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# **Guide for TM-U220 Right Side Up Printing**

**EPSON**

**English**

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## Revision Information

Revision	Page	Altered Items and Contents
Rev. A	All pages	Newly authorized

***About This Manual***

***Aim of the Manual***

This manual was created to provide information on the TM-U220 printer for anyone who is using the right side up printing mode.

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## Related Software and Documents

### *Related software and documents*

Software/document name	Description
ESC/POS Application Programming Guide	This provides descriptions in Acrobat format of the commands used by each TM printer, along with sample programs and other information about the printers
TM-U220 User's Manual	This provides basic handling procedures for the end user of the printer
TM-U220 Technical Reference Guide	This provides the information on the TM-H6000II printer for anyone who is developing hardware, installations, or programs. Programmers will also want to consult other documents.

## Key to Symbols

The following symbols are used in the documentation for this product. See the specific warnings and cautions at appropriate points throughout this guide.



### **Note:**

*Notes have important information and useful tips on the operation of your printer.*

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## ***T* What is Right Side up Printing?**

“Right side up printing” is a printing mode for printers installed on a wall. It reverses the printing result by buffering print data.

However, the right side up printing mode has the following limitations:

- The right side up printing mode is for control with ESC/POS commands. The mode is not supported by any driver (OPOS and Advanced printer driver [APD]) or utility software.
- Some ESC/POS commands have restrictions during Right side up printing. (See “Forbidden/Restricted commands for right side up printing mode” on page 8.)
- The right side up printing mode has no guarantee at “receive buffer full.” Therefore, host PC should have a control to prevent it.
- The right side up printing mode requires DIP switch 1-2 (receive buffer: 4KB) to be turned on.
- The right side up printing mode is provided for Type B (ANK) and Type D (ANK) models only. Type A or Multilingual models don’t have this printing mode.

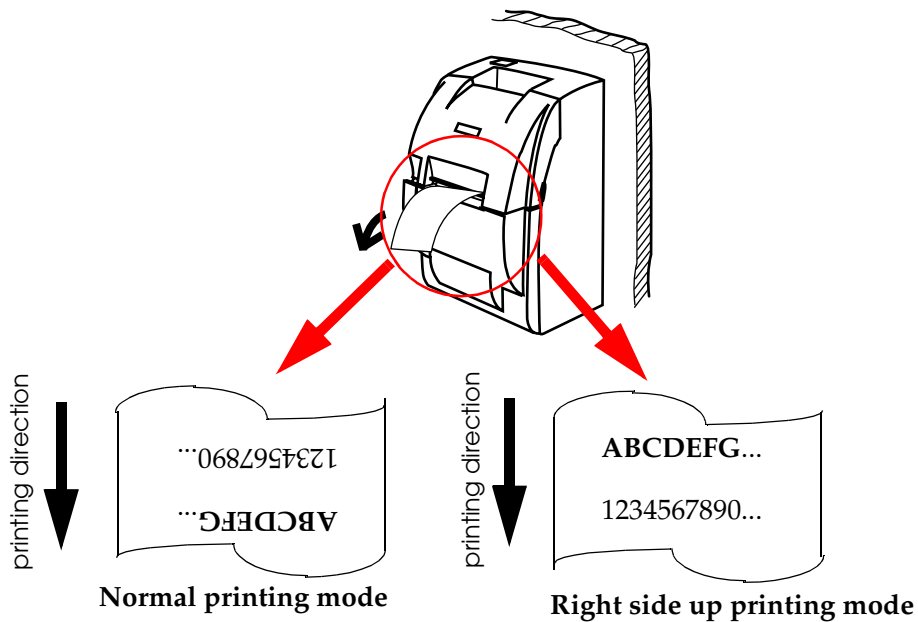


**Note:**

When you use this method, don’t turn on DIP switch 1-1. If you do so, the printer may not work correctly.

### **1.1 How does the printer print in the right side up printing mode?**

“Right side up printing” prints as shown below.



## ***2 How to use right side up printing***

There are two methods for right side up printing:

<b>Method: using specific command</b>	<b>Advantage</b>	<b>Any application program can use this method because this method controls the printer with a command.</b>
	<b>Disadvantage</b>	<b>You have to arrange the application program to transmit the specific command.</b>
<b>Method: using DIP switch setting</b>	<b>Advantage</b>	<b>This method may provide you right side up printing without changing your application.</b>
	<b>Disadvantage</b>	<b>If your application transmits a prohibited command, the printer may not print correctly.</b>



**Note:**

*We recommend the "Using specific command" method.*

Using specific command method

In this method, host PC has to transmit two extra commands. A host PC must transmit the "Start reverse block" command at the beginning of right side up printing. After transmitting the command and print data, the host PC must transmit the "End reverse block" command at the end of right side up printing.

This method requires programming of the application program; however, this is the best method.

Using DIP switch setting method

In this method, the host PC must transmit a paper cut command (ex. **GS V**) at end of printing to print. However, this method has a few limitations:

- The host PC is forbidden to transmit some ESC/POS commands. (See "Forbidden/Restricted commands for right side up printing mode" on page 8.)
- This method isn't guaranteed on TM-U220 Type D (It doesn't have an autocutter.)

If your application programming uses a paper cut command already, this method may provide you right side up printing without changing the application program.

However, you should confirm that the host PC doesn't transmit any forbidden commands. If the host PC transmits a forbidden command to the printer, the printer may print incorrectly. In this case, you have to change your application (ex. cancel transmitting the restricted command, or use another method [using specific command]).



**Note:**

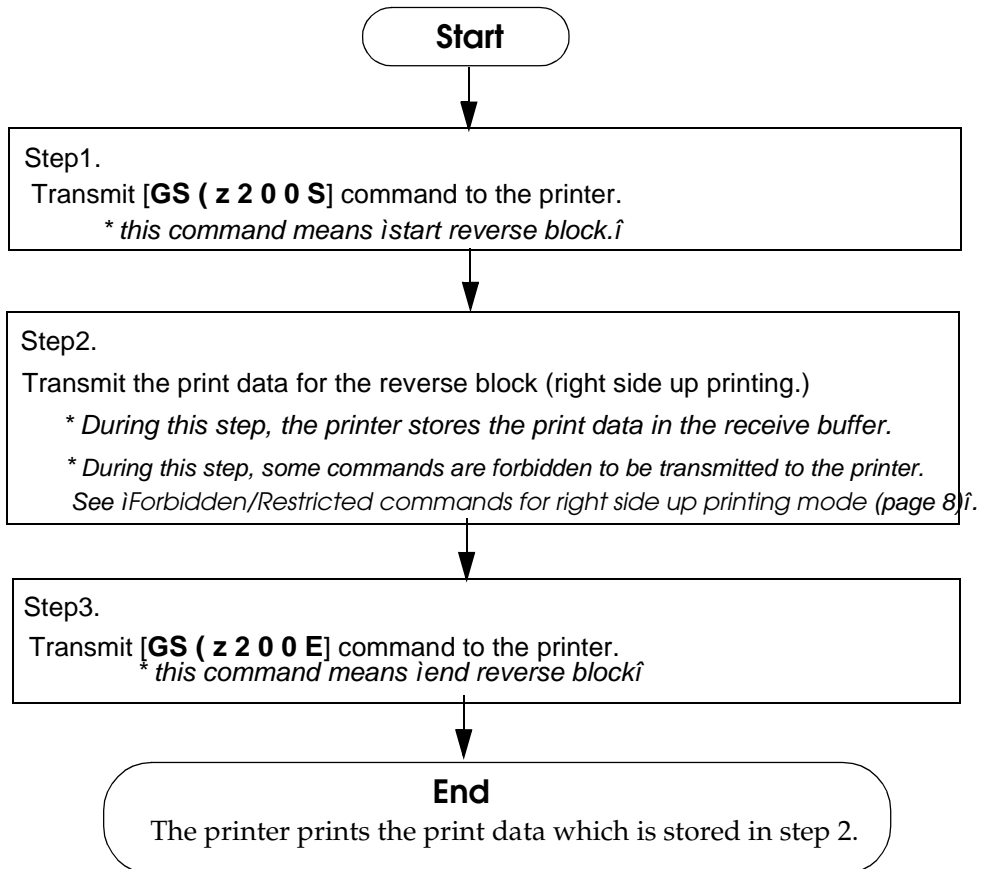
*When you use this method, don't transmit the specific command to the printer. If you do so, the printer may not work correctly.*

## 2.1 Using specific commands

Before running the application program, turn off DIP switch 1-1 (printing mode: normal) and 1-2 (receive buffer: 4KB) or you can't print with right side up printing mode.

### 2.1.1 The flow of using specific commands

The following figure shows the flow of right side up printing using specific commands.



## 2.1.2 Command Notation for the specific commands

[Name]	The name of the command.
[Format]	The code sequence.
[Range]	Gives the allowable ranges, if any, for the arguments.
[Description]	Describes the function of the command.

### GS ( z nL nH 0 S

[Name]	Start reverse block							
[Format]	ASCII	GS	(	z	nL	nH	0	S
	Hex	1D	28	7A	nL	nH	30	53
	Decimal	29	40	122	nL	nH	48	83
[Range]	nL = 2 nH = 0							

[Description]	<ul style="list-style-type: none"> <li>ï Defines the start of a block of text to be printed in reverse order. Printable data received after this command will be buffered.</li> <li>ï Once the ïend reverse blockï command is received, the entire block will be printed in reverse order.</li> <li>ï Unprintable commands such as status requests will be processed as they are received.</li> </ul>
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[Note]	<ul style="list-style-type: none"> <li>ï This command is ignored if the printer has already begun processing a block of text in reverse order.</li> <li>ï This command is enabled only when processed at the beginning of the line. If this command processed at any other point, this command is ignored.</li> <li>ï It is terminated and printed by the following commands.</li> </ul>
--------	--

Command name	Function
GS ( z 2 0 0 E	End reverse block.
GS V m	Select cut mode and cut paper <Function A>
GS V m n	Select cut mode and cut paper <Function B>



**Note:**

On TM-U220 Type D, use the "GS ( z 2 0 0 E" command to terminate and print the defined block because TM-U220 Type D doesn't have an autocutter.

**ESC i** and **ESC m** command are also terminate and print the defined block of text to be printed in reverse order. However, these commands are "obsolete commands."

*Obsolete commands:*

These are commands that will not be supported by future printer models. The description of each of these commands gives a better command to use for the same function.

**GS ( z nL nH 0 E**

[Name]	End reverse block							
[Format]	ASCII	GS	(	z	nL	nH	0	E
	Hex	1D	28	7A	nL	nH	30	45
	Decimal	29	40	122	nL	nH	48	69
[Range]	nL = 2 nH = 0							
[Description]	<ul style="list-style-type: none"> <li>ï Defines the end of a block of text to be printed in reverse order. Printable data received between the ðstart reverse blockî command and this command will be printed in reverse order.</li> </ul>							
[Note]	<ul style="list-style-type: none"> <li>ï Data received after this command will be processed normally, and will not be printed in reverse order.</li> <li>ï This command is enabled only when processed at the beginning of the line. If this command processed at any other point, the printed result isn't guaranteed.</li> <li>ï When DIP switch 1-1 is ON, don't use this command. If you do so, the printing isn't guaranteed.</li> </ul>							

**GS V m (Function A)**  
**GS V m n (Function B)**



**Note:**

*This command is a little changed for right side up printing from original command which is described in the ESC/POS Application Programming Guide.*

[Name]	End reverse block and cut paper					
[Format]	ASCII	GS	V	m	<i>(Function A)</i>	
	Hex	1D	56	m		
	Decimal	29	86	m		
	ASCII	GS	V	m	n	<i>(Function B)</i>
	Hex	1D	56	m	n	
	Decimal	29	86	m	n	
[Range]	<i>(Function A)</i> m = 0, 1, 48, 49 <i>(Function B)</i> m = 65, 66 0 ≤ n ≤ 255					
[Description]	<ul style="list-style-type: none"> <li>ï Defines the end of a block of text to be printed in reverse order, and performs a cut in the specified mode as following.</li> <li>ï Printable data received between the "start reverse block" command and this command will be printed in reverse order.</li> </ul>					

	<b>m</b>	<b>Function</b>
Function A	0, 48, 1, 49	Defines the end of a block of text to be printed in reverse order and executes a cut.
Function B	65, 66	Defines the end of a block of text to be printed in reverse order and feeds paper to (cutting position + n × vertical motion unit) and executes a cut.

- The paper is completely or partially (with one point left uncut) cut depending on the printer model.

**[Note]**

- ï Once the block has been printed in reverse order, a cut is performed. If DIP switch 1-1 is ON, reverse print mode will automatically restart. If DIP switch 1-1 is OFF, further data received after this command will be printed in normal sequence.
- ï Blank lines received immediately before this cut command will not be processed in reverse order. They will be processed immediately before the actual cut takes place. Also, an additional 3 lines are fed immediately before the cut takes place and an additional 6 lines are fed immediately after. This adjustment improves the cut position relative to the receipt text.
- ï This command is enabled only when processed at the beginning of the line. If this command processed at at any other point, the printed result isn't guaranteed.
- ï For other notes, see the ìESC/POS Application Programming Guide.î



## 2.2 Using DIP switch setting

When your application uses a “paper cut” command (ex. “**GS V**”) and doesn’t use any forbidden commands, you can use this method.

In this method, set the 2 DIP switches as described below:

1. Turn off DIP switch 1-2 (receive buffer: 4KB.)
2. Turn on DIP switch 1-1, TM-U220 keeps the right side up printing mode always.

In this method, TM-U220 stores the all transmitted data from a host PC to the receive buffer always. When the TM-U220 prints the stored data, it requires a cut command (ex. “**GS V**”) to print stored print data. (Therefore, if your application doesn’t transmit any cut command, your application have to be changed.) After the cut command is transmitted, the TM-U220 begins the storing again for next printing.



**Note:**

*Don’t apply this method for TM-U220 type D, because the printer doesn’t have an autocutter.*

*In this method, don’t transmit the specific command “**GS ( z nL nH 0 E.**” If you do so, the printed result isn’t guaranteed.*

In this method, there are some forbidden commands just as there are when using specific command method. Check whether your application uses any forbidden commands or not (See “Forbidden/Restricted commands for right side up printing mode” on page 8.) If your application uses any forbidden commands, you have to change the application to use the right side up printing mode.

## 2.3 Forbidden/Restricted commands for right side up printing mode

This section describes common information for the both methods “using specific commands,” “using DIP switch setting.”

About the right side up printing mode, you should notice the Forbidden/Restricted commands, which can be divided into four command groups as described below.

- Forbidden command
- Restricted command
- Instant command
- Required to transmit at Beginning of the line command



**Note:**

*“During right side up printing mode” means both “during DIP switch 1-1: ON” and “between the specific command “**GS ( z nL nH 0 S**” and **GS ( z nL nH 0 E.**”*



### 2.3.1 Forbidden commands

The commands in the following table are forbidden to transmit to the printer when the printer is in the right side up mode. When you transmit these commands, the printed result may be incorrect.

Command name	Function
<b>ESC &amp;</b>	Define user-defined characters
<b>ESC ?</b>	Cancel user-defined characters
<b>FS p</b>	Print NV bit image
<b>FS q</b>	Define NV bit image
<b>ESC D</b>	Set horizontal tab position

### 2.3.2 Restricted commands

The operation of the commands in this table is a little different in the right side up mode than it is in the normal mode. Small problems may occur in printing when these commands are used in the right side up mode. For example, there may be a difference in the time that the setting is enabled.

Command name	Function
<b>ESC &lt;</b>	Return home
<b>ESC =</b>	Select peripheral device
<b>ESC c 3</b>	Select paper sensor(s) to output paper-end signals
<b>ESC c 4</b>	Select paper sensor(s) to stop printing
<b>ESC c 5</b>	Enable/disable panel buttons
<b>GS ( A</b>	Execute test print
<b>GS ( C</b>	Edit NV user memory
<b>GS ( D</b>	Enable/disable real-time command
<b>GS ( E</b>	Set user setup command



**Note:**

*We don't recommend transmitting these commands in the right side up printing mode.*

### 2.3.3 Instant commands

The commands in the following table are processed as soon as they are received by the printer during right side up printing mode. Therefore, if a printer receives a **GS r**, **GS I**, or **GS a** command, the printer transmits the required status before printing the current stored text data.

Command name	Function
<b>ESC p</b>	Generate pulse
<b>GS I</b>	Transmit printer ID
<b>GS a</b>	Enable/disable Automatic Status Back (ASB)
<b>GS r</b>	Transmit status

### 2.3.4 Required to transmit at Beginning of the line command

The commands in the following table must be transmitted to the printer at “Beginning of the line” when the printer is in the right side up mode. If any of these commands is transmitted except at “Beginning of the line,” the printed result is incorrect.

Command name	Function
<b>ESC a</b>	Select justification
<b>ESC i</b>	Partial cut (one point left cut) (Obsolete command)
<b>ESC m</b>	Partial cut (three points left cut) (Obsolete command)
<b>ESC r</b>	Select print color
<b>GS ( z 2 0 0 S</b>	Start reverse block. (specific command)
<b>GS ( z 2 0 0 E</b>	End reverse block. (specific command)
<b>GS V m</b>	Select cut mode and cut paper <Function A>
<b>GS V m n</b>	Select cut mode and cut paper <Function B>

**Note:**

The above commands except **ESC i**, **ESC m** are described as “This command is enabled only when processed at the beginning of the line” in the ESC/POS Application Programming Guide. The **ESC i** and **ESC m** commands are also obsolete commands (See “Obsolete commands:” on page 4.)

Definition of Beginning of the line
-------------------------------------

The beginning of the line meets all of the following conditions:
--

- |   |
|---|
| <ul style="list-style-type: none"> <li>• No data exists in the print buffer.</li> <li>• No spaces are skipped by HT in the print buffer.</li> </ul> |
|---|

**3 FAQ**

*Q. Is there a driver that can use the right side up printing mode?*

A. Sorry, no drivers or utilities can use the right side up printing mode.

No printer drivers or utilities support the right side up printing mode (the specific command method or DIP switch setting method).

If you use a driver or utility when the printer's DIP switch 1-1 is ON (Right side up printing mode) the printer's performance is not guaranteed.

*Q. During right side up printing mode, can any status be transmitted from a printer as in normal printing mode?*

A. Any status will be transmitted from the printer to the host PC; however, the transmitted timing may be different.

During right side up printing mode (specific command method, or DIP switch setting method), when a printer receives a **GS r**, **GS l**, or **GS a** command, the printer transmits the required status before printing the current stored text data. Therefore, if you use **GS r** and **GS l** to confirm the printer has printed print data, these commands can't send you this information during right side up printing mode.

ASB status is transmitted from host PC the same as in normal mode. However, it is transmitted before printing the current stored text data when ASB function is set to enabled.

*Q. A utility can't work correctly for TM-U220.*

A. Sorry, utilities can't use the right side up printing mode.

No utilities support the right side up printing mode. Turn off DIP switch 1-1 (normal printing mode) when using a utility.

*Q. The printer doesn't print correctly in the right side up printing mode.*

A. Confirm the following items.

- Some commands are forbidden commands during the right side up printing mode. Check whether your application transmits any prohibited command again, please. (See "Forbidden/Restricted commands for right side up printing mode" on page 8.)
- Turn off the DIP switch 1-2 (receive buffer: 4KB.)
- Confirm that the receive buffer is not full. When the receive buffer is full, the print result isn't guaranteed. Arrange your application to prevent a receive buffer full. (Ex. Divide the text into two or more the reverse print data blocks by using a specific command.)

*Q. Is the drawer kick-out connection enabled during the right side up mode?*

A. It can be driven; however, the drive timing is slightly different.

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The command to kick-out drawer (**ESC p**), it is processed before printing the current stored text data. When using the specific commands, we recommend to transmit the command after closing the reverse data block.

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