

Wildcat (BL2000)

C-Programmable Single-Board Computer with Ethernet

User's Manual

019-0094 • 070831-M

1. INTRODUCTION

The BL2000 is a high-performance, C-programmable single-board computer that offers built-in digital and analog I/O combined with Ethernet connectivity in a compact form factor. A Rabbit[®] 2000 microprocessor operating at 22.1 MHz provides fast data processing. An optional plastic enclosure is available, and may be wall-mounted or panel-mounted.

1.1 BL2000 Description

The BL2000 is an advanced single-board computer that incorporates the powerful Rabbit 2000 microprocessor, flash memory, static RAM, digital I/O ports, A/D converter inputs, D/A converter outputs, an SPDT relay output, and a 10Base-T Ethernet port.

1.2 BL2000 Features

- Rabbit[®] 2000 microprocessor operating at 22.1 MHz.
- 128K static RAM and 256K flash memory.
- Up to 28 digital I/O:
 - 11 protected digital inputs (plus up to 7 dual-purpose unbuffered analog inputs that may be software-configured for use as digital inputs) and 10 high-current digital sinking outputs that may be factory-configured as sourcing outputs.
- 11 analog channels: nine 12-bit A/D converter inputs, two 12-bit D/A converter outputs.
- Onboard SPDT relay.
- One RJ-45 Ethernet port compliant with IEEE 802.3 standard for 10Base-T Ethernet protocol.
- Eight status LEDs.
- 4 serial ports (2 RS-232 or 1 RS-232 with RTS/CTS, 1 RS-485, and 1 CMOS-compatible programming port).
- Real-time clock.
- Watchdog supervisor.
- Voltage regulator.

- Backup battery.
- Ability to send e-mail and serve Web pages containing embedded data from single-board computer.
- Remote program downloading and debugging capability via RabbitLink.
- Boards with the CE mark are CE-compliant.
- Optional plastic enclosure (can be wall-mounted or panel-mounted) and LED light pipes (enclosure and light pipes are included with the Tool Kit, and are also sold separately).

Appendix A provides detailed specifications.

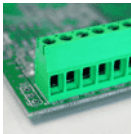

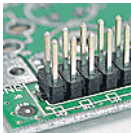
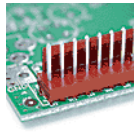
Four models of the BL2000 are available. Their standard features are summarized in Table 1.

Table 1. BL2000 Series Features

Model	Features
BL2000	Full-featured single-board computer.
BL2010	BL2000 with eleven 10-bit A/D converter inputs (no D/A converter outputs).
BL2020	BL2000 <i>without</i> Ethernet interface, only 6 LEDs.
BL2030	BL2010 <i>without</i> Ethernet interface, only 6 LEDs.

1.2.1 Connector Options

In addition to the standard screw-terminal connectors supplied on BL2000 boards, IDC headers, bottom-mount connectors, and polarized friction-lock terminals may be factory-installed instead. Visit our Web site at www.rabbit.com or contact your Rabbit Semiconductor sales representative or authorized distributor for further information.

Standard screw terminals, accept up to 14 AWG (1.5 mm ²) wire		“Bottom-mount connector” to mount BL2000 directly on 0.1" pitch pins located on motherboard	
2 × 17 IDC headers, 0.1" pitch		Polarized friction-lock terminals, 0.1" pitch	

1.3 Development and Evaluation Tools

1.3.1 Tool Kit

A Tool Kit contains the hardware essentials you will need to use your own BL2000 single-board computer. The items in the Tool Kit and their use are as follows:

- *Getting Started* instructions.
- *Dynamic C* CD-ROM, with complete product documentation on disk.
- Programming cable, used to connect your PC serial port to the BL2000.
- AC adapter, used to power the BL2000. An AC adapter is supplied with tool kits sold in the North American market. If you are using another power supply, it must provide 9 to 40 V DC.
- Demonstration Board with pushbutton switches and LEDs. The Demonstration Board can be hooked up to the BL2000 to demonstrate the I/O.
- Wire assembly to connect Demonstration Board to BL2000.
- Plastic enclosure with four screws and eight customer-installable light pipes.
- Screwdriver.
- *Rabbit 2000 Processor Easy Reference* poster.
- Registration card.

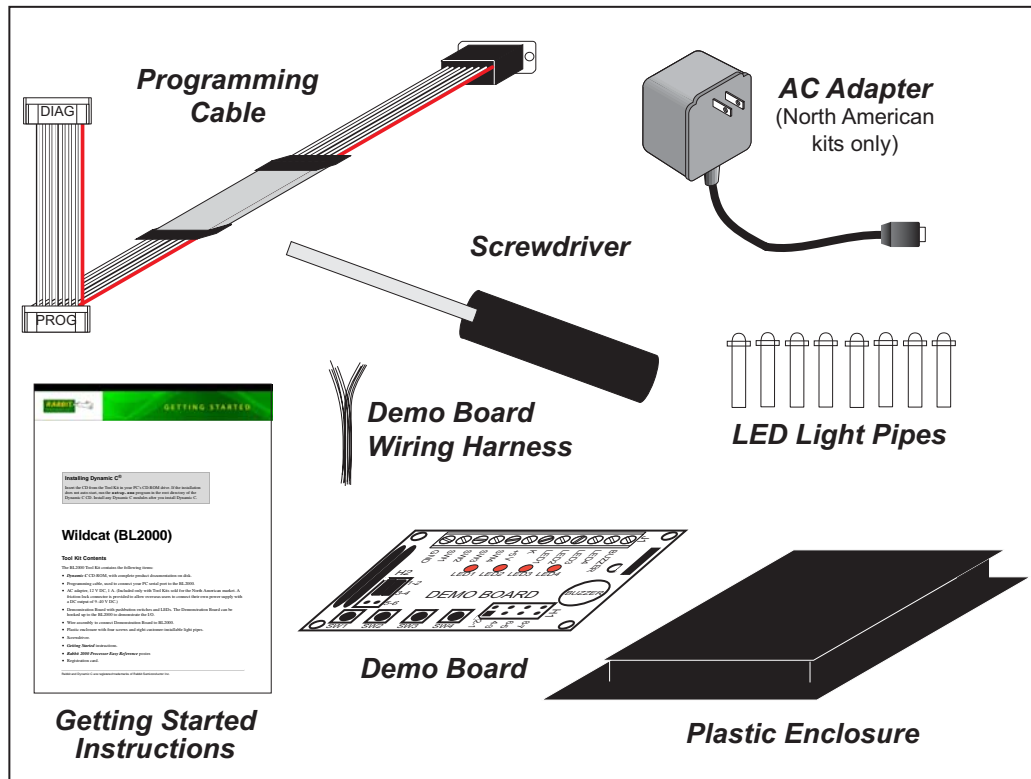


Figure 1. BL2000 Tool Kit

1.3.2 Software

The BL2000 is programmed using version 7.04 or later of Rabbit Semiconductor's Dynamic C. A compatible version is included on the Tool Kit CD-ROM.

Rabbit Semiconductor also offers add-on Dynamic C modules containing the popular μ C/OS-II real-time operating system, as well as PPP, Advanced Encryption Standard (AES), and other select libraries. In addition to the Web-based technical support included at no extra charge, a one-year telephone-based technical support module is also available for purchase. Visit our Web site at www.rabbit.com or contact your Rabbit Semiconductor sales representative or authorized distributor for further information.

1.4 CE Compliance

Equipment is generally divided into two classes.

CLASS A	CLASS B
Digital equipment meant for light industrial use	Digital equipment meant for home use
Less restrictive emissions requirement: less than 40 dB $\mu\text{V/m}$ at 10 m (40 dB relative to 1 $\mu\text{V/m}$) or 300 $\mu\text{V/m}$	More restrictive emissions requirement: 30 dB $\mu\text{V/m}$ at 10 m or 100 $\mu\text{V/m}$

These limits apply over the range of 30–230 MHz. The limits are 7 dB higher for frequencies above 230 MHz. Although the test range goes to 1 GHz, the emissions from Rabbit-based systems at frequencies above 300 MHz are generally well below background noise levels.

The BL2000 single-board computer has been tested and was found to be in conformity with the following applicable immunity and emission standards. The BL2010, BL2020, and BL2030 single-board computers are also CE qualified as they are sub-versions of the BL2000 single-board computer. Boards that are CE-compliant have the CE mark.



NOTE: Earlier versions of the BL2000 sold before 2003 that do not have the CE mark are *not* CE-compliant.

Immunity

The BL2000 series of single-board computers meets the following EN55024/1998 immunity standards.

- EN61000-4-3 (Radiated Immunity)
- EN61000-4-4 (EFT)
- EN61000-4-6 (Conducted Immunity)

Additional shielding or filtering may be required for a heavy industrial environment.

Emissions

The BL2000 series of single-board computers meets the following emission standards using the enhanced-EMI PCB, Part# 175-0224 Rev. A, and the 668-0003 Rev. A Rabbit 2000 microprocessor.

- EN55022:1998 Class B
- FCC Part 15 Class B

Your results may vary, depending on your application, so additional shielding or filtering may be needed to maintain the Class B emission qualification.