



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



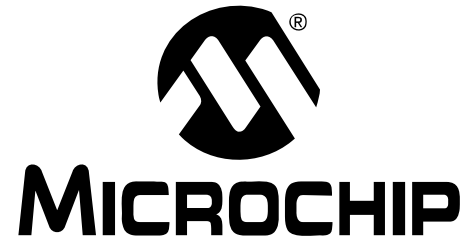
## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





**MCP2150**  
**Developer's Board**  
**User's Guide**

---

**Note the following details of the code protection feature on Microchip devices:**

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

---

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights.

**Trademarks**

The Microchip name and logo, the Microchip logo, dsPIC, KEELOQ, KEELOQ logo, MPLAB, PIC, PICmicro, PICSTART, rfPIC and UNI/O are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.


FilterLab, Hampshire, HI-TECH C, Linear Active Thermistor, MXDEV, MXLAB, SEEVAL and The Embedded Control Solutions Company are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, Application Maestro, CodeGuard, dsPICDEM, dsPICDEM.net, dsPICworks, dsSPEAK, ECAN, ECONOMONITOR, FanSense, HI-TIDE, In-Circuit Serial Programming, ICSP, Mindi, MiWi, MPASM, MPLAB Certified logo, MPLIB, MPLINK, mTouch, Octopus, Omniscient Code Generation, PICC, PICC-18, PICDEM, PICDEM.net, PICKit, PICtail, PIC<sup>32</sup> logo, REAL ICE, rLAB, Select Mode, Total Endurance, TSHARC, UniWinDriver, WiperLock and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

All other trademarks mentioned herein are property of their respective companies.

© 2009, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

 Printed on recycled paper.

**QUALITY MANAGEMENT SYSTEM**  
**CERTIFIED BY DNV**  
**== ISO/TS 16949:2002 ==**

*Microchip received ISO/TS-16949:2002 certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona; Gresham, Oregon and design centers in California and India. The Company's quality system processes and procedures are for its PIC<sup>®</sup> MCUs and dsPIC<sup>®</sup> DSCs, KEELOQ<sup>®</sup> code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.*

**Table of Contents**

<b>Preface</b> .....	<b>5</b>
Introduction.....	5
Document Layout .....	6
Conventions Used in this Guide .....	7
Recommended Reading.....	8
The Microchip Web Site .....	8
Customer Support .....	8
Document Revision History .....	9
<b>Chapter 1. Product Overview</b>	
1.1 Introduction And Highlights .....	11
1.2 What is the MCP2150 Developer's Board? .....	11
1.3 MCP2150 Developer's Board Features .....	12
1.4 PC Requirements .....	17
1.5 What the MCP2150 Developer's Board Kit includes .....	17
<b>Chapter 2. Installation and Operation</b>	
2.1 Introduction .....	19
2.2 The Demo System .....	20
2.3 MCP2150DM Demos .....	21
<b>Appendix A. Schematic and Layouts</b>	
A.1 Introduction .....	35
A.2 Board - Schematic - Page 1 .....	36
A.3 Board - Schematic - Page 2 .....	37
A.4 Board - Top Silk and Pads .....	38
A.5 Board - Top Layer .....	39
A.6 Board - Top Layer with Silk and Pads .....	40
A.7 Board - Bottom Layer .....	41
A.8 Board - Power Layer .....	42
A.9 Board - Ground Layer .....	43
<b>Appendix B. Bill Of Materials (BOM)</b>	
<b>Appendix C. Board Testing</b>	
C.1 What is Tested .....	49
C.2 What is NOT Tested .....	50
<b>Appendix D. Configuring the HyperTerminal® Program</b>	
D.1 Configuring the Hyperterminal® Program .....	51

# MCP2150 Developer's Board User's Guide

---

## Appendix E. Continuously Transmitted Data Table

E.1 Data Table for Demo #2 ..... 61

## Appendix F. Programming the MCP2150DM

Worldwide Sales and Service .....64



# MCP2150 DEVELOPER'S BOARD USER'S GUIDE

---

---

## 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 web site ([www.microchip.com](http://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 "DSXXXXA", where "XXXX" 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 on-line help. Select the Help menu, and then Topics to open a list of available on-line help files.

## INTRODUCTION

This chapter contains general information that will be useful to know before using the MCP2150 Developer's Board. Items discussed in this chapter include:

- Document Layout
- Conventions Used in this Guide
- Recommended Reading
- The Microchip Web Site
- Customer Support
- Document Revision History

# MCP2150 Developer's Board User's Guide

---

## DOCUMENT LAYOUT

This document describes how to use the MCP2150 Developer's Board. The manual layout is as follows:

- **Chapter 1. "Product Overview"** – Important information about the MCP2150 Developer's Board.
- **Chapter 2. "Installation and Operation"** – Includes instructions on how to get started with this user's guide and a description of the user's guide.
- **Appendix A. "Schematic and Layouts"** – Shows the schematic and layout diagrams for the MCP2150 Developer's Board.
- **Appendix B. "Bill Of Materials (BOM)"** – Lists the parts used to build the MCP2150 Developer's Board.
- **Appendix C. "Board Testing"** – Discusses what is and is not tested on the MCP2150 Developer's Board.
- **Appendix D. "Configuring the HyperTerminal® Program"** – Gives aid in the configuration of the HyperTerminal application.
- **Appendix E. "Continuously Transmitted Data Table"** – Shows the data table that the MCP2150 Developer's Board transmits.
- **Appendix F. "Programming the MCP2150DM"** – Gives information to assist in the programming of the MCP2150 Developer's Board.

## CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

### DOCUMENTATION CONVENTIONS

Description	Represents	Examples
<b>Arial font:</b>		
Italic characters	Referenced books	<i>MPLAB<sup>®</sup> IDE User's Guide</i>
	Emphasized text	...is the <i>only</i> 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	<u><i>File&gt;Save</i></u>
Bold characters	A dialog button	Click <b>OK</b>
	A tab	Click the <b>Power</b> 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>
<b>Courier New font:</b>		
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	<i>file.o</i> , where <i>file</i> can be any valid filename
Square brackets [ ]	Optional arguments	mcc18 [options] <i>file</i> [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) { ... }



# MCP2150 Developer's Board User's Guide

---

## RECOMMENDED READING

This user's guide describes how to use MCP2150 Developer's Board. Other useful documents are listed below. The following Microchip documents are available and recommended as supplemental reference resources.

- **MCP2150 Data Sheet, "IrDA Standard Protocol Stack Controller Supporting DTE Applications", DS21655**
- **MCP2155 Data Sheet, "IrDA Standard Protocol Stack Controller Supporting DCE Applications", DS21690**

This data sheet provides detailed information regarding the MCP2150 product family.

You can also find important information in the following Microchip documents:

- **AN941 - "Programming Windows XP® for Embedded IR Applications", DS00941.**
- **AN926 - "Programming the Pocket PC OS for Embedded IR Applications", DS00926**
- **AN927 - "Data Throughput and the MCP215X", DS00927.**
- **AN923 - "Using the MCP2120 Developer's Board for IR Sniffing", DS00923.**
- **AN888 - "Programming the Palm OS™ for Embedded IR Applications", DS00888.**
- **AN858 - "Interfacing the MCP215X to a Host Controller", DS00858.**

## THE MICROCHIP WEB SITE

Microchip provides online support via our web site at [www.microchip.com](http://www.microchip.com). This web site is used as a means to make files and information easily available to customers. Accessible by using your favorite Internet browser, the web site contains the following information:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

## CUSTOMER SUPPORT

Users of Microchip products can receive assistance through several channels:

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

Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at: <http://support.microchip.com>.

## DOCUMENT REVISION HISTORY

### Revision A (October 2009)

- Initial Release of this Document.

# MCP2150 Developer's Board User's Guide

---

NOTES:



# MCP2150 DEVELOPER'S BOARD USER'S GUIDE

---

---

## Chapter 1. Product Overview

---

---

### 1.1 INTRODUCTION AND HIGHLIGHTS

This chapter provides an overview of the MCP2150 Developer's Boards' features, the system configurations that can be used in and the system requirements for the tutorials.

Items discussed in this chapter are:

- What is the MCP2150 Developer's Board?
- MCP2150 Developer's Board Features
- PC Requirements
- What the MCP2150 Developer's Board Kit includes

### 1.2 WHAT IS THE MCP2150 DEVELOPER'S BOARD?

The MCP2150 Developer's Board allows for the easy demonstration and development of IrDA applications. The board can be powered via USB or the power test points (VDD and GND). When using the power test points, if JP2 is shorted, the voltage must not exceed the PIC18F65J50 voltage specification.

The Host interface can be connected to the UART driver device for communication over the DB-9 connector (for IrDA to UART operation), connected to the PIC18F65J50 for stand alone operation, or connected to the PIC18F65J50 with the PIC18F65J50 connected to the UART driver device (for pass-through operation).

The USB interface signals are fully connected to the PIC18F65J50, so programs can be created where the PIC18F65J50 can communicate to the USB Host and to the MCP2150. This would allow the board to be used as an IrDA to USB converter.

# MCP2150 Developer's Board User's Guide

---

## 1.3 MCP2150 DEVELOPER'S BOARD FEATURES

The MCP2150 Developer's Board has five functional blocks. These are:

- Power
- Host Microcontroller
- MCP2150
- Optical Transceiver circuitry
- RS-232 circuitry/interface

The MCP2150 Developer's Board power can come from either the USB connection or the power test points. The USB power is regulated to 3.3V, due to requirements from the PIC18F65J50. To allow the other circuitry to operate at higher voltages, the MCP2150 Developer's Board has two power planes. One for the PIC18F65J50 circuitry and the other for the MCP2150/Optical Transceiver/RS-3238 Driver circuitry. An LED is used to indicate when power is applied to the MCP2150/Optical Transceiver/RS-232 Driver circuitry. A jumper (JP2) is used to tie the two power planes together.

The MCP2150 uses a standard 11.0592 MHz crystal as the device clock. The Host Controller can be programmed via the ICSP interface with user developed programs.

### CAUTION

**The PIC18F65J50 has a maximum operational voltage of 3.6V. If the MCP2150 Developer's Board is powered by the VDD and GND Test Points, then care must be taken to ensure that the PIC18F65J50 is not over voltaged. The PIC18F65J50 can be isolated from the MCP2150's power plane by removing the jumper shunt on jumpers JP1 and JP2.**

The MCP2150DM has the MCP2150 device mounted on the PCB (TSSOP package). There is a DIP footprint (requires the TSSOP package to be removed) which allows the MCP2150 to be easily updated if a device revision occurs.

The board supports up to four optical transceivers circuit implementations. Two implementation share the same general circuit layout. Only one optical transceiver circuit is installed at the time of manufacture. The others are for user implementation and evaluation. Jumpers are used to select the optical transceiver that is used by the system.

A MAX3238 compatible level-shifting IC has all the necessary hardware to support connection of a RS-232 host through the DB-9 connector. The port can be connected to a PC using a straight-through cable. Refer to the MCP2150 Data Sheet (DS21655) for more information on the Host Interface signals.

### NOTICE

**Due to the flexibility of the interface between the MCP2150 and the PIC18F65J50, the board has limited support for the MCP2155 device. This board's firmware does not support the MCP2155. To better understand the MCP2155's Host Interface operation, please refer to the MCP215X/40 Data Logger Demo Board (MCP215XDM) firmware.**

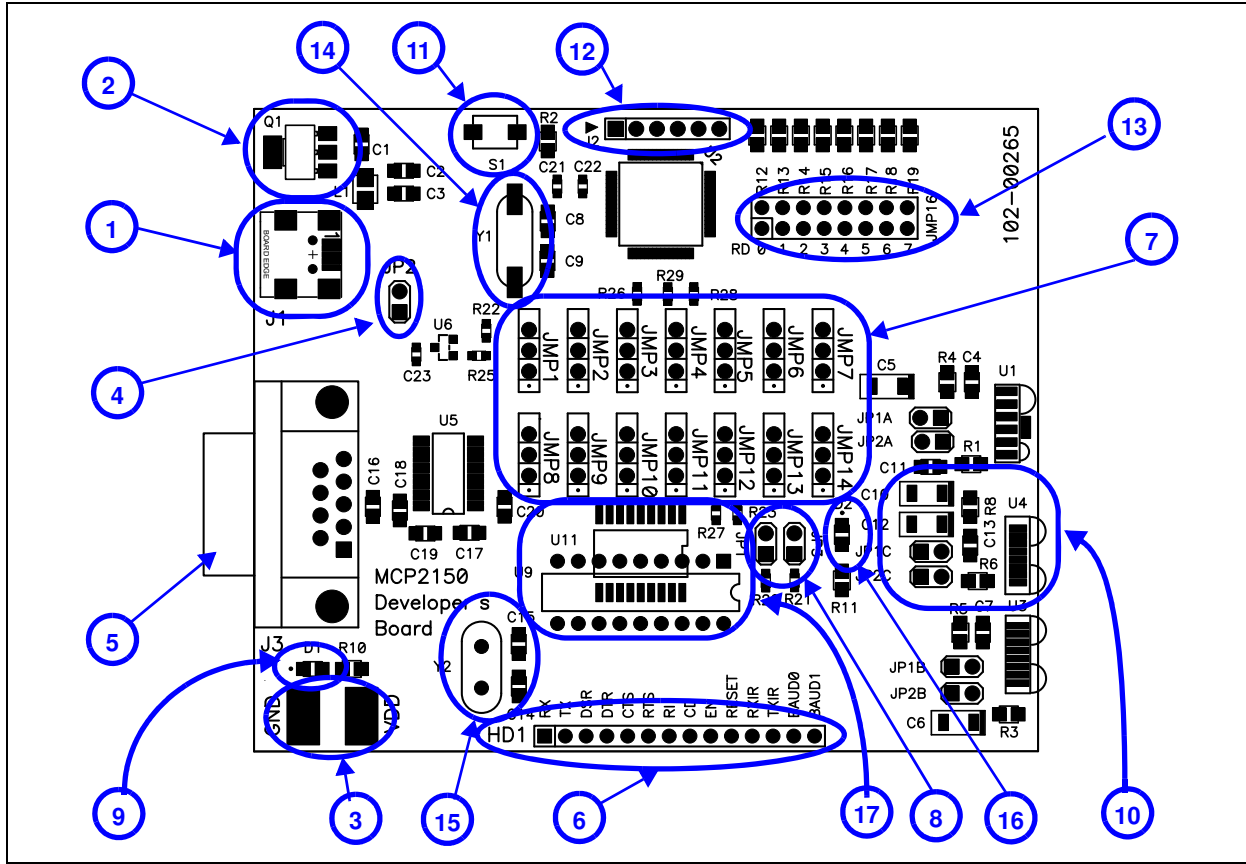
The MCP2150 Developer's Board, as shown in Figure 1-1, has the following hardware features:

1. Mini USB connector (for powering the board).
2. On Board +3.3V regulator for powering PIC18F65J50.
3. Hooks for an external regulated DC supply.
4. Jumper to Isolate PIC18F65J50 power signal from rest of board power. This allows the board to operate at voltages higher than 3.3V.
5. DB-9 connector and associated hardware for direct connection to MCP2150 UART (DB-9 interface requires RS-232 signal levels).
6. Fourteen-pin header connection to Host UART interface.
7. Fourteen 1x3 pin jumpers for routing of the UART signals between the MCP2150, PIC18F65J50, and MAX3238 devices.
8. MCP2150 BAUD1:BAUD0 state jumpers.
9. Green power-on indicator LED.
10. Implemented IR transceiver circuit (two optional optical transceiver circuits implemented but not populated).
11. Reset switch for PIC18F65J50 device.
12. ICSP Header for PIC18F65J50.
13. Jumper option for PIC18F65J50 program selection.
14. PIC18F65J50 crystal.
15. MCP2150 crystal socket.
16. Carrier Detect (CD) indicator LED.
17. MCP2150 SOIC and DIP Footprints (SOIC package is default installation. To install the DIP package requires the removal of the SOIC package).

**Note:** A schematic of the MCP2150 Developer's Board is shown in **Section A.2 "Board - Schematic - Page 1"**

# MCP2150 Developer's Board User's Guide

FIGURE 1-1: MCP2150 DEVELOPER'S BOARD HARDWARE



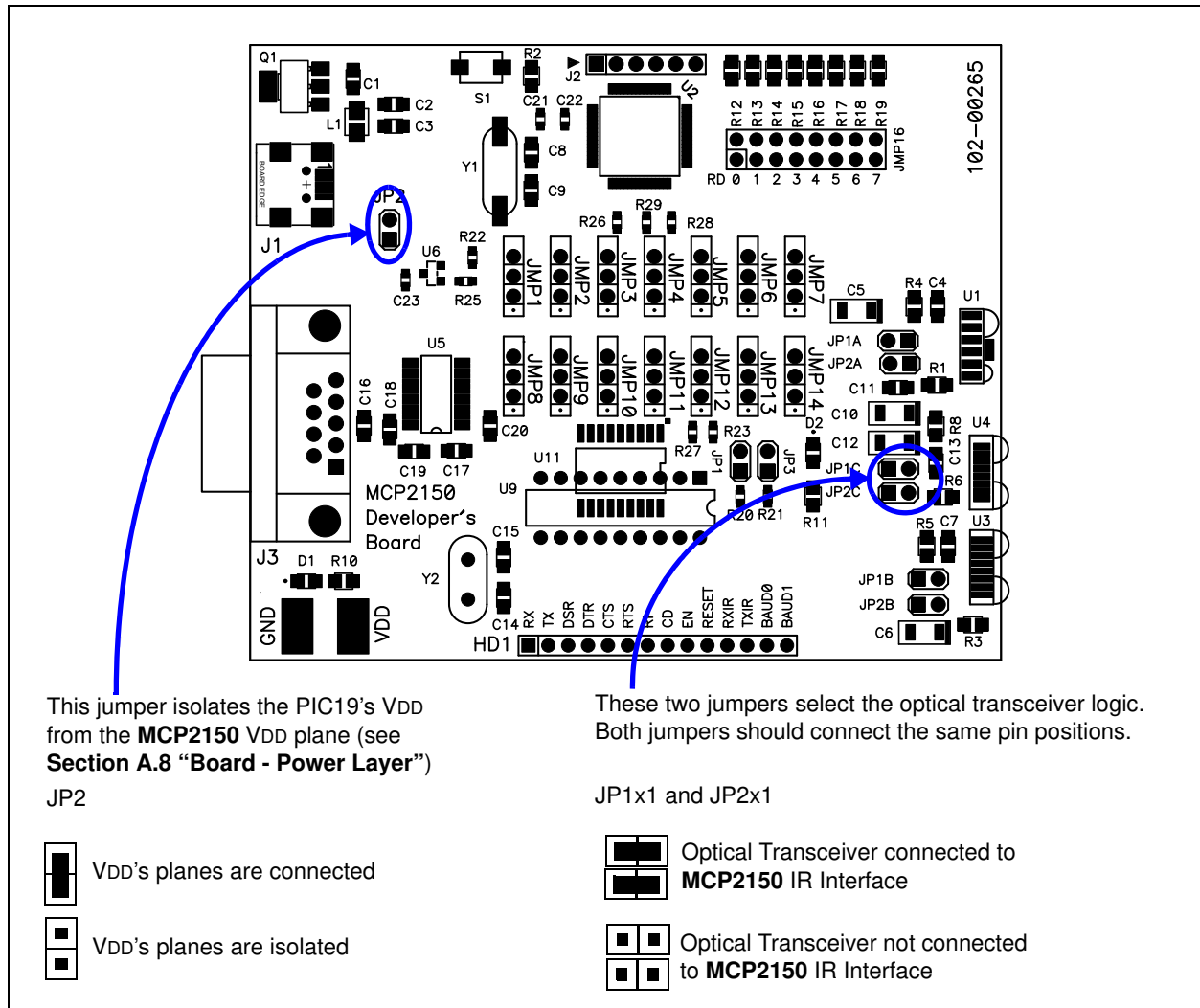
## 1.3.1 Selecting Power Source, and Optical Transceiver Interface Jumper Descriptions

Figure 1-2 shows the jumpers used to control the power source, and the optical transceiver used.

Jumper JP2 connects to the board's two power planes. The MCP2150 Developer's Board has a power plane for the PIC18F65J50 and the related circuitry, and a second power plane for all other circuitry. Removing the jumper allows the MCP2150 portion to operate through the full voltage range of the MCP2150 (2.0V to 5.5V). When JP2 is connected, then the maximum voltage is restricted to the maximum voltage of the PIC18F65J50 device (3.6V). See Figure A.8 for the power plane layout. When JP2 is open, then the PIC18F65J50 must be isolated from the MCP2150. This is done with the JMP1:JMP14 jumpers as well as the R26, R27, R28, and R29 resistors.

Jumpers JP1C1 and JP2C1 are used to connect the default installed optical transceiver to the MCP2150's RXPD and TXIR pins. There are footprints for two other optical transceiver implementations. If either of those implementations are installed, then the jumpers may be switched to the desired optical transceiver.

**FIGURE 1-2: MCP2150 SELECTING SOURCES**



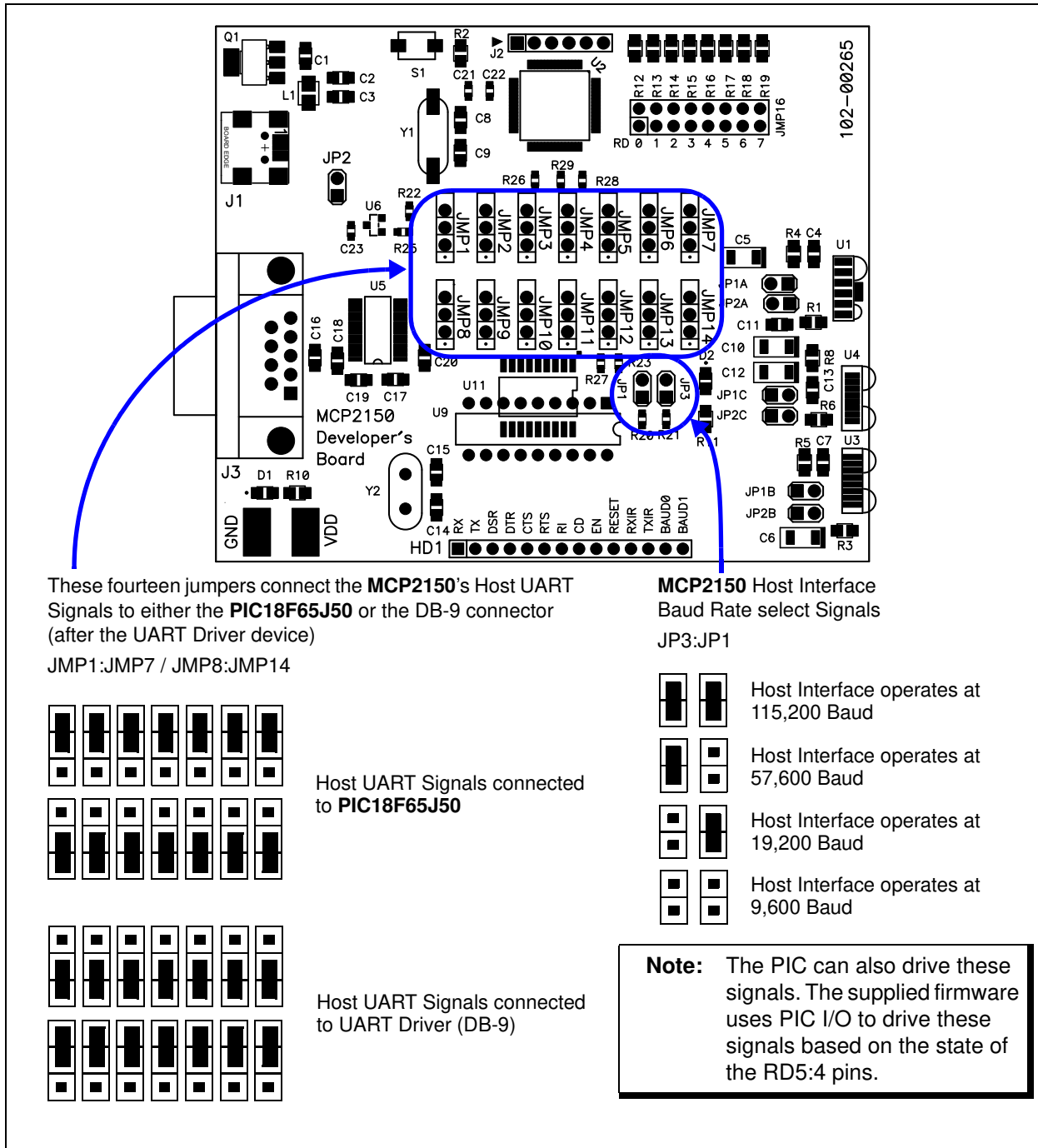


# MCP2150 Developer's Board User's Guide

## 1.3.2 Host UART Interface Connection Jumper Descriptions

Figure 1-3 shows the five jumpers used to control the connection of the MCP2150's Host UART signals.

**FIGURE 1-3: MCP2150 HOST UART INTERFACE CONNECTION**



## 1.4 PC REQUIREMENTS

The PC used has three main requirements. These are:

1. Standard serial port.
2. USB port (to power the MCP2150 Developer's Board).
3. Terminal emulation program.
4. IrDA standard driver installed, which treats the IR port as a virtual serial port.

A non-legacy-free Intel® compatible model with Windows Operating System (OS) would meet these requirements. The Windows® OS includes a terminal emulation program called Hyperterminal. **Section Appendix D. "Configuring the HyperTerminal® Program"** shows instructions to configure HyperTerminal and demonstrate the developer's boards.

## 1.5 WHAT THE MCP2150 DEVELOPER'S BOARD KIT INCLUDES

This MCP2150 Developer's Board kit includes:

- MCP2150 Developer's Board, 102-00265
- Important Information Sheet

### NOTICE

**The Kits no longer ship with CD-ROMs. Any other material is available for download from the Developments Boards product page. This material can include such items as:**

- User's Guide
- Firmware
- GUI programs
- Schematic Capture and PCB Layout files

# MCP2150 Developer's Board User's Guide

---

NOTES:

## Chapter 2. Installation and Operation

### 2.1 INTRODUCTION

To demonstrate the operation of the MCP2150 Developer's Board (Secondary Device) a Primary Device is required. The Primary Device can be a PC with an IR port (integrated IR port or IR Dongle).

The MCP2150 Developer's Board default firmware program has four different programs that are selected by the state of the RD7:6 pins.

These demonstration programs have the following operation:

- Demo #1 Operation - Direct IR / UART (DB-9) Mode
- Demo #2 Operation - Data Streaming Mode
- Demo #3 Operation - Echo Data Mode
- Demo #4 Operation - IR / UART (DB-9) Pass Through PIC Mode

Each demonstration program's operation will be described in the Demo section.

The component layout floor plan of the MCP2150 Developer's Board (MCP2150DM) PCB is shown in Figure 1-1 while Table 2-1 shows the hardware requirements to demonstrate the MCP2150 Developer's Board.

**TABLE 2-1: DEMO SYSTEM HARDWARE REQUIREMENTS**

Qty	Hardware	Purpose
1	PC with: (1) a) IR port or PC with USB/Serial port and USB/Serial port to IR Dongle (1) b) One USB port to power the MCP2150 Developer's Board and c) one serial port to communicate to the MCP2150 Developer's Board.	As a Primary Device, this device will initiate communication to the MCP2150 Developer's Board. The PC's USB port will also power the MCP2150 Developer's Board. Also: The PC's UART port will "talk" with the MCP2150's UART interface, while the PC's IR port will "talk" with the MCP2150's IR interface. The PC will run two instances of HyperTerminal, one connected to the PC's serial port (UART) and the other connected to the PC's IR port.
1	Serial Cable	To connect the PC serial ports to the MCP2150 Developer's Board serial port.
1	USB Cable	To power the MCP2150 Developer's Board from the PC's USB port.
—	MCP2150 Developer's Board	This is the demonstration unit

**Note 1:** This can be done with one PC, but depending on the features of the selected PC, a second PC may be required due to number of serial ports available (see Figure 2-1).

To keep the board cost low, only a portion of the MCP2150 Developer's Board is tested. This test covers the major portions of the system. The portions that are not tested are shown in **Appendix C. "Board Testing"**.

# MCP2150 Developer's Board User's Guide

---

## 2.2 THE DEMO SYSTEM

The demo system setup requires a Primary Device and a MCP2150 Developer's Board (Secondary Device). The Primary Device is a PC with an IR port (integrated IR port or IR Dongle). The Secondary Device is the embedded system, which is the MCP2150 Developer's Board.

The MCP2150 Developer's Board can be powered by one of two sources:

- The USB sourced power
- The Power supply test points

For the demo descriptions, the board will be powered via USB, so, a PC with a UART and USB port is required. The USB voltage is regulated to 3.3V, due to the PIC18 device's voltage operating range.

This developer board either communicates between the DB-9 interface and the IR interface or acts as an embedded system and communicates between the IR interface and the PIC microcontroller.

### 2.2.1 The PIC18F65J50 Firmware

The PIC18F65J50 firmware program looks at the state of the RD7:4 pins to determine the board's operation (program and Host UART baud rate).

The configuration of the JMP14:JMP1 jumpers determines how the UART signals are connected between the MCP2150, PIC and the MAX3238 compatible driver.

The programs have the following operations:

- Data is directly passed from the IR interface to the MAX3238 device
- Data is passed from the IR interface to the MAX3238 device after passing through the PIC microcontroller
- Once a data byte has been received by the PIC, the PIC continuously streams a data table
- The PIC echoes whatever character it receives, after changing the case (upper to lower, and lower to upper)

### 2.2.2 The PC with IR Port

A PC with IR Port can be configured to operate as the Primary Device. The PC will need to run an appropriate application program to communicate with the Secondary Device. For a PC with IR port, this program will be HyperTerminal. The IRCOMM2K driver may need to be installed so that HyperTerminal can communicate to the IR port as if it was a serial port. When installing IRCOMM2K, select COM7 as the desired port.

Configuring the HyperTerminal program on the PC is shown in **D.1.2 "Configuring HyperTerminal to connect to the IrDA Port (Virtual Port)"**.

The PC will run a second instance of HyperTerminal when running Demo #1 and Demo #4. This instance of HyperTerminal will communicate to the PC's serial port which will be connected to the MCP2150DM's serial port. This allows the transmitted data (from the IR port) to be seen on the serial port (and vice versa). Configuring the HyperTerminal program on the PC is shown in **D.1.3 "HyperTerminal Configuration for the Secondary Device"**.

<p><b>Note:</b> HyperTerminal should be disabled before establishing a connection between the PC and the MCP2150 Developer's Board. Make sure that any other programs (e.g., HotSync<sup>®</sup>) connected to the IR ports are disabled.</p>
---

## 2.3 MCP2150DM DEMOS

A description of the demos, including step-by-step instructions are shown in this section.

### 2.3.1 Demo #1 Operation - Direct IR / UART (DB-9) Mode

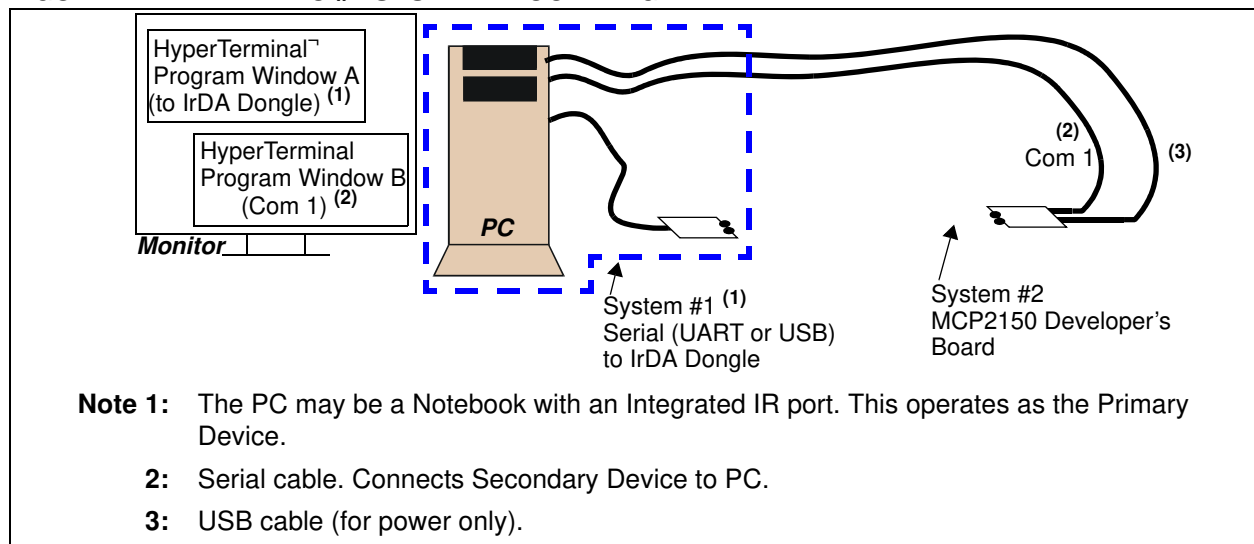
In Demo #1, the MCP2150 Developer's Board will communicate directly to the PC (or IrDA to serial interface Dongle) data received on the DB-9 port.

This demo shows the MCP2150 converting data between the IR port and the Host UART port. The Primary Device's IR packet is decoded and any data is extracted and Transmitted on the Host UART interface. Data received on the Host UART interface is formatted into the IR data packet and transmitted to the Primary device.

Figure 2-1 shows the system setup, while Figure 2-2 shows the jumper configuration for the MCP2150 board. Lastly, Table 2-2 shows the steps for Demo #1 operation.

**Note:** Figure 2-3 shows an alternate jumper configuration where the MCP2150DM is powered via the VDD and GND test points (requires that JP2 shunt be removed). Table 2.3.2 does not document this configuration, but due to its similarities should be easy for the user to implement.

**FIGURE 2-1: DEMO #1 SYSTEM BLOCK DIAGRAM<sup>(1)</sup>**



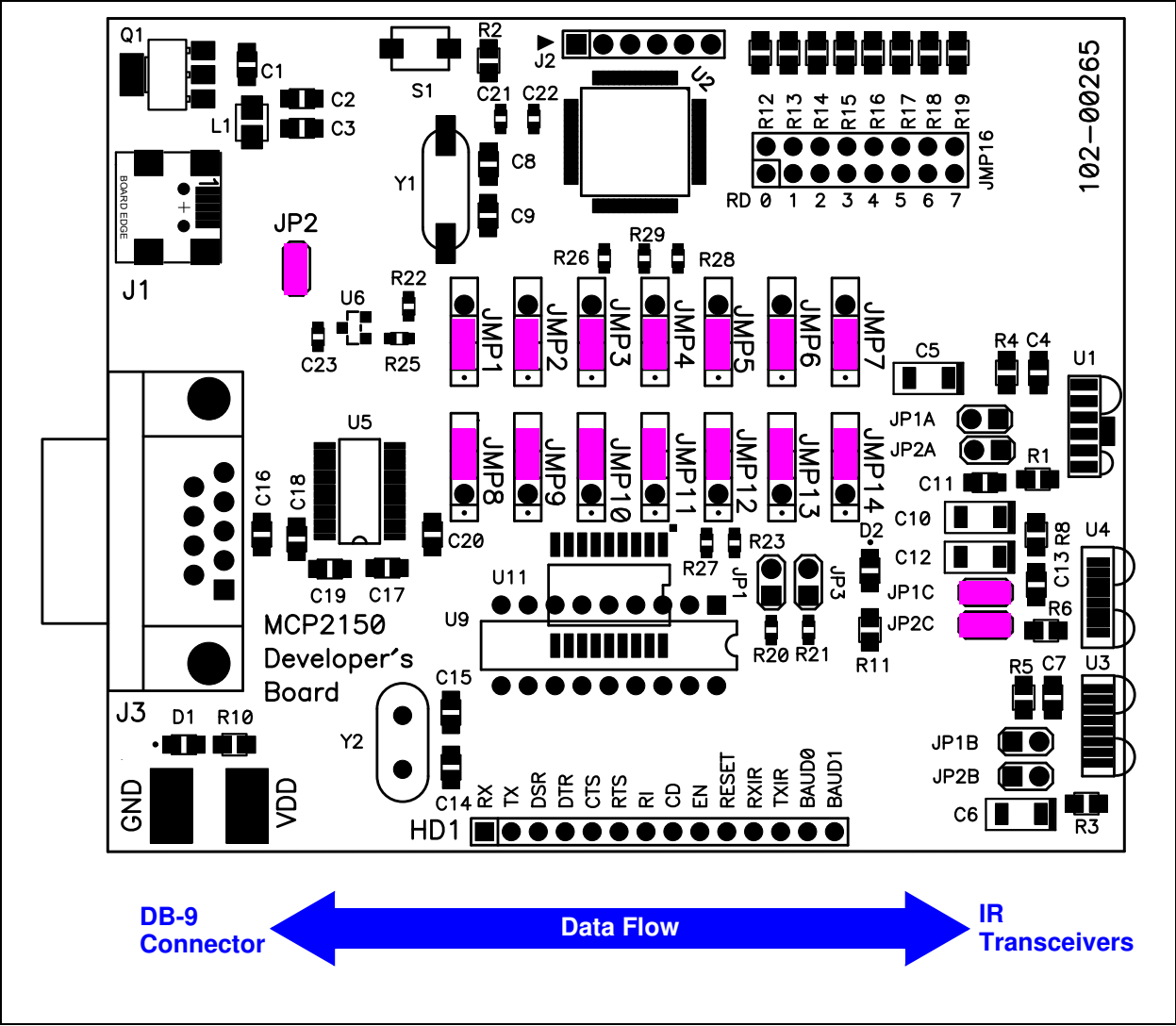
### Hyperterminal to Serial Port Settings

The com port settings should be configured as:

- 115,200 Baud
- 8-bits
- No Parity
- One Stop
- Hardware Flow Control

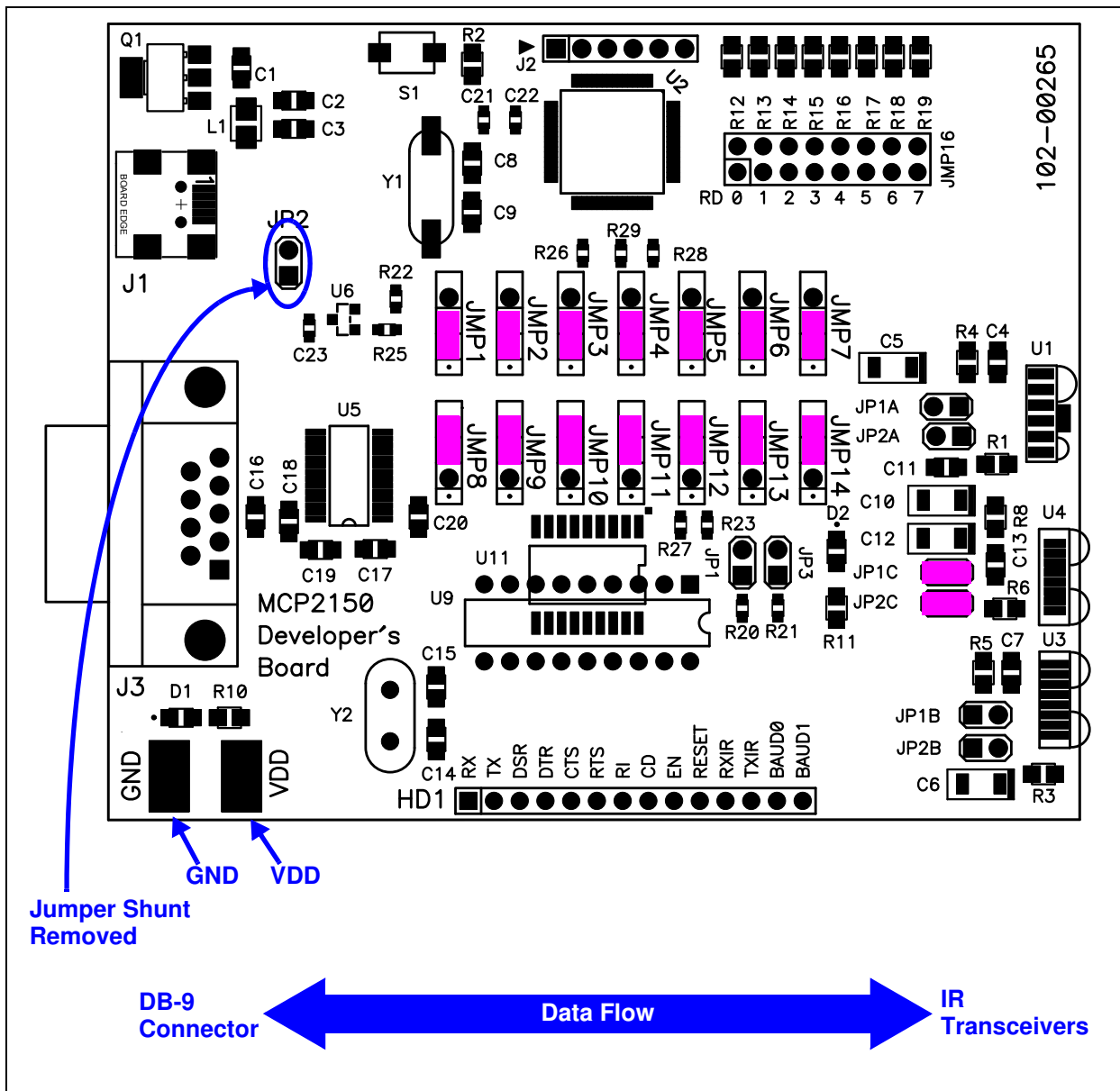
# MCP2150 Developer's Board User's Guide

FIGURE 2-2: DEMO #1 CONFIGURATION - DIRECT TO UART (DB-9) MODE



**Note:** This is the board configuration shipped to customers.

**FIGURE 2-3: DEMO #1 ALTERNATE POWER CONFIGURATION**





# MCP2150 Developer's Board User's Guide

TABLE 2-2: DEMO #1 STEPS

Step	Action	Result
1	Place the Primary Device's IR port and the MCP2150 Developer's Board on a flat surface about 25 cm (10 inches) apart, and with the IR ports facing each other.	—
2	<b>On the MCP2150 Developer's Board:</b> Ensure that the jumpers are configured as in Figure 2-2.	—
3	<b>On the MCP2150 Developer's Board:</b> Apply power to the unit via the USB connector. The PIC reset switch (S1) may be depressed and released to ensure that the PIC had a good reset.	<b>On the MCP2150 Developer's Board:</b> The green power LED (D1) will turn on.
4	Connect PC's Serial Port to the DB-9 connector of the MCP2150 Developer's Board.	—
5	<b>On the PC:</b> Wait for the PC to make a sound and the system tray shows an IR Icon. Placing the mouse over the Icon will show the MCP2150 Device ID (currently "Generic IrDA").	—
6	<b>On the PC:</b> Open the HyperTerminal program window for the Primary Device (such as COM 7). Ensure that the window indicates that the HyperTerminal program is connected.	<b>On the MCP2150 Developer's Board:</b> —
	<b>Note:</b> See D.1.2 "Configuring HyperTerminal to connect to the IrDA Port (Virtual Port)"	<b>On the PC:</b> The system tray Icon will change from a single IR Icon to two IR Icons facing each other. An IR Link is now established.
7	<b>On the PC:</b> Open a second instance of HyperTerminal program window attached to the PC's Serial Port (such as COM 2) to connect to the MCP2150 Developer's Board. Ensure that the window indicates that the HyperTerminal program is connected.	—
	<b>Note:</b> See D.1.3 "HyperTerminal Configuration for the Secondary Device"	
8	<b>On the PC:</b> In one of the HyperTerminal program windows (such as the Primary Device's window), type some characters.	<b>On the PC:</b> In the other HyperTerminal program windows (the Serial Port window), those characters appear.
9	<b>On the PC:</b> In the other HyperTerminal program windows (Serial Port window), type some characters.	<b>On the PC:</b> In the other HyperTerminal program windows (the Primary Device's window), those characters appear.
10	<b>On the PC:</b> In either HyperTerminal program windows, select the Transfer pull-down menu and then the Send Text File ... option. Navigate to the folder that contains the Transmit File.Txt file and select it. Then, click <b>Open</b> .	<b>On the PC:</b> In the selected HyperTerminal program window, the displayed data is transmitted, being received and displayed by the other HyperTerminal program window.
11	<b>On the PC:</b> Make this file transfer transmitting from the other HyperTerminal program window.	<b>On the PC:</b> In the selected HyperTerminal program window, the displayed data is transmitted, being received and displayed by the other HyperTerminal program window.
12	Continue steps 8, 9 10, or 11 for as long as desired.	—

## 2.3.2 Demo #2 Operation - Data Streaming Mode

In Demo #2, the MCP2150 Developer's Board (MCP2150DM) will communicate via the IR interface to the PC. The MCP2150DM is the Secondary Device, and will continuously stream a data table to the Primary Device (PC). This shows the data throughput from the embedded system to the Primary Device. This throughput will vary depending on the characteristics of the Primary Device.

Figure 2-4 shows the system setup for this test, while Figure 2-5 shows the jumper configuration for the MCP2150 board. Lastly, Table 2-3 shows the steps for Demo #2 operation.

**Note:** Figure 2-6 shows an alternate jumper configuration where the MCP2150DM is powered via the VDD and GND test points (requires that JP2 shunt be removed). Table 2-6 does not document this configuration but, due to its similarities, should be easy for the user to implement.

**FIGURE 2-4: DEMO #2 SYSTEM BLOCK DIAGRAM (1)**

