N e t B u r n e r
Networking in 1 Day!

NetBurner's Network Development Kit

SB72 Hardware Manual

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1. Introduction

NetBurner is your single source for hardware, software, development kits, tools, technical support, and custom design services. These elements are combined in a unique package that lets you concentrate on developing your product instead of reinventing network protocols and designing hardware.

NetBurner solutions also allow you to reduce risk and improve functionality with a complete proven design, including hardware, TCP/IP Stack, RTOS, and all necessary tools. NetBurner is indeed the fastest way to network enable your product.

Whether you want to design your own hardware, or are looking for a standard off-the-shelf network solution - NetBurner provides the software, hardware, and tools to get your product to market in the shortest possible time.

NetBurner offers a full line of services from board level designs and hourly consulting to complete turnkey systems. NetBurner also offers a Royalty-Free License option. Please contact our **Sales** Department for more information on any of these options.

Please ensure that your NetBurner SB72 Network Development Kit is registered by going to our **Support** site now to set up your account. 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.

2. Additional Documentation

- An SB72 (Hard Copy) Quick Start Guide
- All NNDK User's Manuals are located (by default) in C:\Nburn\docs
- An NNDK Programmer's Guide is located (by default) in C:\Nburn\docs
- An NBEclipse Getting Started Guide is located (by default) in C:\Nburn\docs
- All Freescale Manuals are located (by default) in C:\Nburn\docs
- All License Information is located (by default) in C:\Nburn\docs
- All GNU Information is located (by default) in C:\Nburn\docs

3. Overview

The NetBurner SB72 is a low cost high performance processor board that network-enable both existing and new product designs with 10/100BaseT Ethernet. Based on the Motorola ColdFire 5272 32-bit processor (with an integrated 10/100 Ethernet), this processor board has plenty of horsepower for the most demanding applications. For additional information on the MCF5272, please go to **Freescale**.

The SB72 processor board network-enable serial devices right out of the box. No programming or development is required!

The SB72 processor board is pre-programmed to convert RS-232 data to ethernet, enabling communication with your serial device over a network or the Internet. The on-board web server provides easy device configuration using a standard web server.

The NetBurner SB72 processor board is also a fully customizable platform. With your NetBurner SB72 Network Development Kit, you can create additional dynamic web page content, filter serial and network data, or write completely new custom applications.

Mount the SB72 on an application-specific motherboard, and you have a powerful processing platform that can function as the control processor for the product, or as a serial to Ethernet converter.

Your SB72 Network Development Kit includes the hardware platform, TCP/IP Stack, uC/OS Real-time operating system, Web Server, ANSI compliant GNU C/C++ Compiler and Linker, NBEclipse IDE with a fully integrated graphical debugger, end user device configuration, and flash update utilities. Please contact our **Sales** Department for more information.

3.1.   Hardware Features

- ColdFire 5272 32-bit processor running at 62MHz

- 10/100 Ethernet Port with RJ-45 connector

- Two UARTs that can be configured in the following ways:

    - **o** Two RS-232 ports without hardware handshaking
    - **o** One RS-232 port with hardware handshaking and one RS-485/422 port
    - **o** Two TTL Serial Interfaces
    - **o** One TTL port and one RS-232 port
    - **o** One TTL port and one RS-485/422 port

- 512 K Flash Memory with boot and application sectors

- 8 MB SDRAM

- Physical Characteristics:

    - **o** Board Dimensions: 3.25" x 2.0"
    - **o** 4 Mounting Holes: 2.0" x 0.125" diameter
    - **o** Weight: 1.1 oz

- Power: 480mA @ +5V DC

- Operating Temperature: 0 to 70 C

3.2.   Software Features

- Configuration through web browser, telnet, NetBurner's IPSetup utility, or SNMP (supports MIB-II).

- Password protection

- Firmware updates through network or serial connections

- Network Protocols Supported: ARP, DHCP, BOOTP, TCP, UDP, ICMP, Telnet, HTTP, and SNMP (**optional**)

- SSL Support (**optional**)

Please contact our **Sales** Department for more information.

4. Life Support Disclaimer

NetBurner's SB72 is **not** authorized for use as a critical component in life support devices or systems, **without** the express written approval of NetBurner, Inc. **prior** to use. As used herein:

1. Life support devices or systems are devices 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 device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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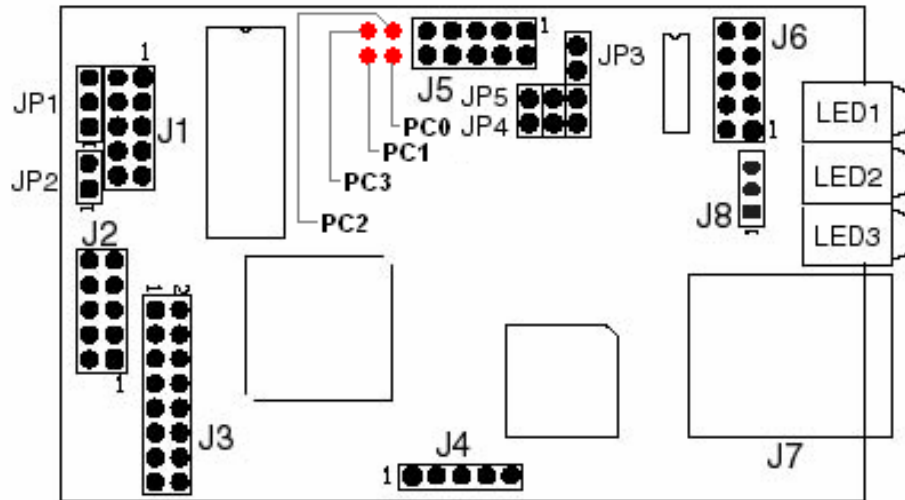5405 Morehouse Drive, Suite 200
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5. Hardware Specifications

5.1. Diagram

5.2. Memory Map

| Memory Region	Address Range	Region Description
Undefined	0x00000000 to 0x01FFFFFF	Undefined Area to Catch NULL Pointers
SDRAM	0x02000000 to 0x027FFFFF	The SDRAM
Unused	0x02800000 to 0x0FFFFFFF	Available to Programmer
MBAR	0x10000000 to 0x1000FFFF	The 5272 Internal Register Mapping
Unused	0x10010000 to 0x1FFFFFFF	Available to Programmer
RAMBAR	0x20000000 to 0x20000FFF	The 5272 Internal Static RAM
VBR	0x20000000 to 0x200003FF	The 5272 Vector Base Register
Unused	0x20002000 to 0xFFBFFFFF	Available to Programmer
Start of FLASH	0xFFC00000	Start of FLASH Memory
FLASH Monitor	0xFFC00000 to 0xFFC03FFF	The Boot Monitor
Monitor Params	0xFFC04000 to 0xFFC05FFF	Monitor Parameter Storage
User Params	0xFFC06000 to 0xFFC07FFF	User Parameter Storage
Application Code	0xFFC08000 to ...	Compressed Application Code
End of FLASH	0xFFC7FFFF	For 512 K of FLASH Memory
	0xFFDFFFFF	For 2 MB of FLASH Memory

5.3. Chip Selects

Resource	Usage
*CSO	Used for Flash.
*CS1	Unused
*CS2	Unused
*CS3	Unused
*CS4	Unused
*CS5	Unused
*CS6	Unused
*CS7	Used for SDRAM.
IRQ1	Used internally for Ethernet.
IRQ2	Unused, but not exposed externally.
IRQ3	Used by Serial and PPP drivers; can be shared, but it is not exposed externally.
IRQ4	Unused, but not exposed externally.
IRQ5	Used for system timer tick.
IRQ6	Unused, but not exposed externally.
IRQ7	Unused, but not exposed externally

5.4. RJ-45 Connector

5.4.1. LEDs

1. LED 1: Ethernet speed: 10 MB (off) or 100 MB (on)
2. LED 2: Link/Activity
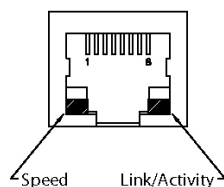
5.4.2. Pinout (J7) Information

Pin	Signal	Pin	Signal
1	TX+	5	----
2	TX-	6	RX-
3	RX+	7	----
4	----	8	----

5.5. Jumper Pins

5.5.1. J1 – Factory Test Connector

This connector is a dual row 10-pin header for factory use only.

5.5.2. J2 – RS-485 Connector

The RS-485 interface support full duplex (FD) and half duplex (HD).

Pin	Signal	Pin	Signal
1	FD RX **-**	2	GND
3	FD RX **+**	4	GND
5	NC	6	GND
7	HD **+**	8	GND
9	HD **-**	10	GND

5.5.3. J3 – Factory Test Connector

This connector is a dual row 16-pin header for factory use only.

5.5.4. J4 – SPI Interface Connector

This connector is a single row straight header.

Pin	Signal
1	GND
2	DOUT
3	CLK
4	DIN
5	/SPI_CS

5.5.5. J5 – Serial TTL Connector

This dual row 10-pin header connector allows access to TTL level serial ports 0 and 1. **Note:** Pin 9 is a VCC 5V input, which allows for a single connector interface with TTL serial and power to the SB72.

Pin	Signal	Pin	Signal
1	GND	2	CTS1
3	TX1	4	RX1
5	RTS1	6	RTS0
7	CTS0	8	TX0
9	5V	10	RX0

5.5.6. J6 – Serial RS-232 Connector

This dual row 10-pin header connector provides RS-232 level signals for Channel 0 and Channel 1, or RS-232 levels with hardware handshaking for Channel 1.

Pin	Signal	Pin	Signal
1	NC	2	Short to 7
3	RX1	4	RTS1 or TX0
5	TX1	6	CTS1 or RX0
7	Short to 2	8	NC
9	GND	10	NC

5.5.7. J8 – Power Connector

This is a single row straight 3-pin header.

Pin	Signal
1	+5V
2	GND
3	+5V

5.6. Jumper Settings

The table below shows jumper settings to configure the 2 serial ports, channel 0 and channel 1, of the SB72.

WARNING: Incorrect jumper settings may result in damage to driver components.

Key: X = Don't care, Open = No connection, and Closed = Jumper pins

Jumper (JP)	TTL Ch 0	TTL Ch 1	RS-232 Ch 0	RS-232 Ch 1	RS-485 Ch 0 - HD	RS-485 Ch 0 - FD
JP1	OPEN	X	X	X	CLOSE 2-3	CLOSE 1-2
JP2	OPEN	OPEN	OPEN	X	CLOSED	CLOSED
JP3	OPEN	X	X	CLOSED	X	X
JP4	OPEN	X	CLOSE 1-2	RTS 2-3	OPEN	OPEN or 2-3
JP5	OPEN	X	CLOSE 1-2	CTS 2-3	OPEN	OPEN or 2-3

Note: RS-232 Operation: The SB72 can run **two** channels **without** hardware handshaking.

Important: If RTS **and** CTS are required, then **only** Channel 1 can be used. RTS and CTS are available at TTL levels on the J5 connector for both channels.