



**Fully User Programmable
Field Upgradable
Dual ARM CPUs + FPGA Logic**

**2x1Gbps PL, 1Gbps PS Ethernet
PCI-Express x4 FPGA card
Small, compact, low profile card**

LeWiz's Zynq™ FPGA family of development board designed specifically for easy customer usage and ready for deployment. Its SoC processors and FPGA resources are fully available for the user to use. Standard tools for programming and debugging are readily available. The popular Zynq FPGA is well-known by creative engineers and used in countless applications from embedded to data center, from commercial to military applications. Customers can code with C/C++, Verilog or VHDL and embed the code on the board. LeWiz also provides several complete, free application projects with software and hardware code to help customers getting started. The applications can function with or without an OS.

The card can be plugged into standard PC system x4 PCI-express slot and perform applications. It's packed with 32Mbytes of dual-parallel flash memory for PCIe boot compatibility – load as much programs on it as you'd like. The FPGA can be ordered with Xilinx Zynq 030 or up to 045 size with speed up to -3 for easy timing closure. It has dual banks of DRAMs - 1 for processor system (PS) and another for programmable logic (PL). Easy JTAG programming with the well-known Digilent module via standard micro USB is available. The dual ARM cores run up to 1GHz rate. It has 3 gigabit Ethernet ports – 2 for PL side and 1 for PS Ethernet side. The PL GigE ports have ability for network by-pass in case of power or other failure in the network. Also available is a PS USB port as well as a high speed UART RS-232 port.

There are a lot of built-in for debug and expansion. Many LEDs, switches, user configurable headers are on the board. User expansion connectors, ARM debug connectors (including for in-circuit emulators) are standard on the board. With full programmability, users can upgrade firmware out in the field. This can be done either remotely or on site. Remote update ability enables users to modify the firmware out in the field where the device is not physically accessible. Expansion connector enables user to add additional functions or features.

Various application examples available to users:

- Light weight IP – for network application developers this is an industrial strength TCP/IP stack with applications
- Net Tap – application for tapping network and sniff traffics. Ability to control network bypass included
- TCP/IP offload engine – LeWiz's hardware, ultra-low latency TCP/IP stack in PL FPGA
- PCI-express – PCI-express DMA, I/O access, tandem mode booting, etc
- PS memory – exerciser for PS DRAM
- PL memory – exerciser for PL DRAM
- Flash – Flash read, write, erase. Provide user full control of the flash for programming, data storage, application configuration information, etc.
- Peripherals – general purpose I/O port programming, LED manipulation, UART input/output, USB, etc.

LeWiz also offers custom development if the user required.

This board can also use other software from ARM CPU eco-systems, or hardware projects from Zynq based boards such as Xilinx ZC706 board.

See also LeWiz's iTrade, Talon, iDefend, and iStream NIC PCI-express products at: www.LeWiz.com

Detailed Specifications:

Product part number	
eZ2002	2x1Gbp, 1x1Gbps
FPGA Options:	Zynq 030 speed -2, -3 Zynq 045 speed -2, -3
System interface	
Compliant PCI-Express Gen 2	
4 lanes PCI-express (PCI-E)	Direct host access
Memory	
1-2GByte DDR3 Low Power	Processor DRAM
2Gbyte DDR3 Low Power	FPGA Logic DRAM
32Mbyte on board flash	User info + programming
Serial Ports	
UART	RS232 serial communication
USB serial	USB port Processor controllable
Micro-USB programming	USB-JTAG programming (Full compatibility with Xilinx tools)
Software support	
Vivado SDK	Fully compatible
Linux based	Executable by ARM CPU
Also support applications without OS	
Any ARM software	
Any Xilinx Vivado projects	Compatible with Xilinx ZC706 board
Design examples	LeWiz provided
Or Custom	

External network interfaces	
2x1Gbp Ethernet ports	1000Base-T, On FPGA logic With bypass capability
1x1Gbps Ethernet port	1000Base-T On processor side
Variety Timing Control	
33.33MHz	Processor clock
100MHz	PCIe clock
200MHz	Memory and system
24MHz	USB
25MHz	Ethernet PHY
PLL generated	Variety of frequencies avail
LED – observability, user control	
Multiple LEDs	Processor control side
Multiple LEDs	FPGA logic LEDs
Expansion	
Expansion connectors	General purpose, user config
User Config Switches	
Multiple user switches	Processor side and FPGA logic side
DEBUG	
ARM debug connectors	For in-circuit emulator
JTAG	For SDK or Vivado hardware debug
Physical board size	
Length x Width	6.6 x 2.5 inches (PCIe low profile)
Operating spec	
Uses standard voltages from PCI-express connector	12V
Or stand-alone power 12V	No system required
Option: Passive (no fan) heatsink	
Operating temperature	0 – 55°C
Operating humidity	85% at +55 °C
Recommended system requirements (for example only)	
Any PC based system	x4 PCIe slot

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