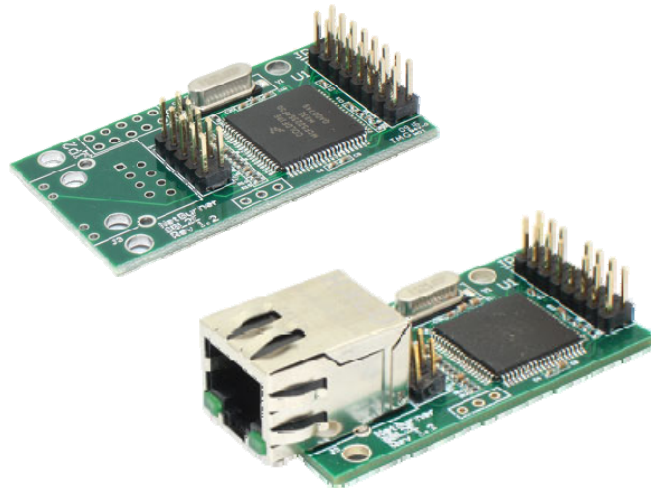


Evaluation Kit

SBL2e Quick Start Guide

Rev 1.1

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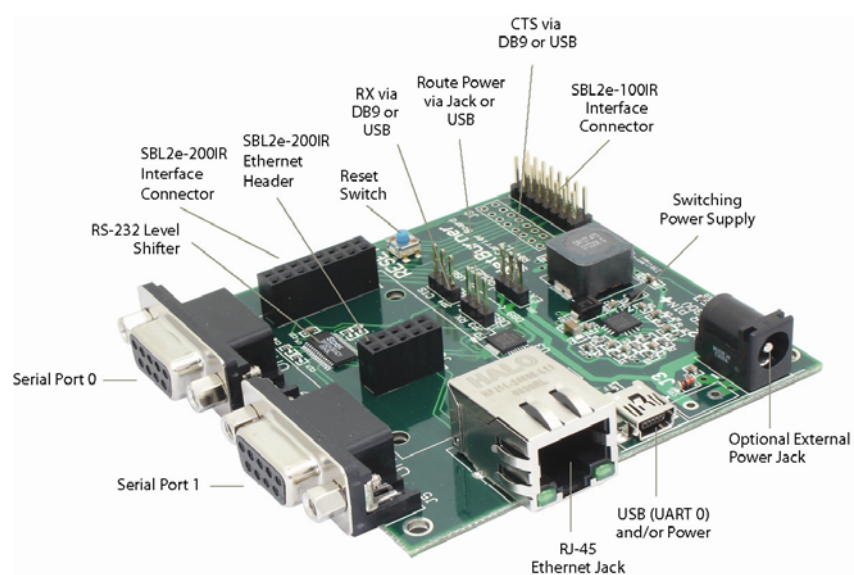
Introduction

The SBL2e Evaluation 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.

SBL2e Carrier Board

The hardware features on the SBL2e carrier board help you evaluate your peripheral connectivity (UART, A/D inputs, digital I/O, 10/100 Ethernet) and to configure the SBL2e. DB9 connectors use the onboard RS-232 level shifter enable devices to quickly connect via the serial ports. Extension headers make it easy to connect to a daughterboard or wrapping board for your specific application. The USB port can be used to monitor serial port 0 data and/or to power the board.

Figure 1. The SBL2e carrier board layout



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Overview

Features

- Two power supply options: USB or optional external power supply
- Two DB9 RS-232 Serial Ports
- USB port
- RJ-45 Ethernet Jack
- Reset Button
- SBL2e-100IR interface connector
- SBL2e-200IR interface connectors
- RoHS Compliant

Kit Contents

- Quick start guide
- SBL2E-200IR Serial to Ethernet Module
- SBL2E adapter board with RS-232 level shifter
- USB Cable (for power and/or serial communication)
- Standard Ethernet Cable (blue)
- Cross-wired Ethernet Cable (red)
- Standard Serial Cable
- Documentation and software on CD-ROM
- RJ-45 Ethernet Jack



Software and Documentation CD-ROM

- AutoUpdate FLASH Update Utility
- IPSetup Configuration Utility
- SBL2e binary (s19 file)
- MTTTY Serial Terminal
- USB Driver
- Users Manual for the NetBurner SBL2e

Download the Public NetBurner Software

The software for this kit is included in the documentation and software CD-ROM or it can also be downloaded from the NetBurner website. This software is publically available only for use on NetBurner devices.

- AutoUpdate Tool
- IPSetup Tool
- MTTTY Serial Terminal Program

NetBurner Public Software Downloads Webpage:
http://www.netburner.com/support/public_downloads.html

No installation is necessary – simply download, unzip, and run the application executables.

Kit Documentation and Online Resources

The users manual is included on the software and documentation CD-ROM, but can also be downloaded from the SBL2e webpage.

NOTE: Additional appnotes, schematics, and pinouts can be found on the SBL2e product webpage and the SBL2e section in the technical documents section of the website.

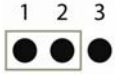
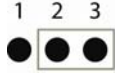
SBL2e product webpage:
http://www.netburner.com/products/serial_to_ethernet/sbl2e.html

SBL2e Support Technical Documents:
http://www.netburner.com/support/technical_documents.html

Power Supply

The SBL2e carrier board is designed to be powered by a standard USB port or a 7.5V DC power supply. It is possible to configure the carrier board to use one of the following sources for the power supply.

Table 1. Power Supply Routing Options

Jumper	Description	Configuration
JP2	External P5 power jack (J2)	
	USB (J4) (Default)	

Reset Source

The reset button on the SBL2e carrier board is labeled RESET.

Input Power, P5 Jack (J2)

Input power jack. The center pin is positive.

USB Driver Installation

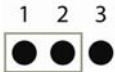
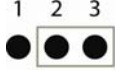
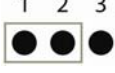
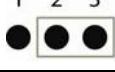
The SBL2e evaluation board USB serial interface requires the installation of the NetBurner USB virtual comm port driver. To install the driver, execute the installation file located on the CD-ROM: \USB\NburnUSBVCP_installer.exe.

USB or UART0 RS-232 Serial Ports

Serial port 0 data can be routed through the USB or DB9 by setting JP3 and JP4. UART 1 RS-232 data can only be accessed from the DB9 connector (J5).

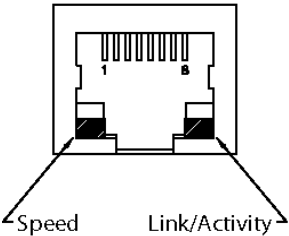
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Table 2. USB or UART 0 Data Routing Options

Jumper	Description	Configuration
JP3	For RX data from UART 0 DB9 (J7)	
	For RX data from USB (J4) (Default)	
JP4	For CTS data from UART 0 DB9 (J7)	
	For CTS data from USB (J4) (Default)	

Ethernet Connector

Figure 2. RJ-45 Ethernet Connector

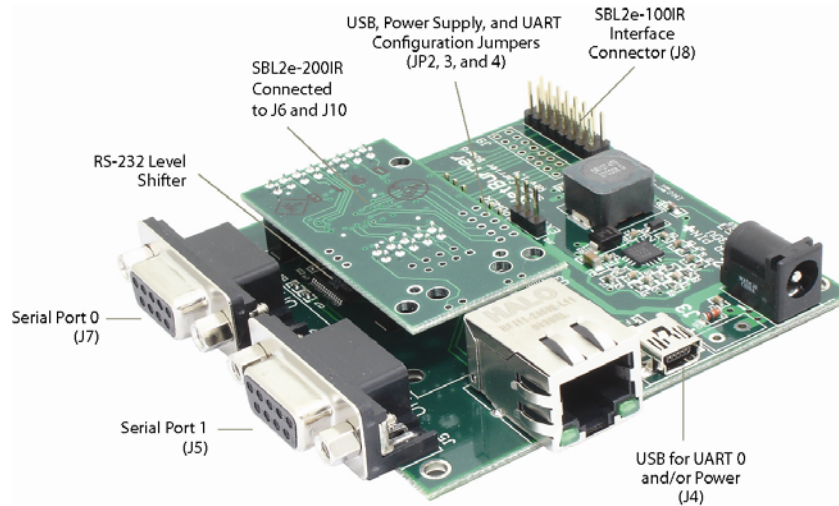


LED1: Speed: 10 MB (off) or 100 MB (on)
LED2: Link/Activity

Hardware Setup

- If you have an SBL2e-100IR (the version with the integrated RJ-45 Ethernet jack): Connect your SBL2e-100IR to the carrier board with the short 16-pin ribbon cable that was included with the kit. Note: The 16-pin header is labeled as J8 on your adapter board.
- If you have an SBL2e-200IR: Plug your SBL2e-200IR into the Interface Connector (J6 and J10).
- There are 2 UARTs on the module. UART0 is routed to the USB port and to DB9 connector labeled "UART0". UART1 is routed only to the DB9 connector labeled "UART1". Signals on the DB9 connectors are at RS-232 electrical levels. The default mode for UART0 serial communication is through the USB port. Jumpers JP3 and JP4 are used to select between the USB and DB9 connectors.

Figure 3. The SBL2e carrier board with SBL2e-200IR



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 SBL2E. The NetBurner factory default program supports both Static and DHCP

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(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 SBL2E 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.

Running the NetBurner Factory Program

If you have not already done so, connect your SBL2E to the adapter board. Note: You must have an IP address for your host computer.

Power the carrier board by either connecting the USB port to a computer USB port or inserting the P5 male connector on the power supply cord into the P5 female connector on the carrier board assembly.

If you are part of an existing network, or are using a hub - Use the blue RJ-45 patch cable to connect your SBL2E 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.

If you do not have a hub and want to connect your SBL2E 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.

If using a power supply instead of USB power, plug it into a working electrical outlet.

Execute the IPSetup utility (located on the included software and documentation CD-ROM, or downloadable from the NetBurner website).

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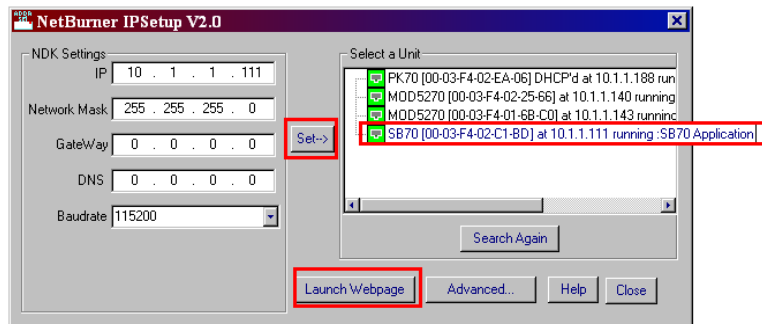
The IPSetup utility will automatically locate all NetBurner devices on your network. If more than one device appears, select your SBL2E by matching the MAC address displayed in IPSetup with the MAC address label on your SBL2E board.

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 SBL2E board. If you are using DHCP, verify that the IP Address and Mask have been set.

Your SBL2E is now configured (as shown below).

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

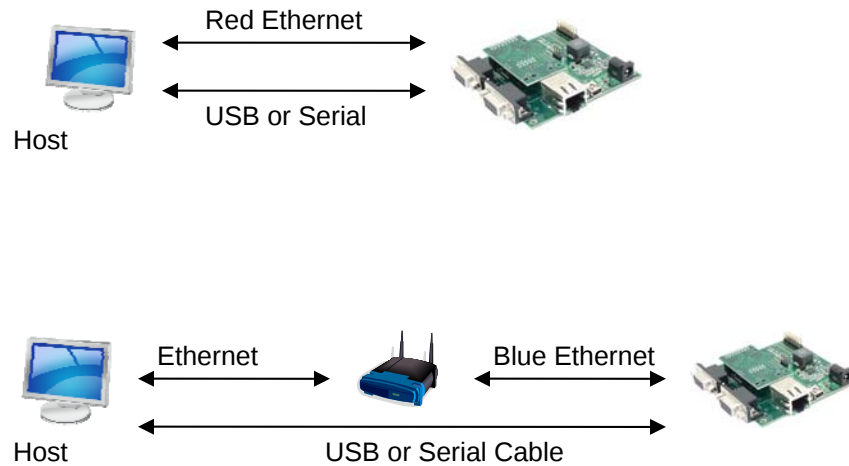
Figure 4. NetBurner IPSetup Application



Testing with a Telnet Connection

A quick way to test the functionality of your Serial-to-Ethernet connection is with the Telnet program and an Serial Terminal Program, such as the NetBurner MTTY program included on the CD-ROM. To run this test, configure your system as one of the two examples shown below. The Red Ethernet cable is a cross-wired cable that can be used for a direct connection without a network hub/switch. The Blue Ethernet cable is a standard straight-through Ethernet cable that should be used if you have a network hub/switch.

Figure 5. Network and Serial Cable Setup



The objective of this example is to use a single host computer running telnet and a serial terminal program to send data in either direction. When you type text in the telnet window, it should appear in the serial terminal window and visa versa.

In the following example, an IP Address of 10.1.1.79 is be used for the SBL2e. Replace this IP address with the actual IP Address of your SBL2e.

Telnet to Serial Test Procedure

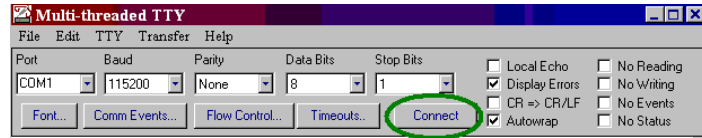
Connect your hardware in one of the above configurations. Open a command prompt window on your host computer. Verify everything is connected correctly by executing the command "ping 10.1.1.79" and pressing the Enter key on your keyboard (remember to substitute your actual IP Address)

Run either HyperTerminal or MTTTY. Set the baud rate to the value you assigned to the SBL2e during configuration (default is 115,200). To use MTTTY:

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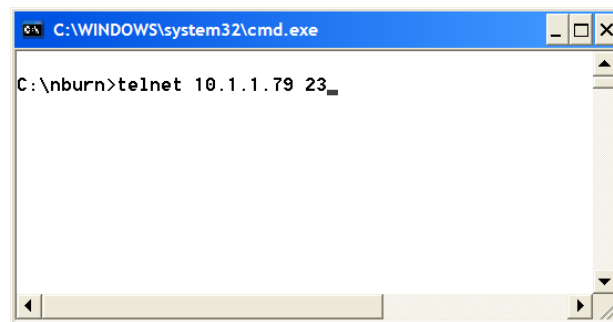
Run MTTTY.exe, you should see the screen below. The Port setting is the PC serial communication port of your host computer. Click the MTTTY Connect button.

Figure 6. NetBurner MTTTY Serial Terminal Application



In your command prompt window, run Telnet by typing: "telnet 10.1.1.79 23" after the prompt, and press the Enter key. The "23" is the network port number of the SBL2e that is listening for incoming connections. This example syntax uses the default value of 23 for SBL2e serial port 0, which is connected to the USB serial interface and to the SBL2e serial port 0. If you have modified the listening network port number in the SBL2e web interface, replace this port number with the listening port number that you assigned.

Figure 7. Windows Command Prompt



At this point, anything you type in the Telnet window should appear in the serial terminal window and vice versa.

SBL2E Interface Connector Pinout

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.

Table 3.J8 Interface Connector Pinout

Pin on J8	Signal Description	Pin on J8	Signal Description
1	U0_TX	2	U0_RX
3	U0_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

Adapter Board Connector Pinout

J7 Provides RS-232 signal levels for UART 0. Null modem configuration.

Table 4. RS-232 UART 0, DB-9 Female

Pin on J7	Signal Description	Pin on J7	Signal Description
1	NC	2	TX
3	RX	4	Short to 6
5	GND	6	Short to 4
7	CTS	8	RTS
9	NC		

J5 Provides RS-232 signal levels for UART 1. Null modem configuration

Table 5. RS-232 UART 1, DB-9 Female

Pin on J5	Signal Description	Pin on J5	Signal Description
1	NC	2	TX
3	RX	4	Short to 6
5	GND	6	Short to 4
7	Short to 8	8	Short to 7
9	NC		

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.

Our services include:

Hardware Design

Firmware Design

Software Applications in C, C++, and JAVA

Turnkey add-on boards to your specifications

Consulting on product design definition

Technical Support

Your NetBurner Network Evaluation 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 Evaluation 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 Evaluation 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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NetBurner, Incorporated
5405 Morehouse Drive, Ste 200
San Diego, CA 92121
www.netburner.com