TB048

Connecting The MCP2150 To The Windows® Operating System

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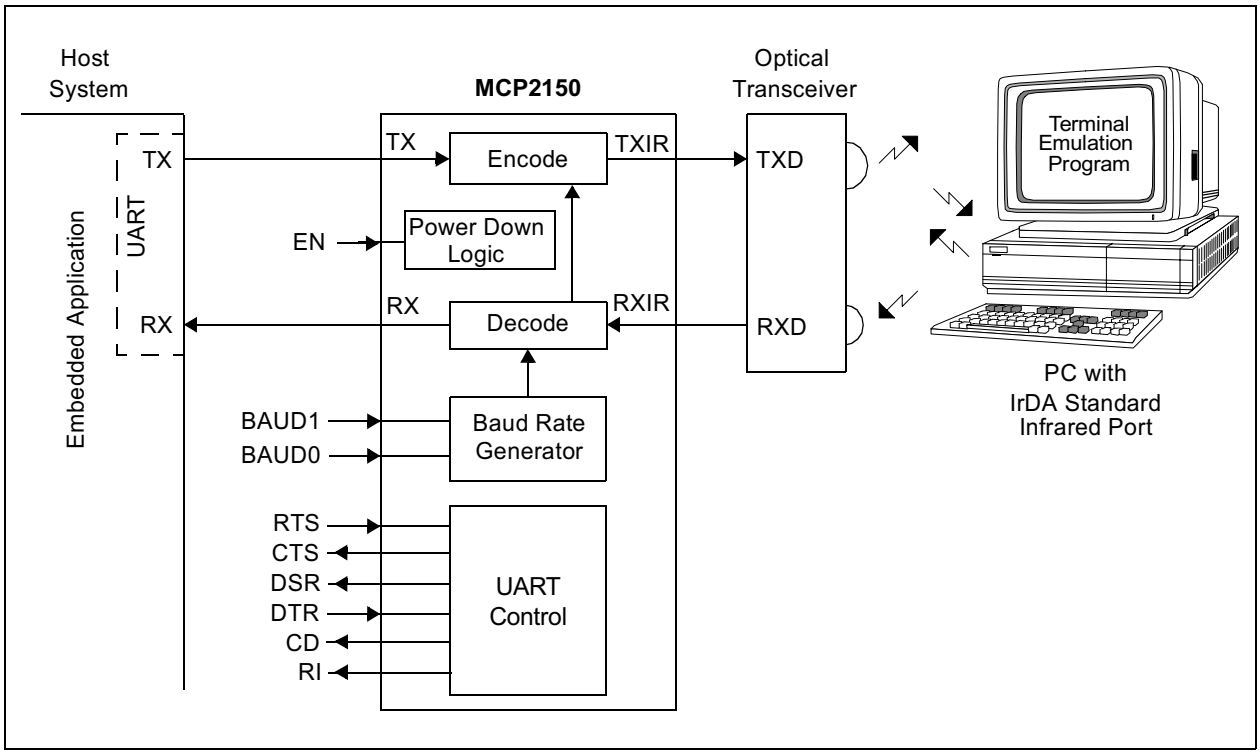
INTRODUCTION

This technical brief demonstrates the operation of the MCP2150 with Microsoft® Windows® Operating System (OS). The MCP2150 is a protocol handler supporting IrDA® standards plus an encoder/decoder. This allows the MCP2150 to be used as a "Virtual Connector", a wireless link between an embedded application and an IrDA standard host. This host can be a Personal Computer (PC) using Microsoft Windows. Microsoft Windows includes a terminal client that can easily be used to demonstrate the capabilities of the MCP2150. Figure 1 shows typical implementation of the MCP2150 in an embedded system.

Note: Windows® 2000 considers the IrDA standard hardware a network device. Thus, a network protocol layer (i.e. TCP/IP, is required by Windows 2000 to communicate). The use of Windows 2000 HyperTerminal to communicate the IrDA standard connection as a serial port is not supported by Microsoft. The IrDA standard functionality is not supported on Windows NT 4.0 or lower.

This demonstration will use the MCP2150 Developer's Board. Optionally, the MCP2120 Developer's Board may be used. The MCP2120 is a simple encoder/decoder. The IrDA standard protocol handler would need to be implemented in the host system, such as a personal computer (PC) with the IrDA standard drivers installed. These boards are available in the MCP2120/MCP2150 Developer's Kit (DV163008).

FIGURE 1: SYSTEM BLOCK DIAGRAM



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SETUP OF INFRARED PORT

For the following discussion, it is assumed you have a PC running Windows® 95, Windows® 98 or Windows® Me. If you do not have a laptop with a built-in IrDA standard infrared port, you can easily use Microchip's MCP2150 Developer's Board with your desktop PC. Please refer to the MCP2120 Developer's Kit User's Guide for more information (DS51246).

When the IrDA standard drivers are installed, a Virtual Serial Port is available to your system. This virtual serial port is reported to the user at the time the drivers are installed. Windows 95 and Windows 98 report this COM port assignment under the Options tab of the IR Monitor. Refer to Figure 2.

Windows Me handles this assignment a bit differently. There is no IR monitor in Windows Me. With Windows Me, the IR icon only appears when an IR device is nearby. There is no IR Monitor and the Windows Me Wireless Link applet does not indicate the COM port assignment of the virtual port. For most systems, this COM port assignment will be the last COM port that HyperTerminal recognizes. This will often be COM4.

For Windows programmers, the virtual COM port is selected the same way. Specify the COM port assignment under the General tab of MSCOMM setup. Refer to Figure 3. Visual Basic® or Visual C++® can connect to the MCP2150 equipped system as if a wired serial port were available. Check with the Microsoft website for the latest IrDA standard drivers.

FIGURE 2: VIRTUAL SERIAL PORT ASSIGNMENT IN THE IR MONITOR

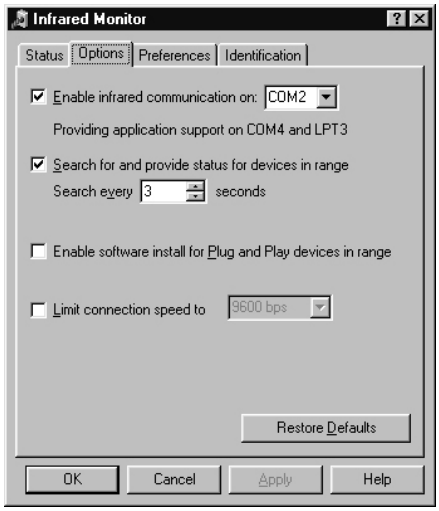
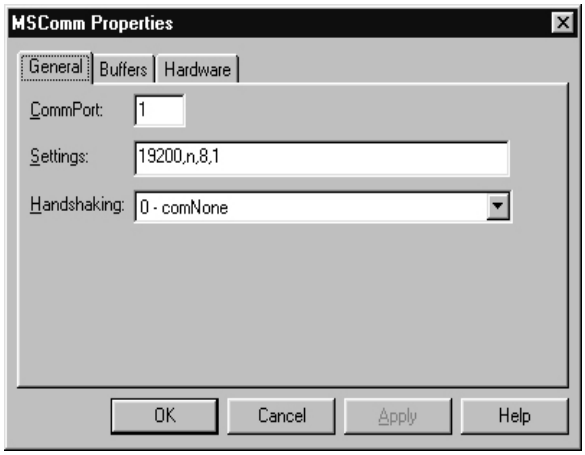


FIGURE 3: MSCOMM SETUP WINDOW



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SETUP OF MCP2150 DEVELOPER'S BOARD

To connect to the MCP2150, make sure the MCP2150 Developer's Board is powered. Then open the terminal or other communication application on the PC. The CD indicator LED on the MCP2150 Developer's Board will light when a valid connection is available.

If IR data is sent to the MCP2150 and the embedded application prevents the MCP2150 from sending its data to the Host controller, the infrared link will be shut down by the MCP2150. This is due to the limited available buffer space. Make sure that the host device is able to receive data (i.e.: CTS/RTS signals are in the appropriate states) when the infrared communication begins.

HyperTerminal supports binary file transfers using Kermit, Xmodem, Xmodem 1K, Ymodem, Ymodem-G, and Zmodem. These file transfer protocols build packets, just like the IrDA standard devices. The packet sizes are larger than the packet size used by the MCP2150. This difference in packet size creates delays as the host and the MCP2150 reconciles what has to be sent and when. Also, the file transfer protocols will send a packet and expect a response sooner than the minimum IrDA standard turnaround time. This will cause the file transfer protocol to abort. For example, HyperTerminal Zmodem will require a response to a packet considerably faster than the minimum IrDA standard turnaround time. Zmodem will therefore immediately abort if you attempt to use it. The use of file transfer protocols is not recommended with the virtual serial link provided by the MCP2150. These protocols are not needed because the IrDA standard packets already have CRC-16 protection. If your embedded application does require handling a data packet, care should be taken to align the IrComm packet boundaries with your data packet boundary to maximize throughput.

REFERENCES

Microchip Documents

Reference documents may be obtained by contacting your nearest Microchip sales office (listed in the back of this document) or by downloading via the Microchip website (**www.microchip.com**).

- MCP2150 Data Sheet, DS21655
- AN758, "*Using the MCP2150 to Add IrDA Standard Wireless Connectivity*", DS00758
- MCP2120/MCP2150 Developer's Kit User Guide, DS51246

IrDA Standards References

The IrDA Standards download page can be found at:

http://www.irda.org/standards/specifications

Additional information on infrared technology can be found at the Microsoft web page at:

http://www.microsoft.com/hwdev/infrared/

Optical Transceiver Manufacturers

Manufacturers of common optical transceivers are shown in Table 1.

TABLE 1: COMMON OPTICAL TRANSCEIVER MANUFACTURERS

Company	Company Web Site Address
Infineon	www.infineon.com
Agilent	www.agilent.com
Vishay/Temic	www.vishay.com
Rohm	www.rohm.com

SUMMARY

The MCP2150 is an easy to use, low cost link between embedded systems and any portable device equipped with an IrDA standard communications port. Third party tools and materials are available to help the developer add IrDA standard wireless connectivity with a minimum lead time and learning curve.

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NOTES:

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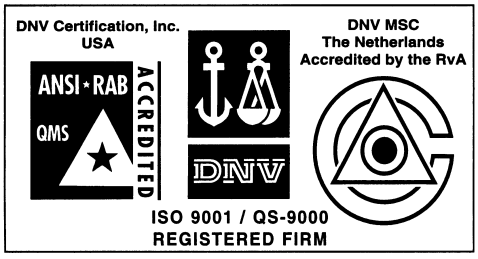

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