RN1810 PICtail™/PICtail Plus Daughter Board User's Guide

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Object of Declaration: RN1810 PICtail™/PICtail Plus Daughter Board

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Signed for and on behalf of Microchip Technology Inc. at Chandler, Arizona, USA

Derek Carlson
VP Development Tools

12-Sep-14
Date

NOTES:

RN1810 PICtail™/PICtail PLUS DAUGHTER BOARD USER'S GUIDE

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Preface

NOTICE TO CUSTOMERS

All documentation becomes dated, and this manual is no exception. Microchip tools and documentation are constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our website (www.microchip.com) to obtain the latest documentation available.

Documents are identified with a "DS" number. This number is located on the bottom of each page, in front of the page number. The numbering convention for the DS number is "DSXXXXXXXXA", where "XXXXXXXX" is the document number and "A" is the revision level of the document.

For the most up-to-date information on development tools, see the MPLAB® IDE online help. Select the Help menu, and then Topics to open a list of available online help files.

INTRODUCTION

This chapter contains general information that will be useful to know before using the RN1810 PICtail™/PICtail Plus Daughter Board. Items discussed in this chapter include:

- Document Layout
- Conventions Used in this Guide
- Recommended Reading
- The Microchip Website
- Development Systems Customer Change Notification Service
- Customer Support
- Document Revision History

DOCUMENT LAYOUT

This document describes how the RN1810 PICtail/PICtail Plus Daughter Board allows the designer to evaluate and demonstrate the capabilities of the RN1810 module. The document is organized as follows:

- **Chapter 1. "Overview"** – This chapter contains the RN1810 PICtail/PICtail Plus Daughter Board description.
- **Chapter 2. "Getting Started"** - This chapter provides a quick overview of the RN1810 PICtail/PICtail Plus Daughter Board.
- **Appendix A. "Board Schematic"** – This appendix provides the RN1810 PICtail/PICtail Plus Daughter Board schematic.

CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

DOCUMENTATION CONVENTIONS

Description	Represents	Examples
Arial font:		
Italic characters	Referenced books	*MPLAB® IDE User's Guide*
	Emphasized text	...is the *only* compiler...
Initial caps	A window	the Output window
	A dialog	the Settings dialog
	A menu selection	select Enable Programmer
Quotes	A field name in a window or dialog	"Save project before build"
Underlined, italic text with right angle bracket	A menu path	*File>Save*
Bold characters	A dialog button	Click **OK**
	A tab	Click the **Power** tab
N'Rnnnn	A number in verilog format, where N is the total number of digits, R is the radix and n is a digit.	4'b0010, 2'hF1
Text in angle brackets < >	A key on the keyboard	Press <Enter>, <F1>
Courier New font:		
Plain Courier New	Sample source code	`#define START`
	Filenames	`autoexec.bat`
	File paths	`c:\mcc18\h`
	Keywords	`_asm, _endasm, static`
	Command-line options	`-Opa+, -Opa-`
	Bit values	`0, 1`
	Constants	`0xFF, 'A'`
Italic Courier New	A variable argument	*`file`*`.o`, where *`file`* can be any valid filename
Square brackets [ ]	Optional arguments	`mcc18 [options]` *`file`* `[options]`
Curly brackets and pipe character: { | }	Choice of mutually exclusive arguments; an OR selection	`errorlevel {0|1}`
Ellipses...	Replaces repeated text	`var_name [, var_name...]`
	Represents code supplied by user	`void main (void) { ... }`

RECOMMENDED READING

This user's guide describes how to use RN1810 PICtail/PICtail Plus Daughter Board. Other useful documents are listed below. The following Microchip document(s) are recommended as supplemental reference resources.

RN1810/RN1810E 2.4 GHz IEEE 802.11b/g/n Wireless Module Data Sheet (DS50002460A)

This document provides the technical specifications for the RN1810/RN1810E modules and is available for download from the Microchip website (www.microchip.com)

RN1810 WiFly Command Reference User's Guide (DS50002467A)

This document provides information for configuring the RN1810 module including a command reference, advanced features, and application examples.

THE MICROCHIP WEBSITE

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- **Emulators** – The latest information on the Microchip MPLAB® REAL ICE™ in-circuit emulator
- **In-Circuit Debuggers** – The latest information on the Microchip in-circuit debugger, MPLAB ICD 3
- **MPLAB X IDE** – The latest information on Microchip MPLAB X IDE, the Windows® Integrated Development Environment for development systems tools
- **Programmers** – The latest information on Microchip programmers including the PICkit™ 3 development programmer

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- Distributor or Representative
- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

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Technical support is available through the website at:

http://www.microchip.com/support.

DOCUMENT REVISION HISTORY

Revision A (March 2016)

This is the initial release of this document.

Chapter 1. Overview

1.1 INTRODUCTION

The RN1810 PICtail™/PICtail Plus Daughter Board is a demonstration board that showcases the Microchip RN1810 Certified WiFly module, a low-cost IEEE 802.11b/g/n Wi-Fi® Transceiver module. The high-speed UART interface and the I/O pins are available on the RN1810 module to configure, control, and transfer data.

The RN1810 PICtail Plus Daughter Board has PICtail Plus and PICtail connectors to interface with a PIC® Microcontroller (MCU) on the development boards that support PICtail Plus or PICtail interface with the required pin mapping. The PICtail board also has an MCP2200 USB bridge to enable easy serial connection to a PC over USB.

This document must be used in conjunction with the *"RN1810 WiFly Command Reference User's Guide"* (DS50002467A).

1.2 FEATURES

- Microchip RN1810 IEEE 802.11b/g/n Compliant Transceiver
- PICtail Plus Daughter Board or PICtail Daughter Board Connection Interfaces
- MCP2200 USB Bridge and connector for stand-alone UART terminal operation
- Status LEDs, **Reset** button, and **Function** button

1.3 BOARD CONFIGURATION

Jumper positions on the RN1810 PICtail™/PICtail Plus Daughter Board are as follows:

- Jumper JP5 must be shorted
- Jumpers JP2 and JP3 must be open
- Jumper JP1 must be configured as follows:
  - must be shorted when the PICtail is operating stand-alone (only powered via USB cable)
  - must be open when the PICtail is connected to the Microchip development board

Table 1-1 provides the list of LEDs on the daughter board with its corresponding color description and pin connection.

TABLE 1-1: RN1810 LED DESCRIPTION

LED	Color	Description
PWR	Green	Turned on when the RN1810 is powered
TX	Green	Connected to UART0_TX
RX	Green	Connected to UART0_RX
D1	Yellow	Connected to IP_STATUS I/O
D2	Blue	Connected to TCP_STATUS I/O
D3	Green	Connected to CMD_STATUS I/O
D4	Red	Connected to MISC_STATUS I/O

Table 1-2 provides a brief description of the buttons on the board.

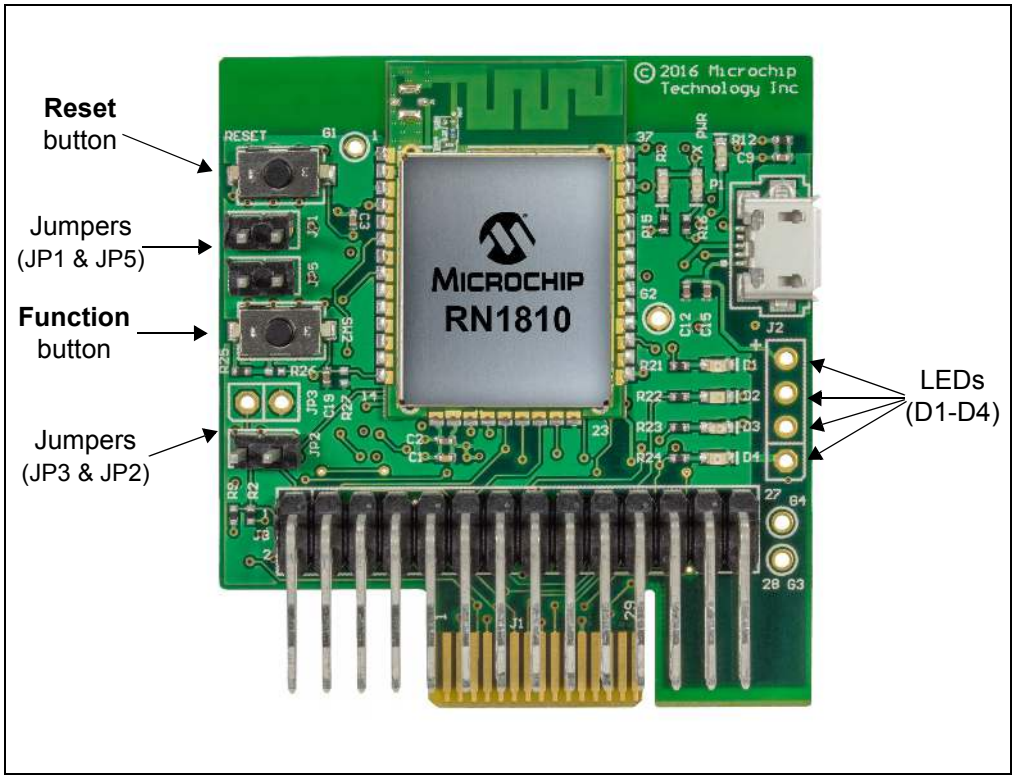
TABLE 1-2: RN1810 BUTTONS

Button(1)	Description
Reset	Performs a Module Reset.
Function	Connected to FUNC_CONFIG pin which is low by default. Pressing the button sets the FUNC_CONFIG pin high.

Note 1: Refer to the *"RN1810 WiFly Command Reference User's Guide"* (DS50002467A) for a detailed description of the I/O pins connected to the module's LEDs and buttons.

Figure 1-1 shows the RN1810 PICtail™/PICtail Plus Daughter Board with the **Reset** button on the top left side and the **Function** button below it. On the right-hand side, lined up vertically, are the four LEDs.

FIGURE 1-1: RN1810 PICtail™/PICtail PLUS DAUGHTER BOARD



Chapter 2. Getting Started

2.1 OVERVIEW

The RN1810 module on the RN1810 PICtail/PICtail Plus Daughter Board exposes a high speed UART interface which can be used to issue ASCII commands to configure and control the RN1810 module. For more information on the RN1810 commands, configuration and examples, refer to the *"RN1810 WiFly Command Reference User's Guide"* (DS50002467A).

While in PICtail mode, the board can be plugged into any standard Microchip development board that supports the PICtail Plus or PICtail connection interface.

> **Note:** Ensure that the PICtail connector pin-out on the host MCU development platform supports the pin-out on the PICtail interface on the RN1810 PICtail/PICtail Plus Daughter Board.

The firmware running on the Microchip 8/16/32-bit PIC MCU can be used to interface over UART and I/O ports with the RN1810 on the PICtail board. Refer to the **Section 2.2 "Other Information"** for information about downloading PIC workspaces for PICtail mode.

When the RN1810 PICtail/PICtail Plus Daughter Board is first connected to a PC via the USB cable, the PC automatically downloads the MCP2200 USB driver. Alternatively, the MCP2200 driver can be downloaded and installed directly from the Microchip web page at http://www.microchip.com/wwwproducts/en/en546923.

While in MCP2200 UART Bridge mode, the board can be connected via a Micro-USB cable to a PC that supports serial COM ports where the board immediately enumerates a serial COM port. A terminal emulator application on the PC can be used to open the COM port and issue commands when the RN1810 is in Command mode, or to transfer data when the RN1810 is in Data mode. Typing `$$$` while in Data mode transitions the module to Command mode. There is a 250 ms guard band duration to enter Command mode. The Command mode is entered only if each dollar sign character (`$`) is entered within 250 ms interval, and no other characters are received by the module 250 ms before the first and after the last `$`.

Application examples can be found in *Chapter 4, Application Examples* of the *"RN1810 WiFly Command Reference User's Guide"* (DS50002467A).

2.2 OTHER INFORMATION

To obtain the most recent and complete RN1810 Data Sheet, User's Guide and code examples, visit the Microchip website: www.microchip.com/RN1810.

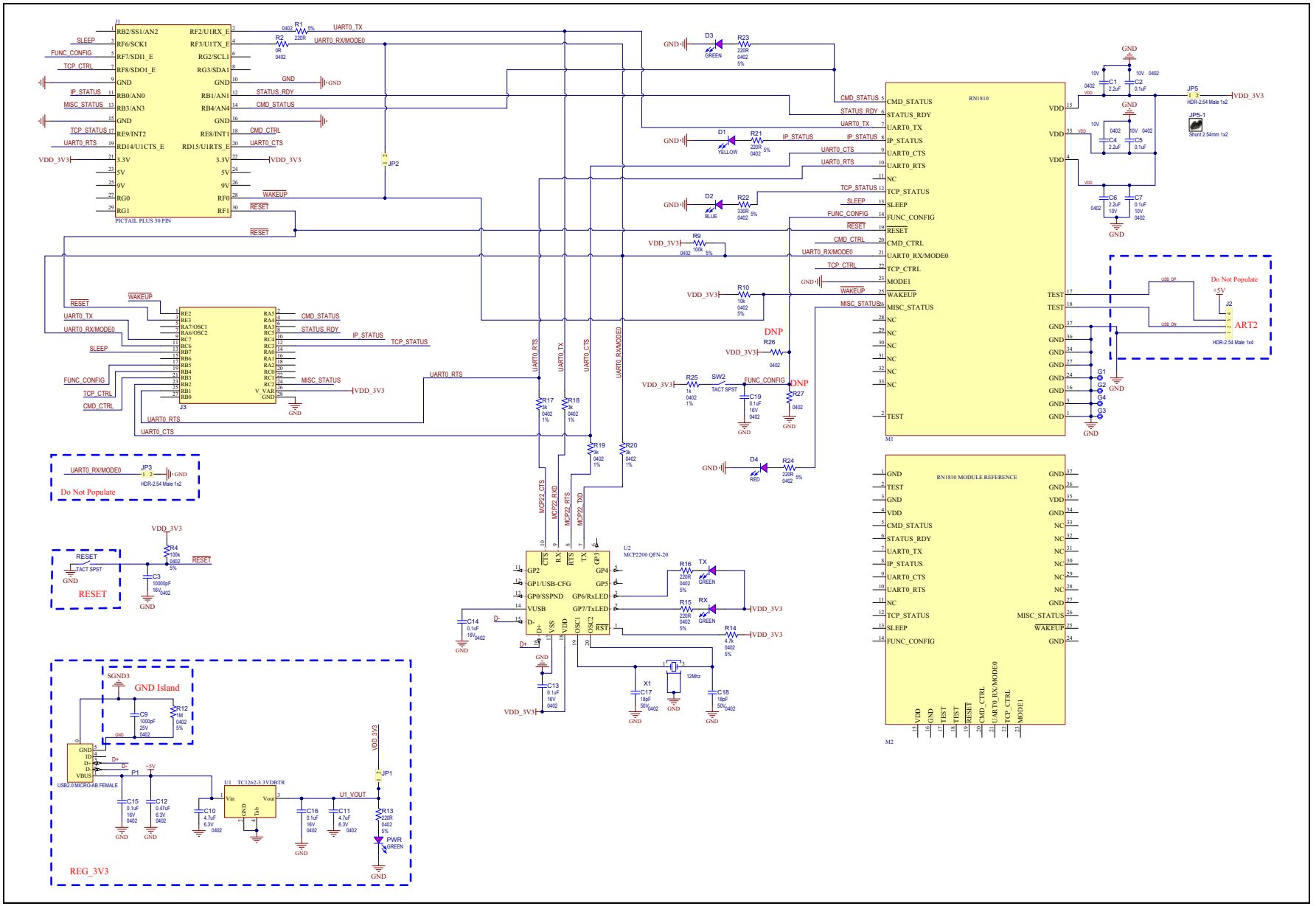
NOTES:

Appendix A. Board Schematic

A.1 RN1810 PICtail™/PICtail PLUS DAUGHTER BOARD SCHEMATIC

Figure A-1 shows the RN1810 PICtail/PICtail Plus Daughter Board schematics.

FIGURE A-1: RN1810 PICtail™/PICtail PLUS DAUGHTER BOARD SCHEMATIC



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