

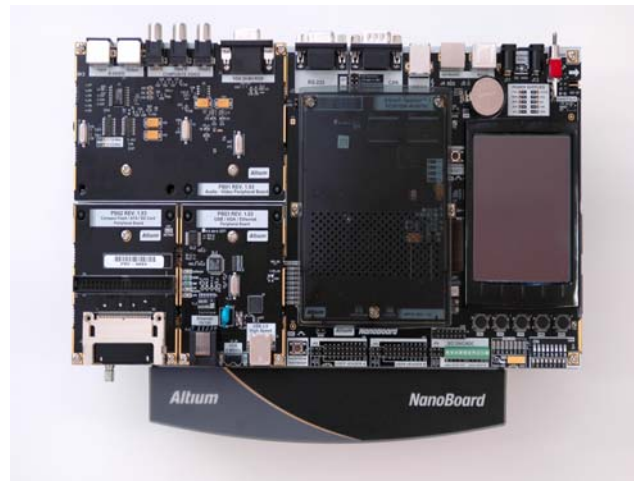


Altium - 12-400-NB2DSK01 - NANOBBOARD NB2 WITH XILINX SPARTAN-3

Product Overview:

Altium's NanoBoard architecture is unique in that target programmable devices are housed on separate satellite boards, referred to as daughter boards. These boards plug-in to the NanoBoard. By keeping each programmable device on its own daughter board, engineers can easily change the target project architecture, while retaining a truly FPGA vendor-independent development board.

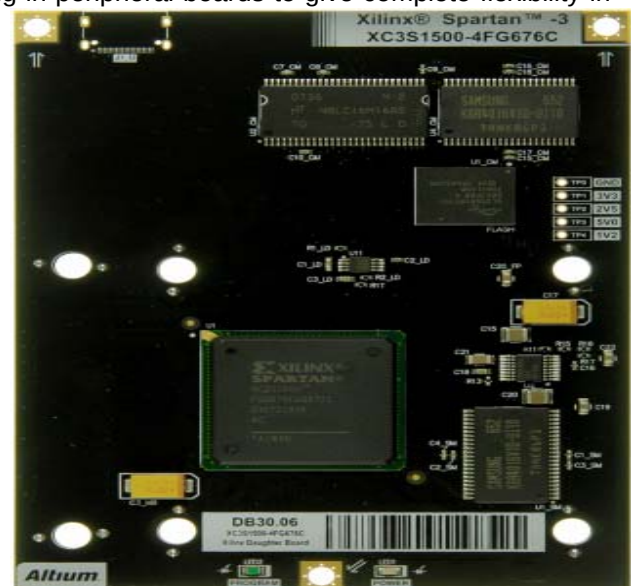
Altium's Xilinx Spartan 3 daughter board DB30 provides an XC3S1500-4FG676C device, as well as a range of on-board memories available for use by a design running within that device.



The NanoBoard NB2 provides application-specific plug-in peripheral boards to give complete flexibility in system architecture and provide a simple and cost-effective method for rapid prototyping of hardware concepts.

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)
 - o Composite and S-Video output and capture, 24-bit VGA output, high-performance I2S stereo audio codec
- Mass Storage Peripheral Board (PB02)
 - o Compact Flash, SD card slot, ATA hard-drive interfaces
- USB-IrDA-Ethernet Peripheral Board (PB03)
 - o 10/100 Ethernet interface, USB 2.0 interface, 4Mbps/sec IrDA



Kit Contents:

Following are included with NanoBoard NB2DSK01:

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, Open Bus, 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

Key Features of Motherboard Altium NanoBoard NB2:

Following are the below Main Features for Altium NanoBoard NB2:

- Integrated colour 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.
- 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
- General purpose switches and LEDs.
- Programmable clock, 6 to 200 MHz.
- 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.
- 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

The following is a list of generic features, common to NB30 board:

- **Protective casing** – all daughter boards have a protective casing that helps protect the topside of the board.
- **100-way connectors** – these 100-way Male docking connectors are used to connect the daughter board to the NB2DSK01 motherboard, which has corresponding 100-way Female docking connectors ('NANOCONNECT' interfaces). Daughter boards available with the Desktop NanoBoard NB2DSK01 and beyond each have three connectors (top, bottom and left). Those available previously for the NanoBoard-NB1 have two such connectors (top and bottom).
- **Power LED** – this will light (RED) when the daughter board is correctly plugged into the NB2DSK01 motherboard and the NB2DSK01's power is switched on.
- **Program LED** – this will light (GREEN) when the target device on the daughter board has been successfully programmed with an FPGA design.

3-connector daughter boards also have three holes that align with threaded standoffs on the NB2DSK01. These can be used to affix the board securely to the motherboard.

Key Features of Spartan 3 daughter board DB30:

Altium's Xilinx Spartan 3 daughter board DB30 provides an XC3S1500-4FG676C device, as well as a range of on-board memories available for use by a design running within that device.

The Daughter Board DB30 has the following features:

- Xilinx Spartan-3 FPGA (XC3S1500-4FG676C)
- On-board memories available for use by FPGA design:
 - o 256K x 32-bit common-bus SRAM (1MByte)
 - o 16M x 32-bit common-bus SDRAM (64MByte)
 - o 16M x 16-bit common-bus Flash memory (32MByte)
 - o Dual 256K x 16-bit independent SRAM (512KByte each)
- Wire® memory device used to store board ID and related information
- Three 100-way connectors for attachment to NB2DSK01 motherboard. These connectors provide:
 - o Interface to resources on the NB2DSK01 motherboard and plugged-in peripheral boards
 - o SPI bus interface
 - o I2C bus interface

- o 1-Wire bus interface
- o JTAG, power and additional control lines from the motherboard.

Ordering Information

Products:

Part Number	Manufacturer	Farnell P/N	Newark P/N
12-400-NB2DSK0 1-DB30	Altium	1714409	25R5626

Associated Products:

Part Number	Manufacturer	Description	Farnell P/N	Newark P/N
Daughter Board	Altium	Spartan-3	174414	10R0249
ADAPTER	Altium	JTAG USB	1714426	10R0257
Flash Memory	ST Micro	Serial SPI Flash Memory	1099669	26M1754
Transceiver	Maxim	RS-232	1379769	68K4632
CAN Bus	Maxim	Transceiver	NA	24R9638
ADC	Maxim	ADC-IC	NA	68K9410
DAC	Maxim	DAC IC	NA	78C3271
Amplifier	Maxim	Current Sense	NA	67K5237
FPGA	Xilinx	Spartan 3	1762476	22M4732
Flash Memory	Spansion	Flash	1567823	42K8611
Switch	Maxim	Switch Addressable	96B0597	1379761
Power Supply	Maxim	Power Supply IC	NA	67K4263

SDRAM	Micron	Memory	1216280	97K6120
ALTERA CYCLONE III DB40 DAUGHTER BOARD	Altium	Cyclone III	1714419	10R0253
XILINX SPARTAN-3AN DB41 DAUGHTER BOARD	Altium	Spartan 3AN	1714420	10R0254
XILINX SPARTAN-3A DSP DB42 DAUGHTER BOARD	Altium	Spartan 3A	1714421	10R0255
BOARD, DAUGHTER, DB46, VIRTEX-4 SX	Altium	Virtex-4	1714422	10R0256
BOARD, DAUGHTER, DB30, Spartan 3	Altium	Spartan-3	174414	10R0249
BOARD, PERIPHERAL, PB01	Altium	AUDIO/VIDEO	1714423	10R0258
BOARD, PERIPHERAL, PB02	Altium	MASS STORAGE	1714424	10R0259
BOARD, PERIPHERAL, PB03	Altium	USB / IRDA /ETHERNET	1714425	10R0260

Similar Products:

Part Number	Manufacturer	Description	Support Device	Farnell P/N	Newark P/N
12-400-NB2DSK01 (ALTERA)	Altium	DESKTOP NANOBOARD WITH ALTERA CYCLONE II	Cyclone II	NA	10R0245
12-400-NB2DSK01 (LATTICE)	Altium	DESKTOP NANOBOARD WITH LATTICE ECP	Lattice ECP	NA	10R0246
12-400-NB2DSK01 (XILINX)	Altium	DESKTOP NANOBOARD WITH XILINX SPARTAN-3	Spartan 3	NA	10R0247
12-401-NB2DS-K01-DB30	Altium	NANOBOARD KIT NB2 SPARTAN-3	Spartan 3		25R5626
12-400-NB2DSK01-DB31	Altium	NANOBOARD KIT NB2, CYCLONE II	Cyclone II	1714407	25R5627

12-400-NB2DSK01-DB32	Altium	NANOBOARD KIT NB2, LATTICE ECP	Lattice ECP	1714410	25R5628
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Document List:

Datasheets:

Part Number	Description	Size
Xilinx's Spartan Series	Spartan 3 User guide	8.94MB
	Spartan 3 Datasheet	5.1MB
DS2406	Dual Addressable Switch Plus 1Kb Memory	240KB
MT48LC16M16A2TG	Common-Bus SDRAM	2.9MB
S29GL256N11FFIV10	Common-Bus Flash memory	4.8MB
MAX8860	Linear Regulator	168KB
MAX1831	Voltage Regulator	106KB

Application Notes:

File Name	Size
XAPP058 - Xilinx In-System Programming Using an Embedded Microcontroller	641KB
XAPP195 - Implementing Barrel Shifters Using Multipliers	52KB
XAPP452 - Spartan-3 FPGA Family Advanced Configuration Architecture	574KB
XAPP453 - The 3.3V Configuration of Spartan-3 FPGAs	215KB
XAPP454 - DDR2 SDRAM Interface for Spartan-3 Generation FPGAs	328KB

Hardware & Software Resources:

File Name	Size
Download the latest release of Altium Designer Viewer	129MB
Download the Altium Instrument Dashboard	31.7MB
Autotrax Freeware Version Download	821KB
Easytrax Freeware Download	485 KB