

EPSON OPOS ADK MANUAL

**APPLICATION DEVELOPMENT
GUIDE**

POSPrinter (TM-T88IVReStick)

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Notes

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Section 1. Introduction

This manual describes the method of use and related items, as well as machine-specific precautions, when the EPSON TM-T88IVReStick Series POS Printers are used with the EPSON OPOS ADK program.

This manual applies to the following devices.

Device List

Serial	Parallel	USB	Ethernet
TM-T88IVReStick	TM-T88IVReStickP	TM-T88IVReStickU	TM-T88IVReStickE

Before reading the manual, see the following explanation about the characteristic of the TM-T88IV ReStick model.

Station: Receipt (Thermal roll paper 203 dpi X 203 dpi)
Receipt (Liner-free label 203 dpi X 203 dpi)

Throughout the manual, the TM-T88IV ReStick model may be abbreviated as TM-T88IVReStick.

Compatibility mode

The compatibility mode for upward compatibility was added in OPOS Ver2.60.

For the details of the compatibility mode, please refer to “EPSON OPOS ADK MANUAL APPLICATION DEVELOPMENT GUIDE Compatibility Mode”.

Section 2. Details on Settings

This section describes connection configurations and how to make the settings for the TM-T88IVReStick.

2.1 References of Firmware Versions

Refer to the release notes (Relnote.txt).

2.2 Settings of DIP Switches

Confirm that the following settings have been made correctly.

Serial port

DIP-SW1

No.	Setting	
1	OFF	Recommended
2	OFF	Recommended
3	OFF	Fixed at OFF
4	OFF	Fixed at OFF
5	OFF	Settable
6	OFF	Settable
7	ON	Settable
8	OFF	Settable

DIP-SW2

No.	Setting	
1	OFF	Settable
2	OFF	Settable
3	OFF	Settable
4	OFF	Settable
5	OFF	Fixed at OFF
6	OFF	Fixed at OFF
7	OFF	Fixed at OFF
8	OFF	Fixed at OFF

It is possible to change the settings of DIP-SW1-1 (Processing of the data input error) and DIP-SW1-2 (Specification of the received buffer capacity), but it is recommended to leave them OFF.

Set DIP-SW1-3 (Handshake) to DTR/DSR.

Set DIP-SW1-4 (Bit length) to 8 bits.

Set DIP-SW1-5 to DIP-SW1-8 in accordance with the port information.

The described set values are the default values. For the details, refer to the product manual of the POSPrinter. Also, if these settings are changed, make sure to change the port information using the SetupPOS utility.

Set DIP-SW2-2 in accordance with whether or not a customer display is connected. If connected, set to ON. If not, set to OFF.

Set DIP-SW2-3 and DIP-SW2-4 (Specification of the print density) to match the

environment of use.

Make other settings in accordance with the settings described above.

When the recommended liner-free label is used in TM-T88IVReStick, set DIP-SW2-3 and DIP-SW2-4 to ON.

Parallel Port

DIP-SW 1

No.	Setting	
1	OFF	Recommended
2	OFF	Recommended
3	OFF	Fixed at OFF
4	OFF	Fixed at OFF
5	OFF	Fixed at OFF
6	OFF	Fixed at OFF
7	OFF	Fixed at OFF
8	OFF	Fixed at OFF

DIP-SW 2

No.	Setting	
1	OFF	Settable
2	OFF	Fixed at OFF
3	OFF	Settable
4	OFF	Settable
5	OFF	Fixed at OFF
6	OFF	Fixed at OFF
7	OFF	Fixed at OFF
8	ON	Fixed at ON

It is possible to change the settings of DIP-SW1-1 (Auto line feed) and DIP-SW1-2 (Specification of the received buffer capacity), but it is recommended to leave them OFF.

Set DIP-SW2-3 and DIP-SW2-4 (Specification of the print density) to match the environment of use.

Make other settings in accordance with the settings described above.

When the recommended liner-free label is used in TM-T88IVReStick, set DIP-SW2-3 and DIP-SW2-4 to ON.

When parallel I/F is used with Windows 2000, Windows XP or Windows Vista, please set DIP-SW2-1 (BUSY condition) to ON (Receive buffer full).

USB Port

DIP-SW1

No.	Setting
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	OFF

Recommended
Recommended
Fixed at OFF
Fixed at OFF
Fixed at OFF
Fixed at OFF
Fixed at OFF
Fixed at OFF

DIP-SW2

No.	Setting
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	ON

Recommended
Fixed at OFF
Settable
Settable
Fixed at OFF
Fixed at OFF
Fixed at OFF
Fixed at ON

It is possible to change the settings of DIP-SW1-1 (Auto line feed) and DIP-SW1-2 (Specification of the received buffer capacity), but it is recommended to leave them OFF.

Set DIP-SW2-3 and DIP-SW2-4 (Specification of the print density) to match the environment of use.

Make other settings in accordance with the settings described above.

When the recommended liner-free label is used in TM-T88IVReStick, set DIP-SW2-3 and DIP-SW2-4 to ON.

Ethernet Port

DIP-SW1

No.	Setting
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	OFF

Recommended
Recommended
Fixed at OFF
Fixed at OFF
Fixed at OFF
Fixed at OFF
Fixed at OFF
Fixed at OFF

DIP-SW2

No.	Setting
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	ON

Recommended
Fixed at OFF
Settable
Settable
Fixed at OFF
Fixed at OFF
Fixed at OFF
Fixed at ON

It is possible to change the settings of DIP-SW1-1 (Auto line feed) and DIP-SW1-2 (Specification of the received buffer capacity), but it is recommended to leave them OFF.

Set DIP-SW2-3 and DIP-SW2-4 (Specification of the print density) to match the environment of use.

Make other settings in accordance with the settings described above.

When the recommended liner-free label is used in TM-T88IVReStick, set DIP-SW2-3 and DIP-SW2-4 to ON.

2.3 Port Information

1) Port information when serial port is used

The port information that can be set with the SetupPOS utility is as follows.

Item	Setting range
Baud rate [bps]	4800, 9600, 19200, 38400, 57600, 115200
Bit length [bit]	8
Parity	NONE, ODD, EVEN
Stop bit [bit]	1
Handshake	DTR/DSR
Output buffer length [byte]	32 to 1024
Output interval time [ms]	0 to 9999

The default settings are as shown in the following table.

Item	Setting range
Baud rate [bps]	9600
Bit length [bit]	8
Parity	NONE
Stop bit [bit]	1
Handshake	DTR/DSR
Output buffer length [byte]	1024
Output interval time [ms]	2500

2) Port information when using parallel port

The port information that can be set with the SetupPOS utility is as follows.

Item	Setting range
Output buffer length [byte]	32 to 1024
Output interval time [ms]	0 to 9999

The default settings are as shown in the following table.

Item	Setting range
Output buffer length [byte]	1024
Output interval time [ms]	2500

3) Port information when using USB port

The port information that can be set with the SetupPOS utility is as follows.

Item	Setting range
Output interval time [ms]	0 to 9999

The default setting is as shown in the following table.

Item	Setting range
Output interval time [ms]	2500

4) Port information when using Ethernet port

The port information that can be set with the SetupPOS utility is as follows.

Item	Setting range
Output buffer length [byte]	32 to 1024
Output interval time [ms]	0 to 9999

The default settings are as shown in the following table.

Item	Setting range
Output buffer length [byte]	1024
Output interval time [ms]	2500

2.4 Device Settings

The following explanation is about the settings for the TM-T88IVReStick.

2.4.1 Usable Device Specific Settings

For the TM-T88IVReStick, the following device specific settings are settable by the SetupPOS utility. For the detail, please refer to the corresponding part of the Section 2 of “EPSON OPOS ADK MANUAL APPLICATION DEVELOPMENT GUIDE POSPrinter (TM Series)”

Tab	Settings
General	Disable panel buttons
	Assume print complete when data output finishes
	Homogenize Error Codes ^{*1}
	Ignore firmware version check
	Output complete timeout [s]
Paper	Paper Type
	Paper Width [mm]: LineWidth [dot]: LineCharsList
Bitmap	TMFlogo...
Color Bitmap	Halftone: Method
	Halftone: Brightness
	Color: Primary
Status Log	ERROR
	OFFLINE
	Log file name (full path name)
	Maximum file size [KB]
Default Value	Multilingual font
Printing Properties	Receipt Characters per Line
	Receipt Line Spacing [dots]
	CharacterSet [CodePage Number]

^{*1} The settings can be changed when using a connection other than serial.

2.4.2 Paper Type Setting

The TM-T88IVReStick supports the following paper type. After adding the TM-T88IVReStick by the SetupPOS utility, open the “Device Specific Settings” dialog box. In the “Paper” tab the paper type could be selected.

- ReStick
- Normal

The default paper type is set to ReStick.

2.4.3 Paper Width Setting

The TM-T88IVReStick supports the following paper width. After adding the TM-T88IVReStick by the SetupPOS utility, open the “Device Specific Settings” dialog box. In the “Paper” tab the paper width could be selected.

- 79.5mm [Print width: 576 dots]
- 57.5mm [Print width: 420 dots]

The default paper width is set to 79.5 mm.

Section 3. Function Details

This section describes the functions of the TM-T88IVReStick in details. Supplementary explanation of the parts not described in detail in the "UPOS" is also given here.

3.1 Property Set Values and Default Values

The following explanation is about the property set values and the default values.

3.1.1 Capability Set Values

The following values are the Capability set values.

Capability Name	Setting Value
CapTransaction	TRUE
CapCoverSensor	TRUE
CapConcurrentRecSlp	FALSE
CapConcurrentJrnSlp	FALSE
CapConcurrentJrnRec	FALSE
CapConcurrentPageMode	FALSE
CapCharacterSet	PTR_CCS_UNICODE
CapMapCharacterSet	TRUE
CapJrnUnderline	FALSE
CapJrnNearEndSensor	FALSE
CapJrnItalic	FALSE
CapJrnEmptySensor	FALSE
CapJrnDwideDhigh	FALSE
CapJrnDwide	FALSE
CapJrnDhigh	FALSE
CapJrnColor	0
CapJrnCartridgeSensor	0
CapJrnBold	FALSE
CapJrn2Color	FALSE
CapJrnPresent	FALSE
CapRecPageMode	TRUE
CapRecUnderline	TRUE
CapRecStamp	FALSE
CapRecRotate180	TRUE
CapRecRight90	TRUE
CapRecPapercut	TRUE

CapRecNearEndSensor	(thermal roll paper) (liner-free label)	TRUE FALSE
CapRecMarkFeed	0	
CapRecLeft90	TRUE	
CapRecItalic	FALSE	
CapRecEmptySensor	TRUE	
CapRecDwideDhigh	TRUE	
CapRecDwide	TRUE	
CapRecDhigh	TRUE	
CapRecColor	PTR_COLOR_PRIMARY	
CapRecCartridgeSensor	0	
CapRecBold	TRUE	
CapRecBitmap	TRUE	
CapRecBarCode	TRUE	
CapRec2Color	FALSE	
CapRecPresent	TRUE	
CapRecRuledLine	FALSE	
CapSlpUnderline	FALSE	
CapSlpRotate180	FALSE	
CapSlpRight90	FALSE	
CapSlpNearEndSensor	FALSE	
CapSlpLeft90	FALSE	
CapSlpItalic	FALSE	
CapSlpEmptySensor	FALSE	
CapSlpDwideDhigh	FALSE	
CapSlpDwide	FALSE	
CapSlpDhigh	FALSE	
CapSlpColor	0	
CapSlpCartridgeSensor	0	
CapSlpBothSidesPrint	FALSE	
CapSlpBold	FALSE	
CapSlpBitmap	FALSE	
CapSlpBarCode	FALSE	
CapSlp2Color	FALSE	
CapSlpFullslip	FALSE	
CapSlpPresent	FALSE	
CapSlpPageMode	FALSE	
CapSlpRuledLine	FALSE	

3.1.2 List Properties

The List Properties are explained in the following.

List Property	Settings
CharacterSetList	"255,437,850,852,858,860,863,865,866,997 ^{*1} ,998,999,1252"
JrnLineCharsList	""
RecLineCharsList	79.5mm (Font A) "48" <Default> (Font B) "64" (Font C) "57" 57.5mm (Font A) "35" <Default> (Font B) "46" (Font C) "42"
SlpLineCharsList	""
RecBarCodeRotationList	"0,R90, L90, 180"
RecBitmapRotationList	"0,R90, L90, 180"
SlpBarCodeRotationList	""
SlpBitmapRotationList	""
FontTypefaceList	""

^{*1} All characters loaded in the device are allocated to Unicode for printing. However, the BinaryConversion property should be set to "OPOS_BC_NONE" when printing with Unicode.

3.1.3 Width and Height Properties

The width and height properties are described below.

Property	Settings		
	Default Value	Maximum value [dot]	Minimum value [dot]
RecLineSpacing	30	127	24 ^{*1}
JrnLineSpacing	X	X	X
SlpLineSpacing	X	X	X
SlpLineHeight [dot]	X		
RecLineHeight [dot]	(Font A)	24	
	(Font B)	17	
	(Font C)	24	
JrnLineHeight [dot]	X		
SlpLineWidth [dot]	X		
RecLineWidth [dot]	(79.5mm)	576	
	(57.5mm)	420	
JrnLineWidth [dot]	X		
RecSidewaysMaxLines	(79.5mm)	19 ^{*2}	
	(57.5mm)	14 ^{*2}	
RecSidewaysMaxChars	(Font A)	138 ^{*3}	
	(Font B)	184 ^{*3}	
	(Font C)	166 ^{*3}	
RecLinesToPaperCut	5 ^{*4}		
SlpSidewaysMaxLines	X		
SlpSidewaysMaxChars	X		
SlpMaxLines	X		

X: No settings

^{*1} When Font A is selected. In the case of a line thermal station, the Line Spacing setting is identical with the height of the characters which means that it can be set at up to 17 when Font B is selected.

^{*2} It can be changed by the settings of the RecLineSpacing or the RecLineHeight.

^{*3} It can be changed by the settings of the font width.

^{*4} It can be changed by the settings of the RecLineSpacing or the character height.

3.1.4 Common Property Strings

The Device information properties are described below.

I/F	DeviceName	DeviceDescription
S	TM-T88IVReStick	EPSON TM-T88IVRestick POS Printer
P	TM-T88IVReStickP	EPSON TM-T88IVReStickP POS Printer
U	TM-T88IVReStickU	EPSON TM-T88IVReStickU POS Printer
E	TM-T88IVReSticke	EPSON TM-T88IVReSticke POS Printer

I/F indicate the connected interface.

The following is the list of the four connecting interfaces.

S: Serial

P: Parallel

U: USB

E: Ethernet

3.1.5 PageMode Print Properties

The Device information properties are described below.

Property	Station ^{*2}		
	Journal	Receipt	Slip
PageModeArea	-	<79.5mm> "576", "1662" <57.5mm> "420", "1662"	-
PageModeDescriptor ^{*1}	-	BM/BC/BMR/BCR	-

^{*1} Following setting values are used for the PageModeDescriptor property.

BM: Bitmap printing is available.

BC: Barcode printing is available.

BMR: Rotated printing of bitmap is available.

BCR: Rotated printing of barcode is available.

^{*2} If the Station's CapRecPageMode property value is FALSE, the PageModeArea property shall have " " and the PageModeDescriptor property shall have "0" respectively as a setting value.

3.2 Methods

The following explanation is about supported/unsupported Methods, and the detailed information.

Method	Supported/Unsupported	Compatibility with the PageMode printing
PrintNormal	O	O
PrintTwoNormal	X	X
PrintImmediate	O	O ^{*1}
PrintBarCode	O	O ^{*2}
PrintBitmap	O	O ^{*3}
PrintMemoryBitmap	O	O ^{*3}
CutPaper	O (1~100: Cutting with one point of the bottom left corner uncut)	X
MarkFeed	X	X
ChangePrintSide	X	X
ValidateData	O	O
TransactionPrint	O	O
SetLogo	O	O
SetBitmap	O	O
RotatePrint	O	X
EndRemoval	X	X
BeginRemoval	X	X
EndInsertion	X	X
BeginInsertion	X	X
ClearPrintArea	O	O
PageModePrint	O	O
DrawRuledLine	X	X

O:Supported

X:Unsupported

^{*1} If the specified Station is ready to print, the printing data shall not be stored in the PageMode printing buffer but, instead, go straight to printing. If the Station is not ready to print, an error is returned.

^{*2} If other than "LEFT" is specified for the printing position of barcode, the printing shall be done, regardless of the PageModeHorizontalPosition property setting, based on the PageModePrintArea property setting in the horizontal direction.

^{*3} If other than "LEFT" is specified for the printing position of bitmap, the printing shall be done, regardless of the PageModeHorizontalPosition property setting, based on the PageModePrintArea property setting in the horizontal direction.

3.3 Escape Sequences

The following figure is about supported/unsupported Escape Sequences.

Escape Sequence	Supported/Unsupported	Compatibility with the PageMode printing
#P	0~100	X
#fP	0~100	X
#sP	X	X
sL	X	X
#B	O	O
tL	O	O
bL	O	O
[*]#R	O	O
#lF	0~9999	O
#uF Base Pitch [inch]	0~ equiv. 50 cm	O
#rF Maximum [inch]	X	X
[*]#E	0~65535	X
#fT	X	X
bC	O	O
!bC	O	O
#uC	1~2	O
iC	X	X
!iC	X	X
#rC	X	X
rvC	O	O
!rvC	O	O
#sC	X	X
#fC	X	X
tbC	X	X
!tbC	X	X
tpC	X	X
!tpC	X	X
1C	O	O
2C	O	O
3C	O	O
4C	O	O
#hC	1~8	O
#vC	1~8	O
cA	O	O ^{*1}
rA	O	O ^{*1}
lA	O	O
#stC	1	1
!stC	O	O
*#dL	X	X
N	O	O

O :Supported

X :Unsupported

Numbers: Settable range

^{*1} Regardless of the PageModeHorizontalPosition property setting, center or right adjust what is to be printed based on the PageModePrintArea property setting in the horizontal direction.

3.4 Printable Barcode Type

The TM-T88IVReStick allows the following barcode types.

- Code 128
- Code 128 Parsed
- Code 93
- Codabar
- ITF
- Code 39
- JAN 13 (EAN 13)
- JAN 8 (EAN 8)
- UPC-E
- UPC-A
- PDF417 *¹
- QRCODE *¹

*¹ Not available with the recommended liner-free label.

3.5 Power Condition Reports

The TM-T88IVReStick supports Power Condition Reports as follows.

Powered on reporting: Supported

Powered off reporting: Unsupported

3.6 Synchronous Processing

The TM-T88IVReStick uses Process ID to determine output completion.

Use of the Process ID allows multiple print commands to be queued to the printer simultaneously. For this reason, Asynchronous output (AsyncMode = TRUE) gives a performance improvement.

3.7 Printing Positions

The TM-T88IVReStick supports the function for setting printing position.

Function	Receipt
Left margin	O
Printing Position	O

O: Supported

X: Unsupported

When the left margin setting function is supported, it is possible to specify the horizontal printing position of the bitmap or barcode by dots unit.

When the printing position settings are supported, it is possible to specify the horizontal printing position of the text, bitmap, or the barcode to the left, center, or the right side of the paper.

3.8 Electronic Logo Function (NVRAM)

The TM-T88IVReStick features an electronic logo function (NVRAM). To use NVRAM, start up TMFlogo utility from “Device Specific Settings” of SetupPOS utility, and register image files (BMP style) with NVRAM in advance.

For the details of the registration, please refer to the “Help” of “TMFlogo utility” and/or “EPSON OPOS ADK MANUAL User’s Manual TMFlogo Utility”.

To print image files registered with NVRAM, please use the either of the following

DirectIO:

PTR_DI_FLASH_BITMAP

PTR_DI_FLASH_BITMAP2.

Please refer to the corresponding part of the Section 4 of “EPSON OPOS ADK MANUAL APPLICATION DEVELOPMENT GUIDE POSPrinter (TM Series)” for detail. The available NVRAM sizes are as follows:

262144 bytes

3.9 Printable bitmap types and sizes

The TM-T88IVReStick supports the following bitmap commands. For the detail, please refer to the corresponding part of the Section 3 of “EPSON OPOS ADK MANUAL APPLICATION DEVELOPMENT GUIDE POSPrinter (TM Series)”. The allowance ranges for bitmaps are as follows.

Bitmap command type	Allowance range		
	X (dot)	y (dot)	xy
Download bitmap	1~2040	1~384	<= 98304
Raster bitmap	1~2048	1~1023	
One-line bitmap	No setting range		

3.10 Color Bitmap Printing

The TM-T88IVReStick not supports color bitmap printing.

3.11 Maintenance Counter

The TM-T88IVReStick features a maintenance counter function for retaining an operation log of the printer.

The following chart shows the available maintenance counters for the TM-T88IVReStick.

Counter number Hexadecimal	Counter	Unit	Max. Value	Counter Type
14	Paper feed in number of lines: Roll paper	Lines	143,165,576	Resettable
15	Number of times head timing pulse: Roll paper	Times	4,294,967,295	Resettable
32	Number of auto-cutter operations	Times	4,294,967,295	Resettable
46	Uptime of product	Hours	71,582,788	Resettable
94	Number of paper feed lines: Roll paper	Lines	143,165,576	Cumulative
95	Number of times head timing pulse: Roll paper	Times	4,294,967,295	Cumulative
B2	Number of auto-cutter operations	Times	4,294,967,295	Cumulative
C6	Uptime of product	Hours	71,582,788	Cumulative

3.12 Automatic Recovery Function

The TM-T88IVReStick features a function for automatic recovery when the power is turned on again after an interruption of power. Recovery processing is performed automatically when the printer's power is turned on again after an interruption. The recovery processing restores the printer to the condition it was in before the power was turned off.

3.13 Output without Flow Control on the USB/Ethernet Interfaces

The TM-T88IVReStick supports outputting without flow control on the USB/Ethernet interfaces. The operations differ by the firmware versions. See the corresponding part of the section 2 of this manual.

Section 4. Warnings

This section describes precautions in use of the TM-T88IVReStick.

- If “ReStick” is selected as the Paper in the “Device Specific settings” dialog in SetupPOS, the recommended liner-free label must be used in the printer.