

NetBurner, Inc.

Development Kit

NBWIFIIN Quick Start Guide

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Network Development Kit Quick Start Guide

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Introduction

The NBWIFIIN is an IEEE 802.11 b/g/n wireless network interface controller that is based on the Broadcom 43362 chipset and a firmware built on Broadcom's WICED SDK. It has the following features:

1. Compliant to IEEE 802.11 b/g/n standards.
2. Operates in the 2.4 GHz ISM band.
3. Supports WPA2, WPA, and WEP security suites with AES/TKIP.
4. Communicates with NetBurner module via SPI or Serial.

Kit Contents

- NBWIFIIN-SOM-PCBIR or NBWIFIIN-SOM-UFLIR
- Adapter/Interface Board
- Software and documentation via [NNDK Red Card](#)

Product Compatibility

All versions of the NBWIFIIN are compatible with the modules listed below:

MOD5272
MOD5282
MOD5441X
NANO54415
SB70LC

The external antenna version (UFL) is compatible with all the above modules, plus these additional modules:

MOD5234
MOD5270

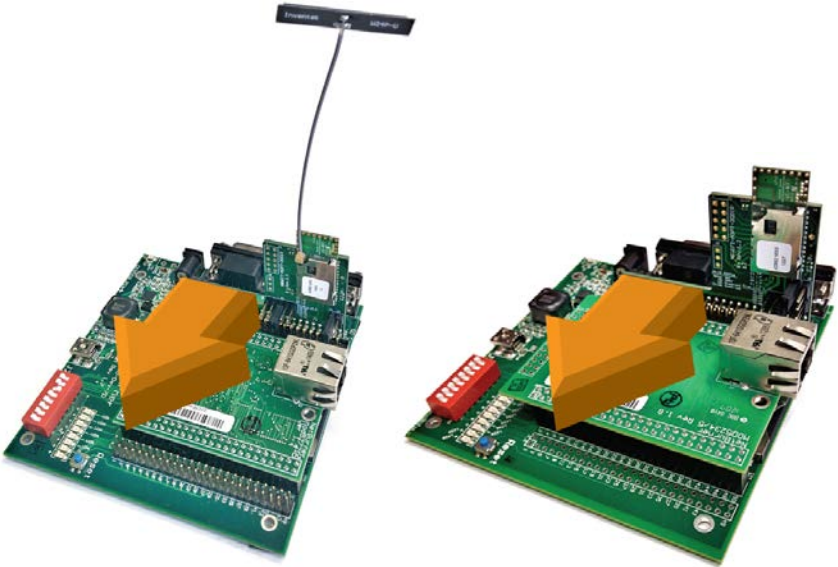
Hardware

The NBWIFIIN-SOM-PCBIR and NBWIFIIN-SOM-UFLIR are in an LGA-44 SOM format, with the NBWIFIIN-SOM-UFLIR having a UFL connector for connecting to an external antenna.

Additional app notes, schematics, and pinouts can be found on the Wifi product webpage:

<http://www.netburner.com/products/wireless/nbwifiin-802-11b-g-n>

Figure 1. Adapter board (inserted on MOD-DEV-70CR)



Note: Plug in WiFi Adapter Board with component side towards the Ethernet Core Module!

Default Interface Signals

The default hardware and software configuration uses the following NetBurner processor module signals:

- MOD5234, MOD5270, MOD5282
 - QSPI MOSI, QSPI MISO, QSPI CLK, QSPI CS0, IRQ 3

OR

- UART_2 TX, UART_2 RX

- MOD5441X, NANO54415
 - DSPI_1 MOSI, DSPI_1 MISO, DSPI_1 CLK, DSPI_1 CS0, IRQ 3

OR

- UART_9 TX, UART_9 RX

- MOD5272
 - QSPI MOSI, QSPI MISO, QSPI CLK, QSPI CS1, IRQ 3

OR

- UART_2 TX, UART_2 RX

- SB70LC
 - QSPI MOSI, QSPI MISO, QSPI CLK, QSPI CS0, IRQ 5 (uses timer input 3 (TIN3) pin.)

OR

- UART_1 TX, UART_1 RX

Custom Interface Signals

You may use different chip select or IRQ input signals. To use different signals, you must populate the arguments of the Wifilnit calls where appropriate. You must also ensure that the signal is connected to the Wifi module.

Additional Documentation

This document covers the wireless product only. If you need assistance in using the NetBurner development tools, TCP/IP stack or Real-Time Operating system, please refer to the following documents located in c:\nburn\docs:

- **NNDK Programmer's Guide:** a textbook style document on programming NetBurner devices.
- **NBEclipse Getting Started Guide:** a tutorial on using the NBEclipse Integrated Development Environment.
- **NetBurner Runtime Libraries:** API function reference documents for the TCP/IP Stack and RTOS.

Installation

For Development

The NNDK-NBWIFIIN-PCB-KIT development kit includes an adapter board that enables it to be installed on the J2 header of the MOD-DEV-70CR development boards, which are included with the NetBurner MODxxxx development kits.

If you have a MOD-DEV-70CR, which does not already have it, you will need to install a 50-pin 0.1” dual row header in the location J2_C.

The Wifi software libraries are automatically installed with your development kit.

For Production

The NBWIFIIN-100IR and NBWIFIIN-200IR are a solderable System on Module (SoM) in a LGA-44 format.

Development Kit Adapter Board JP1 Pinout

The JP1 header on the development board enables you to select the desired mode of operation for the Wifi module (SPI or UART), as well as which IRQ to use in SPI mode.

Table 1. Mode Jumpers: J5 and J6

J5	J6	Mode
OFF	OFF	SPI
ON	OFF	UART
ON	ON	RESERVED
OFF	ON	RESERVED

Table 2. MOD5441X IRQ Jumpers (Note: only select one)

Shorting Jumper Location	Signal Pin on Ethernet Module J2 Connector
1-2	J2-26 (IRQ 3)
3-4	J2-43 (IRQ 2)
5-6	J2-45 (IRQ 1)
7-8	J2-47 (IRQ 6)
9-10	J2-48 (IRQ 7)

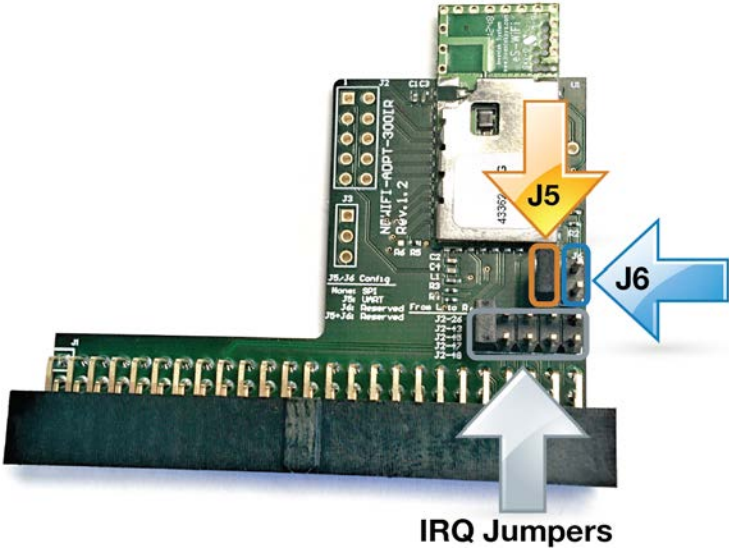
Table 3. MOD5234, MOD5270, MOD5282

Shorting Jumper Location	Signal Pin on Ethernet Module J2 Connector
1-2	J2-26 (N/A)
3-4	J2-43 (IRQ 1)
5-6	J2-45 (IRQ 3)
7-8	J2-47 (IRQ 5)
9-10	J2-48 (IRQ 7)

Table 4. MOD5272

Shorting Jumper Location	Signal Pin on Ethernet Module J2 Connector
1-2	J2-26 (N/A)
3-4	J2-43 (IRQ 1)
5-6	J2-45 (IRQ 3)
7-8	J2-47 (IRQ 5)
9-10	J2-48 (IRQ 6)

Figure 2. Adapter board jumper configuration



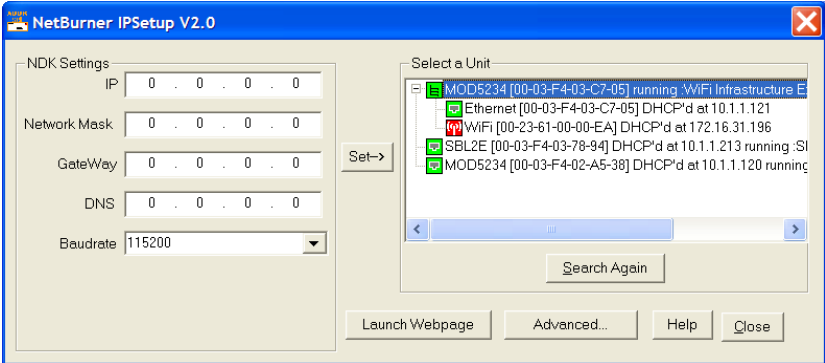
Configuring an IP Address

The IPSetup utility will recognize that there are both Ethernet and Wifi network interfaces available to your NetBurner module. You can configure either interface from the other. The IPSetup device selection box will display a tree structure with a '+' character. If you click on the '+' it will enable you to view/edit each interface. In this way you can configure the Wifi interface through a network connection, which may be easier the first time you use the WDK.

In the screen capture below you can see both interfaces for the MOD5234. The Wifi icon is red because IPSetup was run on a PC on the Ethernet network and the 172.x.x.x address range is not visible to it. However, both interfaces are completely functional and configured correctly.

IMPORTANT: Your NetBurner Ethernet module must have a Wifi-enabled application running before the Wifi interface will appear in IPSetup.

Figure 3. NetBurner IP Setup Application



Running the Wifi Example Program

Prerequisites

- The NBEclipse development tools have been installed and are running properly.
- The Wifi hardware has been installed on your NNDK development board.
- The Wifi module is in a location with access to a 802.11 b/g/n access point.

Procedure

- In NBEclipse, create an empty project. Then, import the source code files located in examples/StandardStack/Wifi of your NNDK install:
 - WifiClient – Configuring a Wifi interface and connecting to an Access Point
 - WifiScan – Performing Scans and reporting results
 - WifiAP – Running the Wifi interface in Access Point mode, with the onboard DHCP server

This procedure is described in the NBEclipse Getting Started Guide.

- Build the project and download it to your Ethernet module.
- Optional: You can view application status messages with MTTY connected to the debug serial port.
- Run IPSetup and verify you can see both the Ethernet and Wifi interfaces.
- Use IPSetup to select the Wifi interface. Then, specify the SSID and key/passphrase if needed. After you click on the Set button, the display will take a few seconds to update, and if the Wifi connection was successful the IP address information should appear.
- Use a web browser and type the Ethernet IP address in the URL field. The web page should display the configuration information for both interfaces, and identify that the request came from the Ethernet interface.
- Use a web browser and type the Wifi IP address in the URL field. The web page should display the configuration information for both interfaces, and identify that the request came from the Wifi interface.

Troubleshooting

- Run MTTY and connect to the debug serial port, either through USB or the DB9 connector. Press the reset button on the development board and look for status information and error messages.
- Try pinging the IP address of each interface.

Additional Services

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