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**EPSON OPOS ADK for .NET Manual**

# Application Development Guide

## POSPrinter
## (TM-T88VI)

Version 1.14.6　Dec. 2017

**Notes**

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**Trademarks**

# Contents

# Chapter 1 Introduction

This manual includes explanations on how to use a POSPrinter with EPSON OPOS ADK for .NET, as well as related items and device-specific precautions.

For details on the POS for .NET API, refer to the "UnifiedPOS Retail Peripheral Architecture Version 1.14.1" specification and the MSDN "POS for .NET v1.14.1 SDK Documentation":

http://www.omg.org/retail/unified-pos.htm
https://msdn.microsoft.com/en-us/library/bb429024(v=winembedded.4).aspx

## 1.1 Terminology

- “UnifiedPOS Retail Peripheral Architecture Version 1.14.1” may be abbreviated as “UPOS”.
- “Microsoft POS for .NET” may be abbreviated as “POS.NET”.
- “EPSON OPOS ADK for .NET Version 1.14.6” may be abbreviated as “OPOS.NET”.
- “POSPrinter” and “printer” may be referred to as “device”.
- “ServiceObject of POSPrinter provided by OPOS.NET” may be abbreviated as “ServiceObject”.
- “ErrorCode properties of PosControlException” may be abbreviated as “ErrorCode”.
- “ErrorCodeExtended properties of PosControlException” may be abbreviated as “ErrorCodeExtended”.
- “**JrnLineChars**”, “**RecLineChars**”, “**SlpLineChars**” and other properties defined commonly for stations may appear as “***Stn***”. For example, “*Stn*LineChars” character strings for indicating stations.
- “Exception” indicates “PosControlException”.
- The EPSON original device constant used with this device is defined in “jp.co.epson.uposcommon.EpsonUPOSConst” and “jp.co.epson.uposcommon.EpsonPOSPrinterConst”.
- Inch: 1 inch is 25.4 mm.
- “dpi” is the number of dots per inch.
- The language specification of the device may be indicated as follows.
  ANK specification: Device without multi-byte characters
  JP specification: Japanese compatible device

- Wired LANs and wireless LANs may be referred to as networks.
- A “receipt”, “journal”, or “slip” indicates either a station or paper depending on the context.
- NVRAM indicates non-volatile random access memory.

# Chapter 2 Before Using POSPrinter

This chapter includes explanations on how to set up a POSPrinter, as well as precautions and restrictions on use.

## 2.1 Device Setup

After checking the model and settings of the hardware, use the SetupPOS utility to select the correct device. For details on how to configure hardware, refer to "Hardware Settings" for each device in "Appendix-C Hardware Settings". For details on how to use the SetupPOS utility, refer to the User's Reference Guide and "Appendix-B SetupPOS Settings".

## 2.2 Precautions and Restrictions

- When using a 90 degree rotation and printing with a layout that prints to the edge of the paper, sometimes the bottom portion of print area will not be printed. Reducing the value of the **RecLineSpacing** property can correct this issue.
  When Font B is used, the number of lines that can be printed by the TM-T88VI is sometimes less than what can be printed by the TM-T88IV. Please also modify the value of the **RecLineSpacing** property in this case.
- Not all Unicode characters can be printed even if PosCommon.CharacterSetUnicode is specified in the **CharacterSet** property. The assignment of Unicode characters to printable characters is limited to the characters installed on the device.
  The characters installed on a device varies depending on the device specification. Please refer to the product specification for your particular device.
- Only DTR/DSR device flow control is supported.
- If you turn the device off and then on or open the cover during printing, unnecessary data may be printed.
- Wait at least five seconds after the device has been turned off before turning it back on.
- Using ESC|#E to send data may hinder the subsequent operations of the ServiceObject or cause an unexpected result because the sent data is not checked by ServiceObject.

- Sending a print control command is not recommended. Careful consideration is required before sending such a command.
- All properties and parameters of a method affected by the **MapMode** property are processed by “dot”. Therefore, when the **MapMode** property is other than MapMode.Dots, an error of ±1 may be produced in the property and the parameter of the method affected by the **MapMode** property.
- Only a value described in the ***Stn*** **LineCharsList** property can be set in the ***Stn*** **LineChars** property. If a value other than a value described in the ***Stn*** **LineCharsList** property is set, the value is set to the nearest value that is smaller in the ***Stn*** **LineCharsList** property. However, an exception is thrown if a value larger than the largest value described in the ***Stn*** **LineCharsList** property is set.
- If 254 or 255 is specified in the **CharacterSet** property and PTR_DI_NONE is the specification of the PTR_DI_BINARY_CONVERSION command of the **DirectIO** method, the Unicode encoding name becomes the system default encoding name.
- When NVRAM is used by the **SetBitmap** method, no consideration is given to other applications saving images to NVRAM.
- A partial cut leaving one point uncut or full cut is performed with the **CutPaper** method. However, this switch does not take place at the ServiceObject. The switch is accomplished by shifting the cutter position of the device.

# Chapter 3 Properties, Methods, and Events

## 3.1 Properties

The properties listed below differ from functions described in UPOS.

### 3.1.1 CapPowerReporting Property

**Description**

Identifies the reporting capabilities of the device.
One of the following values is set.

| Value | Meaning |
|---|---|
| PowerReporting.Standard | The value set when a serial or bluetooth connection is established. ServiceObject can determine and report two of the power states: OFF_OFFLINE (the device is off or offline) and ONLINE. |
| PowerReporting.Advanced | The value set when a parallel, USB and network connection is established. ServiceObject can determine and report three of the power states: OFF, OFFLINE, and ONLINE. |

### 3.1.2 CapCharacterSet Property

#### Description

This property is initialized by the **Open** method according to the “Multi Byte Character Type” setting of SetupPOS utility. However, after the **Claim** method is executed, the value may be changed depending on the actual language of the device.
One of the following values is set.

| Value | Meaning |
|---|---|
| CharacterSetCapability.Unicode | Able to print the equivalent to a Unicode character, within the limits of the printable characters of the device. |

### 3.1.3 CharacterSet Property

#### Description

Only a value in the **CharacterSetList** property can be set.
If the value of the property is set to 932, the print character for the ASCII code 0x5C is changed to the yen mark (¥).
The property is initialized to one of the following values.

| Value | Meaning |
|---|---|
| CharacterSetUnicode(997) | Print an equivalent Unicode character, within the limits of the printable characters of the device. |

This property is initialized by the **Open** method according to the SetupPOS setting "CharacterSet".
After the **Claim** method is executed, the value may be changed depending on the actual language specification of the device.

The same Unicode code point is assigned to some characters which are defined in both the device Kanji and non-Kanji character tables.

e.g.:
U+0391(Greek Capital Letter Alpha)
CharacterSet 932(Shift-JIS) 0x839F
CharacterSet 737(Greek) 0x80

If the CharacterSet property is set to 997 or 932, data will be printed using the Kanji font.
To print a single-byte character, please set the **CharacterSet** property to 737.

### 3.1.4 CharacterSetList Property

#### Description

This property is initialized by the **Open** method according to the “Multi Byte Character Type” setting of SetupPOS.
However, after the **Claim** method is executed, the value may be changed depending on the actual language specification of the device.

### 3.1.5 MapMode Property

#### Description

All properties and parameters of a method affected by the **MapMode** property are processed by “dot”.

When the **MapMode** property is other than MapMode.Dots, an error of ±1 may be produced in the property and the parameter of the method affected by the **MapMode** property.

### 3.1.6 RecLineChars Property

#### Description

After the **Claim** method is executed, the value may be changed according to the specification of the device.

Only a value in the **RecLineCharsList** property can be set.

### 3.1.7 RecLineCharsList Property

#### Description

After the **Claim** method is executed, the value may be changed according to the specification of the device.

### 3.1.8 RecLineSpacing Property

#### Description

A value smaller than the **RecLineHeight** property can also be set.

If a value smaller than the **RecLineHeight** property is set, it is changed to the value of the **RecLineHeight** property for operation. Character strings in the first and second lines do not overlap when printed.

### 3.1.9 RecLineWidth Property

#### Description

After the **Claim** method is executed, the value may be changed according to the specification of the device.

### 3.1.10 RecLetterQuality Property

**Description**

When this property is changed, other properties, such as printing resolution and control method of the head are changed.
They vary depending on the head type of the station.
However, changing the printing resolution does not change the values of properties such as **RecLineWidth** and **RecLineSpacing**.

| Station | Description of Change |
|---|---|
| Receipt | Setting/canceling of smoothing of double height/width characters.<br>Changing of printing resolution. |

### 3.1.11 RecSidewaysMaxChars Property

**Description**

**RecSidewaysMaxChars** property is set to the following value, irrespective of the SetupPOS utility setting.

138 (FontA)
184 (FontB)

### 3.1.12 RecSidewaysMaxLines Property

**Description**

After the **Claim** method is executed, the value may be changed according to the specification of the device.

### 3.1.13 PageModeArea Property

**Description**

**PageModeArea** property is set to the following value, irrespective of the SetupPOS utility setting.

512, 1662 (Paper width: 80mm)
360, 1662 (Paper width: 58mm)

### 3.1.14 DeviceEnabled property

#### Description

When the Device Enabled property is set to TRUE first after the Claim method is executed, device initialization is performed.

In the following states, device initialization cannot be done:

- Offline (e.g. Cover open, out of paper, etc.)
- Error (e.g. Paper jam)

When the **DeviceEnabled** property is set to TRUE, the printer state is notified via a **StatusUpdateEvent**.
If the **StatusUpdateEvent** for the printer stat is not defined in UPOS, however, the **StatusUpdateEvent** cannot be notified. In this case, the printer status can be found by examining the exception that is notified when the method is executed.

If the device initialization cannot be done when the **DeviceEnabled** property is set to TRUE, a device status is checked at an interval of 1 second, and it is repeated until the device initialization is performed completely.
The device initialization status can be found by enabling the **PowerNotify** property.
When StatusPowerOnline is notified by a **StatusUpdateEvent**, the initialization process is complete.
In addition, the initialization process may take several seconds depending on the connection speed and the image registration status.

## 3.2 Methods

The methods listed below differ from functions described in UPOS.

### 3.2.1 Claim Method

**Description**

The device connection state is confirmed. If the device is not connected, or if the power is OFF, an exception is thrown. In the case of a Serial connection, the device connection state cannot be confirmed. In this case, Success is always returned. In the case of a USB connection where the "Port Name Type" is set to "Device Name", if the printer is in an error state, an exception is thrown.

### 3.2.2 Release Method

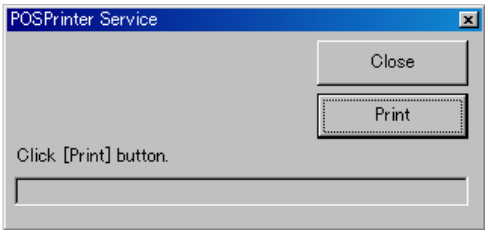
**Description**

The connection is disconnected at the port where the device is connected.

### 3.2.3 CheckHealth Method

#### Description

All functions of the **CheckHealth** method are supported.

| Level | Outline of Function |
|---|---|
| HealthCheckLevel.Internal | The state of the device is checked based on the information held in the current ServiceObject (no action is taken on the device). |
| HealthCheckLevel.External | A test print of the following character strings is performed on the station selected currently.<br>External HCheck !!<br>EPSON UPOS ADK<br>ServiceVersion=version of the ServiceObject<br>DeviceName=device name |
| HealthCheckLevel.Interactive | The following dialog box appears.<br>  <br>Press the Print button to perform the test.<br>A test print of the following character strings is performed on the station currently selected.<br>• Interactive HCheck !!<br>• EPSON UPOS ADK<br>• ServiceVersion=version of the ServiceObject<br>• DeviceName=device name<br>Press the Close button to end the test. |

The results are stored in the **CheckHealthText** property.
And besides, the following value is retrieved as the returned value of method.

| level | Value | Meaning |
|---|---|---|
| HealthCheckLevel.Internal | | |
| | Internal HCheck: Successful | The **CheckHealth** method finished normally. |
| | Internal HCheck: Error-<Message> | The **CheckHealth** method finished with an error.<br>The Message contains error information. |
| HealthCheckLevel.External | | |
| | External HCheck: Successful | The **CheckHealth** method finished normally. |
| | External HCheck: Error-<Message> | The **CheckHealth** method finished with an error.<br>The Message contains error information. |
| HealthCheckLevel.Interactive | | |
| | Interactive HCheck: Canceled | The **CheckHealth** method finished without doing anything. |
| | Interactive HCheck: Complete | After the last operation ended normally, the **CheckHealth** method finished. |
| | Interactive HCheck: Error-<Message> | After the last operation finished with an error, the **CheckHealth** method finished.<br>The Message contains error information. |

### 3.2.4 ClearOutput Method

#### Description

In asynchronous mode, only output data that is non-transmitted transaction data is deleted. Therefore, data in the current transmission and data sent to the device but not printed is not deleted.

### 3.2.5 DirectIO Method

#### Description

This method can be used when the **DeviceEnabled** property is true. The **DirectIO** method supports the following functions.

| Command | Outline of Function |
|---|---|
| PTR_DI_OUTPUT_NORMAL | Sends the specified code to the device using flow control. |
| PTR_DI_OUTPUT_REALTIME | Sends the specified code to the device without using flow control. |
| PTR_DI_PANEL_SWITCH | Enables/disables the panel switch. |
| PTR_DI_RECOVER_ERROR | Recovers from a recoverable error. |
| PTR_DI_PRINT_FLASH_BITMAP | Prints the bitmap saved to NVRAM. |
| PTR_DI_PRINT_FLASH_BITMAP2 | Bitmaps registered in the NVRAM are selected by key code and printed. |
| PTR_DI_CODE128_TYPE | Specifies the default code for Code128. |
| PTR_DI_DELETE_NVIMAGE | Deletes the bitmap saved to NVRAM. |
| PTR_DI_BINARY_CONVERSION | Specifies the character string format specified in the parameter of the string type. |
| PTR_DI_GET_SUPPORT_FUNCTION | Returns the functions supported by the device currently connected. |
| PTR_DI_RING_BUZZER_WITH_TIME | Executes buzzer control. |
| PTR_DI_SOUND_MELODY | Play melody |

PTR_DI_SET_BITMAP_PRINTING_TYPE

Specify the Bitmap print format

- **PTR_DI_OUTPUT_NORMAL Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_OUTPUT_NORMAL |
| *data* | Not used |
| *object*(byte[]type) | Transmission data |

**Description**

Sends data specified by the *object* parameter to the device directly using flow control.
Use this command only when sending an ESC/POS command to the device.
The ServiceObject does not check data sent by this command. Do not send ESC/POS commands that change the line feed amount or font size, since doing so will hinder the subsequent operations of the ServiceObject.

- **PTR_DI_OUTPUT_REALTIME Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_OUTPUT_ REALTIME |
| *data* | Not used |
| *object*(byte[]type) | Transmission data |

**Description**

Sends data specified by the *object* parameter to the device directly without using flow control.
Use this command only when sending a real-time ESC/POS command to the device.
As this command is sent without using flow control, garbled printing may occur if there is any unsent data in the ServiceObject.
In the case of a network connection, a command cannot be sent without using flow control. Therefore, an exception is thrown if this command is executed when the device is in a busy state.

- **PTR_DI_PANEL_SWITCH Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_PANEL_SWITCH |
| *data* | Specify ON/OFF (0 is OFF and 1 is ON) |
| *object* | Not used |

**Description**

Enables/disables the panel switch.

The panel switch is enabled if *data* is set to ON (1) and disabled if *data* is set to OFF (0).

Depending on the type of device, there may be exceptions such as the following.

- During switch standby when a macro is being executed, the switch is enabled regardless of the setting.
- When the cover is open, the switch is disabled regardless of the setting.

- **PTR_DI_RECOVER_ERROR Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_RECOVER_ERROR |
| *data* | Not used |
| *object* | Not used |

**Description**

Recovers from a recoverable error.

This command sends the error recovery command to the device without using flow control.

Do not use this command when the device is in a non-recoverable error state.

In the case of a network connection, a command cannot be sent without using flow control. Therefore, an exception is thrown if this command is executed when the device is in a busy state.

- **PTR_DI_PRINT_FLASH_BITMAP Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_PRINT_FLASH_BITMAP |
| *data* | Specify the number (1 to 255) of the bitmap to print. |
| *object*(String type) | Printing position (specify the number of the alignment parameter to use with the **PrintBitmap** method ). |

**Description**

Prints the bitmap in NVRAM that corresponds to the bitmap number specified for the *data* parameter.
If there is no bitmap saved to NVRAM, nothing is printed.
If the printer has no NVRAM bit image printing function, an exception is thrown. The value specified for the printing position is the same as that specified in the *alignment* parameter of the **PrintBitmap** method.
Use the TM-T88VI utility to save to NVRAM.
The Save Images in NVRAM check box of SetupPOS Settings has no effect on this command.
If the stored image is larger than the available printable area or larger than the printable area specified with the alignment parameter, only the part inside the printable area is printed.

- **PTR_DI_PRINT_FLASH_BITMAP2 Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_PRINT_FLASH_BITMAP2 |
| *data* | Specify the Bitmap key code |
| *object* | Print position (specify the alignment parameter to use with the **printBitmap** method). |

**Description**

Prints the NV graphic corresponding to the key code specified by the bitmap number. The key code is specified by storing the first part in bits 31 to 16 and the second part in bits 15 to 0 of pData.
They key code corresponds to the two digits used to write the NV graphic in the logo utility. The first digit is the first byte of the key code, and the second digit is the second byte. If the NV graphic corresponding to the specified key code is not registered, nothing is printed.
The printing position matches the value specified in the Alignment parameter of PrintBitmap, but the type is different. It is specified by converting the numeric data into a character string.

- Example: Centering
  *object* = int.Parse(PosPrinter.PrinterBitmapCenter);
- Example: 100 dots from the left edge
  *object* = int.Parse(100)

- Example: Specifying key code
  int data = 0;
  data += 126;
  data += 32 << 16;

Data format:

31 16 15 0

| 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 | 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 0 |
|---|---|
| First byte of key code | Second byte of key code |

*Multi-tone printing can not be used when using the RotatePrint method with 90 degrees or using PageMode.

- **PTR_DI_CODE128_TYPE Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_CODE128_TYPE |
| *data* | Specify one of the following.<br>• PTR_DI_CODE_A<br>• PTR_DI_CODE_B<br>• PTR_DI_CODE_C |
| *object* | Not used |

**Description**

Specifies the default code for the CODE128 barcode.
To print the CODE128 barcode, codes A, B, and C need to be specified at the beginning of the printing data. If they are not specified at the beginning of the printing data of the **PrintBarCode** method, use the code specified with this command to print the CODE128 barcode.
The default setting is PTR_DI_CODE_A.

- **PTR_DI_DELETE_NVIMAGE Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_DELETE_NVIMAGE |
| *data* | Specify the key code to delete |
| *object* | Not used |

**Description**

Deletes the image of the key code specified for the parameter from NVRAM. Use the key code reported by the DirectIOEvent event when SetBitmap is executed. If the key code is specified by PTR_DI_DELETE_ALL, all the images saved to NVRAM are deleted. If an image saved to NVRAM is deleted, the information is also deleted.
· The image information of NVRAM on the PC.
· The registration information of the SetBitmap associated with the key code to be deleted.

- **PTR_DI_BINARY_CONVERSION Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_BINARY_CONVERSION |
| *data* | Specify one of the following.<br>• PTR_DI_BC_NONE<br>• PTR_DI_BC_NIBBLE<br>• PTR_DI_BC_DECIMAL |
| *object* | Not used |

**Description**

Specifies the character string format specified in the parameter of the string type.

The specification is the same as that of the **BinaryConversion** property of OPOS.

Use this command for the printing of two dimensional codes and for a **CharacterSet** property for which Unicode specification is not possible.

The setting of this command is valid for the following methods.

- **PrintBarCode** method
- **PrintNormal** method (only when the **CharacterSet** property is a blank page [254, 255])
- **PrintImmediate** method (only when the **CharacterSet** property is a blank page [254, 255])

- **PTR_DI_SOUND_MELODY Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_SOUND_MELODY |
| *data* | Constant corresponding to the sound pattern |
| *object* | Specifies the number of repetitions for the sound, and the sound interval |

**Description**

Plays the specified melody.

An exception is thrown if the **AsyncMode** property is set to TRUE.

Constant values that can be specified to the *data* parameter are as follows:

If an invalid value is specified, an exception will be thrown.

| *data* | Meaning |
|---|---|
| PTR_DI_SOUND_PATTERN_1 | Pattern 1 |
| PTR_DI_SOUND_PATTERN_2 | Pattern 2 |
| PTR_DI_SOUND_PATTERN_3 | Pattern 3 |
| PTR_DI_SOUND_PATTERN_4 | Pattern 4 |
| PTR_DI_SOUND_PATTERN_5 | Pattern 5 |
| PTR_DI_SOUND_PATTERN_ERROR | Pattern when an error occurs |
| PTR_DI_SOUND_PATTERN_NOPAPER | Pattern when paper out |

* Patterns 1 ~ 5 for the *data* parameter are the same as Patterns A ~ E of the "ESC ( A fn = 97" command in the TM-T88VI product specification.

The number of repetitions and the sound interval in the *Object* parameter are separated by a comma as follows. (The format is: "repetitions, sound interval")
The sound interval is in milliseconds.
e.g. "5,1000" = 5 repetitions and a sound interval of 1 second

The valid range of the number of repetitions and the sound interval are as follows:
Number of repetitions: 1 ~ 255
Sound Interval: 100 ~ 60000 (Rounded off to the nearest 100ms)

If an invalid format or value is set, an exception will be thrown. If there is a space before and/or after the comma between the number of repetitions and the sound interval, it will be deemed as and invalid format and an exception will be thrown.

Specification of the sound interval is not available for all devices.
Specification of the sound interval is not available for the TM-T88VI. If a value is specified for the sound interval, it will be reset to 0. (The specified pattern is repeated for the specified number of repetitions without any interval).

If the optional external buzzer is not connected then it will not make a sound.

- **PTR_DI_SET_BITMAP_PRINTING_TYPE Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_SET_BITMAP_PRINTING_TYPE |
| *data* | Constant indicating the print format for the specified bitmap |
| *object* | Not used |

**Description**

Specifies the print format for bitmaps printed by printBitmap
Valid constants for the *data* parameter are as follows:
If a value other than the ones below is specified, an exception will be thrown.
*Multi-tone printing can not be used when using the RotatePrint method with 90 degrees or using PageMode.

| *data* | Meaning |
|---|---|
| PTR_DI_BITMAP_PRINTING_NORMAL | Does not print a special bitmap |
| PTR_DI_BITMAP_PRINTING_MULTI_TONE | Multi-tone bitmap |

If PTR_DI_BITMAP_PRINTING_MULTI_TONE is selected, graphics data will be displayed with richer gradation.
When PTR_DI_BITMAP_PRINTING_MULTI_TONE is selected, the BMP file input to printBitmap must be in 24-bit format.
If any other type of BMP file is input to printBitmap, an exception will be thrown.
If a Jpeg or Gif file is used with the printBitmap method, it is possible to print with gradation regardless of the file format.
If this command is not executed, the Bitmap print format will use the setting in SetupPOS.
Please refer to Sample Step16 for an example of how to use this program.

- **PTR_DI_GET_SUPPORT_FUNCTION Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_GET_SUPPORT_FUNCTION |
| *data* | Not used |
| *object* | Not used |

**Description**

Indicates the functions supported by the currently connected device with the logical OR of the function flag, and stores the returned value in the Data property of DirectIOData.
The value 0 is always stored in the Data property.

- **PTR_DI_RING_BUZZER_WITH_TIME Command**

**Parameter**

| | |
|---|---|
| *command* | PTR_DI_RING_BUZZER_WITH_TIME |
| *data* | Specifies the buzzer operating time (milliseconds). |
| *object* | Not used |

**Description**

Sounds the buzzer for the time specified with the *data* parameter.
The settable buzzer operating time is 0 to 510 milliseconds.

If this command is executed while a drawer is connected, please use a drawer which has a kick pin of 2.
If you are use a drawer which has a kick pin of 5, the drawer will open when the buzzer sounds.

### 3.2.6 ResetStatistics Method

- **Parameter type: Microsoft.PointOfService.StatisticCategories**

**Parameter**

*Microsoft.PointOfService.StatisticCategories*

Specify one of the following.
- StatisticCategories.Upos
- StatisticCategories.Manufacturer
- StatisticCategories.All

**Description**

Of the items included in the specified category, only the items for which O appeared for the permission reset in "Appendix-F DeviceStatistics" are reset.

All the statistics supported by the ServiceObject are defined in UPOS. If "StatisticCategories.Manufacturer" is specified, nothing is reset.

- **Parameter type: *String[]***

**Parameter**

| | |
|---|---|
| *String[]* | An array of the item names to reset |

**Description**

Of the items included in the specified category, only the items for which O appears for the reset permission in "Appendix-F DeviceStatistics" are reset when "U_", "M_", or an empty string is specified for item names.

If an illegal item name or non-resettable item name is included, this method reports an error. When this happens, correctly specified items are also not reset.

All the statistics supported by the ServiceObject are defined in UPOS. If "M_" is specified, nothing is reset.

### 3.2.7 ResetStatistic Method

**Description**

Of the items included in the specified category, only the items for which O appears for the reset permission in "Appendix-F DeviceStatistics" are reset when "U_", "M_", or an empty string is specified for item names.
If an illegal item name or non-resettable item name is specified, this method reports an error.
All the statistics supported by the ServiceObject are defined in UPOS. If "M_" is specified, nothing is reset.

### 3.2.8 RetrieveStatistics Method

- **Parameter type: Microsoft.PointOfService.StatisticCategories**

**Parameter**

*Microsoft.PointOfService.StatisticCategories*

Specify one of the following.
- StatisticCategories.Upos
- StatisticCategories.Manufacturer
- StatisticCategories.All

**Description**

The Statistics supported by ServiceObject are all defined in UPOS. If "StatisticCategories.Manufacturer" is specified, the minimum information specified by UPOS (the 4 items; UPOS version, manufacturer name, device name, and device category) is acquired.

- **Parameter type: *String[]***

| Parameter | |
|---|---|
| *String[]* | An array of the item names to retrieve |

**Description**

If an illegal item name is included, this method reports an error.
The Statistics supported by ServiceObject are all defined in UPOS. If “M_” is specified, the minimum information specified by UPOS (the 4 items; UPOS version, manufacturer name, device name, and device category) is acquired.

- **Parameter type: None**

**Description**

The information of all defined items is retrieved.

### 3.2.9 RetrieveStatistic Method

**Description**

If an illegal item name is included, this method reports an error.
If multiple item names separated by commas are specified (UPOS Specification), an error is reported.
The Statistics supported by ServiceObject are all defined in UPOS. If “M_” is specified, the minimum information specified by UPOS (the 4 items; UPOS version, manufacturer name, device name, and device category) is acquired.

### 3.2.10 UpdateStatistics Method

- **Parameter type: Microsoft.PointOfService.Statistic[]**

**Parameter**

*Microsoft.PointOfService.Statistic[]*

Specifies *Microsoft.PointOfService.Statistic* array for which item names and new values have been set.

**Description**

Of the items included in the specified category, only the items for which O appears for the update permission in “Appendix-F DeviceStatistics” are updated when “U_”, “M_”, or an empty string is specified for item names.
If an illegal item name or non-updatable item name is included, this method reports an error. In this case, correctly specified items are also not updated.
The Statistics supported by ServiceObject are all defined by UPOS. If “M_” is specified, nothing is updated.

- **Parameter type: Microsoft.PointOfService.StatisticCategories**

| Parameter | |
|---|---|
| *Microsoft.PointOfService.StatisticCategories* | Specify one of the following.<br>• StatisticCategories.Upos<br>• StatisticCategories.Manufacturer<br>• StatisticCategories.All |
| *Object* | Specify the new value after updating. |

**Description**

Of the items included in the specified category, only the items for which O appeared for the update permission in "Appendix-F DeviceStatistics" are updated.
All the statistics supported by the ServiceObject are defined in UPOS. If "StatisticCategories.Manufacturer" is specified, nothing is update.

### 3.2.11 UpdateStatistic Method

**Description**

Of the items included in the specified category, only the items for which O appears for the update permission in "Appendix-F DeviceStatistics" are updated when "U_", "M_", or an empty string is specified for item names.
If an illegal item name or non-updatable item name is specified, this method reports an error.
The Statistics supported by ServiceObject are all defined by UPOS. If "M_" is specified, nothing is updated.

### 3.2.12 BeginInsertion Method

**Description**

This device the exception is thrown because there is not a slip station.

### 3.2.13 BeginRemoval Method

**Description**

This device the exception is thrown because there is not a slip station.

### 3.2.14 ChangePrintSide Method

**Description**

This device the exception is thrown because there is not a slip station.

### 3.2.15 MarkFeed Method

**Description**

**CapRecMarkFeed** property is PrinterMarkFeeds.None the exception of “there is no function” is thrown.

### 3.2.16 EndInsertion Method

**Description**

This device the exception is thrown because there is not a slip station.

### 3.2.17 EndRemoval Method

**Description**

This device the exception is thrown because there is not a slip station.

### 3.2.18 CutPaper Method

**Description**

If the *percentage* parameter is 0, the method process ends without sending the command.
If the *percentage* parameter is from 1 to 100, activate the cutter to perform a partial cut leaving one point uncut.

### 3.2.19 PrintNormal Method

**Description**

Although the UPOS specification is such that an error is generated during synchronous printing if there is no line feed code, printing is successful when this method is executed even if a character string contains no line feed code.
See the table “Appendix-E Escape Sequences” for escape sequences supported by this device.

### 3.2.20 PrintImmediate Method

#### Description

Although “this method tries to print its data immediately – that is, as the very next printer operation” is written in the UPOS, with ServiceObject, the data of multiple transactions may be sent to the device during asynchronous printing. Therefore, data of the **PrintImmediate** method may not be printed immediately.

Although the UPOS specification is such that an error is generated during synchronous printing if there is no line feed code, printing is successful when this method is executed even if a character string contains no line feed code.

See the table “Appendix-E Escape Sequences” for escape sequences supported by this device.

### 3.2.21 PrintTwoNormal Method

#### Description

This device has only one station, the exception is thrown.

### 3.2.22 RotatePrint Method

#### Description

An exception is thrown for each of the following conditions, so the following method cannot be used.

| Rotation | Methods | Mode |
|---|---|---|
| PrintRotation.Right90 | **CutPaper** | Rotated 90-degree print |
| PrintRotation.Left90 | Same as above | Same as above |

When ESC|#B is used to print an image, rotated printing takes places regardless of the PrintRotation.Bitmap specification of the *rotation* parameter.
In the case of rotated 90-degree print mode, the following escape sequences are ignored even if the device supports the functions.

- ESC | P
- ESC | fP
- ESC | sP
- ESC | sL
- ESC | #rF
- ESC | cA
- ESC | rA

The *alignment* parameter of each of the **SetBitmap** method, **PrintBitmap** method, **PrintMemoryBitmap** method, and **PrintBarCode** method is also ignored.
If the current print mode is PageMode print, it is not possible to switch to rotated 90-degree print mode or rotated 180-degree print mode.
If an exception is thrown when this method is called, the rotated print mode is not switched.
In the case of rotated 90-degree print mode, buffering data saved to the ServiceObject is not cleared.

### 3.2.23 PrintBarCode Method

#### Description

Although both of the following affect rotated printing, settings made with the **RotatePrint** method take priority.
In other words, the **RotateSpecial** property setting is ignored when rotated printing of barcodes is specified with the **RotatePrint** method.

- **RotatePrint** method (specify PrintRotation.Barcode for the *rotation* parameter)
- **RotateSpecial** property

In the case of rotated 90-degree printing, operation differs depending on whether data buffering is performed. For details, refer to UPOS.

The following types of barcode can be printed using the **PrintBarCode** method.

- CODE128
- CODE128 Parsed
- CODE93
- CODABAR
- ITF
- CODE39
- JAN13 (EAN13)
- JAN8 (EAN8)
- EAN128
- UPC-E
- UPC-A
- PDF417
- AztecCode
- DataMatrixCode
- QRCode
- OTHER + 3
- OTHER + 4
- GS1-DataBar
- GS1-DataBar 128
- GS1-DataBar Expanded
- GS1-DataBar Stacked Omnidirectional
- GS1-DataBar Expanded Stacked
- OTHER + 3 (QR Code model1)
- OTHER + 4 (QR Code model2)

- OTHER + 5 (GS1-Data Truncated)
- OTHER + 6 (GS1-Data Limited)
- OTHER + 7 (GS1-Data Stacked)
- OTHER + 8 (GS1-Data Stacked Omnidirectional)
- OTHER + 9 (GS1-Data Expanded Stacked)
- 13172839 (PDF417, EAN-8)
- 13172840 (PDF417, EAN-13)
- 13172837 (PDF417, UPC-A)
- 13172838 (PDF417, UPC-E)
- 13172867 (PDF417, GS1-DataBar)
- 13173242 (PDF417, GS1-DataBar Truncated)
- 13173244 (PDF417, GS1-DataBar Stacked)
- 13173245 (PDF417, GS1-DataBar Stacked Omnidirectional)
- 13172869 (PDF417, GS1-DataBar Stacked Omnidirectional)
- 13173243 (PDF417, GS1-DataBar Limited)
- 13172868 (PDF417, GS1-DataBar Expanded)
- 13173246 (PDF417, GS1-DataBar Expanded Stacked)
- 13172870 (PDF417, GS1-DataBar Expanded Stacked)
- 13172856 (PDF417, GS1-DataBar 128)

### 3.2.24 PrintBitmap Method

**Description**

This method enables a jpeg file, gif file, or Windows bmp file to be specified. The resolutions for printing images are as follows.

| Station | Landscape | Portrait |
|---|---|---|
| Receipt | 180 dpi | 180 dpi |

### 3.2.25 PrintMemoryBitmap Method

**Description**

Only bitmaps created from jpeg files, gif files, or Windows bmp files are supported. The resolutions for printing images are as follows.

| Station | Landscape | Portrait |
|---|---|---|
| Receipt | 180 dpi | 180 dpi |

### 3.2.26 SetBitmap Method

**Description**

This method enables a jpeg file, gif file, and bmp file to be specified.
For the resolutions for printing images, refer to the **PrintBitmap** method.
This device can download images to non-volatile memory and volatile memory.
Use SetupPOS to set whether to download to non-volatile memory.
Only one image per station can be downloaded and saved to volatile memory.
The upper size limits for images that can be downloaded to the device are shown below. The following values are the upper limits for the command specification. Paper width or other factors may result in an exception being thrown even when an upper limit is not reached.

**Volatile Memory:**

| Station | Number of Dots Wide | Number of Dots High | Total ((Number of Dots Wide ÷ 8) × (Number of Dots High ÷ 8)) |
|---|---|---|---|
| Receipt | 2040 dots | 384 dots | 1536 dots |

**Non-volatile Memory:**

Downloading can be performed until there is no longer any non-volatile memory available for storing images (memory capacity differs depending on the device settings).
The size of memory used to store one image can be calculated as follows.

Size = ((number of dots wide + 7) ÷ 8) × number of dots high + 8 + (number of colors – 1)

### 3.2.27 SetLogo Method

**Description**

The following escape sequences cannot be specified in data saved using this method. If they are specified, an exception is thrown.

- ESC | tL
- ESC | bL

### 3.2.28 TransactionPrint Method

**Description**

If the current rotated print mode is rotated 90-degree print mode, the mode cannot be switched to transaction mode.
When switching out of transaction mode, any buffering data saved to the ServiceObject in rotated 90-degree print mode is printed and rotated 90-degree print mode is maintained.
If an exception is thrown when this method is called, the transaction mode is not switched. Furthermore, buffering data saved to the ServiceObject while in transaction mode is not cleared.

### 3.2.29 PageModePrint Method

**Description**

Since an exception is thrown with the following conditions, the methods below cannot be used.

| control | Methods | Mode |
|---|---|---|
| PageModePrintControl.PageMode | **CutPaper**<br>**RotatePrint** | PageModePrint |

With PageMode printing, the following escape sequences are ignored even if the device supports the function.

- ESC | P
- ESC | fP
- ESC | sP
- ESC | sL
- ESC | #rF
- ESC | #E

If the current rotation print mode is rotated 90-degree print mode or rotated 180-degree print mode, it is not possible to switch to PageMode printing.

If, while in the transaction printing mode, either of the **PageModePrint** methods, PageModePrintControl.Normal or PageModePrintControl.PrintSave are executed, the PageMode printing data is buffered into the transaction printing buffer.

Properties related PageMode is initialized with following values only when it calls with DeviceEnabled=true for the first time.

・PageModePrintArea(0,0,0,0)

The values saved in this property is set when the page mode is started by PageModePrint method. Also, It is not initialized even if page mode printing is terminated by the PageModePrint method.

When this method is invoked and an exception is thrown, the PageMode printing mode is not switched. In addition, with PageMode printing, data buffered in ServiceObject is not cleared.

## 3.3 Events

### 3.3.1 DirectIOEvent

The properties listed below differ from functions described in UPOS.

- **PTR_DIE_RESPONSE Event Number**

**Property**

| | |
|---|---|
| *EventNumber* | PTR_DIE_RESPONSE |
| *Data* | 0 (not used) |
| *Object* | Stores the response from the printer |

**Description**

When the PTR_DI_OUTPUT_NORMAL or PTR_DI_OUTPUT_REALTIME command of the **DirectIO** method or the **PrintNormal** method/ **PrintImmediate** method involving ESC|#E results in the sending of an ESC/POS command that has a response from the device, the response is stored in the *Object* property and reported.
The ESC/POS commands capable of notification as a response are as follows.

- ESC u
- ESC v
- GS I (printer ID of 1 byte)
- GS r
- DLE EOT
- GS ( C
- GS 8 L
- GS ( L
- GS ( G

- **PTR_DIE_SET_BITMAP_MODE Event Number**

| **Property** | |
|---|---|
| *EventNumber* | PTR_DIE_SET_BITMAP_MODE |
| *Data* | Image save method |
| *Object* | Stores the key code |

**Description**

Notifies of the save method used when the **SetBitmap** method saved an image.

One of the following values is set to the *Data* property.

| **Data** | **Meaning** |
|---|---|
| PTR_DIE_MEMORY | Stored in the ServiceObject |
| PTR_DIE_VRAM | Stored in volatile memory of the printer |
| PTR_DIE_NVRAM | Stored in NVRAM of the printer |

If the image saved by the **SetBitmap** method uses NVRAM, the key code used when saving to the *Object* property is stored.

### 3.3.2 ErrorEvent

**Description**

If the **DeviceEnabled** property becomes false while there is an **ErrorEvent** event queued state, the ServiceObject assumes that the *ErrorResponse* property has been set to ErrorResponse.Retry and performs the corresponding processing. Therefore, asynchronous output data is output again when the **DeviceEnabled** property becomes true. To prevent this data from being output again, execute the **ClearOutput** method.

# Appendix-A Revision history

## A.1 EPSON OPOS ADK for .NET 1.14.6

(1) Microsoft POS for .NET 1.14.1 is supported.

## A.2 EPSON OPOS ADK for .NET 1.12.23

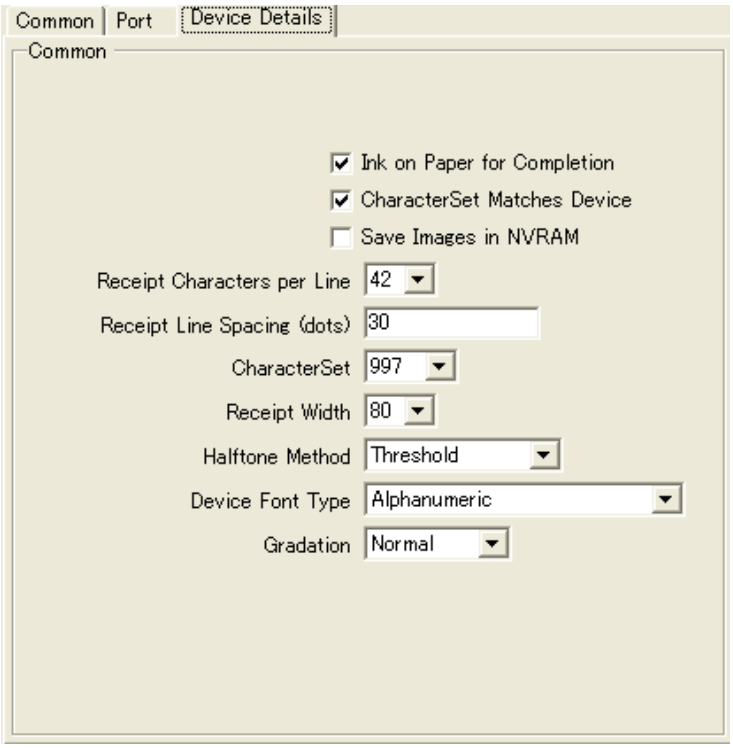
(1)TM-T88VI is supported

## A.3 Differences from the TM-T88V

(1) Added support for **AztecCode** Barcode, **DataMatrix** Barcode.

(2) Added “Printing Using Multiple Interfaces” function.

# Appendix-B SetupPOS Settings




The above screen is for the TM-T88VI.

## B.1 Verbose Error Codes Check Box

**Description**

Sets the error code type for during output.

| State | Meaning |
|---|---|
| Checkmark added | Sets the timeout to ErrorCodeExtended for an error that occurs during output. |
| No checkmark added | Sets the printer state as is to ErrorCode or ErrorCodeExtended, regardless of whether the error occurred during output. |

**Default:** no checkmark added

For some devices, this setting is only possible when there is either a parallel or a network connection.

## B.2 CharacterSet Matches Device Check Box

**Description**

Sets whether the setting for the international character set is changed automatically to match the value of the **CharacterSet** property.

| State | Meaning |
|---|---|
| Checkmark added | Sets the international character set to match the value of the **CharacterSet** property. |
| No checkmark added | Sets the international character set of America when the value of the **CharacterSet** property is other than 932. |

**Default:** checkmark added

## B.3 Save Images in NVRAM Check Box

**Description**

Sets whether the image specified when executing the **SetBitmap** method is saved to NVRAM of the device.

| State | Meaning |
|---|---|
| Checkmark added | Saves the image to NVRAM of the device. |
| No checkmark added | Does not save the image to NVRAM of the device. |

- **When set to save the image to NVRAM of the device**
  The saved image can even be printed if the application is restarted. The key code saved to the *Object* property of the **DirectIOEvent** event is set.

**Default:** no checkmark added

## B.4 Receipt Characters per Line Combo Box

**Description**

Sets the default value for the number of characters on a line for receipt paper.

| Item | Meaning |
|---|---|
| In case of Receipt Width 80mm | |
| 42 | 42 characters will be printed on one line. |
| 56 | 56 characters will be printed on one line. |

**Default:** 42

| | |
|---|---|
| In case of Receipt Width 58mm | |
| 30 | 30 characters will be printed on one line. |
| 40 | 40 characters will be printed on one line. |

**Default:** 30

## B.5 Receipt Line Spacing (dots) Text Box

**Description**

Sets the default value for the line spacing for receipt paper. Note that since the text cannot overlap for thermal printers, if this value is less than the value of the **RecLineHeight** property, the text will be printed using the value for the **RecLineHeight** property.

| Value | Meaning |
|---|---|
| 1 to 255 | Receipt Line Spacing (units: dots)<br>The spacing can be set in increments of 1 dot. |

**Default:** 30

## B.6 Ink on Paper for Completion Check Box

### Description

Sets whether to check that printing operation is complete.

| State | Meaning |
|---|---|
| Checkmark added | Judges the printing method to be complete when the device completes printing. |
| No checkmark added | Judges the printing method to be complete when data output is complete. |

- **When set to judge method output to be complete when the device completes printing**
  Printing on the device and the printing method are not completely synchronized. The method can be completed quickly.
  If the value of the **AsyncMode** property is set to true, the completion of printing is reported before the device actually completes printing because the **OutputCompleteEvent** event considers the printing method to be complete when the data output is complete.
  Printing is judged to be successful if method output completes even when an error was generated on the device during printing.

**Default:** checkmark added

## B.7 CharacterSet Combo Box

### Description

Set the initial value of the **CharacterSet** property. Select from a Character Set list depending on the setting of the **CharacterSetList** property. Selectable values change depending on the Device Font Type Combo Box setting.

| Item | Meaning |
|---|---|
| 997 | All the printable characters installed on device can be assigned to Unicode and printed. |
| 437, 720, 737, 775, 850, 851, 852, 853, 855, 857, 858, 860, 861, 862, 863 864, 865, 866, 869, 998, 999, 1098, 1125, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258 | Printed with the standard code page. |
| 932 | Only when DeviceFontType is set to "Japanese" |
| 120, 121, 126, 130, 131, 150, 151, 152, 153, 154, 155, 255 | Printed with the Device-specific Character CodePage. |

**Default:** 997

## B.8 Halftone Method Combo Box

**Description**

Sets the halftone method type used during image printing (execution of **PrintBitmap** method).

| Item | Meaning |
|---|---|
| Threshold | Uses the threshold method (monochrome conversion) on the specified image file, and then outputs it to the device. |
| Error Diffusion | Performs error diffusion processing on the specified image file, and then outputs it to the device. |
| Dithering | Performs dithering processing on the specified image file, and then outputs it to the device. |

**Default:** Threshold

## B.9 Device Font Type Combo Box

**Description**

Sets the multi-byte character font of the device.

| Item | Meaning |
|---|---|
| Alphanumeric | The device has no multi-byte character font. |
| Japanese | The device has a Japanese font. |

**Default:** Alphanumeric

## B.10 Gradation Combo Box

**Description**

Specifies the initial value of the print format for bitmaps printed by **printBitmap** method.
Refer to the description of the **directIO** method "PTR_DI_SET_ BITMAP_PRINTING_TYPE Command" for details.
*Multi-tone printing can not be used when using the RotatePrint method with 90 degrees or using PageMode.

| Item | Meaning |
|---|---|
| Normal | Does not print a special bitmap. |
| Multi Tone | Prints a Multi-tone bitmap. |

**Default:** Normal

# Appendix-C Hardware Settings

- **DIP Switch Settings**

  Set the DIP switches of this device as shown below.

**1) Serial connection**

DIP-SW 1

| No. | Setting | |
|---|---|---|
| 1 | OFF | Recommended |
| 2 | OFF | Fixed to OFF |
| 3 | OFF | Fixed to OFF |
| 4 | OFF | Fixed to OFF |
| 5 | OFF | Note 1 |
| 6 | OFF | Note 1 |
| 7 | ON | Note 2 |
| 8 | ON | Note 2 |

DIP-SW 2

| No. | Setting | |
|---|---|---|
| 1 | OFF | Recommended |
| 2 | OFF | Fixed to OFF |
| 3 | OFF | Settable Note 3 |
| 4 | OFF | Settable Note 3 |
| 5 | OFF | Fixed to OFF |
| 6 | OFF | Fixed to OFF |
| 7 | OFF | Fixed to OFF |
| 8 | OFF | Fixed to OFF |

Note 1: Set the parity with 5 and 6 of DIP-SW1.

DIP Switch 1 Parity Settings

| SW No. | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1-5 | Parity check | Parity | No parity | OFF |
| 1-6 | Parity selection | Even parity | Odd parity | OFF |

Note 2: Set the transmission speed with 7 and 8 of DIP-SW1.

DIP Switch 1 Transmission Speed Switching

| SW1-7 | SW1-8 | Baud Rate (bps) |
|---|---|---|
| ON | ON | 38400 (see *1) |
| OFF | ON | 4800 |
| ON | OFF | 9600 |
| OFF | OFF | 19200 |

*1:

- The default value of the transmission speed is 38400 bps.
- The transmission speed can be selected by setting the transmission condition of the serial interface.

Note 3: Set the printing density and the power saving mode with 3 and 4 of DIP-SW2.

**2) Parallel connection**

DIP-SW 1

| No. | Setting | |
|---|---|---|
| 1 | OFF | Recommended |
| 2 | OFF | Fixed to OFF |
| 3 | ON | Recommended |
| 4 | OFF | Fixed to OFF |
| 5 | OFF | Fixed to OFF |
| 6 | OFF | Fixed to OFF |
| 7 | OFF | Fixed to OFF |
| 8 | OFF | Fixed to OFF |

DIP-SW 2

| No. | Setting | |
|---|---|---|
| 1 | ON | Fixed to ON |
| 2 | OFF | Fixed to OFF |
| 3 | OFF | Settable Note 1 |
| 4 | OFF | Settable Note 1 |
| 5 | OFF | Fixed to OFF |
| 6 | OFF | Fixed to OFF |
| 7 | OFF | Fixed to OFF |
| 8 | ON | Fixed to ON |

Note 1: Set the printing density and the power saving mode with 3 and 4 of DIP-SW2.

**3) USB connection Supported and Network connection**

DIP-SW 1

| No. | Setting | |
|---|---|---|
| 1 | OFF | Fixed to OFF |
| 2 | OFF | Fixed to OFF |
| 3 | OFF | Fixed to OFF |
| 4 | OFF | Fixed to OFF |
| 5 | OFF | Fixed to OFF |
| 6 | OFF | Fixed to OFF |
| 7 | OFF | Fixed to OFF |
| 8 | OFF | Fixed to OFF |

DIP-SW 2

| No. | Setting | |
|---|---|---|
| 1 | OFF | Recommended |
| 2 | OFF | Fixed to OFF |
| 3 | OFF | Settable Note 1 |
| 4 | OFF | Settable Note 1 |
| 5 | OFF | Fixed to OFF |
| 6 | OFF | Fixed to OFF |
| 7 | OFF | Fixed to OFF |
| 8 | ON | Fixed to ON |

Note 1: Set the printing density and the power saving mode with 3 and 4 of DIP-SW2.

**4) Bluetooth connection**

DIP-SW 1

| No. | Setting | |
|---|---|---|
| 1 | OFF | Fixed to OFF |
| 2 | OFF | Fixed to OFF |
| 3 | OFF | Fixed to OFF |
| 4 | OFF | Fixed to OFF |
| 5 | OFF | Fixed to OFF |
| 6 | OFF | Fixed to OFF |
| 7 | OFF | Fixed to OFF |
| 8 | ON | Fixed to ON |

DIP-SW 2

| No. | Setting | |
|---|---|---|
| 1 | ON | Fixed to ON |
| 2 | OFF | Fixed to OFF |
| 3 | OFF | Settable Note 1 |
| 4 | OFF | Settable Note 1 |
| 5 | OFF | Fixed to OFF |
| 6 | OFF | Fixed to OFF |
| 7 | OFF | Fixed to OFF |
| 8 | ON | Fixed to ON |

Note 1: Set the printing density and the power saving mode with 3 and 4 of DIP-SW2.

# Appendix-D Default Values of Properties

- **Common Settings**

| Property | Setting Value/Default Value | Range of Settings |
|---|---|---|
| CapCompareFirmwareVersion | false | — |
| CapPowerReporting | (Serial/Bluetooth connection)<br>PowerReporting.Standard<br>(Other connection)<br>PowerReporting.Advanced | — |
| CapStatisticsReporting | true | — |
| CapUpdateFirmware | false | — |
| CapUpdateStatistics | true | — |
| CheckHealthText | “” | — |
| Claimed | false | — |
| DeviceEnabled | false | true, false |
| OutputID | 0 | — |
| PowerNotify | PowerNotification.Disabled | PowerNotification.Disabled,<br>PowerNotification.Enabled |
| PowerState | PowerState.Unknown | — |
| DeviceDescription | “EPSON TM-T88VI Printer” | — |
| DeviceName | “TM-T88VI” | — |
| State | ControlState.Idle | — |
| AsyncMode | false | true, false |
| CapCharacterSet | CharacterSetCapability.Unicode | Refer to “Settings Affecting Changing of Language”. |
| CapConcurrentJrnRec | false | — |
| CapConcurrentJrnSlp | false | — |
| CapConcurrentRecSlp | false | — |
| CapConcurrentPageMode | false | — |
| CapCoverSensor | true | — |
| CapMapCharacterSet | false | — |
| CapTransaction | true | — |
| CartridgeNotify | PrinterCartridgeNotify.Disabled | — |
| CharacterSet | CharacterSetCapability.Unicode | Refer to the SetupPOS Setting “CharacterSet Combo Box”. |
| CharacterSetList | Refer to “Settings Affecting Changing of Language”. | Refer to “Settings Affecting Changing of Language”. |
| ErrorLevel | PrinterErrorLevel.None | — |
| ErrorStation | PrinterStation.None | — |
| ErrorString | “” | — |
| FlagWhenIdle | false | true, false |
| FontTypefaceList | “” | — |
| MapCharacterSet | false | — |
| MapMode | MapMode.Dots | MapMode.Dots, MapMode.Twips,<br>MapMode.English, MapMode.Metric |
| PageModeArea | Refer to “Settings Related to PageMode”. | — |
| PageModeDescriptor | Refer to “Settings Related to PageMode”. | — |
| PageModeHorizontalPosition | Refer to “Settings Related to PageMode”. | Refer to “Settings Related to PageMode”. |
| PageModePrintArea | Refer to “Settings Related to PageMode”. | Refer to “Settings Related to PageMode”. |

| | | |
|---|---|---|
| PageModePrintDirection | Refer to “Settings Related to PageMode”. | Refer to “Settings Related to PageMode”. |
| PageModeStation | PrinterStation.None | PrinterStation.Receipt |
| PageModeVerticalPosition | Refer to “Settings Related to PageMode”. | Refer to “Settings Related to PageMode”. |
| RotateSpecial | PrintRotation.Normal | PrintRotation.Normal,<br>PrintRotation.Right90,<br>PrintRotation.Left90,<br>PrintRotation.Rotate180 |
| CoverOpen | false | — |

- **Settings Related to Receipts**

| Property | Setting Value/Default Value | Range of Settings |
|---|---|---|
| CapRec2Color | false | — |
| CapRecBarCode | true | — |
| CapRecBitmap | true | — |
| CapRecBold | true | — |
| CapRecCartridgeSensor | PrinterCartridgeSensors.None | — |
| CapRecColor | PrinterColors.Primary | — |
| CapRecDhigh | true | — |
| CapRecDwide | true | — |
| CapRecDwideDhigh | true | — |
| CapRecEmptySensor | true | — |
| CapRecItalic | false | — |
| CapRecLeft90 | true | — |
| CapRecMarkFeed | PrinterMarkFeeds.None | — |
| CapRecNearEndSensor | true | — |
| CapRecPageMode | true | — |
| CapRecPapercut | true | — |
| CapRecPresent | true | — |
| CapRecRight90 | true | — |
| CapRecRotate180 | true | — |
| CapRecStamp | false | — |
| CapRecUnderline | true | — |
| RecBarCodeRotationList | PrintRotation.Normal, PrintRotation.Right90, PrintRotation.Left90, PrintRotation.Rotate180 | — |
| RecBitmapRotationList | PrintRotation.Normal, PrintRotation.Right90, PrintRotation.Left90, PrintRotation.Rotate180 | — |
| RecCurrentCartridge | PrinterColors.Primary | — |
| RecCartridgeState | PrinterCartridgeStates.Unknown | — |
| RecEmpty | false | — |
| RecLetterQuality | false | true, false |
| RecLineChars | Refer to “Settings Affecting Changing of Paper Width”. | Refer to “Settings Affecting Changing of Paper Width”. |
| RecLineCharsList | Refer to “Settings Affecting Changing of Paper Width”. | — |
| RecLineHeight | 24 | The font height is adjusted to that of FontA or FontB specified in RecLineChars. |
| RecLineSpacing | 30 | 1 to 255 |
| RecLinesToPaperCut | 5<br>Changing RecLineSpacing configures the setting as follows.<br>RecLinesToPaperCut = 145 ÷ RecLineSpacing<br>(If the above calculation generates a remainder, perform the following calculation:<br>RecLinesToPaperCut = RecLinesToPaperCut +1) | — |
| RecLineWidth | Refer to “Settings Affecting Changing of Paper Width”. | Refer to “Settings Affecting Changing of Paper Width”. |
| RecNearEnd | false | — |
| RecSidewaysMaxChars Note 1 | 138 (Font A)<br>184 (Font B) | — |
| RecSidewaysMaxLines | Refer to “Settings Affecting Changing of Paper Width”. | — |

Note 1: This is default value. This value be changed according to the RecLineChars property setting.

- **Settings Affecting Changing of Language**

| Language | Property | Setting Value/Default Value | Range of Settings |
|---|---|---|---|
| ANK | CharacterSetList | 120,121,126,130,131,150,151,152,153,154,255,437,720,737,775,850,851,852,853,855,857,858,860,861,862,863,864,865,866,869,997,998,999,1048,1098,1125,1250,1251,1252,1253,1254,1255,1256,1257,1258 | — |
| Japanese | CharacterSetList | 120,121,126,130,131,150,151,152,153,154,255,437,720,737,775,850,851,852,853,855,857,858,860,861,862,863,864,865,866,869,932,997,998,999,1048,1098,1125,1250,1251,1252,1253,1254,1255,1256,1257,1258 | — |

- **Settings Affecting Changing of Paper Width**

| Paper Width | Property | Setting Value/Default Value | Range of Settings |
|---|---|---|---|
| 80 mm | RecLineChars | 42<br>Changes depending on the SetupPOS setting “Receipt Characters Per Line Combo Box” | 1 to 56<br>Numbers described in RecLineCharsList can be set.<br>For any other value, if the set value is smaller than the maximum value supported by the printer, the value is set to the nearest value that is larger than the specified value in RecLineCharsList properties. |
| | RecLineCharsList | 42, 56 | — |
| | RecLineWidth | 512 | — |
| | RecSidewaysMaxLines | The value resulting from the following calculation is set (after rounding it down to the nearest whole number).<br>((Value of RecLineWidth – 22 dots) ÷ (the largest value of RecLineSpacing and RecLineHeight)) +1. | — |
| 58 mm | RecLineChars | 30<br>Changes depending on the SetupPOS setting “Receipt Characters Per Line Combo Box” | 1 to 40<br>Numbers described in RecLineCharsList can be set.<br>For any other value, if the set value is smaller than the maximum value supported by the printer, the value is set to the nearest value that is larger than the specified value in RecLineCharsList properties. |
| | RecLineCharsList | 30,40 | — |
| | RecLineWidth | 360 | — |
| | RecSidewaysMaxLines | The value resulting from the following calculation is set (after rounding it down to the nearest whole number).<br>((Value of RecLineWidth – 22 dots) ÷ (the largest value of RecLineSpacing and RecLineHeight)) +1. | — |

- **Settings Related to PageMode**

| Paper Width | Property | Setting Value/Default Value | Range of Settings |
|---|---|---|---|
| 80 mm | PageModeArea | "512,1662" | — |
| | PageModeDescriptor | PageModeDescriptors.Barcode,<br>PageModeDescriptors.Bitmap,<br>PageModeDescriptors.BitmapRotate,<br>PageModeDescriptors.BarcodeRotate | — |
| | PageModeHorizontalPosition | 0 | 0 or more |
| | PageModePrintArea | "0,0,0,0" | "X, Y, Width, Height"<br>X + Width <= 512<br>Y + Height <= 1662 |
| | PageModePrintDirection | PageModePrintDirection.None | PageModePrintDirection.BottomToTop,<br>PageModePrintDirection.LeftToRight,<br>PageModePrintDirection.RightToLeft,<br>PageModePrintDirection.TopToBottom |
| | PageModeVerticalPosition | 0 | 0 or more |
| 58 mm | PageModeArea | "360,1662" | — |
| | PageModeDescriptor | PageModeDescriptors.Barcode,<br>PageModeDescriptors.Bitmap,<br>PageModeDescriptors.BitmapRotate,<br>PageModeDescriptors.BarcodeRotate | — |
| | PageModeHorizontalPosition | 0 | 0 or more |
| | PageModePrintArea | "0,0,0,0" | "X, Y, Width, Height"<br>X + Width <= 360<br>Y + Height <= 1662 |
| | PageModePrintDirection | PageModePrintDirection.None | PageModePrintDirection.BottomToTop,<br>PageModePrintDirection.LeftToRight,<br>PageModePrintDirection.RightToLeft,<br>PageModePrintDirection.TopToBottom |
| | PageModeVerticalPosition | 0 | 0 or more |

# Appendix-E Escape Sequences

The following figure is about supported/unsupported Escape Sequences.

| Device | Escape Sequence | Range of Settings |
|---|---|---|
| TM-T88VI | ESC\|#P | 0 to 100 (100) |
| | ESC\|#fP | 0 to 100 (100) |
| | ESC\|#sP | — |
| | ESC\|sL | — |
| | ESC\|#B | 1 to 20 |
| | ESC\|tL | O |
| | ESC\|bL | O |
| | ESC\|#lF | 0 to 9999 (1) |
| | ESC\|#uF | 0 to 9999 (1) |
| | ESC\|#rF | — |
| | ESC\|#E | 0 to 999 (1) |
| | ESC\|#fT | — |
| | ESC\|bC | O |
| | ESC\|#uC | 0 to 2 (1) |
| | ESC\|iC | — |
| | ESC\|#rC | Plain paper 1 |
| | ESC\|rvC | O |
| | ESC\|#sC | — |
| | ESC\|1C | O |
| | ESC\|2C | O |
| | ESC\|3C | O |
| | ESC\|4C | O |
| | ESC\|#hC | 1 to 8 (1) |
| | ESC\|#vC | 1 to 8 (1) |
| | ESC\|tbC | — |
| | ESC\|tpC | — |
| | ESC\|cA | O |
| | ESC\|rA | O |
| | ESC\|lA | O |
| | ESC\|N | O |
| | ESC\|#R | 1 to 999999999 |
| | ESC\|#stC | 0 to 1 (0) |

The number in ( ) is the value when # is omitted.
O indicates the setting is possible.

# Appendix-F DeviceStatistics

**TM-T88VI**

| XML Definition Name | Description | Reset Permission | Update Permission |
|---|---|---|---|
| UnifiedPOSVersion | UPOS version | x | x |
| DeviceCategory | Device category | x | x |
| ManufactureName | Manufacturer name | x | x |
| ModelName | Device name | x | x |
| SerialNumber | Serial number | x | x |
| ManufactureDate | Manufacture date | x | x |
| MechanicalRevision | Device revision | x | x |
| FirmwareRevision | Firmware version | x | x |
| Interface | Interface | x | x |
| InstallationDate | Installation date | x | x |
| HoursPoweredCount | Operation time | O | x |
| CommunicationErrorCount | Communication error count | O | O |
| BarcodePrintedCount | Barcode print count | O | O |
| FormInsertionCount | Slip insertion count | x | x |
| HomeErrorCount | Mechanical error count | O | O |
| JournalCharacterPrintedCount | Journal character print count | x | x |
| JournalLinePrintedCount | Journal line print count | x | x |
| MaximumTempReachedCount | Head temperature error count | O | O |
| NVRAMWriteCount | NVRAM setting count | O | O |
| PaperCutCount | Paper cut count | O | x |
| FailedPaperCutCount | Paper cut failure count | O | O |
| PrinterFaultCount | Unrecoverable error count | O | O |
| PrintSideChangeCount | Slip side change count | x | x |
| FailedPrintSideChangeCount | Slip side change failure count | x | x |
| ReceiptCharacterPrintedCount | Receipt print character count | O | O |
| ReceiptLinePrintedCount | Receipt print line count | O | O |
| ReceiptLineFeedCount | Receipt line feed count | O | x |
| ReceiptCoverOpenCount | Receipt cover open count | O | O |
| SlipCharacterPrintedCount | Slip print character count | x | x |
| SlipLinePrintedCount | Slip print line count | x | x |
| SlipLineFeedCount | Slip line feed count | x | x |
| SlipCoverOpenCount | Slip cover open count | x | x |
| StampFiredCount | Stamp print count | x | x |

O: Permitted
x: Not permitted