

CITIZEN

Virtual LPT Port Driver User' s Manual

Ver. 1.3.1.1

CITIZEN SYSTEMS JAPAN CO., LTD.

Revision History

Date	Version	Details
2015/6/10	1.1.0.0	Newly issued.
2016/9/28	1.3.0.0	Added write buffering function. Supported the old models (CT-S2000, CT-S4000, CT-S310). Changed the driver of the operation when called by the write timeout = 0. (Old version: immediate return, new version: continue to wait until write)
2016/11/29	1.3.1.1	Since the driver got Microsoft's digital signature, the Windows Security dialog in "2.2. Installation of Virtual LPT Port Driver" chapter will not be displayed. Deleted descriptive text and graphics. Added the chapter "2.3. Silent installation of Virtual LPT Port Driver". In order to add the silent uninstall function, the chapter has been changed by adding "4.1. Uninstallation of Virtual LPT Port Driver" and "4.2. Silent Uninstallation of Virtual LPT Port Driver".

Be sure to read this manual carefully before using the product. After you read it, store it in a safe place so that you can reread it when necessary.

- Contents of this manual may be changed without notice.
- Reproducing and/or copying the contents of this manual by any means without permission are prohibited.
- We will not be responsible for any adverse occurrence that results from the use of this manual, regardless if it contains omissions, errors/misprints, etc.
- Note that we will not be responsible for (a) loss caused by improper operation or mishandling of the device by the user, or (b) loss due to operational environment.
- Data are basically impermanent; long time or permanent storing/saving of data by the device is not possible.
- Note that we will not be responsible for any loss or loss of profits owing to loss of data due to breakdown, repairs, inspections, etc.
- Please contact us if there are omissions, errors, ambiguities, etc. in this manual.
- Refer to this document along with the user manual of the printer.

Trademarks

- Microsoft, Windows XP, Windows Vista, Windows 7 ,Windows 8 , Windows 8.1 , Windows10 and Win32 are registered trademarks of Microsoft Corporation U.S.A.
- Other company names and product names mentioned here are trademarks or registered trademarks of those companies.

CITIZEN is a registered trademark of Citizen Watch Co., Ltd.

Table of Contents

1. Outline	5
1.1. Characteristics.....	5
1.2. Requirements.....	5
1.3. LPT port number range.....	5
2. Installation	6
2.1. Printer driver installation and settings.....	6
2.2. Installation of Virtual LPT Port Driver	7
2.3. Silent Installation of Virtual LPT Port Driver	10
3. Changing Settings	12
3.1. Virtual LPT Port Tool.....	12
3.2. Handling	13
3.3. Write Buffering Function	15
4. Uninstallation	17
4.1. Uninstallation of Virtual LPT Port Driver	17
4.2. Silent Uninstallation of Virtual LPT Port Driver.....	18
5. Windows API	19

1. Outline

This document explains about Virtual LPT Port Driver.

1.1. Characteristics

Using this Virtual LPT Port Driver, you can print to the printer with USB port from the application which can take LPT port only. If your PC has USB port only and you cannot change your application, this Virtual LPT port driver can be recommended.

1.2. Requirements

OS

- Windows 7 SP1 (32/64 bit)
- Windows 8.1 (32/64 bit)
- Windows 10 (32/64 bit)

Printers

- Printer with USB printer class USB port.
- Printer with USB Vendor ID of CITIZEN SYSTEMS and with USB serial number available in USB descriptor.

* Most of POS printer from CITIZEN SYSTEMS can be used.

1.3. LPT port number range

- Assignable port number: LPT1 to LPT9 (Except existing port on the PC)
- Applicable interface: USB (Printer class)

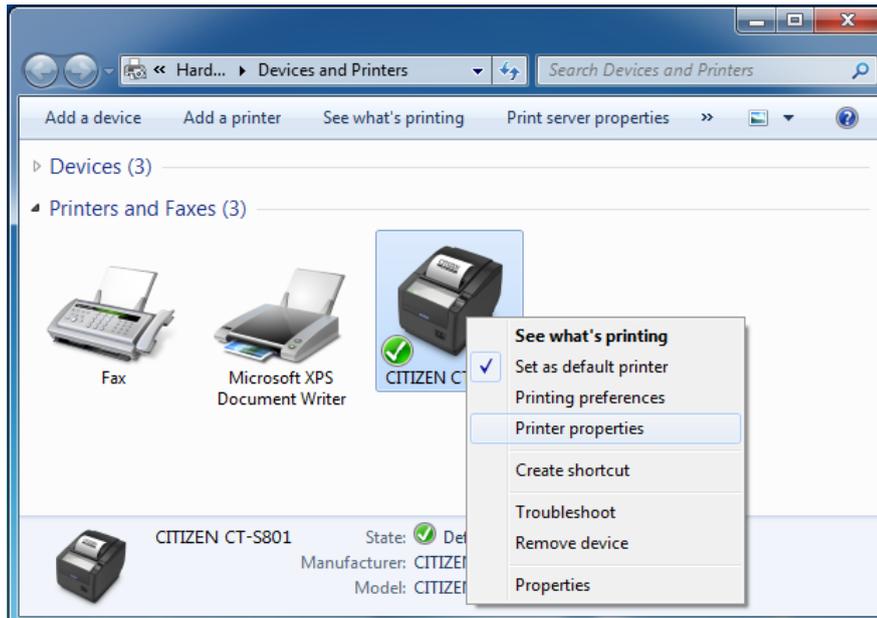
2.Installation

This section is about the installation of Virtual LPT Port Driver.

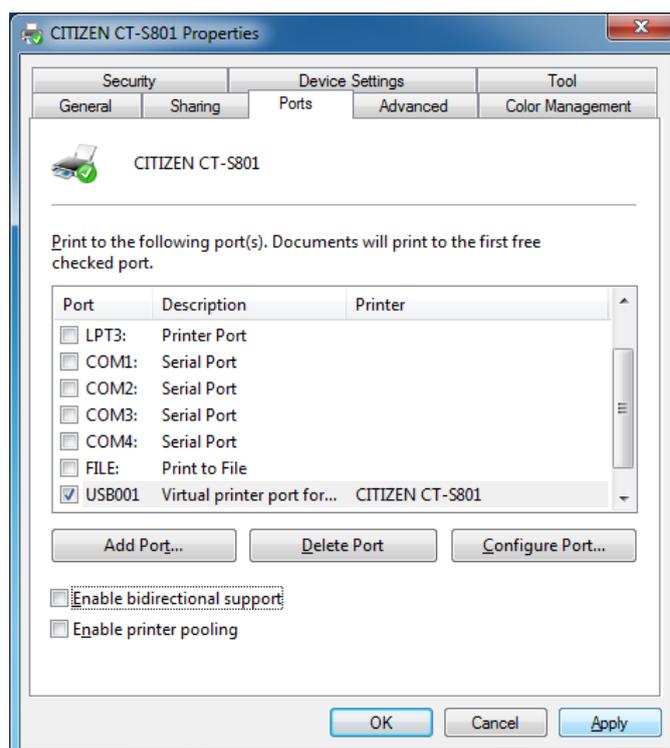
Installation steps are based on Windows 7 but steps for other OS are basically same or very similar.

2.1. Printer driver installation and settings

- Prior to the installation of Virtual LPT Port Driver, install the Windows printer driver. (Please refer to the “Windows driver installation guide”)
- Right-click on printer driver icon and choose “Printer properties” from drop down menu.

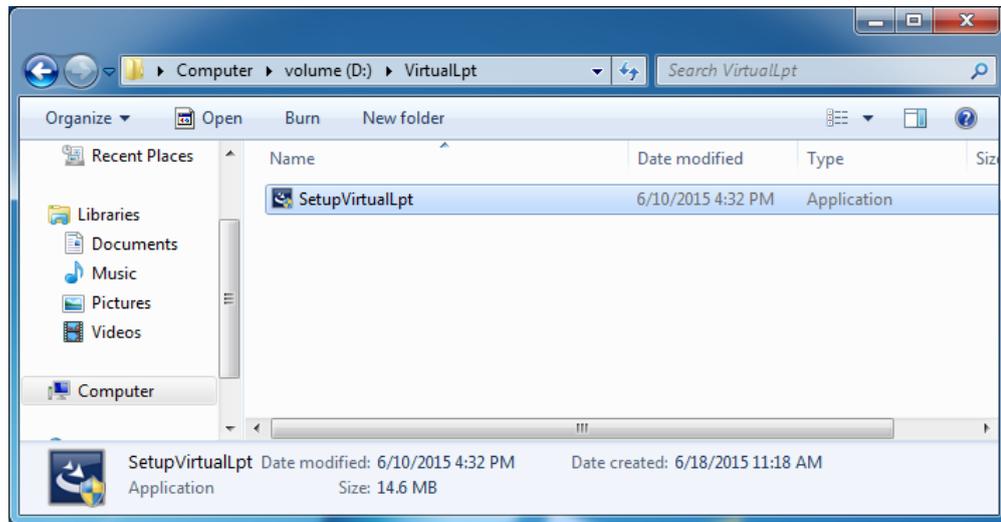


- Choose “Port” tab and remove check mark from “Enable bidirectional support” and press Apply button.



2.2. Installation of Virtual LPT Port Driver

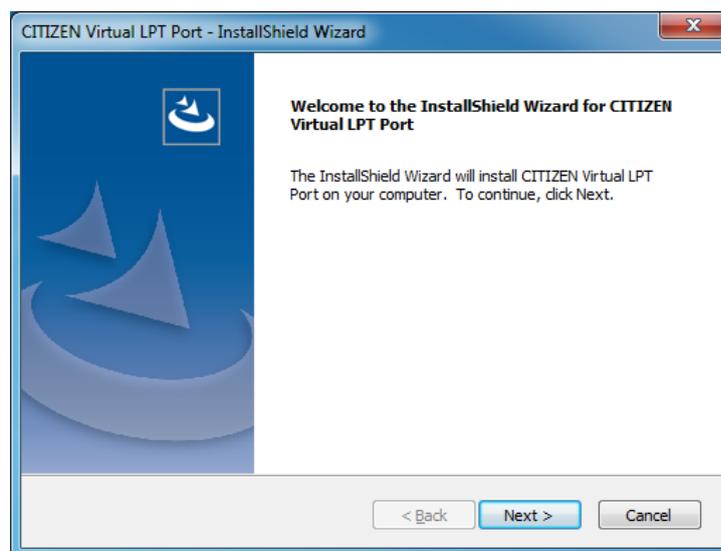
- Run SetupVirtualLpt.exe.



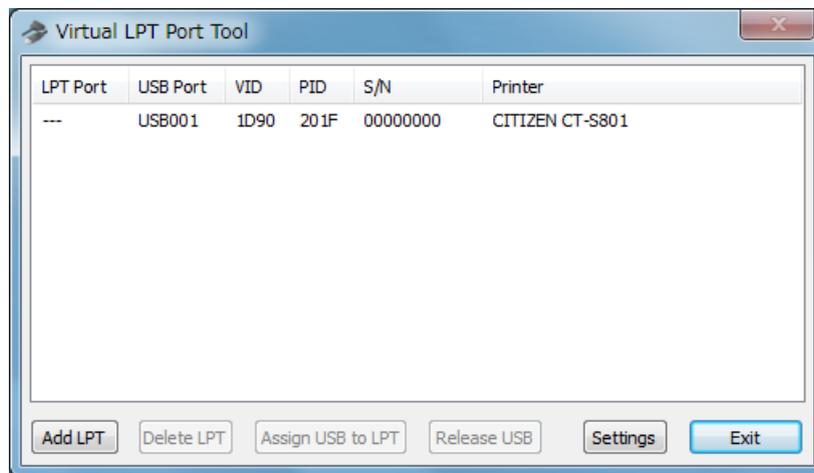
- When dialog of User Account Control appears, press “Yes”.



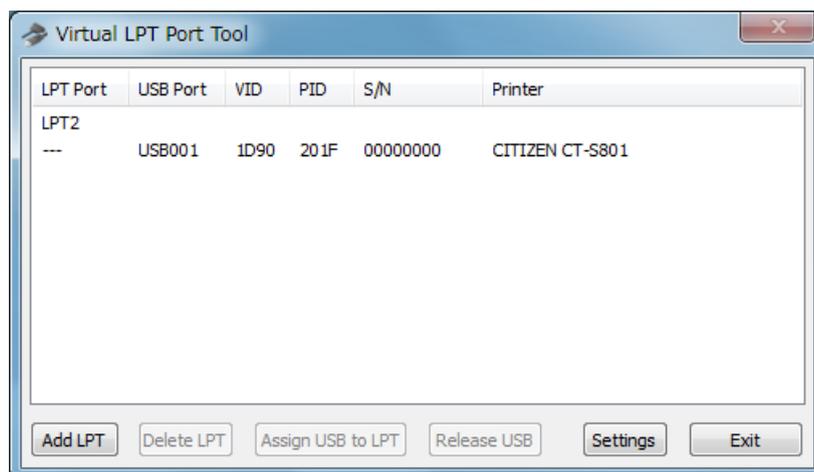
- Follow the instructions of installer.



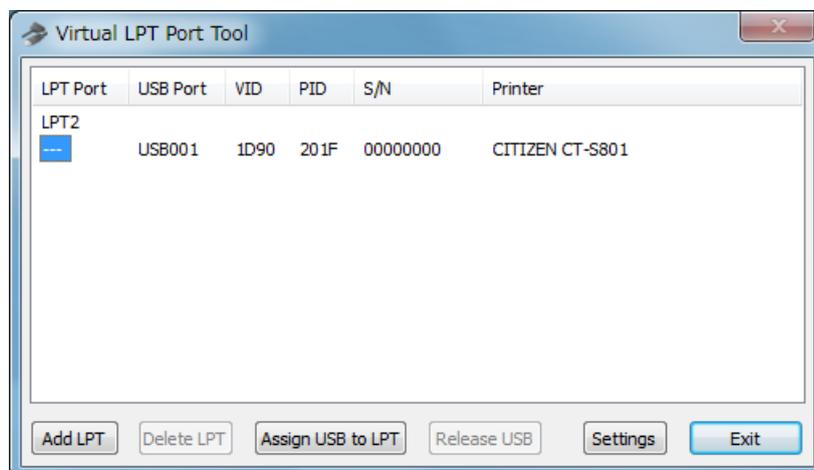
- “Virtual LPT Port Tool” dialog appears in the later step of installation. The dialog indicates the list of assignable USB ports and printers. To add virtual LPT port number press “Add LPT” button.



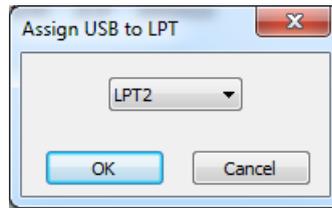
- After a while, LPT2 is shown as added LPT port. (Port number depends on the PC environment.)



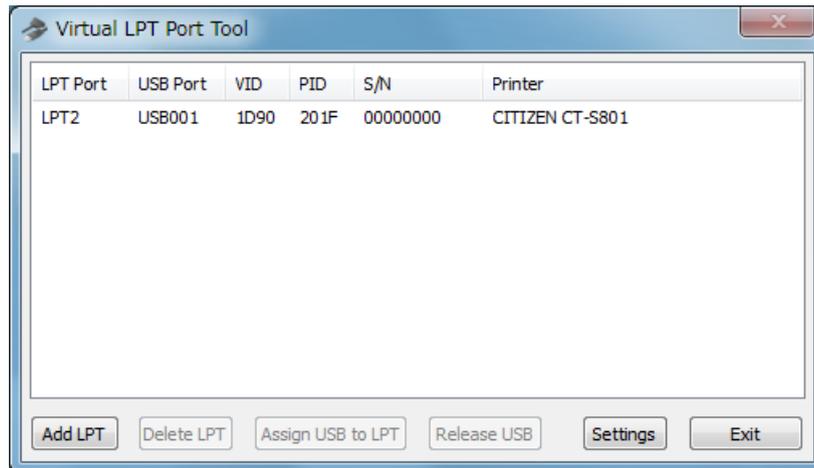
- Assign the USB port to the virtual LPT port. Click “---” and Assign USB to LPT” button.



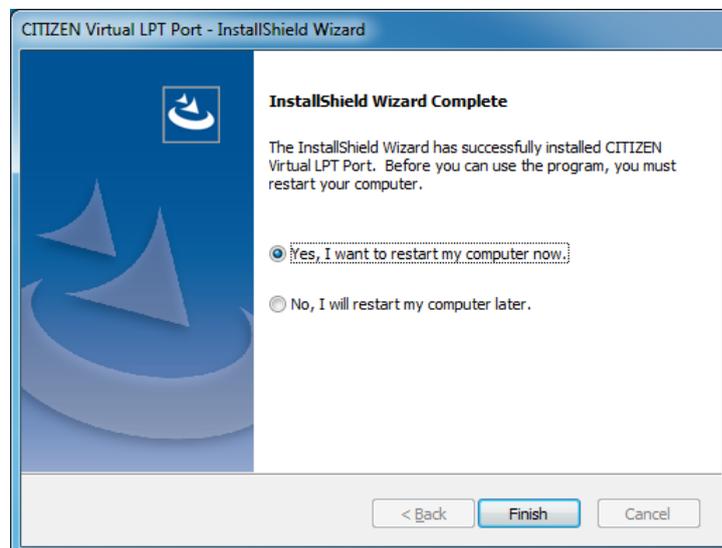
- Choose the LPT port and press “OK”.



- Then LPT2 is assigned to USB001 as shown below. Press “Exit” to finish the installation.



- Reboot the PC to make this port setting effective.



2.3. Silent Installation of Virtual LPT Port Driver

The installer file SetupVirtualLpt.exe has the function of silent installation. It is possible to do the installation of the driver and the setting of the virtual LPT port automatically without a dialog display.

- The User Account Control (UAC) dialog remains displayed.
- In the case of setting up the virtual LPT port with silent installation, please connect with the PC and the printer in advance and execute with the USB Printing Support registered.
- Unlike normal installation, the silent installation does not display the PC restart message at the end. Be sure to restart the PC before using.

- Execute the installation with the following parameters.

Parameter	Category	Description
/s	Silent installation settings	<ul style="list-style-type: none"> • Execute the silent installation.
/f1*		<ul style="list-style-type: none"> • Specify the path of the response file (inst.iss). • Specify enclosed in "" (double quotes). • Inst.iss is provided with the installer. <p>ex1: When inst.iss is in C:\work. /f1 "c:\work\inst.iss"</p> <p>ex2: When inst.iss in the same location as SetupVirtualLpt.exe /f1 ".\inst.iss"</p>
/f2*		<ul style="list-style-type: none"> • Specify log file name and output file path. • Specify enclosed in "". • The execution result of the silent installation is recorded. <p>ex1: When saving results as inst.log in C:\work /f2 "c:\work\inst.log"</p> <p>ex2: When saving results as inst.log in the same location as SetupVirtualLpt.exe /f2 ".\inst.log"</p>
LptNum:*	Virtual LPT port setting (optional)	<ul style="list-style-type: none"> • Specify the LPT port number to be added. • Specify the number between 1 and 9. • If the installation PC has a real LPT port, it can not specify its port number. • If this parameter is not specified, no LPT port is added. <p>ex: When adding LPT 3. LptNum:3</p>
VID:* PID:*		<ul style="list-style-type: none"> • Specify the USB Vendor ID (VID) and USB Product ID (PID) of the printer to be assigned to the added port. • When this parameter is not specified, allocation is not performed. <p>ex: When assigning to a printer with VID=0x1D90, PID=0x2027. VID:1D90 PID:2027</p>
WriteBuffer:*	Write buffering setting *1 (optional)	<ul style="list-style-type: none"> • Specify enable / disable of the write buffering function. • Specify 1 if it is enabled, 0 if it is disabled. • If this parameter is not specified, the default value is specified. <p>ex: When write buffering is enabled. WriteBuffer:1</p>
WriteBufferSize:*		<ul style="list-style-type: none"> • Specify the buffering size. • Specify a number between 2 and 512. • If this parameter is not specified, the default value is specified.

		ex: When setting the buffer size to 128 bytes. WriteBufferSize:128
WriteBufferInterval:*		<ul style="list-style-type: none"> •Specify the wait time. •Specify a number between 1 and 100. •If this parameter is not specified, the default value is specified. ex: When waiting time is set to 10 WriteBufferInterval:10
WriteFlow:*		<ul style="list-style-type: none"> •Specify enable / disable of write flow control function. •Specify 1 if it is enabled, 0 if it is disabled. •If this parameter is not specified, the default value is specified. ex: When write flow control is disabled. WriteFlow:0
WriteFlowInterval:*		<ul style="list-style-type: none"> •Specify the flow monitoring interval time. •Specify a number between 1 and 100. •If this parameter is not specified, the default value is specified. ex: When interval time is set to 20 WriteFlowInterval:20

*1: For the write buffering setting, please refer to "3.3. Write Buffering Function".

example 1:

Install LPT5, assign a printer with VID = 1D90, PID = 2006, and enable buffering with an appropriate value.
 SetupVirtualLpt.exe /s /f1".¥inst.iss" /f2".¥inst.log" LptNum:5 VID:1D90 PID:2006 WriteBuffer:1 WriteBufferSize:64
 WriteBufferInterval:10 WriteFlow:0 WriteFlowInterval:10

example 2:

Install LPT2, printer assignment is not done, and the buffering parameter is set to the default value.
 SetupVirtualLpt.exe /s /f1".¥inst.iss" /f2".¥inst.log" LptNum:2

•Refer to the log file for the execution result of the silent installation. If "ResultCode = 0", the installation is successful. When an error occurs, it becomes a value other than 0.

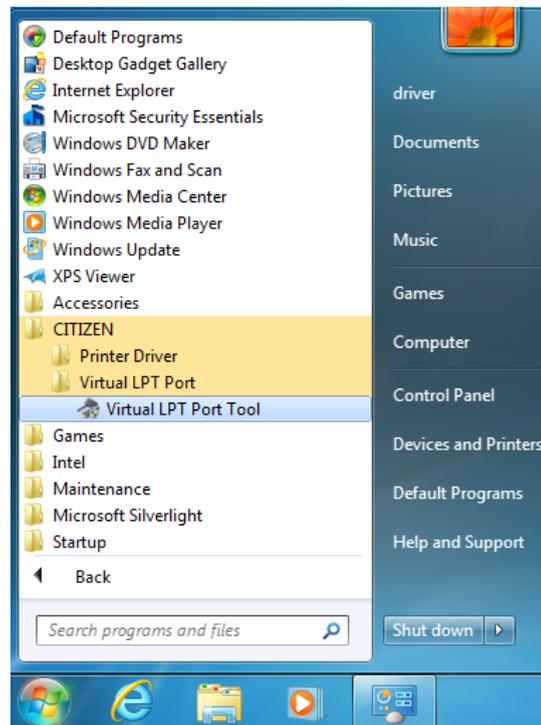
```
[InstallShield Silent]
Version=v7.00
File=Log File
[ResponseResult]
ResultCode=0
[Application]
Name=CITIZEN Virtual LPT Port
Version=1.3.1.1
Company=CITIZEN SYSTEMS JAPAN
Lang=0409
```

3. Changing Settings

To change Virtual LPT Port settings, use “Virtual LPT Port Tool”.

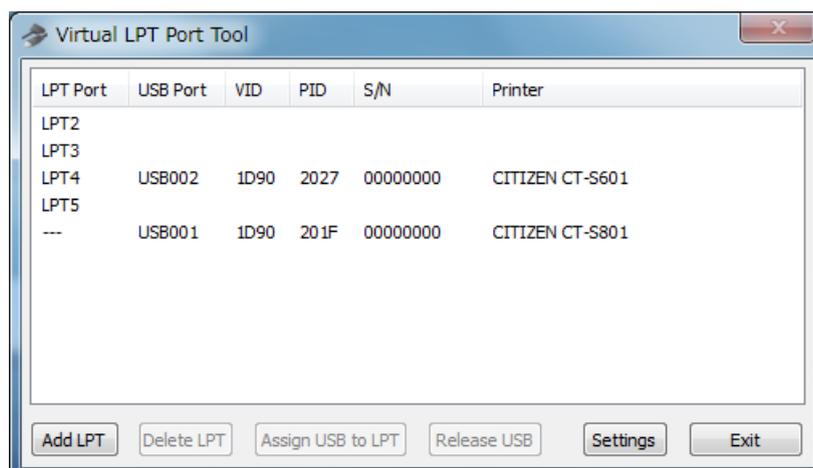
3.1. Virtual LPT Port Tool

You can start “Virtual LPT Port Tool” from Start Menu.



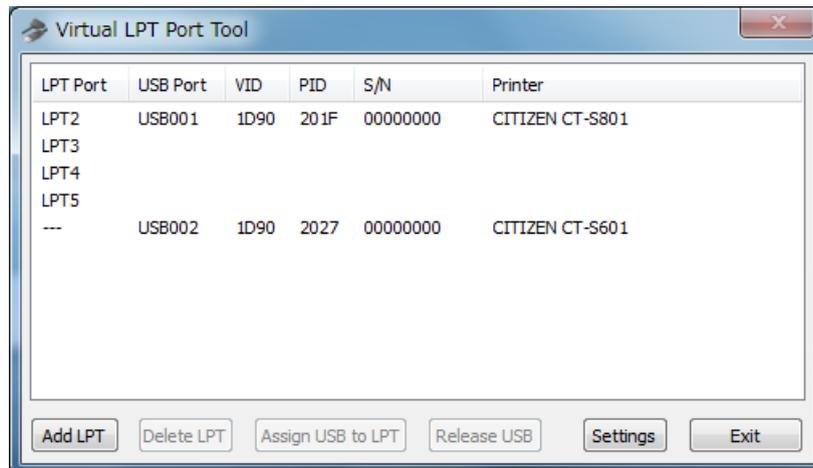
Assignable USB port number and its printer name is listed on the dialog.

You can choose “Add LPT”, “Delete LPT”, “Assign USB to LPT” and “Release USB”.



• Reboot the PC to make this port setting effective.

3.2. Handling



(1) Adding Virtual LPT Por

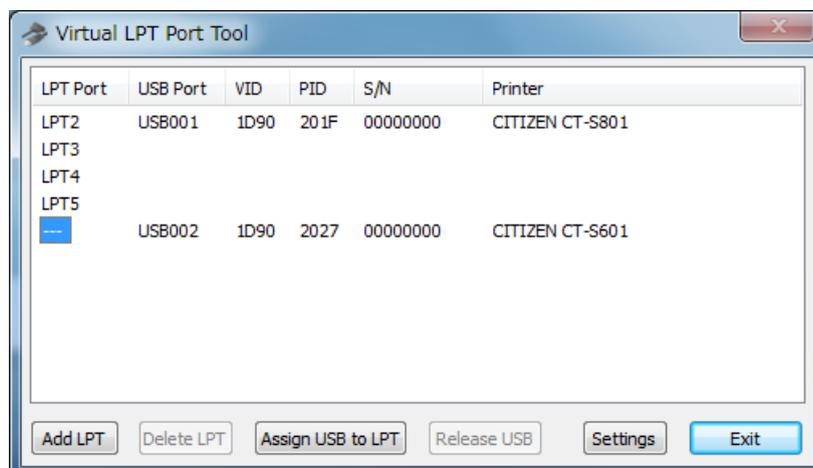
Press "Add LPT" button and add virtual LPT port. It is possible to add up to LPT9.

(2) Removing Virtual LPT Port

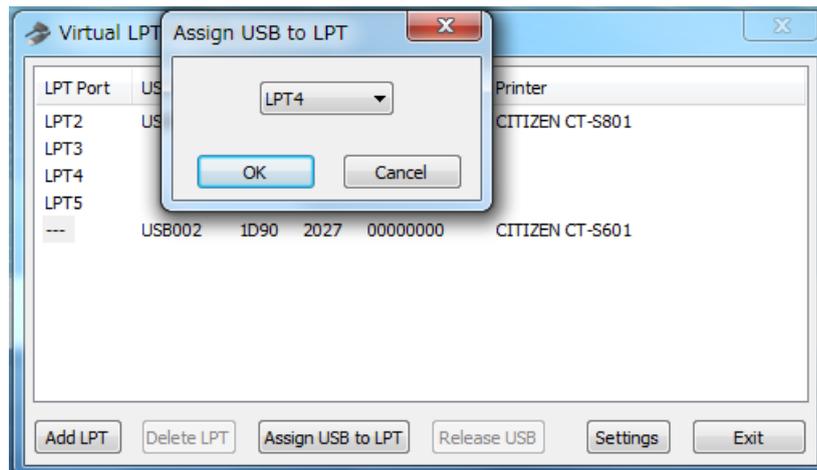
Choose the LPT port to remove and press "Delete LPT" button.

(3) Assigning Virtual LPT Port to the printer

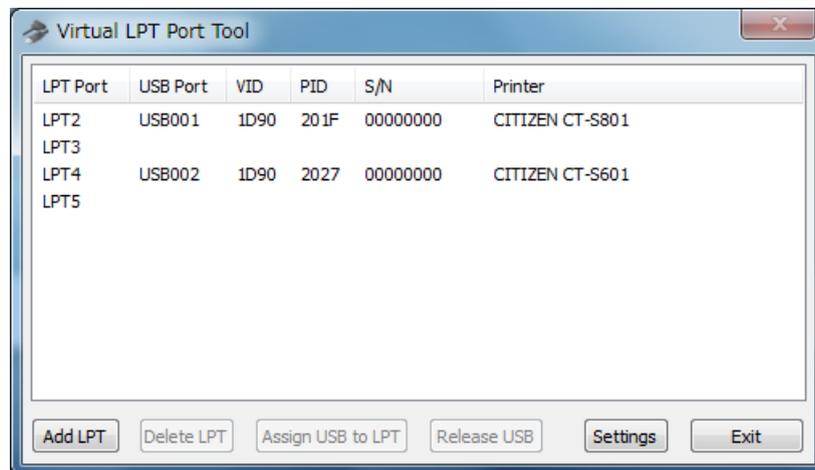
Crick "---" of the printer to assign virtual LPT port and press "Assign USB to LPT" button.



Choose the port number to assign and press “OK”.

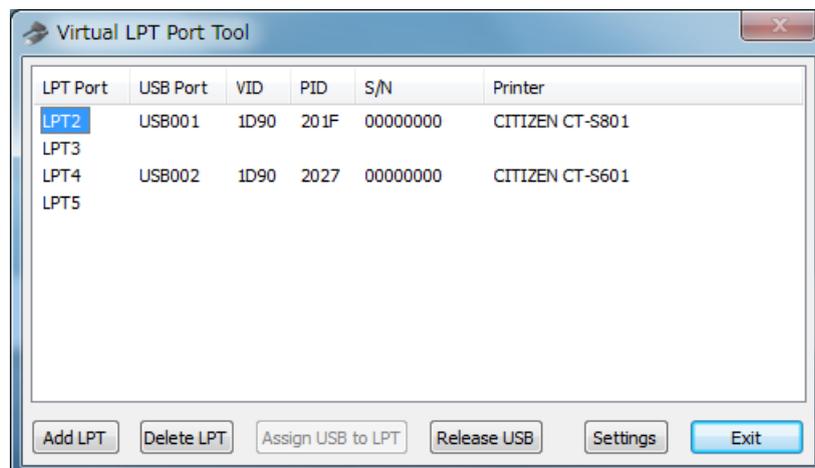


Then assigned port is shown in the list.

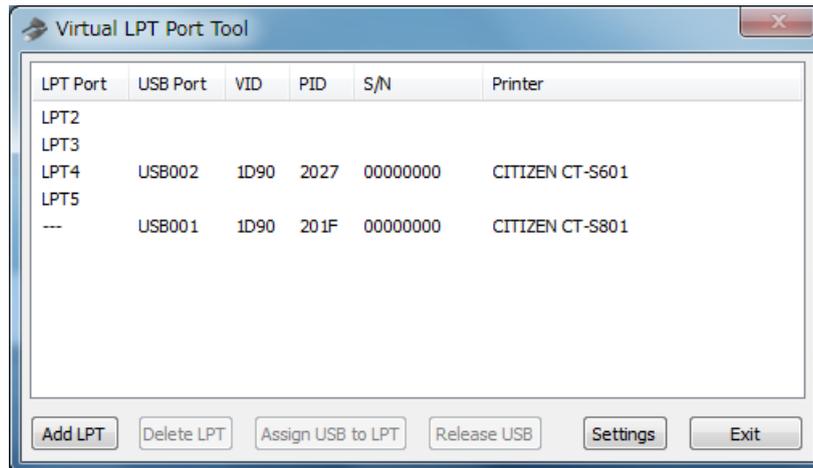


(4) Release the virtual LPT Port and Printer

Choose the LPT port number to release and press “Release USB” button.



The port is released.



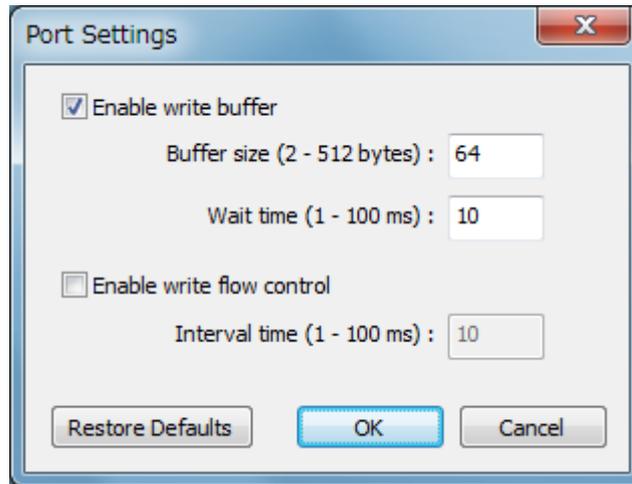
3.3. Write Buffering Function

In the case of a few data writing, such as WriteFile from the application one byte at a time, because the throughput is slow from the limitations of the USB specifications, there is a printing operation is slow case. To solve these, there is a function for buffering transmission data in this driver. Buffered within this driver the WriteFile data from the application, and immediately return the return value of WriteFile to the application, then the driver will send to the printer together the buffered data.

Configurable parameters in the buffering function is as follows.

Parameter name	Set value	Default value	Details
Enable write buffer	Enable / Disable	Enable	Enable / disable sending buffering function.
Buffer size	2 - 512 bytes	64 bytes	To specify the size of buffering.
Wait time	1 - 100ms	10ms	If the WriteFile data does not reach the buffer full, they will be sent to the printer after this time has passed.
Enable write flow control	Enable / Disable	Disable	Depending on the state of the SELECT (signal to get in IOCTL_USBPRINT_GET_LPT_STATUS), to cancel / resume data transmission.
Interval time	1 - 100ms	10ms	To specify the interval to monitor the SELECT.

By pressing the "Settings" button in the "Virtual LPT Port Tool", and change the value to display the dialog below.

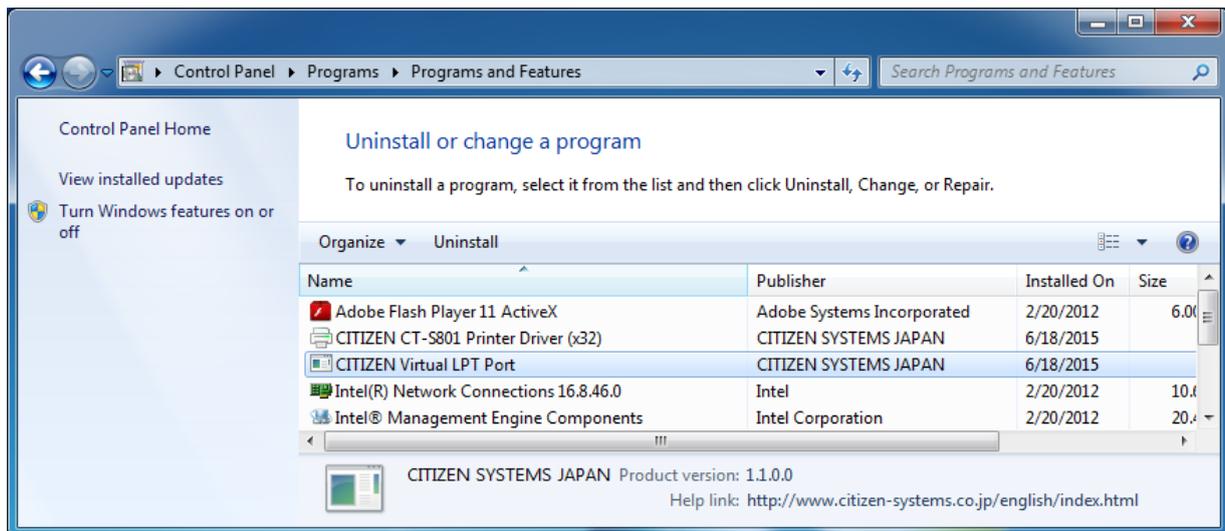


4. Uninstallation

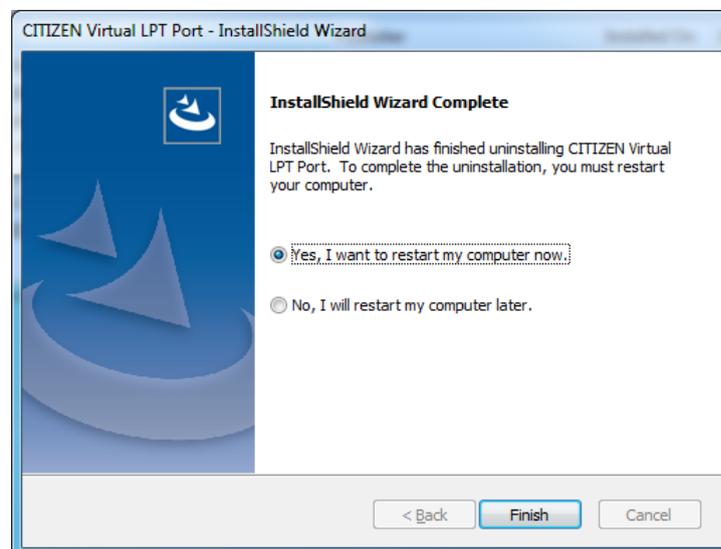
This section is about uninstallation of Virtual LPT Port Driver.

4.1. Uninstallation of Virtual LPT Port Driver

- Follow “Control Panel” > “Programs” > “Programs and Features” and choose “CITIZEN Virtual LPT Port” and press “Uninstall”



- When uninstallation is finished, reboot the PC.



4.2. Silent Uninstallation of Virtual LPT Port Driver

The installer file SetupVirtualLpt.exe has the function of silent uninstallation. It is possible to do the uninstallation without a dialog display.

- The User Account Control (UAC) dialog remains displayed.
- Unlike normal uninstallation, the silent uninstallation does not display the PC restart message at the end. Be sure to restart the PC.

- Execute the uninstallation with the following parameters.

Parameter	Description
/s	• Execute the silent uninstallation.
/removeonly	• Specify the operation for uninstallation.
/f1*	<ul style="list-style-type: none"> • Specify the path of the response file (uninst.iss). • Specify enclosed in "" (double quotes). • Uninst.iss is provided with the uninstaller. <p>ex1: When uninst.iss is in C:\work. /f1"c:\work\uninst.iss"</p> <p>ex2: When uninst.iss in the same location as SetupVirtualLpt.exe /f1".\uninst.iss"</p>
/f2*	<ul style="list-style-type: none"> • Specify log file name and output file path. • Specify enclosed in "". • The execution result of the silent uninstallation is recorded. <p>ex1: When saving results as inst.log in C:\work /f2"c:\work\uninst.log"</p> <p>ex2: When saving results as uninst.log in the same location as SetupVirtualLpt.exe /f2".\uninst.log"</p>

example:

Typical silent uninstallation.

```
SetupVirtualLpt.exe /s /removeonly /f1".\uninst.iss" /f2".\uninst.log"
```

- Refer to the log file for the execution result of the silent uninstallation. If "ResultCode = 0", the uninstallation is successful. When an error occurs, it becomes a value other than 0.

```
[InstallShield Silent]
Version=v7.00
File=Log File
[ResponseResult]
ResultCode=0
[Application]
Name=CITIZEN Virtual LPT Port
Version=1.3.1.1
Company=CITIZEN SYSTEMS JAPAN
Lang=0409
```

5. Windows API

This section is about available Win32API.

Following APIs are supported.

Win32 API	Memo
CreateFile	Multiplex "Open" is not allowed.
CloseHandle	
WriteFile	
ReadFile	
CancelIo	
WriteFileEx	For Asynchronous IO
ReadFileEx	For Asynchronous IO
FileIOCompletionRoutine	For Asynchronous IO
GetOverlappedResult	
WaitForSingleObject	For Asynchronous IO
DeviceIoControl	Following IOCTLcode can be used. IOCTL_PAR_QUERY_DEVICE_ID IOCTL_PAR_QUERY_INFORMATION (PARALLEL_PAPER_EMPTY、PARALLEL_SELECTEDのみ) IOCTL_PAR_SET_INFORMATION (PARALLEL_INITのみ)
SetCommTimeouts	
GetCommTimeouts	

