



## iDigi™ BL4S100 Add-On Kit ZB

The iDigi X4 Starter Kit ZB combines Digi's ConnectPort™ X4 gateway with the iDigi BL4S100 Add-On Kit ZB. The BL4S100 single-board computer in the iDigi BL4S100 Add-On Kit ZB illustrates the sharing of data with a ZigBee network via Digi's ConnectPort™ X4 gateway. Sample applications are provided and can be used as a template for your own application.

### Add-On Kit Contents

- BL4S100 Single-board computer with XBee ZB RF module.
- *Getting Started* instructions.
- *Dynamic C*® CD-ROM, with Rabbit-branded product documentation on disk.
- USB programming cable, used to connect your PC USB port to the BL4S100.
- Universal AC adapter, 12 V DC, 1 A (includes Canada/Japan/U.S., Australia/N.Z., U.K., and European style plugs).
- Demonstration Board with pushbutton switches and LEDs. The Demonstration Board can be hooked up to the BL4S100 to demonstrate the I/O and capabilities of the BL4S100.
- DB9 to bare leads serial cable.
- CAT 5/6 Ethernet crossover cable.
- Wire assembly to connect Demonstration Board to BL4S100.
- Screwdriver.
- *Rabbit 4000 Processor Easy Reference* poster.
- Registration card.

Visit our online Rabbit store at [www.rabbit.com/store/](http://www.rabbit.com/store/) for the latest information on peripherals and accessories that are available for the BL4S100 series of single-board computers.

### Step 1 — Install Dynamic C®

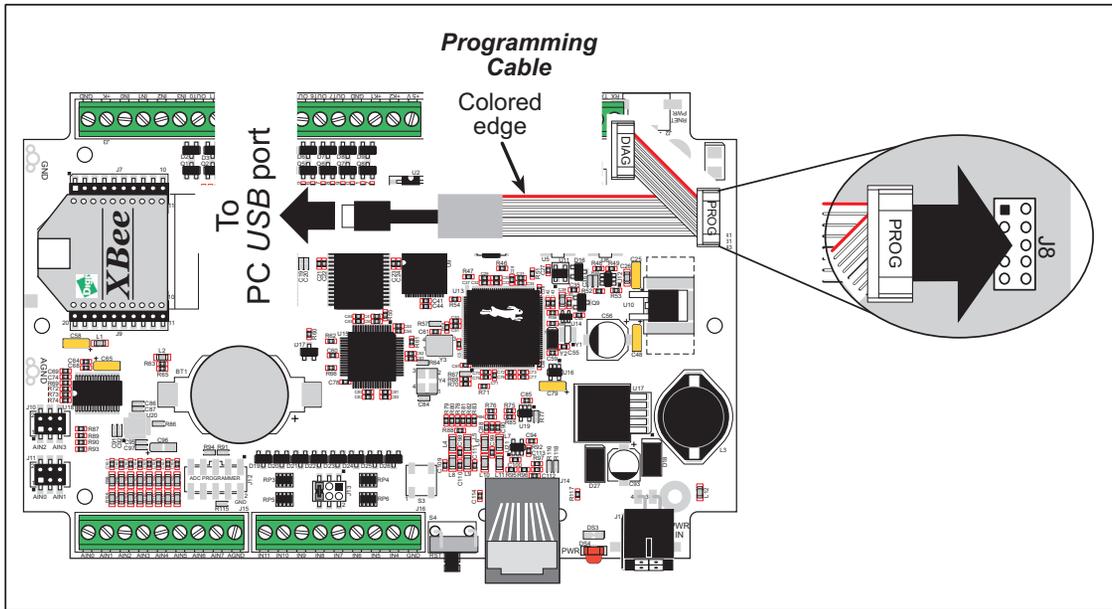
Before doing any development, you must install Dynamic C. Insert the CD from the Add-On Kit in your PC's CD-ROM drive. If the installation does not auto-start, run the **setup.exe** program in the root directory of the Dynamic C CD. Install any Dynamic C modules after you install Dynamic C.

# Hardware Connections

## Step 1 — Connect Programming Cable

The programming cable connects the BL4S100 to the PC running Dynamic C to download programs and to monitor the BL4S100 module during debugging.

Connect the 10-pin **PROG** connector of the programming cable to header J8 on the BL4S100. Ensure that the colored edge lines up with pin 1 as shown. (Do not use the **DIAG** connector, which is used for monitoring only.) Connect the other end of the programming cable to an available USB port on your PC or workstation.



**Figure 1. Connect Programming Cable and Power Supply**

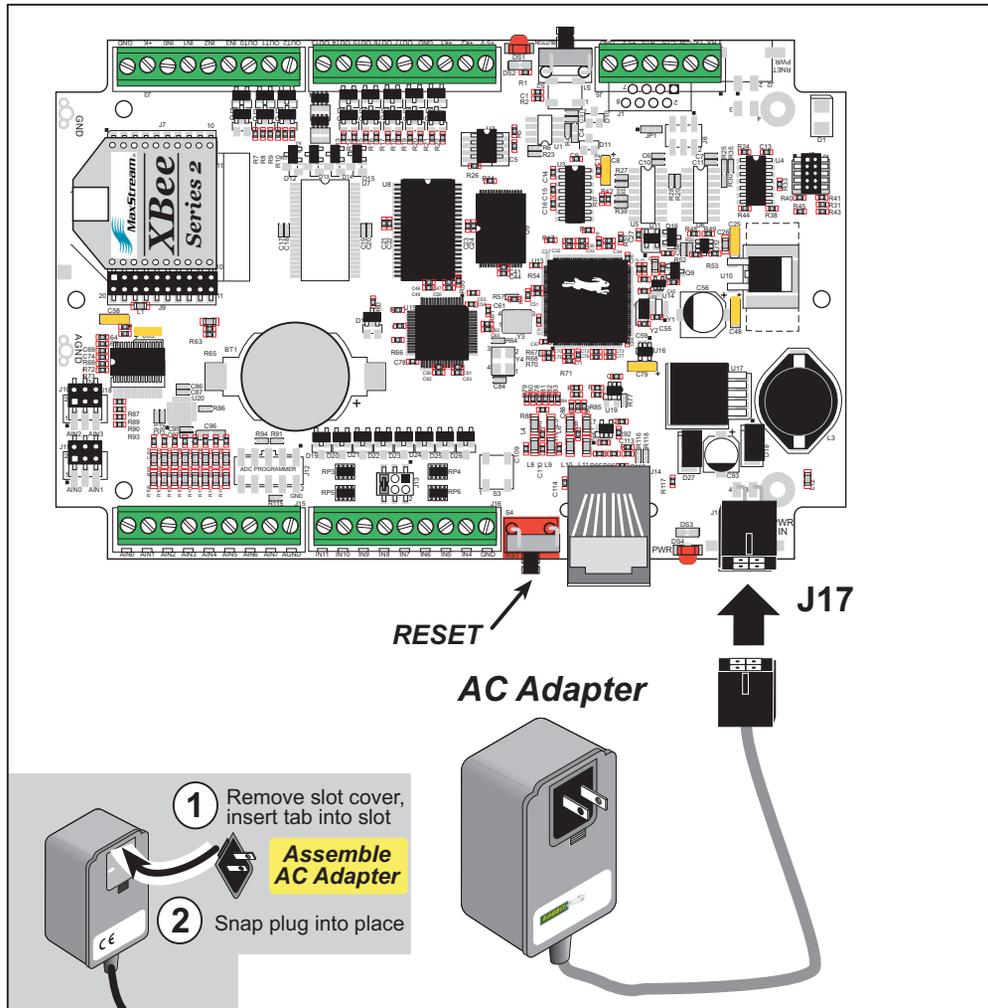
Your PC should recognize the new USB hardware, and the LEDs in the shrink-wrapped area of the USB programming cable will flash — if you get an error message, you will have to install USB drivers. Drivers for Windows XP are available in the Dynamic C **Drivers\Rabbit USB Programming Cable\WinXP\_2K** folder — double-click **DPInst.exe** to install the USB drivers. Drivers for other operating systems are available online at [www.ftdichip.com/Drivers/VCP.htm](http://www.ftdichip.com/Drivers/VCP.htm).

## Step 2 — Connect Power

Once all the other connections have been made, you can connect power to the BL4S100.

First, prepare the AC adapter for the country where it will be used by selecting the plug. The Add-On Kit presently includes Canada/Japan/U.S., Australia/N.Z., U.K., and European style plugs. Snap in the top of the plug assembly into the slot at the top of the AC adapter as shown in Figure 2, then press down on the spring-loaded clip below the plug assembly to allow the plug assembly to click into place. Release the clip to secure the plug assembly in the AC adapter.

Connect the power supply to header J17 on the BL4S100 as shown in Figure 1. Be sure to match the latch mechanism with the top of the connector to header J17 on the BL4S100 as shown. The Micro-Fit® connector will only fit one way.



**Figure 2. Power Supply Connections**

Plug in the AC adapter. The red LED next to the power connector at J17 should light up. The BL4S100 is now ready to be used.

**CAUTION:** Unplug the power supply while you make or otherwise work with the connections to the headers. This will protect your BL4S100 from inadvertent shorts or power spikes.

A hardware reset is done by unplugging the power supply, then plugging it back in, or by pressing the **RESET** button located next to the Ethernet jack.

## Run a Sample Program

Once the BL4S100 is connected to your PC and to a power source, start Dynamic C by double-clicking on the Dynamic C icon on your desktop or in your **Start** menu. Select **Store Program in Flash** on the “Compiler” tab in the Dynamic C **Options > Project Options** menu. Then click on the “Communications” tab and verify that **Use USB to Serial Converter** is selected to support the USB programming cable. Select the COM port used for the USB connection in the dropdown menu under **Options > Project Options**, on the **Communications** tab, then click **OK**.

Use the **File** menu to open the sample program **PONG.C**, which is in the Dynamic C **SAMPLES** folder. Press function key **F9** to compile and run the program. The **STDIO** window will open on your PC and will display a small square bouncing around in a box.

## Where Do I Go From Here?

If the sample program ran fine, you are now ready to go on to other sample programs. Information on how to set up and use Digi’s ConnectPort™ X4 gateway and Application Note AN422, *Using the iDigi™ BL4S100 Add-On Kit ZB with the ConnectPort™ X4 Gateway*, are available on the [www.digigreen.com](http://www.digigreen.com) Web site. Instructions for the sample programs and the source code are provided to allow you to modify them for your own use.

The *BL4S100 User’s Manual* included with the Dynamic C installation provides complete hardware reference information and describes the software function calls for the BL4S100. Sample programs specific to the operation of the BL4S100 are available in the Dynamic C **SAMPLES\BL4S1xx** folder.

The Digi® XBee USB identified in Chapter 2 of the *BL4S100 User’s Manual* and additional XBee ZB RF modules are available in a separate Rabbit-branded ZigBee Mesh Network Add-On Kit. These accessories can be used in a ZigBee network with the BL4S100.

## Troubleshooting

If Dynamic C cannot find the target system (error message "**No Rabbit Processor Detected.**"):

- Check that the BL4S100 is powered correctly — the red power LED next to the power connector at J17 should be lit when the AC adapter is plugged in.
- Check both ends of the programming cable to ensure that they are firmly plugged into the PC and the **PROG** connector, not the **DIAG** connector, is plugged in to the programming port on the BL4S100 with the marked (colored) edge of the programming cable towards pin 1 of the programming header.
- If a program compiles and loads, but then loses target communication before you can begin debugging, it is possible that your PC cannot handle the default debugging baud rate. Locate the **Serial Options** dialog in the Dynamic C **Options > Project Options > Communications** menu. Choose a lower debug baud rate.

Press **<Ctrl-Y>** to force Dynamic C to recompile the BIOS. You should receive a **Bios compiled successfully** message once these steps are completed successfully.

If there are any other problems:

- Use the Dynamic C **Help** menu to get further assistance with Dynamic C.
- Check the Rabbit Technical Bulletin Board and forums at [www.rabbit.com/support/bb/](http://www.rabbit.com/support/bb/) and at [www.rabbit.com/forums/](http://www.rabbit.com/forums/).
- Use the Technical Support e-mail form at [www.rabbit.com/support/](http://www.rabbit.com/support/).

**NOTE:** If you purchased your BL4S100 or iDigi BL4S100 Add-On Kit ZB through a distributor or through a Rabbit partner, contact the distributor or partner first for technical support.