

EPSON OPOS ADK MANUAL

**APPLICATION DEVELOPMENT
GUIDE**

POSPrinter (TM-P20II)

Version 3.00 June 2022

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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-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-P20IIU	TM-P20IIW	TM-P20IIB
TM-P20IIMU	TM-P20IIMW	TM-P20IIMB
TM-P20II_MltFontU	TM-P20II_MltFontW	TM-P20II_MltFontB

Before reading the manual, see the following explanation about the characteristic of the TM-P20II/ TM-P20II_MltFont models.

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

Throughout the manual, the various model names will be referred to as TM-P20II.

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”.

Multilingual printing

TM-P20II support following methods for multilingual printing.

- Single multilingual printing
- MultiFont Printing

Single multilingual printing

Either “Simplified Chinese”, “Traditional Chinese” or “South Asia language” can be printed.

It cannot be used depending on the destination.

MultiFont printing

See [Section 4. MultiFont Printing](#) for a detailed explanation.

Section 2. Details on Settings

This section describes connection configurations and how to make the settings for the TM-P20II 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.

2.4.1 Registered name

If you use single multilingual printing, select the device of "M" in SetupPOS.

If you use MultiFont printing, select the device of "MltFont" in SetupPOS.

e.g.:

Use MultiFont printing: Select "TM-P20II_MltFont"

Use single multilingual printing: Select "TM-P20IIM"

Not use multilingual printing: Select "TM-P20II"

To switch between the column emulation mode, use the Paper Type settings in SetupPOS.

2.4.2 Usable Device Specific Settings

For the TM-P20II, 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
Bitmap	Utility
	NVRAM
Color Bitmap	Method
	Brightness
	Primary
Status Log	ERROR
	OFFLINE
	Log file name (full path name)
	Maximum file size [KB]
Default Value ^{*1}	Multilingual font
Printing Properties	Receipt Characters per Line
	Receipt Line Spacing [dots]
	CharacterSet [CodePage Number]

^{*1} Available only for the Multilingual character model.

Section 3. Function Details

This section describes the functions of the TM-P20II 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 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* ³
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	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.

3.1.2 List Properties

The List Properties are explained in the following.

MultiFont registration:

List Property	Settings
CharacterSetList	120, 121, 126, 130, 131, 150, 151, 152, 153, 154, 155, 437, 720, 737, 775, 850, 851, 852, 853, 855, 857, 858, 860, 861, 862, 863, 864, 865, 866, 869, 932, 936, 949, 950, 997, 998, 999, 1098, 1125, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258
JrnLineCharsList	""
RecLineCharsList	"32, 38, 42, 48"
SlpLineCharsList	""
RecBarCodeRotationList	"0, R90, L90, 180"
RecBitmapRotationList	"0, R90, L90, 180"
SlpBarCodeRotationList	""
SlpBitmapRotationList	""
FontTypefaceList	""

Other than MultiFont registration:

List Property	Settings
CharacterSetList	120, 121, 126, 130, 131, 150, 151, 152, 153, 154, 155, 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 ^{*1*2} South Asia Model Only 120, 121, 126, 130, 131, 437, 997 ^{*3} 437, 874 ^{*4}
JrnLineCharsList	""
RecLineCharsList	"32, 38, 42, 48"
SlpLineCharsList	""
RecBarCodeRotationList	"0, R90, L90, 180"
RecBitmapRotationList	"0, R90, L90, 180"
SlpBarCodeRotationList	""
SlpBitmapRotationList	""
FontTypefaceList	""

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

^{*2} 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} Available only for Thai3 Pass mode and Vietnamese.

^{*4} 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 ^{*1}
JrnLineSpacing	X	X	X
SlpLineSpacing	X	X	X
SlpLineHeight [dot]	X		
RecLineHeight [dot]	24,17 ^{*4} ,16		
JrnLineHeight [dot]	X		
SlpLineWidth [dot]	X		
RecLineWidth [dot]	384		
JrnLineWidth [dot]	X		
RecSidewaysMaxLines ^{*2}	13		
RecSidewaysMaxChars	(LineChars"32" is selected) 200 (LineChars"38" is selected) 240 (LineChars"42" is selected) 266 (LineChars"48" is selected) 300		
RecLinesToPaperCut	3 ^{*3}		
SlpSidewaysMaxLines	X		
SlpSidewaysMaxChars	X		
SlpMaxLines	X		

X : No settings

^{*1} In the case of a line thermal station, the Line Spacing setting is identical with the height of the characters.

^{*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.

^{*4} 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.

DeviceName	DeviceDescription
TM-P20II○	EPSON TM-P20II○ POS Printer
TM-P20IIM○	EPSON TM-P20IIM○ POS Printer
TM-P20II_MltFont○	EPSON TM-P20II_MltFont○ POS Printer

In the ○ part, either U, W or B is entered.

U: USB

W: IEEE 802.11

B: Bluetooth

3.1.5 PageMode Print Properties

The Device information properties are described below.

Property	Station ^{*2}		
	Journal	Receipt	Slip
PageModeArea	-	"384", "2400"	-
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	X	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

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	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
#lF	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	0~1 ^{*2}	0~1 ^{*2}
*#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.

^{*2} MultiFont registration: X

Without MultiFont registration: O (0~1)

3.4 Printable Barcode Type

The types of barcodes that can be printed are as follows.

- Code 128
- Code 128 Parsed
- Code 93
- Codabar
- ITF
- Code 39
- JAN 13 (EAN 13)
- JAN 8 (EAN 8)
- UPC-E
- UPC-A
- PDF417
- QR CODE
- 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

3.4.1 Code128/ Code128 Parsed Printing

If the data does not contain a special character ("{"), size optimization will be performed.

In this case, the check of the Width parameter before printing is ignored.

As a result, if the barcode has too much data and exceeds the paper width, it may be fed without printing anything.

An example is shown below.

Data (example)	Size optimization	Width check
1234567890	O	X
{C1234567890	X	O

O: Applicable

X : Not applicable

3.5 Synchronous Processing

Process ID is used for synchronization 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.

3.6 Electronic Logo Function (NVRAM)

There are two ways to use the electronic logo function (NVRAM).

To use NVRAM, startup 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 “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: 384K bytes

3.7 Automatic Recovery Function

It has 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.

Section 4. MultiFont Printing

This section describes the details of MultiFont Printing and how to use it.

4.1 Supported Methods

- PrintNormal
- PrintImmediate
- SetLogo

4.2 Supported Languages

- Alphanumeric
- Japanese
- Simple Chinese
- Traditional Chinese
- Korean
- Thai

4.3 Priority Font

Support models search the print character code points in the following priority order.

The following is the default analysis priority of the language font.

Language Font	Analysis priority
ANK Font	1: priority: High
Japanese Font	2:
Korean Font	3:
Traditional Chinese Font	4:
Simple Chinese Font	5: priority: Low

Thai is treated the same as ANK font.

Therefore, even if the code point is the same, the typeface for each language may differ as shown below.

CodePoint	Japanese	Simple Chinese	Traditional Chinese	Korean
U+9AA8	骨	骨	骨	骨

As a result, depending on the analysis priority of the language font, printing may be performed in a typeface different from the typeface assumed by the application developer.

To avoid this, change the CharacterSet property in your application. Priority Font can be set as follows.

	932 Japanese	936 Simple Chinese	949 Korean	950 Traditional Chinese	Other
First priority Font	Japanese Font	Simple Chinese Font	Korean Font	Traditional Chinese Font	ANK Font
Second priority Font	ANK Font	ANK Font	ANK Font	ANK Font	Japanese Font

4.4 Precautions and Restrictions

- Set the application build to "Unicode Build".
※For "Unicode Build", refer to the manual of the development tool you use.
- When using the following functions, set the same value as the character code value specified in SetupPOS to the CharacterSet property.
 - RotatePrint
 - PageModePrint
 - Specify a character string that combines multiple ESC | IA, ESC | cA, and ESC | rA in one PrintNormal method.If the settings are incorrect, the following phenomena will occur.
 - The margin on the right edge becomes wider
 - Line breaks at unintended positions
- Strikethrough function of escape sequence (ESC | #stC) is not supported.
- If you want to use "U + 005C" as a half-width yen sign instead of a backslash, set the printer's international character set to "Japan" with the utility.

Section 5. Warnings

This section describes precautions in use of TM-P20II.

- When the power is turned on or off while using a Bluetooth connection, the recovery process might take time to complete.
- 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."
- The following StatusUpdateEvent that indicates loading condition of battery cartridge may not be fired.
PTR_SUE_BATTERY_REMOVED : Battery Cartridge is unloaded