BL2500 Coyote™

Ethernet-Enabled Single-Board Computer

OEM Volume Version *$69* w/o Ethernet*

The BL2500 Coyote single-board computer gives OEM designers extremely low-cost embedded control for high-volume applications such as product control, factory equipment control, access control, HVAC, and vending machines. Two standard models—one with Ethernet, one without—feature the Rabbit 3000™ microprocessor at 29.4 MHz, with 256K Flash and 128K SRAM (standard).

Customized BL2500 models (OEM2500 versions) can be manufactured to user-specified configurations in volumes ≥ 500. Customization helps OEMs realize an extremely low-cost, yet maintain a reliable and rugged industrial solution. Our pin-compatible RabbitCore modules provide multiple configurations on the BL2500 Coyote, including Ethernet, non-Ethernet, and memory options.

On-Board Features

The Coyote's compact board size of 3.95" × 3.95" (100 × 100 mm) is easily mountable in standard 100 mm DIN rail trays. External connections via polarized locking industry-standard Molex®-type connectors enable rapid assembly with wire harnesses. These connectors also provide dependable cable harness connectivity to I/O. Future expansion boards (including A/D, D/A, digital I/O, and keypad/display) will interface via the two multiplexed SPI RS-422 ports.

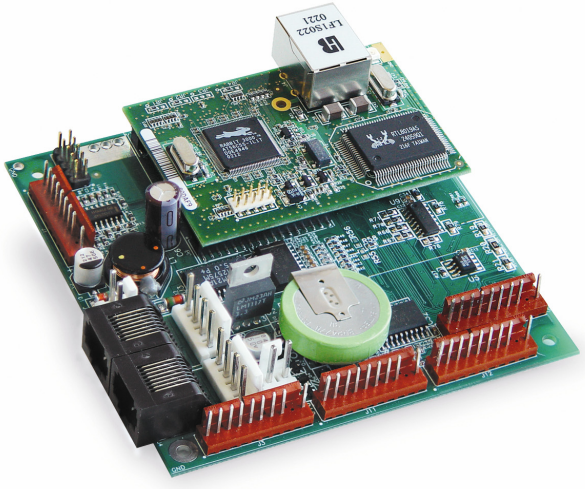
The Coyote provides 24 rugged digital I/O (plus 1 A/D input and 2 D/A outputs) along with 4 LEDs (3 yellow and 1 extra bright red). The 8 industrialized open-collector sinking outputs can easily switch up to 200 mA of inductive loads such as relays and solenoids with protection from inductive kickback. Of the 16 digital inputs, 15 are fully protected to ±36 V.

Six serial ports are included to support external communication. Two ports are connected to standard full-duplex RS-232 circuitry. One port is connected to rugged RS-485 differential pair signaling circuitry—allowing for industry standard multi-drop RS-485 networks. One port, designed to allow serial expansion, is multiplexed through two very high-speed (>1Mbit/sec capability) SPI ports with each line going through RS-422 differential pair signaling. The SPI ports connect to RJ-45 connectors (accepting standard category 5 cabling) for ease of connectivity. One serial port is a 3.3 V CMOS-level port that can either be asynchronous or clocked and one CMOS-compatible serial port is dedicated to programming/debugging.

The optional Ethernet interface (10 Mbps or 10/100 Mbps) allows easy connection to local networks or the Internet. Powerful software allows TCP/IP communication including e-mail and serving of web pages. Remote program development and loading via a network or the Internet is supported using appropriate accessory hardware.

Programming the Coyote

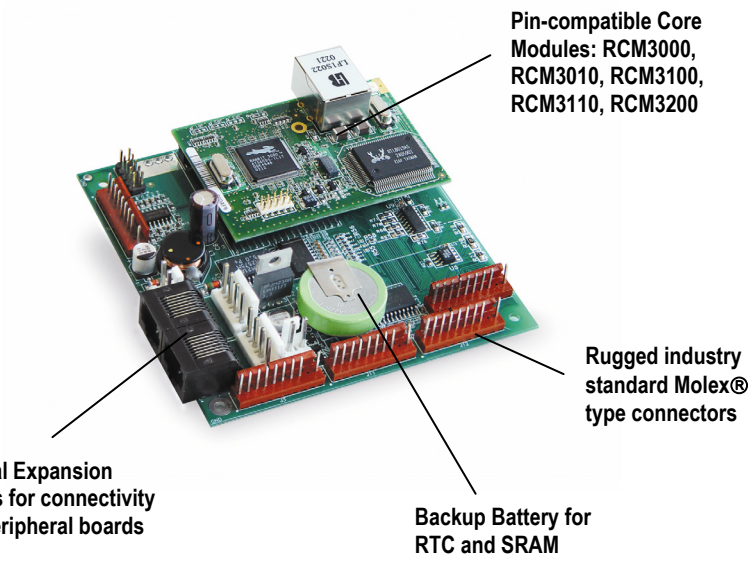
Programs are developed and debugged using Z-World's industry-proven Dynamic C® software, which runs on a Windows PC. Interfacing from the PC hosting Dynamic C to the target BL2500 board can be accomplished by a serial cable, a USB cable, or via Ethernet. Comprehensive debugging support includes break points, watch expressions and many other extensive features oriented toward real-time embedded systems programming. An extensive library of drivers and sample programs is provided, including a royalty-free TCP/IP stack for network and Internet communications.
Full source code is provided for most library routines.



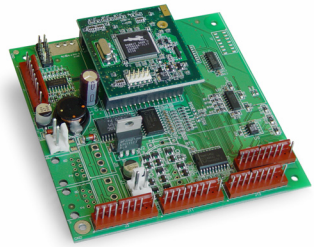
BL2500

BL2500 Features

- Rabbit 3000™ processor core modules
- With or without 10Base-T Ethernet
- Molex-type connectors for industry standard wire harness connectivity
- 16 digital inputs
- 8 digital high-current sinking outputs with rugged protection diodes
- Two 9-bit PWM analog output channels
- One 8-bit A/D analog input channel
- 6 serial ports (2 RS-232, RS-485, RS-422, 2 CMOS)
- 4 user-configurable LEDs
- 1000 mA·h backup battery for RTC (time/date clock) and SRAM
- Standard options:
  - 10/100Base-T Ethernet
  - Higher Memory Versions



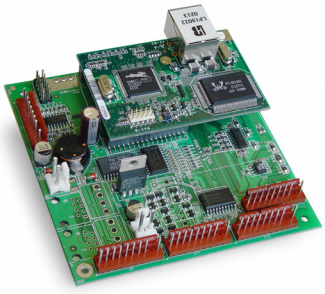
***Example - OEM2510: RCM3110 (non-Ethernet Core), remove 8 inputs, remove backup battery, and remove serial expansion SPI RS-422 ports = $69 each (qty. 500)**



OEM2500 Options (Available for quantities ≥ 500)

- A variety of core modules with or without Ethernet—10Base-T or 10/100Base-T
- Higher memory versions
- Addition/removal of any or all of the following sub circuits for performance/lower cost:
  - 2 serial expansion SPI RS-422 ports
  - Battery
  - RS-485
  - RS-232
  - 16 inputs
  - 8 outputs
  - 2 D/A + 1 A/D
  - 4 LEDs
- User Specified Options: Contact Sales Representative

****Example - OEM2500: RCM3010 (10Base-T Ethernet Core), remove 8 inputs, remove backup battery, and remove serial expansion SPI RS-422 ports = $99 each (qty. 500)**



Development Kit

The BL2500/OEM2500 Development Kit contains all the software and hardware tools needed to begin design, including BL2500 model, demonstration board, Dynamic C SE development software and documentation on CD-ROM, User's Manual with schematics, serial cable for programming and debugging, AC adapter (US/Canada only), and Molex®-style crimp pins & housings (standard crimping tool sold separately).

BL2500 Specifications & Features

FEATURE	BL2500	BL2510	OEM2500**	OEM2510*
Microprocessor	Rabbit 3000 at 29.4 MHz			
Ethernet Port	10Base-T, RJ-45 (standard)	None	10Base-T, RJ-45 (standard)	None
Flash Memory	256K (standard)			
SRAM	128K (standard)			
LEDs	4, user-programmable			
Digital Inputs	16: 15 protected to ±36 V DC, 1 protected to +5 –36V; threshold is 1.5 V nom.		8 protected to ±36 V DC, threshold is 1.5 V nom.	
Digital Outputs	8, sink up to 200 mA each, 36 V DC max. standoff voltage			
Analog Inputs	One 10-bit resolution, 8-bit accuracy, input range 0.1–3.1 V, 10 samples/s			
Analog Outputs	Two 9-bit PWM, 0.1–3.1 V DC, 17ms settling time			
Serial Ports	**6** serial ports: • 1 RS-485 • 2 RS-232 or one RS-232 (with CTS/RTS) • 1 CMOS level asynchronous or clocked serial port • 1 expansion serial port multiplexed to two RS-422 clocked SPI ports • 1 CMOS compatible serial port for programming/debug		**5** serial ports: • 1 RS-485 • 2 RS-232 or one RS-232 (with CTS/RTS) • 1 CMOS level asynchronous or clocked serial port • 1 CMOS compatible serial port for programming/debug	
Serial Rate	Max. async = CLK/8, Max. sync = CLK/2			
Real-Time Clock	Yes			
Timers	Ten 8-bit timers (6 cascadable from the first) and one 10-bit timer with 2 match registers			
Watchdog/Supervisor	Yes			
Power	8 – 40 V DC 1 W typical w/ no load	8 – 40 V DC 0.8 W typical w/ no load	8 – 40 V DC 1 W typical w/ no load	8 – 40 V DC 0.8 W typical w/ no load
Backup Battery	3 V lithium coin-type, 1000 mA·h, supports RTC & SRAM		None	
Operating Temperature	–40° to +70°C			
Humidity	5 – 95%, noncondensing			
Connectors	**5** polarized 9-pin Molex®-type terminals with 0.1" pitch, Two 4-pin 0.156" pitch Molex-type, two 0.156" pitch 2-pin Molex-type, two RJ-45, one 0.1" pitch 2x5 IDC, one 2 mm pitch 2x5 IDC programming port		**4** polarized 9-pin Molex® type terminals with 0.1" pitch, two 0.156" pitch 2-pin Molex-type, one .1" pitch 2x5 IDC, one 2 mm pitch 2x5 IDC programming port	
Board Size	3.94" × 3.94" × 1.16" (100 × 100 × 29 mm)	3.94" × 3.94" × 0.80" (100 × 100 × 20 mm)	3.94" × 3.94" × 1.16" (100 × 100 × 29 mm)	3.94" × 3.94" × 0.80" (100 × 100 × 20 mm)
Pricing Part Number	$189/155 (qty. 1/100) 101-0575	$149/122 (qty. 1/100) 101-0576	****$99**/94 (qty. 500/1000) 101-0605	***$69**/64 (qty. 500/1000) 101-0606
Development Kit Part Number	$299 U.S. 101-0577		Int'l 101-0578	

Options

Standard Options	BL2500 Pricing (qty. 1/100)	BL2510 Pricing (qty. 1/100)	OEM2500 Pricing (qty. 500/1000)	OEM2510 Pricing (qty. 500/1000)
BL25XX with: 10/100Base-T, 512K Flash, 512K SRAM (program) + 256K SRAM (data), Rabbit 3000™ @ 44.2 MHz Part Number	$239/195 101-0602	N/A	$145/135 101-0609	N/A
BL25XX with: 512K Flash / 512K SRAM Part Number	$209/171 101-0599	$179/147 101-0600	$129/119 101-0607	$99/89 101-0608
User-Specified Options	N/A		Contact Sales Representative	

OEM2500 Customization Checklist

Complete form and fax for custom quote or complete online at:
www.zworld.com/products/oem2500/custom.shtml

FEATURE

Ethernet/Memory	☐ 10/100Base-T (44.2 MHz clock, 512K Flash, 512K program + 256K data SRAM) (100)	☐ 10Base-T, 512K Flash / 512K SRAM (80)	☐ 10Base-T, 256K Flash / 128K SRAM (40)
	☐ No Ethernet, 512K Flash / 512K SRAM (40)	☐ No Ethernet, 256K Flash / 128K SRAM	
Serial Ports:			
RS-485	☐ Yes (5)	☐ No	
RS-232	☐ Yes (5)	☐ No	
Digital Inputs	☐ 16 (15 protected) (8)	☐ 8 (8 protected) (4)	☐ No Inputs
Digital Outputs	☐ 8 Outputs (6)	☐ No Outputs	
Analog I/O	☐ 1 Input / 2 Outputs (3)	☐ No Analog I/O	
Expansion	☐ RabbitNet™ expansion port multiplexed to 2 RS-422 clocked SPI ports (10)	☐ No RabbitNet	
Backup Battery (1000 mA·h)	☐ Yes (8)	☐ No	
LEDs	☐ 4 LEDs (1)	☐ No LEDs	
Quantity Required	☐ 500 - 999	☐ 1000 - 4999	☐ 5000 +

Other User Specification: _____

_____

_____

In the checklist above, the numbers in parentheses denote the relative worth of the circuits listed. This will aid a designer in judging which circuits to use for an OEM version. Example: LEDs are given the lowest relative value = 1. Actual OEM prices will vary depending upon the particular combination of circuits and also upon the volume. Contact a sales representative for actual price quote and lead time.

Name:	
Company:	
Address:	
City:	State:
Country:	Zip/Postal Code:
Phone Number:	
Fax Number:	
Email:	

Fax completed form to Z-World Sales at 530.757.3792