

EPSON OPOS ADK MANUAL

APPLICATION DEVELOPMENT GUIDE

POSPrinter (TM-T70)

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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-T70 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-T70	TM-T70P	TM-T70U	TM-T70E
TM-T70M	TM-T70PM	TM-T70MU	TM-T70ME

Before reading the manual, see the following explanation about the characteristic of the TM-T70 models.

TM-T70:

Station: Receipt (Line Thermal 180 dpi X 180 dpi)

TM-T70M:

Station: Receipt (Line Thermal 203 dpi X 203 dpi)

Throughout the manual, the various model names will be referred to as TM-T70.

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-T70 Series printers.

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.

1) 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	ON	Settable

DIP-SW2

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	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-SW2-3 and DIP-SW2-4 (Specification of the print density) to match the environment of use.
- DIP-SW2-2 is not used. Fix them OFF.
- When using with the power saving mode, set DIP-SW2-3 and DIP-SW2-4 to ON.
- Make other settings in accordance with the settings described above.

2)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.
- When using with the power saving mode, set DIP-SW2-3 and DIP-SW2-4 to ON.
- Make other settings in accordance with the settings described above.
- 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).

3)USB Port

DIP-SW1

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-SW2

No.	Setting	
1	OFF	Recommended
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.
- When using with the power saving mode, set DIP-SW2-3 and DIP-SW2-4 to ON.
- Make other settings in accordance with the settings described above.

4)Ethernet Port

DIP-SW1

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-SW2

No.	Setting	
1	OFF	Recommended
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.
- When using with the power saving mode, set DIP-SW2-3 and DIP-SW2-4 to ON.
- Make other settings in accordance with the settings described above.

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]	2400, 4800, 9600, 19200, 38400, 57600, 115200
Bit length [bit]	8
Parity	NONE, ODD, EVEN
Stop bit [bit]	1
Handshake	DTR/DSR

The default settings are as shown in the following table.

Item	Setting range
Baud rate [bps]	115200
Bit length [bit]	8
Parity	NONE
Stop bit [bit]	1
Handshake	DTR/DSR

2) Port information when using parallel port

Not applicable

3) Port information when using USB port

Not applicable

4) Port information when using Ethernet port

Not applicable

2.4 Device Settings

The following explanation is about the settings for TM-T70.

2.4.1 Usable Device Specific Settings

For the TM-T70, 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
Bitmap	TMFlogo...
	NVRAM
Color Bitmap	Halftone: Method
	Halftone: Brightness
	Color: Primary
Status Log	ERROR
	OFFLINE
	Log file name (full path name)
	Maximum file size [KB]
Default Value ^{*2}	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} Available only for the Multilingual character model.

2.4.2 Multilingual font Setting

The TM-T70 Multilingual character models support the following font type.

- CHINA GB18030
- TAIWAN BIG-5
- VIETNAMESE
- THAI 3 PASS
- THAI 1 PASS

The default paper type is set to CHINA GB18030.

Section 3. Function Details

This section describes the functions of the TM-T70 printers 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* ¹
CapMapCharacterSet	TRUE* ²
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	TRUE
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

*1 If CHINA GB18030 character model or TAIWAN BIG-5 character model or Thai 1 Pass character model, "PTR_CCS_KANJI" is set.

*2 If CHINA GB18030 character model or TAIWAN BIG-5 character model or Thai 1 Pass character model, "FALSE" is set

3.1.2 List Properties

The List Properties are explained in the following.

List Property	Settings
CharacterSetList	(TM-T70) "255,437,850,852,858,860,863,865,866,998,999,1252" *1*5 (TM-T70M) *2 "120,121,126,130,131,437,997" *3 "437,874" *4
JrnLineCharsList	"437"
RecLineCharsList	(TM-T70) "42,56" (TM-T70M) "48,64"
SlpLineCharsList	"437"
RecBarCodeRotationList	"0,R90, L90, 180"
RecBitmapRotationList	"0,R90, L90, 180"
SlpBarCodeRotationList	"437"
SlpBitmapRotationList	"437"
FontTypefaceList	"437"

*1 If Multilingual character model, "936" or "950" is added to the list.

*2 Device is limited to South Asia model.

*3 Available only for Thai3 Pass mode and Vietnamese

*4 Available only for Thai1 Pass mode.

*5 When the CapCharacterSet property is set to "PTR_CCS_UNICODE," "997" is added to the list. When CharacterSet is set to "997," 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]	24,17		
JrnLineHeight [dot]	X		
SlpLineWidth [dot]	X		
RecLineWidth [dot]	(TM-T70) 512 (TM-T70M) 576		
JrnLineWidth [dot]	X		
RecSidewaysMaxLines	17 ^{*2}		
RecSidewaysMaxChars (When Font A is selected)	138		
RecSidewaysMaxChars (When Font B is selected)	184		
RecLinesToPaperCut	5 ^{*3}		
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 RecLineSpacing or the character height.

3.1.4 Common Property Strings

The Device information properties are described below.

I/F	DeviceName	DeviceDescription
S	TM-T70	EPSON TM-T70 POS Printer
	TM-T70M	EPSON TM-T70M POS Printer
P	TM-T70P	EPSON TM-T70P POS Printer
	TM-T70PM	EPSON TM-T70PM POS Printer
U	TM-T70U	EPSON TM-T70U POS Printer
	TM-T70MU	EPSON TM-T70MU POS Printer
E	TM-T70E	EPSON TM-T70E POS Printer
	TM-T70ME	EPSON TM-T70ME 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	-	(TM-T70) "512", "1662" (TM-T70M) "576", "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 and/or CapSlpPageMode property values are 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
#IF	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
#uC	1~2	O
[!]iC	X	X
#rC	1	O
[!]rvC	O	O
#sC	X	X
#fC	X	X
[!]tbC	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
*#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-T70 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
- QRCODE

3.5 Power Condition Reports

The TM-T70 support Power Condition Reports as follows.

Powered on reporting: Supported.

Powered off reporting: Unsupported.

3.6 Synchronous Processing

The TM-T70 using 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-T70 support 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-T70 models feature 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_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-T70 support 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		
Download bitmap	x (dot)	y (dot)	xy
	1~2040	1~384	<=98304
Raster bitmap	1~65535	1~1023	
One-line bitmap	No setting range		

Even if meet with the limitation described above, a bitmap that extend the paper width cannot be printed.

3.10 Maintenance Counter

The TM-T70 models feature a maintenance counter function for retaining an operation log of the printer.

The following chart shows the available maintenance counters for the TM-T70.

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

3.11 Automatic Recovery Function

The TM-T70 models feature 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.

3.12 Output without Flow Control on the USB/Ethernet Interfaces

The TM-T70 support 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 TM-T70.

- When using the built-in buzzer model of TM-T70 with network connection, always use a UB-E02 or UB-R02 interface board. If a device is connected via an other interface board, Epson will not be responsible for any consequences.
- Thai1 Pass mode printing:
If print data remains in the printer buffer when printing is executed (i.e. The line feed for the print data was not completed), it is possible that the result will not be printed correctly.