

# Table of Contents

NetBurner License Agreement .....	2
Introduction.....	4
Kit Contents.....	5
Kit Software .....	6
Installing the NetBurner Software.....	6
Obtaining an IP Address.....	8
Static IP Address.....	8
Dynamic IP Address (DHCP).....	8
Development Board Jumper Settings .....	9
Running the NetBurner Factory Program .....	9
The NetBurner Network AutoUpdate Utility .....	13
Serial RS-232 Downloads .....	14
Additional Services.....	16
Technical Support.....	16
Software Licensing .....	16

## NetBurner License Agreement

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3. The runtime libraries and include files provided in the C:\Nburn\GCC-M68k directory branch are subject to the Newlib license. This license can be found in C:\Nburn\docs\NewlibLicense.txt file.
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## **Life Support Disclaimer**

NetBurner's products both hardware and software (including tools) are not authorized for use as critical components in life support s or systems, without the express written approval of NetBurner, Inc. prior to use. As used herein: **(1)** Life support s or systems are s or systems that **(a)** are intended for surgical implant into the body or **(b)** support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user. **(2)** A critical component is any component of a life support or system whose failure to perform can be reasonably expected to cause the failure of the life support or system, or to affect its safety or effectiveness.

## Introduction

The NetBurner Network Development Kit (NNDK) is the fastest way to network-enable both existing and new product designs with 10/100BaseT Ethernet. 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.

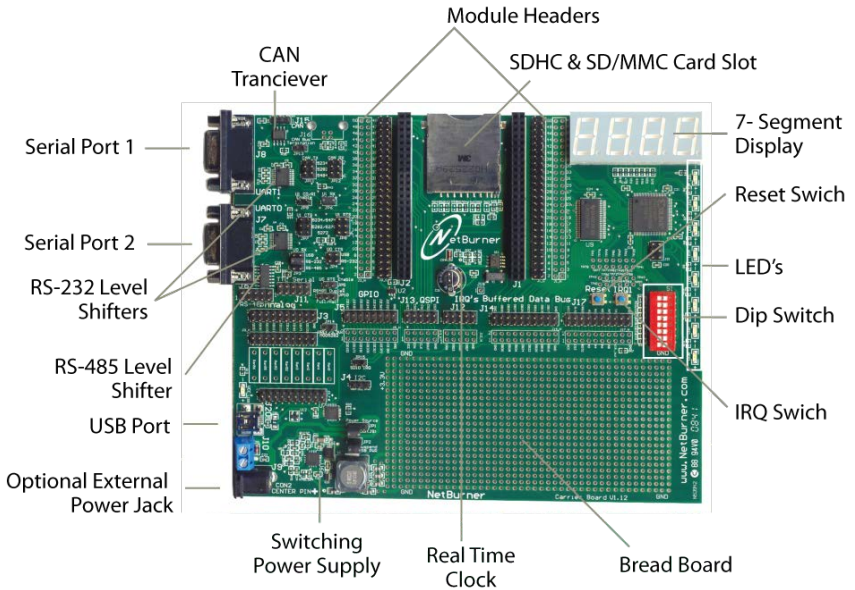
For specific hardware information please read your Hardware User's Manual (located in C:\Nburn\docs\platform).

All documentation is located in your C:\Nburn\docs directory.

- NBEclipse Getting Started Guide
- NNDK Programmer's Guide
- NetBurner Network Development Kit (NNDK) User Manuals provide information on the RTOS and TCP/IP Libraries
- Hardware Manual
- Embedded Flash File System (EFFS) Programmer's Guide

## Kit Contents

- NetBurner Carrier board and module. The picture below shows the carrier board. To install the module, insert it in the two 50-pin sockets above the SD card connector, **with the module's RJ-45 Ethernet jack pointing to the outside edge of the carrier board**



- NetBurner Tools CD-ROM
- Standard Serial Cable
- Standard Ethernet Cable (blue)
- Cross-Wired Ethernet Cable (red)
- USB cable for power and serial communications
- Jumpers
- Quick Start Guide

## **Kit Software**

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

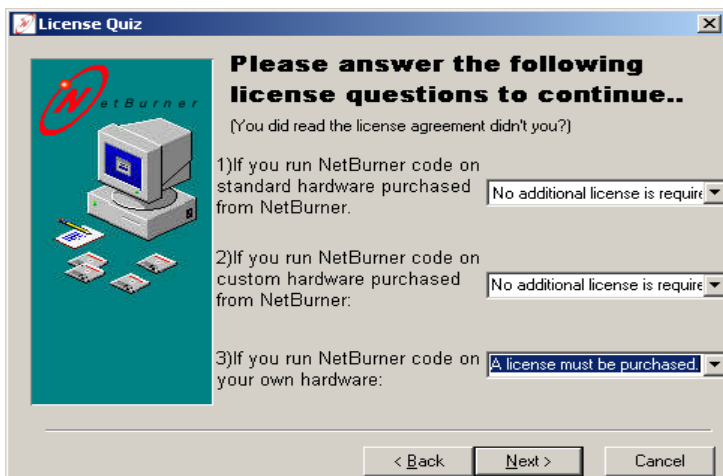
- The NetBurner TCP/IP Stack
- The NetBurner Web Server
- The NetBurner Real-time Operating System based on uC/OS
- The GNU C/C++ (Fully ANSI Compliant) Compiler and Linker
- The NBEclipse IDE with Integrated Debugger
- The NetBurner IPSetup Configuration Utility
- The NetBurner AutoUpdate FLASH Update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

NetBurner also provides a Royalty Free License, SSL, and SNMP for an additional charge. Please contact [Sales@NetBurner.com](mailto:Sales@NetBurner.com) for more information on purchasing any of these options.

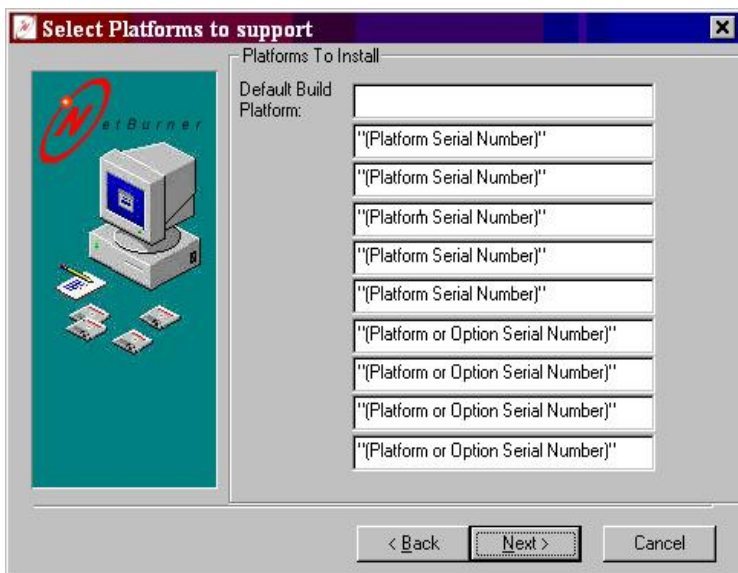
## **Installing the NetBurner Software**

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 Quiz 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. Remember to click the Next button when finished with each screen.



When the Select Platforms to support screen appears, click in the text box, and type the Serial Number (located on your CD jacket). 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.

## **Obtaining an IP Address**

To get your application up and running as quickly as possible, you must first have an IP Address for both your host computer and your NetBurner module. The NetBurner factory default program supports both Static and DHCP (Dynamic Host Configuration Protocol) assigned IP Addresses. Note: The factory default is DHCP.

### **Static IP Address**

If you are part of an existing network and want to use a Static IP Address, you must get the address from your network administrator. If you are connecting your NetBurner module to a single computer, or if you are on an isolated network, you should select one of the reserved IP Addresses

### **Dynamic IP Address (DHCP)**

When the factory default application boots, it will first attempt to obtain an address from a DHCP Server. If you are connected to a network with a DHCP Server, the IP Address, Subnet Mask, and Gateway should be configured automatically.

## Development Board Jumper Settings

Your development board has jumper locations to select the power source and serial communication channel.

The factory jumper settings configure the USB port to be used for both power and UART0 serial communications. The instructions below use the notation “1-2” to signify connecting a jumper between jumper header pins 1 and 2, “2-3” to signify pins 2 and 3, etc. Some jumper headers have only 2 pins. The word “open” signifies no jumper is to be installed.

### Power Source Jumpers, JP1 and JP2

USB: JP1 (1-2), JP2 (1-2)

Optional external power supply on J9 or J10: JP1 (2-3), JP2 (open)

### Debug Port UART0 RS-232 Jumper, JP3

USB: JP3 (1-2)

DB9 J7: JP3 (3-4)

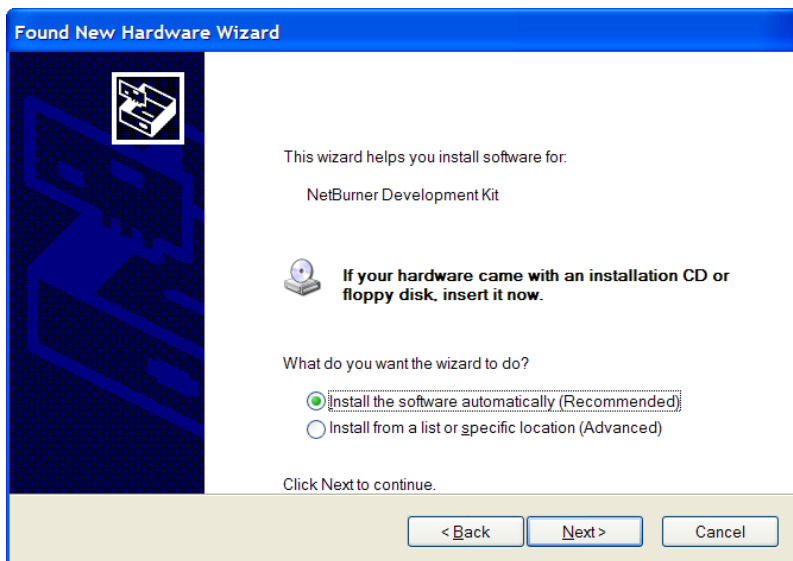
## Running the NetBurner Factory Program

1. Get a Static IP Address or decide to use DHCP (factory default).
2. Install the NetBurner Development Tools on your host computer (Windows XP or Vista).
3. If you are part of an existing network, or are using a hub: Use the blue RJ-45 patch cord to connect your NetBurner module to an unused network jack or hub port. Warning: You can not 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 directly to your host computer: Use the red RJ-45 patch cable to connect your NetBurner module to your host computer. Warning: You can not use the red patch cable to connect to a network hub or existing network jack.

5. The NetBurner USB driver was automatically installed during the installation of the NetBurner NNDK. If you cancelled the USB driver installation, you should run the executable in nburn\NetBurnerUSB\_DriverInstall.
6. Connect the USB cable to the MINI USB socket on the development board, and to a standard USB connector on your host computer. The first time you power-up the development board your computer will recognize a new USB device and display a configuration screen. Complete the questions a directed below.

Optional: If you purchased the optional external power supply, connect by inserting the P5 male connector on the power supply cord into the P5 female connector on the development board.



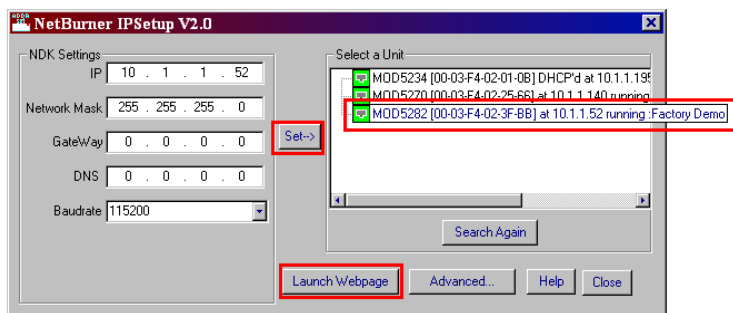


If you receive a warning message about registered windows drivers, select “Continue Anyway”.

7. Execute the NetBurner IPSetup program. From the Windows Start Menu, select: Start → Programs → Netburner NNDK → IP Setup tool. If you used the default installation settings, this program is located in the C:\Nburn\pctools\ipsetup directory.
8. The IPSetup program will automatically locate all NetBurner devices on your network. Note: If more than one NetBurner device appears in the IPSetup window, select your module by matching the MAC address displayed in IPSetup with the MAC address label located on the module. Warning: If IPSetup cannot locate your NetBurner device, your firewall may be blocking communications. Try disabling the firewall, or enable UDP and TCP on port 20034.
9. If using a Static IP Address: Enter your IP Address and Network Mask in the corresponding IPSetup text boxes. For example, if you are on an isolated network, the IP Address could be 10.1.1.52 and the Network Mask could be 255.255.255.0 (as

shown below). Remember to click the Set button to send (and save) the modifications into your NetBurner module when you are finished.

10. If using DHCP (factory default): Verify that the IP address and mask have been set.
11. Your NetBurner module is now configured (as shown below).
12. Click the Launch Webpage button in the IPSetup GUI to view the NetBurner factory web pages using the browser of your choice.
13. If the above steps are not working correctly, you can view the module status messages by running the NetBurner MTTTY serial dumb terminal program and connecting to either the USB serial connection, or the UART0 serial port DB9 connector. These two devices are jumper selectable.



## The NetBurner Network AutoUpdate Utility

NetBurner's AutoUpdate is the fastest way to download your application to your NetBurner module. AutoUpdate can be run as a stand-alone windows utility to update your code in the field. It is also the mechanism used by the NBEclipse development environment to update your device during development.

AutoUpdate can be run from Windows (Start → Programs → Netburner NNDK → Auto Update Tool), from the IDE, or from a command prompt. If run without options, a dialog box will appear. If run with options, no user intervention is required. There are various options that can be selected, but the complete functionality is as follows:

- Download the code image over Ethernet to your NetBurner module
- Program the code image into FLASH memory
- Reboot your NetBurner module

## Serial RS-232 Downloads

NetBurner provides a simple high performance serial communications program called MTTTY. MTTTY used primarily to monitor status messages from the NetBurner device during development or debugging. You can use either the USB or RS-232 Serial connection with MTTTY. The following sections also assume that you have correctly set up your NetBurner hardware.

1. Attach either the supplied USB cable or serial cable from the J7 DB9 connector on your development board to your host computer.
2. Start the MTTTY program (From Windows: Start → Programs → Netburner NNDK → MTTY 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, and click the Connect button (the button name will change to Disconnect after it's clicked).
3. Reset your NetBurner hardware by pressing the reset button on the development board. You will see the message "Waiting 2 sec to start 'A' to abort" in the MTTTY window.
4. Before the time period expires, type an A (i.e. an uppercase A) in the MTTTY window and the Boot Monitor prompt (i.e. nb>) will appear.
5. At the nb> prompt, type the command FLA (FLA stands for FLASH Application) and press the Enter key. A Send File Window will appear.
6. Next, navigate to the directory where your \_APP.s19 application file is located.
  - NB Eclipse: The \_APP.s19 file is located in your project's release directory.

- NetBurner's Dev C++ or Command Line: The \_APP.s19 file is in your C:\Nburn\bin directory.
  - NetBurner Factory Examples: The \_APP.s19 (example) files are located in your C:\Nburn\
7. Send this file to your NetBurner module. This can be done with MTTY by selecting the Send option from the Transfer pull down menu, or by pressing the F5 key on your keyboard.
  8. As your download progresses, "\*\*\*\*\*" characters will appear in the MTTY window, and the progress bar in the lower left hand side of the window will move towards the right. When the download is finished, the Boot Monitor will automatically reprogram the application area of the FLASH and reset your NetBurner module. 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.

## **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](mailto:Sales@NetBurner.com) for more information on any of our services.

Our services include:

- Hardware Design
- Firmware Design
- Software Applications in C, C++, and JAVA
- Schematic Capture
- PCB Layout
- Turnkey add-on boards to your specifications
- Consulting on product design definition
- Rapid Prototyping
- Low and High Volume Production

## **Technical Support**

Your NetBurner Network Development Kit purchase includes 90 days of free email support and software updates. In order to submit technical support requests, you must register your NetBurner Network Development Kit at: <http://Support.NetBurner.com>. Registration is quick and easy. The registration data stored on NetBurner's server will not be sold, exchanged, or knowingly released to third parties without prior written permission from the individuals affected.

## **Software Licensing**

The Software included in your NetBurner Network Development Kit is licensed to run only on NetBurner provided hardware. Please

read the license.txt file located (by default) in your C:\Nburn\docs directory.

If your application involves manufacturing your own hardware, please contact Sales@NetBurner.com for details on a royalty-free software license.

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