Mode Flash memory (32MB), 256K x 32-bit independent SRAM (1MB)
- Dual User Board JTAG headers for direct interaction and development on production board
- Home/Reset button – Home button enables firmware to take control of TFT panel; Reset provides NanoBoard reset functionality
- NanoTalk Controller – manages real time proprietary communication with Altium Designer, the board, and the NanoBoard firmware using a Xilinx® Spartan-3™ (XC3S1500-4FG676C) controller with JTAG-accessible Flash configuration PROM
- Master-Slave connectors for chaining multiple development boards – allowing multiple-FPGA system development
- Board ID memory – 1-Wire® ID system uniquely identifies each daughter board and peripheral board
- Power – Dual 5V DC power daisy-chain connectors with power switch, 5V DC power output connector, power supply test points for all supply levels available on the board, four GND points
- High-speed PC interconnection through USB 2.0 allows faster downloading and debugging

Included in the box

Altium Designer

The NanoBoard NB2 includes a 12-month subscription to an Altium Designer Soft Design license which is linked to the NanoBoard in the box. This license option provides functionality to quickly start designing FPGA-based embedded systems, including:

- FPGA design entry in C, OpenBus, Schematic, VHDL and Verilog
- VHDL simulation engine, integrated debugger and waveform viewer
- Support for a range of 32-bit soft processors for use in FPGA design
- A rich set of royalty-free IP core libraries including peripherals and user-configurable custom logic
- Full software development tool chain with libraries and source code
- Programmable FPGA-based instruments for hardware debug and deployment
- Support for importing third-party FPGA IP cores, developing and reusing IP libraries

Additional Altium Designer license options are available for custom board design. For information on Altium Designer licensing options, visit **www.altium.com/altiumdesigner**

Peripheral boards

The NanoBoard NB2 caters for the use of up to three peripheral boards, and is delivered with the following standard peripheral boards:

Audio/Video Peripheral Board (PB01)

- Composite and S-Video output and capture, 24-bit VGA output, high-performance I2S stereo audio codec

Mass Storage Peripheral Board (PB02)

- Compact Flash, SD card slot, ATA hard-drive interfaces

USB-IrDA-Ethernet Peripheral Board (PB03)

- 10/100 Ethernet interface, USB 2.0 interface, 4Mbits/sec IrDA

Additional peripheral boards continue to be developed by Altium, and users can also develop their own, making it easy to evaluate new and alternate technology options.

Choice of daughter board

Each NanoBoard NB2 comes with one daughter board, which can be selected from the following:

Xilinx® Spartan™-3 Daughter Board (DB30)

- With Xilinx Spartan-3 FPGA (XC3S1500-4FG676C)

Altera® Cyclone™ II Daughter Board (DB31)

- With Altera Cyclone II FPGA (EP2C35F672C8)

LatticeECP™ Daughter Board (DB32)

- With LatticeECP FPGA (LFECP33E-3FN672C)

Daughter boards are swappable and an extended range can be purchased separately from Altium.

Training and resource materials

Altium provides extensive online resources designed to get you up and running as quickly as possible.

- Everything you need to know to get started and build your proficiency with Altium Designer – **www.altium.com/gettingstarted**
- Full technical information on the NanoBoard NB2 – **www.altium.com/wiki/nanoboardnb2**

For information on all available NanoBoard configurations, visit the Altium website at **www.altium.com/nanoboard**

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