

Microsoft® Windows™
95 Infrared
Communications Driver
Version 1.0
Release Notes

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Quick Start

Congratulations! You are the proud owner of the Microsoft(r) Windows(r) 95 Infrared (IR) communications driver. After you install the IR communications driver you can start replacing your serial and parallel cable connections with wireless IR links.

Wireless communications between computers is a new thing. And you're part of it! Have fun experimenting with wireless IR links between your computers and printers.

The Version 1.0 IR communications driver is a set of software components that you can add to a Windows 95 computer to enable that computer to send and receive data over IR communications links. Installing the IR communications driver is as simple as running the Setup program that is one of the driver components.

The IR communications driver supports IR communications links running up to 115.2 kilobytes per second (Kbps). The infrared hardware can be built into your Windows 95 computer or added by attaching an infrared adapter to a serial or parallel port. A future release of the IR communications driver will add support for high-speed IR devices which run at 1.152 and 4.0 megabytes per second (Mbps).

Installing the IR Communications Driver

Note: You must always remove any previously installed version of the IR communications driver every time you install the driver. For example, if you have an earlier (Beta) version of the IR communications driver already installed you must remove it before you install Version 1.0. You may also need to remove an installation of the Version 1.0 driver. For example, if you change the IR adapter model that is connected to your computer, you must remove the installed IR communications driver and reinstall it, specifying the new IR adapter type. Instructions for removing the IR communications driver are in "An Optional Step: Removing the IR Communications Driver."

A Quick Start overview of the IR Communications driver installation procedure is:

- If you are using an IR adapter (rather than a built-in IR device), make sure the adapter is physically attached to a COM port and note which COM port it is (COM1, COM2, and so on). If you are using a computer with a built-in IR device, note which COM port that device is assigned to.
- Start the setup program SETUP.EXE, which is one of the IR communications components, to invoke the Windows 95 Add Infrared Device Wizard. Respond to the wizard's prompts for physical COM port information, IR device manufacturer and model information, and so on.
- If the wizard announces New Hardware Found events for the IR serial and parallel ports, you can enable the IR device immediately after the wizard is finished. Enable the IR device by double-clicking on the Infrared device icon in the Control Panel. If the wizard does not announce New Hardware Found events before it is finished, you must restart the computer before you use the Control Panel icon to activate the IR device.

For a detailed description of each of these steps, see "Roadmap for Installing and Using the IR Communications Driver" later in this document.

Using the IR Communications Driver

End-users can install the IR communications device driver on their Windows 95 computer and run applications using wireless infrared communications instead of serial or parallel cables. The driver has been successfully tested on the following Windows 95 notebook computers, which have built-in IR ports:

- Digital(r) HiNote Ultra CT475
- Gateway(r) 2000 Liberty
- Gateway Solo
- HP(r) Omnibook(tm) 600CT
- HP Omnibook 4000C
- IBM(r) ThinkPad(r) 701C (Butterfly)
- IBM ThinkPad 755 (most configurations)
- Midwest Micro Elite
- Midwest Micro Elite p90
- Sharp(r) PC 3050
- TI(r) TravelMate(tm) 5000
- Toshiba(r) Satellite Pro 400 CDT

In addition, the driver has been successfully tested on Windows 95 platforms with the following IR adapters connected to serial ports:

- ACTiSYS ACT-200L Infrared Wireless Interface
- ACTiSYS ACT-220L Infrared Wireless Interface
- Adaptec(tm) AIRport APA-9320 External Infrared Adapter (this adapter is also called the Adaptec AIRport 2000)
- Adaptec AIRport 1000
- AMP PhasIR Serial Adapter
- Extended Systems JetEye PC Infrared PC Interface (ESI-9680)
- Parallax IR Adapter LiteLink PRA9500A

To obtain any of the IR adapters listed above, contact the adapter manufacturer. The addresses of these manufacturers are listed in “IR Adapter Manufacturer Names and Addresses” at the end of this document.

The following applications have been run successfully over an IR communications link, using the IR communications driver and the hardware listed above:

- Windows 95 Direct Cable Connection (DCC)
- Various Windows communications applications, including HyperTerminal, DynaComm, and Carbon Copy.

Because the IR link is simulating a serial communications link, some communications applications may not perform as expected after they connect over the IR link. See the “Troubleshooting” topic for more information.

For instructions on running DCC over an IR link, see “Notes on Running the Direct Cable Connection Application Over an IR Link” later in this document.

Numerous Windows 95 applications have successfully printed over an IR link to an HP(r) Laserjet(r) 5P or 5MP printer, which have built-in IR ports.

Troubleshooting

Some general troubleshooting tips are:

- To get two IR devices to discover each other, you may have to realign the IR devices so they point right at each other, move them closer together, and/or change the batteries in an IR adapter or plug the AC power into an IR adapter. The devices must be three feet apart, or less, and the angle of the cone of IR transmission is 30 degrees. Some devices work best if kept at least six inches apart.

- You must always remove any previously installed version of the IR communications driver every time you install the driver. For example, if you have an earlier (Beta) version of the IR communications driver already installed you must remove it before you install Version 1.0. You may also need to remove an installation of the Version 1.0 driver. For example, if you change the IR adapter model that is connected to your computer, you must remove the installed IR communications driver and reinstall it, specifying the new IR adapter type. Instructions for removing the IR communications driver are in “An Optional Step: Removing the IR Communications Driver.”

Some troubleshooting tips related to using particular applications over IR links are:

- If you use the Windows 95 application HyperTerminal to transfer files, you will not be able to transfer files successfully over an IR link using the Zmodem protocol as it is implemented by HyperTerminal.
- When you run the Windows 95 application Direct Cable Connection (DCC) and establish the connection between the host and guest computers, the guest computer may display the message “Direct Cable Connection was unable to display shared folders of the host computer” and prompt you to enter the computer name of the host computer. A convenient way to find the computer name of the host computer is on the Status tab of the Infrared Monitor interface screen.

Troubleshooting tips related to specific infrared hardware are:

- The Adaptec AIRport 2000 infrared adapter can be powered by either the serial port, installed AA batteries, or an external power supply. In some cases, the serial port may not provide sufficient power for the operation of the adapter. This can cause reduced operating range and/or a failure to find another IR device which is nearby and aligned correctly. If you suspect such a problem, connect an AC adapter or add four AA batteries to the battery compartment in the infrared adapter. This will assure sufficient power. In some instances, you may need to separate the adapter by at least six inches the other IR device.
- If you have an ActiSys 220L IR adapter attached to your computer and print to a printer that is using an Extended Systems ESI-9580 printer IR adapter, or you are printing to the HP DeskJet 340, you must use the Options tab in the Infrared Monitor to limit the connection speed to 19.2 Kbps to print successfully. If you allow the IR devices to automatically negotiate the connection speed without setting this limit, they will negotiate a higher connection speed and your application will not be able to print.
- The TI TravelMate 5000 may communicate over an IR link only at very low speeds (9600 baud).
- The Sharp PC 3050 may communicate over an IR link only at speeds between 9600 baud and 19.2 Kbps.
- If you have an HP Omnibook 4000C or an HP Omnibook 600CT, you must install a special echo-canceling serial driver in addition to the components that make up the IR communications driver. The echo-canceling driver, along with instructions on how to install it, are available from Hewlett-Packard.

Product Support

Microsoft’s support offerings range from no-cost and low-cost electronic information services (available 24 hours a day, 7 days a week) to annual support plans and CD-ROM subscription programs. Please check the SUPPORT.TXT on-line documentation that comes with Windows 95 for detailed information. Note that Microsoft support services are subject to Microsoft’s then-current prices, terms, and conditions, which are subject to change without notice.

In the United States, no-charge support from Microsoft support engineers is available via a toll call between 6:00 A.M. and 6:00 P.M. Pacific time, Monday through Friday, excluding holidays. For all issues except networking issues, this support is available for 90 days after your first call to a support engineer. Networking issues are defined as server-based setup, network administration, dialing into a computer, or connecting to the Internet via a service provider, and using e-mail and fax from within Windows 95. For

fee-based support for these networking issues, see the information in SUPPORT.TXT.

- For technical support for Windows 95, call (206) 635-7122.
- In Canada, support engineers are available via a toll call between 8:00 A.M. and 8:00 P.M. Eastern time, Monday through Friday, excluding holidays. Call (905) 568-4494. This support is available for 90 days after your first call to a support engineer.

When you call, you should be at your computer and have the appropriate product documentation at hand. Be prepared to give the following information:

- The version number of the Microsoft product that you are using.
- The type of hardware that you are using.
- The exact wording of any messages that appeared on your screen.
- A description of what happened and what you were doing when the problem occurred.
- A description of how you tried to solve the problem.

Road Map for Installing and Using the IR Communications Driver

You must carry out a three-step process to use the IR communications driver:

1. Install the Windows 95 IR Communications driver.
2. Validate the installation by using an application to transfer data over the IR link.
3. Start running other communicating applications over the IR link.

After you install the driver, you can remove it at any time by running the Windows 95 Control Panel Add/Remove Programs feature.

Each of these steps, including the driver removal step, is presented in detail below.

Step 1. Installing the IR Communications Driver

Note: You must always remove any previously installed version of the IR communications driver every time you install the driver. For example, if you have an earlier (Beta) version of the IR communications driver already installed you must remove it before you install Version 1.0. You may also need to remove an installation of the Version 1.0 driver. For example, if you change the IR adapter model that is connected to your computer, you must remove the installed IR communications driver and reinstall it, specifying the new IR adapter type. Instructions for removing the IR communications driver are in “An Optional Step: Removing the IR Communications Driver.”

To install the IR communications driver, do the following:

- a. Click the Start button and select the Run option.
- b. In the Run dialog, open the Setup program (SETUP.EXE) from the Infrared setup location. After the Setup program copies some files, it starts the Add Infrared Device Wizard.
- c. When the wizard prompts you to choose a manufacturer’s name for your IR device, choose “(Standard Infrared Devices)” if you have a computer with a built-in device, or choose the name of the manufacturer and the model of the adapter if you have an IR adapter attached to the computer.
- d. When the wizard prompts you to choose the communications port that the IR device is physically connected to, click the port from the list. If you are not certain which physical communications port the IR device is using, make your best guess.
- e. When you are done with the wizard, click the Finish button to complete the IR device installation. The wizard should have briefly displayed New Hardware Found messages. If the wizard did not display these messages, then restart the computer.

f. Activate the IR device by clicking the Start button, pointing to Settings, and then clicking Control Panel.

Double-click the Infrared icon.

g. If you chose the correct port in Step d., the Infrared Monitor interface screen appears. If you did not choose the correct port, a message appears telling you that the port you have chosen is being used by another program. Click OK. When the Infrared Monitor interface appears, click the Options tab, and then choose a different communications port (for example, COM1 instead of COM2). Repeat this step until you have chosen the correct port.

For general information about how to use the Infrared Monitor, click the Help button in the lower-right corner of the Infrared Monitor interface screen. To get information about individual items in the Infrared Monitor interface, such as check boxes, click the question-mark (?) button in the upper-right corner of the screen and then click the item you want information about.

The Options tab of the Infrared Monitor interface contains the following two particularly useful items:

- The Enable Infrared Communication On check box, which enables and disables the IR device.
- The Limit Connection Speed To option, which limits the link speed the IR device can negotiate.

You might want to use the Limit Connection Speed To option if an adapter is attached to a COM port that is using an 8250 UART instead of a 16550 UART, or if an adapter is connected to a relatively slow computer (such as a 386 running at 20 MHz). In these cases, you could use this option to limit the connection speed to 19.2 Kbps.

Step 2. Validating the IR Communications Driver Installation

To validate your IR communications driver installation, you can either:

- Print from an application over an IR link to an IR-capable printer.
- Exchange data between two IR-capable computers over an IR link, using a communications application.

Printing to an IR-Capable Printer

If you are testing the printing capability of a Windows 95 application over an IR link to an IrDA-compliant printer such as the HP 5P, then you need to carry out the installation step for the IR communications driver on one computer and then try the Print option in an application. Make sure you have the correct printer driver installed for your IR-capable printer and that you have selected the infrared printing port (virtual LPT port) as the printer port. If the application prints on the IR-capable printer, you have validated the link.

If you have trouble printing, see “Troubleshooting” for more information.

Exchanging Data Between Two Computers

To validate a link between two computers running Windows 95, you must install the IR communications driver on both computers. To do this, carry out the procedure in “Step 1. Installing the IR Communications Driver” earlier in this document.

Note that the IR devices on the two computers do not have to be made by the same manufacturer as long as both devices are IrDA-compliant. For example, you could have a JetEye PC Infrared PC Interface (ESI-9680) attached to one desktop computer and an Adaptec AIRport APA-9320 External Infrared Adapter attached to the other desktop and the IR link will work.

One way to validate an IR link is to run the HyperTerminal application on both computers and send characters from the keyboard of each computer over the IR link. HyperTerminal is installed on a Windows 95 computer as part of the typical installation that is recommended for most computers. To validate your installation of the IR driver on both computers, carry out the following procedure:

- a. On both computers, click the Start button, point to Settings, and then click the Control Panel. Double-click the Infrared icon. Then move the IR devices within 3 feet of each other, and make sure they're pointing at each other. When the two IR devices discover each other, the message "Available infrared devices in range" will appear on the Status tab of the Infrared Monitor interface screen. Make sure Infrared Monitor reports both IR devices have the appropriate infrared device within range before you proceed. You might have to realign the IR devices so they point right at each other, move them closer together, and/or change the batteries in an IR adapter or plug the AC power into an IR adapter. For more information, see "Troubleshooting" earlier in the document.
- b. On one of the computers, click the Options tab in the Infrared Monitor interface and find the information that starts with "Providing application support on ...". Write down the name of the COM port you find there. This is the name of the simulated serial port that the IR link using. The name of this virtual serial port might be COM4 or COM5 and it will differ from the name of the physical communications port your IR device is running on (which is typically named COM1 or COM2).
- c. Run HyperTerminal on the computer for which you have the virtual serial port name by clicking the Start button, pointing to Programs, pointing to Accessories, and then clicking the HyperTerminal folder.
In the window that appears, double-click the Hypertm.exe icon.
- d. In the Connection Description dialog box, type a descriptive name (such as "Direct IR") for the new connection, and then click OK.
- e. In the Phone Number dialog box, use the Connect Using drop-down list to click the "Direct to Com x " entry, where x is the number of the virtual COM port that you wrote down in Step b. Then click OK. You are ready to start using HyperTerminal on one of the computers.
- f. Repeat steps b. through e. for the other computer.
- g. In HyperTerminal on either computer, type any characters at the keyboard. If the characters you type appear in the HyperTerminal window on the other computer, then you have confirmed that the IR link works in that direction. Repeat this step on the other computer. If the IR link works in both directions using HyperTerminal, you have confirmed the successful installation of the IR communications driver on the two computers.

Note the changes in status that are displayed in the Status tab of the Infrared Monitor interface while you type characters in HyperTerminal.

- h. Disconnect the HyperTerminal direct IR connection by exiting the HyperTerminal application on both computers. When you are prompted to save the session, click Yes. This saves the direct IR connection setup information as an icon in the HyperTerminal main folder. You can double-click this icon to restart one side of the HyperTerminal direct IR connection.

Step 3. Running Other IR-Capable Applications

Most applications that can communicate over a null modem cable that is connecting serial ports on two Windows 95 computers should also be able to communicate over an IR link. The procedure for setting up and using the IR link in these other communicating applications will probably be similar to the procedure you use in Step 2 of the Roadmap, when you use the HyperTerminal application to validate the installation of the IR communications driver.

An Optional Step: Removing the IR Communications Driver

To remove the IR communications driver, including all the files and registry entries, carry out the following procedure:

- a. Make sure the Infrared Monitor (Irmon.exe) is not running. If it is running, you must restart the computer, or you can close the Infrared Monitor dialog box, press CTRL+ALT+DEL, click Irmon, and then click End Task.
- b. Click the Start button, point to Settings, and then click the Control Panel.
- c. Double-click the Add/Remove Programs icon, and then click the Install/Uninstall tab.
- d. In the list of installed software, click the name of the IR communications entry, and then click the Add/Remove button. For this release of the IR communications driver, the entry in the software list to click is "Infrared Support for Windows 95 Version 1.0."
- e. When you are prompted to restart the computer, click Yes. The Infrared icon will no longer appear in the Control Panel folder.

Notes on Running the Direct Cable Connection Application Over an IR Link

With Direct Cable Connection (DCC), you can establish a direct serial or parallel cable connection between two computers to share the resources of the computer designated as the host. DCC can also be used over an IR link.

Preparing to Use DCC

The computer that contains the folder you want to share is the host, and the other computer is the guest. Share a folder on the host, granting access rights to anyone using the guest computer, by carrying out the procedure given below.

Note: The following procedure is just one of many that could be used to share files in a folder on the host computer. For example, there is user-level access control as well as share-level access control.

The following procedure is one of the simplest access control procedures, which is all that is needed to get you started using DCC. To get information about all the ways files, folders, and printers can be shared, use the Windows 95 Help.

- a. Double-click on the My Computer icon.
- b. Double-click on the icon of the drive that contains the folder you want to share (for example, double-click on the icon for the C: drive).
- c. Right-click on the icon of the folder you want to share and then select Properties.
- d. In the folder properties dialog, select the Sharing tab and then select the Shared As option, enter a share name, enter a comment, and add user access rights (Full or Read-Only).
- e. The picture of a hand is added to the folder icon to indicate the selected folder is now a shared resource.

Making Sure DCC Is Installed on Both Computers

DCC is not installed with the typical Windows 95 installation recommended for most computers.

So you must check whether DCC is installed on both of the two computers that will be using the IR link. To do this, click the Start button, point to Programs, and then point to Accessories. Direct Cable Connection appears in this menu if it is installed on this computer.

If you find that DCC is installed on the host and DCC is installed on the guest, you can skip the next step.

(Optional) Installing DCC

Before you can establish a DCC connection, DCC must be installed on both the host and guest. The procedure for installing DCC is given below. If you found that DCC is not installed on either the host or the guest, you must run the following procedure twice (once on each machine).

- a. Click the Start button, point to Settings, and then click the Control Panel. Double-click the Add/Remove Programs icon.
- b. In the Add/Remove Program Properties, click the Windows Setup tab.
- c. In the Components list, click Communications, and then click the Details button.
- d. In the Communications dialog box, make sure Direct Cable Connection is checked and then click OK.

Establishing and Using the DCC IR Link Between Host and Guest

To run DCC over an IR link, carry out the following procedure:

- a. Make sure the IR communications driver is properly installed and the IR devices are enabled by carrying out the procedures in “Step 1. Installing the IR Communications Driver” and “Step 2. Validating the IR Communications Driver Installation” earlier in this document.

Note: You might want to limit the IR connection speed to 9600 bps for the first test of DCC over the IR link (and then increase the speed later).

- b. On the host computer, click the Start button, point to Accessories, and then click Direct Cable Connection.
- c. Follow the steps in the Direct Cable Connection Wizard to set up the host computer. When the wizard prompts you, select the Host option. When the wizard prompts you to choose a port, use the same virtual port as you used in the procedure “Step 2. Validating the IR Communications Driver Installation” earlier in this document. The wizard will also offer password protection. You do not need to establish password protection on the host for this test of the IR link. When you are done with the wizard, click the Finish button. DCC will start running on the IR link and display the message “Status: Waiting to connect via Serial cable on Comx,” where Comx is the name of the virtual port the IR link is using.
- d. Repeat steps b. and c. for the guest computer, except when the wizard prompts you select the Guest option instead of the Host option. When you are done with the wizard, click the Finish button. The DCC connection is automatically made over the IR link, and all the shared folders on the host are displayed on the guest’s screen.
- e. Working on the guest computer, to copy a shared folder from the host to the guest over the IR link select the folder’s icon in the window that displays all the shared folders that are on the host and drag the icon to the desktop. To work on a shared folder on the host without copying it to the guest, double-click on the folder in the display on the guest. Note that if the host is connected to a network, the guest can reach shared resources on the network through the DCC connection to the host.

IR Communications Driver Components

The files that make up the IR communications driver are:

Filename	Description
ACT200L.VXD	Support for the ACTiSYS ACT-IR200L IR adapter.
ACT220L.VXD	Support for the ACTiSYS ACT-IR220L IR adapter.
ADAPTEC.VXD	Support for Adaptec IR adapter.
CRYSTAL.VXD	Support for AMP PhasIR Serial Adapter.
ESI.VXD	Support for Extended Systems JetEye PC Infrared Interface (ESI9680).
INFRARED.CPL	Infrared device in the Windows 95 Control Panel.
INFRARED.DLL	Infrared device class installer.
INFRARED.INF	IR device information file for Windows 95 Setup.
INFRARED.HLP	On-line help topics for Infrared Monitor.
IRCOMM.VXD	Top layer of IR communications for Windows 95.
IRENUM.VXD	Enumerator for the “IR bus.”
IRLAMP.VXD	Generic infrared framer, lower layer of IR communications for Windows 95.
IRMON.EXE	Infrared Monitor.
IRMONHLP.EXE	
IR_BEGIN.WAV	Sound for Infrared Monitor user interface.
IR_END.WAV	Sound for Infrared Monitor user interface.
IR_INTER.WAV	Sound for Infrared Monitor user interface.
MSPORTS.INF	IR port information file for Windows 95 Setup.

PARALLAX.VXD	Support for Parallax IR Adapter, LiteLink PRA9500A.
SETUP.EXE	Installs the Windows 95 Infrared communications driver.
W_IR.CNT	Table of contents for Infrared Monitor on-line help.

The documentation files supplied with the IR device driver are:

Filename	Description
RELNOTES.DOC	This document.
LICENSE.TXT	Terms and limitations for using the driver.

IR Adapter Manufacturer Names and Addresses

The names and addresses of manufacturers of IR adapters that have been successfully tested with the IR driver executable in the IR Communications for Windows 95 DDK:

ActiSys, Inc.
1507 Fulton Place
Fremont CA 94539
tel: 510-490-8024
fax: 510-623-7268
email: corp@actisys.com

Adaptec, Inc.
691 South Milpitas Blvd,
Milpitas CA 95035
tel: 1-800-959-7274
fax: 1-408-957-7223

AMP Product Information Center
AMP Incorporated
Harrisburg PA 17105
tel: 1-800-522-6752

Extended Systems, Inc.
5777 North Meeker Ave
Boise ID 83704-1520
tel: 208-322-7575
fax: 208-377-1906

The Parallax IR adapter distributor in North America is:

TSC Electronics
1610 Lockness Place
Torrance CA 90501
tel: 310 534 2738
fax: 310 534 3216
email: dtsaitsc@aol.com
contact person: Daniel Tsai

The Parallax IR adapter distributor outside North America is:

Parallax Research
201 Innovation Centre
NTU
Nanyang Drive

Singapore 639798
Republic of Singapore
tel: +65 793 0855
fax: +65 793 0775
email: parallax@technet.sg