

**EPSON OPOS ADK MANUAL**

# **APPLICATION DEVELOPMENT GUIDE**

## **POSPrinter (TM-P20)**

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# Section 1. Introduction

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This manual describes the method of use and related items, as well as machine-specific precautions, when the EPSON TM-P20 POSPrinter are used with the EPSON OPOS ADK program.

This manual applies to the following devices.

## Device List

USB	IEEE 802.11	Bluetooth
TM-P20U	TM-P20W	TM-P20B
TM-P20MU	TM-P20MW	TM-P20MB

Before reading the manual, see the following explanation about the characteristic of the TM-P20 models.

- TM-P20  
Station: Receipt (Line Thermal 203 dpi X 203 dpi)

Throughout the manual, the various model names will be referred to as TM-P20.

## 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

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This section describes connection configurations and how to make the settings for the TM-P20 printers.

### 2.1 Reference Versions of Firmware

Refer to the release notes (Relnote.txt).

### 2.2 Settings of DIP Switches

Not applicable

### 2.3 Port Information

#### 1) Port information when using USB port

Not applicable

#### 2) Port information when using Bluetooth port

Not applicable

#### 3) Port information when using IEEE 802.11 port

Not applicable

## 2.4 Device Settings

The following explanation is about the settings for TM-P20.

### 2.4.1 Usable Device Specific Settings

For the TM-P20, the following Device Specific Settings are settable by the SetupPOS utility. For more details on each setting, refer to the Section 2 in the Application Development Guide (POSPrinter EPSON TM series).

Tab	Settings
General	Disable panel buttons
	Assume print complete when data output finishes
	Ignore firmware version check
	Homogenize Error Codes
	Output complete timeout
Paper	Paper Width [mm]: LineWidth [dot]: LineCharsList
Bitmap	TM-P20Utility
	NVRAM
Color Bitmap	Method
	Brightness
	Primary
Status Log	ERROR
	OFFLINE
	Log file name (full path name)
	Maximum file size [KB]
Printing Properties	Receipt Characters per Line
	Receipt Line Spacing [dots]
	CharacterSet [CodePage Number]

## Section 3. Function Details

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This section describes the functions of the TM-P20 printer 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 setting values and the default values.

#### 3.1.1 Capability Set ValuesList Properties

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* <sup>2</sup>
CapMapCharacterSet	TRUE* <sup>3</sup>
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	FALSE
CapRecNearEndSensor	FALSE
CapRecMarkFeed* <sup>1</sup>	0 PTR_MF_TO_NEXT_TOF
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 The setting values of CapRecMarkFeed differ depending on the device state and the paper type in the case of the TM-P20.

Please refer to “3.13 MarkFeed function” of this manual for details.

\*2 If CHINA GB18030 character model or TAIWAN BIG-5 character model or Thai 1 Pass character model, “PTR\_CCS\_KANJI” is set.

\*3 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-P20, TM-P20M <sup>*1,2</sup> ) "120, 121, 126, 130, 131, 150, 151, 152, 153, 154, 155, 254, 255, 437, 720, 737, 775, 850, 851, 852, 853, 855, 857, 858, 860, 861, 862, 863, 864, 865, 866, 869, 874, 997, 998, 999, 1098, 1125, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258" (TM-P20M <sup>*3</sup> ) "120, 121, 126, 130, 131, 437, 997" <sup>*4</sup> "437, 874" <sup>*5</sup>
JrnLineCharsList	" "
RecLineCharsList	"32, 38, 42, 48"
SlpLineCharsList	" "
RecBarCodeRotationList	"0, R90, L90, 180"
RecBitmapRotationList	"0, R90, L90, 180"
SlpBarCodeRotationList	" "
SlpBitmapRotationList	" "
FontTypefaceList	" "

<sup>\*1</sup> If Multilingual character model, "936" or "950" is added to the list.

<sup>\*2</sup> 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.

<sup>\*3</sup> Device is limited to South Asia model.

<sup>\*4</sup> Available only for Thai3 Pass mode and Vietnamese.

<sup>\*5</sup> Available only for Thai1 Pass mode.

### 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	24,17,16 <sup>*1</sup>
JrnLineSpacing	X	X	X
SlpLineSpacing	X	X	X
SlpLineHeight [dot]	X		
RecLineHeight [dot]	24,17 <sup>*4</sup> ,16		
JrnLineHeight [dot]	X		
SlpLineWidth [dot]	X		
RecLineWidth [dot]	384		
JrnLineWidth [dot]	X		
RecSidewaysMaxLines <sup>*2</sup>	13		
RecSidewaysMaxChars (When RecLineChars"32" is selected)	200		
RecSidewaysMaxChars (When RecLineChars"38" is selected)	240		
RecSidewaysMaxChars (When RecLineChars"42" is selected)	266		
RecSidewaysMaxChars (When RecLineChars"48" is selected)	300		
RecLinesToPaperCut	3 <sup>*3</sup>		
SlpSidewaysMaxLines	X		
SlpSidewaysMaxChars	X		
SlpMaxLines	X		

X : No settings

<sup>\*1</sup> In the case of a line thermal station, the Line Spacing setting is identical with the height of the characters.

<sup>\*2</sup> It can be changed by the settings of the RecLineSpacing or the RecLineHeight.

<sup>\*3</sup> It can be changed by the settings of the RecLineSpacing or the character height.

<sup>\*4</sup> The case of setting the RecLineHeight to the "17", please set it after setting the RecLineChars to the "42".

### 3.1.4 Common Property Strings

The Device information properties are described below.

I/F	DeviceName	DeviceDescription
U	TM-P20U	EPSON TM-P20U POS Printer
	TM-P20MU	EPSON TM-P20MU POS Printer
W	TM-P20W	EPSON TM-P20W POS Printer
	TM-P20MW	EPSON TM-P20MW POS Printer
B	TM-P20B	EPSON TM-P20B POS Printer
	TM-P20MB	EPSON TM-P20MB POSPrinter

I/F shows the connected interface.

There are four types of the connecting interfaces as follows:

U: USB

W: IEEE 802.11

B: Bluetooth

### 3.1.5 PageMode Print Properties

The Device information properties are described below.

Property	Station <sup>*2</sup>		
	Journal	Receipt	Slip
PageModeArea	-	"384", "2400"	-
PageModeDescriptor <sup>*1</sup>	-	BM/BC/BMR/BCR	-

<sup>\*1</sup> 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.

<sup>\*2</sup> 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 <sup>*1</sup>
PrintBarCode	O	O <sup>*2</sup>
PrintBitmap	O	O <sup>*3</sup>
PrintMemoryBitmap	O	O <sup>*3</sup>
CutPaper	X	X
MarkFeed	O	O
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

O : Supported

X : Unsupported

<sup>\*1</sup> 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.

<sup>\*2</sup> 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.

<sup>\*3</sup> 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	Support	Compatibility with the PageMode printing
#P	X	X
#fP	0~100	X
#sP	X	X
sL	X	X
#B	O	O
tL	O	O
bL	O	O
[*]#R	O	O
#fF	0~9999	O
#uF Base Pitch [inch]	0~ approx. 50 cm	O
#rF Maximum [inch]	X	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
[*]#E	0~65535	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	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-P20 allow 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
- MAXI CODE
- GS1-Data
- GS1-Data Expanded
- GS1-128
- GS1-Data Truncated
- GS1-Data Limited
- GS1-Data Stacked
- GS1-Data Stacked Omnidirectional
- GS1-Data Expanded Stacked
- Composite
- AztecCode
- DatamatrixCode

### 3.5 Power Conditions Report

The TM-P20 supports Power Conditions Report as follows.

Powered on reporting: Supported (Available by the manufacturer settings.)

Powered off reporting: Supported (Available by the manufacturer settings.)

The manufacturer settings are automatically set.

### 3.6 Synchronous Processing

The TM-P20 support the Process ID for the Synchronous Processing.

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 Print Position

The TM-P20 supports the function for setting printing position.

Function	Support
Left margin	O
Print position	O

O : Supported

X : Unsupported

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

When supports the printing position settings, 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-P20 models feature an electronic logo function (NVRAM). To use NVRAM, start up TM Bluetooth connector 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 “TM-P20 Utility User's Manual”.

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:

TM-P20 : 384K bytes

### 3.9 Printable bitmap types and the specified size

The TM-P20 models support the following bitmap commands. For the detailed information about the each command, refer to the Section 2 in the Application Development guide (POSPrinter EPSON TM Series). The allowance ranges for bitmaps are as follows.

Bitmap command type	Allowance range		
	X	Y	xy
NV bitmap	1~8192	1~2304	
Raster bitmap	1~8192	1~2304	

### 3.10 Maintenance Counter

The TM-P20 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-P20.

Counter number Hexadecimal	Counter	Unit	Max Value	Counter Type
14	Number of line feeds	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 line feeds	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-P20 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 IEEE 802.11 interfaces

The TM-P20 models support outputting without flow control on the IEEE 802.11 interfaces.

### 3.13 MarkFeed function

The operations of the CapRecMarkFeed and the MarkFeed method is as follows.

Paper Type	CapRecMarkFeed
Roll paper	0
Black marked roll paper	PTR_MF_TO_NEXT_TOF



## Section 4. Warnings

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This section describes precautions in use of TM-P20.

When the power is turned on or off while using a Bluetooth connection, the recovery process might take time to complete.

The TM-P20 status becomes busy only when the buffer is full. This behavior cannot be changed. Thus, it is not considered to be offline when the status is set to "cover open" and "no paper."

When using the TM-P20, the following StatusUpdateEvent that indicates loading condition of battery cartridge may not be fired.

PTR\_SUE\_BATTERY\_REMOVED : Battery Cartridge is unloaded