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EPSON OPOS ADK for .NET Manual

Application Development Guide

LineDisplay

(DM-D30)

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Chapter 1 Introduction

This section explains how to use LineDisplay when using EPSON OPOS ADK for .NET, including any related information and special notes regarding the device.

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

- "Unified POS 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".
- "LineDisplay" may be abbreviated as "the device".
- "The ServiceObject of LineDisplay 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".
- "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.EpsonLineDisplayConst".

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Chapter 2 Before Using LineDisplay

This chapter explains how to set up LineDisplay, as well as notes and restrictions on using it.

2.1 Device Setting

After checking the hardware model and the hardware settings, select the correct device using the SetupPOS utility. Refer to "Appendix C Hardware settings" for information on setting the hardware, and "Appendix B SetupPOS Settings" for information on how to use the SetupPOS utility.

2.2 Notes and Restrictions
2.2.1 General

- In the event that printer is rebooted in the midst of executing methods involved in transmitting to device, the data displayed may be corrupted.
- Because data transmitted by utilizing the DISP_DI_OUTPUT command of the **DirectIO** method is not checked by the ServiceObject, the ServiceObject may be obstructed and may lead to unexpected results.
- All the character codes (Unicode) expressed in strings are converted to single-byte codes based on the values set in the **CharacterSet** property. When doing byte-code conversions, sufficient care should be exercised if extended ASCII codes are specified.
- If the same port where POSPrinter is connected is used, the communication conditions of POSPrinter and LineDisplay should be adjusted.
- If used with POSPrinter connected, the status of the LineDisplay may become OFFLINE depending on the status of the POSPrinter. In this state, the methods involved in transmitting to the device (such as **DisplayText** method) will fail.
- The device does not support blinking of display by character units. The setting and cancellation of blinking display apply to the whole screen.
- The escape sequence (ESC|kC) for performing blinking display is ignored. Similarly, the escape sequence (ESC|N) for canceling blinking display does not cancel out the blinking of display.
- The setting of the Attribute parameter of the **DisplayText(At)** method executed in the marquee initialization mode is reflected when coming out of the marquee initialization mode.

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Chapter 3 Properties and Methods

3.1 Properties

The properties that differ from those functions described in UPOS are shown below.

3.1.1 CapPowerReporting property

Description

The notification capability of the device is identified.

This property is set to one of the following values.

Value	Meaning
PowerReporting.Standard	ServiceObject can determine between and provide notification of the two power statuses: OFF_OFFLINE (the device is turned off or offline) and ONLINE.

3.1.2 PowerState property

Description

The power supply status of the device is identified.

However, if the LineDisplay is connected to the POSPrinter, the value of this property may get updated depending on the power status of the POSPrinter.

3.1.3 DeviceEnabled property

Description

When set to "true", the operation of the marquee mode and teletype mode is resumed based on the properties set at that time.

When set to "false", the operation of the marquee mode and teletype mode is halted.

3.1.4 BlinkRate property

Description

The blinking synchronization of the device is set.

The values that can be set for this property are positive numbers of 1 and above. Actually, the value is corrected to the nearest setting value supported by the device. The correction is performed during the setting of the **BlinkRate** property. On this occasion the setting value after correction is reflected also in the blinking cycle of the device.

The correction methods for the setting value are as follows:

• Setting values are corrected to the nearest value that is divisible by 100. For example, the values of 50 – 149 are corrected to 100, the values of 150 – 249 to 200, and so on. However, the values of 1 – 49 are corrected to 100.

• The largest setting value after correction is 25400. If the value is set to greater than 25400, it is corrected to 25400.

3.1.5 CharacterSet property

Description

The values that can be set are limited to the values found in the **CharacterSetList** property. If the property value is set to 932, the display for ASCII code 0x5C is changed to the yen symbol "¥".

3.1.6 DeviceBrightness property

Description

The device brightness is set in terms of percentages from 0 to 100.

The relation between brightness set at the device and the property setting value is as follows:

DeviceBrightness property	Device brightness
0 – 19	0%
20 – 39	20%
40 – 59	40%
60 – 79	60%
80 – 100	100%

3.1.7 DeviceWindows property

Description

This property is always set to 4.

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3.2 Methods

The methods that differ from those functions described in UPOS are shown below.

3.2.1 Claim method

Description

When the **Claim** method is executed, the connection of the port to which the device is connected, and the acquisition and setting of device information are performed.

If the acquisition and setting of device information, or port connection fails, an exception is thrown.

The execution of the **Claim** method after executing the **Release** method redraws the contents that were displayed when the **Release** method was executed. However, if the **Close** method or the **Open** method was executed prior to executing the **Claim** method, there is no redrawing.
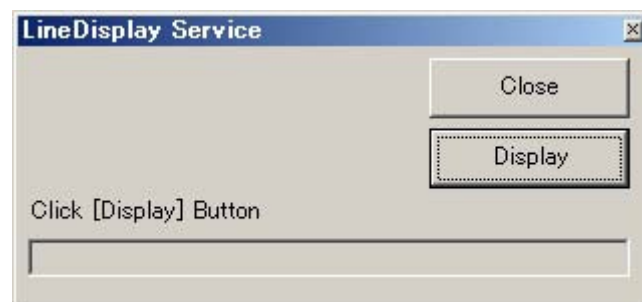
3.2.2 CheckHealth method

Description

This ServiceObject supports only "HealthCheckLevel.Interactive".

It can be executed when all the windows are in Immediate mode.

When "HealthCheckLevel.Interactive" is executed, the following dialog box appears.

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The operations when the respective buttons are clicked are as follows:

- **[Display] button**

It performs testing.

The following character strings are displayed to the device:
• Interactive HCheck !!

• DeviceName=device name

- **[Close] button**

It ends the processing of **CheckHealth** method.

After executing the method, the following values can be acquired in the **CheckHealthText** property.

And besides, the following value is retrieved as the returned value of method.

Value	Meaning
Interactive HCheck: Canceled	Ends CheckHealth without doing anything.
Interactive HCheck: Complete	Ends CheckHealth after the last operation ends normally.
Interactive HCheck: Error - <*Message*>	Ends CheckHealth after the last operation ends with an error. The content of the error appears as a *Message*.

3.2.3 DirectIO method

Description

The **DirectIO** method can be used when the **DeviceEnabled** property is "true".

The function that the **DirectIO** method supports is as follows:

Command	Outline of functions
DISP_DI_OUTPUT	Specified codes are transmitted to the device.

● **DISP_DI_OUTPUT command**

Parameter

command	DISP_DI_OUTPUT
data	Not used
object(byte[] type)	Transmission data

Description

It sends the data specified in the *object* parameter directly to device.
It is to be used only when sending ESC/POS commands to the device.
ServiceObject does not check data sent through this command.
ESC/POS commands such as those that change the amount of line feed or font size obstruct the operations of ServiceObject and should not be sent.

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3.2.4 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-E 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-E 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 **Error! Unknown document property name.**are defined in UPOS. If "M_" is specified, nothing is reset.

3.2.5 ResetStatistic Method

Description

Of the items included in the specified category, only the items for which O appears for the reset permission in "Appendix-E 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 **Error! Unknown document property name.**are defined in UPOS. If "M_" is specified, nothing is reset.

3.2.6 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.

3.2.7 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.

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3.2.8　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-E 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-E DeviceStatistics" are updated.

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

3.2.9 UpdateStatistic Method

Description

Of the items included in the specified category, only the items for which O appears for the update permission in "Appendix-E 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.

3.2.10 CreateWindow method

Description

It can create a new window.

The theoretical size of window that can be created is up to 50 lines vertically and 200 columns horizontally.

3.2.11 DisplayText method

Description

It can display characters.

The escape sequence (ESC|kC) that enables blinking display is ignored.

The escape sequence (ESC|N) that cancels the display does not cancel blinking display.

3.2.12 DisplayTextAt method

Description

It can display characters starting from specified position.

The escape sequence (ESC|kC) that enables blinking display is ignored.

The escape sequence (ESC|N) that cancels the display does not cancel blinking display.

3.2.13 DefineGlyph method

Description

It performs download registration of character for the specified character code.

The timing for the reflection of download registration is as follows: It differs according to the number of times registration was performed.

- If the character being registered has not been registered at least once before, the registration is reflected from the next display onwards.

- If the character being registered has been registered at least once before, it is immediately reflected to the display at the time of registration. However, the reflection to display is immediate only when the character going through download registration is on display.

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3.2.14 ReadCharacterAtCursor method

Description

It reads the character displayed at the current cursor position, and returns the character code.

If character information is not present at the cursor position, it returns 127 (decimal number).

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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 USB Connection is available for connecting DM-D30.

(2) Added support for "Stand Alone" connection.

A.3 EPSON OPOS ADK for .NET 1.12.22

(1) DM-D30 is supported.

Appendix B SetupPOS Settings

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B.1 "Connection Type" combobox

Description

It sets the connection type of LineDisplay.

State	Meaning
TM USB Connection	It means connecting DM-D30 to USB Type-A port of the printer directly
Stand Alone	LineDisplay is used as a single unit.

Default: TM USB Connection

B.2 "Connected Printer" combobox

Description

It sets the POSPrinter used as the host device.

When using LineDisplay on a USB-connected printer when multiple printers have been registered, select the proper "connected port" in the "Port" configuration window.

Default: TM-T88VI

B.3 "Device Font Type" combobox

Description

Set the character font for LineDisplay

State	Meaning
Alphanumeric	The device has no multi-byte character font.
Japanese	Set LineDisplay to use the Japanese language.

Default: Alphanumeric

Appendix C Hardware Settings

C.1 DM-D30
- **DIP switch settings**

    This device has no DIP Switch.

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Appendix D Default Values of Properties

D.1 DM-D30

The default values of the properties of this device are shown below.

Property	Setting value / Defined value	Acceptable setting values
CapCompareFirmwareVersion	false	-
CapPowerReporting	PowerReporting.Standard	-
CapStatisticsReporting	true	-
CapUpdateFirmware	false	-
CapUpdateStatistics	true	-
CheckHealthText	""	-
Claimed	false	-
DeviceEnabled	false	true, false
FreezeEvents	false	true false
PowerNotify	PowerNotifycation.Disabled	PowerNotifycation.Disabled, PowerNotifycation.Enabled
PowerState	PowerState.Unknown	-
State	ControlState.Closed	-
DeviceDescription	"EPSON DM-D30 LineDisplay"	-
DeviceName	"DM-D30"	-
CapBlink	DisplayBlink.All	-
CapBitmap	false	-
CapBlinkRate	true	-
CapBrightness	true	-
CapCharacterSet	CharacterSetCapability.Ascii	-
CapCursorType	DisplayCursors.None	-
CapCustomGlyph	true	-
CapDescriptors	false	-
CapHMarquee	true	-
CapICharWait	true	-
CapMapCharacterSet	false	-
CapReadBack	DisplayReadBack.Single	-
CapReverse	DisplayReverse.Each	-
CapScreenMode	false	-
CapVMarquee	false	-
BlinkRate	1600	1 and above
CharacterSet	437	Any of CharacterSetList

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CharacterSetList	150,151,152,437,737,775,850,852,855, 857,858,860,861,862,863,865,866,869, 932,999,1250,1251,1252,1253, 1254,1255,1257	-
Columns	20	-
CurrentWindow	0	0 to 4
CursorColumn	0	Within the range of 0 to Columns Property
CursorRow	0	Within the range of 0 to (Rows Property - 1)
CursorType	DisplayCursors.None	-
CursorUpdate	true	true false
CustomGlyphList	0x20, 0x7e	-
DeviceBrightness	100	0 to 100
DeviceColumns	20	-
DeviceDescriptors	0	-
DeviceRows	2	-
DeviceWindows	4	-
GlyphHeight	16	-
GlyphWidth	8	-
InterCharacterWait	0	0 and above
MapCharacterSet	false	-
MarqueeFormat	DisplayMarqueeFormat.Walk	DisplayMarqueeFormat.Walk, DisplayMarqueeFormat.Place
MarqueeRepeatWait	0	0 and above
MarqueeType	DisplayMarqueeType.None	DisplayMarqueeType.None, DisplayMarqueeType.Init, DisplayMarqueeType.Left, DisplayMarqueeType.Right
MarqueeUnitWait	0	0 and above
MaximumX	0	-
MaximumY	0	-
Rows	2	-
ScreenMode	0	0
ScreenModeList	2, 20	-

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Appendix E DeviceStatistics

The summary for the Statistics function of the device is shown.

XML definition name	Description	Reset Permission	Update Permission
UnifiedPOSVersion	UPOS version	×	×
DeviceCategory	Device category	×	×
ManufactureName	Manufacturer	×	×
ModelName	Device name	×	×
SerialNumber	Serial number	×	×
ManufactureDate	Manufacturing date	×	×
MechanicalRevision	Device revision	×	×
FirmwareRevision	Firmware version	×	×
Interface	Interface	×	×
InstallationDate	Installation date	×	×
HoursPoweredCount	Length of time in operation	O	O
CommunicationErrorCount	Communication error count	O	O
OnlineTransitionCount	Number of times displayed	O	O

O:Permitted
×:Not permitted

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