

EPSON OPOS ADK MANUAL

**APPLICATION DEVELOPMENT
GUIDE**

**POSPrinter (TM-T20/TM-T20-42C/
TM-T20II/TM-T20II-42C/
TM-T20III/TM-T20III-42C)**

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Contents

| | |
|---|-----------|
| SECTION 1. INTRODUCTION | 1 |
| SECTION 2. DETAILS ON SETTINGS | 2 |
| 2.1 References of Firmware Versions | 2 |
| 2.2 Settings of DIP Switches | 2 |
| 2.3 Port Information | 2 |
| 2.4 Device Settings | 3 |
| <i>2.4.1 Usable Device Specific Settings.....</i> | <i>3</i> |
| SECTION 3. FUNCTION DETAILS | 4 |
| 3.1 Property Set Values and Default Values | 4 |
| <i>3.1.1 Capability Set Values.....</i> | <i>4</i> |
| <i>3.1.2 List Properties.....</i> | <i>6</i> |
| <i>3.1.3 Width and Height Properties</i> | <i>7</i> |
| <i>3.1.4 Common Property Strings.....</i> | <i>8</i> |
| <i>3.1.5 PageMode Print Properties.....</i> | <i>9</i> |
| 3.2 Methods | 10 |
| 3.3 Escape Sequences | 11 |
| 3.4 Printable Barcode Type | 12 |
| 3.5 MAXI CODE Printing..... | 13 |
| <i>3.5.1 Symbology Parameter.....</i> | <i>13</i> |
| <i>3.5.2 Printing Size.....</i> | <i>13</i> |
| <i>3.5.3 Printing Position</i> | <i>13</i> |
| <i>3.5.4 Data Format.....</i> | <i>13</i> |
| 3.6 QR CODE Printing | 16 |
| <i>3.6.1 QR CODE Printing.....</i> | <i>16</i> |
| <i>3.6.2 Printing Size.....</i> | <i>16</i> |
| <i>3.6.3 Error Correction Level.....</i> | <i>16</i> |
| <i>3.6.4 Printing Position</i> | <i>16</i> |
| 3.7 GS1 Printing (two dimension)..... | 17 |
| <i>3.7.1 Symbology Parameter.....</i> | <i>17</i> |
| <i>3.7.2 Printing Size.....</i> | <i>17</i> |
| <i>3.7.3 Printing Position</i> | <i>17</i> |
| <i>3.7.4 Data Format.....</i> | <i>17</i> |
| 3.8 COMPOSITE Printing..... | 18 |

| | |
|--|-----------|
| <i>3.8.1 Symbology Parameter</i> | 18 |
| <i>3.8.2 Printing Size</i> | 18 |
| <i>3.8.3 Printing Position</i> | 19 |
| <i>3.8.4 Data Format</i> | 19 |
| 3.9 Power Condition Reports..... | 20 |
| 3.10 Synchronous Processing..... | 20 |
| 3.11 Printing Positions..... | 20 |
| 3.12 Electronic Logo Function (NVRAM) | 20 |
| 3.13 Printable bitmap types and sizes..... | 21 |
| 3.14 Maintenance Counter..... | 21 |
| 3.15 Automatic Recovery Function..... | 22 |
| 3.16 Output without Flow Control on the USB/Ethernet Interfaces..... | 22 |
| SECTION 4. WARNINGS | 23 |

Section 1. Introduction

This manual describes the method of use and related items, as well as machine-specific precautions, when the EPSON TM-T20 and TM-T20II Series POS Printers are used with the EPSON OPOS ADK program.

This manual applies to the following devices.

Device List

| Serial | USB | Ethernet | Bluetooth |
|---------------|----------------|----------------|----------------|
| TM-T20 | TM-T20U | TM-T20E | - |
| TM-T20-42C | TM-T20-42CU | TM-T20-42CE | - |
| TM-T20II | TM-T20IIU | TM-T20IIIE | TM-T20IIB |
| TM-T20II-42C | TM-T20II-42CU | TM-T20II-42CE | TM-T20II-42CB |
| TM-T20III | TM-T20IIIU | TM-T20IIIE | TM-T20IIIB |
| TM-T20III-42C | TM-T20III-42CU | TM-T20III-42CE | TM-T20III-42CB |

Before reading the manual, see the following explanation about the characteristic of the TM-T20/TM-T20-42C/TM-T20II/TM-T20II-42C/TM-T20III/TM-T20III-42C printers.

- TM-T20/TM-T20-42C/TM-T20II/TM-T20II-42C/TM-T20III/TM-T20III-42C
Station: Receipt (Line Thermal 203 dpi X 203 dpi)

Throughout the manual, the various model names will be referred to as “TM-T20(II)(III)”.

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-T20(II)(III) printers.

2.1 References of Firmware Versions

Refer to the release notes (Relnote.txt/SupportedDevicesList.txt).

2.2 Settings of DIP Switches

Not applicable

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] | 38400 |
| Bit length [bit] | 8 |
| Parity | NONE |
| Stop bit [bit] | 1 |
| Handshake | DTR/DSR |

The baud rate setting of device is set using the TM-T20(II)(III) Utility. For details, please refer to the "TM-T20(II)(III) Utility User's Manual".

2) Port information when using USB port

Not applicable

3) Port information when using Ethernet port

Not applicable

4) Port information when using Bluetooth port

Not applicable

2.4 Device Settings

The following explanation is about the settings for TM-T20(II)(III).

2.4.1 Usable Device Specific Settings

For the TM-T20(II)(III) printers, 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... |
| | NVRAM |
| Color Bitmap | Halftone: Method |
| | Halftone: Brightness |
| | Color: 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] |

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

Section 3. Function Details

This section describes the functions of the TM-T20(II)(III) 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 |
| 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 | 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.

TM-T20/TM-T20II/TM-T20III:

| 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, 997 ^{*1} , 998, 999, 1098, 1125, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258" |
| JrnLineCharsList | {} ¹ |
| RecLineCharsList | 79.5mm: (Font A) "48" (Font B) "64" 57.5mm: (Font A) "35" (Font B) "46" |
| SlpLineCharsList | {} ¹ |
| RecBarCodeRotationList | "0,R90, L90, 180" |
| RecBitmapRotationList | "0,R90, L90, 180" |
| SlpBarCodeRotationList | {} ¹ |
| SlpBitmapRotationList | {} ¹ |
| FontTypefaceList | {} ¹ |

^{*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.

TM-T20-42C/TM-T20II-42C/TM-T20III-42C:

| 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, 997 ^{*1} , 998, 999, 1098, 1125, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258" |
| JrnLineCharsList | {} ¹ |
| RecLineCharsList | 79.5mm: (Font A) "42" (Font B) "60" 57.5mm: (Font A) "42" (Font B) "31" |
| SlpLineCharsList | {} ¹ |
| RecBarCodeRotationList | "0,R90, L90, 180" |
| RecBitmapRotationList | "0,R90, L90, 180" |
| SlpBarCodeRotationList | {} ¹ |
| SlpBitmapRotationList | {} ¹ |
| FontTypefaceList | {} ¹ |

^{*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.

TM-T20/TM-T20II/TM-T20III:

| 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 | | |
| 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 (Font B) 184 | | |
| RecLinesToPaperCut | 4 ^{*3} | | |
| SlpSidewaysMaxLines | X | | |
| SlpSidewaysMaxChars | X | | |
| SlpMaxLines | X | | |

TM-T20-42C/TM-T20II-42C/TM-T20III-42C:

| 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] | 79.5mm: | (Font A) 24 (Font B) 17 | |
| | 57.5mm: | (Font A) 17 (Font B) 24 | |
| JrnLineHeight [dot] | X | | |
| SlpLineWidth [dot] | X | | |
| RecLineWidth [dot] | (79.5mm) 546 (57.5mm) 378 | | |
| JrnLineWidth [dot] | X | | |
| RecSidewaysMaxLines | (79.5mm) 18 ^{*2} (57.5mm) 12 ^{*2} | | |
| RecSidewaysMaxChars | 79.5mm: | (Font A) "127" | |

| | |
|---------------------|--|
| | 57.5mm: (Font B) "184" (Font A) "184" (Font B) "138" |
| RecLinesToPaperCut | 4 ^{*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-T20 | EPSON TM-T20 POSPrinter |
| | TM-T20-42C | EPSON TM-T20 POS Printer 42Column Mode |
| | TM-T20II | EPSON TM-T20II POSPrinter |
| | TM-T20II-42C | EPSON TM-T20II POS Printer 42Column Mode |
| | TM-T20III | EPSON TM-T20III POSPrinter |
| | TM-T20III-42C | EPSON TM-T20III POS Printer 42Column Mode |
| U | TM-T20U | EPSON TM-T20U POSPrinter |
| | TM-T20-42CU | EPSON TM-T20U POS Printer 42Column Mode |
| | TM-T20IIU | EPSON TM-T20IIU POSPrinter |
| | TM-T20II-42CU | EPSON TM-T20IIU POS Printer 42Column Mode |
| | TM-T20IIIU | EPSON TM-T20IIIU POSPrinter |
| | TM-T20III-42CU | EPSON TM-T20IIIU POS Printer 42Column Mode |
| E | TM-T20E | EPSON TM-T20E POSPrinter |
| | TM-T20-42CE | EPSON TM-T20E POS Printer 42Column Mode |
| | TM-T20IIE | EPSON TM-T20IIE POSPrinter |
| | TM-T20II-42CE | EPSON TM-T20IIE POS Printer 42Column Mode |
| | TM-T20IIIE | EPSON TM-T20IIIE POSPrinter |
| | TM-T20III-42CE | EPSON TM-T20IIIE POS Printer 42Column Mode |
| B | TM-T20IIB | EPSON TM-T20IIB POSPrinter |
| | TM-T20II-42CB | EPSON TM-T20IIB POS Printer 42Column Mode |
| | TM-T20IIIB | EPSON TM-T20IIIB POSPrinter |
| | TM-T20III-42CB | EPSON TM-T20IIIB POS Printer 42Column Mode |

I/F indicate the connected interface.

S: Serial U: USB E: Ethernet B: Bluetooth

3.1.5 PageMode Print Properties

The Device information properties are described below.

TM-T20/TM-T20II/TM-T20III:

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

TM-T20-42C/TM-T20II-42C/TM-T20III-42C:

| Property | Station ^{*2} | | |
|----------------------------------|-----------------------|--|------|
| | Journal | Receipt | Slip |
| PageModeArea | - | <monochrome> (79.5mm) "546", "1662" (57.5mm) "378", "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 |
| #fF | 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 | 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-T20(II)(III) 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
- 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 ^{*1}
- DataMatrixCode ^{*1}

^{*1} Only TM-T20III/TM-T20III-42C.

3.5 MAXI CODE Printing

3.5.1 Symbology Parameter

When printing MAXI CODE, set the Symbology parameter to one of the following values.

PTR_BCS_MAXICODE : Print using MAXI mode 2.

PTR_BCS_OTHER + 0 : Print using MAXI mode 3.

PTR_BCS_OTHER + 1 : Print using MAXI mode 4 or 5. The mode is set to 4 or 5 automatically depending on the length of the Data parameter. (If the data is long, then the data correction level is lowered for printing.)

PTR_BCS_OTHER + 2 : Print using MAXI mode 6.

3.5.2 Printing Size

Because the size of MAXI CODE is fixed, printing is done at a fixed size that is unaffected by the Width and Height parameters. An error occurs only when the Width and Height parameters fall below zero. If the two dimensional barcode cannot fit into the print area (depending on the paper width, layout settings, etc.) then OPOS_E_ILLEGAL is returned and at this moment ResultCodeExtended becomes zero.

3.5.3 Printing Position

Like the one dimensional barcode, the print position of the two dimensional barcode is the specified position.

3.5.4 Data Format

3.5.4.1 Mode 2

In the case of mode 2, because the format of header + primary message + secondary message is fixed, data for the Data parameter must follow this format.

The header part contains the following data, which can be omitted.

"[> RS 01 GS yy" (In hexadecimal: 0x5B 0x29 0x3E 0x1E 0x30 0x31 0x1D 0x.. 0x..)

yy is '0' to '9' (0x30 to 0x39)

The primary message part contains the following data.

"Postal Code" GS "ISO Country Code" GS "Service Class Code" GS

| Field | Length (byte) | Type |
|--------------------|---------------|-----------------------|
| Postal Code | 1 to 9 | Number (0x30 to 0x39) |
| ISO Country Code | 1 to 3 | Number (0x30 to 0x39) |
| Service Class Code | 1 to 3 | Number (0x30 to 0x39) |

For the secondary message, you can freely specify any data from 0x01 to 0xFF, and the data can be omitted. Since the length of the encoded data is not known, the data length cannot be correctly verified. For this reason, if the printer determines, after examining the original data length, that the data can more or less be printed, it tries to print the data; if the length is more than that, then an error occurs. (For the secondary message, an error occurs if the data length is more than 70 bytes.)

3.5.4.2 Mode 3

In the case of mode 3, except for the format of the primary message, it is same as mode 2. The primary message of mode 3 has the following type of data.

"Postal Code" GS "ISO Country Code" GS "Service Class Code" GS

| Field | Length (byte) | Type |
|--------------------|---------------|---|
| Postal Code | 1 to 6 | Number (0x30 to 0x39) A-Z space "\$%&'()*+,-./ |
| ISO Country Code | 1 to 3 | Number (0x30 to 0x39) |
| Service Class Code | 1 to 3 | Number (0x30 to 0x39) |

3.5.4.3 Modes 4 and 5

0x01 to 0xFF can be specified to the Data parameter, and there is no restriction on the format. Since the length of the encoded data is not known, the data length cannot be correctly verified. For this reason, if the printer determines, after examining the original data length, that the data can more or less be printed, it tries to print the data; if the length is more than that, then an error occurs. (An error occurs if Data is zero byte or more than 80 bytes.)

Mode 4 differs from mode 5 in the error correction level. As much as possible, OPOS uses the higher error correction level. Therefore, if the data amount is small (less than 50 bytes), OPOS uses mode 5 (the one with a higher error correction level).

3.5.4.4 Mode 6

0x01 to 0xFF can be specified to the Data parameter, and there is no restriction on the format. Since the length of the encoded data is not known, the data length cannot be correctly verified. For this reason, if the printer determines, after examining the original data length, that the data can more or less be printed, it tries to print the data; if the length is more than that, then an error occurs. (An error occurs if Data is zero byte or more than 80 bytes.)

3.6 QR CODE Printing

3.6.1 QR CODE Printing

When printing QR CODE, set the Symbology parameter to one of the following value

PTR_BCS_QRCODE : Print using QR CODE model 2.

PTR_BCS_OTHER + 3 : Print using QR CODE model 1 (old specification, used for maintaining compatibility).

PTR_BCS_OTHER + 4 : Print using QR CODE model 2.

3.6.2 Printing Size

Because the width and length of QR CODE are the same, printing is done to the inner part at a size closest to it by using the value specified by the Width parameter. Therefore, the height of print is not affected by the Height parameter. If the Height parameter is less than 0, an error occurs.

The print size is determined by the version of QR and the size of the module. Because the version of QR is determined by the data length and type, you can use the size of the module to adjust the print size. If the two dimensional barcode cannot fit into the print area (depending on the paper width, layout settings, etc.) then OPOS_E_ILLEGAL is returned and at this moment ResultCodeExtended becomes zero.

For QR, it differs from other two dimensional barcodes; if the encoded data result is not known, then the print width cannot be obtained. If the print width cannot be obtained, the page mode range for 90-degree rotated printing cannot be specified. Therefore, within OPOS it calculates the number of code words of the encoded data. Because of this reason, data amount can be correctly verified.

3.6.3 Error Correction Level

Error correction level is fixed at 7%.

3.6.4 Printing Position

Like the one dimensional barcode, the print position of the two dimensional barcode is the specified position.

3.7 GS1 Printing (two dimension)

3.7.1 Symbology Parameter

When printing GS1, set the Symbology parameter to one of the following value.

PTR_BCS_GS1DATABAR_S : Print using GS1 DataBar Stacked
Omnidirectional.

PTR_BCS_GS1DATABAR_E_S : Print using GS1 DataBar Expanded
Stacked.

PTR_BCS_OTHER + 7 : Print using GS1 DataBar Stacked.

PTR_BCS_OTHER + 8 : Print using GS1 DataBar Stacked Omnidirectional.

PTR_BCS_OTHER + 9 : Print using GS1 DataBar Expanded Stacked.

3.7.2 Printing Size

Printing is done to the inner part at a size closest to it by using the value specified by the Width parameter. Therefore, the height of print is not affected by the Height parameter. If the Width and Height parameters are less than 0, an error occurs. Because the printing size is determined by the data length ^{*1} and barcode type, you can use the size of the module to adjust the print size.

If the two dimensional barcode cannot fit into the print area (depending on the paper width, layout settings, etc.) then OPOS_E_ILLEGAL is returned and at this moment ResultCodeExtended becomes 0.

^{*1} Available only for the GS1 DataBar Expanded Stacked.

3.7.3 Printing Position

Like the one dimensional barcode, the print position of the two dimensional barcode is the specified position.

3.7.4 Data Format

[Setting range of data]

| Symbology | Length (byte) | Characters that can be specified |
|-------------------------------------|---------------|---|
| GS1 DataBar Stacked | 13 | 0x30-0x39 |
| GS1 DataBar Stacked Omnidirectional | 13 | 0x30-0x39 (The first character is limited to 0x30 or 0x31.) |
| GS1 DataBar Expanded Stacked | 2 to 255 | 0x20-0x22, 0x25-0x3f, 0x41-0x5a, 0x5F, 0x61-0x7a (The first two characters are limited to 0x30-0x39. Or if the first character is 0x28, the second and the third characters are limited to |

| | | |
|--|--|-------------|
| | | 0x30-0x39.) |
|--|--|-------------|

[Special characters of GS1 DataBar 128]

| Special characters | ASCII |
|--------------------|-------|
| FNC1 | {1 |
| '(' | {{ |
| ')' | {} |

3.8 COMPOSITE Printing

3.8.1 Symbology Parameter

When printing COMPOSITE, set the Symbology parameter to the following value.

HIWORD : The constant value of PDF417

LOWORD : The constant value of the barcode that will combine the value of PDF417.

3.8.1.1 Combinable Barcode

The settable barcode in the ROWORD is as follows.

- UPC-A
- UPC-E (Compressed format)
- UPC-E
- EAN 8
- EAN 13
- GS1 DataBar
- GS1 DataBar Truncated
- GS1 DataBar Stacked
- GS1 DataBar Stacked Omnidirectional
- GS1 DataBar Limited
- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked
- GS1 DataBar 128

3.8.2 Printing Size

Printing is done to the inner part at a size closest to it by using the value specified by the Width parameter.

Therefore, the height of print is not affected by the Height parameter. If the Width and Height parameters are less than 0, an error occurs.

Because the printing size is determined by the data length and composite barcode type, you can use the size of the module to adjust the print size.

If the two dimensional barcode cannot fit into the print area (depending on the

paper width, layout settings, etc.) then OPOS_E_ILLEGAL is returned and at this moment ResultCodeExtended becomes 0.

3.8.3 Printing Position

Like the one dimensional barcode, the print position of the two dimensional barcode is the specified position.

3.8.4 Data Format

The range designation of the HIWORD data is as follows.

| Symbology | Length (byte) | Characters that can be specified |
|-----------|---------------|--|
| PDF417 | 3 to 2361 | 0x20-0x22, 0x25-0x3f, 0x41-0x5a, 0x5f, 0x61-0x7a |

The range designation of the ROWORD data is as follows.

| Symbology | Length (byte) | Characters that can be specified |
|--|---------------|---|
| UPC-A | 11 | 0x30-0x39 |
| UPC-E (Compressed format) | 6 | 0x30-0x39 |
| UPC-E | 11 | 0x30-0x39 (The first character is limited to 0x30.) |
| EAN 8 | 7 | 0x30-0x39 |
| EAN 13 | 12 | 0x30-0x39 |
| GS1 DataBar | 13 | 0x30-0x39 |
| GS1 DataBar Truncated | 13 | 0x30-0x39 |
| GS1 DataBar Stacked | 13 | 0x30-0x39 |
| GS1 DataBar Stacked Omnidirectional | 13 | 0x30-0x39 (The first character is limited to 0x30 or 0x31.) |
| GS1 DataBar Limited | 13 | 0x30-0x39 (The first character is limited to 0x30 or 0x31.) |
| GS1 DataBar Expanded | 2 to 255 | 0x20-0x22, 0x25-0x3f, 0x41-0x5a, 0x5f, 0x61-0x7a (The first two characters are limited to 0x30-0x39. Or if the first character is 0x28, the second and the third characters are limited to 0x30-0x39.) |
| GS1 DataBar Expanded Stacked | 2 to 255 | 0x20-0x22, 0x25-0x3f, 0x41-0x5a, 0x5f, 0x61-0x7a (The first two characters are limited to 0x30-0x39. Or if the first character is 0x28, the second and the third characters are limited to 0x30-0x39.) |
| GS1 DataBar 128 | 3 to 255 | 0x00-0x7f |

[Special characters of Barcodes (GS1 DataBar 128, GS1 DataBar Expanded and GS1 DataBar Expanded Stacked)]

| Special characters | ASCII |
|--------------------|-------|
| FNC1 | {1 |
| FNC3 | {3 |
| {' | {{ |
| {(' | {{(|
| {')' | {}) |
| {*} | {* |

3.9 Power Condition Reports

The TM-T20(II)(III) supports Power Condition Reports as follows.

Powered on reporting: Supported

Powered off reporting: Unsupported

3.10 Synchronous Processing

The TM-T20(II)(III) 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.

3.11 Printing Positions

The TM-T20(II)(III) 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.

3.12 Electronic Logo Function (NVRAM)

The TM-T20(II)(III) feature an electronic logo function (NVRAM). To use NVRAM, startup 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-T20(II)(III) Utility User's Manual”.

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:

TM-T20(II)(III): 262144 bytes

3.13 Printable bitmap types and sizes

The TM-T20(II)(III) 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 | | |

3.14 Maintenance Counter

The TM-T20(II)(III) feature a maintenance counter function for retaining an operation log of the printer.

The following chart shows the available maintenance counters.

| 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 |

3.15 Automatic Recovery Function

The TM-T20(II)(III) 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.

3.16 Output without Flow Control on the USB/Ethernet Interfaces

The TM-T20(II)(III) 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

- **When using the TM-T20(II)(III)-42C:**

If you are using a port that has already been registered and created in SetupPOS, "TM-T20(II)(III)" will be displayed in the TMPORT Settings list on the Communication Settings screen. In this case, please select "TM-T20(II)(III)".

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