TB046

Connecting The MCP2150 To The Psion Operating System

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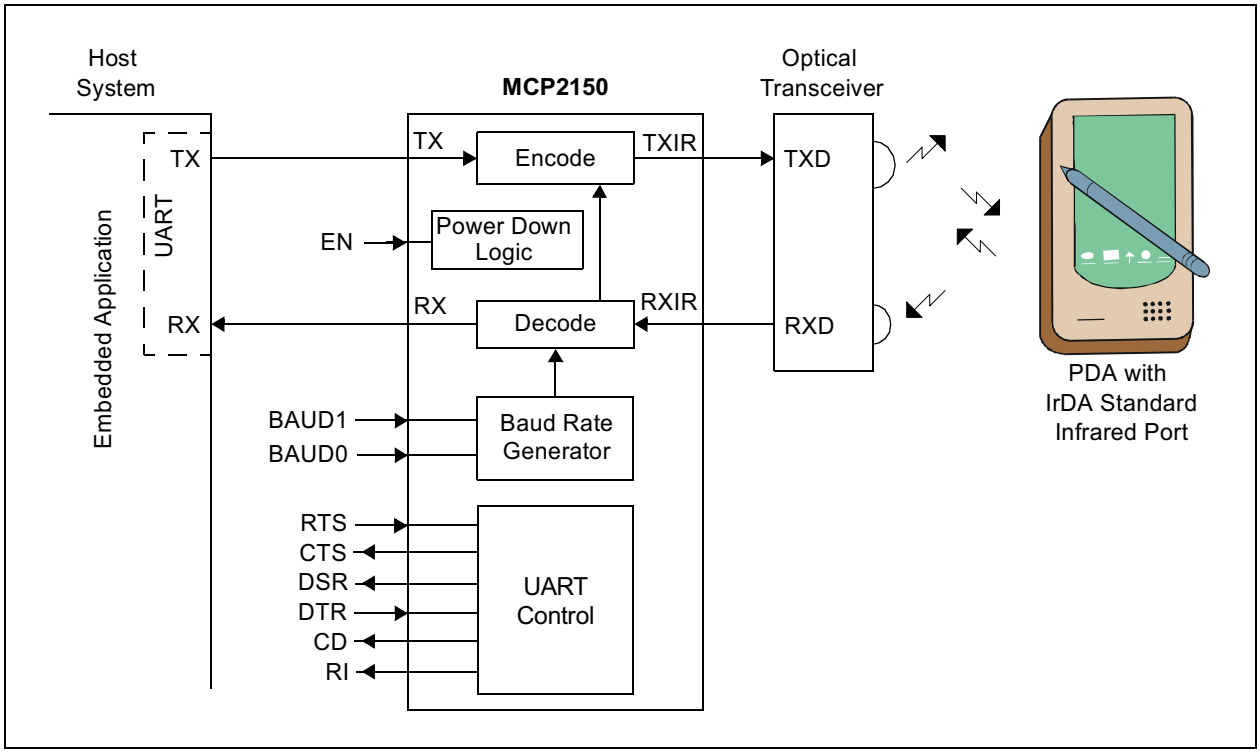
INTRODUCTION

This technical brief demonstrates the operation of the MCP2150 with Psion 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 handheld device using the Psion OS. The Psion OS is generally used for small Personal Digital Assistants (PDA) devices. PDAs are an excellent host platform for use with the MCP2150 because of the light weight, low cost, ease of use, and portability of these devices. The Psion may include a Terminal client that can easily be used to demonstrate this capability.

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 IrDA standard drivers installed. These boards are available in the MCP2120/MCP2150 Developer's Kit (DV163008).

FIGURE 1: SYSTEM BLOCK DIAGRAM



IrDA is a registered trademark of the Infrared Data Association.

SETUP OF PSION DEVICE PORT

This technical brief was written using a Psion NetBook, but the procedure applies to all Psion Series V and later devices. The first step in using Psion is configuring the terminal client. The name for this client is COMMs and can be found from the main menu. Figure 3 shows the Psion Main Menu with the COMMs applet highlighted.

To configure COMMs:

- Run the applet.
- From the pull-down menu, select **Tools**, then **Communication settings**. Figure 2 shows how this window should appear.
- Select "**Infrared**" to enable usage of the IrDA standard protocol stack.

Note:	Do not use IR Raw. Selecting this option will bypass the IrDA standard protocol stack and send the serial data as raw IR data without this protocol.

FIGURE 2: PSION COMMUNICATION SETTINGS

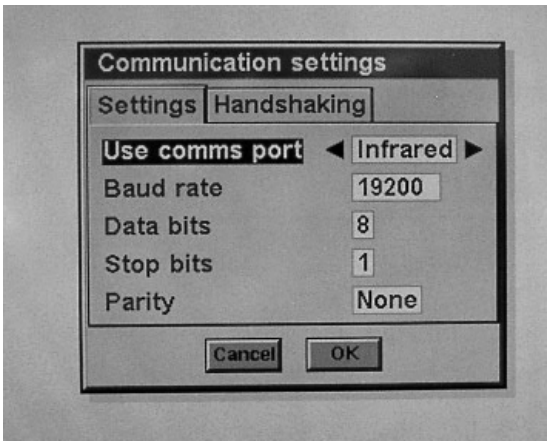
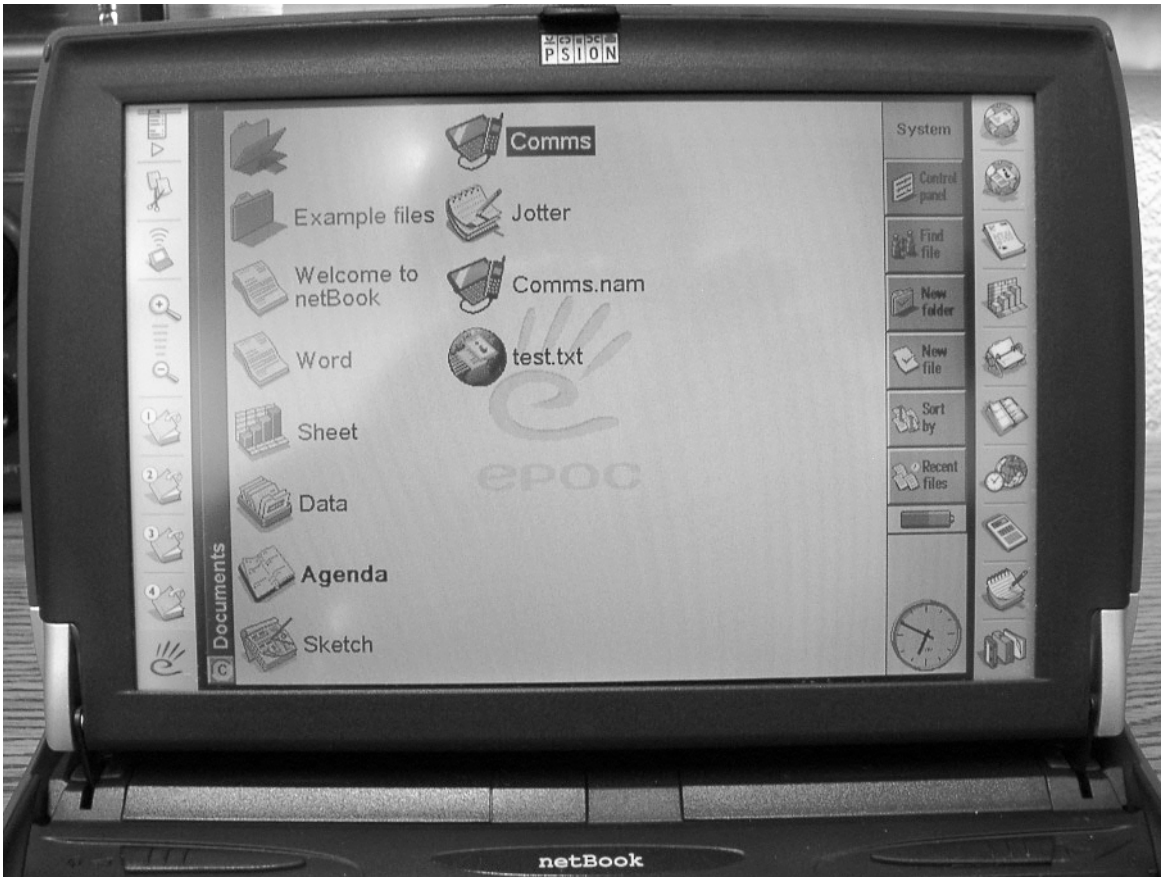


FIGURE 3: PSION MAIN MENU



SETUP OF MCP2150 DEVELOPER'S BOARD

To connect to the MCP2150, make sure the MCP2150 demo board is powered. Open the Comms session. The indicator on the MCP2150 demo 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 in appropriate states) when the infrared communication begins.

Psion products exhibit several behaviors that deviate from IrDA standard specifications. Some models emit a long IR break signal after the discovery process has been initiated. This break signal can last up to 70 ms. and it occurs just before both Primary and Secondary devices switch to their new baud rates. The MCP2150 accommodates this behavior. Also, Psion products do not shut down the link as specified by the IrDA specification. These products simply stop sending IR data, thus severing the link by default. The MCP2150 handles this by using a 10-second time-out. After this time-out has expired, the MCP2150 will assume the link was improperly terminated. The MCP2150 will then revert to normal disconnect mode.

COMMs 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 specifies. 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 reconcile 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, COMMs 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 then 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's Guide, DS51246

IrDA Standards References

The IrDA Standards download page can be found at:

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

The Psion home page can be found at:

http://www.psion.com

Optical Transceiver Manufacturers

Manufacturers of common optical transceivers are shown in Table 1.

TABLE 1: COMMON OPTICAL TRANSCEIVER MANUFACTURERS

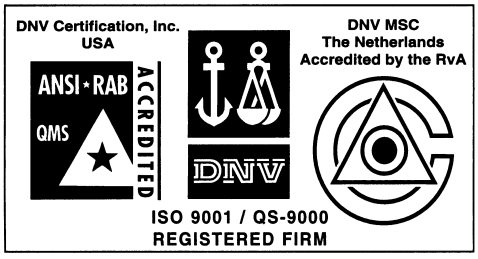
Company	Company Web Site Address
Infineon	www.infineon.com
Agilent	www.agilent.com
Vishay/Temic	www.vishay.com
Rohm	www.rohm.com

SUMMARY

The MCP2150 is an easy to use, low cost link between embedded systems and any portable device equipped with an IrDA standard compatible 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.

NOTES:

Trademarks



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