

Windows Driver Specifications

(Function, Setting, Specifications)

(Windows 2000 or later)

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Revision history

Date	Version	Details
09/06/25	V2.00	Issued
09/010/29	V2.01	Added CT-S601
09/12/15	V2.02	Added CT-S281 and CT-S4000 Windows7 is supported Status function is supported on all the drivers. Driver port setting function is added. Status monitor library is added.

Caution

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1. Operating systems

Our drivers are designed to work on any of following operating systems.

Microsoft Windows 2000 (SP4)

Microsoft Windows XP

Microsoft Windows Server 2003

Microsoft Windows Vista

Microsoft Windows 7

2. Supported printer drivers

Supported driver and its function are as follows.

Thermal Printer	CITIZEN CT-S2000	Standard driver
	CITIZEN CT-S2000	Standard driver
	CITIZEN CT-S2000	Standard driver
	CITIZEN CT-S310	Standard driver
	CITIZEN CT-S281	Standard driver
	CITIZEN CT-S4000	Standard driver
	CITIZEN CT-S601	Standard driver
	CITIZEN CT-S801	Standard driver

3. Supported interfaces

Supported interfaces are as follows.

Serial / CITIZEN COM

Parallel

USB

USB Virtual COM

Caution

USB Virtual COM driver

If you use CT-S601/801/2000/310 in USB Virtual COM mode, it is necessary to install USB virtual COM driver.

CITIZEN COM

If you want to get printer status through serial interface, use the port "CITIZEN COM".

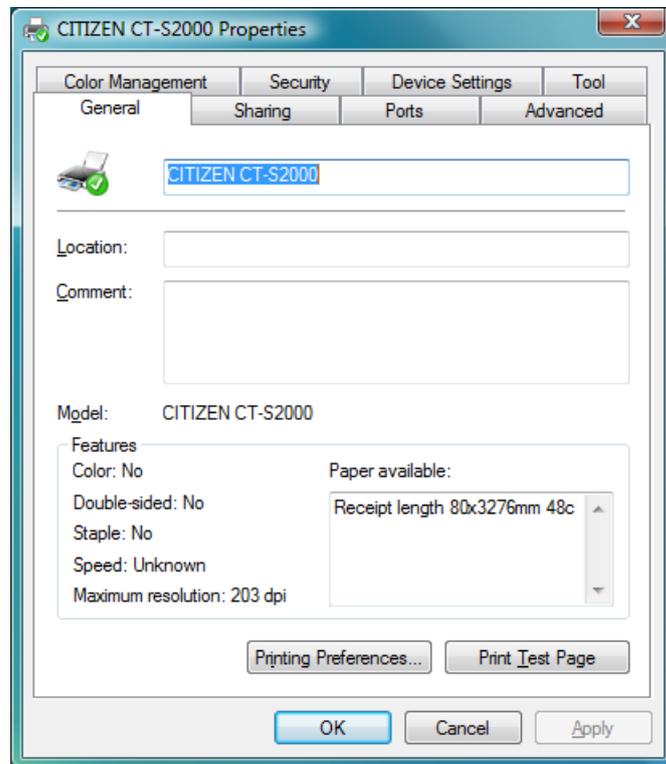
4. Driver setting

Follow the steps below to access function to change the printer driver setting

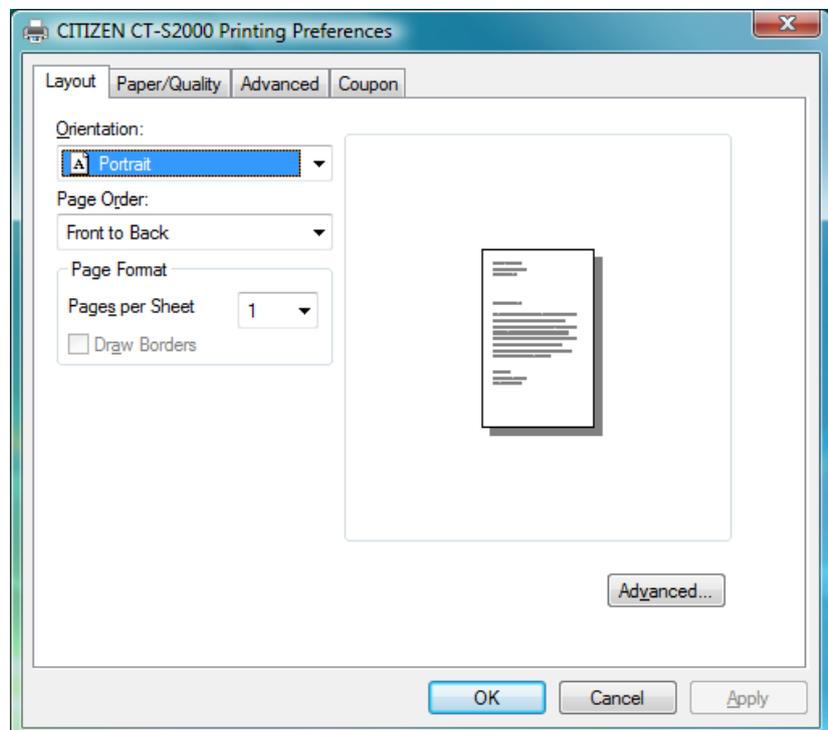
4.1 “General” tab

Select the printer properties for the printer driver by right clicking on the printer icon.

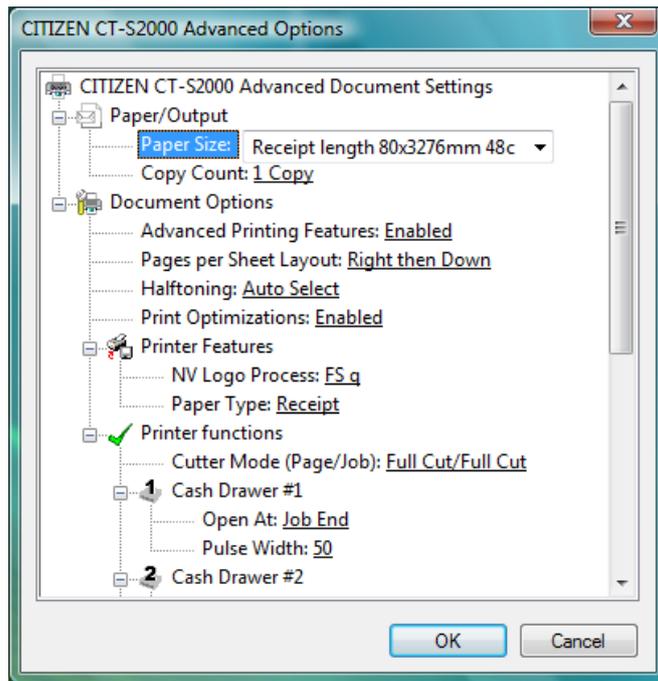
Then Press the “Printing Preferences” button in the General Tab.



Then press the “Advanced” button.



There are some items for the printer setting.

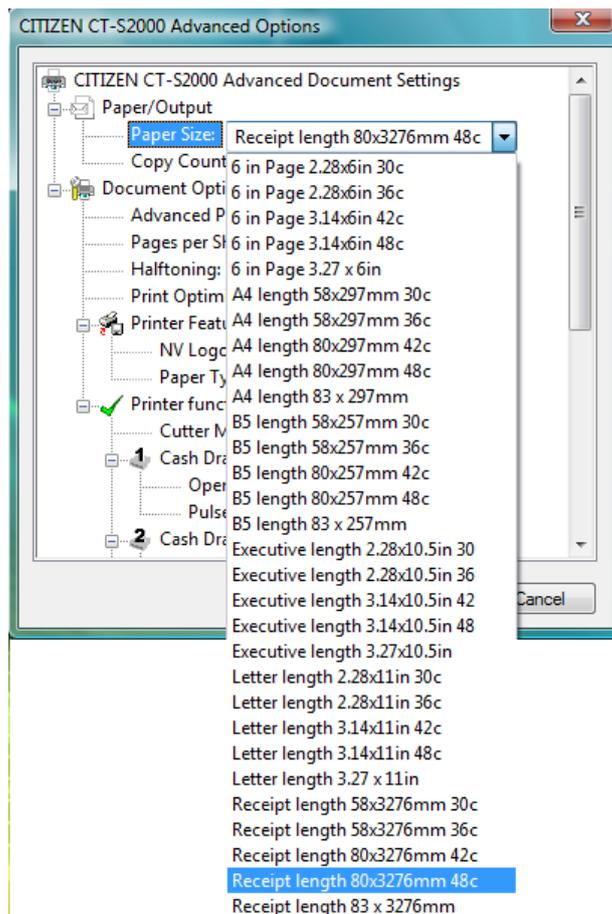


4.1.1 Paper Size

You can choose the paper size. Listed paper size depends on the printer driver.

Default paper size depends on printer driver.

* Custom paper can be used. Please refer to the explanation of paper width and paper length in this document.



4.1.2 NV Logo Process

NV logo registration

method can be chosen here.

When printing logo

function is used as

mentioned in section 5.1.8

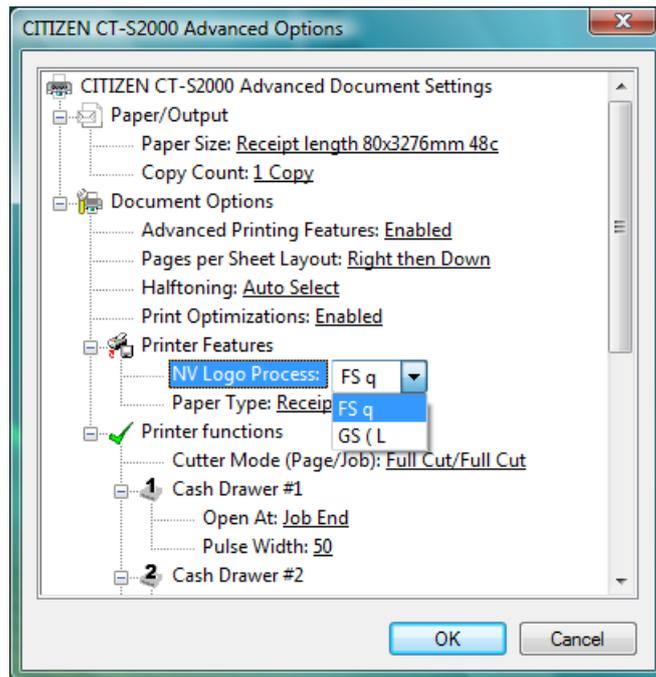
Logo Printing, the chosen

method is used.

“FS q” is old way

“GS (L” is new.

Default is “FS q”.



NV logo registration by “FS q” is done altogether for multiple logo data and ID numbers are added sequentially. NV logo registration by “GS (L” can be done for each logo data individually and key code with 2 characters can be added by user. It is possible to access registered logo data by this key code.

If you cannot find “Paper Type” is not displayed, the printer driver does not support this function and only “FS q” method can be used. The function to support “GS (L” depends on the model.

4.1.3 Paper Type

You can choose Receipt or

Ticket as paper types.

Receipt allows flexible

paper length according to

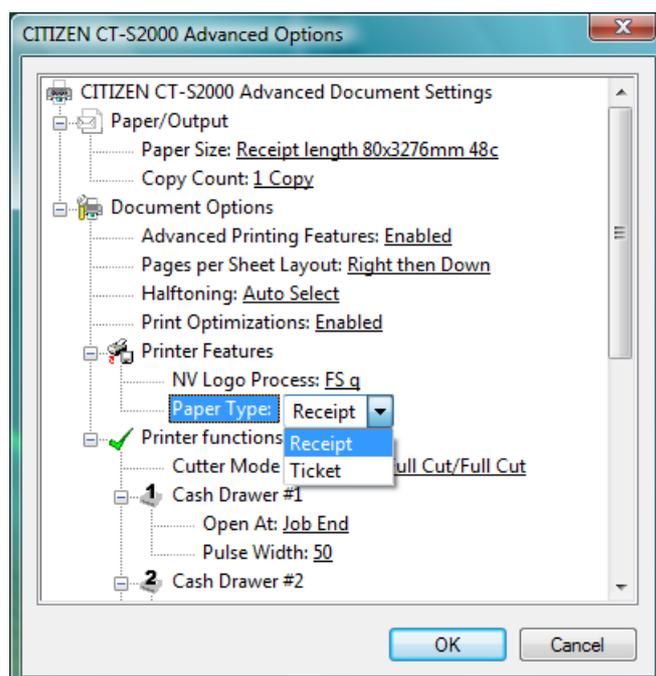
the data length to avoid

waste of paper. Ticket print

in fixed length even the

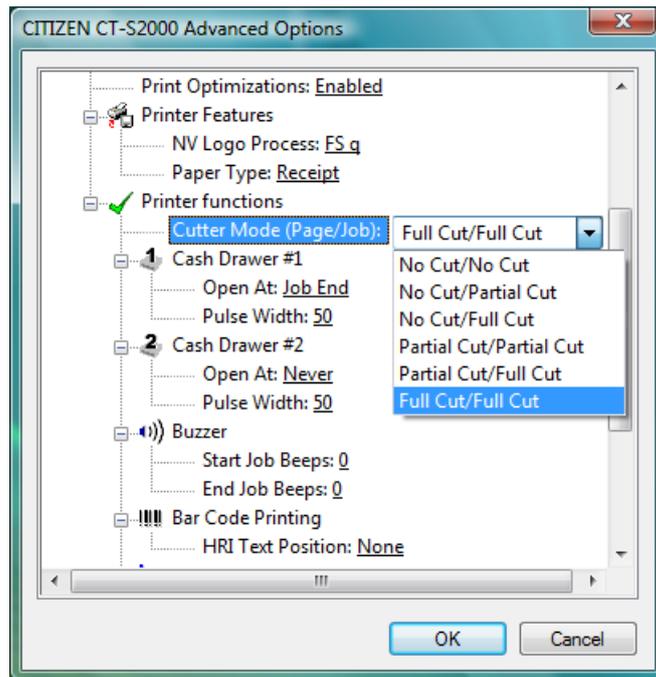
print data is short.

Default setting is “Receipt”



4.1.4 Cutter Mode

Cutting at page end (Page) and cutting at receipt end (Job) can be set. On some models, it is possible to specify cut type either full cut, partial cut or no cut. As combination of page end and job end, 6 type of cutting method can be chosen. Default setting depends on the driver.

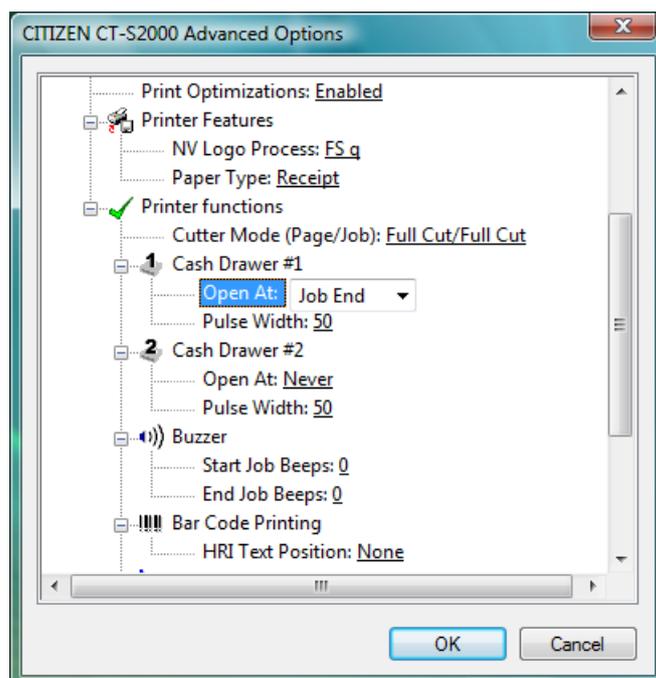


- * Partial cut mean that cutter leaves one tab by the cut.
- * This menu is not shown on the driver model where the cutter is not equipped.
- * There is “Partial only” in the memory switch setting. If this setting is valid, “Full Cut” works only as “Partial Cut” automatically. Please refer User’s manual for the details of memory switches.

4.1.5 Cash Drawer #1, #2

Setting of cash drawer 1/2 can be changed. Timing to open drawer, pulse width to send to drawer for opening can be changed. For timing, top of receipt (Job Start), end of receipt (Job End), end of page (Page End) can be selected and 50ms to 250ms can be set for pulse width.

Default setting are Drwer1 / Job End / 50ms and Drawe2 / Job End / 50ms.

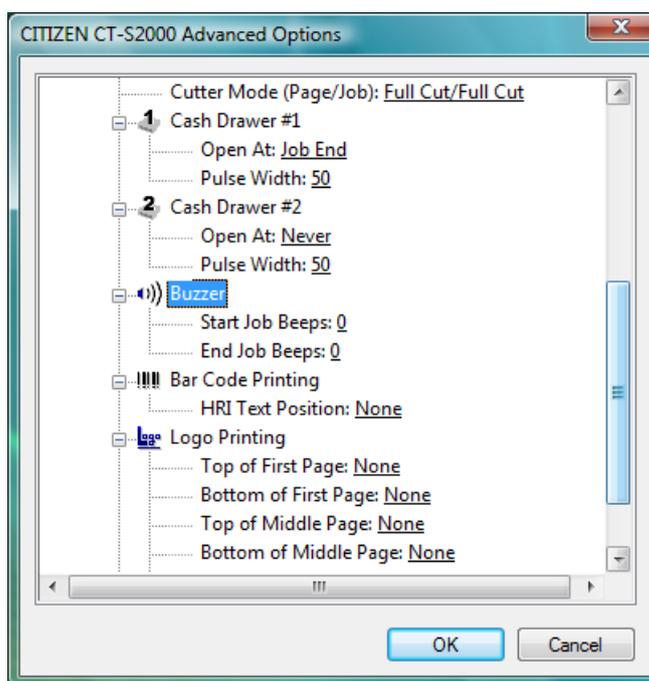


- *Cash drawer is the drawer to store bill, coin and etc at cash register.
- * Driver model which does not have cash drawer function
- * If the two cash drawers are connected to the printer, do not open 2 drawers at the same timing. It may cause the printer malfunction.
- * Pulse width for drawer opening is set for 50ms as default. Depending o the cash drawer type, this setting may not open the cash drawer. Please adjust the pulse width according to the specification of the drawer.
- * Please refer to the User's manual for the details to connect printer and cash drawer

4.1.6 Buzzer

Buzzer function of printer can be utilized from the driver. The timing of buzz can be selected from top of receipt (Job Start) or end of receipt (Job End). Number of buzz can be selected from 1 to 9.

Default setting is no buzz.



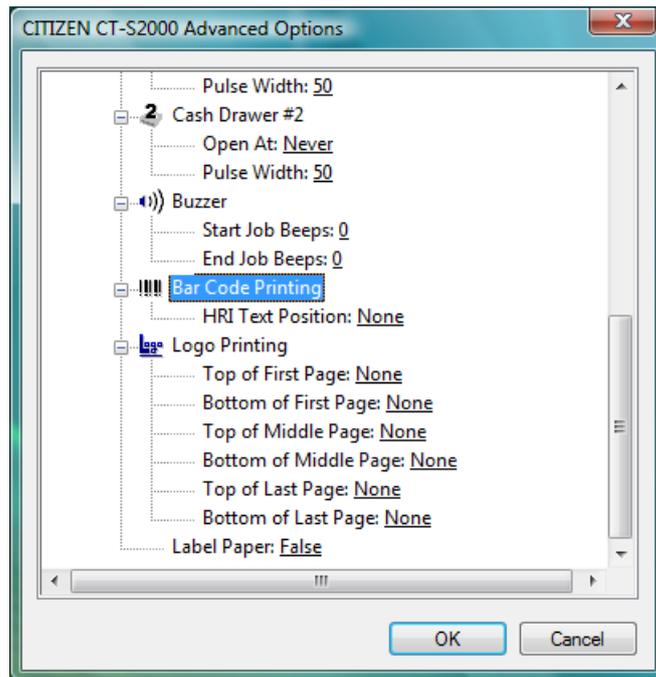
- * Driver model which does not have buzzer does not show this menu.

4.1.7 Bar Code Printing

HRI character setting can be changed. (HRI character is the character which comes with barcode.) No HRI, Top, Bottom or both (Top and Bottom) can be selected.

Default is not HRI characters.

Please refer to section of Barcode in this document for the details



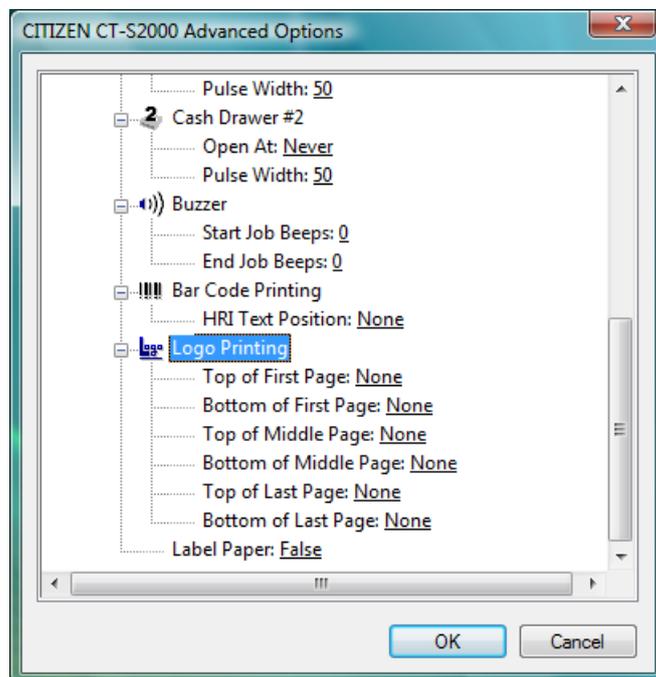
* Driver model which does not have barcode function does not show this menu.

4.1.8 Logo Printing

The setting of NV logo printing function can be changed.

The position to print NV logo can be chosen from top of page or end of page. The page to print logo can be chosen from first page, middle page, or last page. NV logo data to print can be chosen from logo1 to logo5.

Default setting is set for printing no NV logo



* As mentioned in section “5.1.2 NV Logo Process”, there are 2 different commands to register logo data. Please make sure if the NV logo data is registered by FS q command or GS (L command. Please refer to command reference for the details of the command.

* If “FS q” command is used, each logo data is recognized as follows.

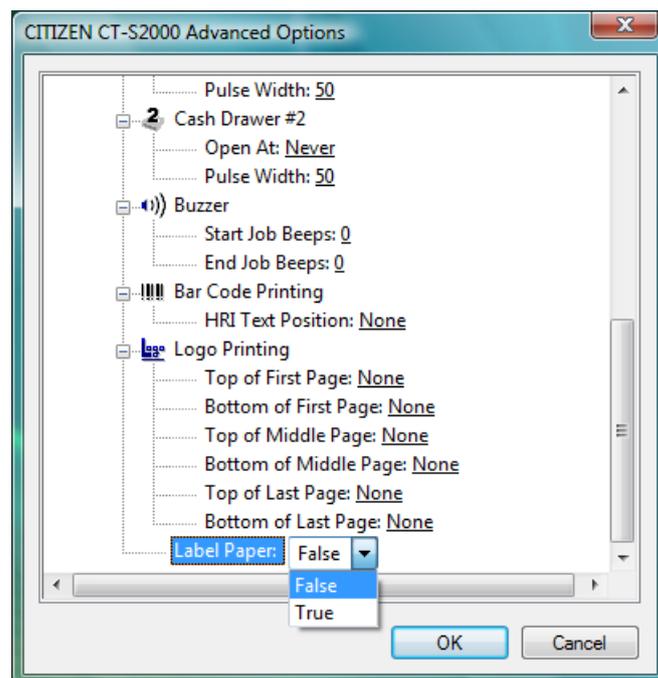
- logo1 : Firstly registered NV logo
- logo2 : Secondly registered NV logo
- logo3 : Thirdly registered NV logo
- logo4 : Fourthly registered NV logo
- logo5 : Fifthly registered NV logo

* If “GS (L” command is used, the each logo data is recognized as follows.

- logo1 : NV logo saved as key code “L1”
- logo2 : NV logo saved as key code “L2”
- logo3 : NV logo saved as key code “L3”
- logo4 : NV logo saved as key code “L4”
- logo5 : NV logo saved as key code “L5”

4.1.9 Label Paper

For the models to have label function or black mark function, it is possible to switch validity of the function. When label/black mark function is valid, setting of Cutter Mode is limited and it does not cut the paper as the setting. Instead of cutting searching top of label or searching black mark function works.



Default is set for label function, black mark function to be invalid.

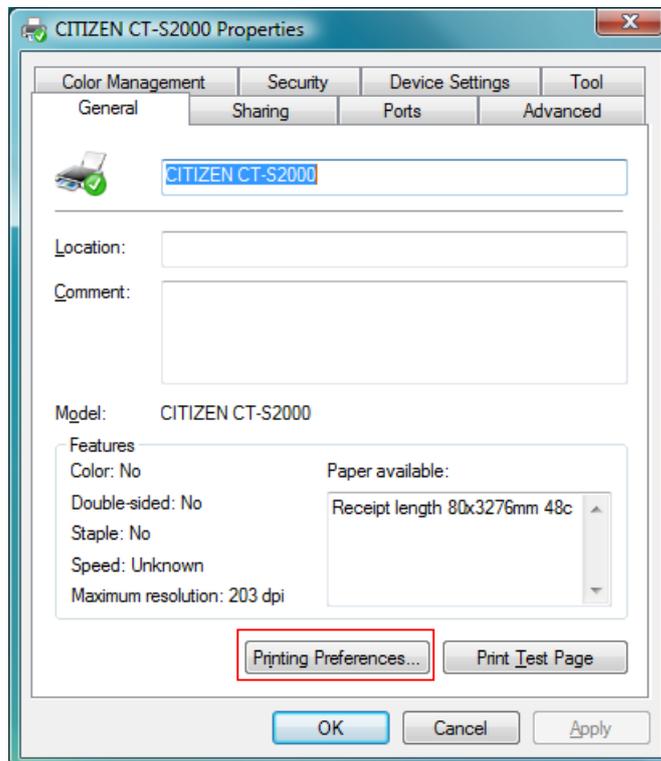
* ~~Driver model which does not have label/barcode function does not show this menu.~~

* Remarks: If you enable the label/black mark function, setting of Paper Type described at section 4.1.3 need to be “Receipt”.

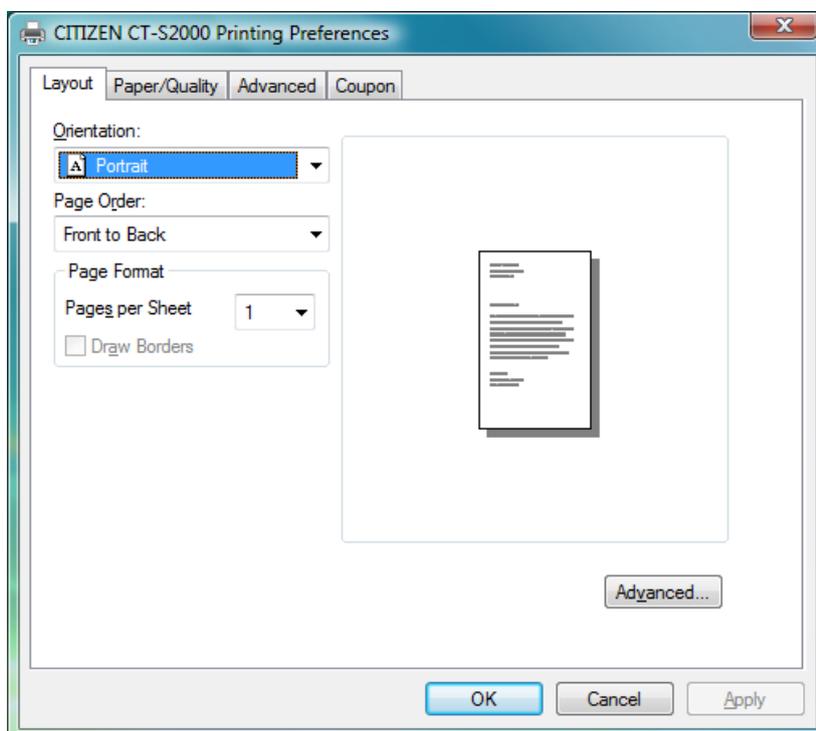
4.2 Electronic Journal Data

Electronic journal is the function to save printed data in the PC. The setting for this function can be done as follows.

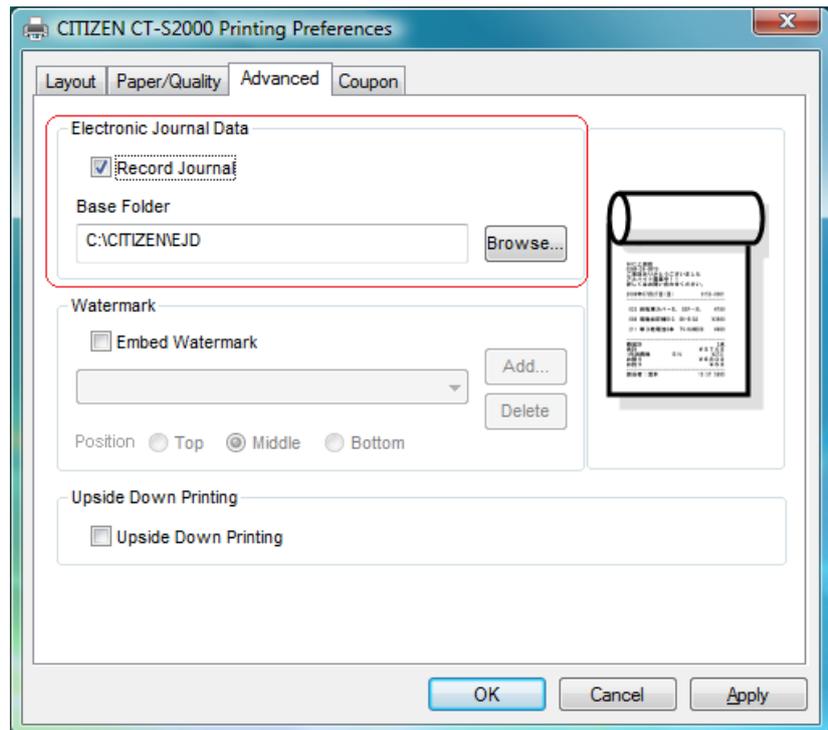
From the Properties of printer driver, choose "Printing Preferences".



Choose "Advanced" tab.

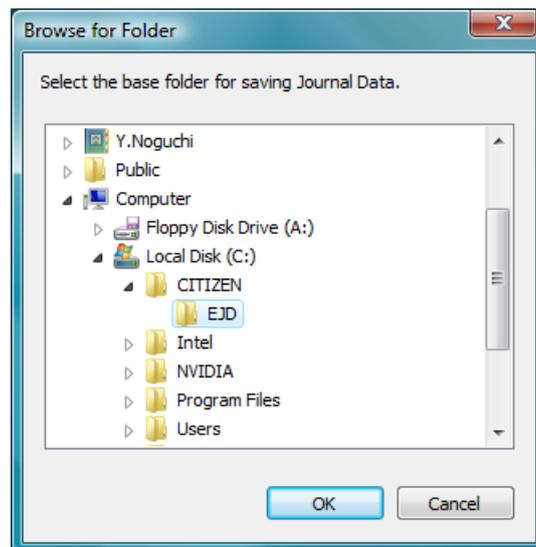


To enable Electronic Journal Viewer function, put the check mark in "Record Journal".

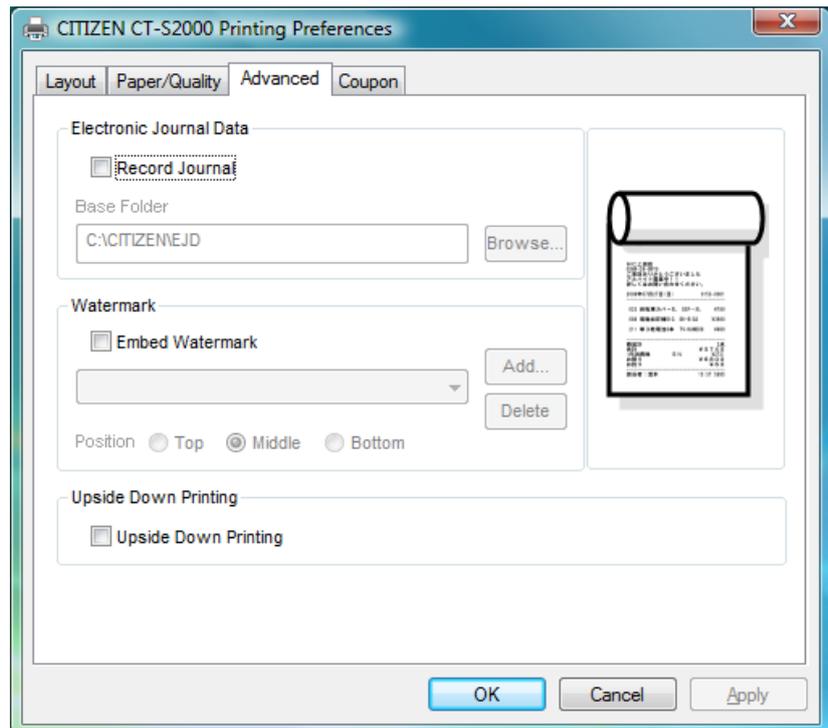


Press "Browse" of Base Folder then you can specify the folder to store the journal data. Default folder is "c:\CITIZEN\EJD".

If you want to change the folder, please make the folder in advance.

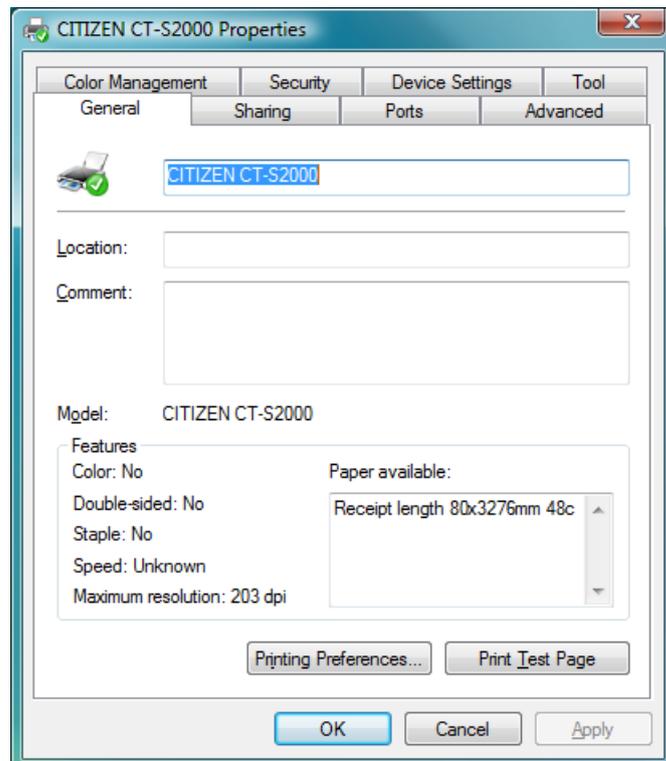


Press "Apply" or "OK" to finish the setting.

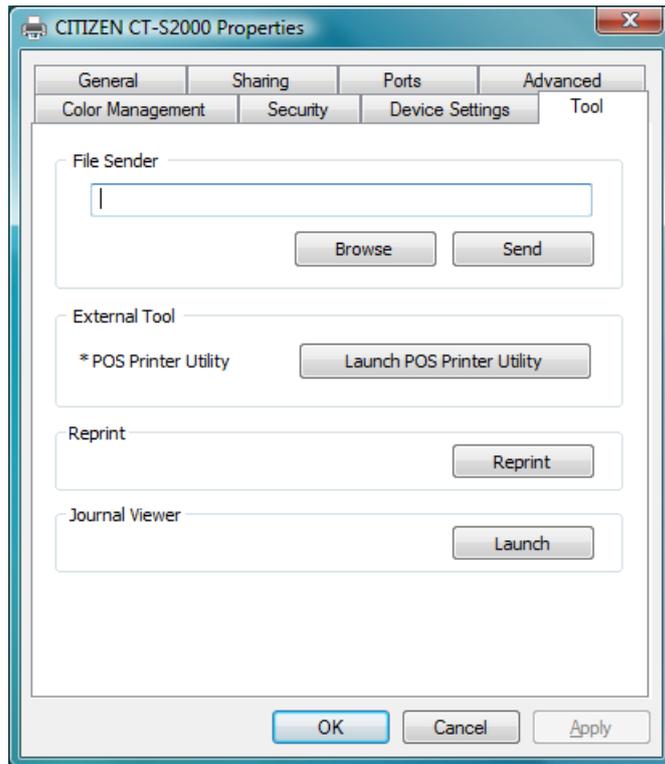


It is possible to display/print electronic journal data from journal viewer.

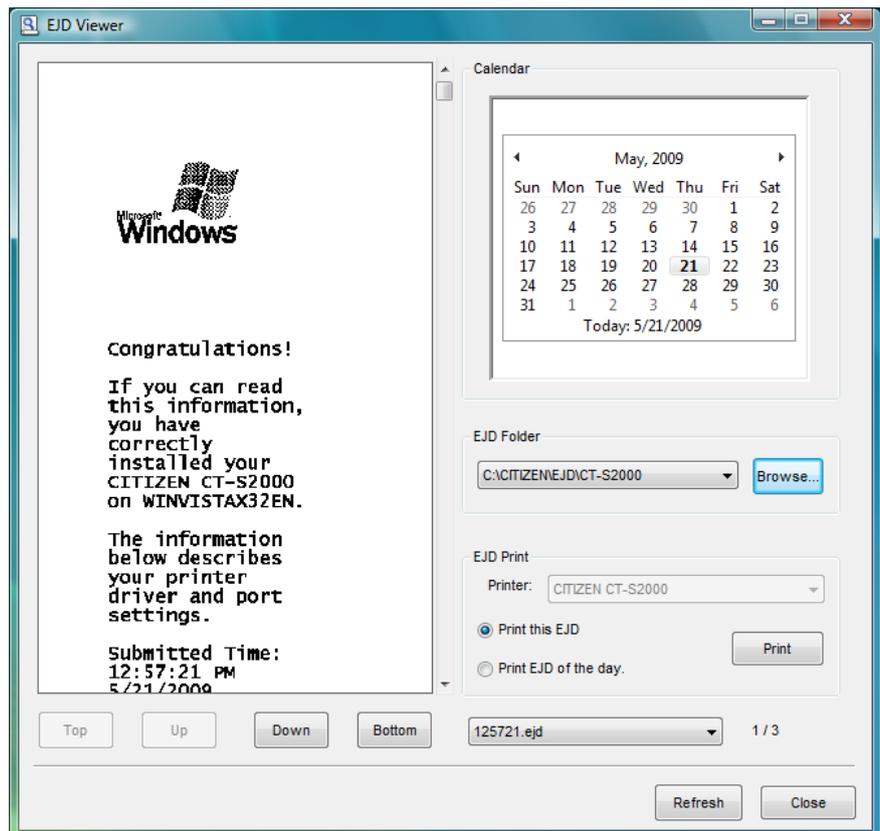
Choose "Tool" tab.



Press "Launch" of Journal Viewer



Journal Viewer shows up and you can see journal data in the viewer and the data can be printed from viewer



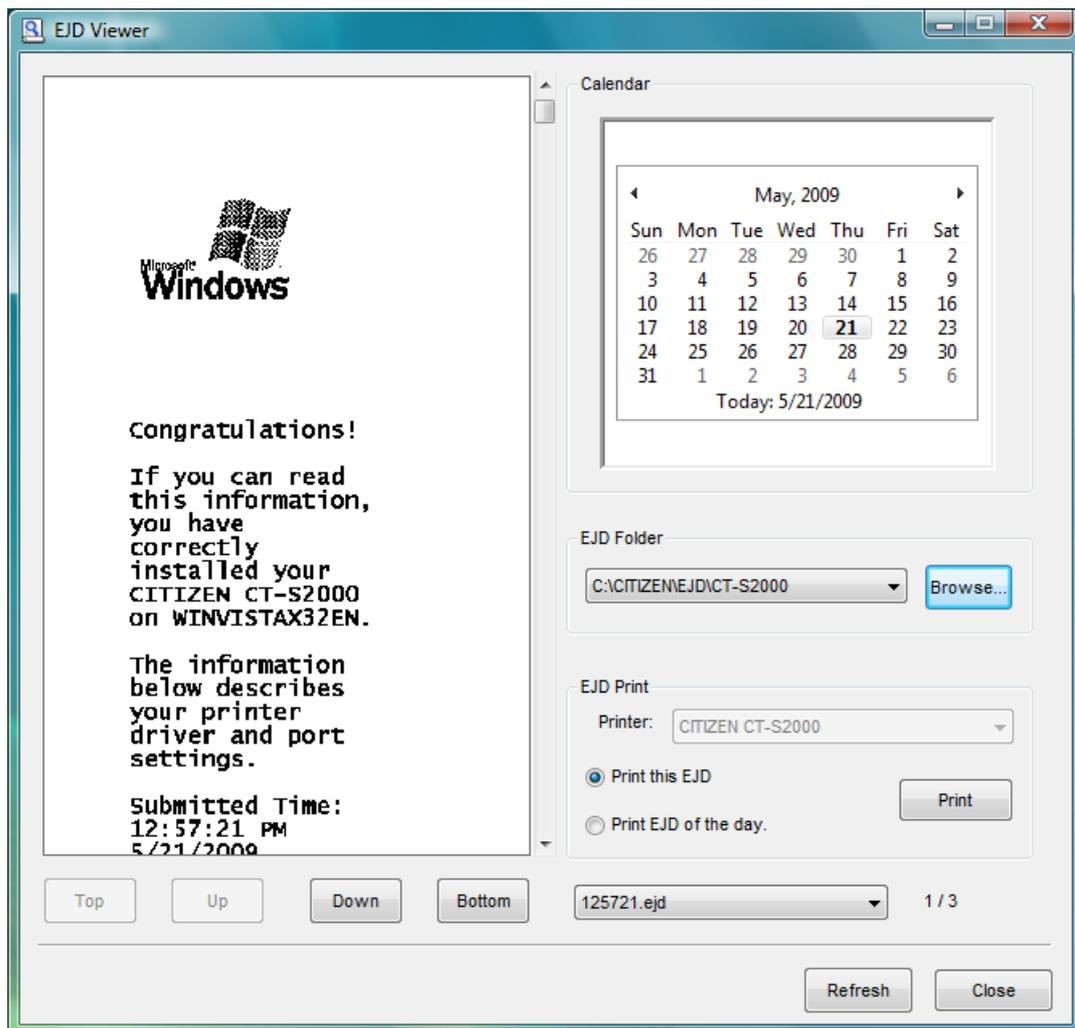
* Under the specified folder to save journal data, folders are generated with the name of data in “yymmdd” format and journal data files are saved in the folder with the name of time in “hhmmss.ejd” format.

* Each print job is saved as individual journal data file.

* The path length of folder to save journal data must be within 100 characters (Unicode).

* Do not use network driver for destination folder to save journal data.

4.2.1 Journal Viewer



- * Journal data is grouped by folder by the date. It is possible to display or print the journal data of the specified day in "Calendar". There are journal data on the date which is shown in bold in the Calendar.
- * By right-click on the Calendar, the menu to go back today is shown.
- * "EJD Folder" is the folder that the journal data is stored. Usually, it should be same folder as the one that printer driver specifies for saving the journal data. You can choose other folder from drop down list for up to 7 used folders or press "Browse"
- * The image of journal data is shown in the viewer area in the left. By pressing "Top", "Up", "Down" or "Bottom" button, the data shown on the viewer moves to other data in the same day.
- * It is possible to choose the file data directly in the list of the bottom.
- * "Printer" of "EJD Print" shows the printer driver that launches the Journal Viewer.
- * To print journal data, press "Print". There are 2 choices to print journal data. If "Print this EJD" is selected, the data shown on the viewer is printed. If "Print EJD of the day" is selected, all the journal data of the day will be printed altogether without cut between each data.

* NV logo, printer font and barcode font cannot be shown correctly on the viewer because those are realized by the function of printer side. Substitute image of NV logo or barcode will replace NV logo data and barcode data. And generic font replaces printer font on the viewer. Therefore, the impression on the viewer is different from actual printing results.

* Journal data which include special function like Control font may show garbage character on the viewer.

*** Please refer to the other section for the details of printer font, barcode font or special function.

* Journal data does not include attribute of upside down printing. It is affected by the setting of the driver to print the journal data.

* When journal data is generated, cut, drawer and buzzer setting are not included as well. Setting at the printing from journal viewer is applied.

* The data printed by Reprint function is not recoded as journal data.

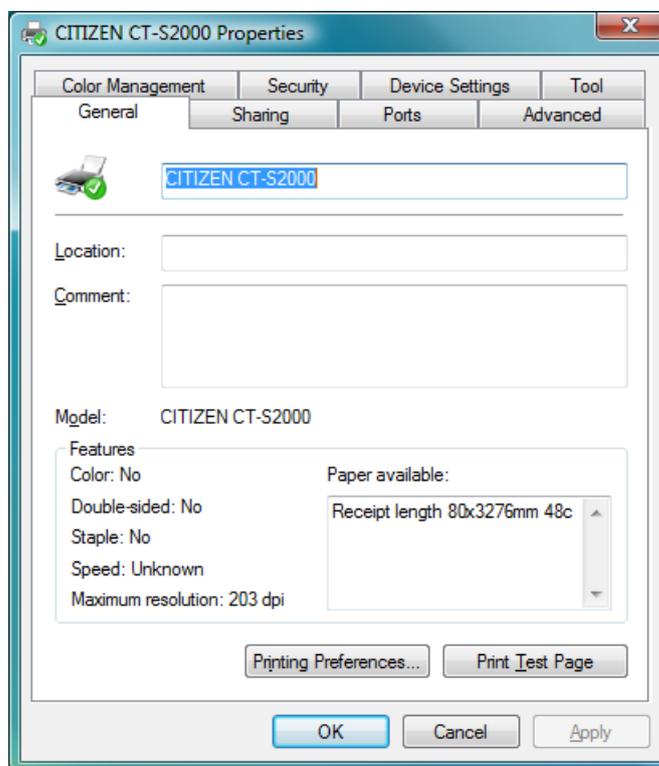
* Data sent to printer by "File Sender" function is not recoded as journal data.

* Journal viewer shows the data made by other printer driver. If a journal data is printed to different printer driver from original driver that made the journal data, it may not print correctly.

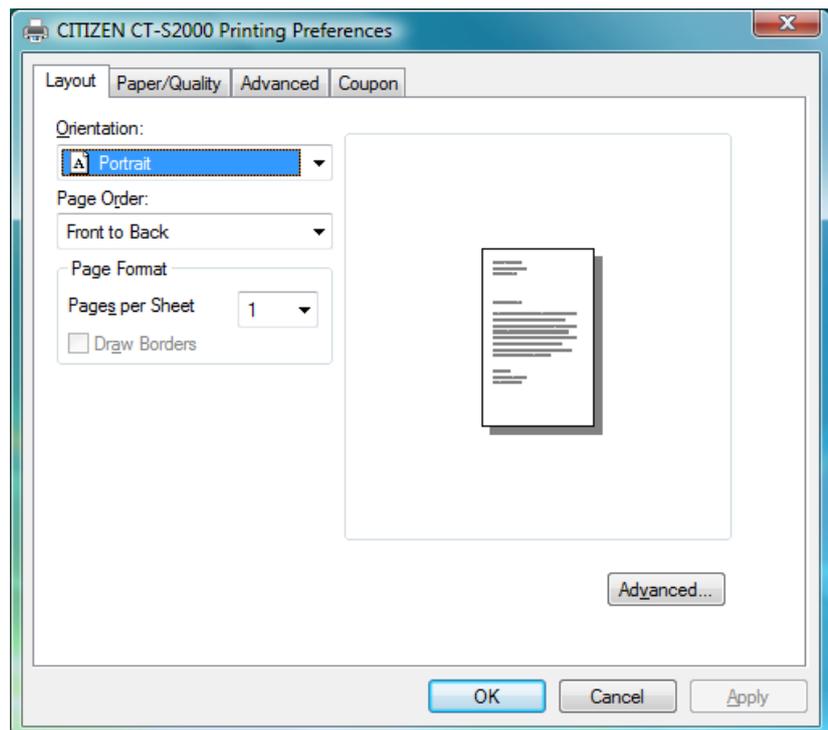
4.3 Watermark

It is possible to print data with overlapping the image data which is specified in advance.

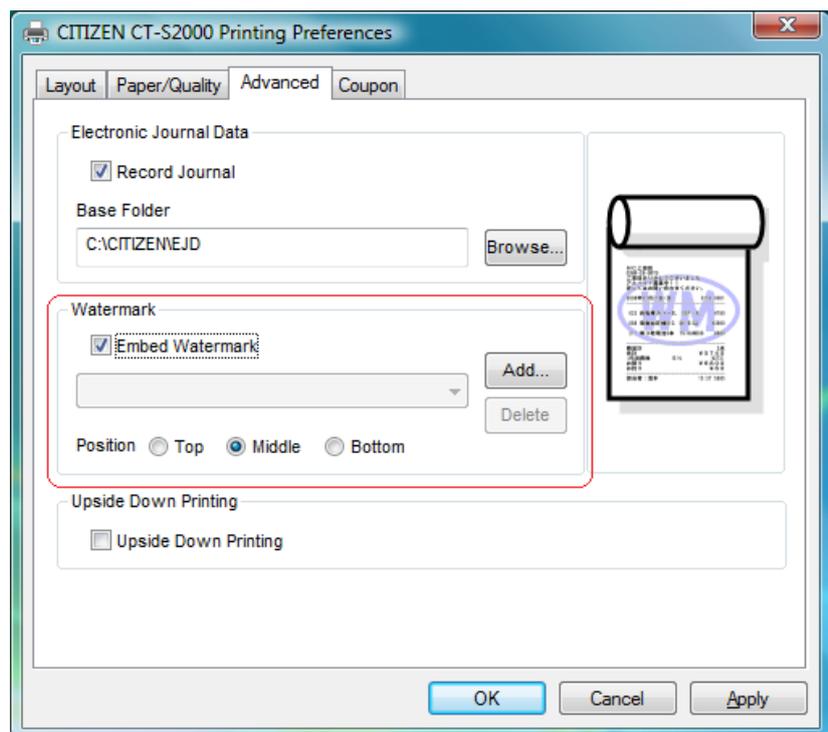
From the Properties of printer driver, choose "Printing Preferences".



Choose "Advanced" tab.



To enable Water mark function, put check mark in "Embed Watermark" and press "Add" to specify the watermark image data. Then specify the position of overlapping from "Top", "Middle" or "Bottom".



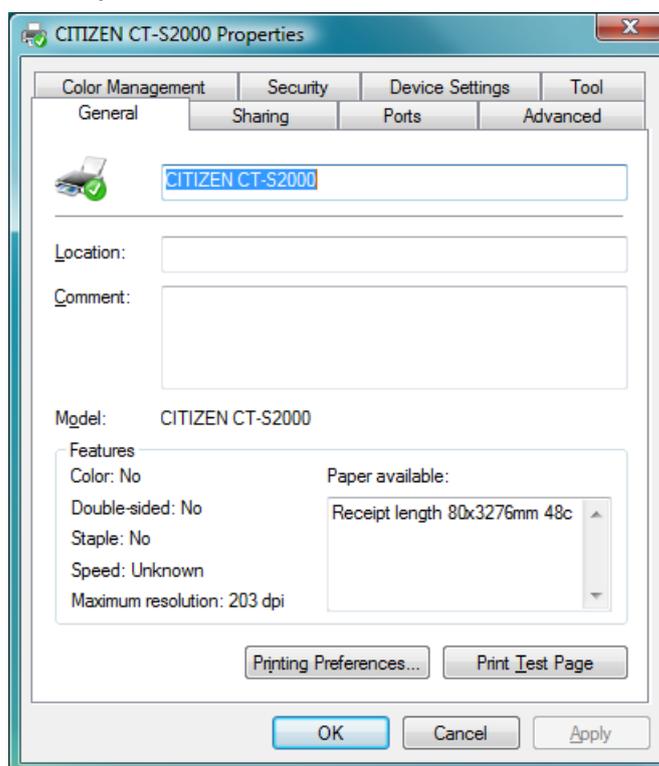
- * The watermark image data to use for overlapping is black/white bitmap format data only.
- * Size of watermark image data is limited in horizontally 1023 pixels width. There is no limit for vertical size. Paper size limitation of driver is effective for watermark image size as well.
- * Up to 5 watermark image data can be specified in advance. If you want to more, remove existing data by pressing "Delete" and "Add" new one.

- * Please note about the limitation of this Watermark function.
- * Based on 24 vertical dots, image block from Windows and watermark image is overlapping,
 - (1) If the received image block is taller than 24 pixels, white gap is generated in the watermark image. Especially, it can be seen in the case to use tall printer font.
 - (2) If the received image block is shorter than 24 pixels, image block is expanded automatically in vertical direction.
- * Barcode font and image data cannot be overlapped.

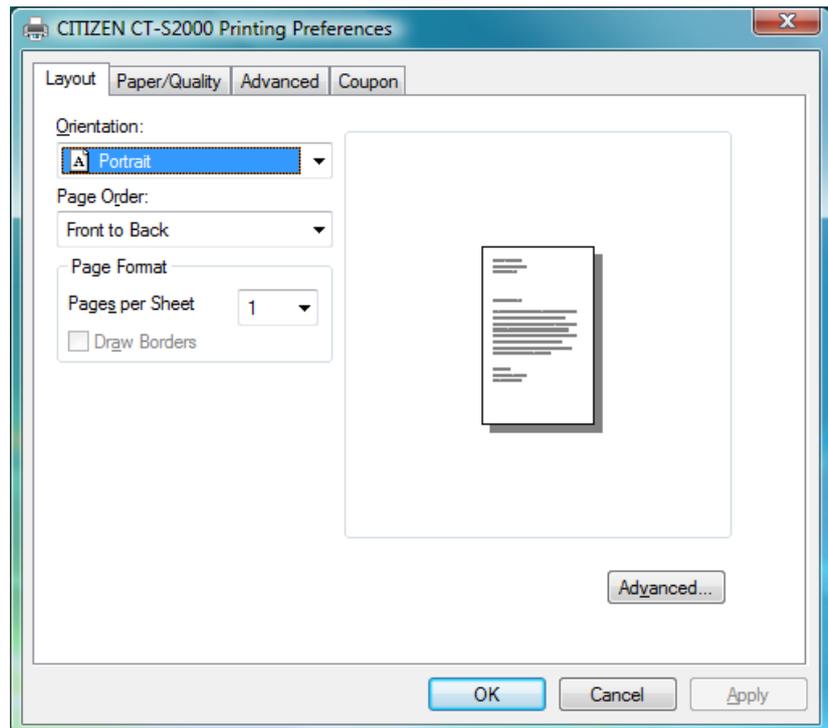
4.4 Upside Down Printing

Printing data in upside down can be done by this function.

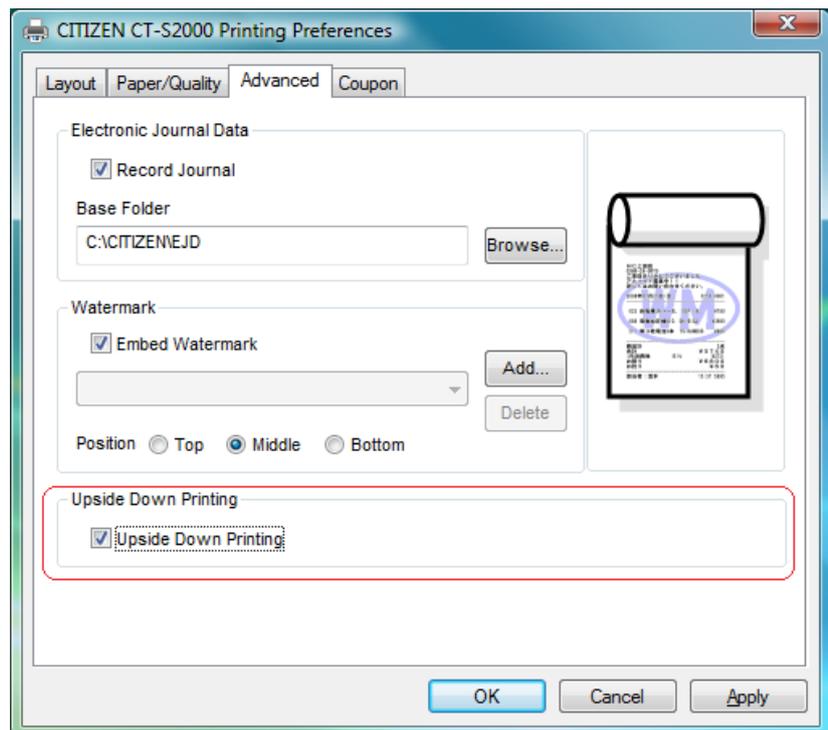
From the Properties of printer driver, choose "Printing Preferences".



Choose "Advanced" tab.



To enable upside down printing, put check mark in "Upside Down Printing".



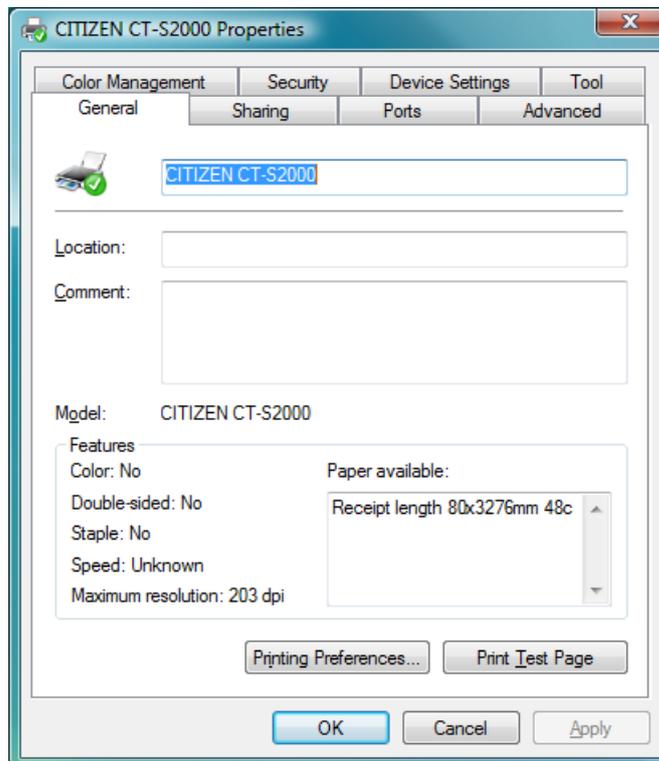
* Printer font is printed upside down as well.

* NV logo saved by "GS (L)" command cannot be printed upside down. Please save the upside down data in advance.

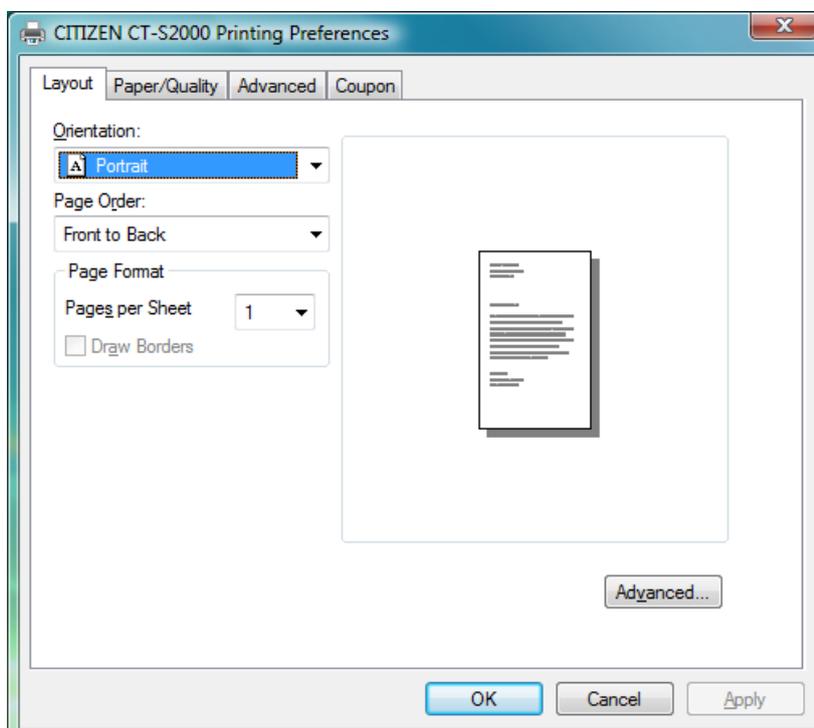
4.5 Coupon printing

Coupon printing is the function like this. Coupon image data is specified to link with a keyword and if the keyword is found in the print data, the coupon image data is printed automatically.

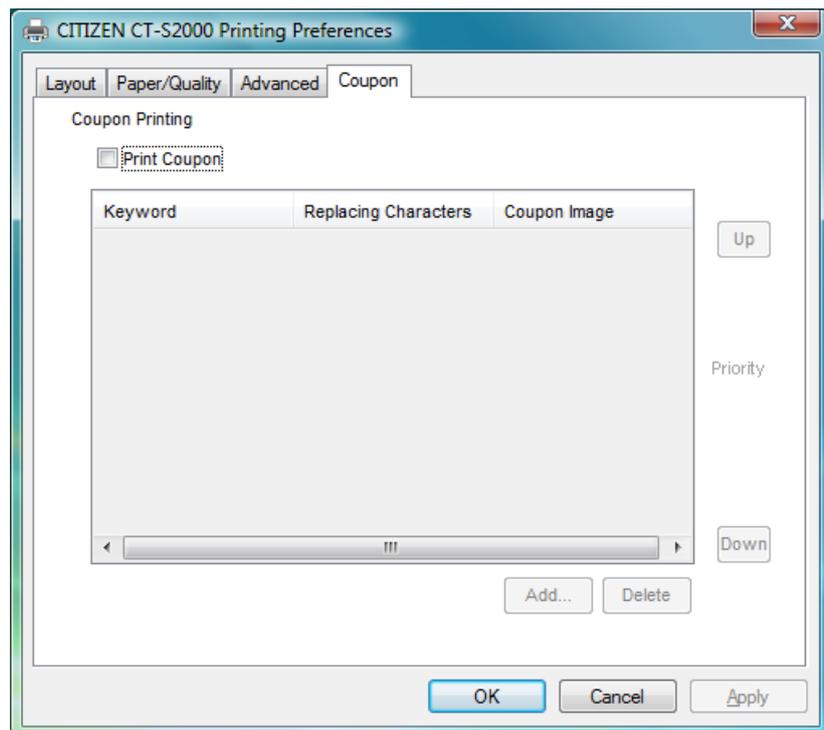
From the Properties of printer driver, choose "Printing Preferences".



Choose "Coupon" tab.



To enable coupon function,
check mark in "Print
Coupon".



Add "Coupon" information

- * To register the information of the coupon, press "Add". "Add Coupon Information" dialogue shows up. "Keyword", "Replacing Characters" and "Coupon Image" need to be registered on it as a set.
- * Coupon information up to 10 can be registered. Coupon information has to be aligned in priority order. Upper information in the list has higher priority and lower information has lower priority. The order can be changed by "Up" and "Down". Searching Keyword, "Replacing Characters and printing coupon image are done in the priority order.
- * The image data to use for coupon must be in black/white bitmap format and its width must be up to 1023 pixels.
- * If "Keyword", "Replacing Characters" and "Coupon Image" are same, it cannot be registered. If any of them is different, it is handled as new coupon information and can be registered.

Behavior of coupon printing

- * First, characters to correspond with "Keyword" are searched in the print data. When the characters are found, the coupon image data linked with the keyword is set to be printed at the end of print data. Then corresponding characters are replaced by "Replacing Characters"
 - * If multiple coupon information exists, jobs are separated to "Coupon image printing" and "Character replacing".
 - * First, the routine of "Coupon image printing" is performed.
- "Keyword" searching of first coupon information starts from top of print data. If the corresponding characters are found, linked coupon image is printed at the end of printing. Then same routine is repeated from 2nd coupon information to last coupon information. Then the routine of "Replacing character" is performed. "Keyword" searching of first coupon information starts from top of print

data. When the corresponding characters are found, characters are replaced by “Replacing characters” of first coupon information. The same routine is repeated from 2nd coupon information to last coupon information.

- * Because of the above routine flow, the replaced characters in higher priority coupon information can be re-replaced by the low priority coupon information.

*** Limitation of coupon printing function

Limitation of character

- * Character replacing does not work for TrueType font. Choose printer font to replace characters.
- * Character replacing does not work barcode font.
- * Character replacing does not work for “Control” font.
- * Character data with mixed font or with mixed font size cannot be recognized as continuous characters. Therefore, it cannot be found by searching keyword.
- * Characters extending 2 lines cannot be found by searching keyword.
- * Symbol font of TrueType (such as Webdings, MS Extra) cannot be found by searching keyword
- * If the character length of keyword and replacing characters is different
 - "Keyword" > "Replacing Characters": Characters after replaced character moves forward
 - "Keyword" < "Replacing Characters": The characters beyond print width are ignored.

Limitation for the application

- *MS-Word may separate the data even if they are in the same line and using same font and font size. If the character is separated, it cannot be found by searching keyword.
- *AutoCorrect function of MS-Word may change the character such as quotation mark automatically. In such case, it cannot be found by searching keyword.
- *Notepad does not handle device font. Printer font cannot be used for Notepad. Only TrueType can be used. Therefore, replacing characters do not work for Notepad.
- *If left/right margin is set for zero, the characters in margin area may not be printed or deleted. Therefore, such characters may not be found by searching keyword.
- * From VB or VC, it is possible to send more character than print width using method or API. The data beyond print width is ignored and it cannot be found by searching keyword.

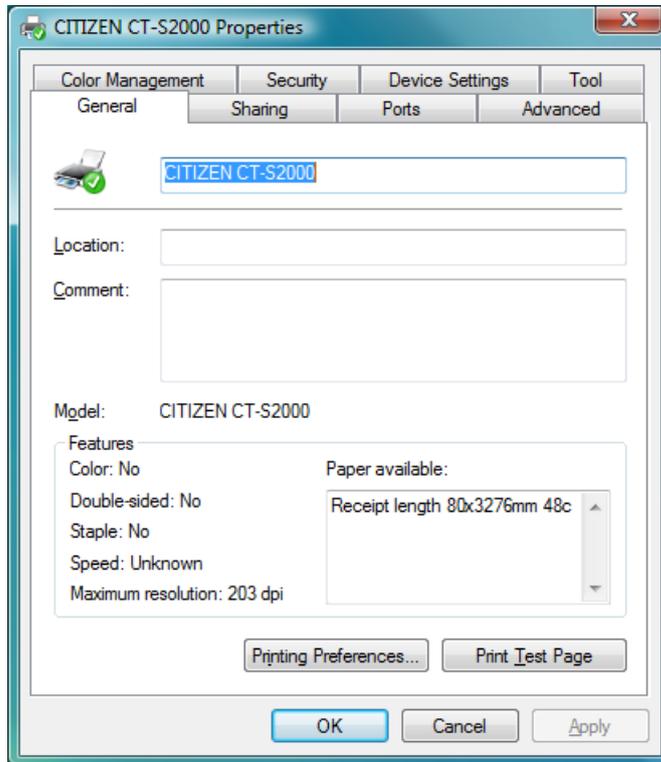
Limitation of coupon printing

- *If the NV log is set to print at the end of print job, coupon is printed after NV logo.
- * In case of multiple page printing, the coupon printing set in the middle page is done after the last page printing.
- *In case of multiple copy printing, coupon is printed at the end of each copy.
- *If the “Ticket is set for Paper Type, coupon is printed after reaching fixed length.
- *If the print direction is set for horizontal, coupon is not printed in horizontal direction.

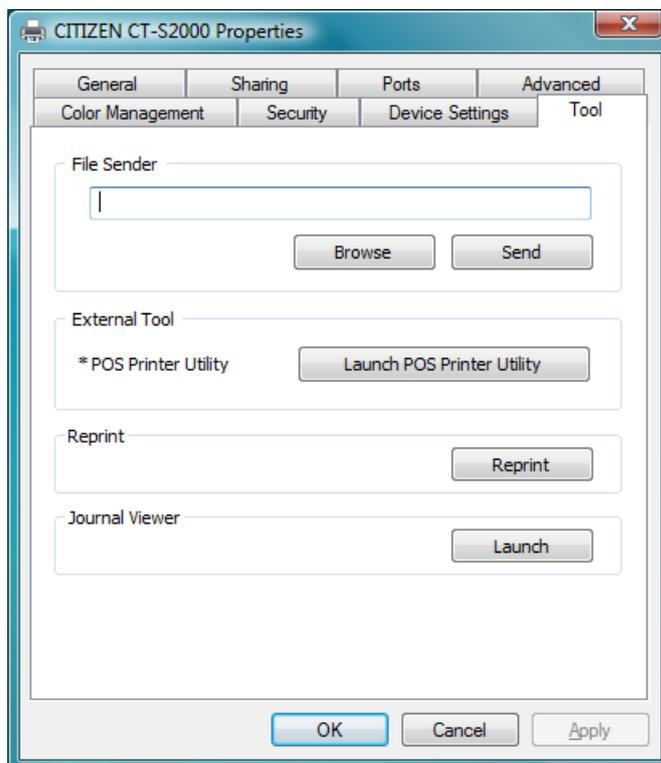
4.6 File Sender

The data file to send to printer can be transmitted to the printer using this function. There is no data added by the driver and the data file itself is simply transmitted to the printer.

From the Properties of printer driver, choose "Tool" tab.



Press "Browse" of "File Sender" and specify the file to send to the printer. The data is sent to printer by pressing "Send".

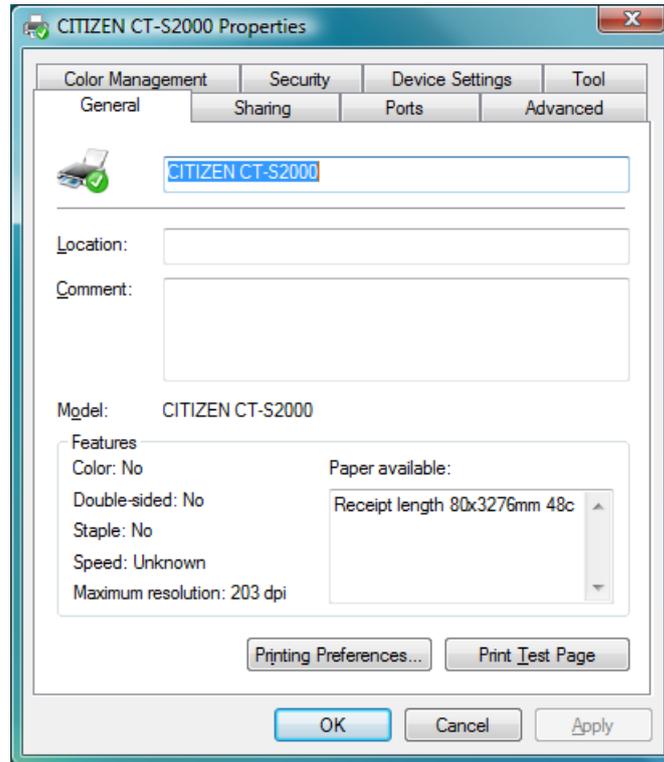


* This function can be used for the purpose such as loading firmware data.

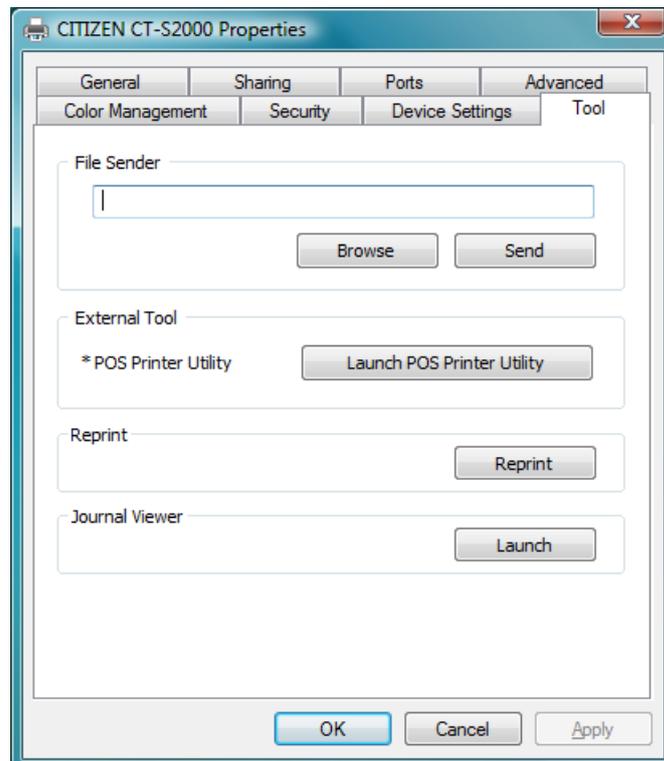
4.7 POS Printer Utility

The utility software to set up printer can be launched as follows.

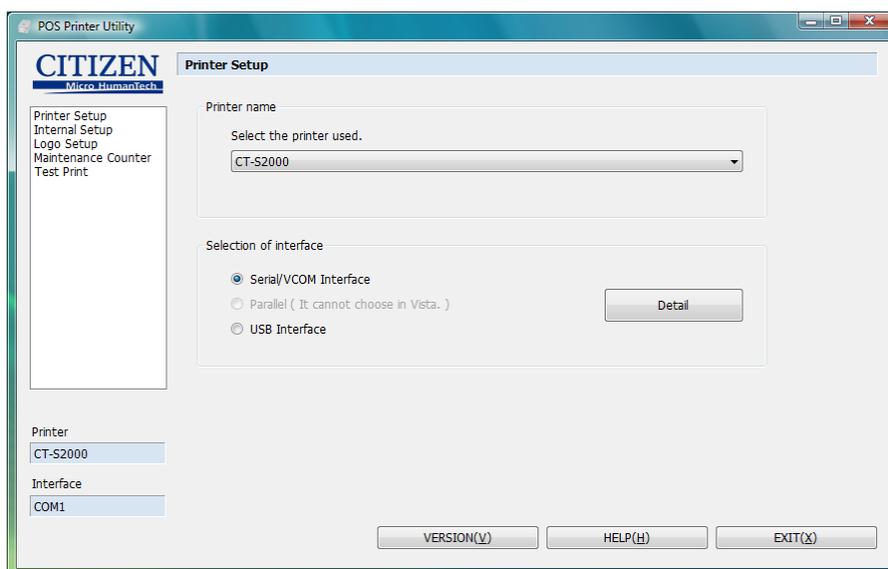
From the Properties of printer driver, choose "Tool" tab.



Press "Launch POS Printer Utility" of "External Tool".



This is the launched screen. Please refer to the HELP file of POS Printer Utility for the details of POS Printer Utility.



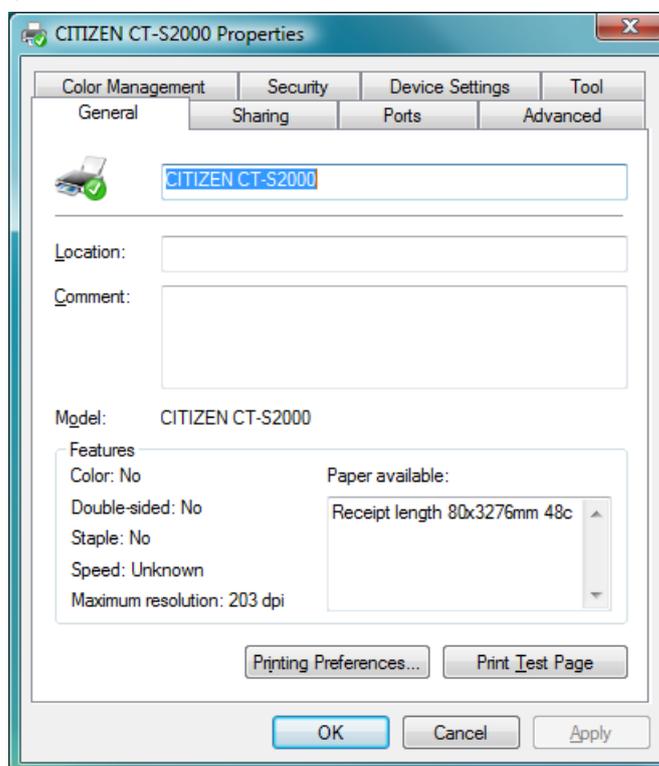
*Remarks: If the status monitoring function is active, the communication between PC and printer takes longer time.

*If the driver is installed with status monitoring function enabled through Plug & Play, interface such as parallel or USB, the communication right after the driver installation may fail. In such case, please reboot PC then the communication becomes stable.

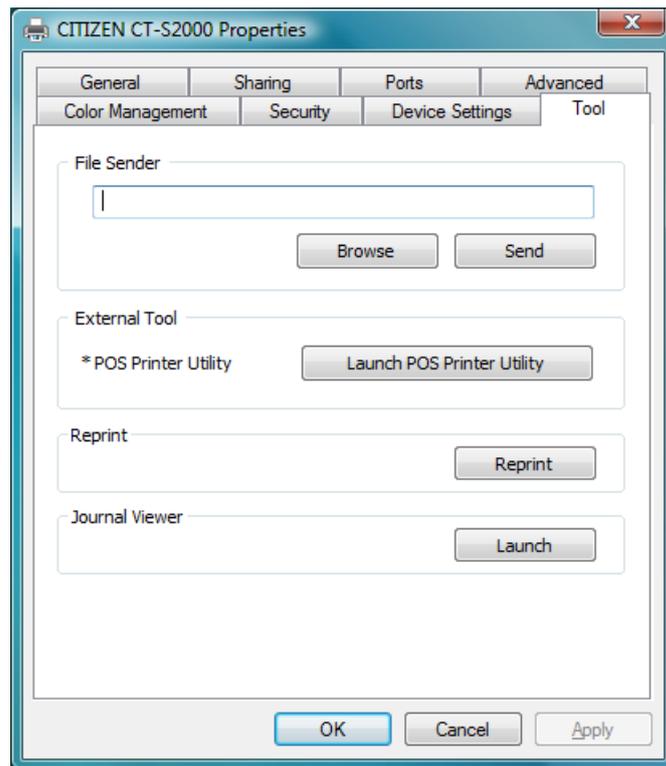
4.8 Reprint

The last print job can be re-printed by this function.

From the Properties of printer driver, choose "Tool" tab.



Press "Reprint" of
"Reprint".



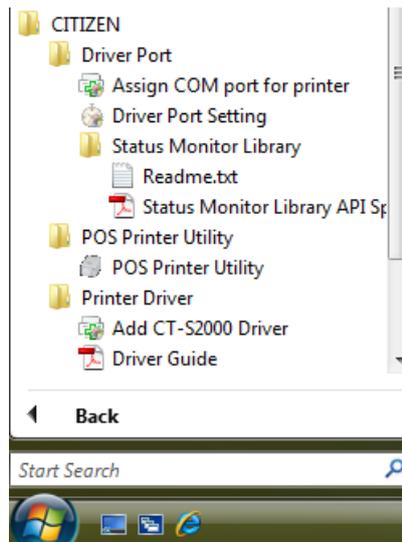
- * If printing is done before PC reboot, the last data before the boot can be reprinted.
- * Target of reprint function is 1 print job. If the print data covers more than 1 page, the reprinted data is not the last page but whole print data of last print job.
- * Upside down printing is affected by the setting of upside down at reprint.
- * Reprint data is not handled as Electronic journal data.
- * The print data sent by File Sender cannot be reprinted.

To use this reprint function, journal viewer function must be installed.

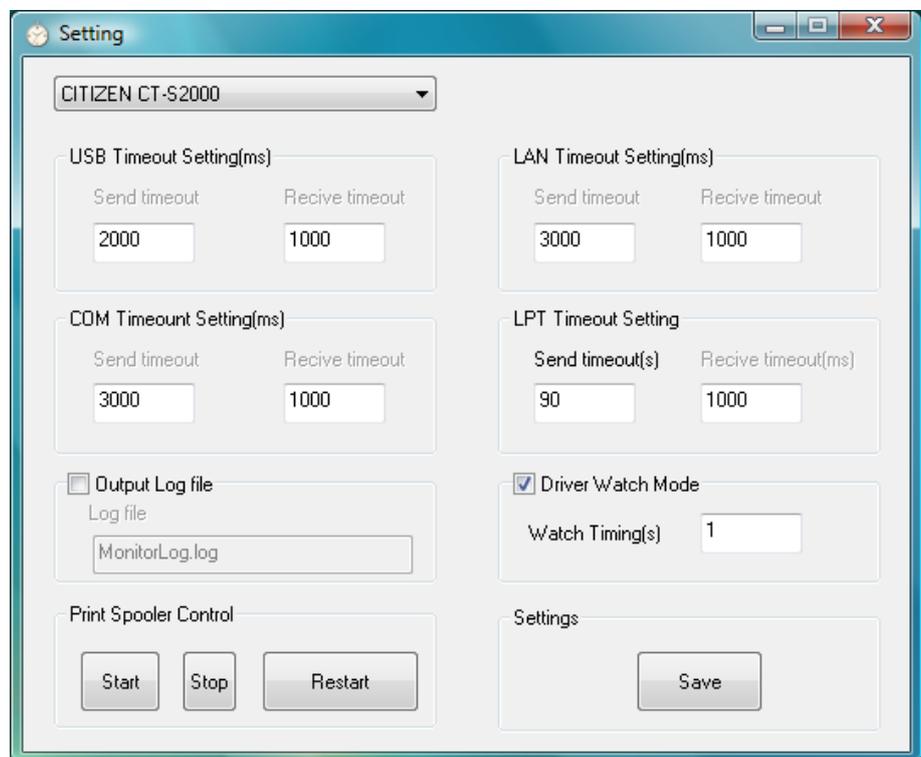
4.9 Driver Port Setting

This is to change the time-out setting etc. for the status monitoring function, when necessary.

From Start menu,
CITIZEN=> Driver Port =>
Driver Port Setting



Dialog shows up.



- It is possible to set time-out duration for sending/receiving data through each interface (USB, COM, LPT, LAN)
- To change the time-out duration setting, change the number of time-out setting and press “Save” button then at Print Spooler Control, press “Restart” button. (or press “Stop” button and press “Start” button.)
- If “Driver Watch Mode” is check-marked, printer status is always monitored and the interval to check the status is fixed by “Watch Timing(s)”. If “Driver Watch Mode” is not check-marked, printer status is monitored only when printer status monitoring API is called by user application. New setting can be effective same way as time-out duration setting. (Print Spooler Control: “Save” => “Restart”) Usually, check-mark the “Driver Watch Mode”.

- Default values of each interface are set for optimum ones and usually do not need to change. However, the time-out value of LPT is set for 90sec as default of OS and 90 seconds is too long for time-out.. When you use LPT, change the value to 5 sec which is recommended value..
- If you see the difficulty to get printer status, set the sending time-out value larger. Usually, this will make it possible to get the status.

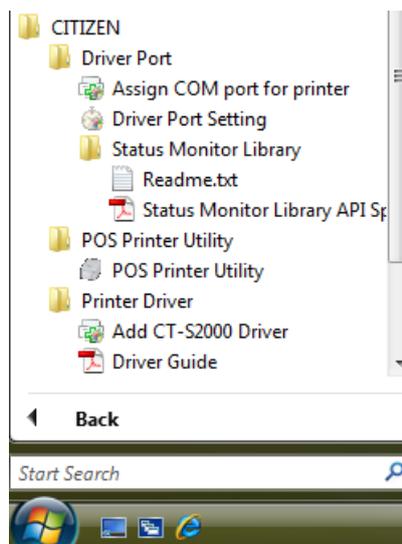
4.10 Status Monitor Library

Status monitoring function supplies the own method to get the status from the printer. Using status monitor API from user program, it is possible to get more status information than the status information that OS supplies as standard way. Refer to the Status Monitor Library API specifications for the details. "Readme.txt shows the place where the sample program is stored.

From Start menu,

CITIZEN => Driver Port

=> Status Monitor Library



5. Printer fonts

Printer font is the characters stored in the printer.

Printing by printer font is much faster than printing by TrueType font. Therefore, we recommend using these printer fonts for faster printing.

Following printer fonts can be selected by using Windows driver.

Driver	Font	Font size	
CT-S601	15 cpi	12 / 24 / 36 / 48 / 60 / 72 / 80	
CT-S801	15 cpi [Euro]		
CT-S2000	15 cpi [Ext.]		
CT-S310	15 cpi [RED Euro]		
CT-S4000	15 cpi [RED Ext.]		
CT-S281	15 cpi (RED)		
	7.5 cpi		
	7.5 cpi [Euro]		
	7.5 cpi [Ext.]		
	7.5 cpi [RED Euro]		
	7.5 cpi [RED Ext.]		
	7.5 cpi (RED)		
	3.75 cpi		
	3.75 cpi [Euro]		
	3.75 cpi [Ext.]		
	3.75 cpi [RED Euro]		
	3.75 cpi [RED Ext.]		
	3.75 cpi (RED)		
	1.8 cpi		
	1.8 cpi [Euro]		
	1.8 cpi [Ext.]		
	1.8 cpi [RED Euro]		
	1.8 cpi [RED Ext.]		
	1.8 cpi (RED)		
	20 cpi		Font B
	20 cpi [Euro]		
	20 cpi [Ext.]		
	20 cpi [RED Euro]		
	20 cpi [RED Ext.]		
	20 cpi (RED)		
	10 cpi		
	10 cpi [Euro]		
	10 cpi [Ext.]		
	10 cpi [RED Euro]		
	10 cpi [RED Ext.]		
	10 cpi (RED)		
	5 cpi		
	5 cpi [Euro]		
	5 cpi [Ext.]		
	5 cpi [RED Euro]		
	5 cpi [RED Ext.]		
	5 cpi (RED)		
	2.5 cpi		
	2.5 cpi [Euro]		
	2.5 cpi [Ext.]		
	2.5 cpi [RED Euro]		
	2.5 cpi [RED Ext.]		
	2.5 cpi (RED)		

	25 cpi 25 cpi [Euro] 25 cpi [Ext.] 25 cpi [RED Euro] 25 cpi [RED Ext.] 25 cpi (RED) 12.5 cpi 12.5 cpi [Euro] 12.5 cpi [Ext.] 12.5 cpi [RED Euro] 12.5 cpi [RED Ext.] 12.5 cpi (RED) 6.25 cpi 6.25 cpi [Euro] 6.25 cpi [Ext.] 6.25 cpi [RED Euro] 6.25 cpi [RED Ext.] 6.25 cpi (RED) 3 cpi 3 cpi [Euro] 3 cpi [Ext.] 3 cpi [RED Euro] 3 cpi [RED Ext.] 3 cpi (RED)	Font C	
CT-S601	FontA11	Font A	9.5
CT-S801	FontA11 [255]		
CT-S2000	FontA11 [Ext.]		
CT-S310	FontA12		19
CT-S4000	FontA12 [255]		
CT-S281	FontA12 [Ext.]		
	FontA21		9.5
	FontA21 [255]		
	FontA21 [Ext.]		
	FontA22		19
	FontA22 [255]		
	FontA22 [Ext.]		
	FontA24		38.5
	FontA24 [255]		
	FontA24 [Ext.]		
	FontA42	19	
	FontA42 [255]		
	FontA42 [Ext.]		
	FontA44	38.5	
	FontA44 [255]		
	FontA44 [Ext.]		
	FontA48	77	
	FontA48 [255]		
	FontA48 [Ext.]		
	FontA84	38.5	
	FontA84 [255]		
	FontA84 [Ext.]		
	FontA88	77	
	FontA88 [255]		
	FontA88 [Ext.]		
	FontB11	Font B	7 (CT-S310)
	FontB11 [255]		9.5 (CT-S2000)
	FontB11 [Ext.]		
	FontB12		13.5 (CT-S310)

FontB12 [255] FontB12 [Ext.]	19 (CT-S2000)
FontB21 FontB21 [255] FontB21 [Ext.]	7 (CT-S310) 9.5 (CT-S2000)
FontB22 FontB22 [255] FontB22 [Ext.]	13.5 (CT-S310) 19 (CT-S2000)
FontB24 FontB24 [255] FontB24 [Ext.]	27 (CT-S310) 38.5 (CT-S2000)
FontB42 FontB42 [255] FontB42 [Ext.]	13.5 (CT-S310) 19 (CT-S2000)
FontB44 FontB44 [255] FontB44 [Ext.]	27 (CT-S310) 38.5 (CT-S2000)
FontB48 FontB48 [255] FontB48 [Ext.]	54.5 (CT-S310) 77 (CT-S2000)
FontB84 FontB84 [255] FontB84 [Ext.]	27 (CT-S310) 38.5 (CT-S2000)
FontB88 FontB88 [255] FontB88 [Ext.]	54.5 (CT-S310) 77 (CT-S2000)
Control	12

* The difference of “xx cpi”, “xx cpi [Euro]” and “xx cpi [Ext.]” is characters/functions assigned to 80 ~ FF hex. The details of difference are as follows.

Font	80-9F(hex)	A0-FF(hex)
xxx cpi	Special function	WPC1252
xxx cpi [Euro]	WPC1252	
xxx cpi [Ext.]	Code Page 437	

Special function: Special functions are assigned. (Refer to section 9 for the special functions.)

Windows Code: Characters from Windows code table are assigned.

Code Page 437: Characters from code page 437 are assigned.

- * “xx cpi”, “xx cpi(RED)” font: If the number is smaller, character width is larger. 4 different sizes (Standard size, x2/x4/x8 width) can be chosen from each font. For example, “7.5 cpi” is double width font of “15 cpi”.
- * Standard font size of “xx cpi”, “xx cpi(RED)” is 12. If the number is larger, character is taller.
- * “FontAxx (Bxx)” font: xx means size of height and width.
For example, FontA48 is based on font A and 4 times high and 8 times wide from standard size 11.
- * Line pitch by “xx cpi” and by “FontAxx (FontBxx)” are different because the font size is different.
- * Supported characters by the driver are based on WPC1252 codepage. The font with [255] uses characters (80h – FFh) defined by user.

- * The font with (RED) is to print in 2 colors (usually black and red). But it requires correct memory switch setting and paper for 2 color printing.
- * If printing direction is set for Landscape (Horizontal), printer font cannot be printed.
- * "Control" font is only for special functions and not for printing. Please refer to the section of "Special functions" for the details. (We do not guarantee the correct functioning of special functions.)
- * The function of centering or right aligning by application software does not work with the driver.
- * If the print data for printer font is longer than one line, extra part is basically ignored but in some case, one character may be printed in next line. Please do not send the longer data than one line.
- * Printer font name contains space. Please be careful.

Example ("_" mean the space.)

"15_cpi"

"15_cpi_ [Euro]"

"15_cpi_ [Ext.]"

"15_cpi_ [RED_Euro]"

"15_cpi_ [RED_Ext.]"

"15_cpi_(RED)"

"FontA11_ [255]"

"FontA11_ [Ext.]"

6. Barcode

Using following font, barcode can be printed on the printer.

Barcode font	Font size
Codabar	20 / 40 / 42 / 60 / 64 / 80 / 84
Code128	20 / 40 / 42 / 60 / 64 / 80 / 84
Code39	20 / 40 / 42 / 60 / 64 / 80 / 84
Code93	20 / 40 / 42 / 60 / 64 / 80 / 84
JAN13 (EAN)	20 / 40 / 42 / 60 / 64 / 80 / 84
JAN8 (EAN)	20 / 40 / 42 / 60 / 64 / 80 / 84
ITF	20 / 40 / 42 / 60 / 64 / 80 / 84
UPC-A	20 / 40 / 42 / 60 / 64 / 80 / 84
UPC-E	20 / 40 / 42 / 60 / 64 / 80 / 84

*This barcode printing utilizes the printer function on the printer.

* Size of barcode can be selected by choosing font size.

* As mentioned in previous section, HRI character can be printed above, below or both.

* The wider barcode than printing width cannot be printed.

* Each barcode has limitation of characters to use. Please refer to Command reference.

* The sub code set type A/B/C for Code128 should be specified as {A, {B, {C prior to the print data.

* The data for sub code set C of Code128 is printed in decimal address of the input character.

For example, Input data "1" => Output 49 ("1" address = 31h = 49dec)

* Printer font and barcode cannot be printed in the same line.

* The function of centering or right aligning by application software does not work with the driver.

* As this function utilizes the printer's internal function, barcode image cannot be shown on the Windows application software. The barcode data is shown instead.

* If printing direction is set for Landscape (Horizontal), barcode cannot be printed.

* In the font name of "JAN13 (EAN)" and "JAN8 (EAN)", a space is included before the "(".

Example ("_" means a space)

"JAN13_(EAN)"

"JAN8_(EAN)"

7. Graphic printing function

Graphic printing is supported by this driver.

The resolution is as follows.

	Resolution (DPI)
Thermal Printers	203 x 203

TrueType font is printed as graphic by this driver.

· If the long size graphic data is printed with the horizontal paper orientation, a gap about 1mm may be generated.

· Print data size of graphic printing is large. Therefore serial interface is not adequate for graphic printing because of its slow communication speed.

8. Special functions

To use special function of printer, it is necessary to send specified character in "Control" font. If other font is used, it does not work for the special functions.

Model	Printer Function	"Control"		"xx cpi"
		ASCII	Hex	Hex
All drawer models	50ms pulse to drawer #1	A	41	81
All drawer models	100ms pulse to drawer #1	B	42	82
All drawer models	150ms pulse to drawer #1	C	43	83
All drawer models	200ms pulse to drawer #1	D	44	84
All drawer models	250ms pulse to drawer #1	E	45	85
All drawer models	50ms pulse to drawer #2	a	61	89
All drawer models	100ms pulse to drawer #2	b	62	8A
All drawer models	150ms pulse to drawer #2	c	63	8B
All drawer models	200ms pulse to drawer #2	d	64	8C
All drawer models	250ms pulse to drawer #2	e	65	8D
All models	Horizontal Tab (HT)	5	35	95
All models	Line Feed (LF)	6	36	96
All models	Carriage Return (CR)	7	37	97
All cutter models	Receipt paper Full Cut *	F	46	9D
All cutter models	Receipt paper Partial Cut *	P	50	9E
All models	NV Bitmap data ID:1 Normal printing	G	47	
All models	NV Bitmap data ID:2 Normal printing	H	48	
All models	NV Bitmap data ID:3 Normal printing	I	49	
All models	NV Bitmap data ID:4 Normal printing	J	4A	
All models	NV Bitmap data ID:5 Normal printing	K	4B	
All models	NV Bitmap data ID:1 Double Width printing	Q	51	
All models	NV Bitmap data ID:2 Double Width printing	R	52	
All models	NV Bitmap data ID:3 Double Width printing	S	53	
All models	NV Bitmap data ID:4 Double Width printing	T	54	
All models	NV Bitmap data ID:5 Double Width printing	U	55	
All models	NV Bitmap data ID:1 Double Height printing	V	56	
All models	NV Bitmap data ID:2 Double Height printing	W	57	
All models	NV Bitmap data ID:3 Double Height printing	X	58	
All models	NV Bitmap data ID:4 Double Height printing	Y	59	
All models	NV Bitmap data ID:5 Double Height printing	Z	5A	
All models	NV Bitmap data ID:1 Quadruple printing	[5B	
All models	NV Bitmap data ID:2 Quadruple printing]	5D	
All models	NV Bitmap data ID:3 Quadruple printing	^	5E	
All models	NV Bitmap data ID:4 Quadruple printing	_	5F	
All models	NV Bitmap data ID:5 Quadruple printing	`	60	

* Depending on the memory switch setting of the printer, cutting method may not follow as specified.

* The function not supported by printer does not work.

9. Paper sizes

By installing driver, paper sizes (combination of supported paper width and various paper lengths) are automatically added. The details of length and width are as follows.

A) Length

	Paper length
a)	A4 length (297mm)
b)	B5 length (257mm)
c)	6 in Page (6 in)
d)	Letter length (11 in)
e)	Executive length (10.5 in)
f)	Receipt (3276 mm)
g)	User-Defined size

B) Width

Model	Paper width
CT-S601	83mm (53col.) 80mm (48col.) 80mm (42col.) 58/60mm (36col.) 58mm (30col.)
CT-S801	83mm (53col.) 80mm (48col.) 80mm (42col.) 58/60mm (36col.) 58mm (30col.)
CT-S2000	83mm (53col.) 80mm (48col.) 80mm (42col.) 58/60mm (36col.) 58mm (30col.)
CT-S310	80mm (48col.) 80mm (42col.) 58mm (32col.) 58mm (30col.)
CT-S281	58mm (32col.) 58mm (30col.)
CT-S4000	112mm (69col.)

	83mm (53col.)
	80mm (48col.)
	80mm (42col.)

* As mentioned in previous section, if the “Paper Type” is set for “Receipt” and print data is shorter than paper size, printing is finished before reaching the specified paper size with cutting paper or just stopping printing.

If the “Paper Type” is set for “Ticket”, the printer continues paper feeding until reaching the chosen paper size.

* It is not possible to choose f) Receipt (3276 mm) size from application software like MS-Word or MS-ACCESS.

* User defined paper can be set up by following way. The size that user can define depends on the printer driver.

Windows Vista

"Control Panel" -->

"Printer"

Right-click at empty space.

Choose "Run as

administrator" --> "Server

Properties" in the drop

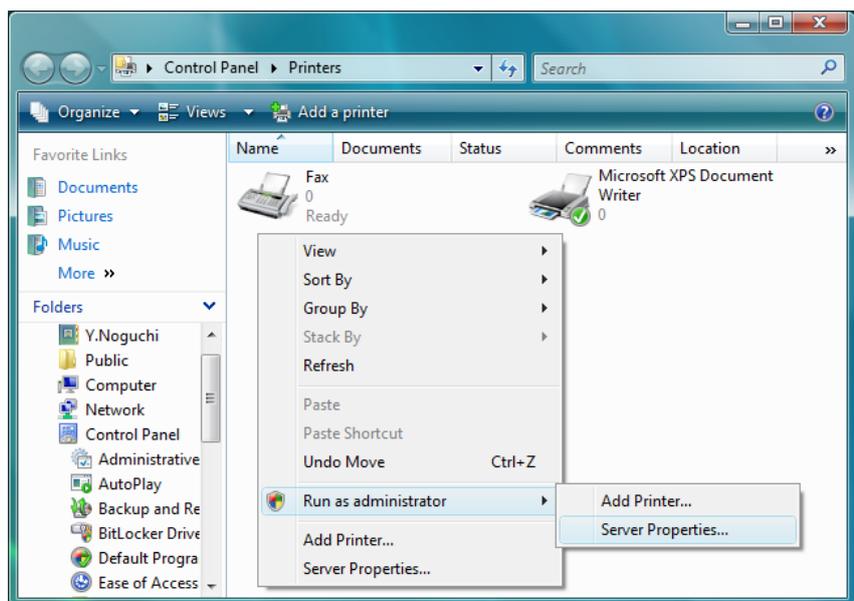
down menu.

Other OS

from menu of “Printer

and Faxes” window,

File -> Server Properties



"User Account Control"

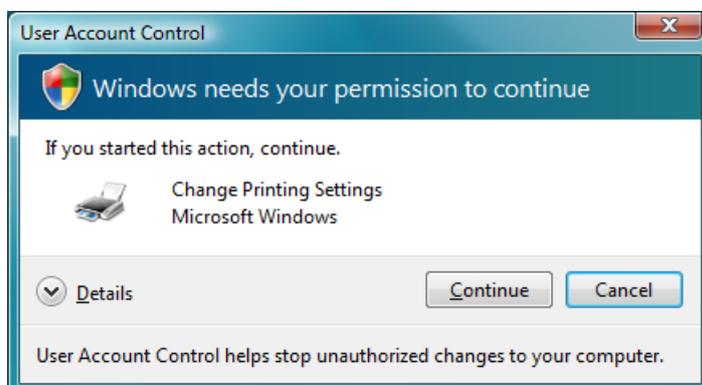
message shows up like

right picture. Press

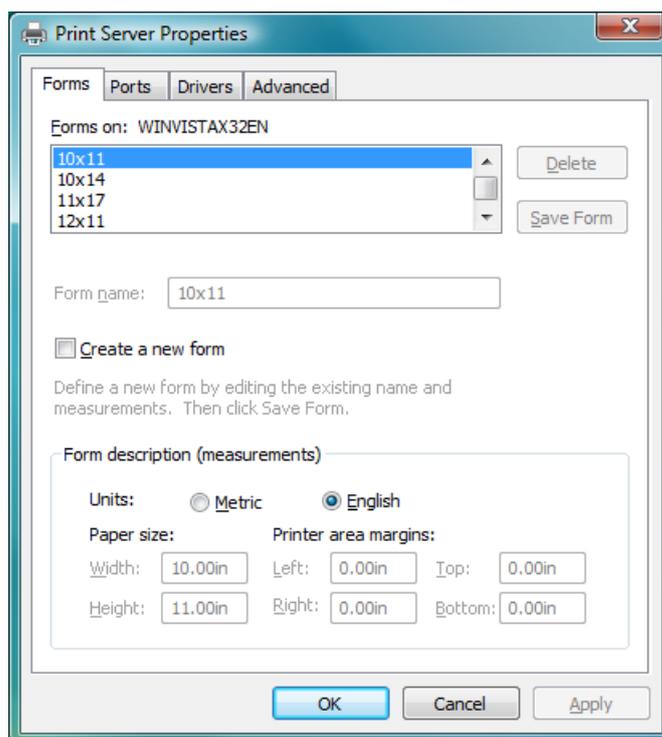
“Continue”.

* This operation is only for

Windows Vista.



"Print Servers Properties" is shown like right picture. On "Forms" tab, put check mark in "Create a new form". Enter data in "Form name" and "Form description" and press, "Save Form" to create a new form.



* The range of paper size that user can define is as follows.

Driver	User deign paper size range	
	Minimum	Maximum
CT-S601	(20,20)	(664,26182) :Max print width is 640.
CT-S801	(20,20)	(664,26182) :Max print width is 640.
CT-S2000	(20,20)	(664,26182) :Max print width is 640.
CT-S310	(20,20)	(640,26182) :Max print width is 575.
CT-S281	(20,20)	(464,26182) :Max print width is 383.
CT-S4000	(20,20)	(896,26182) :Max print width is 832.

* Unit is dot. 1 dot is converted as 1/203 inch.

Remarks: For the label function, do not use the paper size smaller than 203dot x 203dot.

10. Example of Usage for specific software

10.1 Example of usage by Microsoft Word

Example to use printer font on MS-Word2003

A. From the menu, click

File--> Print --> Printer Name

Choose the printer to use then click Close button.

B. Then from menu

File --> Page setting --> Paper size

And choose the paper size to use.

C. Then move to **Margin** tab and Set the proper margins. (If you set the margins to zero, it will be corrected to minimum number automatically after the error message.)

D. Choose the printer font in the font list box (Refer to above printer font section)

E. Choose the printer font size in the font size list box. (Refer to above printer font section)

F. Enter the data to print on Word,

Step from here is important.

G. From menu メニューから、

Tools --> Options --> Compatibility

Then choose "Microsoft Word 6.0/95" or "Use printer metrics to lay out document" in "Options"

H. Finally

File --> Print --> OK

Example to use special function to open drawer1

Step A to C is same as above.

D. Choose "Control" from font list box

E. Choose "12" in font size list box.

F. Enter "A" on Word screen. (Function to send 50ms pulse to drawer1 is assigned to "A".)

Follow step G and H mentioned above.

10.2 Example of program by Visual Basic

Following is the Visual Basic 6.0 program list for "CITIZEN CT-S2000" to utilize various printing and special functions.

```
' Set "CT-S2000" as default printer driver
Dim X As Printer
For Each X In Printers
    If X.DeviceName = "CITIZEN CT-S2000" Then
        Set Printer = X
        Exit For
    End If
Next

'Printing Windows font
Printer.FontSize=10
Printer.FontName="Arial"
Printer.Print "Font Arial / Size 10"

'Printing Printer font
Printer.FontSize=12
Printer.FontName="15 cpi"
Printer.Print "15 cpi / Size 12"

'Printing Barcode
Printer.FontSize=42
Printer.FontName="Code39"
Printer.Print "ABC123456"

'Opening cash drawer
Printer.FontSize=12
Printer.FontName="Control"
Printer.Print "A" 'Drawer 1 at 50ms

'Cutting paper
Printer.FontSize=12
Printer.FontName="Control"
Printer.print "P" 'Partial cut

'Printing graphic data from NV memory
Printer.FontSize=12
Printer.FontName="Control"
Printer.print "G" 'Print #1 gaphic data in NV memory

Printer.EndDoc

Also you can send commands through driver but it is necessary to choose printer font first.
(Please use this way at your own risk. We do not recommend this usage.)
(ex)

Printer.FontSize=12
Printer.FontName="15 cpi"
Printer.Print CHR$(&H1B) + "V" + CHR$(1) '90 degrees right turned.
Printer.Print "15 cpi / Size 12"
Printer.EndDoc
```

Caution: PrintDocument object of Visual Basic.Net etc does not support printer font. Therefore the above method using printer font cannot be used.

10.3 Example of program by Visual C++

Following is the Visual C++ 6.0 program list using MFC library.

```
// It displays PrintDialog. And select printer by user.
CPrintDialog prndlg(FALSE);
if (prndlg.DoModal() != IDOK) return; // Stop transaction

// Get Printer Device Context
HDC PrinterHDC;
CDC PrinterCDC;
PrinterHDC = prndlg.GetPrinterDC();
PrinterCDC.Attach(PrinterHDC);

// Make Print-Job
DOCINFO docInfo;
memset(&docInfo, 0, sizeof(docInfo));
docInfo.cbSize = sizeof(docInfo);
docInfo.lpszDocName = _T("Driver Print Test");
docInfo.lpszOutput = NULL;
docInfo.lpszDatatype = NULL;
docInfo.fwType = NULL;

// Start printing
int ypos = 0;
PrinterCDC.StartDoc(&docInfo);
PrinterCDC.StartPage();

// Windows font
CFont setFont;
CFont* poldFont;
CSize setSize;
CString txtPrintData;
setFont.CreatePointFont(10*10, _T("Arial"), &PrinterCDC);
poldFont = PrinterCDC.SelectObject(&setFont);
txtPrintData = _T("Font Arial / Size 10");
setSize = PrinterCDC.GetTextExtent(txtPrintData);
PrinterCDC.TextOut(0, ypos, txtPrintData);
PrinterCDC.SelectObject(poldFont);
setFont.DeleteObject();
ypos += setSize.cy;

// Printer font
setFont.CreatePointFont(12*10, _T("15 cpi"), &PrinterCDC);
poldFont = PrinterCDC.SelectObject(&setFont);
txtPrintData = _T("15 cpi / Size 12");
setSize = PrinterCDC.GetTextExtent(txtPrintData);
PrinterCDC.TextOut(0, ypos, txtPrintData);
PrinterCDC.SelectObject(poldFont);
setFont.DeleteObject();
ypos += setSize.cy;

// Barcode
setFont.CreatePointFont(42*10, _T("Code39"), &PrinterCDC);
poldFont = PrinterCDC.SelectObject(&setFont);
txtPrintData = _T("ABC123456");
setSize = PrinterCDC.GetTextExtent(txtPrintData);
```

```
PrinterCDC.TextOut(0, ypos, txtPrintData);
PrinterCDC.SelectObject(poldFont);
setFont.DeleteObject();
ypos += setSize.cy;

// Cash drawer
setFont.CreatePointFont(12*10, _T("Control"), &PrinterCDC);
poldFont = PrinterCDC.SelectObject(&setFont);
txtPrintData = _T("A");
setSize = PrinterCDC.GetTextExtent(txtPrintData);
PrinterCDC.TextOut(0, ypos, txtPrintData);
PrinterCDC.SelectObject(poldFont);
setFont.DeleteObject();
ypos += setSize.cy;

// Cut paper
setFont.CreatePointFont(12*10, _T("Control"), &PrinterCDC);
poldFont = PrinterCDC.SelectObject(&setFont);
txtPrintData = _T("P");
setSize = PrinterCDC.GetTextExtent(txtPrintData);
PrinterCDC.TextOut(0, ypos, txtPrintData);
PrinterCDC.SelectObject(poldFont);
setFont.DeleteObject();
ypos += setSize.cy;

// Graphic data from NV memory
setFont.CreatePointFont(12*10, _T("Control"), &PrinterCDC);
poldFont = PrinterCDC.SelectObject(&setFont);
txtPrintData = _T("G");
setSize = PrinterCDC.GetTextExtent(txtPrintData);
PrinterCDC.TextOut(0, ypos, txtPrintData);
PrinterCDC.SelectObject(poldFont);
setFont.DeleteObject();
ypos += setSize.cy;

// End Printing
PrinterCDC.EndPage();
PrinterCDC.EndDoc();

// Release Printer Device Context
PrinterCDC.Detach();
DeleteDC(PrinterHDC);
```

*Visual C#.Net does not allow using the printer font.