Nexys A7

Buy Reference Manual Technical Support
Nexys A7
AMD Artix™ 7 FPGA
Features

- Programmable over JTAG and Quad-SPI Flash
- On-chip analog-to-digital converter

Key FPGA Specifications
Part Number
XC7A100T-1CSG324C
(XC7A50T-1CSG324I*)
Logic Slices
15,850 (8,150*)
6-Input LUTs
63,400 (32,600*)
Flip-Flops
126,800 (65,200*)
Block RAM
4,860 Kb (2,700 Kb*)
DSP Slices
240 (120*)
Clock Resources
6 PLLs & 6 MMCMs (5 PLLs & 5 MMCMs*)
Internal ADC
Dual-channel, 1 MSPS

- (*A7-50T variant value in parentheses where different)

Connectivity, Memories, and On-board I/O
DDR2
128 MiB
Ethernet
10/100 PHY
SD
microSD card connector
Pmod Connectors
Four Pmod ports
One XADC Pmod port
VGA
12-bit VGA port
Audio
PWM audio output
Microphone
PDM mic
Temp sensor
One temperature sensor

Display
Two 4-digit seven-segment displays
Switches
16
Buttons
5
LEDs
16
Tri-Color LEDs
2
Electrical
Power Inputs
USB
5V (2.5mm coaxial) supply
Physical
Width
4.3 in
Length
4.8 in
Product Compliance
HTC
8471500150
ECCN
5A992.c
EMC Disclaimer
PDF

> The Nexys A7-50T variant is now retired in our store. The Nexys A7-100T is not affected and will remain in production.

The Nexys A7 board is a complete, ready-to-use digital circuit development platform based on the latest AMD Artix™ 7 Field Programmable Gate Array (FPGA) from AMD. With its large, high-capacity FPGA, generous external memories, and collection of USB, Ethernet, and other ports, the Nexys A7 can host designs ranging from introductory combinational circuits to powerful embedded processors. Several built-in peripherals, including an accelerometer, temperature sensor, MEMs digital microphone, a speaker amplifier, and several I/O devices allow the Nexys A7 to be used for a wide range of designs without needing any other components.

Documentation

- Nexys A7 Reference Manual
- AMD 7 Series FPGAs Overview
- Master XDC Files

- EMC Disclaimer, Digilent Development and Evaluation Kits

- Nexys A7 Revision D.3 Schematic
- Nexys A7 Revision D.2 Schematic
- Nexys A7 Revision D.0 Schematic

- Product Change Notice - Flash Memory

Note: *AMD software tools are not available for download in some countries. Prior to purchasing the Nexys A7, please check the supporting software's availability, as it is required for the board's use.*

Tutorials

- Installing Vivado, Vitis, and Digilent Board Files
  - Walks through installing Vivado and Vitis, the development environments used to create hardware and software applications targeting Digilent FPGA development boards.
- Getting Started with Vivado and Vitis for Baremetal Software Projects
  - Walks through using Vivado and Vitis to create a design in hardware and software that uses a processor to control buttons and LEDs.
- Getting Started with Hardware Design in Vivado: Essential Setup & Navigation
  - Walks through using Vivado to create a simple design that blinks a single LED.
- Getting Started with Digilent Pmod IPs
  - Digilent Pmod IPs can be used to control connected Pmods from baremetal software.
  - It should be noted that not all Pmods are supported and that Pmod IPs are only supported in versions of Vivado 2019.1 and older.
- Getting Started with VHDL: Syntax, Programming & Modules
  - An introductory reference document on learning and using VHDL
- Using the Simulator in Vivado
  - Learn how to use Vivado's built-in simulator for the first time

- https://forum.digilent.com/topic/27389-arty-a7-microblaze-ddr3-tutorial/
  - The user Viktor Nikolov posted a tutorial on the Digilent Forum showing an alternate architecture for clocking the DDR interface for Digilent boards when using MicroBlaze. It works around several errors that may occur in other guides linked here.

Example Projects

Demos Supporting Vivado 2022.1

- Nexys A7 Keyboard Demo
- Nexys A7 XADC Demo
- Nexys A7 GPIO Demo

- Nexys A7 OOB Demo

Other Demos

- Nexys A7-50T Microblaze DMA Audio Demo
- Nexys A7-100T Microblaze DMA Audio Demo

Additional Resources

- Nexys 4 DDR Resource Center - Resources originally created for the Nexys 4 DDR board may be useful to users of the Nexys A7, as the boards are, for all intensive purposes, identical.
- Nexys A7 3D model
- Nexys A7 Mechanical Drawings
- REACH Certificate of Compliance
- Declaration of Conformity CE

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programmable-logic, programmable-logic-start, nexys-a7, resource-center