14. Data Communication between PC and HPC

You can connect the handheld to a desktop PC using a serial connection, USB connection, infrared port, or a network connection. Before you do it, however, you must install Microsoft ActiveSync on the desktop PC.

14.1 Microsoft ActiveSync Installation

Microsoft has announced a new version of ActiveSync to address USB compatibility issues and other minor fixes. It also added support for the Pocket PC 2002. The Pocket PC 2002 devices can sync Inbox and use an internet connection on the desktop to access the internet on the Pocket PC. This version of ActiveSync adds the ability to use Infrared with Windows 2000. Also, Microsoft has dropped support for Windows 95, Schedule+ and Outlook 97 with this release so you'll need Windows 98, ME, NT, 2000 or XP. If you have Windows 95 or Schedule+ you can still use ActiveSync 3.1. In addition, you can now synchronize Favorites and Notes (right into Outlook) as well as other files like Pocket Access, Inbox, Calendar, Contacts, and Task. You can download the latest version of ActiveSync from Microsoft's website.

(1) Installation

Upon running the ActiveSync installation program you will see the option to install ActiveSync 3.5 or other version.

Figure 1. Install MS ActiveSync.

(2) Selecting the Installation Folder for the Desktop
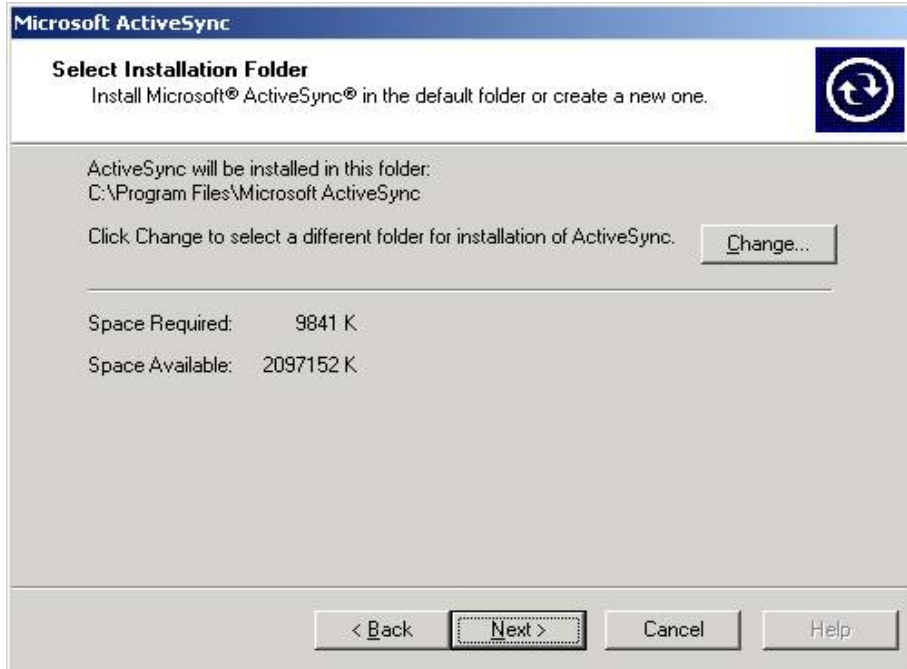

Figure 2. Select folder.

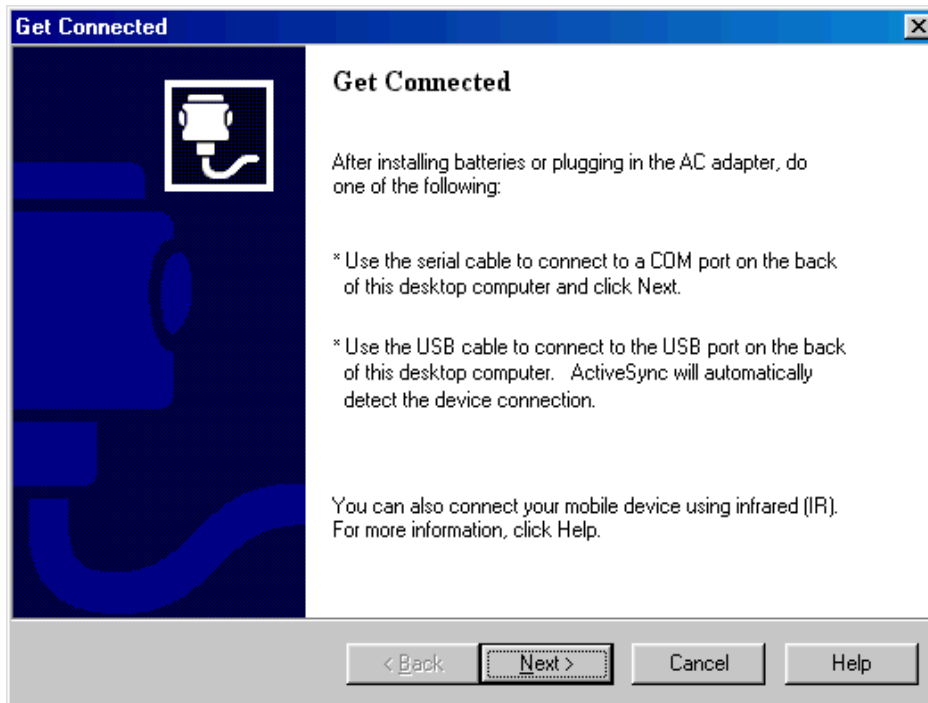(3) Getting Connected

Figure 3. Get connection.

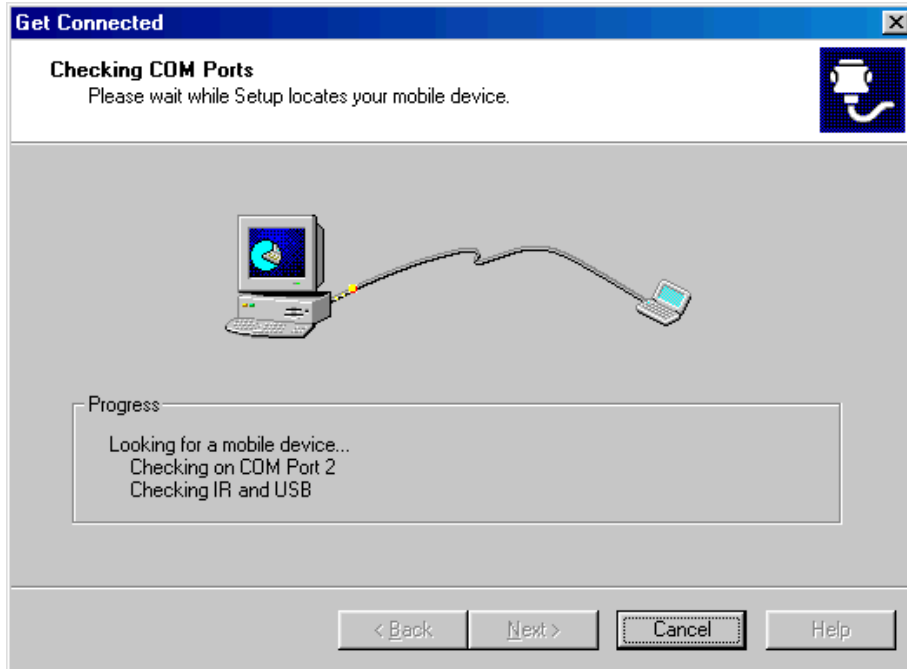(4) Defining a New Partnership for Your PC Companion

Figure 4. Define partnership.
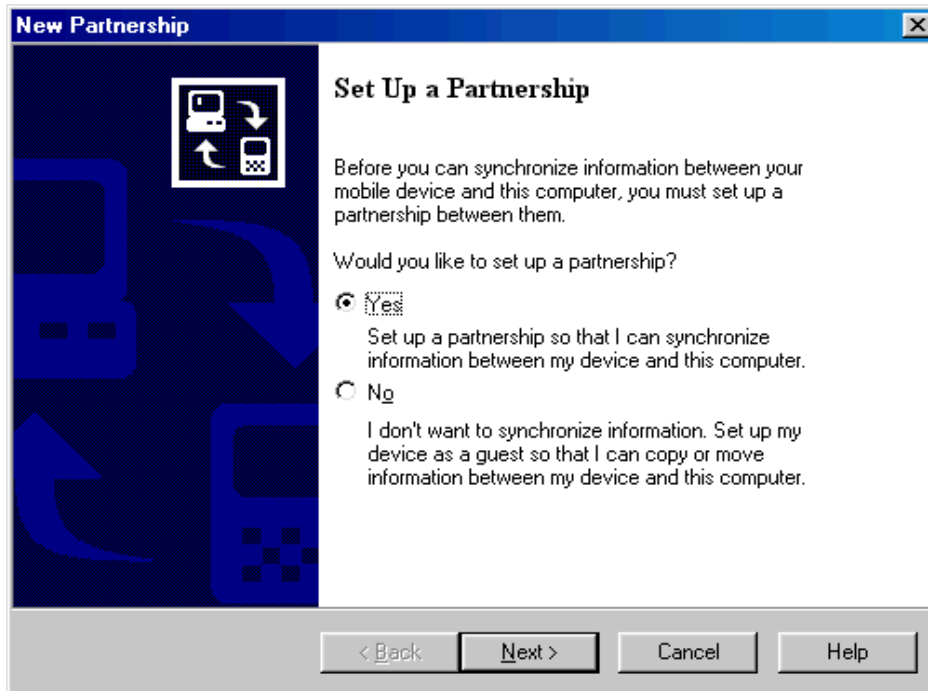
(5) Setting Up a Partnership

Figure 5. Set up partnership.

(6) Naming Your Pocket PC

You will need to rename it if you have more than one device with the same name.
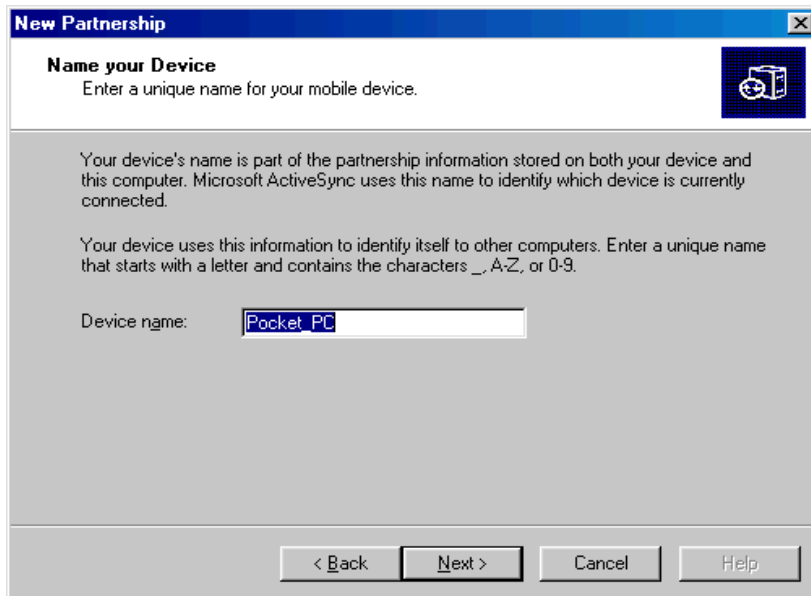

Figure 6. Name HPC.

(7) Selecting the Synchronization Settings for a New Partnership
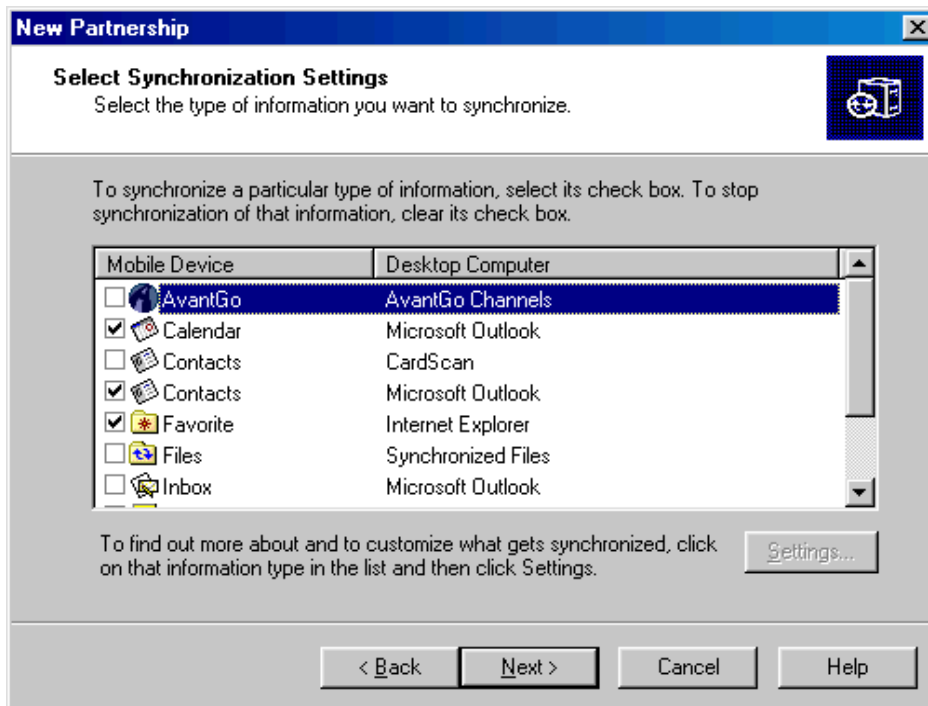

Figure 7. Set synchronization.
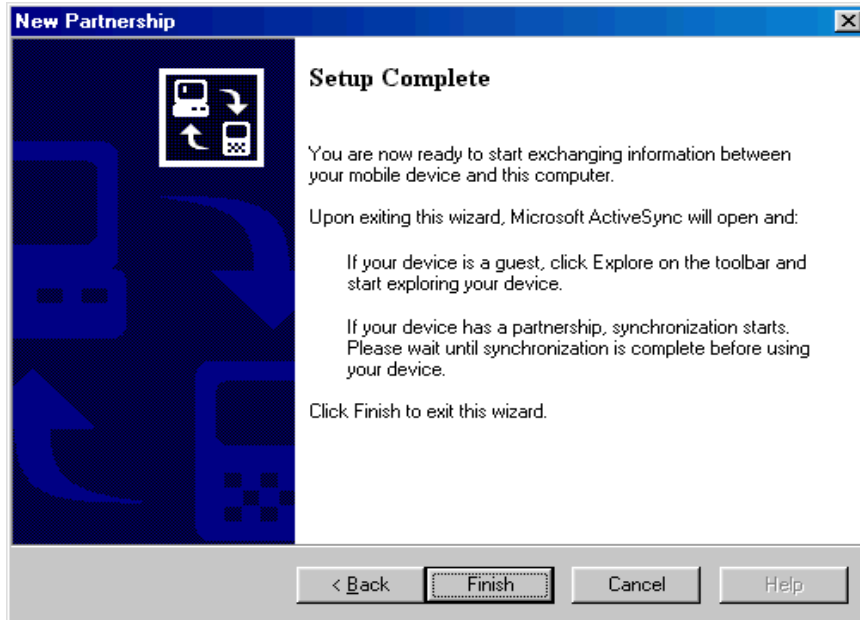
(8) Complete New Partnership

Figure 8. Setup completion.

14.2 Synchronizing Data

Once ActiveSync is installed on a PC, you can start to synchronize data between PC and HPC. The synchronization process offers advanced capabilities like auto-detection of the serial port your PC companion is installed on. It also automatically adjusts the baud rate of the connection based on the settings of your PC companion (Control Panel - Communications - PC Connection - Change Connection). You can now select 115.2K baud and it will connect without any other changes required on the desktop. If ActiveSync runs into a problem completing synchronization, it will notify you in the status window. You have the option to see the log to identify the problem and potential options to resolve it.
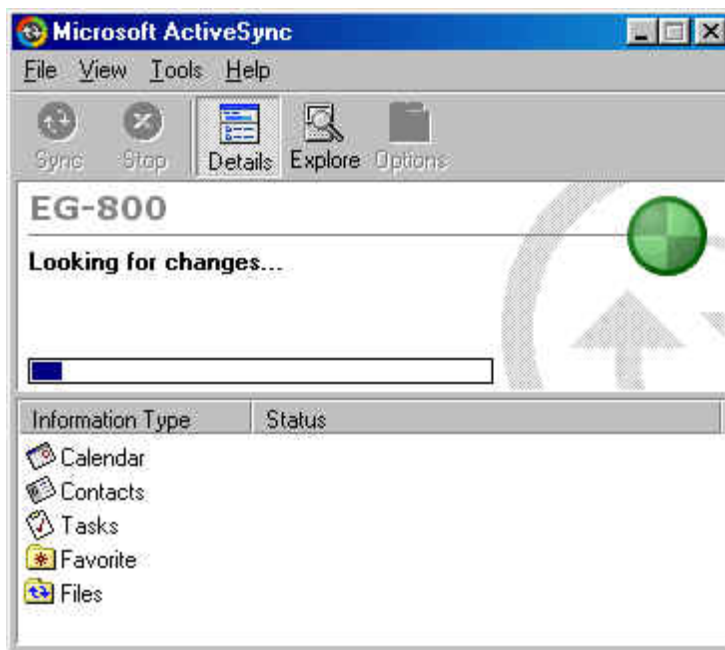
Figure 9. Synchronizing the first time.
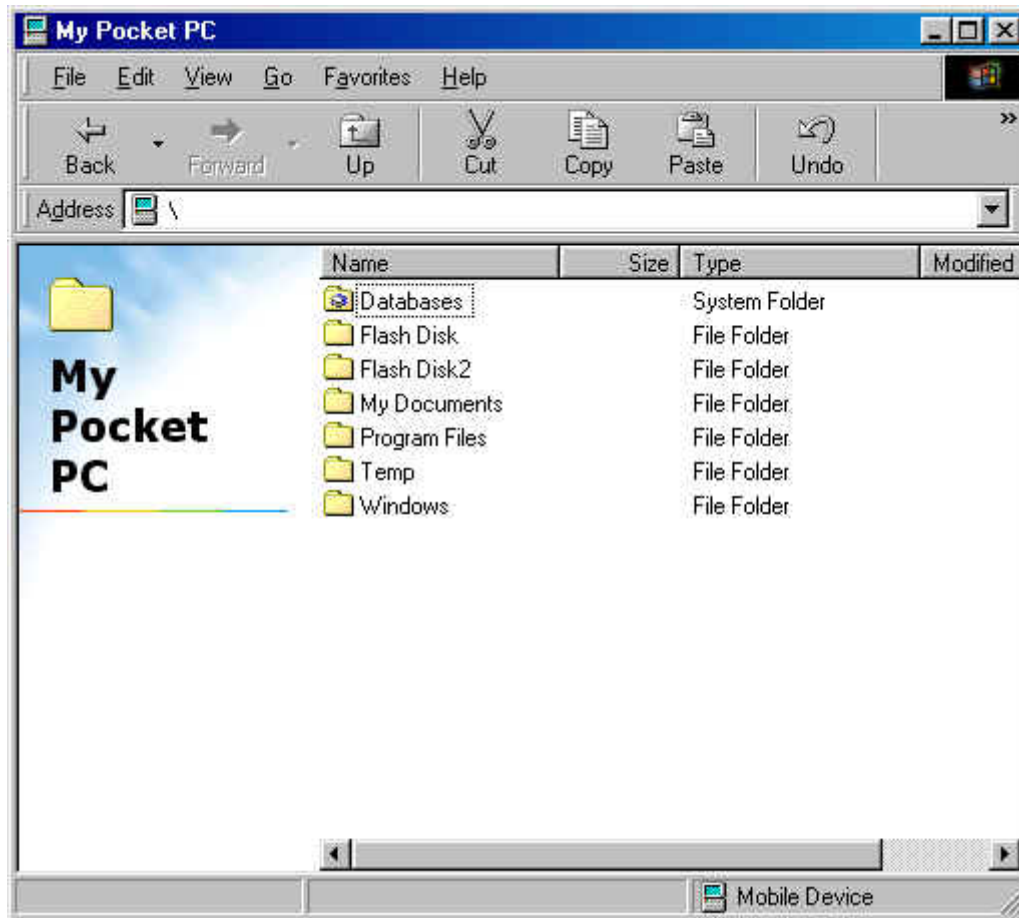
Figure 10. Mobile devices folder.

You can configure MS ActiveSync including sync options, modes, and rules. The Calendar defaults to synchronizing two weeks of appointments in the past while the Contacts defaults to synchronizing all contacts and only outstanding tasks. File synchronization is not on by default, however, I recommend that all users turn this feature on since it automatically copies and converts documents stored in your \My Documents\Synchronized Files\ folder to your desktop.

Figure 11. Sync options.

Figure 12. Sync mode**.**
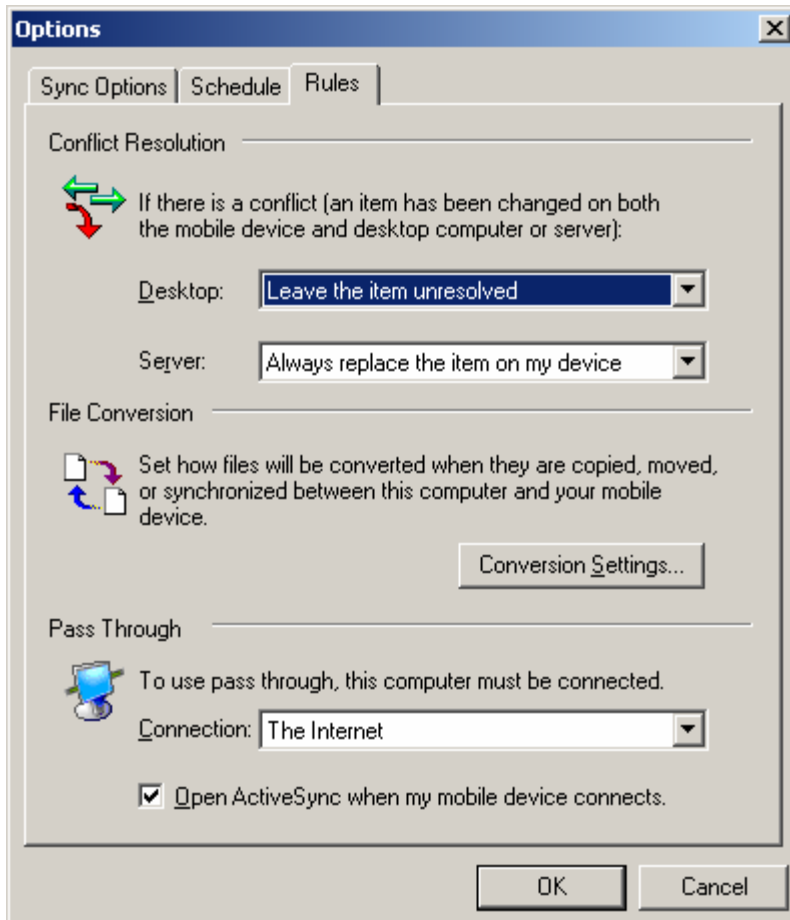
Figure 13. Sync rules.

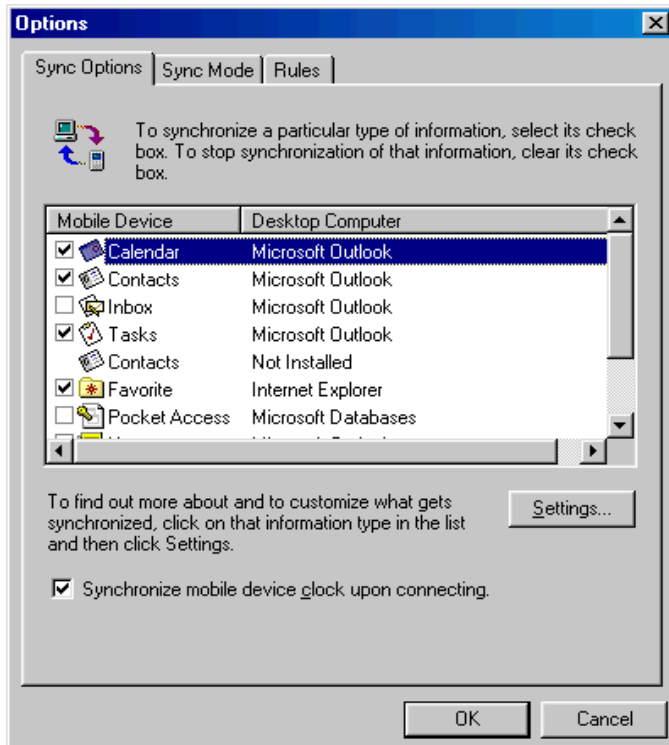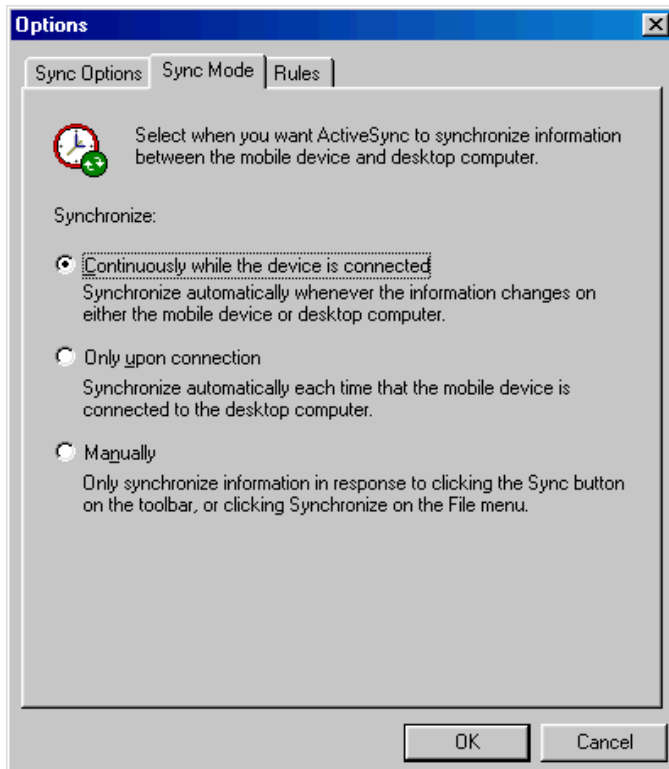### 14.3 Serial Port Connection

You can use the serial port on your Windows CE PC Companion to connect to a variety of different peripherals. The most common is synchronization. You can also connect a GPS (global positioning satellite) with moving maps, printing and an external modem.

Synchronization

This is the first use of the serial port for almost all PC Companions. You can speed up your synchronization from the default 19.2k to 38.4k 56k or 115.2k. I recommend using 56k since some devices will have errors at 115.2k. Also, while you are connected, you can transfer files, sync e-mail and install software. Also with additional software you can access desktop shared drives with the network client and surf the web of you add a proxy server program to your desktop. While the device is synchronizing, you cannot print to a printer attached to your PC.

External Modem

You can attach an external modem to a H/PC or P/PC's sync cable. All you need is a null modem adapter and a gender changer. In some applications you may need a 9to25pin adapter. There is no difference in functionality between a PC Card and an external modem. You can access the web, RAS, or desktop modem connection.

Direct Terminal Connection

You can also use the serial port with a null modem adapter to connect to routers, hubs and other hosts via the terminal emulator which Microsoft provides. Microsoft does not have an option for a direct connection, so you'll need to use a terminal before dialing option. This can be done on the P/PCs as well with their Remote Networking connections. You will have to enter a dummy phone number that never gets dialed.

14.4 USB Connection

USB is short for Universal Serial Bus. It is a 12 MB per second communications link for peripherals that supports plug and play. Starting with Windows CE 2.11 USB support was added. It includes the drivers to enable Windows CE to recognize USB devices (the host controller and root hub). There is only one driver provided with each Handheld PC, Professional Edition - a sample mouse driver. If a user purchases another USB peripheral, they must make sure that they have a Windows CE driver. You cannot use a Windows 95/98/2000 driver on a Windows CE system.

The Pocket PC and the H/PC 2000 also supports USB but in a different way. USB is used in the Pocket PC and H/PC 2000 to provide easier synchronization. That means USB on the Pocket PC and H/PC 2000 allows the Pocket PC and H/PC 2000 to be a peripheral to a PC. The Pocket PCs do not support using the USB port to attach other peripherals.

USB is designed so that some ports are designated for hosts while others are for peripherals. You can't change a port from being used for a peripheral to using it as a host.

Supported Desktop Operating Systems

Microsoft offers USB plug and play support with Windows 95, Windows 98, Windows ME, and Windows 2000. Microsoft chose not to support USB synchronization in Windows 95. Also, Microsoft does not offer USB support with Windows NT. Blue Water Systems offers their own USB for Windows NT that allows you to synchronize with your Pocket PC. In order to sync using USB and your Pocket PC, you will need to install ActiveSync 3.1 which is included.

USB will have to wait for drivers to appear before it will become significantly useful for connectivity and peripherals for Windows CE.

14.5 Infrared Connection

One of the easiest methods of communications for Windows CE based PC Companion (Handheld PCs, Handheld PC Professional Edition, H/PC 2000, Palm-size PCs or Pocket PC) is IrDA. It offers a wireless connection for ActiveSync at up to 115.2k baud which is comparable to a cable connection. The some of the H/PC Pro units can communicate at up to 4 megabits per second! Most notebook PCs have IrDA ports and some desktops do too.   You can purchase a Jeteye PC adapter from Extended Systems or an Aegis IRCE if you want to add IrDA support to a desktop without it. Only Windows 95/98 based systems can use IrDA with Windows CE. Microsoft does not offer an IrDA driver for Windows NT. You can use Windows NT with IrDA on the IBM Thinkpad's IrDA port or with QuickBeam from Extended Systems. Most units can not use the IR port as a remote control. The IR port is configured to support IrDA and not consumer IR. An exception is the HP 620/660LX - SkyCommander - Universal Remote for Windows CE and Palm Remote (formerly Remocon) for the Mips based Palm-size PCs including Casio E-15/100/105 and Compaq Aero 2100.

You can also use the Network Client to access Windows 95/98/NT/NT Server drives as well. I personally have used IrDA with multiple Handheld PCs, Handheld PC Professional Edition and Palm-size PCs to my desktop.

You can also send Contacts, Voice Memos and Pocket Word/Notetaker files to and from PC Companions and the Auto PCs.   The contacts are sent from the Contacts program by selecting the contact to send and File - Send. To receive the contacts you must be in the Contacts program and use File - Receive. To send a file from one PC Companion is via the Windows Explorer. Select the file you want to send and use File Send To - Infrared Recipient. On the other side in Windows Explorer use File - Receive.

You can also communicate unit to unit with other non-Windows CE PDAs via IRChat. It supports communications with Windows CE, Psion EPOC32 and the Newton 2000. Coming soon will be support for the Palm Pilot.

Another feature that IrDA can provide is the ability to connect to the latest GSM phones which are common in Europe and are starting to appear in the United States. This is done as if the phone is a modem and IrDA is used instead of a cable.

Requirements

In order to use IrDA you need the following:

- IrDA Port - Most notebook computers have IrDA. Some desktops do to. If your desktop does not, you can add it from Extended Systems Jeteye PC or Aegis IRCE.
- Microsoft IrDA 2.0 drivers - These drivers are supplied on the Windows CE Services CD under the Optional Components. You can only install this driver on Windows 95. Microsoft does not offer a corresponding driver for Windows NT, however Extended Systems does - QuickBeam.   QuickBeam support laptop computers and desktops with their Jeteye PC.

Configuration

Once you have the IrDA driver installed, you need to configure Windows CE services to use the virtual com port. You can do this via the following screen. Note that the virtual com port is Com5. This is the one that you must use in Windows CE Services for IrDA to work.
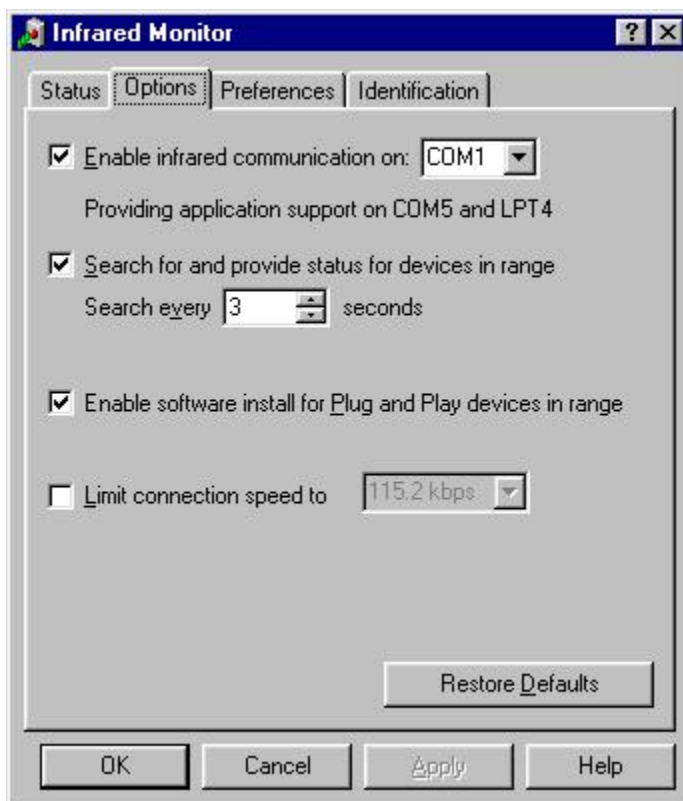

Figure 14. Configure infrared connection.

Also, you need to configure the Handheld PC to use IrDA as well. This is done via Start -> Settings -> Control Panel -> Communications. Select Pc Connection -.> Change then Infrared Port from the list.
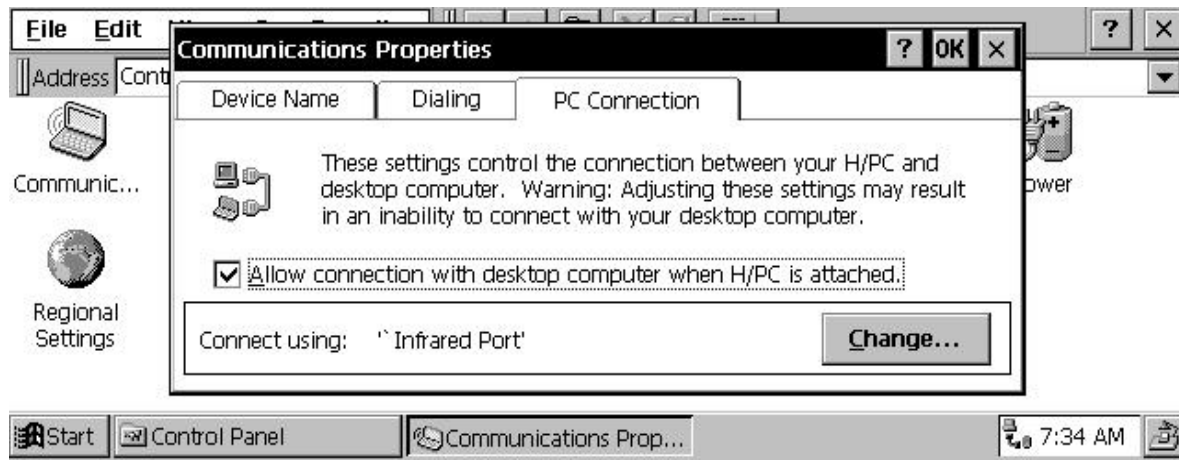

Figure 15. Infrared connection.

You should be already set to sync via IrDA. Use Start -> Programs -> Communications -> PC Link. Don't forget to aim the IrDA port at the notebook or desktop's IrDA port. This may be awkward if your notebook has the IrDA port on the back. Here's the IrDA monitor while the units are connected:
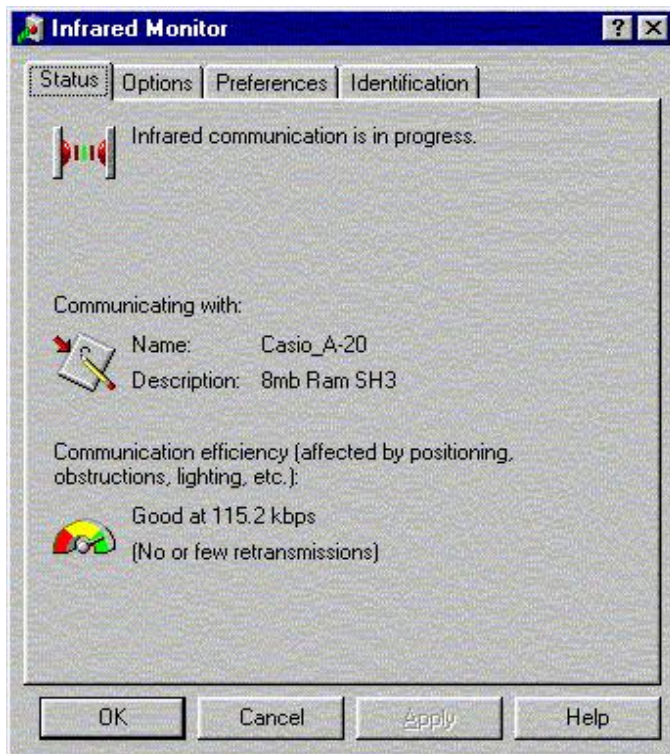

Figure 16. Options of infrared connection.