BL2500 Single-Board Computer CE

Large View

Models BL2500, BL2510

BL2500 Description

BL2500 Specifications

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Description

The BL2500 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).

Features

- **RabbitNet Expansion**
- 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

RabbitNet

RabbitNet expansion ports enable a modular and expandable embedded control system whose configuration of expansion cards can be tailored to a large variety of demanding real-time control, display, and data-acquisition applications. A typical RabbitNet system consists of a master single-board computer and one or more peripheral cards. A high-performance Rabbit 3000 or Rabbit® 2000 microprocessor on the master provides fast data processing, and the master SBC also provides the DCIN and +5 V power for the peripheral cards.

Onboard Features

The BL2500's compact board size of 3.95" × 3.95" (100 mm × 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 be available which interface via the two multiplexed SPI RS-422 ports.

The BL2500 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 BL2500 Single-Board Computer

Programs are developed using Rabbit's industry-proven Dynamic C® software development system. An extensive library of drivers and sample programs is provided, along with royalty-free TCP/IP stack with source. Systems with built-in 10Base-T or 10/100Base-T Ethernet can be directly controlled and monitored across networks or the Internet, and can also open sockets to remote devices, serve Web pages, or send e-mail. All BL2500 models can be programmed and debugged over Ethernet/Internet using appropriate accessory hardware.

BL2500 Specifications

Features	BL2500	BL2510
Microprocessor	Rabbit 3000 @ 29.4 MHz	
Ethernet Port	10Base-T, RJ-45 (standard)	N/A
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.	
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	
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
Backup Battery	3 V lithium coin-type, 1000 mA•h, supports RTC & SRAM	
Operating Temperature	-40°C 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	
Board Size	3.94" × 3.94" × 1.16" (100 mm × 100 mm × 29 mm)	3.94" × 3.94" × 0.80" (100 mm × 100 mm × 20 mm)
Pricing **Part Number**	$189/155 (qty. 1/100) 20-101-0575	$149/122 (qty. 1/100) 20-101-0576
Development Kit	U.S. 101-0577, Int'l 101-0578	