



Pass-Through Function Guide

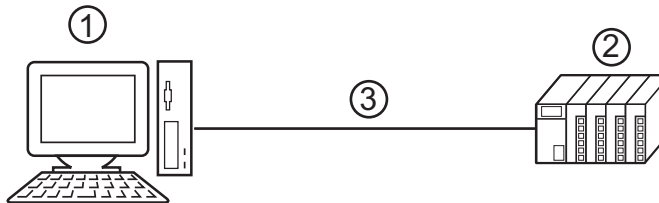
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1 General Description

1.1 What is the Pass Through Function?

When communicating with the external devices using Windows applications such as ladder software that uses serial interfaces, the ladder software and external device need to be serially interfaced.

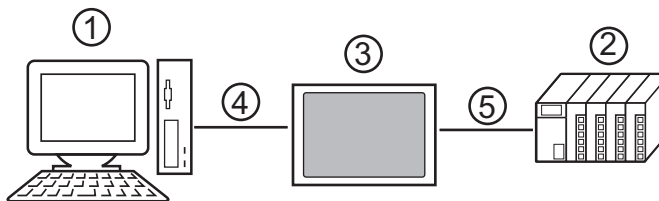
Example)



1. PC with an application such as ladder software installed.
2. External device to be communicated with.
3. Serial interface

On GP-Pro EX, using the pass through function enables communication between the ladder software and external device through an indicator.

Example)



1. PC with an application such as ladder software installed.
2. External device to be set.
3. Indicator to relay serial interface.
4. USB or Ethernet (UDP) connection
5. GP-Pro EX driver corresponding to the external device.

Using the pass through function makes connecting cables unnecessary when changing the settings of external devices with the ladder software.

1.2 Mechanism of the Pass through Function

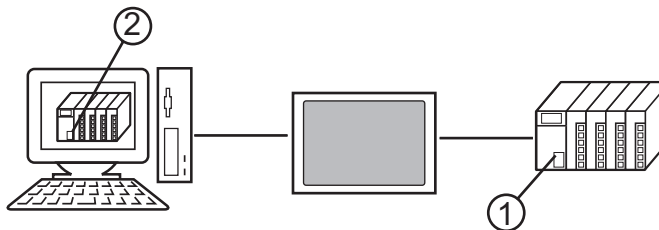
The Pass Through function is a mechanism for the associate virtual port on the PC to communicate with the serial interface port of the external device.

Hereinafter, the virtual port on the PC is to be referred to as “virtual COM.”

Example)

By setting the virtual COM “Port 1” in communication setting of the ladder software, the system operates as if it is connected to port 1 of the external device.

To implement this operation, the pass through function setting tool, virtual COM bus driver, and virtual COM port driver are used.



1. Port 1 of external device for serial interface.

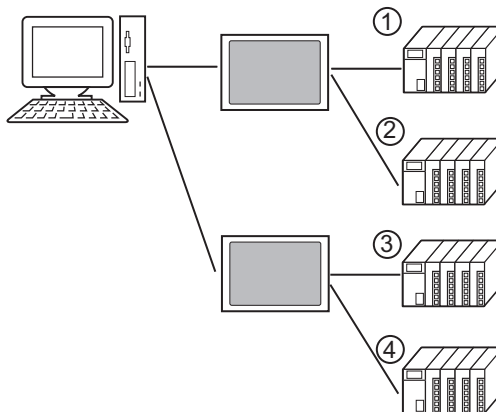
2. Hereinafter, the virtual port on the PC is to be referred to as “virtual COM.”

The Pass Through function setting tool and virtual COM bus driver, virtual COM port driver provide the functions below.

- Make port 1' on the PC: Virtual COM port driver
- Associate port 1' with port 1: Pass Through function setting tool
- Exchange data of port 1' and port 1: Virtual COM bus driver

External device that can communicate the Pass Through function at the same time is four or less.

Example)



1.3 Operation Environment

The following environment is required to use the Pass Through function.

Compatible OS

Microsoft Windows 2000 Professional (SP4 or later)

Microsoft Windows XP (SP2 or later)

2 Install

Installation of the Pass Through function setting tool and virtual COM path driver/virtual Com port driver for Pass Through function use.

Installation procedure is as follows.

1. Install pass through function setting tool.
2. Install virtual COM path driver.
3. Install virtual COM port driver.

2.1 Install of Pass Through Function Setting Tool

- 1 Start up the installer of GP-Pro EX.
- 2 When the install screen is displayed, click “Tools.”



- 3 When the “Tools” screen is displayed, click “Pass Through.”



- 4 Select where to install the Pass Through function setting tool and click “OK.”

2.2 Install of Virtual COM Bus Driver

2.2.1 Install on Windows 2000

Install virtual COM bus driver using “Add/Remove Hardware Wizard.”

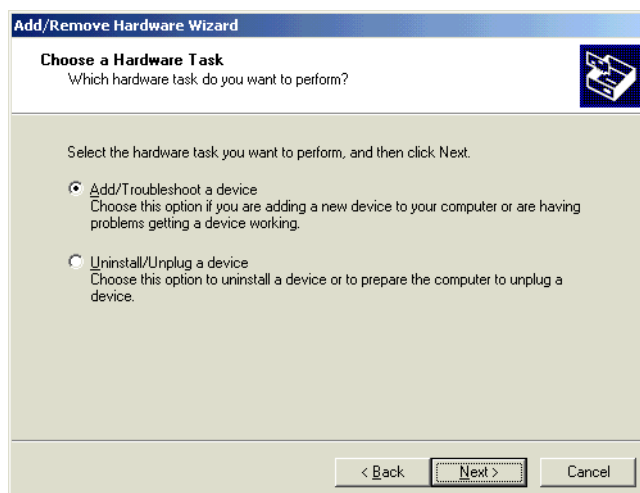
INF file, “vrcombus.inf” for virtual COM driver required for installation is in the COM folder where the Pass Through function setting tool is installed.

■ Procedure

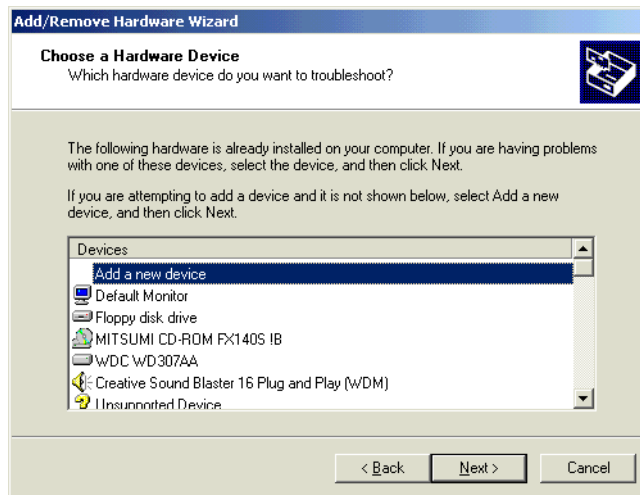
- 1 Start up the “Add/Remove Hardware Wizard” on the Control Panel. The dialog box, “Welcome to Add/Remove Hardware Wizard” is displayed, and go forward with the installation following the directions of the wizard.



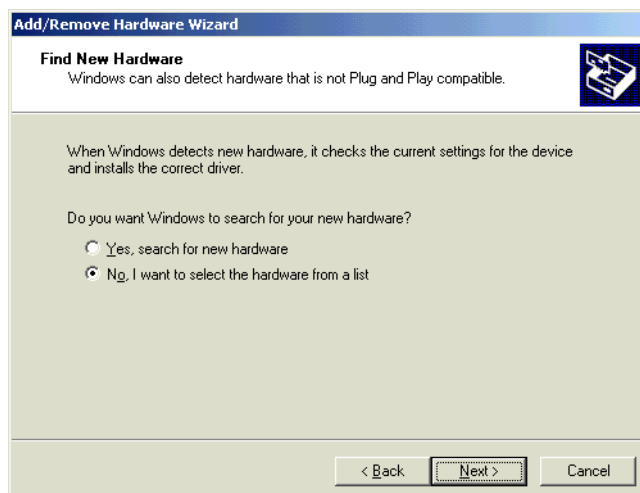
- 2 When the dialog box, “Choose a Hardware Task,” is displayed, select “Add/Troubleshoot a device” and click “Next.”



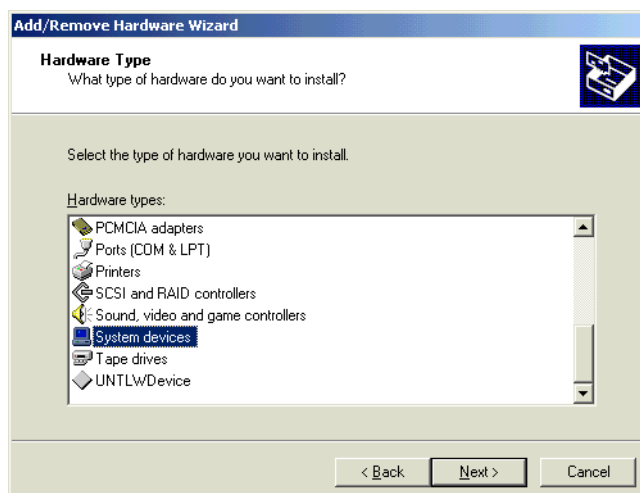
- 3 When the dialog box, “Choose a Hardware Device,” is displayed, select “Add new device” and click “Next.”



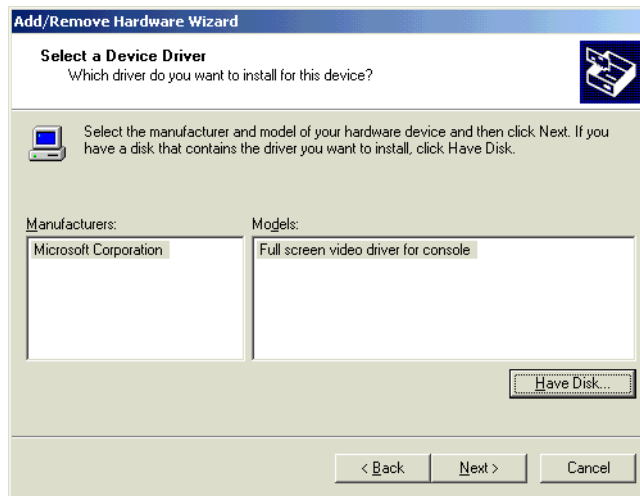
- 4 When the dialog box, “Find New Hardware,” is displayed, select “No, I want to select the hardware from a list” and click “Next.”



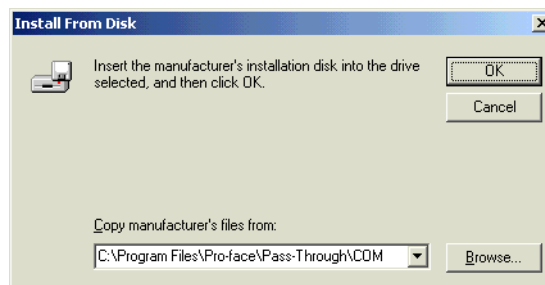
- 5 When the dialog box, “Hardware Type,” is displayed, select “System device” from the list and click “Next.”



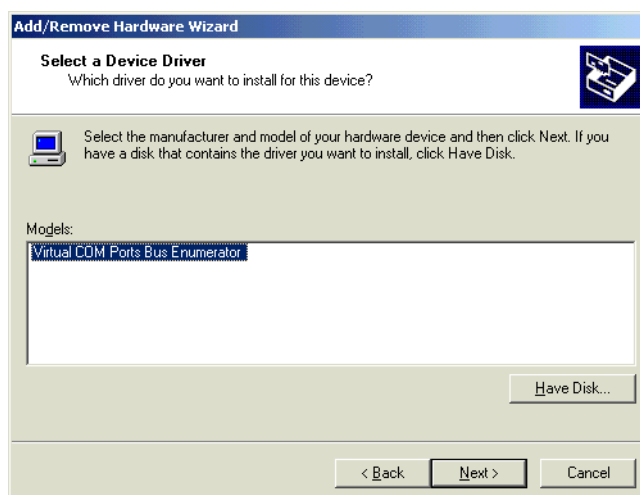
- 6 When the dialog box, "Select Device Driver," is displayed, click "Have Disk."



- 7 When the dialog box, "Install From Disk," is displayed, click "Browse" and select "vrcombus.inf."



- 8 When the screen returns to the dialog, "Select a Device Driver," select "Virtual COM Ports Bus Enumerator" from the list. Click "Next" to proceed and complete installation.



2.2.2 Install on Windows XP

Install virtual COM bus driver using “Add Hardware Wizard.”

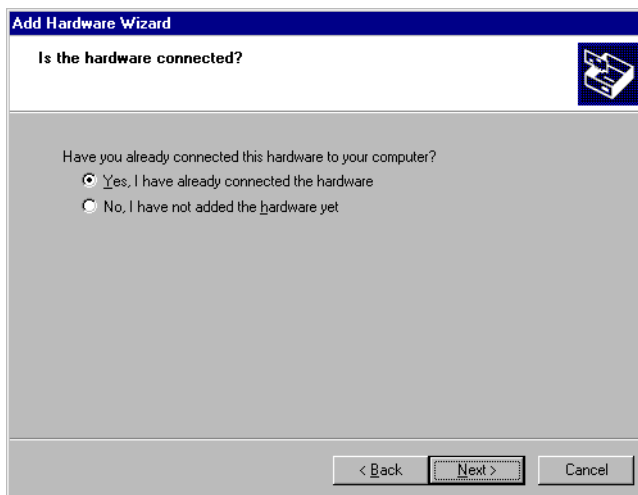
INF file, “vrcombus.inf” for virtual COM driver required for installation is in the COM folder where the Pass Through function setting tool is installed.

■ Procedure

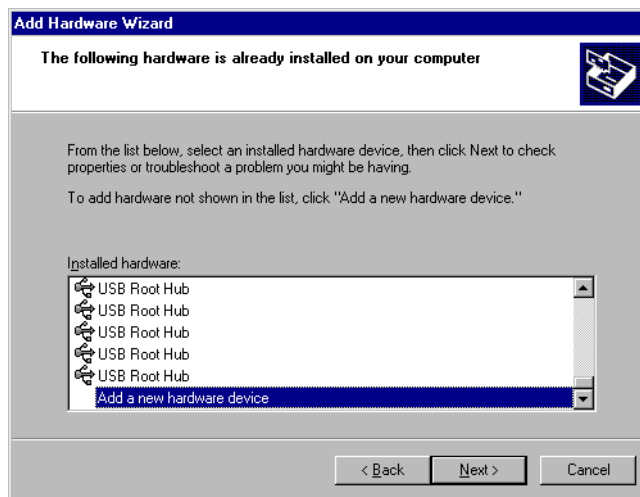
- 1 Start up the “Add Hardware Wizard” on the Control Panel. The dialog box, “Welcome to the Add Hardware Wizard” is displayed, and go forward with the installation following the directions of the wizard.



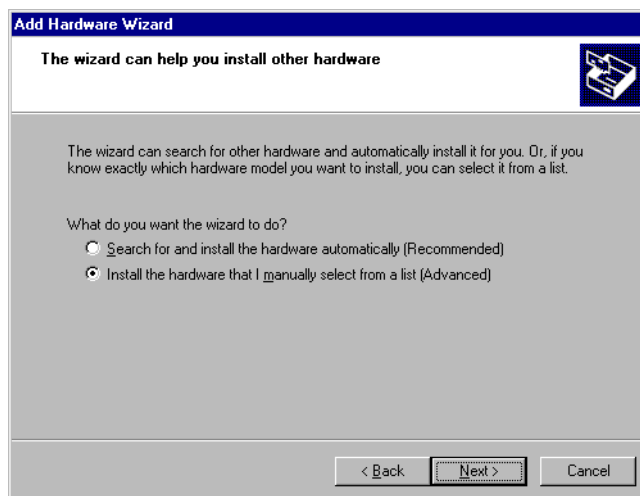
- 2 When the dialog box, “Is the hardware connected?” is displayed, select “Yes. I have already connected the hardware” and click “Next.”



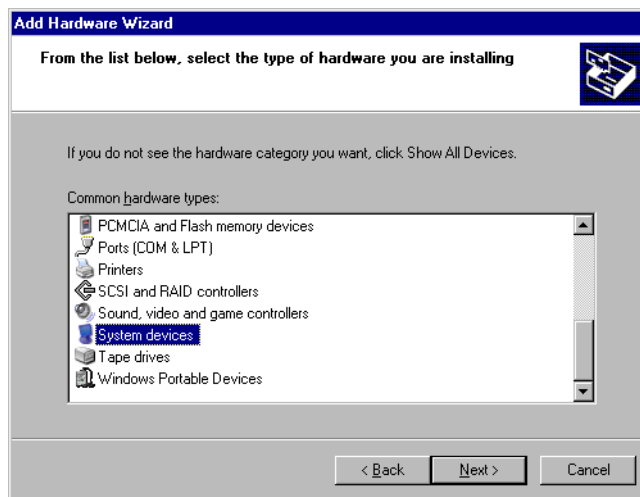
- 3 When the dialog box, “The following hardware is already installed on your computer” is displayed, select “Add a new hardware device” and click “Next.”



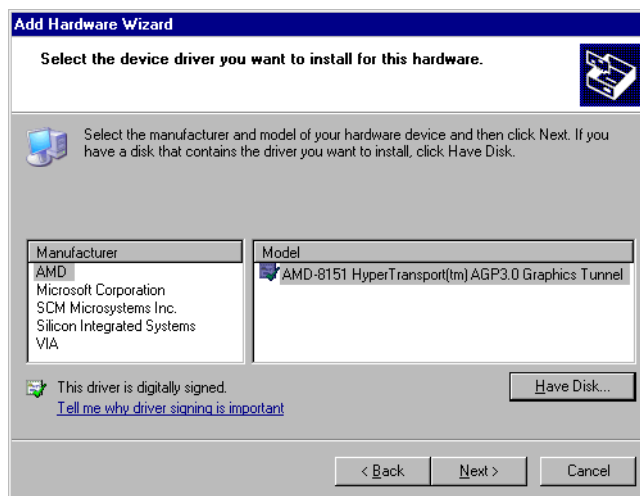
- 4 When the dialog box, “The wizard can help you install other hardware” is displayed, select “Install the hardware that I manually select from a list (Advanced)” and click “Next.”



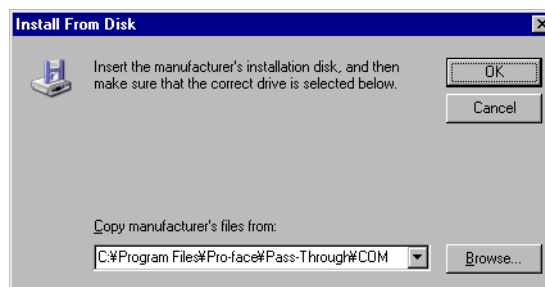
- 5 When the dialog box, “From the list below, select the type of hardware you are installing” is displayed, select “System devices” from the list and click “Next.”



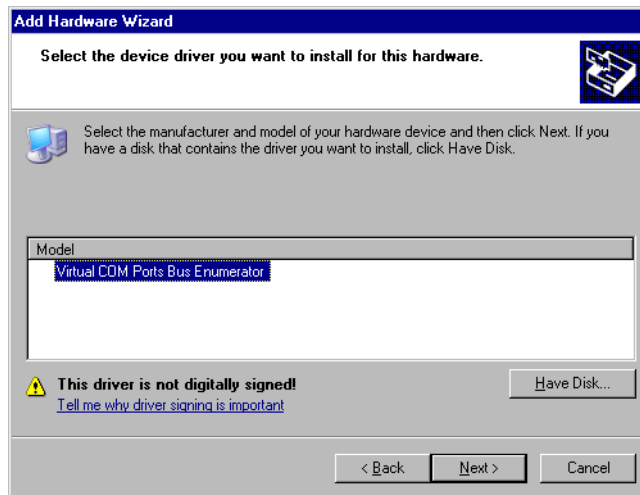
- 6 When the dialog box, “Select the device driver you want to install for this hardware.” is displayed, click “Have Disk.”



- 7 When the dialog box, “Install From Disk,” is displayed, click “Browse” and select “vrcombus.inf.”



- 8 When the screen returns to the dialog, “Select the device driver you want to install for this hardware.” select “Virtual COM Ports Bus Enumerator” from the list. Click “Next” to proceed and complete the installation.



2.3 Install of Virtual COM Port Driver

2.3.1 Install on Windows 2000

Install virtual COM port driver using “Found New Hardware Wizard.”

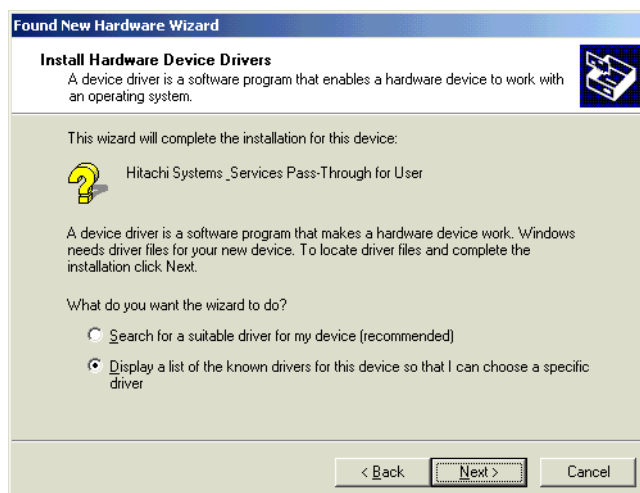
INF file, “vrcomdrv.inf” for virtual COM driver required for install is in the COM folder where the Pass Through function setting tool is installed.

■ Procedure

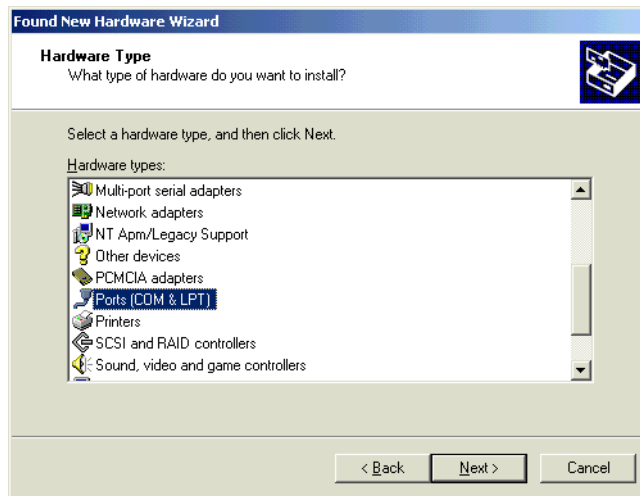
- 1 Once bus driver’s installation is completed, the dialog box, “Found New Hardware Wizard” is displayed, and go forward with the installation following the directions of the wizard.



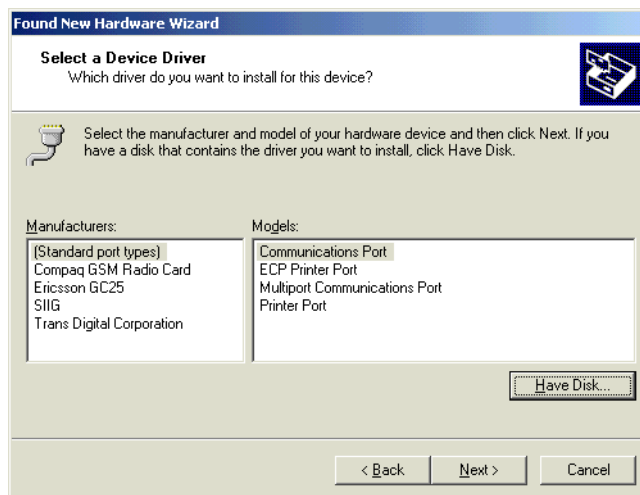
- 2 When the dialog box, “Install Hardware Device Drivers” is displayed, select “Display a list of the known drivers for this device so that I can choose a specific driver” and click “Next.”



- 3 When the dialog box, “Hardware Type,” is displayed, select “Port (COM and LPT)” and click “Next.”



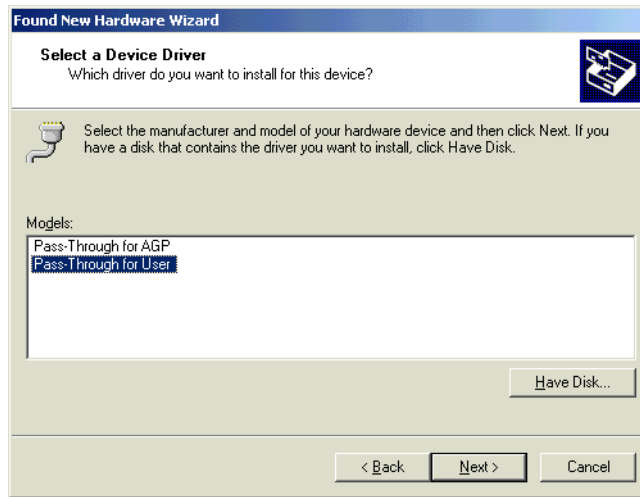
- 4 When the dialog box, “Select a Device Driver” is displayed, click “Have Disk.”



- 5 When the dialog box, “Install From Disk,” is displayed, click “Browse” and select “vrcomdrv.inf.”



- 6 When the screen returns to the dialog, “Select a Device Driver,” select “Pass-Through for User” from the list. Click “Next” to proceed and complete the installation.
- Eight virtual COM port drivers will be installed automatically.

**NOTE**

- If the dialog box asking to reboot during the virtual COM port driver installation, select “No” for all requests.
- You can confirm the installed virtual COM port by Device Manager. Select [Show hidden devices] on the [View] menu, and confirm that eight virtual COM port drivers are displayed.

2.3.2 Installation on Windows XP

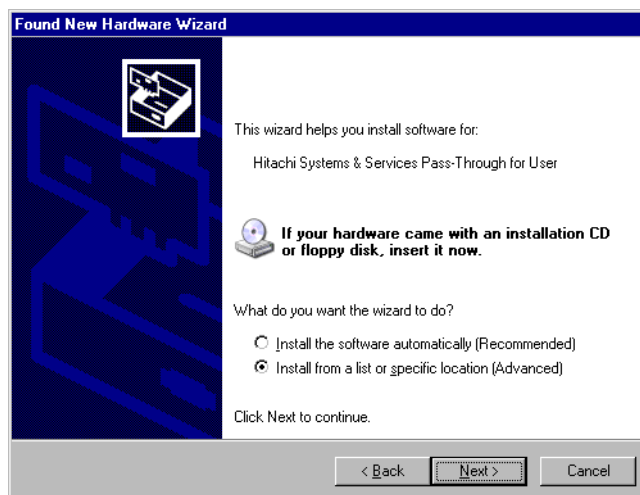
Install virtual COM port driver using “Found New Hardware Wizard.”

INF file, “vrcomdrv.inf” for virtual COM driver required for installation is in the COM folder where the pass through function setting tool is installed.

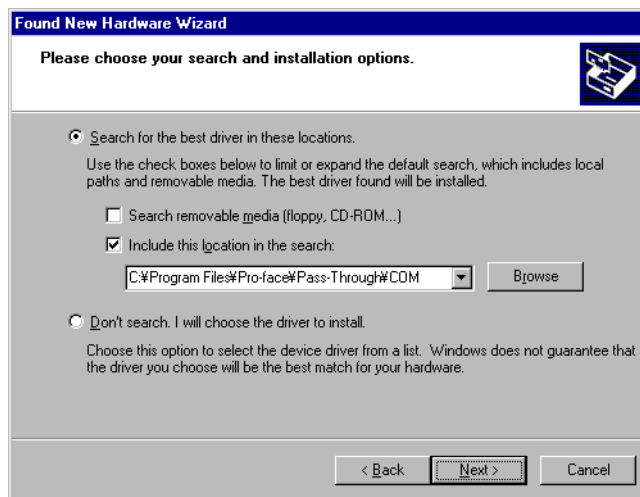
- 1 Once bus driver’s installation is completed, the dialog box, “Welcome to Found New Hardware Wizard” is displayed, select “No, not this time.” and click “Next.” (This dialog box may not be displayed depending on the environment.)



- 2 When the dialog box, “This wizard helps you install software for: Virtual COM Port” is displayed, select “Install from a list or specific location (Advanced)” and click “Next.”



- 3 When the dialog box, “Please choose your search and installation options.” is displayed, remove the check on “Search removable media (floppy, CD-ROM...)” and put a check in “Include this location in the search:” box



- 4 Click “Browse,” select the path where INF file for virtual Com driver is stored (COM folder where the pass through function setting tool is installed), and click “OK.”



- 5 When the dialog box, “The software you installing for this hardware: Pass-Through for User” is displayed, click “Continue Anyway” to complete the installation.



6 There are eight virtual COM port drivers. Install all virtual COM port drivers, repeating procedure 1 through 5.

NOTE

- If the dialog box asking to reboot during the virtual COM port driver installation, select “No” for all requests.
- You can confirm the installed virtual COM port by Device Manager. Select [Show hidden devices] on the [View] menu, and confirm that eight virtual COM port drivers are displayed.

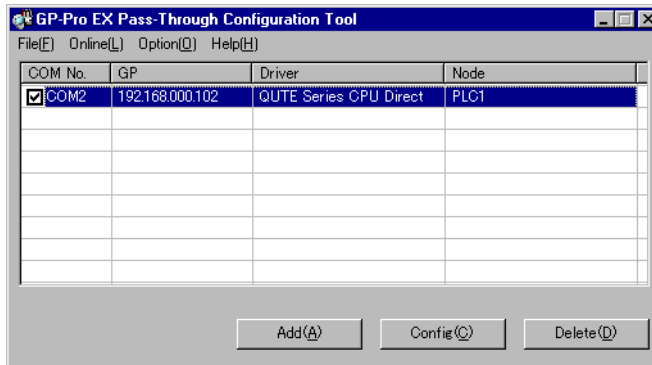
3 Setting

Set association between virtual Com made by virtual COM bus driver/virtual COM port driver and external device using the pass through function setting tool.

3.1 Setting with Pass Through Function Setting Tool

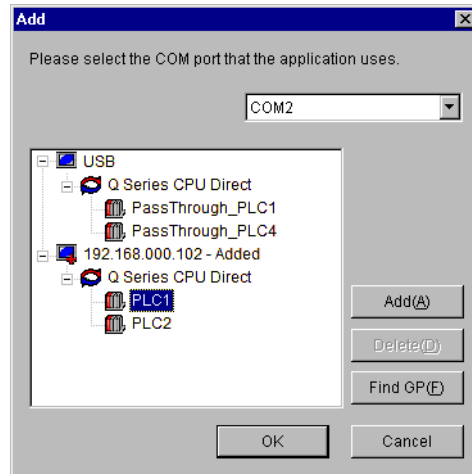
3.1.1 Interface of Pass Through Function Setting Tool

- Pass Through Function Setting Tool



Setup Items	Setup Description
Menu bar	Menu to operate pass through function setting tool is displayed. When these are selected, pull down menu is displayed.
COM No.	The currently set virtual COM port is displayed. Check box shows the current on-line status. When there is a check in the box, virtual COM port is on line.
GP	Connection method with GP is displayed.
Driver	Driver set on the GP is displayed.
Node	Name of external device connected to GP is displayed.
Add	Virtual COM connection is added.
Config	The setting of virtual COM registered in the pass through function setting tool is changed.
Delete	The setting of virtual COM registered in the pass through function setting tool is deleted.

- [Add]/[Edit] Dialog Box



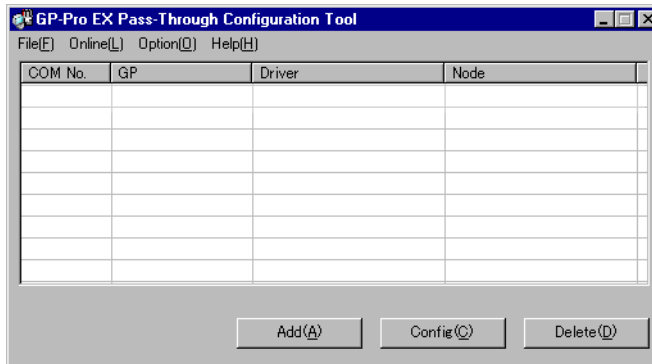
Setup Items	Setup Description
Please select the COM port that the application uses.	Virtual COM port used by an application such as ladder software is selected.
List	USB or indicator connected on the Ethernet is searched, and the list of external device connected to the GP is displayed.
Add	GP that cannot be found by search such as access beyond the router is added. GP is searched by inputting IP address in the displayed dialog box, and added to the list.
Delete	GP is deleted from the list. Only GP that is added by “Add” button can be deleted.
Find GP	USB or GP on the Ethernet is searched again. NOTE GP that is added by “Add” button is not deleted even if it is searched again. However, when an GP using the same IP address is searched, information is updated.

3.1.2 Setting with Pass Through Function Tool

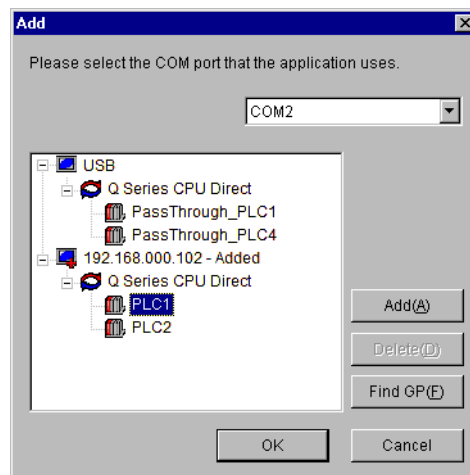
- 1 From [Start Menu], select [Pro-face]-[Pass Through function setting tool] to start up the pass through function setting tool.

NOTE • An icon is displayed on the task bar while the Pass Through application is starting up.
When right-clicking the Pass Through setting tool icon in the task bar, the menu is displayed, and select [Start the setting tool] in the menu.

- 2 If the Pass Through function setting tool is started up for the first time, the virtual COM driver is automatically adjusted. After the automatic adjustment of virtual COM driver completes, restart the PC.
- 3 Start up the Pass Through function setting tool again.

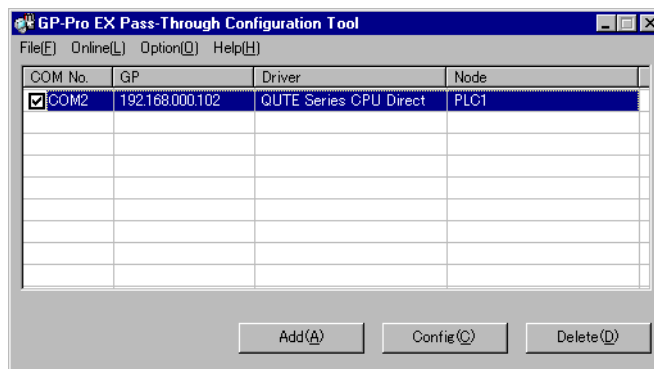


- 4 Click “Add” from the dialog box of Pass Through function setting tool.
- 5 The list of usable external devices is displayed in the “Add” dialog box, select the virtual COM and external device to be used, and click “OK.”



NOTE • If external device to be used is not displayed, click “Find GP.”
If it is not displayed even after the search, click “Add,” a dialog box is displayed, and input IP address of the GP connected to the external device.

- 6 Combinations of associated virtual COM and external device are displayed in the dialog box of the Pass Through function setting tool. Place a check in the check box in the COM port column to make the combination on-line.



4 Error Messages

Error messages of pass through functions are as follows.

Error Message	Description
Timeout error is occurred.	Time out occurred when connecting with the setting registered in the pass through function setting tool. Check that the GP is connected.
Failed to open port of Virtual Com Driver.	Failed to open Virtual COM when connecting with the setting registered in the pass through function setting tool. Check that port number set by applications such as ladder software is the same.
The node is already connected.	Connected to the GP that has already been connected with pass through function. Check the connection status of pass through function with the pass through function setting tool.
Virtual COM port driver is not normally installed. Please install Virtual COM port driver	Virtual COM port driver is not properly installed. After deleting virtual COM port driver, reinstall.
The port number of virtual COM is overlaped. Please change virtual port number of virtual Com in the device manager	Port number of virtual COM duplicated. Change the corresponding COM port number with device manager.

5 Appendix

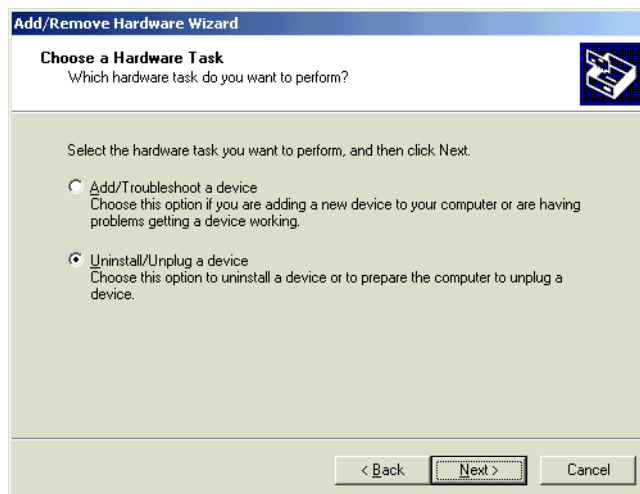
5.1 Uninstall of Virtual COM Bus Driver/Virtual COM Port Driver

5.1.1 Uninstall on Windows 2000

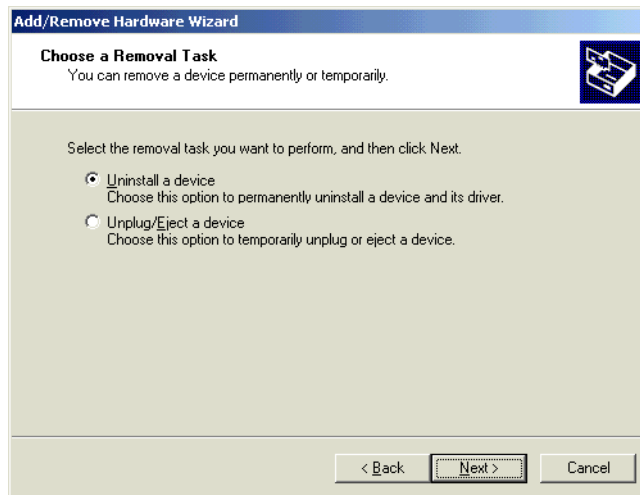
- 1 Start up the “Add/Remove Hardware Wizard” on the Control Panel. The dialog box, “Welcome to Add/Remove Hardware Wizard” is displayed, and go forward with the installation following the directions of the wizard.



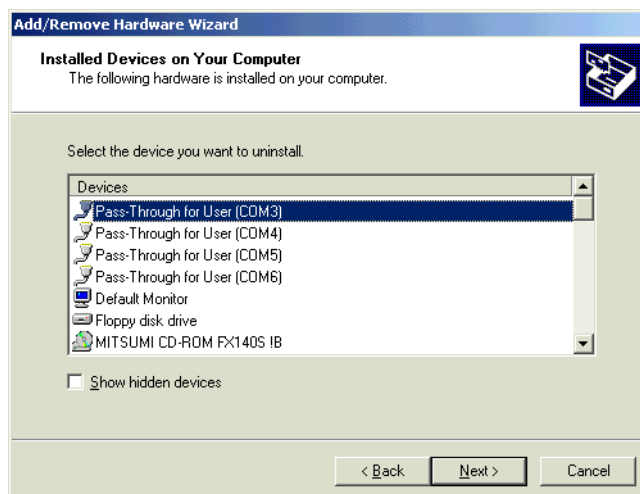
- 2 When the dialog box, “Choose a Hardware Task,” is displayed, select “Uninstall/Unplug device” and click “Next.”



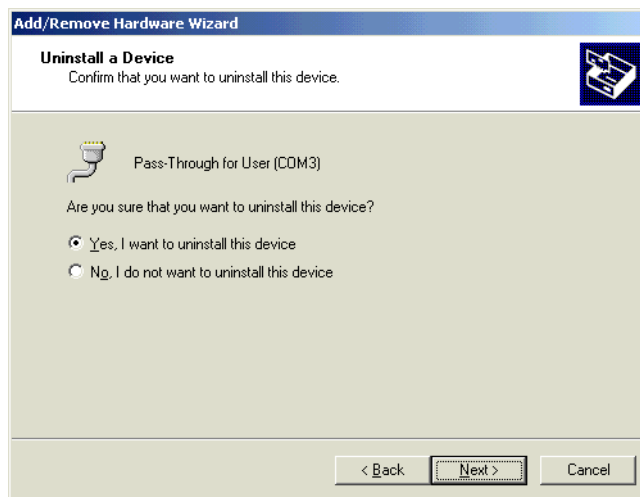
- 3 When the dialog box, “Choose a Removal Task,” select “Uninstall a device” and click “Next.”



- 4 When the dialog box, “Installed Devices on Your Computer” is displayed, select “Pass-Through for User (COMx)” from the list and click “Next.”



- 5 When the dialog box, “Uninstall a Device” is displayed, select “Yes, I want to uninstall this device.” Click “Next” to complete uninstall.



- 6 Repeat the procedure 1 through 5, and delete “Pass-through for AGP (COMx)” and “Virtual COM Ports Bus Enumerator” device.
- 7 Open the folder, “C:\WINNT?inf” with the Explorer, etc., refer to “oemxx.inf” file with editor, and delete files containing “VRCOMBUS.INF” and “VRCOMDRV.INF” string at the header of the file. Delete “oemxx.PNF” file at the same time.

NOTE

- “C:?\WINNT?” stands for a file where the OS is installed.
- When looking for the onemxx.inf file to be deleted, searching for the bigger figure of xx is effective.

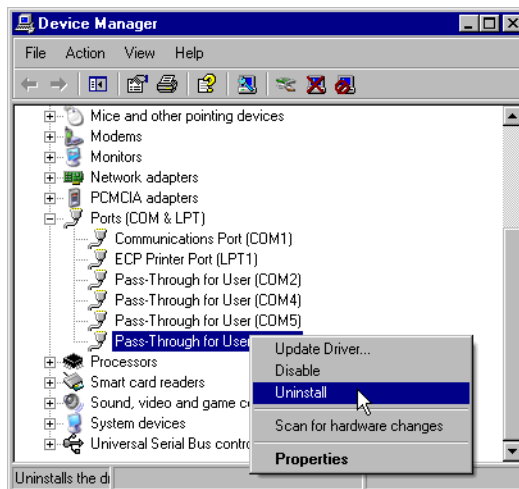
- 8 Open the folder “C:\WINNT\SYSTEM32\DRIVERS” with the Explorer, etc., and delete “vrcombus.sys,” “vrcomgdrv.sys,” and “vrcomudrv.sys” files.
- 9 Open the folder “C:\WINNT\SYSTEM32” with the Explorer, etc., and delete “vrcomctrl.dll” file.
- 10 Start up the registry editor, open the paths below, and delete entire key.
- “HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Service\vrcombus”
- “HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Service\vrcomgdrv”
- “HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Service\vrcomudrv”
- 11 Reboot the computer.

IMPORTANT

- Always reboot the computer after uninstallation.

5.1.2 Uninstallation on Windows XP

- 1 Start up the device manager.
- 2 Select the virtual COM port to be deleted from the device list, "Ports (COM & LPT)" by clicking right-button of the mouse, and select "Uninstall" from the displayed menu.



- 3 Repeat the procedure 2 to delete all virtual COM ports.

NOTE • One virtual COM consists of a pair of "Pass-Through for AGP" and "Pass-Through for User." If 4 virtual COMs are made, the procedure 2 needs to be repeated 8 times.

- 4 Select "Virtual COM Ports Bus Enumerator" from the device list "System device" by clicking right-button of the mouse, and select "Delete" from the displayed menu.
- 5 Open the folder, "C:\WINDOWS\inf" with the Explorer, etc., refer to "oemxx.inf" file with editor, and delete files containing "VRCOMBUS.INF" and "VRCOMDRV.INF" string at the header of the file. Delete "oemxx.PNF" file at the same time.

NOTE • "C:?\WINDOWS" stands for a folder where the OS is installed.
 • When looking for the onemxx.inf file to be deleted, searching for the bigger figure of xx is effective.

- 6 Open the folder "C:\WINDOWS\SYSTEM32\DRIVERS" with the Explorer, etc., and delete "vrcombus.sys," "vrcomgdv.sys," and "vrcomudrv.sys" files.
- 7 Open the folder "C:\WINDOWS\SYSTEM32" with the Explorer, etc., and delete "vrcomctrl.dll" file.
- 8 Start up the registry editor, open the paths below, and delete entire key.
 "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Service\vrcombus"
 "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Service\vrcomgdv"
 "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Service\vrcomudrv"
- 9 Reboot the computer.

IMPORTANT • Always reboot the computer after uninstallation.
