



NetBurner PK70 with 4-port Multi-mode Serial-to-Ethernet Option

User's Manual



Table of Contents

1	OVERVIEW	3
2	CONFIGURATION	4
2.1	HARDWARE SETUP	4
2.2	NETWORK CONFIGURATION	4
2.3	OPERATIONAL CONFIGURATION.....	5
3	NETWORK SETTINGS.....	6
4	DEVICE CONNECTION SETTINGS (TCP MODE)	7
5	ADVANCED SERIAL DATA PORT SETTINGS	9
6	DEVICE CONNECTION SETTINGS (UDP MODE).....	10
7	SERIAL CONFIGURATION	11
8	PASSWORD SETUP SECTION.....	14
8.1	RESETTING A PASSWORD	14
9	DIAGNOSTICS SECTION	15
10	SPECIFICATIONS	16
10.1	INPUT POWER REQUIREMENTS	16
10.2	POWER CONNECTOR.....	16
10.3	DB9 RS-232 CONSOLE PORT	16
10.4	RJ-45 CONNECTOR.....	17
10.5	MECHANICAL	17
10.6	DB37-TO-QUAD-DB9 SERIAL CABLE PIN-OUT	18
11	TERMINATION JUMPERS.....	19
12	NETWORK IP ADDRESS CONFIGURATION.....	20
13	WEB BROWSERS AND PROXY SERVERS	20
14	CUSTOM PROGRAMMING WITH THE NETBURNER DEVELOPMENT KIT	20

1 Overview

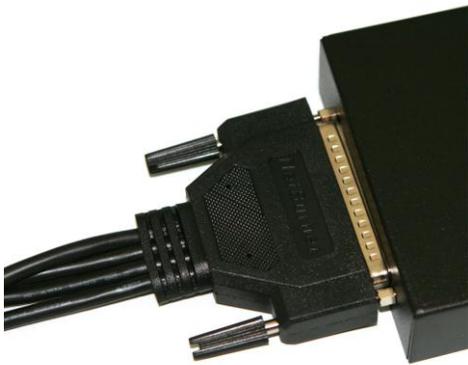
The NetBurner PK70 with the 4-port multi-mode serial-to-Ethernet blade board option can network-enable up to four serial devices in either RS-232 or RS-422/485 mode. The device is factory-programmed with an application that supports the TCP and UDP protocols, and a web page interface for configuration.



PK70 (Front)

The PK70 has five interfaces on the front panel:

- One 10/100 Ethernet port
- Two 7-24 VDC power connectors
- One MMC/SD Card slot
- One serial console port (UART 0 RS-232)



PK70 (Rear & Side)

The PK70 has one DB37 port on the rear panel and two LEDs on the side panel:

- NetBurner DB37-to-quad-DB9 UART cable adapter for serial ports 1 through 4
- Two bicolor red/green LEDs on side panel (not shown)

2 Configuration

Before you can begin using your PK70, the following steps are required:

1. Hardware setup
2. Network configuration
3. Operational configuration

You will need to tell your PK70 what type of serial interface you want to use, the network address you want your PK70 to respond to, the serial data baud rate, and the TCP/IP listening port number.

2.1 Hardware Setup

1. Connect the NetBurner DB37-to-quad-DB9 UART cable adapter to the DB37 port on the rear panel of the PK70 device, and then connect the individual DB9 connectors to one or more serial devices.
2. Connect the Ethernet cable to the Ethernet port.
3. Connect the external power supply.

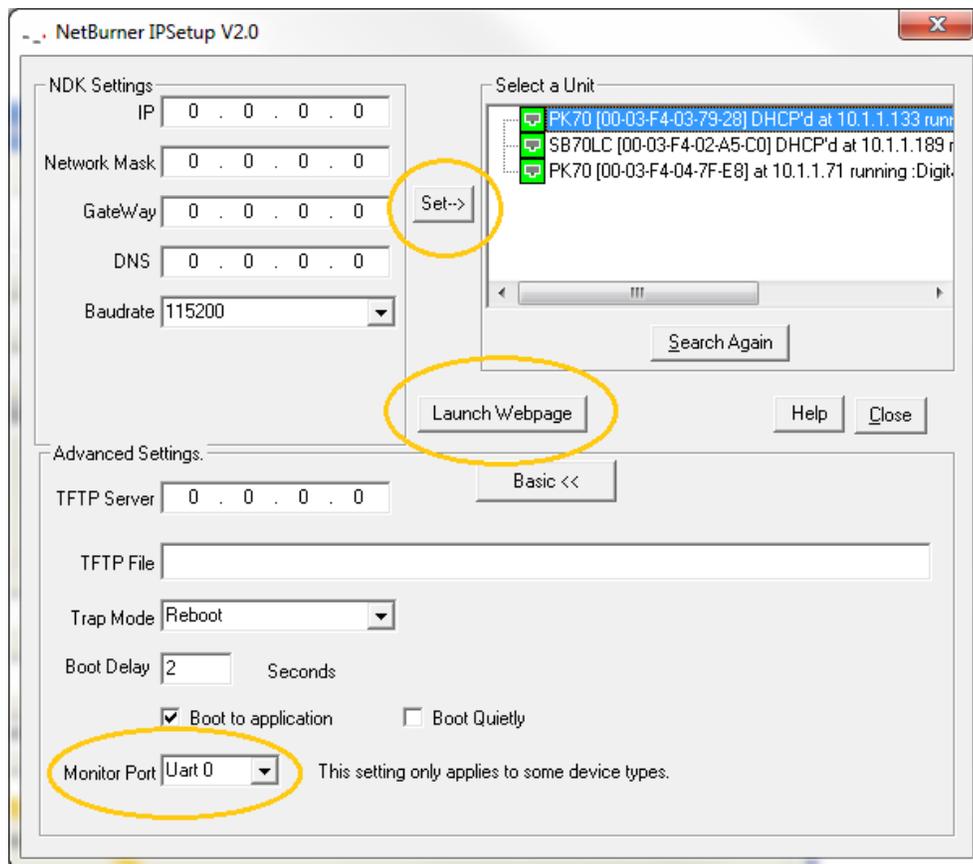
2.2 Network Configuration

The hardware configuration steps described above must be completed correctly before the software configuration can take place.

1. Run the IPSetup tool (IPSetup.exe) by double-clicking its icon. This application can be downloaded from the "Public Downloads" web page under the "Support" menu at www.netburner.com. To view the advanced settings, click on the "Advanced..." button (the button name will then change to "Basic <<"). In the screen shot example below, UART 0 is used as the monitor port.
2. Locate your PK70 device in the "Select a Unit" list box by matching its MAC address. The MAC address is located on the bottom of your PK70. If your PK70 device does not appear in the list box, then verify that the power LED and Ethernet speed and link LEDs are illuminated, and click the "Search Again" button. If you are still unable to see your PK70, remove power, correct any cabling errors, reapply power, and then click the "Search Again" button. Note: The IPSetup tool uses a UDP broadcast protocol similar to BOOTP and will not operate through a router.

Important: IPSetup uses UDP port number 20034. Most firewall programs will prompt you to allow a new application to use network services. If you cannot see your device in IPSetup, try disabling your firewall. If this corrects the problem, then you will need to add a rule to your firewall to allow IPSetup to use port 20034. Since IPSetup uses UDP broadcasts, the PC must be on the same LAN as the PK70 device.

3. If your network supports DHCP (factory default): the assigned IP address will appear in the "Select a Unit" list box. Write down this address. If your network does not support DHCP, configure the IP address and network mask fields as shown in the screen shot below. If you need help selecting values, then please read the "Network IP Address Configuration" section near the end of this guide. After you have entered all of your values, click the "Set→" button in the center of the IPSetup window to configure your PK70 with its new parameters. Note: If you do not click the "Set→" button, your values will not be saved. If you have multiple NetBurner devices, make sure you select your desired PK70 in the "Select a Unit" pane before you input your information as shown in the screen shot.



2.3 Operational Configuration

Once the network parameters have been configured, you can use the web server interface to modify the settings of your PK70. To access your PK70 device's configuration page, click on the "Launch Webpage" button in IPSetup or open a web browser and enter the numeric IP address in the address bar (e.g., <http://10.1.1.133>).

3 Network Settings

Below is a screen shot of the top section of the network configuration page that you will see when you first access the PK70 via the web browser. Remember to click the "Submit New Network Settings" button at the bottom of the page to save your settings. If you want to restore the PK70 to its factory default settings (DHCP), click the "Reset Everything To Factory Defaults" button.

Network

Device Name (for DHCP)

	Static Settings	DHCP Assigned Values
Device IP Address	<input type="text" value="0.0.0.0"/>	(10.1.1.133)
Device Subnet Mask	<input type="text" value="0.0.0.0"/>	(255.255.255.0)
Device Gateway	<input type="text" value="0.0.0.0"/>	(10.1.1.1)
DNS Server	<input type="text" value="0.0.0.0"/>	(66.75.160.15)

Syslog/UDP debug Port: Addr:

Syslog/UDP Debug will override any serial ports assigned as "Debug"

Parameter	Description
Device Name (for DHCP)	The name which identifies your PK70 device. Note that the last four values of the default name represent the last four digits of the device's MAC address.
Device IP Address	The IP address of your PK70 device. There are two choices: <ul style="list-style-type: none"> If "DHCP" is selected from the "Address Mode" drop-down menu, the PK70 will obtain its IP address information automatically from an available DHCP server, including the subnet mask, gateway, and DNS server (if applicable). This is the factory default. If "Static" is selected from the "Address Mode" drop-down menu, you will need to manually enter a static IP address in the appropriate text box under the "Static Settings" column as shown in the above screen shot.
Device Subnet Mask	If you are using a static IP address, then manually enter the subnet mask address in the appropriate text box under the "Static Settings" column as shown in the above screen shot.
Device Gateway	If you are using a static IP address, then manually enter the gateway address in the appropriate text box under the "Static Settings" column as shown in the above screen shot.
DNS Server	If you are using a static IP address, then manually enter the DNS server address in the appropriate text box under the "Static Settings" column as shown in the above screen shot.

4 Device Connection Settings (TCP Mode)

This is the bottom section of the network configuration page that you will see when you first access the PK70 via the web browser. Up to five serial-to-Ethernet connections can be configured on the network side in this section: four serial ports through the DB37-to-quad-DB9 UART adapter cable, and one serial port which is also used as the console debug port on the other end of the PK70 device.

	Port 1	Port 2
System is set to TCP mode Switch to CDF mode		
Listen for incoming network connections	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Listening network port:	<input type="text" value="23"/>	<input type="text" value="5001"/>
Timeout and disconnect after this many seconds of inactivity:	<input type="text" value="60"/>	<input type="text" value="60"/>
Allow new connections if the existing connection has been idle for this many seconds:	<input type="text" value="30"/>	<input type="text" value="30"/>
When to begin making outgoing network connections:	<input type="text" value="Never"/>	<input type="text" value="Never"/>
Connect on network port:	<input type="text" value="1000"/>	<input type="text" value="1001"/>
Connect to this address:	<input type="text" value="(Enter IP Address)"/>	<input type="text" value="(Enter IP Address)"/>
Timeout and disconnect after this many seconds of inactivity:	<input type="text" value="60"/>	<input type="text" value="60"/>
Retry failed outgoing connections after this many seconds:	<input type="text" value="600"/>	<input type="text" value="600"/>
Use custom TCP packetization logic (below)	<input type="checkbox"/>	<input type="checkbox"/>
Number of characters to accumulate before sending TCP packet:	<input type="text" value="32"/>	<input type="text" value="32"/>
Number of msec to wait for accumulated characters 0 waits forever:	<input type="text" value="100"/>	<input type="text" value="100"/>
Flush TCP frame when this character is received. (enter NA to disable):	<input type="text" value="NA"/>	<input type="text" value="NA"/>
	Setup Advanced serial messages.	Setup Advanced serial messages.
<input type="button" value="Reset All ports to default"/>	<input type="button" value="Submit New Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>

Firmware Version: PK70 Quad Multi-Mode Serial V1.1 Aug 6 2010

Your choices for when to begin making outgoing network connections are:

- on device power-up, or
- when data arrives on the serial side

When to begin making outgoing network connections:	Never	Never
Connect on network port:	Never	1001
Connect to this address:	On power-up	(Enter IP Address)
	If serial data received	(Enter IP Address)
	(Enter IP Address)	

When you are finished with this section, click the appropriate button at the bottom of the page. "Submit New Port N Values" (where 'N' is the designated port number) will save your settings, and "Reset All ports to default" will restore the factory values. Next, click on the "Setup Advanced serial messages" link to enter your serial notification information. You can ignore the unused port sections if you are not using all of them. Note: for the user's manual Telnet example, the listening network port number for "Port 1" is 23 (the default setting).

To view the advanced serial settings web page, click on its link at the bottom of the web page.

[Setup Advanced serial messages.](#)

5 Advanced Serial Data Port Settings

Advanced settings for Port 1			
<input type="checkbox"/>	Send serial message when TCP connection is established.	Message to send:	
<input type="checkbox"/>	Send serial message when TCP connection is lost. Message Formatting Codes	Message to send:	
<input type="checkbox"/>	Send serial break when incoming TCP connection is established.	Break interval (in tenths of a second):	20
<input type="checkbox"/>	Send serial break when incoming character is received (2-digit hex, i.e. "02"):	02	
<input type="button" value="Submit New Port 1 Values"/>			

If you want to have a message displayed in the MTTY window (or HyperTerminal) when your TCP connection (e.g., Telnet) is established or lost, enter it in this section. Remember to check the appropriate box and click the "Submit New Port N Values" (where 'N' is the designated port number) button to save your settings. The message formatting codes are listed below.

Message Formatting Codes	
Character	Data Item
%	Prints "%"
r	Line feed (ASCII 10)
n	Carriage return (ASCII 13)
x	Any hex value is %X20 (ASCII space)

When finished viewing message formatting codes, click the "Return to Setup Page" button to return to the advanced serial settings web page. You can ignore the unused port sections if not all of them are used.

6 Device Connection Settings (UDP Mode)

Return to the network web page by clicking on the "Network" link at the top of the advanced serial settings web page.



Click on the "Switch to UDP mode" link to go to the network configuration page for UDP. This link is located to the left of the "Port 1" label.



You will see the text "System is set to UDP mode" after you click the "Switch to UDP mode" link.

	Port 1	Port 2
System is set to UDP mode Switch to TCP mode		
Incoming network port:	<input type="text" value="23"/>	<input type="text" value="5001"/>
Outgoing network port:	<input type="text" value="1000"/>	<input type="text" value="1001"/>
Send output to this address:	<input type="text" value="(Enter IP Address)"/>	<input type="text" value="(Enter IP Address)"/>
Learn outbound address from last incoming packet	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Number of characters to accumulate before sending UDP packet:	<input type="text" value="32"/>	<input type="text" value="32"/>
Number of msec to wait for accumulated characters 0 waits forever:	<input type="text" value="100"/>	<input type="text" value="100"/>
Flush TCP frame when this character is received. (enter NA to disable):	<input type="text" value="NA"/>	<input type="text" value="NA"/>
<input type="button" value="Reset All ports to default"/>	<input type="button" value="Submit New Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>

When you are finished with this section, click the appropriate button at the bottom. "Submit New Port N Values" (where 'N' is the designated port number) will save your settings, and "Reset All ports to default" will restore the factory values. Enter your valid destination IP address as a numeric address separated by periods. The unused port sections can be ignored if not all ports are used.

7 Serial Configuration

Click the "Serial" link at the top of the page to view the serial configuration page. When you are finished, click the respective "Submit New Port N Values" button to save your changes.



[Network](#) [Serial](#) [Password](#) | [Diagnostics](#)

Serial Port Settings	Port 1	Port 2	Port 3	Port 4
Port Operating Mode:	RS-232	RS-232	RS-232	RS-232
Baudrate:	115200	115200	115200	115200
Data Bits:	8	8	8	8
Parity:	None	None	None	None
Stop Bits:	1	1	1	1
Flow Control:	None	None	None	None
<input type="button" value="Reset All ports to default"/>	<input type="button" value="Submit New Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>	<input type="button" value="Submit New Port 3 Values"/>	<input type="button" value="Submit New Port 4 Values"/>

Select the appropriate "Port Operating Mode" from the drop-down menu.

Serial Port Settings	Port 1	Port 2	Port 3	Port 4
Port Operating Mode:	RS-232	RS-232	RS-232	RS-232
Baudrate:	115200	115200	115200	115200
Data Bits:	8	8	8	8
Parity:	None	None	None	None
Stop Bits:	1	1	1	1
Flow Control:	None	None	None	None
<input type="button" value="Reset All ports to default"/>	<input type="button" value="Submit New Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>	<input type="button" value="Submit New Port 3 Values"/>	<input type="button" value="Submit New Port 4 Values"/>

Select the appropriate data "Baudrate" from the drop-down menu. Your host computer and your attached PK70 must agree on the same baud rate to use for the serial connection. The factory default is 115,200 bits per second.

Serial Port Settings	Port 1	Port 2	Port 3	Port 4
Port Operating Mode:	RS-485 Half Duplex, Echo Off	RS-232	RS-232	RS-232
Baudrate:	115200	115200	115200	115200
Data Bits:	8	8	8	8
Parity:	None	None	None	None
Stop Bits:	1	1	1	1
Flow Control:	None	None	None	None
<input type="button" value="Reset All ports to default"/>	<input type="button" value="Submit New Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>	<input type="button" value="Submit New Port 3 Values"/>	<input type="button" value="Submit New Port 4 Values"/>

Select the appropriate "Data Bits" value from the drop-down menu. The data bits are the number of bits in a transmitted data package (the default setting is '8' data bits).

Serial Port Settings	Port 1	Port 2	Port 3	Port 4
Port Operating Mode:	RS-485 Half Duplex, Echo Off	RS-232	RS-232	RS-232
Baudrate:	115200	115200	115200	115200
Data Bits:	8	8	8	8
Parity:	None	None	None	None
Stop Bits:	1	1	1	1
Flow Control:	None	None	None	None
	<input type="button" value="Reset All ports to default"/>	<input type="button" value="Submit New Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>	<input type="button" value="Submit New Port 3 Values"/>

Select the appropriate data "Parity" value from the drop-down menu. This feature checks whether data has been lost or written over when transmitted between your host computer and your PK70 (the default setting is "None").

Serial Port Settings	Port 1	Port 2	Port 3	Port 4
Port Operating Mode:	RS-485 Half Duplex, Echo Off	RS-232	RS-232	RS-232
Baudrate:	115200	115200	115200	115200
Data Bits:	8	8	8	8
Parity:	None	None	None	None
Stop Bits:	1	1	1	1
Flow Control:	None	None	None	None
	<input type="button" value="Reset All ports to default"/>	<input type="button" value="Submit New Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>	<input type="button" value="Submit New Port 3 Values"/>

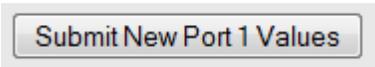
Select the appropriate "Stop Bits" value from the drop-down menu. The stop bit or bits follow after the data and parity bits in serial communication. It indicates the end of transmission (the default setting is '1').

Serial Port Settings	Port 1	Port 2	Port 3	Port 4
Port Operating Mode:	RS-485 Half Duplex, Echo Off	RS-232	RS-232	RS-232
Baudrate:	115200	115200	115200	115200
Data Bits:	8	8	8	8
Parity:	None	None	None	None
Stop Bits:	1	1	1	1
Flow Control:	None	None	None	None
	<input type="button" value="Reset All ports to default"/>	<input type="button" value="Submit New Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>	<input type="button" value="Submit New Port 3 Values"/>

For "Flow Control", the default setting is "None". If you are using flow control, set this to the appropriate option.

Serial Port Settings	Port 1	Port 2	Port 3	Port 4
Port Operating Mode:	RS-485 Half Duplex, Echo Off	RS-232	RS-232	RS-232
Baudrate:	115200	115200	115200	115200
Data Bits:	8	8	8	8
Parity:	None	None	None	None
Stop Bits:	1	1	1	1
Flow Control:	None	None	None	None
	<input type="button" value="Reset All ports to default"/> <input type="button" value="None"/> <input type="button" value="XON/XOFF"/> <input type="button" value="Port 1 Values"/>	<input type="button" value="Submit New Port 2 Values"/>	<input type="button" value="Submit New Port 3 Values"/>	<input type="button" value="Submit New Port 4 Values"/>

You must click the "Submit New Port N Values" button at the bottom of the appropriate "Port N" column to save your settings. Settings must be saved for one port that is configured before moving on to configure the next port. If there are unused ports, then you can ignore the other port sections.



8 Password Setup Section

Click on the "Password" link at the top of the web page to password-protect your web server. Type in your user name and password, and then click the "Submit New Settings" button to save your user name and password.

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Password

User Name:

Password: (Leave blank for no password)

Repeat Password:

8.1 Resetting a Password

Web page password protection is offered as an option with the NetBurner serial-to-Ethernet application. If a password is forgotten, the following procedure can be used to reset the password.

1. Connect the console serial port on the PK70 to your computer. This is located on the opposite side of the DB37 connector. This is also known as "UART 0", and is not the same as "Port 0" which comes out from the DB37 connection.
2. Run the NetBurner MTTY serial terminal program or any other serial terminal program on the PC.
3. Reboot the PK70 by removing the power cord and then plugging it back in. When you see the message "Waiting 2sec to start 'A' to abort", press <Shift>+'A' (uppercase 'A') to abort to the "nb>" prompt.
4. Type "SETUP" (not case-sensitive). When the menu appears, type option '5' and then press <Enter> to select the "TFTP File" option. Type the name "RESETPASSWORD" and then press <Enter>. Type 'S' (not case-sensitive) and then <Enter> to save the setting and exit the monitor setup menu. The password will be cleared and the device will automatically reboot.
5. To re-enable password protection, enter the boot monitor again, type "setup" to access the monitor setup menu, and then delete the TFTP file name "RESETPASSWORD" by simply pressing <Enter> without entering any characters.

If you want to remove password protection without the "RESETPASSWORD" in place, then you will need to go back to the password setup web page with "RESETPASSWORD" still enabled, press the "Submit New Settings" button without entering any user name and password, and then go back to the monitor setup menu to remove the "RESETPASSWORD" string.

9 Diagnostics Section

Click the "Diagnostics" link to view the available options. To get back to the network configuration page, click the "Back to Ethernet & Serial Configuration" link.



[Network](#) | [Serial](#) | [Password](#) | [Diagnostics](#)

[Arp cache](#)

[Data Counters](#)

[Show processor Tasks](#)

[Dump Config Record State](#)

Ping:

[Back to Ethernet & Serial Configuration](#)

Firmware Version: PK70-Quad Multi-Mode Serial V1.1 Aug 6 2010

10 Specifications

10.1 Input Power Requirements

DC input range: 7 to 24 Volts DC
Suggested power source: 12 Volts @ 500 mA
Operating range: Commercial temperature of 0 to 70 degrees Celsius

10.2 Power Connector

The power LED is illuminated on what is designated as the front side of the PK70 while power is applied. There are two types of input power connectors to use (do not use both at the same time):

1. A standard 2.1-mm P5 input jack. The center pin has a positive (+) polarity and the outer shell has a negative (-) polarity.
2. A 2-pin quick-disconnect terminal block. Pin 1 (the pin that is closer to the 2.1-mm P5 input jack) has a negative polarity (-) and pin 2 (the pin that is closer to the console serial port and MMC/SD Card slot) has a positive polarity (+).

10.3 DB9 RS-232 Console Port

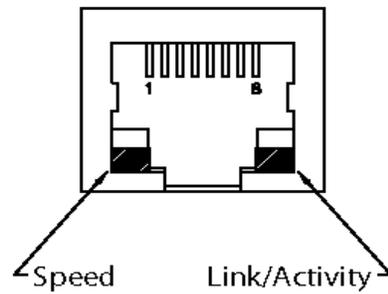
The DB9 connector on the front of the PK70 provides an RS-232 serial port from the MCF5270 processor's UART 0 serial port. In the default software configuration, UART 0 is the serial debug port, and can be used as a serial terminal interface.

N/C = No connection

Pin	Signal	Pin	Signal
1	N/C	2	TX
3	RX	4	N/C
5	GND	6	N/C
7	CTS	8	RTS
9	N/C		

10.4 RJ-45 Connector

- LED1: Ethernet speed – 10/100 Mbps
- LED2: Link and data activity



N/C = No connection

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

10.5 Mechanical

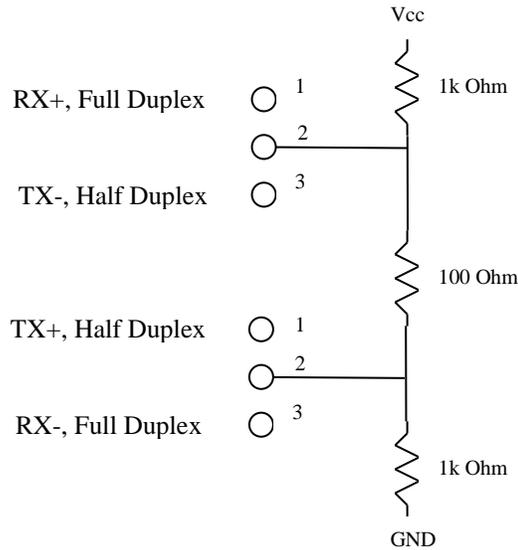
Case dimensions: 4.4 in. x 3.9 in. x 1.2 in.

10.6 DB37-to-quad-DB9 Serial Cable Pin-out

DB37	DB9-1	DB9-2	DB9-3	DB9-4	Quad RS-232 Function	Quad RS-485 Function
1				1	Raw Port 4 Carrier Detect	
2				2	Raw Port 4 Receive	Raw Port 4 Rx+ (FD)
3				3	Raw Port 4 Transmit	Raw Port 4 Tx- (FD/HD)
4				4	Raw Port 4 DTR	
5				5	GND	GND
6			9		Raw Port 3 Ring Indicator	
7			8		Raw Port 3 CTS	Raw Port 3 Rx- (FD)
8			7		Raw Port 3 RTS	Raw Port 3 Tx+ (FD/HD)
9			6		Raw Port 3 DSR	
10		1			Raw Port 2 Carrier Detect	
11		2			Raw Port 2 Receive	Raw Port 2 Rx+ (FD)
12		3			Raw Port 2 Transmit	Raw Port 2 Tx- (FD/HD)
13		4			Raw Port 2 DTR	
14		5			GND	GND
15	9				Raw Port 1 Ring Indicator	
16	8				Raw Port 1 CTS	Raw Port 1 Rx- (FD)
17	7				Raw Port 1 RTS	Raw Port 1 Tx+ (FD/HD)
18	6				Raw Port 1 DSR	
19	NO CONNECTION					
20				6	Raw Port 4 DSR	
21				7	Raw Port 4 RTS	Raw Port 4 Tx+ (FD/HD)
22				8	Raw Port 4 CTS	Raw Port 4 Rx- (FD)
23				9	Raw Port 4 Ring Indicator	
24			5		GND	GND
25			4		Raw Port 3 DTR	
26			3		Raw Port 3 Transmit	Raw Port 3 Tx- (FD/HD)
27			2		Raw Port 3 Receive	Raw Port 3 Rx+ (FD)
28			1		Raw Port 3 Carrier Detect	
29		6			Raw Port 2 DSR	
30		7			Raw Port 2 RTS	Raw Port 2 Tx+ (FD/HD)
31		8			Raw Port 2 CTS	Raw Port 2 Rx- (FD)
32		9			Raw Port 2 Ring Indicator	
33	5				GND	GND
34	4				Raw Port 1 DTR	
35	3				Raw Port 1 Transmit	Raw Port 1 Tx- (FD/HD)
36	2				Raw Port 1 Receive	Raw Port 1 Rx+ (FD)
37	1				Raw Port 1 Carrier Detect	

11 Termination Jumpers

Each of the four serial ports on the NBPKBU-MMS blade board has a pair of 3-pin headers for optional RS-485 resistor termination that can be added by installing jumpers. The schematic representation of the terminating resistors is shown below:



As shown above, the 3-pin headers for each serial port can be jumped to short pins 1-2 or 2-3 depending on the duplex mode.

To add termination in full duplex mode, add one 2-pin jumper to pins 1-2 of the RX+/TX- header, and a second 2-pin jumper to pins 2-3 of the TX+/RX- header.

To add termination in half duplex mode, add one 2-pin jumper to pins 2-3 of the RX+/TX- header, and a second 2-pin jumper to pins 1-2 of the TX+/RX- header.

Port	RX+/TX- Header	TX+/RX- Header
1	JP6	JP5
2	JP3	JP4
3	JP1	JP2
4	JP8	JP7

12 Network IP Address Configuration

If you are part of an existing network that does not contain a DHCP server, stop reading now and get a static IP address and subnet mask address from your network administrator.

IP addresses are used to route packets from place to place on an Intranet/Internet. If you are going to put the PK70 directly on the Internet, then you will need to acquire an IP address. If you are on a LAN, then you will normally choose an IP address from one of the groups below which are set aside for local networks.

Class A IP address range: 10.0.0.0 to 10.255.255.255; mask 255.0.0.0

Class B IP address range: 172.16.0.0 to 172.31.255.255; mask 255.255.0.0

Class C IP address range: 192.168.0.0 to 192.168.255.255; mask 255.255.255.0

13 Web Browsers and Proxy Servers

If you are working on a corporate LAN that uses a proxy server for Internet web browsing, you will need to exclude the IP address of your PK70 in your web browser's proxy server settings or preferences. Otherwise, an attempt to connect to a web page on the LAN will fail because the proxy server will attempt to route the request outside the LAN. For most web browsers, this can be accomplished in the advanced settings for the proxy server configuration. Set the network subnet mask for your host computer's network adapter and your PK70 to 255.255.255.0.

14 Custom Programming with the NetBurner Development Kit

The NetBurner NNDK-PK70EX-KIT enables you to modify the factory application or create entirely new applications to suit your product requirements. The function call reference specific to the NBPKBU-MMSCR blade board is located in the `\Nburn\PK70\include\NBPKQuadMM.h` file.