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TM Virtual Port Driver Ver.7
User's Manual

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Rev. G

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⚠	Provides information that must be observed to avoid damage to your equipment or a malfunction.
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About this Manual

Aim of the Manual

This manual presents information that is necessary information for using the TM Virtual Port Driver.

Manual Content

The manual is made up of the following sections:

Contents

Overview

This chapter describes the features and operating environment of the TM Virtual Port Driver Ver. 7 (hereafter called the "driver").

Features

This driver is an interface change driver for accessing an EPSON USB / Ethernet interface TM printer and a customer display connected to it as virtual serial/parallel ports.

A customer display connected to a USB interface TM printer can also be accessed as a virtual serial/parallel port.
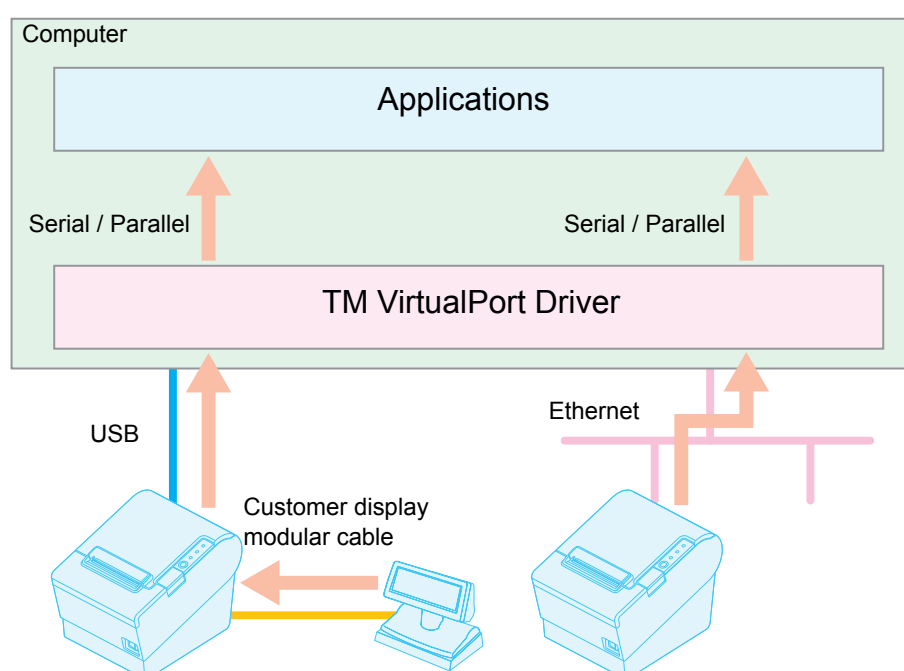
A wireless LAN interface TM printer cannot connect. Also, a customer display connected to an Ethernet interface printer cannot connect.

The following features are available in this driver:

❏ The serial / parallel interface TM printer can be replaced with a USB / Ethernet interface TM printer without altering the existing application.

❏ Even in an environment of Y-connection/pass-through connection, replacement with a USB interface printer can be performed without altering the existing application. When pass-through connection is used, the connection pattern will be changed to Y-connection. See .

❏ If the TM printer or the customer display is replaced with a new or compatible one due to equipment failure, there is no need to set up the driver and the application again. (An ESDPRT port is assigned by the automatic device assignment function.)

❏ By using this driver, a system performing direct control using ESC/POS commands and a system using Advanced Printer Driver (hereafter called "APD") or UPOS* can be installed together and used in one PC. Even if this driver is installed later, there is no need to change the settings for APD/UPOS.

❏ By using this driver, an application performing direct control using ESC/POS commands and an application using APD/UPOS can share and use one TM printer and customer display.
However if the port of one of the applications is not closed, printing from the other application cannot be accepted.

❏ Even when the serial signal line is controlled by the application, replacement with a USB interface TM printer and customer display can be performed without altering that application. (Serial signal line emulation function)

❏ If TMNet WinConfig is installed on the computer, the IP address of the TM printer can be set from the setting screen of Virtual Port Driver.

* UPOS (a generic term for OPOS, OPOS .NET, and JavaPOS)

Operating Environment

The operating environment of this driver is as follows:

Item		Description
OS		Windows 7 SP1 (32 bit / 64 bit)
		Windows Vista SP2 (32 bit / 64 bit)
		Windows XP SP3 (32 bit)
		Windows Server 2008 R2 SP1
		Windows Server 2008 SP2 (32 bit / 64 bit)
		Windows Server 2003 R2 SP2 (32 bit)
		Embedded for Point of Service (32 bit)
		Embedded POSReady (32 bit)
USB environment	USB host controller	Intel chipset embedded USB host controller
		NEC's EHCI USB host controller*
		* Operation is not guaranteed for the NEC's USB 1.1 OHCI host controller
	USB driver stack	Use the Microsoft driver stack (standard driver stack on the OS).
		Also use the latest Microsoft USB driver stack as much as possible.
		Windows XP
		• Operation with a third-party USB driver stack is not guaranteed.
		• For USB 2.0 High Speed connection, use Version 5.1.2600.1243 or later of the file usbehci.sys for the Microsoft USB driver stack.
	USB connection	Maximum USB cable length: 5m
		Maximum number of ports in a USB hub: 5
		* Use USB2.0 compliant USB cables and USB hubs.
Ethernet environment		10/100 Base-T
		A wireless LAN is not supported.
Operating application		An application that has controlled the EPSON serial/parallel interface TM printer using ESC/POS commands. It is possible to use together an application controlling a TM printer using APD/UPOS if any of the drivers that can co-exist shown as below is installed.
Drivers that can co-exist	APD	APD Ver.4.09 or later
	UPOS (OPOS, OPOS.NET, JavaPOS)	TM printer and customer display of TM-T88V/TM-T20/TM-H6000IV/TM-H2000 or later.
		TM printers other than the above cannot be used even with the latest UPOS.
TM printer that can be set		EPSON TM printer with USB / Ethernet interface.
		TM-C3400, TM-610, or TM-S1000 cannot be used.
		When USB interface:
		When APD/UPOS is installed, a printer class TM printer can be used with this driver. Otherwise, change the USB class to vendor class. For details on how to change the USB class, see the equipment instruction manual.

1

Item	Description
Customer display that can be set	EPSON customer display. Can be set to the same port as the port for the TM printer when connected to the TM printer's DM-D connector. (Y-connection)
Driver to be upgraded to this driver	TMCOMUSB Serial Emulation Driver TM Virtual Port Driver Ver.5 / 6

Connection Environment

Stand-alone connection

USB

Ethernet
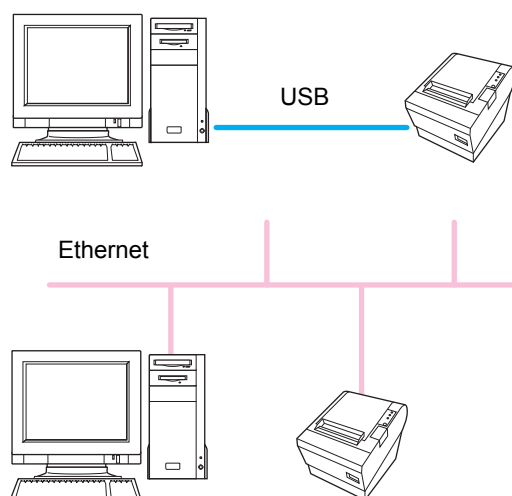
Pass-through connection

You can replace the printer with a USB-connected TM printer by changing the connection pattern from pass-through connection to Y-connection. There is no need to alter the application.

Serial   Serial

USB   Customer display modular cable
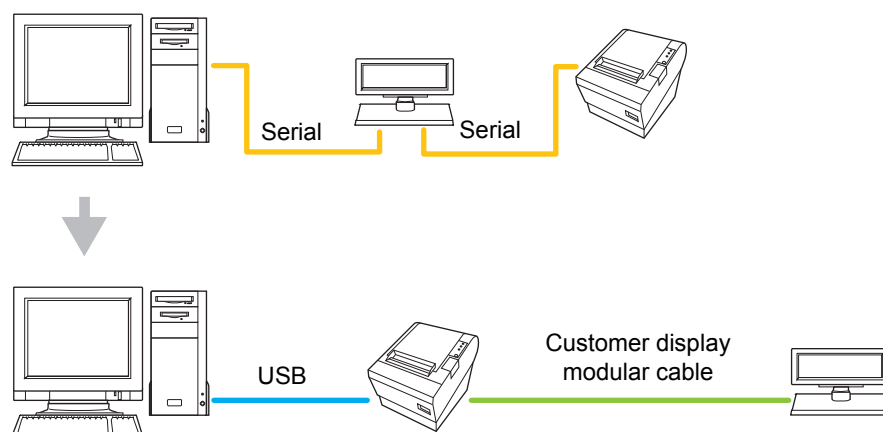
Y-connection

Connect the customer display to the DM-D connector of TM-H6000 series printer or UB-U01III/UB-U02III with a modular cable.

For the TM-H6000 series printer, turn dip switch SW 2-2 ON to enable the customer display.
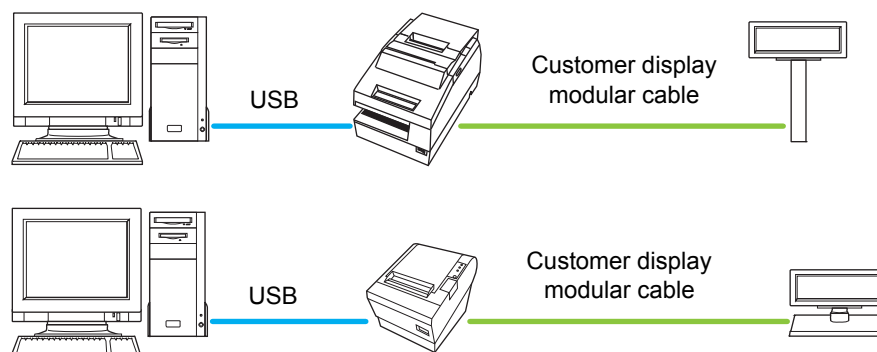
Differences Depending on the OS

The content of the descriptions of some operations in this book may be different depending on the OS. See the following.

Item	Description
Screens shown	Screens in Windows Vista are used for the descriptions in this manual.
Uninstall	Windows 7 (Start) - (Control Panel) - (Uninstall a program) Windows Vista (Start) - (Control Panel) - (Uninstall a program) Windows XP (Start) - (Control Panel) - (Add or Remove Programs) Windows 2000 (Start) - (Settings) - (Control Panel) - (Add or Remove Programs)

Installation and Uninstallation

This chapter describes how to install/uninstall this driver.

⚠ Install it with the administrator authority.

Installation

⚠ When TM Virtual Port Driver Ver.5.xx or TMCOMUSB Serial Emulation Driver is already installed, this driver is installed after uninstalling such an driver. For that reason, if an APD/ UPOS driver coexists and more than one printer is used, the virtual port settings will disappear. After installing this driver, set the ports again by referring to Co-Existence with APD/UPOS - Ethernet / USB (p.29).
If the previous driver is used without a co-existing APD/UPOS driver, the port settings will be transferred.

1 Double-click "TMVirtualPortDriverxxx.exe" to start the installer.
When the "User Account Control" screen appears, click the (Continue) button.

2 The "EPSON TM Virtual Port Driver Ver.x.xx - InstallShield Wizard" screen appears. Select the language used for installation and click the (OK) button.
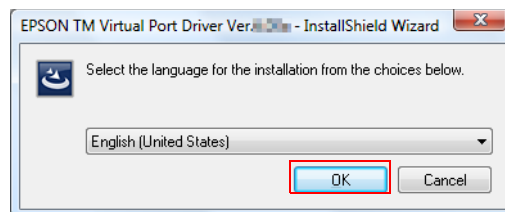
3 The "Welcome to the InstallShield Wizard for EPSON TM Virtual Port Driver Ver.x.xx" screen appears. Click the (Next) button.

4 The "License Agreement" screen appears. Read the content and select the "I accept the terms of the license agreement". Then click the (Next) button.

5 The "Ready to Install the Program" screen appears. Click the (Install) button.

6 When the following screen appears, click the (Restart Later) button.
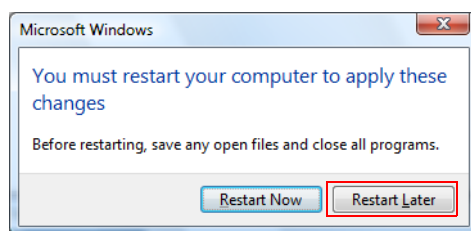
⚠️ If you restart your PC at this point, the installation process may not be completely performed. Be sure to select the (Restart Later) button.

7 The "InstallShield Wizard Complete" screen appears. Click the (Finish) button.
If the restart of your PC is requested, select (Yes, I want to restart my computer now.) and click the (Finish) button.

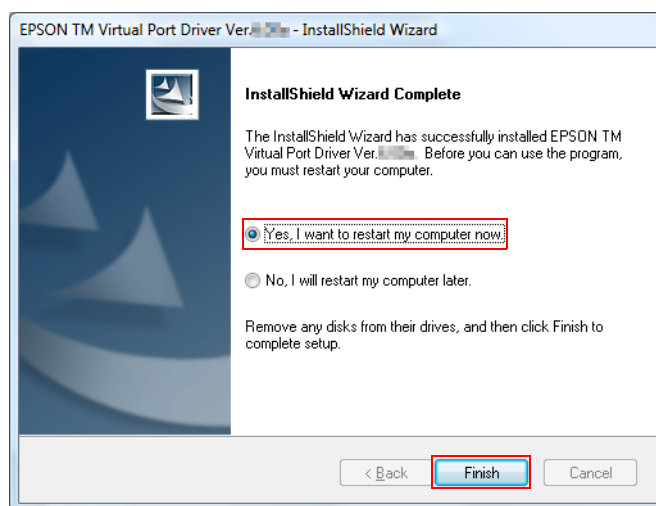⚠️ If the restart of your PC is requested on the "InstallShield Wizard Complete" screen, be sure to select (Yes, I want to restart my computer now).

8 The installation process is complete and Port Assignment Tool starts up. When Port Assignment Tool starts up, if ✖ is displayed in the item of Port Number, select (View) - (Refresh) from the menu. Note that when your PC is restarted, Port Assignment Tool does not start up automatically.

Then, the driver installation process is complete. Set virtual ports by referring to Chapter 3 "Driver Setup".

Uninstallation

1 Quit all applications running on the computer.

2 Select (Start) - (Control Panel) - (Uninstall a program) - (EPSON TM Virtual Port Driver Ver.x.xx). Click "Uninstall".

For information of the differences in screen selections based on the OS versions; ➡ Differences Depending on the OS (p.12). When the "User Account Control" screen appears, click the (Continue) button.
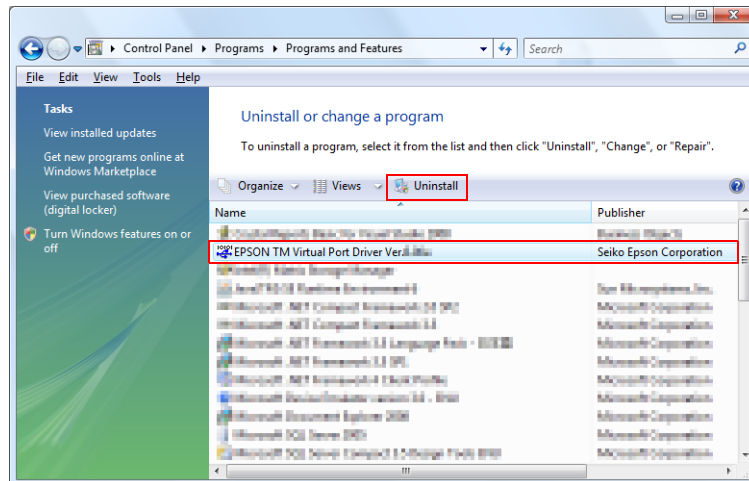
3 The Virtual Port Driver uninstallation confirmation screen appears. Click the (Yes) button.

4 The uninstallation of the Virtual Port Driver starts.

5 The "Uninstall Complete" screen appears. Click the (Finish) button to finish the uninstallation.
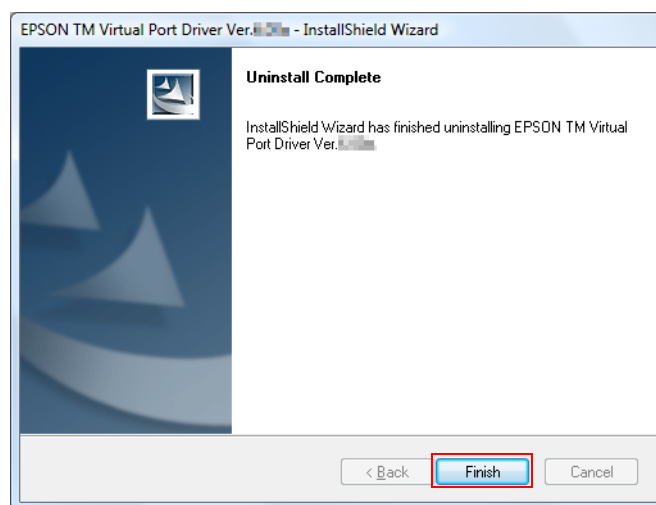
When APD or UPOS is Uninstalled

When APD or UPOS co-exists, if such a driver is uninstalled, you must change the settings for this driver. Change the settings according to the following procedure:

1 Uninstall APD or UPOS.

2 Start up Port Assignment Tool.

3 Delete the virtual port assigned to the ESDPRT port.
See Deleting a Virtual Port (p.34).

4 Assign the devices again.
See Automatic Device Assignment - USB (p.21) or Manual Device Assignment - Ethernet (p.24).

Silent installation

Silent installation is the function to automatically install TM Virtual Port Driver and perform port configuration without displaying dialog boxes. By embedding the installer of TM Virtual Port Driver into the installer of an application, TM Virtual Port Driver can be installed together when installing that application.

> • On Windows 7, because the UAC dialog box is displayed when using the silent installation function, it doesn't become complete silent installation.
> • For Windows Vista/Windows Server 2008, execute silent installation by specifying the -s1 option only. When the message for PC restart appears, restart your PC and set virtual ports by referring to Chapter 3 "Driver Setup".
> When Port Assignment Tool starts up, if ❌ is displayed in the item of Port Number, select [View] - [Refresh] from the menu.

1 Confirm that the TM printer is not connected to your PC.

2 Execute the installer of TM Virtual Port Driver with any of the following startup options:

TMVirtualPortDriverXXXa.exe -s1 -TM:COM3

The startup options related to installation are as follows:

Startup options	Description
-S1	Executes silent installation. If TM Virtual Port Driver of a version that is newer than this installer is installed, it does not execute the installation but ends with an error.
-TM:COM(Port No)	Specify an automatically assigned port or ESDPRT port for TM printer to automatically assign the device to.
-TM:LPT(Port No)	

-TM:ESDPRT(Port No)	Ports that can be specified
	• COM : COM1 to COM32
	• LPT : LPT1 to LPT8
	• ESDPRT: Specify a three digit integer.
	   (Port number assigned to the TM printer to be used.)
	Example 1: Specifying an automatically assigned port
	            -TM:COM2
	Example 2: Specifying an ESDRPT port
	            -TM:COM2 -TM:ESDPRT001
	If the automatic device assignment function is not used, do not specify the -TM option. In such cases, after installing the TM Virtual Port Driver, set the port by using "Port Assignment Tool".

Startup options	Description

-DM:COM(Port No)
-DM:LPT(Port No)
 	
-DM:ESDPRT(Port No)
	Specify an automatically assigned port or ESDPRT port for customer display to automatically assign the device to.
	
	Ports that can be specified
	
	• COM: COM1 to COM32
	• LPT: LPT1 to LPT8
	• ESDPRT: A three digit integer.
	  (Port number assigned to the customer display to be used.)
	
	Example 1: Specifying an automatically assigned port
	    -TM:COM2 -DM:COM3
	
	Example 2: Specifying an ESDRPT port
	    -TM:COM2 -TM:ESDPRT001 -DM:COM3 -DM:ESDPRT002
	
	When specifying the DM option, be sure to specify the -TM option too. You cannot specify the same number as the number for the TM port.

-TMDM	Set the TM printer port and the customer display port to the same port.
	
	Example 1: Specifying an automatically assigned port
	    -TM:COM2 -DM:COM2 -TMDM
	
	Example 2: Specifying an ESDRPT port
	    -TM:COM2 -TM:ESDPRT001 -DM:COM3 -DM:ESDPRT001 -TMDM
	
	When a port is specified for -TM/DMÅFCOM(Port No) only, that port is set as a united port.

For installer error codes, see .

Silent uninstallation

Execute the command below to perform uninstallation without displaying the dialog boxes.

> ⚠️ On Windows 7, because the UAC dialog box is displayed when using the silent installation function, it doesn't become complete silent installation.

TMVirtualPortDriverXXXa.exe -u1

The startup options related to uninstallation are as follows:

Startup options	Description
-u1	Executes silent uninstallation.
-u3	Executes complete silent uninstallation. Deletes the entire related driver registry completely.

> ✎ For installer error codes, see .

Error codes during silent installation

Codes	Conditions
0	Normal termination.
102	The installer was activated on an unsupported OS.
104	A user without administrator privileges launched the installer.
105	The installer was activated while the TM Virtual Port Driver was using the COM/LPT port.
106	The same COM port was specified for -TM:COM(xx) and -DM:COM(xx). The same LPT port was specified for -TM:LPT(xx) and -DM:LPT(xx).
107	A port was specified for-DM:COM(xx) when nothing was specified for -TM:COM(xx). A port was specified for-DM:LPT(xx) when nothing was specified for -TM:LPT(xx).
108	A new version of TM Virtual Port Driver is already installed.
109	Port Assignment Tool is running.
110	User Manual or ReadMe is open.
200	Installation failed.
207	Conflict occurred between COM/LPT ports, and the automatic assignment of the device to the TM printer failed.
208	Conflict occurred between COM/LPT ports, and the automatic assignment of the device to the Customer display failed.
209	The port setting process failed.
300	Uninstallation failed (service deletion failed, etc.)
306	Uninstallation failed.
500	Restart required.
1001	Other internal errors.

Driver Setup

This chapter describes how to set up this driver.

> ⚠️ Set the IP address of the Ethernet interface printer as described below.
> • Set the IP address for the TM printer in advance.
> • Install TMNet WinConfig and set the IP address when setting the driver. The same IP address value is set for TM printers at the time of shipment so do not connect multiple TM printers at the same time.
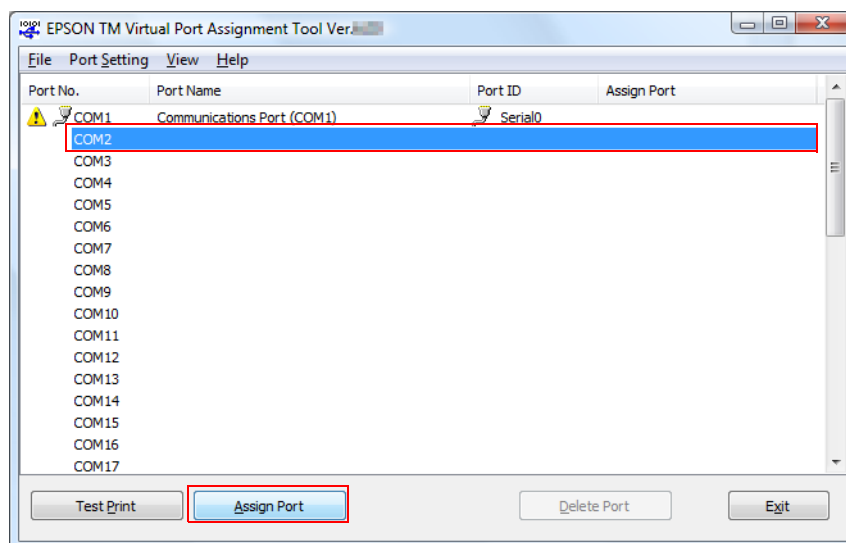
❏ When the TM printer has an Ethernet interface
   See Manual Device Assignment - Ethernet (p.24).

❏ When APD or UPOS is not installed and one TM printer and one customer display exist,
   See Automatic Device Assignment - USB (p.21).

❏ When APD or UPOS is not installed and multiple TM printers exist,
   See Manual Device Assignment - Ethernet (p.24).

❏ When APD/UPOS is installed,
   See Co-Existence with APD/UPOS - Ethernet / USB (p.29).

Automatic Device Assignment - USB

To use only one TM printer or to use one TM printer and one customer display, make port settings by using the automatic device assignment function. To use multiple TM printers simultaneously, see Manual Device Assignment - Ethernet (p.24).

1 Turn the power of the TM printer OFF and close all the applications running on your PC.

2 Select (Start) - (All Programs) - (EPSON) - (TM Virtual Port Driver) - (Port Assignment Tool).
When the "User Account Control" screen appears, click the (Continue) button.

3

3 The "EPSON TM Virtual Port Driver Port Assignment Tool" screen appears. Set the TM printer port. Select an empty port and click the (Assign Port) button.

4 The port setting screen appears. Click the (USB) button. Select (The first recognized device is automatically assigned to this port.) and then select (TM printer port). Click the (OK) button.
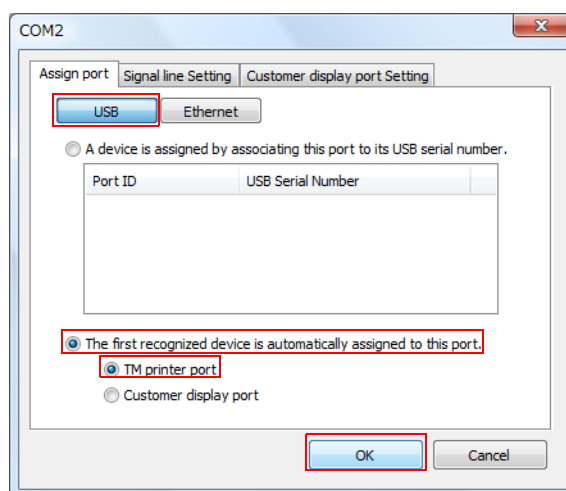
5 Confirm that the specified device has been assigned to the port.
If you do not intend to set the customer display port, proceed to step 9.
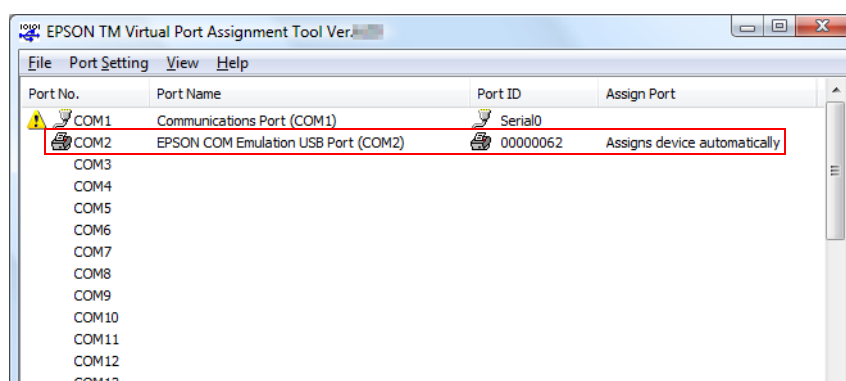
6   Then, set the customer display port. Select an empty port and click the (Assign Port) button.

7   The port setting screen appears. Click the (USB) button. Select (The first recognized device is automatically assigned to this port.) and then select (Customer display port). Click the (OK) button.

8   Confirm that the specified device has been assigned to the port.

9   After assigning the device, click the (Exit) button to close Port Assignment Tool.

Manual Device Assignment - Ethernet

When using a TM printer with an Ethernet interface, use Port Assignment Tool to manually assign the device.

> ⚠️ If the IP address of the TM printer is not set, install TMNet WinConfig in advance.

1 Connect a customer display to each TM printer and turn the power ON. Connect all the TM printers you want to use to your PC with USB cables and power them ON. Close all the applications running on your PC.

2 Select (Start) - (All Programs) - (EPSON) - (TM Virtual Port Driver) - (Port Assignment Tool).
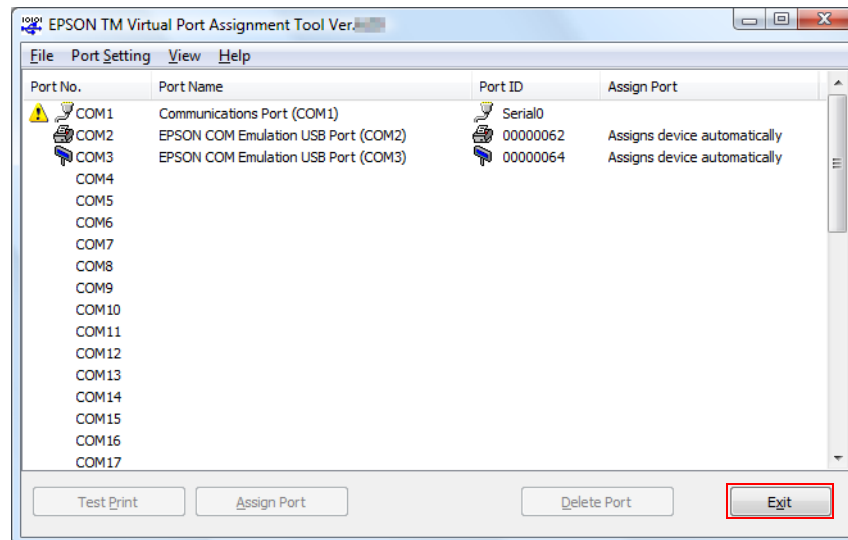When the "User Account Control" screen appears, click the (Continue) button.

3 The "EPSON TM Virtual Port Driver Port Assignment Tool" screen appears. Select an empty port and click the (Assign Port) button.
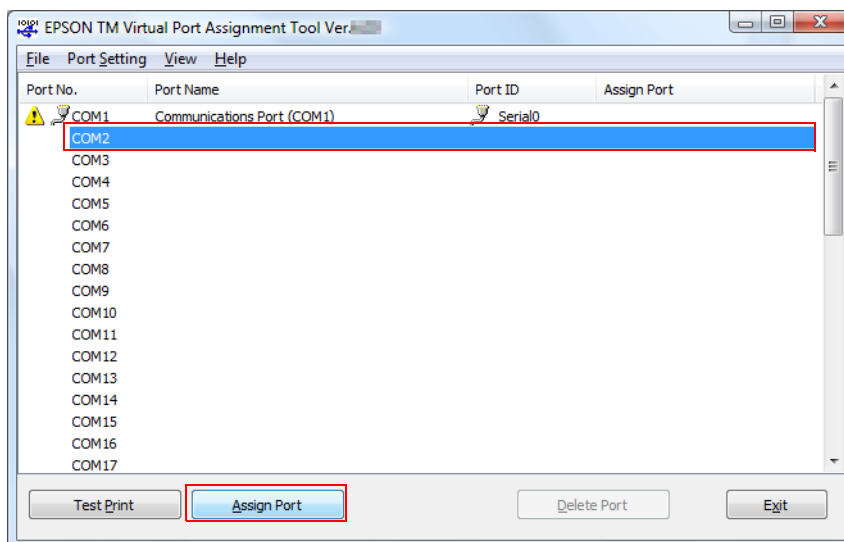
4 The port setting screen appears. Click the (Ethernet) button.

❏ When setting the IP address of the printer: Click [Change IP Address of printer.]. Proceed to step 5.

❏ When the IP address of the printer is already set: Proceed to step 6.
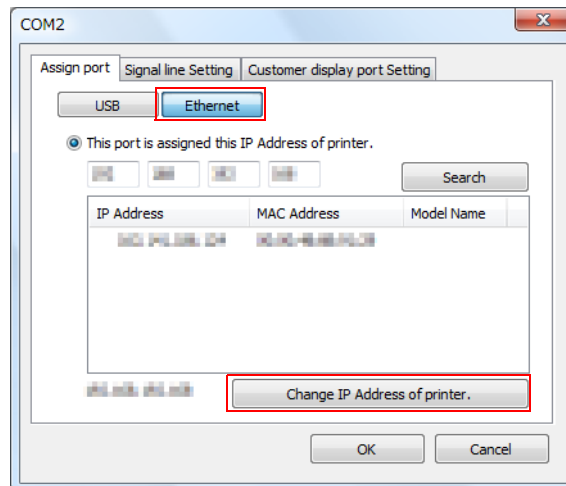
5 TMNet WinConfig starts. Set the IP address. After the setting process is complete, close TMNet WinConfig and then proceed to step 6.

For details on how to set the IP address, see (Help) - (User's Guide) of TMNet WinConfig.
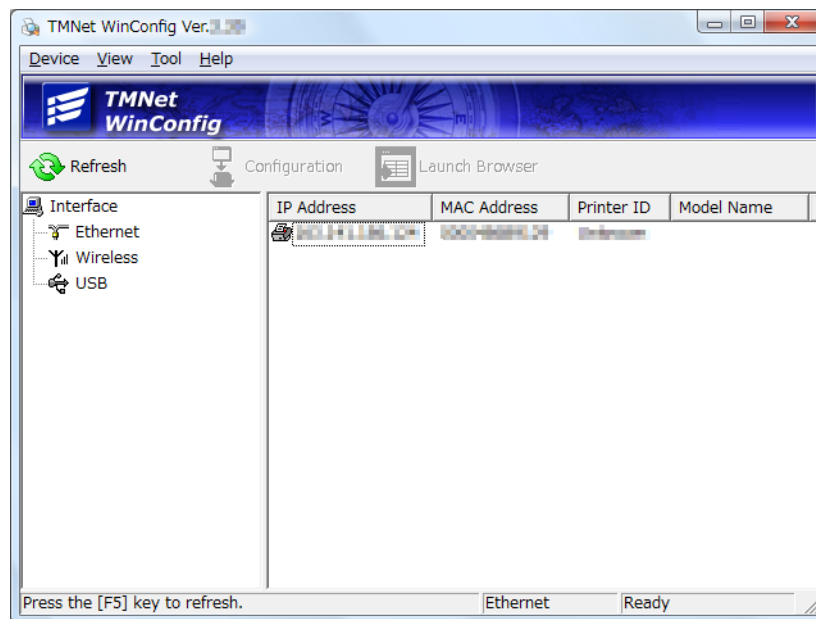
6 Set the port. Enter the IP address value in the text box or select the printer from the list. If you select the printer from the list, the IP address value will be entered in the text box. Click the (OK) button.

If the printer is not displayed in the list, click the (Search) button.
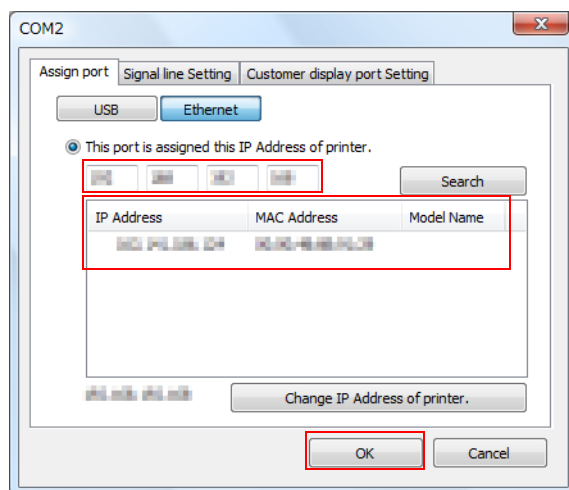
7 Confirm that the specified device has been assigned to the port.

8 To assign multiple ports, repeat steps 3 to 5. After the setting process is complete, click the (Exit) button to close Port Assignment Tool.
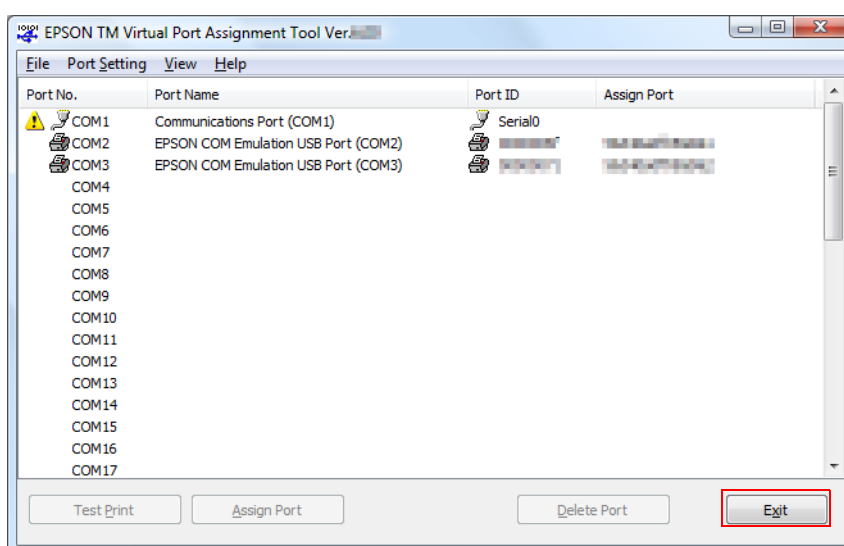
Manual Device Assignment - USB

To use multiple TM printers simultaneously, manually assign devices by using Port Assignment Tool. (Associate the USB serial number of the device with the COM/LPT port).

1 Connect a customer display to each TM printer and turn the power ON. Connect all the TM printers you want to use to your PC with USB cables and power them ON. Close all the applications running on your PC.

2 Select (Start) - (All Programs) - (EPSON) - (TM Virtual Port Driver) - (Port Assignment Tool).
When the "User Account Control" screen appears, click the (Continue) button.

3 The "EPSON TM Virtual Port Driver Port Assignment Tool" screen appears. Select an empty port and click the (Assign Port) button.

4 The port setting screen appears. Click the (USB) button. Select (A device is associating this port to its USB serial number.) and then select a device. Click the (OK) button.

If the connected device is not displayed, click the (Cancel) button. Return to the "EPSON TM Virtual Port Driver Port Assignment Tool" screen and click (View)-(Refresh).
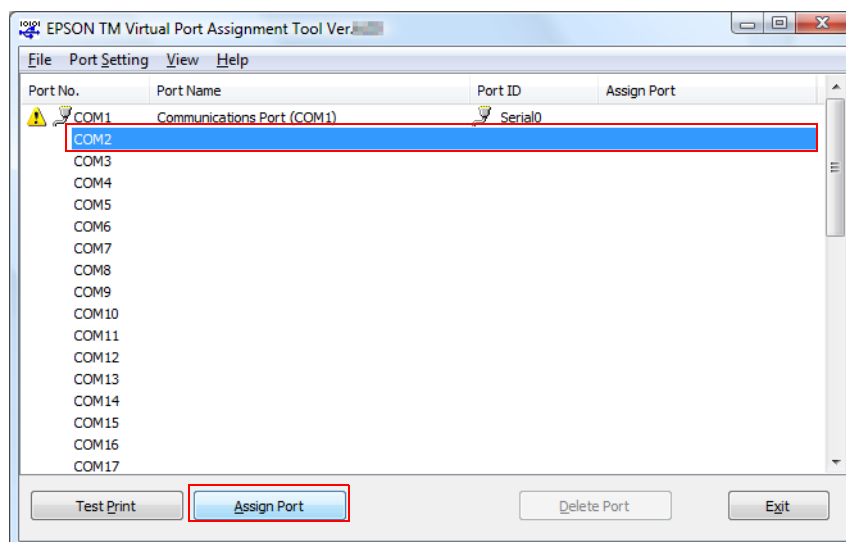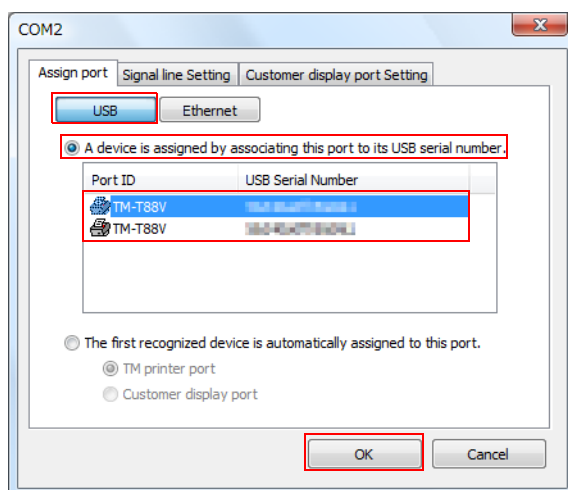

5 Confirm that the specified device has been assigned to the port.

6 To assign multiple ports, repeat steps 3 to 5. After the setting process is complete, click the (Exit) button to close Port Assignment Tool.
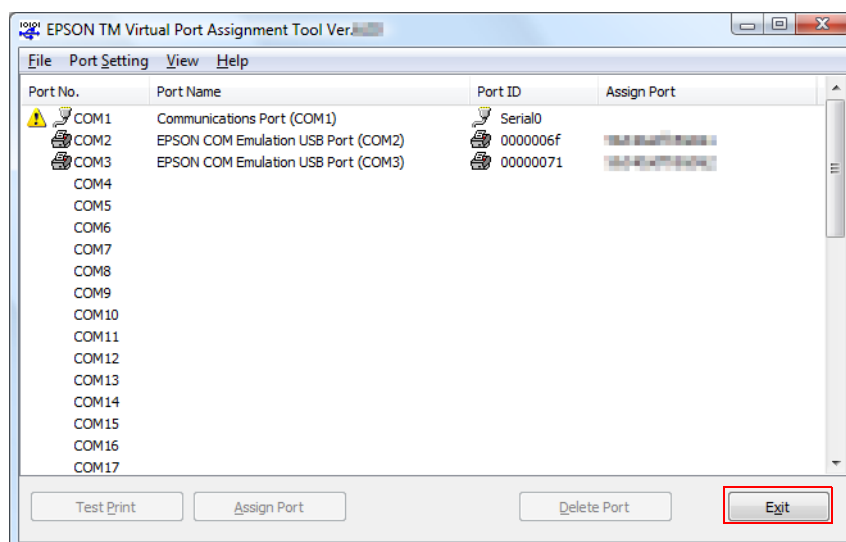
Co-Existence with APD/UPOS - Ethernet / USB

When this driver and APD/UPOS are allowed to co-exist, assign ports according to the following procedure:

1 Install APD/UPOS and set the printer status as ready to print.

2 Turn the power of the TM printer OFF and close all the applications running on your PC.

3 Select (Start) - (All Programs) - (EPSON) - (TM Virtual Port Driver) - (Port Assignment Tool).
When the "User Account Control" screen appears, click the (Continue) button.

4 The "EPSON TM Virtual Port Driver Port Assignment Tool" screen appears. Select an empty port and click the (Assign Port) button.
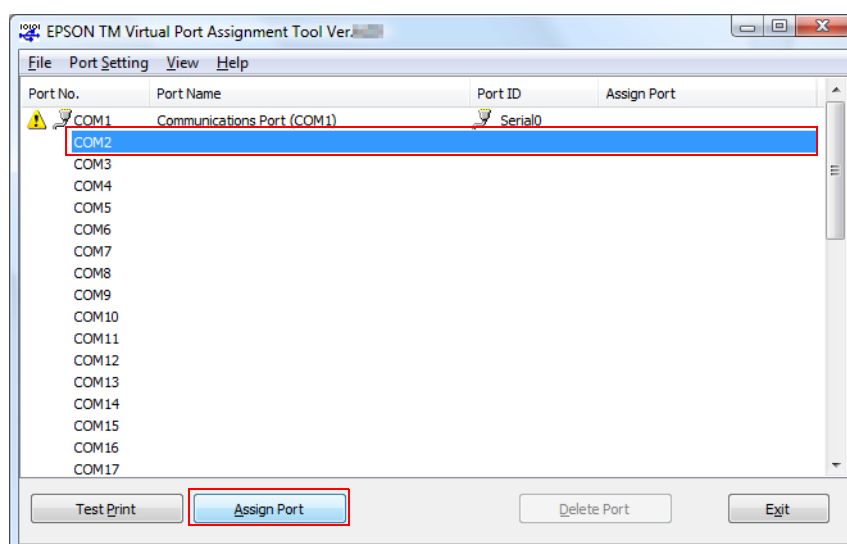
5 The port setting screen appears. Select an ESDPRT port to assign to a virtual port. Click the (OK) button.

6 Confirm that the specified device has been assigned to the port.

7 To assign multiple ESDPRT ports to virtual ports, repeat steps 3 to 5. After the setting process is complete, click the (Exit) button to close Port Assignment Tool.
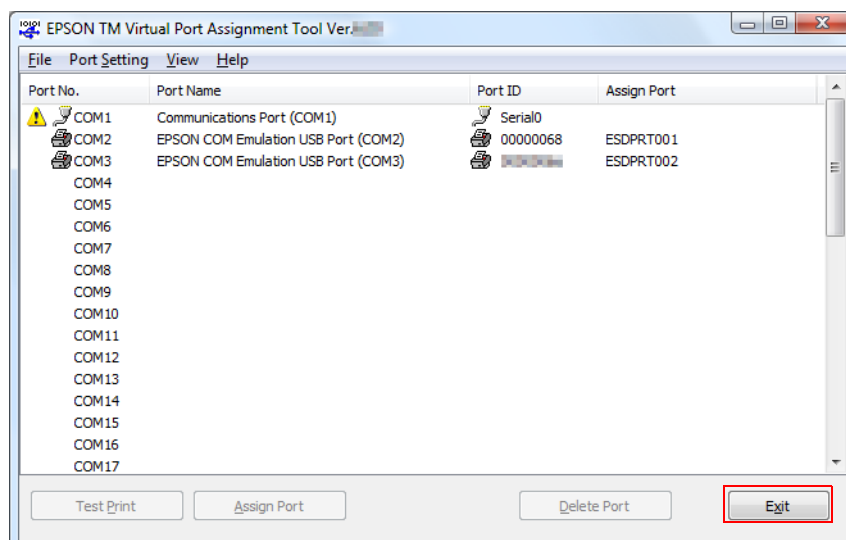
Port Sharing (Y-Connection) - USB

Set this feature for an application that has used the TM printer and customer display through Y-/pass-through connection based on one serial port. At the time the virtual ports have been assigned, the TM printer port 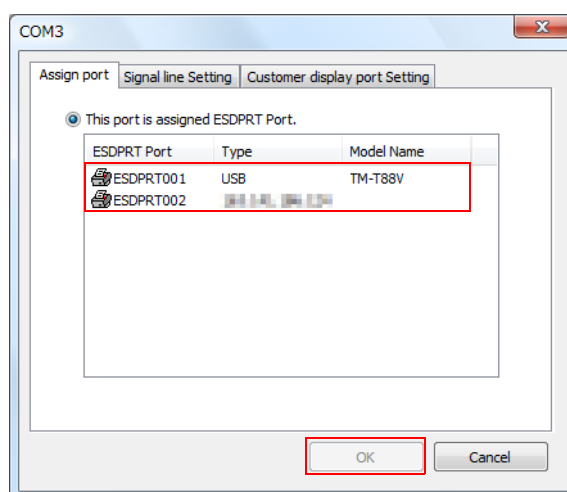and the customer display port have been set as separate ports. Unite these ports into one port through port sharing. For these settings, the following conditions must be satisfied:

❏ The TM printer virtual port and the customer display virtual port have been assigned.

❏ The customer display has been connected to the TM printer's DM-D connector.
(If the TM printer and the customer display have been connected to your PC separately, the ports cannot be united into one port.)

> To connect a customer display to a TM-H6000 series printer, it is necessary to set the dip switch. Turn dip switch SW 2-2 ON to enable the customer display.

Unite the ports into one port according to the following procedure:

1 Start up Port Assignment Tool and assign the TM printer virtual port and the customer display virtual port.

For details on how to assign the TM printer virtual port and customer display virtual port, see Automatic Device Assignment - USB (p.21), Manual Device Assignment - Ethernet (p.24) and Co-Existence with APD/UPOS - Ethernet / USB (p.29).

2 Select the TM printer virtual port and click the (Assign Port) button.
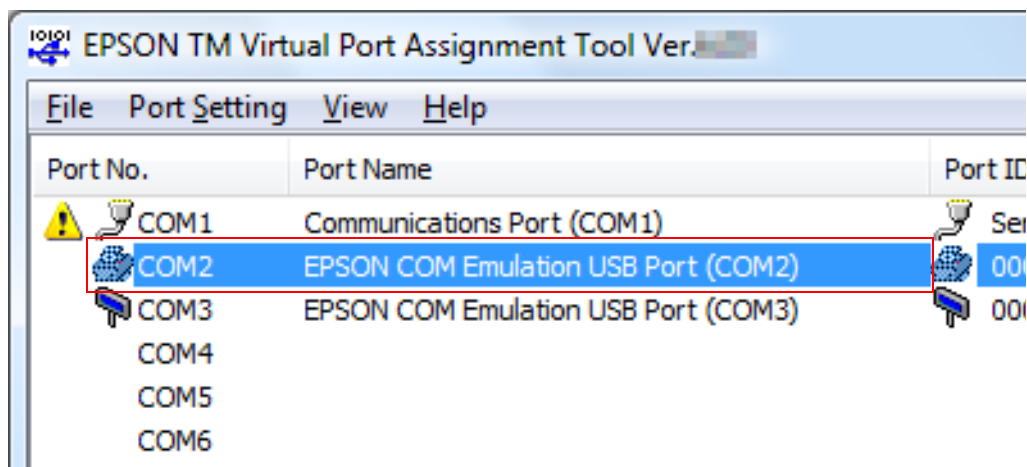
3   The port setting screen appears. Select the (Customer display port Setting) tab. Select (united with one port.) and click the (OK) button.
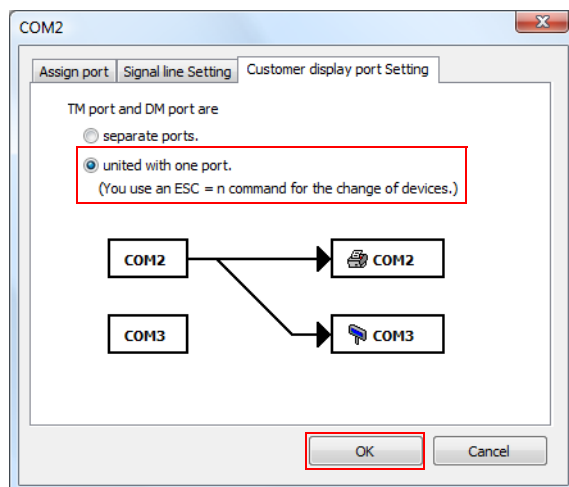
4   Confirm that the specified devices have been assigned to the port. Click the (Exit) button to close Port Assignment Tool.

Change from Pass-Through Connection to Y-Connection. - USB

To change the connection patterns for the TM printer from serial to USB in a pass-through connection environment, take the following procedure:

1 Re-connect the devices.
Connect the devices as follows:
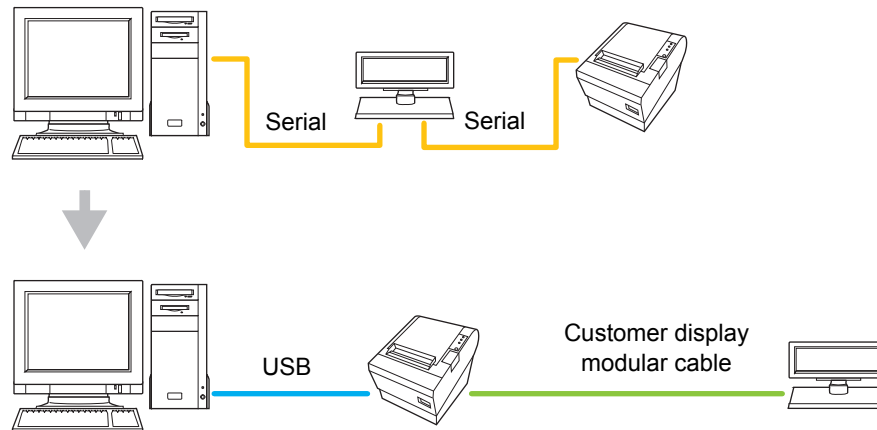
2 Assign the virtual port driver.
You should assign the TM printer virtual port and the customer display virtual port to one port. Set the ports by referring to Port Sharing (Y-Connection) - USB (p.31).

3 Set the serial signal line.
Check the connection and connection pattern of the cable used for serial connection and then set the serial signal line by using Port Assignment Tool. See Driver Setup (p.41).

3

Deleting a Virtual Port

To delete one virtual port, select the port you want to delete and click the (Delete Port) button.
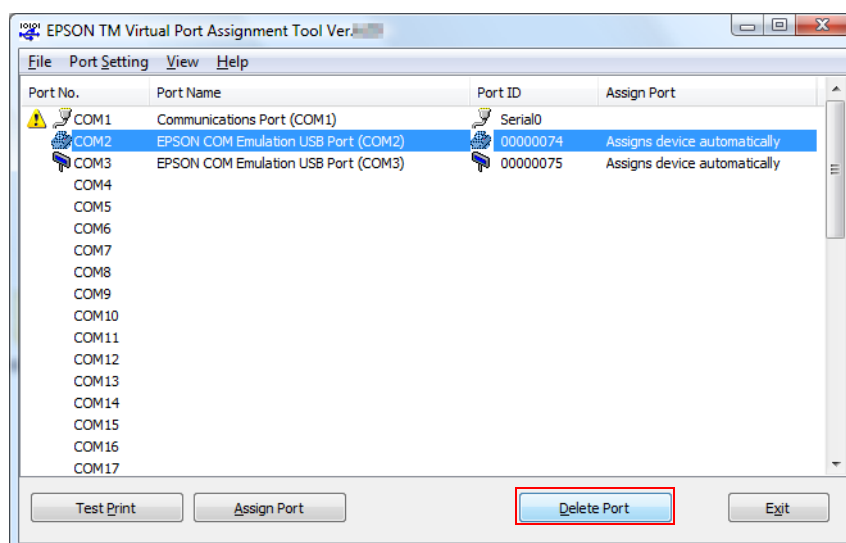
To delete all virtual ports, select (Port Setting)-(Delete All COM/LPT Port).
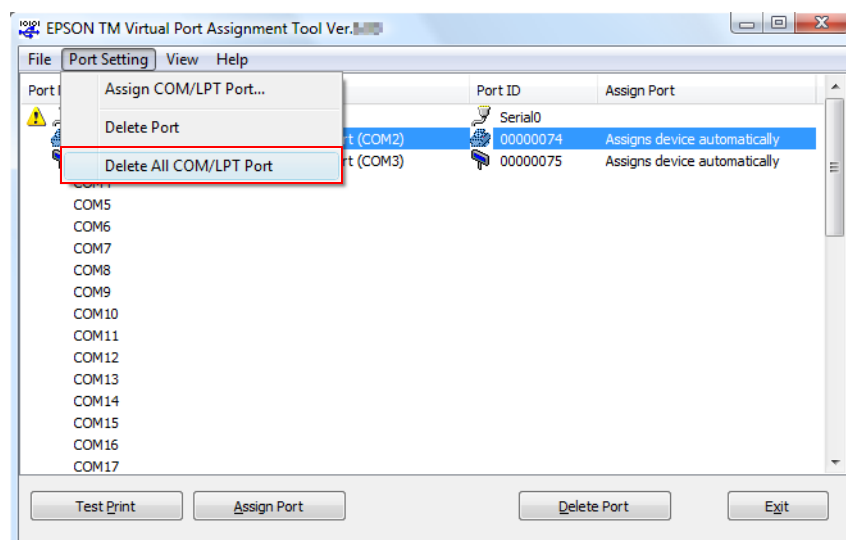
Windows API

This chapter describes Windows API that can be used.

Serial Communication

With some exceptions, Win32 API used for serial communication can be used as is.
For how to use Win32 API, see the MSDN information provided by Microsoft Corporation.

List of supported Win32 API

Win32 API

Win32 API	Remarks
CreateFile	For the port name to be specified for CreateFile(), specify "\\\\.\\COM1" to "\\\\.\\COM32".
WriteFile	When an ESDPRT port is used, timeout may occur maximally 5 seconds off the specified time.
ReadFile	
CloseHandle	
DeviceIoControl	
CancelIo	For asynchronous I/O When the printer is on-line, the process will not be cancelled even by executing CancelIo.
WriteFileEx/ ReadFileEx/ SleepEx	For asynchronous I/O
FileIOCompletionRoutine	For asynchronous I/O Also when a transfer error occurs, the completion code (dwErrorCode) becomes 0. Be sure to check the number of transferred bytes (dwNumberOfBytesTransfered).
GetOverlappedResult	For asynchronous I/O
WaitForSingleObject	For asynchronous I/O

Communication API

Communication API		
BuildCommDCB	GetCommModemStatus	SetCommMask
BuildCommDCBAndTimeouts	GetCommProperties	SetCommState
ClearCommBreak	GetCommState	SetCommTimeouts
ClearCommError	GetCommTimeouts	SetDefaultCommConfig
CommConfigDialog	GetDefaultCommConfig	SetupComm
EscapeCommFunction	PurgeComm	TransmitCommChar
GetCommConfig	SetCommBreak	WaitCommEvent
GetCommMask	SetCommConfig	

If Communication API is called with an abnormal parameter, normally, an error is returned as a function's return value, but because of the OS restrictions, a normal code will be returned. Note that an abnormal parameter will not be set in such cases.

4

Serial communication settings and flow control

USB communication is not affected by any value set for the baud rate, parity, byte size, or stop bit of the DCB structure. However, if a value beyond the defined range is specified, a function returns an error.

❏ When "hard flow" is set for the flow control
   Specify the members of the DCB structure as shown below and call SetCommStatus().
   fOutxCtsFlow   = TRUE;
   fOutxDsrFlow   = TRUE;

❏ When "none" is set for the flow control
   Specify the members of the DCB structure as shown below and call SetCommStatus(). When it is necessary to send a real command at the time of BUSY such as when sending an error cancellation command to the device, temporarily use these settings.
   fOutxCtsFlow   = FALSE;
   fOutxDsrFlow   = FALSE;

> If data is sent when "none" is set for the flow control and the printer power is off, "Transmission completed" is returned, even if no actual data is sent.

❏ The flow control XON/XOFF is unsupported.

Reception of scanned images

To receive scanned image data, the reception performance can be improved by increasing the number of reception requests specified by ReadFile() at a time. For example, the reception performance is improved by requesting (64K+4) bytes in ReadFile so that packets to be sent from the printer at a time can be received completely. In addition, we recommend specifying the values of the COMMTIMEOUTS structure, which are specified in the SetCommTimeouts() function, as follows:
ReadIntervalTimeout = MAXDWORD,
ReadTotalTimeoutMultiplier = MAXDWORD,
ReadTotalTimeoutConstant = 500,
WriteTotalTimeoutConstant = 0,
WriteTotalTimeoutConstant = 2000,

Parallel Communication

With some exceptions, Win32 API used for parallel communication can be used as is.
For how to use Win32 API, see the MSDN information provided by Microsoft Corporation.
For how to use IOCTL, see the document supplied with the WDK. When using it, link the header files,
devioctl.h and ntddpar.h, to the project.

List of supported Win32 API

Win32 API

Win32 API	Remarks
CreateFile	The port name for CreateFile() should include anyone between LPT1 and LPT8 as follows."\\\\.\\LPT1" through "\\\\.\\LPT8".
WriteFile	When an ESDPRT port is used, timeout may occur maximally 5 seconds off the specified time.
ReadFile	
CloseHandle	
CancelIo	For asynchronous I/O When the printer is on-line, the process will not be cancelled even by executing CancelIo.
WriteFileEx/ ReadFileEx	For asynchronous I/O
FileIOCompletionRoutine	For asynchronous I/O Also when a transfer error occurs, the completion code (dwErrorCode) becomes 0. Be sure to check the number of transferred bytes (dwNumberOfBytesTransfered).
GetOverlappedResult	When transmission is completed normally, TRUE is returned. However, if a timeout or error occurs, a function does not return TRUE. Be careful.
WaitForSingleObject	For asynchronous I/O
DeviceIoControl	Supports the following IOCTL codes: IOCTL_PAR_QUERY_DEVICE_ID IOCTL_PAR_QUERY_INFORMATION IOCTL_PAR_SET_INFORMATION

Communication API

Communication API	
SetCommTimeouts	GetCommTimeouts

If Communication API is called with an abnormal parameter, normally, an error is returned as a function's return value, but because of the OS restrictions, a normal code will be returned. Note that an abnormal parameter will not be set in such cases.

4

IOCTL

IOCTL	Remarks
IOCTL_PAR_QUERY_DEVICE_ID	Obtains a Device ID. DWORD nSize; char OutBuff(256); DeviceIoControl(hPort, IOCTL_PAR_QUERY_DEVICE_ID , NULL,0,Out-Buff,256,&nSize,NULL);
IOCTL_PAR_QUERY_INFORMATION	When APD/UPOS is not installed, depending on the TM printer, the signal line change PARALLEL_PAPER_EMPTY may not be acquired. #define PARALLEL_PAPER_EMPTY 0x4 #define PARALLEL_POWER_OFF 0x10 #define PARALLEL_BUSY 0x40 DWORD nSize; DWORD OutBuff; DeviceIoControl(hPort, IOCTL_PAR_QUERY_INFORMATION , NULL,0,OutBuff,4,&nSize,NULL);
IOCTL_PAR_SET_INFORMATION	Using "INIT", hardware can be reset. DWORD nSize; PAR_SET_INFORMATION InBuff ; InBuff.Init = PARALLEL_INIT; DeviceIoControl(hPort, IOCTL_PAR_SET_INFORMATION , &InBuff, sizeof(PAR_SET_INFORMATION), NULL,0,&nSize,NULL);

Sample Codes for Sending/Receiving Data via Serial/Parallel interface

```
HANDLE hPort;                          handles the port
char    cmd(128);                      data to be sent or received
DWORD cmdsize;                         size of data to be sent or received
DWORD nSize;                           number of data sent or received
OVERLAPPED ol;                         buffer for overlapped structure

//Time out setting
COMMTIMEOUTS t;
t.ReadIntervalTimeout = MAXDWORD;
t.ReadTotalTimeoutMultiplier = MAXDWORD;
t.ReadTotalTimeoutConstant = 500;
t.WriteTotalTimeoutMultiplier = 0;
t.WriteTotalTimeoutConstant = 2000;
SetCommTimeouts( hPort, &t);


//When FILE_FLAG_OVERLAPPED is not specified for CreateFile,
//WriteFile( hPort, cmd, cmdsize, &nSize, NULL);
//ReadFile( hPort, cmd, cmdsize, &nSize, NULL);
//call the above.

//When FILE_FLAG_OVERLAPPED is specified for CreateFile
//initialize the overlap
ol.Offset    = 0;
ol.OffsetHigh = 0;
ol.hEvent   = CreateEvent(NULL, TRUE, FALSE, NULL);


if ( WriteFile( hPort, cmd, cmdsize, &nSize, &ol) == FALSE )        //When sending data
//if ( ReadFile( hPort, cmd, cmdsize, &nSize, &ol) == FALSE )     //When receiving data
{
        while(true)
        {
                if( GetLastError() != ERROR_IO_PENDING )
                {
                        break;
                }
                if( GetOverlappedResult(hPort, &ol, &nSize, TRUE) == TRUE )
                {
                        break;
                }
        }
}
```

4

Serial Signal Emulation

This chapter describes Serial Signal Emulation.

Serial cables have a variety of connection types such as cross connection, interlink connection, and device manufacturer's propriety connection.

In some special device or application, control is performed by changing the meaning of the serial signal. To support such a special device or application, a function is available that can change the meanings of signal lines (except for the data transmission and reception signal line) for inputs to the PC (DCD/DSR/CTS/RI).

You can set the conditions for port change by using Port Assignment Tool.

Driver Setup

Set up the driver by using Port Assignment Tool. Start according to the following procedure:

1 Start up Port Assignment Tool.

2 The "EPSON TM Virtual Port Driver Port Assignment Tool" screen appears. Set the TM printer port. Select an empty port and click the (Assign Port) button.

5
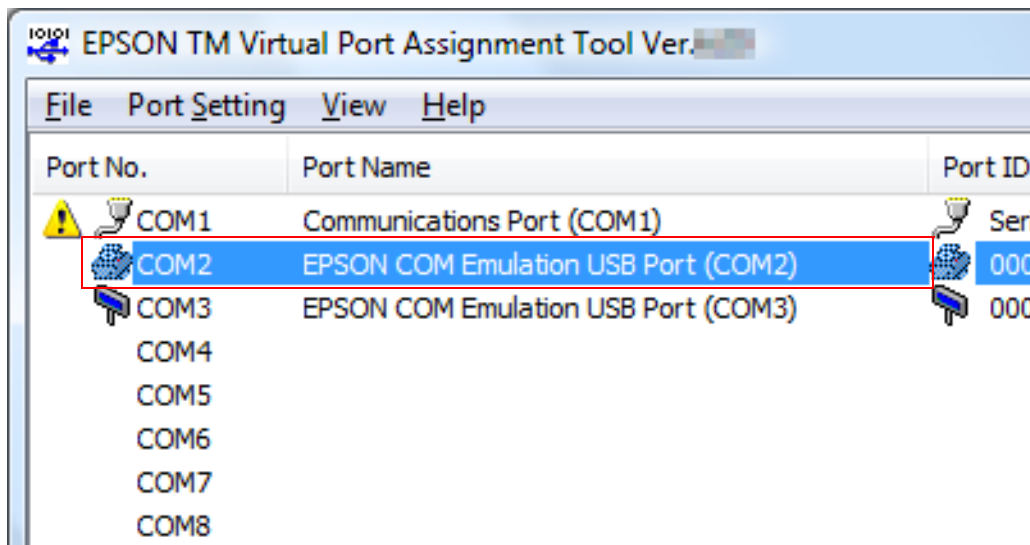
3 The port setting screen appears. Select the (Signal line Setting) tab and set the port by referring to Cable Connection (p.43). After the port setting, click the (OK) button.

After the port setting, click the (OK) button.Check the connection and connection pattern of the cable used for serial communication and then set the port.
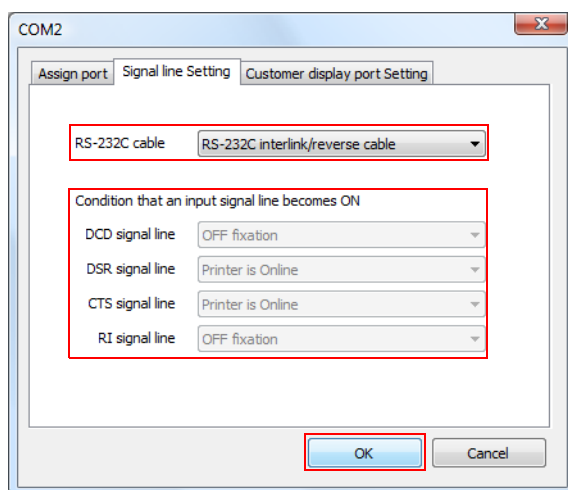
Cable Connection

RS-232C cross cable

Normal port

	Condition for turning the signal line ON	Condition for turning the signal line OFF
DCD(1)	Printer is Online	Printer is Offline
DSR(6)	Printer is Online	Printer is Offline
CTS(8)	RTS(7) output signal line is ON	RTS(7) output signal line is OFF
RI (9)	OFF fixation	

TM/DM unified port Connection when in Y-type connection mode - USB

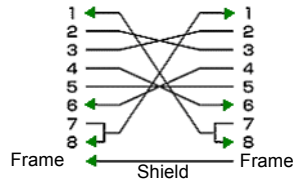|	Condition for turning the signal line ON	Condition for turning the signal line OFF
DCD(1)	Y-type connection mode is Online	Y-type connection mode is Offline
DSR(6)	Printer is Online	Printer is Offline
CTS(8)	RTS(7) output signal line is ON	RTS(7) output signal line is OFF
RI (9)	OFF fixation	

TM/DM unified port Pass-through connection - USB

	Condition for turning the signal line ON	Condition for turning the signal line OFF
DCD(1)	Pass through mode is Online	Pass through mode is Offline
DSR(6)	Printer is Online	Printer is Offline
CTS(8)	RTS(7) output signal line is ON	RTS(7) output signal line is OFF
RI (9)	OFF fixation	

5

RS-232C interlink/reverse cable

Normal port

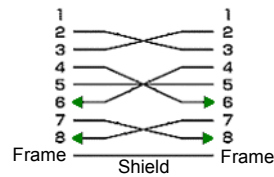|	Condition for turning the signal line ON	Condition for turning the signal line OFF
DCD(1)	OFF fixation	
DSR(6)	Printer is Online	Printer is Offline
CTS(8)	Printer is Online	Printer is Offline
RI (9)	OFF fixation	

TM/DM unified port Connection when in Y-type connection mode - USB

	Condition for turning the signal line ON	Condition for turning the signal line OFF
DCD(1)	OFF fixation	
DSR(6)	Printer is Online	Printer is Offline
CTS(8)	Y-type connection mode is Online	Y-type connection mode is Offline
RI (9)	OFF fixation	

TM/DM unified port Pass-through connection - USB

	Condition for turning the signal line ON	Condition for turning the signal line OFF
DCD(1)	OFF fixation	
DSR(6)	Printer is Online	Printer is Offline
CTS(8)	Pass through mode is Online	Pass through mode is Offline
RI (9)	OFF fixation	

Custom setting

For each signal line, make it possible to set one of the conditions below by using Port Assign Tool.
3 and 4 become enabled only when a TM/DM unified port is specified.

	Condition for turning the signal line ON	Condition for turning the signal line OFF
1	Printer is Power ON	Printer is Power OFF
2	Printer is Online	Printer is Offline
3	Y-type connection mode is Online	Y-type connection mode is Offline
4	Pass through mode is Online	Pass through mode is Offline
5	There are reception data	There are no reception data
6	RTS(7) output signal line is ON	RTS(7) output signal line is OFF
7	DTR(4) output signal line is ON	DTR(4) output signal line is OFF
8	OFF fixation	
9	ON fixation	

Pin assignment at the PC side

Pin Number	Signal name	Input/ Output	Definition by OS	Description	
1	DCD	Input	MS_RLSD	Date Carrier Detect	Carrier detection
2	RxD	Input		Recieved Data	Received data
3	TxD	Output		Transmitted Data	Transmitted data
4	DTR	Output		Data Terminal Ready	Data terminal is ready
5	SG	-		Signal Ground	Signal ground or common return wire
6	DSR	Input	MS_DSR	Data Set Ready	Dataset is ready
7	RTS	Output		Request To Send	Transmission request
8	CTS	Input	MS_CTS	Clear To Send	Transmission permission
9	RI	Input	MS_RING	Ring Indicator	Indication of being called
CASE	FG	-		Frame Ground	Protective ground (frame ground)

5

Troubleshooting

This chapter describes troubleshooting methods.

Trouble	Action
When the port information of TM Virtual Port Driver is corrupt	If EPSON COM Emulation USB Port (COMx)/ EPSON LPT Emulation USB Port (LPTx) is deleted from Device Manager or if NONE is specified in the port settings by using the COM Assignment Tool of the past TMCOMUSB, the registry information of TM Virtual Port Driver may lose integrity. Delete a port with error symbol or restore its initial state by using "Port Assignment Tool", and perform the re-assignment of the device to a port.
When conflict occurs with a COM/ LPT port used by another driver	Re-assign the device to an empty port, or either change the COM/LPT settings of or uninstall another driver.
When using a physical port number as a virtual port	When the physical port is COM port 1. Start the Device Manager. For Windows Vista/ Windows 7/ Windows Server 2008, when the UAC dialog box appears, press the (Continue) button. 2. From the (Ports (COM & LPT)), select the physical port that you want to use as a virtual port, and open its Properties. 3. Select the (Port Settings) tab on the Properties screen, and click the (Advanced) button. 4. The "Advanced Settings" screen appears. Change the number in (COM Port Number) to another number. 5. Using the Port Assignment Tool, change the physical port to a virtual port.
	When the physical port is LPT port 1. Start the Device Manager. For Windows Vista/ Windows 7/ Windows Server 2008, when the UAC dialog box appears, press the (Continue) button. 2. From the (Ports (COM & LPT)), select the physical port that you want to use as a virtual port, and open its Properties. 3. Select the (Port Settings) tab on the Properties screen, and change the number in (LPT Port Number) to another number. 4. Using the Port Assignment Tool, change the physical port to a virtual port.

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Trouble	Action
When the Ethernet printer cannot be found or used	Print a status sheet and then check whether or not there is an error in the network settings printed on the status sheet. • Check whether or not the IP address of the TM printer is set to a valid value for your operating environment. The initial value is [192.168.192.168] but this address cannot be used due to the product specifications. Be sure to change the address to a value that matches your operating environment. Check whether or not the hub and cables are OK. Check the hub and confirm whether or not the link lamp of the port to which the device is connected is lit/flashing. If the link lamp is off, perform the following checks. • Connect the device to another port, and then check whether or not the link lamp is lit/flashing. • Connect the device to another hub, and then check whether or not the link lamp is lit/flashing. • Replace the LAN cable, and then check whether or not the link lamp is lit/flashing.

Restrictions

This chapter describes restrictions.

Restrictions on the TM Virtual Port Driver

❏ During printing, do not power OFF/ON the printer, or do not remove or connect any cable. In addition, do not forcibly terminate an application during printing. Doing so could make the system unstable.

❏ After powering OFF the printer, wait until the driver is unloaded (for approx. 5 seconds) and then power ON the printer. If the power is turned ON immediately, communication with the printer may fail. In such a case, power OFF the printer again, wait for approx. 5 seconds, and power ON the printer.

❏ While devices are running, due to restrictions on the OS side, it may become impossible to turn the computer into standby or hibernation mode normally. Terminate the print application or power OFF the devices, and then turn the PC into standby/hibernation mode.

❏ Automatic device assignment and manual device assignment cannot be used together.

❏ A wireless LAN interface TM printer cannot be used.

❏ When a TM printer is shared by two applications, printing from one application cannot be accepted if the port of the other application is not closed.

Restrictions on COM/LPT assignment

❏ There may be a conflict between the ports assigned to devices or the driver of another manufacturer and the ports used by TM Virtual Port Driver. In the event of COM/LPT port conflict, re-assign COM/LPT ports to be used by TM Virtual Port Driver through "COM Port Assignment Tool".

❏ Do not delete EPSON COM Emulation USB Port (COMx)/ EPSON LPT Emulation USB Port (LPTx) from Device Manager. If it has been deleted, you need to launch "Port Assignment Tool" and delete the assignment of the COM/LPT ports concerned.

Restrictions on the installer/uninstaller

❏ For operation of the installer of TM Virtual Port Driver, it is necessary that Internet Explorer Version 4.0 or later and Windows Installer Version 2.0 or later should be installed. The installer can run without problems on operation systems supported by TM Virtual Port Driver because these modules have already been installed there.

❏ To perform downgrading, uninstall the installed TM Virtual Port Driver and then install an older version.

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