

EPSON OPOS ADK for .NET Manual

Application Development Guide

POSPrinter

(TM-U220IIA/U220IIB/U220IID)

Version 1.14.30 Oct. 2023

Notes

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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": Refer to the release notes for information on where to find the latest information.

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 1.14.30" 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, "**StnLineChars**" 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.
- Similar devices are referred to as follows.
TM-U220II TM-U220IIA/TM-U220IIB/TM-U220IID
- 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 Command execution during offline

When "command execution during offline" is enabled, you can perform operations such as registering a logo to the nonvolatile region of the device even when the printer status is set to "cover open" or "no paper."

This function is set using the utility. For details, refer to "Utility User's Manual".

2.3 Precautions and Restrictions

- 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.
- 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 vary depending on the device specification. Please refer to the product specification for your particular device.
Any character code (Unicode) expressed in the string type is converted to a byte code based on the value set in the **CharacterSet** property. Be careful if you want to specify the extended ASCII code for byte code conversion.
- 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 **StnLineCharsList** property can be set in the **StnLineChars** property. If a value other than a value described in the **StnLineCharsList** property is set, the value is set to the nearest value that is smaller in the **StnLineCharsList** property. However, an exception is thrown if a value larger than the largest value described in the **StnLineCharsList** 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.

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 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. 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.

After the **Claim** method is executed, the value may be changed depending on the actual language specification of the device.

This property is initialized by the **Open** method according to the SetupPOS setting "CharacterSet".

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.

If the value set is other than a value in the **RecLineCharsList** property and is smaller than the maximum value supported by the printer, the value is set to a value that is larger and the nearest value in the **RecLineCharsList** property.

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, character strings in the first and second lines 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	Specifying/canceling of unidirectional printing.

3.1.11 DeviceEnabled Property

Description

When the **DeviceEnabled** 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

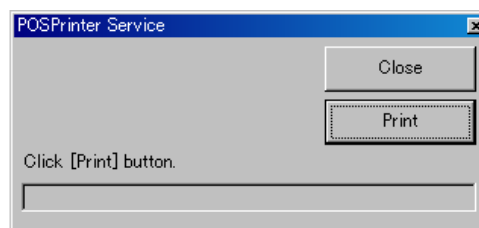
The connection is disconnected at the port where the device is connected.

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. External HCheck !! EPSON UPOS ADK ServiceVersion=version of the ServiceObject DeviceName=device name
HealthCheckLevel.Interactive	The following dialog box appears.



Press the Print button to perform the test.

A test print of the following character strings is performed on the station currently selected.

- Interactive HCheck !!
- EPSON UPOS ADK
- ServiceVersion=version of the ServiceObject
- DeviceName=device name

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. 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. 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. 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_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_OUTPUT_NORMAL Command**

Parameter

<i>command</i>	PTR_DI_OUTPUT_NORMAL
<i>data</i>	Not used.
<i>object</i> (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

<i>command</i>	PTR_DI_OUTPUT_REALTIME
<i>data</i>	Not used.
<i>object</i> (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 an USB or 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

<i>command</i>	PTR_DI_PANEL_SWITCH
<i>data</i>	Specify ON/OFF (0 is OFF and 1 is ON)
<i>object</i>	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

<i>command</i>	PTR_DI_RECOVER_ERROR
<i>data</i>	Not used.
<i>object</i>	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 an USB or 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_BINARY_CONVERSION Command**

Parameter

<i>command</i>	PTR_DI_BINARY_CONVERSION
<i>data</i>	Specify one of the following. <ul style="list-style-type: none"> • PTR_DI_BC_NONE • PTR_DI_BC_NIBBLE • PTR_DI_BC_DECIMAL
<i>object</i>	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.

- **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_GET_SUPPORT_FUNCTION Command**

Parameter

<i>command</i>	PTR_DI_GET_SUPPORT_FUNCTION
<i>data</i>	Not used.
<i>object</i>	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

<i>command</i>	PTR_DI_RING_BUZZER_WITH_TIME
<i>data</i>	Specifies the buzzer operating time (milliseconds).
<i>object</i>	Not used.

Description

Sounds the buzzer for the time specified with the *data* parameter.

The settable buzzer operating time is 0 to 510 milliseconds.

This command can only be executed when the device is used with a network connection. If other connections are used, an exception is thrown.

● PTR_DI_SOUND_MELODY Command

Parameter

<i>command</i>	PTR_DI_SOUND_MELODY
<i>data</i>	Constant corresponding to the sound pattern.
<i>object</i>	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.

<i>data</i>	Meaning
PTR_DI_SOUND_PATTERN_1	Pattern A
PTR_DI_SOUND_PATTERN_2	Pattern B
PTR_DI_SOUND_PATTERN_3	Pattern C
PTR_DI_SOUND_PATTERN_4	Pattern D
PTR_DI_SOUND_PATTERN_5	Pattern E
PTR_DI_SOUND_PATTERN_ERROR	Pattern when an error occurs.
PTR_DI_SOUND_PATTERN_NOPAPER	Pattern when paper out.

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. 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.

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.

- *StatisticCategories.Upos*
- *StatisticCategories.Manufacturer*
- *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

When ESC|#B is used to print an image, rotated printing takes places regardless of the PrintRotation.Bitmap specification of the *rotation* parameter.

The *alignment* parameter of each of the **SetBitmap** method, **PrintBitmap** method, **PrintMemoryBitmap** method, and **PrintBarCode** method is also ignored.

If an exception is thrown when this method is called, the rotated print mode is not switched.

3.2.23 PrintBitmap Method

Description

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

Station	Landscape	Portrait
Receipt	80 dpi	72 dpi

3.2.24 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	80 dpi	72 dpi

3.2.25 SetBitmap Method

Description

This method enables a jpeg file, gif file, and or Windows bmp file to be specified. Images are printed at the standard resolution of the device, regardless of the value of **RecLetterQuality**.

If a value other than PrintBitmap.Left or 0 is specified for the *alignment* parameter, an exception is thrown when a device is incapable of printing in the specified location.

3.2.26 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

3.2.27 TransactionPrint Method

Description

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.

3.3 Events

3.3.1 DirectIOEvent

The properties listed below differ from functions described in UPOS.

- **PTR_DIE_RESPONSE Event Number**

Property

<i>EventNumber</i>	PTR_DIE_RESPONSE
<i>Data</i>	0 (not used)
<i>Object</i>	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 (L
- GS 8 L
- GS (G

- **PTR_DIE_SET_BITMAP_MODE Event Number**

Property

<i>EventNumber</i>	PTR_DIE_SET_BITMAP_MODE
<i>Data</i>	Image save method.
<i>Object</i>	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

3.3.2 ErrorEvent
Description

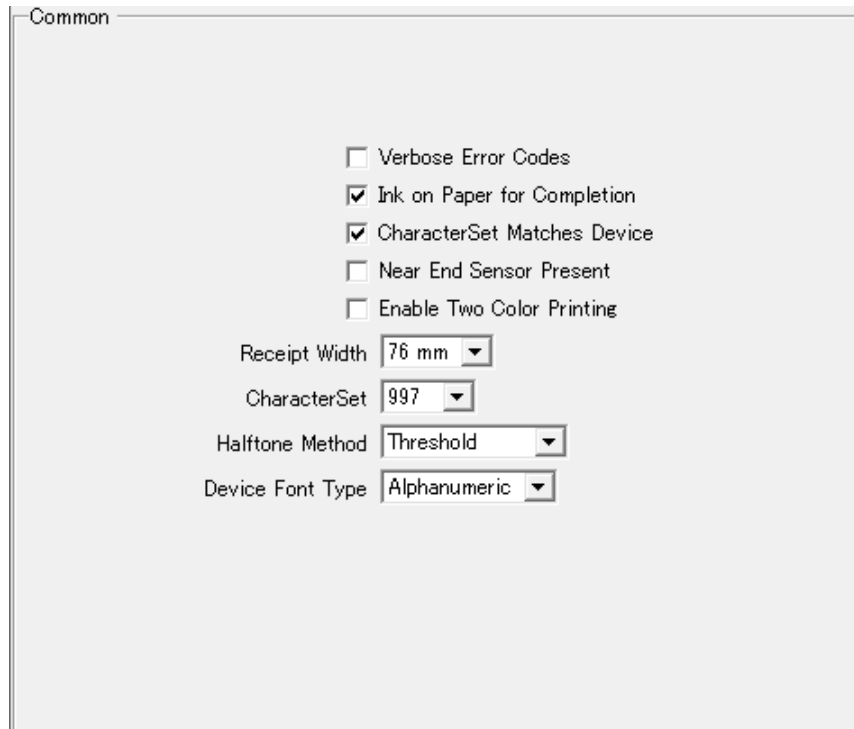
If the **DeviceEnabled** property becomes false while there is an **ErrorEvent** event queued state, the ServiceObject assumes that the *ErrorResponse* property has been set to ErrorResponse.Retry and performs the corresponding processing. Therefore, asynchronous output data is output again when the **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 1.14.30

(1) TM-U220II is supported

Appendix-B SetupPOS Settings



Common

☐ Verbose Error Codes

☒ Ink on Paper for Completion

☒ CharacterSet Matches Device

☐ Near End Sensor Present

☐ Enable Two Color Printing

Receipt Width

CharacterSet

Halftone Method

Device Font Type

This is the settings screen for the TM-U220IIB.

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

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 in the CharacterSet property.

Default: checkmark added

B.3 Enable Two Color Printing Check Box

Description

Sets whether to perform two color printing.

State	Meaning
Checkmark added	Performs two color printing on receipts.
No checkmark added	Performs one color printing on receipts.

- **When set to perform two color printing**

The **CapRec2Color** property is set to **PrinterColors.Primary** | **PrinterColors.Custom1**.

Using the **PrintBitmap** method to perform two color printing becomes possible.

Using the escape sequences of the **PrintNormal** and **PrintImmediate** methods to perform custom color printing becomes possible.

Default: no checkmark added

B.4 Near End Sensor Present Check Box

Description

Sets whether the device has a near end sensor.

State	Meaning
Checkmark added	The device has a near end sensor.
No checkmark added	The device has no near end sensor.

- **When set to device has a near end sensor**

The value of the **CapRecNearEndSensor** property becomes true.

The **StatusUpdateEvent** event enables you to know when there is not much paper left.

Default: no checkmark added

B.5 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.6 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.7 Device Font Type Combo Box

Description

Sets the multi-byte character font of the device.

Item	Meaning
None (ANK)	The device has no multi-byte character font.
Japanese	The device has a Japanese font.

- When set to the device has a Japanese font
The **CharacterSet** property is set to 932.
932 exists in the **CharacterSetList** property.
Printing Japanese using the **PrintNormal** method and **PrintImmediate** method becomes possible if the **CharacterSet** property is 932.

Default: None (ANK)

B.8 Receipt Width Combo Box

Description

Sets the receipt paper width.

Item	Meaning
58 mm (TM-U220IIB/ TM-U220IID)	The receipt width is 58 mm.
70 mm (TM-U220IIB/ TM-U220IID)	The receipt width is 70 mm.
76 mm (TM-U220IIB/ TM-U220IID)	The receipt width is 76 mm.

Default: 76 mm

B.9 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.
254,255,437,850,852, 858,860,863,865,866,	Printed with the standard code page.
932	Only when DeviceFontType is set to "Japanese"

Default: 997

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	OFF	Note 2
8	OFF	Recommended

DIP-SW 2

No.	Setting A Note 3	Setting B Note 3	Setting D Note 3	
1	OFF	OFF	OFF	Fixed
2	ON	ON	OFF	Fixed
3	OFF	OFF	OFF	Fixed
4	OFF	OFF	OFF	Settable
5	OFF	OFF	OFF	Fixed
6	OFF	OFF	OFF	Fixed
7	OFF	OFF	OFF	Fixed
8	OFF	OFF	OFF	Fixed

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 of DIP-SW1.

DIP Switch 1 Transmission Speed Switching

SW1-7	Baud Rate (bps)
ON	4800
OFF	9600

Note 3: Setting A indicates the setting for TM-U220IIA, setting B indicates the setting for TM-U220IIB, and setting D indicates the setting for TM-U220IID.

2) Parallel connection

DIP-SW 1

No.	Setting	
1	OFF	Recommended
2	OFF	Recommended
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 A Note 1	Setting B Note 1	Setting D Note 1	
1	OFF	OFF	OFF	Fixed
2	ON	ON	OFF	Fixed
3	OFF	OFF	OFF	Fixed
4	OFF	OFF	OFF	Fixed
5	OFF	OFF	OFF	Fixed
6	OFF	OFF	OFF	Fixed
7	OFF	OFF	OFF	Fixed
8	ON	ON	ON	Fixed

Note 1: Setting A indicates the setting for TM-U220IIA, setting B indicates the setting for TM-U220IIB, and setting D indicates the setting for TM-U220IID.

3) USB connection and Network connection

DIP-SW 1

No.	Setting	
1	OFF	Recommended
2	OFF	Recommended
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	Recommended

DIP-SW 2

No.	Setting A Note 1	Setting B Note 1	Setting D Note 1	
1	OFF	OFF	OFF	Fixed
2	ON	ON	OFF	Fixed
3	OFF	OFF	OFF	Fixed
4	OFF	OFF	OFF	Fixed
5	OFF	OFF	OFF	Fixed
6	OFF	OFF	OFF	Fixed
7	OFF	OFF	OFF	Fixed
8	ON	ON	ON	Fixed

Note 1: Setting A indicates the setting for TM-U220IIA, setting B indicates the setting for TM-U220IIB, and setting D indicates the setting for TM-U220IID.

● Memory Switch Settings

Set the memory switches of this device as shown below.

Mem-SW 2

No.	Setting	
1	-	
2	-	
3	OFF	Note 1
4	-	
5	-	
6	-	
7	-	
8	-	

Mem-SW 8

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

Note 1: The setting is changed by the SetupPOS settings.

Note 2: The setting is fixed by the ServiceObject.

Appendix-D Default Values of Properties

● Common Settings

Property	Setting Value/Default Value	Range of Settings
CapCompareFirmwareVersion	false	—
CapPowerReporting	(Serial I/F) PowerReporting.Standard (Other I/F) PowerReporting.Advanced	—
CapStatisticsReporting	true	—
CapUpdateFirmware	false	—
CapUpdateStatistics	true	—
CheckHealthText	""	—
Claimed	false	—
DeviceEnabled	false	true, false
OutputID	0	—
PowerNotify	PowerNotification.Disabled	PowerNotification.Disabled, PowerNotification.Enabled
PowerState	PowerState.Unknown	—
DeviceDescription	Refer to "Device Specific Property Settings".	—
DeviceName	Refer to "Device Specific Property Settings".	—
State	ControlState.Idle	—
AsyncMode	false	true, false
CapCharacterSet	Refer to "Settings Affecting Changing of Language".	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	Refer to "Settings Affecting Changing of Language".	Refer to "Settings Affecting Changing of Language".
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, MapMode.English, MapMode.Metric
PageModeArea	""	—
PageModeDescriptor	PageModeDescriptors.None	—

PageModeHorizontalPosition	0	—
PageModePrintArea	""	—
PageModePrintDirection	PageModePrintDirection.None	—
PageModeStation	PrinterStation.None	—
PageModeVerticalPosition	0	—
RotateSpecial	PrintRotation.Normal	—
CoverOpen	false	—

● **Settings Related to Receipts**

Property	Setting Value/Default Value	Range of Settings
CapRec2Color	false	True is set when the use of TwoColor is set with the utility.
CapRecBarCode	false	—
CapRecBitmap	true	—
CapRecBold	true	—
CapRecCartridgeSensor	PrinterCartridgeSensors.None	—
CapRecColor	PrinterColors.Primary	PrinterColors.Primary and PrinterColors.Custom1 are set when the use of TwoColor is set with the utility.
CapRecDhigh	true	—
CapRecDwide	true	—
CapRecDwideDhigh	true	—
CapRecEmptySensor	true	—
CapRecItalic	false	—
CapRecLeft90	false	—
CapRecMarkFeed	PrinterMarkFeeds.None	—
CapRecNearEndSensor	false	True is set when the use of NearEndSensor is set with the utility.
CapRecPageMode	false	—
CapRecPapercut	Refer to “Device Specific Property Settings”.	—
CapRecPresent	true	—
CapRecRight90	false	—
CapRecRotate180	true	—
CapRecStamp	false	—
CapRecUnderline	true	—
RecBarCodeRotationList	“”	—
RecBitmapRotationList	PrintRotation.Normal, 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	9	The font height is adjusted to that of FontA or FontB specified in RecLineChars.
RecLineSpacing	12	0 to 127
RecLinesToPaperCut	Refer to “Device Specific Property Settings”.	—
RecLineWidth	Refer to “Settings Affecting Changing of Paper Width”.	—
RecNearEnd	false	—
RecSidewaysMaxChars	0	—
RecSidewaysMaxLines	0	—

- **Device Specific Property Settings**

Device	Property	Setting Value/Default Value	Range of Settings
TM-U220IIA	DeviceDescription	"EPSON TM-U220IIA Printer"	—
	DeviceName	"TM-U220IIA"	—
	CapRecPapercut	true	—
	RecLinesToPaperCut	8	—
TM-U220IIB	DeviceDescription	"EPSON TM-U220IIB Printer"	—
	DeviceName	"TM-U220IIB"	—
	CapRecPapercut	true	—
	RecLinesToPaperCut	8	—
TM-U220IID	DeviceDescription	"EPSON TM-U220IID Printer"	—
	DeviceName	"TM-U220IID"	—
	CapRecPapercut	false	—
	RecLinesToPaperCut	6	—

- **Settings Affecting Changing of Language**

Language	Property	Setting Value/Default Value	Range of Settings
ANK	CapCharacterSet	CharacterSetCapability.Unicode	—
	CharacterSet	CharacterSetUnicode	One of the values in CharacterSetList
	CharacterSetList	254, 255, 437, 850, 852, 858, 860, 863, 865, 866, 997, 999, 1252	—
Japanese	CapCharacterSet	CharacterSetCapability.Unicode	—
	CharacterSet	CharacterSetUnicode	One of the values in CharacterSetList.
	CharacterSetList	254, 255, 437, 850, 852, 858, 860, 863, 865, 866, 932, 997, 999, 1252	—

● Settings Affecting Changing of Paper Width

Device Name	Paper Width	Property	Setting Value/Default Value	Range of Settings
TM-U220IIA	76 mm	RecLineChars	33	1 to 40 Numbers described in RecLineCharsList can be set. 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	33, 40	—
		RecLineWidth	200	—
TM-U220IIB/ TM-U220IID	58 mm	RecLineChars	25	1 to 30 Numbers described in RecLineCharsList can be set. 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	25, 30	—
		RecLineWidth	150	—
	70 mm	RecLineChars	30	1 to 36 Numbers described in RecLineCharsList can be set. 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, 36	—
		RecLineWidth	180	—
	76 mm	RecLineChars	33	1 to 40 Numbers described in RecLineCharsList can be set. 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	33, 40	—
		RecLineWidth	200	—

Appendix-E Escape Sequences

The following figure is about supported/unsupported Escape Sequences.

Escape Sequence	Range of Settings
ESC #sP	—
ESC sL	—
ESC #B	1 to 20
ESC tL	O
ESC bL	O
ESC #F	0 to 9999 (1)
ESC #uF	0 to 9999 (1)
ESC #rF	0 to 2 (1)
ESC #E	0 to 999 (1)
ESC #fT	—
ESC bC	O
ESC #uC	0 to 1 (1)
ESC iC	—
ESC #rC	1 to 2 (2)
ESC rvC	—
ESC #sC	—
ESC 1C	O
ESC 2C	O
ESC 3C	O
ESC 4C	O
ESC #hC	1 to 2 (1)
ESC #vC	1 to 2 (1)
ESC tbC	—
ESC tpC	—
ESC cA	O
ESC rA	O
ESC lA	O
ESC N	O
ESC #R	—
ESC #stC	0 to 1 (1)
The number in () is the value when # is omitted. O indicates the setting is possible.	

- **Device Specific Escape Sequences**

Escape Sequence	Range of Settings		
	U220IIA	U220IIB	U220IID
ESC#P	0 to 100 (100)		—
ESC#fP	0 to 100 (100)		—

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

Appendix-F DeviceStatistics

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	O
CommunicationErrorCount	Communication error count	O	O
BarcodePrintedCount	Barcode print count	x	x
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	x	x
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	O
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

● Device Specific Statistics

XML Definition Name	Description	Reset Permission			Update Permission		
		U220IIA	U220IIB	U220IID	U220IIA	U220IIB	U220IID
PaperCutCount	Paper cut count	O	O	x	O	O	x
FailedPaperCutCount	Paper cut failure count	O	O	x	O	O	x

O: Permitted
x: Not permitted