SBL2e-Eval Quick Start Guide

NetBurner, Inc

Contents

1   Introduction

1.1   Quick Start Guide Overview

The NetBurner Network Development Kit (NNDK) is designed as a complete development platform for NetBurner's hardware devices. This quickstart guide will help with the installation of the NetBurner software, hardware setup and accessing the factory application running on the device.

1.2   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 \Nburn\docs directory.

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

1.3   Kit Contents

- Quick start guide
- SBL2e Device
- SBL2e Carrier Board
- SBL2e Carrier Board Connector Ribbon
- Mini USB Cable for power and/or serial communication
- Serial Cable
- Standard Ethernet Cable (Blue)
- Crossover Ethernet Cable (Red)

1.4   SBL2e

The SBL2e Development Kit is designed as a complete evaluation platform for NetBurner's SBL2e board with 2 UART serial interfaces, four 12-bit

analog to digital inputs, up to 10 general purpose I/O and 10/100 Ethernet support.
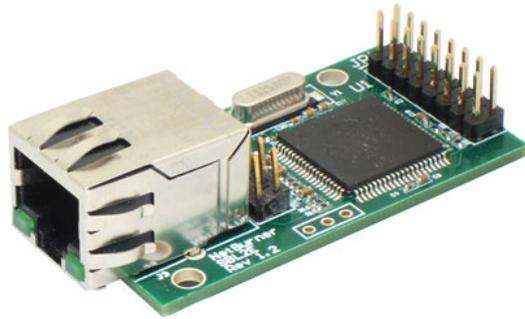
Figure 1: SBL2e

Features

- 2 DB9 RS-232 Serial Ports

- RS-485 header

- USB port

- RJ-45 Ethernet Jack

- Reset Button

- SBL2e-100IR interface connector

- SBL2e-200IR interface connectors

- Power via USB port or barrel connector

2   Software Installation

3   Running the Factory Application

3.1 Plug in the Module

After installating the NNDK software, it's a good idea to plug in your module and connect to it to verify that the network and USB driver are properly configured.

To proceed, carefully insert the NetBurner module in to the SBL2e carrier board.

Note

A crossover cable is not required in any network configuration. The network PHY includes Auto MDI/MDIX, which will automatically adjust to make link over both crossover and straight-through cable types.

3.2 Network Setup

Once your device is powered on and plugged in to the network, you may need to configure the network settings of the device. If a DHCP server in running on the local network, then the module will automatically use the DHCP server when the factory application is running.

3.2.1 Dynamic IP Address (DHCP)

When the factory 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, then the device IP address, network mask and gateway should be configured automatically. If your PC is on the same DHCP network, you will be able to communicate with the device after a short boot period of 2-3 seconds.

3.2.2 Static IP Address

If the module is plugged in to a network that does not have a DHCP server, you must provide a static IP address, network mask and gateway. These addresses should be provided by your network administrator. Ensure that the IP address and mask selected are able to communicate with the static IP settings of your PC.

3.2.3 Auto IP Address (APIPA)

The default factory application contains an auto IP negotiation system. This allows the device to automatically configure its address in the absence of a central DHCP server, and without the need or a static IP address. This scheme is utilized as a fallback that will activate when both dynamic and static IP addresses fail to initialize. In order to communicate with a device in auto IP mode, the host system must support auto IP. auto IP support is included in both Windows and OS X operating systems. By default, auto IP addressing starts in the 169.XXX.XXX.XXX address range.

The factory application that is included with the NetBurner module includes a simple web page, network configuration options and a demo of some of the hardware available on the device.

3.3 Find your Device

To begin, you will need to find out the IP address of your module. There are several ways to do this. One option is to use the included utility IPSetup. If the device is powered on and plugged in to the same network as your PC, run IPSetup and all NetBurner devices on your network will be displayed with configuration options available.

Another option to find the IP address of your device is to use the NBEclipse IDE. As before, ensure that your device is powered on and plugged in to the same network as your PC. Open NBEclipse, and in the bottom left of the workspace, NBFind can be found running. This will list the IP, application and MAC address of all NetBurner devices on your local network.

If these options are failing, there may be a firewall issue blocking the applications from sending the UDP broadcast that is used to locate NetBurner devices on the network. Always grant NetBurner applications the ability to get through your OS firewall. Ensure that UDP port 20034 is open for use.

3.4 View the Web Page

The factory application is running a web server with a basic web page detailing some of the features of the device and development board. Once you have found your device's IP address, open your favorite browser and point it at the IP address of the device.

3.5 Develop your own Application

Now that the NetBurner tools are installed, the hardware is set up and you have verified this by accessing the device's web server. You have now graduated beyond this quick start guide.

To begin writing an application, we recommend reading through the NBEclipse Getting Started guide and the NetBurner Programmers Guide. In the NBEclipse guide, you will find information on writing NetBurner applications, sending new applications to the module and debugging with the graphical debugger. The Programmers guide will teach you more about the NetBurner libraries, operating system, and writing of applications in a multitask environment. Both of these documents can be found in the \nburn\docs folder of your NNDK software installation.

3.6 NetBurner Examples

The NNDK includes a multitude of examples that demonstrate the various hardware and software applications of the kit. These examples can be found in your NNDK installation directory, under the examples folder. The default location is \nburn\examples.

4 Hardware Errata

4.1 Jumper Descriptions

Jumper	Description	Configuration
JP1	UART1 RS-485 disabled	No Jumper
JP1	UART1 RS-485 enabled	Jumper
JP2	Power - USB	[1 2] 3
JP2	Power via external power jack	1 [2 3]
JP3	UART0 RX - DB9 Connector	[1 2] 3
JP3	UART0 RX - USB Connector	1 [2 3]
JP4	UART0 CTS - DB9 Connectort	[1 2] 3
JP4	UART0 CTS - USB Connector	1 [2 3]
JP6	UART1 RS-485 echo enabled	No Jumper
JP6	UART1 RS-485 echo disabled	Jumper

Jumper Descriptions

4.2 Power the Development Board

All NetBurner development boards are designed to be powered by a standard micro USB cable or a 7.5V DC power supply. The development board is shipped in a state designed to be powered by USB. To change the power mode, set the JP2 jumper to the desired position described above.

4.3 UART 0-2 Data Routing Configurations

The default setup for UART 0, 1, and 2 is USB connector, RS-232 D-B9 connector, and RS-485 connector, respectively. If you would like to connect to the UARTs directly, they can be accessed through the Mini PCI

express (P3) connector by configuring their respective jumpers. RS-485 Duplex Mode is selectable in software

Mode	Jumpers Enabled	Jumpers Removed
UART0 via USB	JP3[1-2],JP4[1-2]	JP1
UART0 via DB9	JP3[2-3],JP4[2-3]	JP1
UART0 RS-485 Half Duplex	JP1	N/A
UART0 RS-485 Full Duplex	JP1	JP6

Jumper Mode. Note - Power must be selected in all modes JP2[1-2] or JP2[2-3]

4.4   Hardware Pin Guide

There are two 20-pin headers; one is populated with a 0.1" dual row male header and the other is not populated. The unpopulated position has the same signals, and it intended to be used for applications that may require the header on the non-component side of the board assembly. For additional signal information, please refer to the SBL2E-100CR datasheet. The J8 header should be used when interfacing a SBL2e-100IR module to the SBL2e evaluation board using the included ribbon cable. When using the SBL2e-200IR (without the RJ-45) you can simply plug the device into the J6 and J10 sockets on the evaluation board.

4.5 SBL2e-100 Interface Connector Pinout

Pin	Signal	Pin	Signal
1	U0_TX	2	U0_RX
3	UX_RTS	4	U0_CTS
5	VCC 3V	6	GND
7	A0	8	AN1
9	A2	10	A3
11	GND	12	U1_RX
13	U1_TX	14	SCL
15	SDA	16	RSTI

J8 Interface Connector Pinout

4.6 Serial RS-232 Connector Pinouts

Pin	Signal	Pin	Signal
1	No Connect	6	Short to 4
2	TX	7	CTS
3	RX	8	RTS
4	Short to 6	9	No Connect
5	Ground	N/A	N/A

DB-9 UART0

Pin	Signal	Pin	Signal
1	No Connect	6	Short to 4
2	TX	7	Short to 8
3	RX	8	Short to 7
4	Short to 6	9	No Connect
5	Ground	N/A	N/A

DB-9 UART1

4.7   RS-485 Connector Pinouts

The JP5 header provides RS-485 signal levels for UART 0. In the following table HD = Half Duplex and FD = Full Duplex

Pin	Signal	Pin	Signal
1	RX- (FD)	2	GND
3	RX+ (FD)	4	GND
5	VCC 3.3V	6	GND
7	TX+ (FD/HD)	8	GND
9	TX- (FD/HD)	10	GND

UART0 RS-485

For the most up to date pin references and schematics, visit the product page for your device at http://www.netburner.com

5   Disclaimers

5.1   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.

5.2   Anti-Piracy Policy

NetBurner, Inc. vigorously protects its copyrights, trademarks, patents and other intellectual property rights.

In the United States and many other countries, copyright law provides for severe civil and criminal penalties for the unauthorized reproduction or distribution of copyrighted material. Copyrighted material includes, but is not limited to: computer programs and accompanying sounds, images and text.

Under U.S. law, infringement may result in civil damages of up to $150,000, and/or criminal penalties of up to five years imprisonment, and/or a $250,000 fine. In addition, NetBurner, Inc. may seek to recover its attorneys' fees.