NetBurner
Networking in 1 Day!

SB700EX Development Kit Quick Start Guide

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Introduction

The NetBurner SB700EX Network Development Kit (NNDK) is the fastest way to develop your network product. This kit includes everything you need to create network applications, and all the hardware and software components are integrated in a complete and easy to use package.

The documentation included in your kit includes tutorials, library function references and hardware platform details. All documentation is located in your C:\nburn\docs directory. Excellent resources for getting starting with your development kit include:

- SB700EX Users Guide for information on running the Serial-to-Ethernet application pre-programmed into the SB700EX.
- NBEclipse Getting Started Guide, explains how to use the Eclipse IDE.
- NNDK Programmer's Guide, a textbook style document covering custom programming.
- NetBurner Runtime Libraries, includes RTOS and TCP/IP functions.

Kit Contents

- SB700EX-100CR Serial to Ethernet device.
- NetBurner Tools CD-ROM
- Null-modem wired serial cable
- Standard Ethernet cable (blue)
- Cross-wired Ethernet Cable (red)
- 7.5 VDC Power Supply

Kit Software

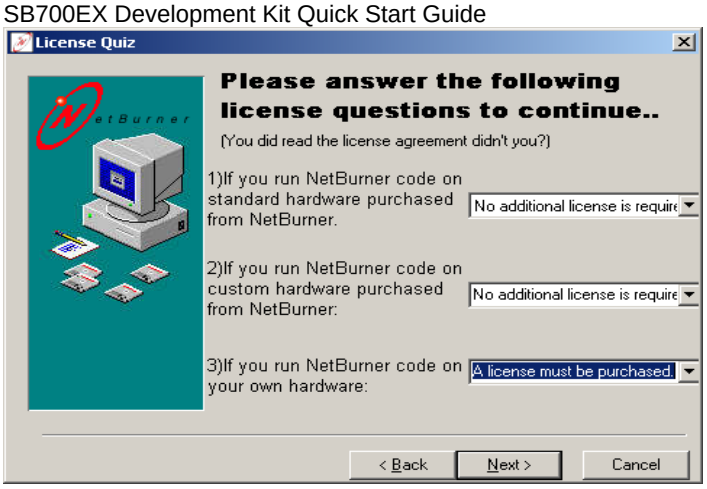
The NetBurner Network Development Kit CD-ROM contains many software libraries and utilities, including:

- NetBurner TCP/IP Stack
- NetBurner Web Server
- NetBurner Real-time Operating System based on uC/OS
- GNU C/C++ (Fully ANSI Compliant) Compiler and Linker
- NBEclipse IDE with Integrated Debugger
- NetBurner IPSetup Configuration Utility
- NetBurner AutoUpdate FLASH Update Utility
- NetBurner Application Wizard

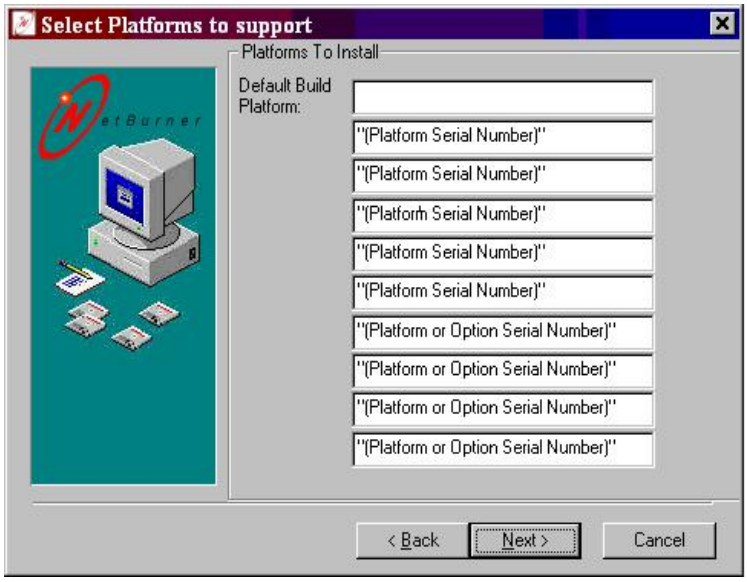
Installing the NetBurner Software

Close all Windows programs before running the NetBurner setup program. Put the NetBurner CD in your host computer's CD ROM drive. Follow the on screen directions for each step, clicking the Next button when finished with each screen.

A License screen will appear with three questions to clarify whether a license is required. A NetBurner license is only required if you intend to run NetBurner software on hardware that was not manufactured by NetBurner.



When the Select Platforms to support screen appears, click in the text box, and type the Serial Number (located on your CD jacket) of your SB700EX Kit. Click the Next button when finished.



Continue to follow the on-screen directions until the installation process is finished. The NetBurner tools are now installed on your host computer.

Configuring an IP Address

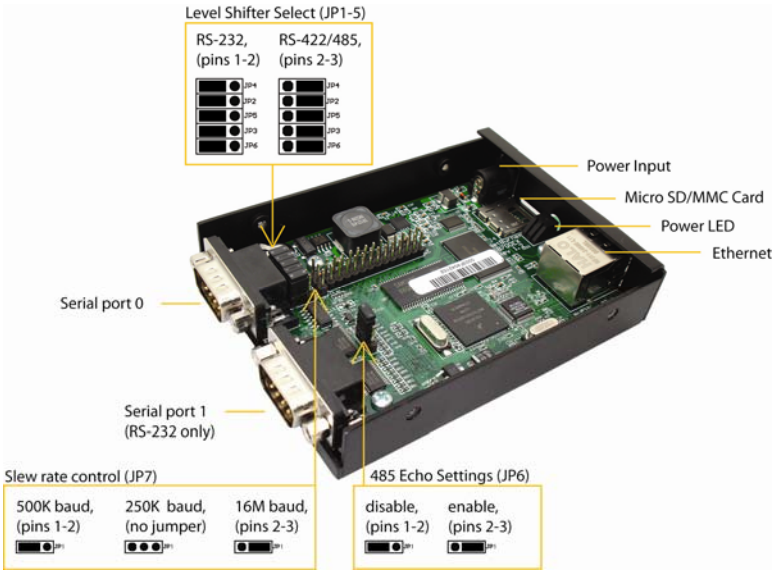
To enable your SB700EX to communicate over an Ethernet network it will need an IP Address and Network Mask. The NetBurner factory default program supports both Static and DHCP (Dynamic Host Configuration Protocol) assigned IP Addresses.

The factory default setting is DHCP, and if you have a DHCP server on your network the IP Address, mask, gateway and DNS server settings should be configured automatically. The NetBurner IPSetup utility (described in the following section) can be used to view the DHCP settings.

If you wish to use a Static IP Address and mask, you will need to select values compatible with your LAN and host computers. You can use the IPSetup utility to specify the appropriate values.

Hardware Setup

The SB700EX is pre-configured for RS-232 serial to Ethernet operation. If you wish to use RS-422 or RS-485 the mode selection jumper must be changed inside the SB700EX as shown in the diagram below.



The SB700EX can function with just an Ethernet connection and the power supply. The default serial data port is Port 1, and the default serial debug/monitoring port is Port 0. You can connect the included null-modem cable from Port 0 to your computer and run a serial terminal such as the NetBurner MTTTY to view status information of the SB700EX during operation. You may also use Port 0 as a data port by disabling the debug/monitoring feature in the web page configuration screen for serial settings.

Running the NetBurner Factory Program

1. Install the NetBurner Development Tools on your host computer.

2. Connect the power supply to the SB700EX by inserting the P5 male connector on the power supply cord into the P5 female socket of the SB700EX.

3. If you are part of an existing network, or are using a hub - Use the blue RJ-45 patch cable to connect your SB700EX to an unused network jack or hub port. Note: You cannot use the blue patch cable to connect directly to a network card in a computer.

4. If you do not have a hub and want to connect your SB700EX directly to your host computer - Use the red RJ-45 patch cable. Note: You cannot use the red patch cable to connect to a network hub port or existing network jack.

5. Plug the power supply into a working electrical outlet.

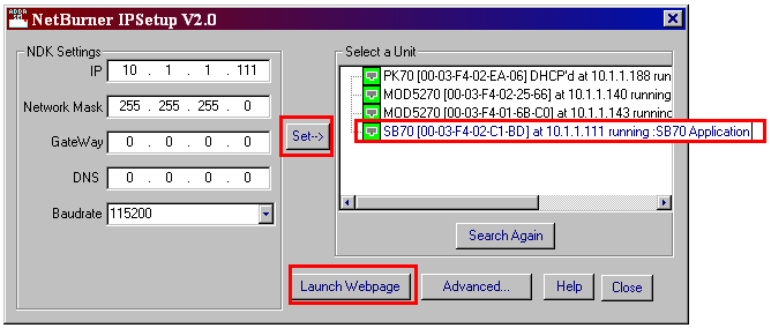
6. Execute the IPSetup utility. From the Windows Start Menu: Start → Programs → Netburner NNDK → IP Setup Tool.

7. The IPSetup utility will automatically locate all NetBurner devices on your network. If more than one device appears, select your SB700EX by matching the MAC address displayed in IPSetup with the MAC address label on your SB700EX board.

8. If you are using a Static IP Address, enter your IP Address and Mask in the corresponding IPSetup text boxes. For example, if you are on an isolated network, the Static IP Address could be 10.1.1.111 and the Mask could be 255.255.255.0. Note: Remember to click the Set button in the IPSetup window to send (and save) the modifications in your SB700EX board. If you are using DHCP, verify that the IP Address and Mask have been set.

9. Your SB700EX is now configured (as shown below).

10. Click the Launch Webpage button in the IPSetup GUI to view the NetBurner factory web pages using the browser of your choice.



The NetBurner AutoUpdate Utility

NetBurner's AutoUpdate is the fastest way to download your application to your NetBurner SB700EX board. AutoUpdate is used by the NBEclipse IDE to download code during software development, and can also be run as a stand-alone utility to update your code in the field.

AutoUpdate can be run from Windows (Start → Programs → Netburner NNDK → Auto Update Tool), from the IDE, or from a command prompt for batch processing or production bring-up. If no options are specified, a dialog box will appear asking for user input to select the network device and application image. If run with options, no user intervention is required.

A Flash application update is executed as follows:

1. The application image is downloaded over Ethernet to your SB700EX board's SDRAM. Any power failures or network problems at this stage will simply abort the update and the SB700EX will continue to run the previous application.
2. Once the application download is complete and verified, only then is it programmed into flash memory.
3. The SB700EX is commanded to reboot, and will then run the new application.

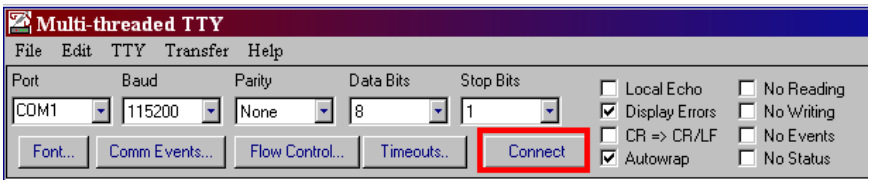
Serial RS-232 Downloads to Flash Memory

NetBurner provides a serial communications program called MTTTY that can be used to interact with the SB700EX. You may also use any other serial terminal program of your choice. The following sections also assume that you have correctly set up your NetBurner hardware.

Network communications with your SB700EX are only possible if you have a running application. If during development you download an application that has an error and causes the application to crash (a normal part of the development process), you will need to download a good application through the SB700EX debug serial port (port 0 by default). This is accomplished by interacting with the SB700EX Boot Monitor. The following procedure describes how to use the NetBurner MTTTY serial terminal to accomplish this task.

Connect the supplied serial cable from the Port 0 DB9 on your SB700EX to your host computer (Port 0 is the default debug/monitor port, but you may also configure it as Port 1 if you wish).

Start the MTTTY program (From Windows: Start → Programs → Netburner NNDK → Mttty Serial Terminal). Select the communication port you connected the cable to on your host computer (usually COM1), set the Baud to 115200, the Parity to None, the Data Bits to 8, the Stop Bits to 1 (as shown below), and click the Connect button (the button name will change to Disconnect after it's clicked).



Reset your NetBurner SB700EX by removing and reapplying power (i.e. a hard reset). You will see the message "Waiting 2 sec to start 'A' to abort" in the MTTTY window.

Before the time period expires, type an A (i.e. an uppercase A) in the MTTTY window and the Boot Monitor prompt, "NB>" will appear.

At the NB> prompt, type the command "FLA" (FLA stands for FLASH Application) and press the <Enter> key. A Send File prompt will appear in MTTTY. Send your _APP.s19 file to your SB700EX. This can be done with MTTTY by selecting the Send option from the Transfer pull down menu, or by pressing the F5 key on your keyboard.

Navigate to the directory where your _APP.s19 application file is located.

- NBEclipse: The _APP.s19 file is located in your project's release directory.
- NetBurner Factory Examples: The _APP.s19 (example) files are located in your C:\Nburn\SB70\original directory.

As your download progresses, "*****" characters will appear in the MTTTY window. When the download is finished, the Boot Monitor will automatically reprogram the application area of the FLASH and reset your SB700EX.

Note: If your program does not automatically restart, automatic loading may be turned off. In this case, you can start your application by typing the command "boot" at the NB> prompt and pressing the Enter key.

DB9 Pinout

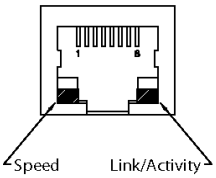
NetBurner SB700EX Port 0-1 Signal Descriptions

Port 0		Port 1	
Pin	**RS-232**	**RS-232[1]**	**RS-485[1]**
1	CD	CD	-
2	RX	RX	HD- / FD TX-
3	TX	TX	HD+ / FD TX+
4	DTR	DTR	-
5	GND	GND	GND
6	DSR	DSR	FD RX-
7	RTS	RTS	FD RX+
8	CTS	CTS	-
9	RI	RI	-

Note:

1. Port 1 can be configured as either RS-232 or RS-485

RJ-45 Ethernet Connector



- LED1: Speed: 10 MB (off) or 100 MB (on)
- LED2: Link/Activity

Additional Services

The NetBurner design team has extensive experience in developing network products, and also offers a full line of services from hourly consulting to complete turnkey systems. Please contact Sales@NetBurner.com for more information on any of our services.

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Firmware Design
Turnkey add-on boards to your specifications
Consulting on product design definition

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