

## **CITIZEN POS for .NET DRIVER 1.12**

**Application Development Guide**

**For Ver. 1.12.1.5**

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2011/04/05	1.04	<ul style="list-style-type: none"><li>- The CT-S310II model was added to each item. (Page 6, 12, 19, 34, 37, 43, 46, 49, 52, 55)</li><li>- Changed the value of RecCurrentCartridge/CapRecColor property.(Page 15-32)</li></ul>
2011/06/22	1.12.1.4	<ul style="list-style-type: none"><li>- Version number is changed to same version as driver itself.</li><li>- The explanation of the configuration file with Windows7 was added. (Page 8,10)</li><li>- Added "About the printing completion judgment function" and "About buffer full evasion function of the printer" to "Other function". (Page 49)</li></ul>
2011/09/12	1.12.1.5	<ul style="list-style-type: none"><li>- Changed an example of the structure in Configuration.xml to CT-S801. (Page 8)</li><li>- Changed the explanation about "Function to detect the completion of printing". (Page 49)</li><li>- Changed the explanation about "Function to evade buffer full when the printer error occurred in the printing output". (Page 50)</li><li>- Added the explanation about "Handling of character encoding". (Page 50)</li></ul>

## Notes

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# 1. Introduction

This driver complies with Unified POS 1.12. This document mainly describes the specifications that depend on the device (POS printer) and the notes. When developing the application, refer to "UnifiedPOS Retail Peripheral Architecture Version 1.12" and "POS for .NET v1.12 SDK Documentation" of MSDN in advance.

<http://www.microsoft.com/japan/business/industry/retail/opus/default.msp>

<http://www.nrf-arts.org/UnifiedPOS/default.htm>

<http://msdn.microsoft.com/en-us/library/bb429024.aspx>

## 1.1. CITIZEN POS for .NET Driver

This driver provides the open device driver architecture that facilitates the integration of the hardware, the CITIZEN POS printer and the cash drawers connected to it, and the Microsoft operating system Windows-base POS system, which is called Microsoft Windows Embedded for Point of Service (WEPOS). This driver is developed for the following purposes:

- Defining architecture for access to the Win32-base POS printer and the connected cash drawers on .NET Framework while maintaining the close relationship between the UnifiedPOS specifications and the existing OPOS implementation
- Defining interface of the CITIZEN POS printer and the connected cash drawers that can sufficiently support various POS applications that are linked to the abstracted UnifiedPOS device

## 1.2. Operating Environment

### Supported operating systems

This driver supports the following Windows operating systems:

- Windows XP
- Windows 7

### Supported models

The models supported by this driver and the corresponding driver are as listed below.

For the detailed functions of each model, refer to the user's manual of the printer.

Object Model	Function	Applicable driver (Printer)	Applicable driver (Drawer)
CT-S310	Standard (Paper with blackmark on front side is supported)	CT-S310_*	CT-S310_*.CD*
CT-S310-M1/M2	Paper with blackmark on back side is supported.		
CT-S310II	Standard	CT-S310II_*	CT-S310II_*.CD*
CT-S601/651/801/851	Standard	CT-S601_*	CT-S601_*.CD*
CT-S801/851-M	Blackmark paper is supported.	CT-S651_*	CT-S651_*.CD*
CT-S801-L	Label paper is supported.	CT-S801_*	CT-S801_*.CD*
		CT-S851_*	CT-S851_*.CD*
CT-S2000	Standard	CT-S2000_*	CT-S2000_*.CD*
CT-S2000-M	Blackmark paper is supported.		
CT-S2000-L	Label paper is supported.		

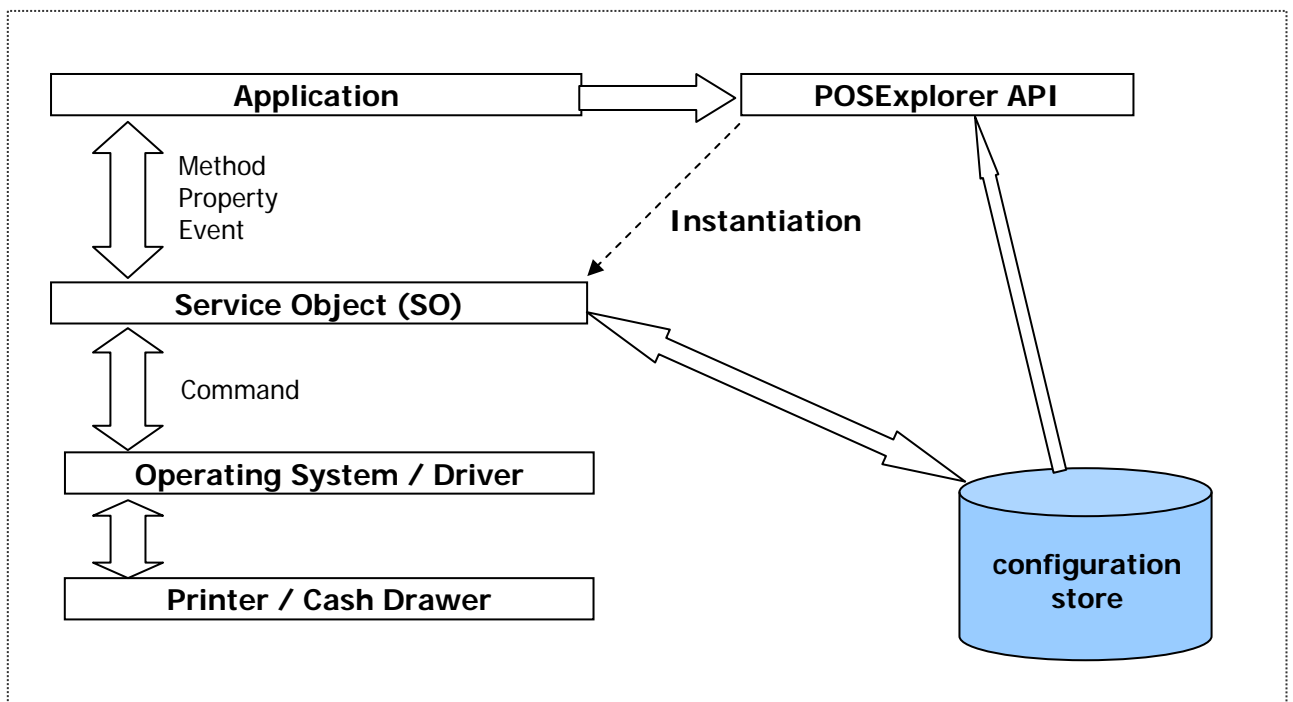
### 1.3. Developers of Applications

Developers of the applications that use this driver shall be familiar with the following items.

- Specifications of POS for .NET 1.12
- General features of the CITIZEN POS printers
- Terminology and architecture of Microsoft .NET Framework
- Practical knowledge on POS for .NET
- Integrated development tool of Microsoft including Visual Studio for .NET and at least one of the .NET application development languages (Microsoft Visual Basic for .NET, C# for .NET and Visual C++ for .NET, for example)

### 1.4. POS for .NET

- By calling **PosExplorer API**, the application lists the available POS peripheral devices and instantiates their service objects. The application can directly communicate with the instantiated service objects by using PosExplorer API. The service object shows the state and behavior of the peripheral device through the property, method and event.
- Unlike the operation with the OPOS implementation, there is no concept of the control objects in POS for .NET. Instead, PosExplorer API operates as a sole control object for all the device classes in some ways. There is a global configuration store which is held by the setting of POS for .NET. PosExplorer API reads the logical device which is defined in the system and other relevant information from the storage area. The settings of the physical devices and the service objects are also held in the configuration store. The serviced object can read and write the property values in the configuration store.



#### Device class

The device class is a category of the POS devices that share the set of the property, method and event.

#### PosExplorer API

By using PosExplorer, the application can obtain the list of the installed POS devices, open these devices or create the instances of them, and receive the plug-and-play events when the device

is connected to or removed from the system.

\* For detailed usage of **PosExplorer API**, refer to "POS for .NET v1.12 SDK Documentation" in MSDN.

### **Service object (SO)**

It is a class to implement the interface of the device class which is defined by POS for .NET. It discloses the property and the methods that are called by the application. The SO of this driver performs the processing that is reliant on the CITIZEN POS printer and the cash drawers connected to it.

## **1.5. Structure of Configuration.xml of CITIZEN POS for .NET Driver**

In order to correctly initialize the device that corresponds to each service object, POS for .NET requires the configuration file.

The configuration file is saved in the file registered in Configuration under the HKEY\_LOCAL\_MACHINE¥SOFTWARE¥POSfor.NET key of the system registry. It is saved in the following file by default:

WindowsXP:

C:\Documents and Settings\All Users\Application Data\Microsoft\Point Of Service\Configuration\Configuration.xml

WindowsXP:

C:\ProgramData\Microsoft\Point Of Service\Configuration\Configuration.xml

However, the configuration file is saved in the following file when starting by the user-mode with Windows7.

C:\Users\[User Name]\AppData\Local\VirtualStore\ProgramData\Microsoft\Point Of Service\Configuration\Configuration.xml

The structure of Configuration.xml, taking CT-S801 (a printer and a cash drawer) as an example, is shown below:

```
<?xml version="1.0"?>
<PointOfServiceConfig Version="1.0">
  <ServiceObject Type="PosPrinter" Name="CTS801POSPrinter">
    <Device HardwarePath="192.168.0.1_CT-S801_1">
      <LogicalName Name="CT-S801_1" />
      <Property Name="DeviceName" Value="CT-S801_1" />
      <Property Name="PhysicalDeviceID" Value="CITIZENCT-S801" />
      <Property Name="WriteTimeout" Value="5000" />
      <Property Name="WriteBuffer" Value="3072" />
      <Property Name="StatusBackInterval" Value="200" />
      <Property Name="Service" Value="C:¥Program Files¥CITIZEN¥CITIZEN Service Objects for .NET¥CSJWPOS.dll" />
      <Property Name="BaudRate" Value="19200" />
      <Property Name="HandShake" Value="001" />
      <Property Name="Parity" Value="000" />
      <Property Name="PortNo" Value="9100" />
      <Property Name="FamilyID" Value="001" />
      <Property Name="MapResolution" Value="000" />
      <Property Name="PrinterName" Value="CTS801.CITIZEN.POSPrinter" />
      <Property Name="PrinterMode" Value="000" />
      <Property Name="PrinterLanguageModel" Value="000" />
      <Property Name="PaperModel" Value="002" />
      <Property Name="Column" Value="001" />
      <Property Name="UseNVRAM" Value="000" />
      <Property Name="CharacterSet" Value="437" />
      <Property Name="IP_Addr" Value="192.168.0.1" />
      <Property Name="Port" Value="NET:" />
    </Device>
  </ServiceObject>
</PointOfServiceConfig>
```



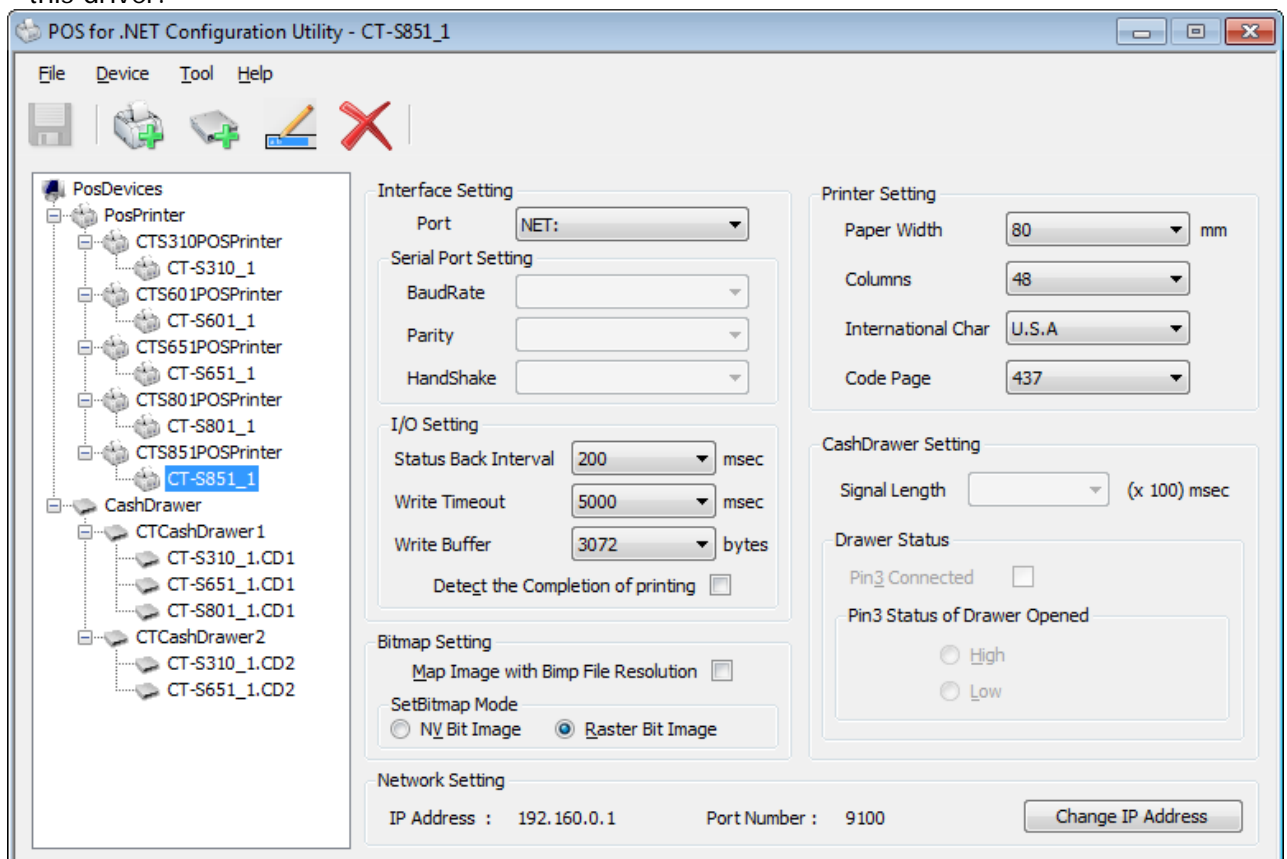
```

    <Property Name="CheckResponse" Value="0" />
  </Device>
</ServiceObject>
<ServiceObject Type="CashDrawer" Name="CTCashDrawer1">
  <Device HardwarePath="192.168.0.1_CT-S801_1">
    <LogicalName Name="CT-S801_1.CD1" />
    <Property Name="DeviceName" Value="CT-S801_1.CD1" />
    <Property Name="PhysicalDeviceID" Value="CITIZENCT-S801" />
    <Property Name="WriteTimeout" Value="5000" />
    <Property Name="WriteBuffer" Value="3072" />
    <Property Name="StatusBackInterval" Value="200" />
    <Property Name="Service" Value="C:\Program Files\CITIZEN\CITIZEN Service Objects for .NET\CSJWPOS.dll" />
    <Property Name="BaudRate" Value="19200" />
    <Property Name="HandShake" Value="001" />
    <Property Name="Parity" Value="000" />
    <Property Name="PortNo" Value="9100" />
    <Property Name="DrawerName" Value="CTS801.CITIZEN.CD1" />
    <Property Name="OnTime" Value="005" />
    <Property Name="PrinterID" Value="CT-S801_1" />
    <Property Name="CapStatus" Value="001" />
    <Property Name="Pin3" Value="001" />
    <Property Name="IP_Addr" Value="192.168.0.1" />
    <Property Name="Port" Value="NET:" />
  </Device>
</ServiceObject>
</PointOfServiceConfig>

```

## Manipulating Configuration.xml

In principle, you have to use the following Configuration.xml setting tool (Configuration Utility) when manipulating Configuration.xml. For the usage of this tool, refer to the "Setup Guide" of this driver.



(Configuration Utility)

## 1.6. Notes on CITIZEN POS for .NET Driver

- When handling label paper, use the MarkFeed method (handling of marked paper). For the usage of this method, refer to "UnifiedPOS Retail Peripheral Architecture Version 1.12".
- When an application and Configuration.xml setting tool are started with Windows7 by a different authority, the setting might not be reflected. Please start by the same authority.
- The operation is not guaranteed in the environment where a POS for .NET driver of other vendor is installed.
- See the notes provided in each section below.

## 2. CITIZEN POS for .NET Printer Service Object

For details and usage of each property, method and event, refer to “UnifiedPOS Retail Peripheral Architecture Version 1.12”.

### 2.1. POS Printer Service Object and Method Relations

#### CT-S310

Method	Status of support by the driver (CT-S310_*)		Notes
Open	✓		
Close	✓		
Claim	✓		Notes on network I/F connection ( <a href="#">See Claim in 2.5. Notes on POS printer service object</a> )
Release	✓		
CheckHealth	✓	HealthCheckLevel.External (Only self diagnostic printing is supported.)	
ClearInput		Not applicable with POSPrinter	
ClearInputProperties		Not applicable with POSPrinter	
ClearOutput	✓		Data being transmitted cannot be stopped.
CompareFirmWareVersion		ErrorCode.Illegal	Not supported
DirectIO		ErrorCode.Illegal	Not supported
ResetStatistic		ErrorCode.Illegal	Not supported
ResetStatistics		ErrorCode.Illegal	Not supported
RetrieveStatistic	✓	Only FirmwareRevision, ManufacturerName, ModelName, Interface is supported.	
RetrieveStatistics	✓	Only FirmwareRevision, ManufacturerName, ModelName, Interface is supported.	
UpdateFirmware		ErrorCode.Illegal	Not supported
UpdateStatistic		ErrorCode.Illegal	Not supported
UpdateStatistics		ErrorCode.Illegal	Not supported
PrintNormal	✓		
PrintTwoNormal		ErrorCode.Illegal	Not supported
PrintImmediate	✓		
BeginInsertion		ErrorCode.Illegal	Not supported
EndInsertion		ErrorCode.Illegal	Not supported
BeginRemoval		ErrorCode.Illegal	Not supported
EndRemoval		ErrorCode.Illegal	Not supported
CutPaper	✓	Partial cut (1-99) Full cut (0,100)	
RotatePrint	✓		( <a href="#">See RotatePrint in 2.5. Detail on POS printer service object</a> )
PrintBarCode	✓		( <a href="#">See PrintBarcode method / RotateSpecial property in 2.5. Detail on POS printer service object</a> )
PrintBitmap	✓	Raster bit image printing	( <a href="#">See PrintBitmap in 2.5. Detail on POS printer service object</a> )
TransactionPrint	✓		
ValidateData	✓		
SetBitmap	✓	Raster bit image mode NV bit image mode	( <a href="#">See SetBitmap method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> )
SetLogo	✓		
ChangePrintSide		ErrorCode.Illegal	Not supported
MarkFeed	✓	Blackmark paper is supported.	
ClearPrintArea	✓		

Method	Status of support by the driver (CT-S310_*)		Notes
PageModePrint	✓		
PrintMemoryBitmap	✓		
DrawRuledLine		ErrorCode.Illegal	Not supported

**CT-S310II**

Method	Status of support by the driver (CT-S310II_*)		Notes
Open	✓		
Close	✓		
Claim	✓		Notes on network I/F connection ( <a href="#">See Claim in 2.5. Detail on POS printer service object</a> )
Release	✓		
CheckHealth	✓	HealthCheckLevel.External (Only self diagnostic printing is supported.)	
ClearInput		Not applicable with POSPrinter	
ClearInputProperties		Not applicable with POSPrinter	
ClearOutput	✓		Data being transmitted cannot be stopped.
CompareFirmWareVersion		ErrorCode.Illegal	Not supported
DirectIO		ErrorCode.Illegal	Not supported
ResetStatistic		ErrorCode.Illegal	Not supported
ResetStatistics		ErrorCode.Illegal	Not supported
RetrieveStatistic	✓	Only FirmwareRevision, ManufacturerName, ModelName, Interface is supported.	
RetrieveStatistics	✓	Only FirmwareRevision, ManufacturerName, ModelName, Interface is supported.	
UpdateFirmware		ErrorCode.Illegal	Not supported
UpdateStatistic		ErrorCode.Illegal	Not supported
UpdateStatistics		ErrorCode.Illegal	Not supported
PrintNormal	✓		
PrintTwoNormal		ErrorCode.Illegal	Not supported
PrintImmediate	✓		
BeginInsertion		ErrorCode.Illegal	Not supported
EndInsertion		ErrorCode.Illegal	Not supported
BeginRemoval		ErrorCode.Illegal	Not supported
EndRemoval		ErrorCode.Illegal	Not supported
CutPaper	✓	Partial cut (1-99) Full cut (0,100)	
RotatePrint	✓		( <a href="#">See RotatePrint in 2.5. Detail on POS printer service object</a> )
PrintBarCode	✓		( <a href="#">See PrintBarcode method / RotateSpecial property in 2.5. Detail on POS printer service object</a> )
PrintBitmap	✓	Raster bit image printing	( <a href="#">See PrintBitmap in 2.5. Detail on POS printer service object</a> )
TransactionPrint	✓		
ValidateData	✓		
SetBitmap	✓	Raster bit image mode NV bit image mode	( <a href="#">See SetBitmap method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> )
SetLogo	✓		
ChangePrintSide		ErrorCode.Illegal	Not supported
MarkFeed		ErrorCode.Illegal	Not supported
ClearPrintArea	✓		
PageModePrint	✓		
PrintMemoryBitmap	✓		
DrawRuledLine		ErrorCode.Illegal	Not supported

**CT-S601/651/801/851**

Method	Status of support by the driver (CT-S601_*, CT-S651_*, CT-S801_*, CT-S851_*)		Notes
Open	✓		
Close	✓		
Claim	✓		Notes on network I/F connection ( <a href="#">See Claim in 2.5. Detail on POS printer service object</a> )
Release	✓		
CheckHealth	✓	HealthCheckLevel.External (Only self diagnostic printing is supported.)	
ClearInput			Not applied because no input device is used.
ClearInputProperties			Not applied because no input device is used.
ClearOutput	✓		Data being transmitted cannot be stopped.
CompareFirmWareVersion		ErrorCode.Illegal	Not supported
DirectIO		ErrorCode.Illegal	Not supported
ResetStatistic		ErrorCode.Illegal	Not supported
ResetStatistics		ErrorCode.Illegal	Not supported
RetrieveStatistic	✓	Only FirmwareRevision, ManufacturerName, ModelName, Interface is supported.	
RetrieveStatistics	✓	Only FirmwareRevision, ManufacturerName, ModelName, Interface is supported.	
UpdateFirmware		ErrorCode.Illegal	Not supported
UpdateStatistic		ErrorCode.Illegal	Not supported
UpdateStatistics		ErrorCode.Illegal	Not supported
PrintNormal	✓		
PrintTwoNormal		ErrorCode.Illegal	Not supported
PrintImmediate	✓		
BeginInsertion		ErrorCode.Illegal	Not supported
EndInsertion		ErrorCode.Illegal	Not supported
BeginRemoval		ErrorCode.Illegal	Not supported
EndRemoval		ErrorCode.Illegal	Not supported
CutPaper	✓	Partial cut (1-99) Full cut (0,100)	
RotatePrint	✓		( <a href="#">See RotatePrint in 2.5. Detail on POS printer service object</a> )
PrintBarCode	✓		( <a href="#">See PrintBarcode method / RotateSpecial property in 2.5. Detail on POS printer service object</a> )
PrintBitmap	✓	Raster bit image printing	( <a href="#">See PrintBitmap in 2.5. Detail on POS printer service object</a> )
TransactionPrint	✓		
ValidateData	✓		
SetBitmap	✓	Raster bit image mode NV bit image mode	( <a href="#">See SetBitmap method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> )
SetLogo	✓		
ChangePrintSide		ErrorCode.Illegal	Not supported
MarkFeed	✓	Blackmark paper and label paper are supported.	
ClearPrintArea	✓		
PageModePrint	✓		
PrintMemoryBitmap	✓		
DrawRuledLine		ErrorCode.Illegal	Not supported

**CT-S2000**

Method	Status of support by the driver (CT-S2000_*)		Notes
Open	✓		
Close	✓		
Claim	✓		Notes on network I/F connection ( <a href="#">See Claim in 2.5. Detail on POS printer service object</a> )
Release	✓		
CheckHealth	✓	HealthCheckLevel.External (Only self diagnostic printing) is supported.)	
ClearInput			Not applied because no input device is used.
ClearInputProperties			Not applied because no input device is used.
ClearOutput	✓		Data being transmitted cannot be stopped.
CompareFirmWareVersion		ErrorCode.Illegal	Not supported
DirectIO		ErrorCode.Illegal	Not supported
ResetStatistic		ErrorCode.Illegal	Not supported
ResetStatistics		ErrorCode.Illegal	Not supported
RetrieveStatistic	✓	Only FirmwareRevision, ManufacturerName, ModelName, Interface is supported.	
RetrieveStatistics	✓	Only FirmwareRevision, ManufacturerName, ModelName, Interface is supported.	
UpdateFirmware		ErrorCode.Illegal	Not supported
UpdateStatistic		ErrorCode.Illegal	Not supported
UpdateStatistics		ErrorCode.Illegal	Not supported
PrintNormal	✓		
PrintTwoNormal		ErrorCode.Illegal	Not supported
PrintImmediate	✓		
BeginInsertion		ErrorCode.Illegal	Not supported
EndInsertion		ErrorCode.Illegal	Not supported
BeginRemoval		ErrorCode.Illegal	Not supported
EndRemoval		ErrorCode.Illegal	Not supported
CutPaper	✓	Partial cut (1-99) Full cut (0,100)	
RotatePrint	✓		( <a href="#">See RotatePrint in 2.5. Detail on POS printer service object</a> )
PrintBarCode	✓		( <a href="#">See PrintBarcode method / RotateSpecial property in 2.5. Detail on POS printer service object</a> )
PrintBitmap	✓	Raster bit image printing	( <a href="#">See PrintBitmap in 2.5. Detail on POS printer service object</a> )
TransactionPrint	✓		
ValidateData	✓		
SetBitmap	✓	Raster bit image mode NV bit image mode	( <a href="#">See SetBitmap method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> )
SetLogo	✓		
ChangePrintSide		ErrorCode.Illegal	Not supported
MarkFeed	✓	Blackmark paper and label paper are supported.	
ClearPrintArea	✓		
PageModePrint	✓		
PrintMemoryBitmap	✓		
DrawRuledLine		ErrorCode.Illegal	Not supported

## 2.2. POS Printer Service Object and Property Relations

### CT-S310

Property	Attribute	Status of support by the driver (CT-S 310_*)		Notes
AutoDisable	R/W		Not applicable with POSPrinter	
CapCompareFirmwareVersion	R		false	Not supported
CapPowerReporting	R	✓	PowerReporting.Standard	
CapStatisticsReporting	R	✓	true	
CapUpdateFirmware	R		false	Not supported
CapUpdateStatistics	R		false	Not supported
CheckHealthText	R	✓	"External HCheck: Successful" "External HCheck: Not Responding"	
Claimed	R	✓	true / false	
DataCount	R		Not applicable with POSPrinter	
DataEventEnabled	R/W		Not applicable with POSPrinter	
DeviceEnabled	R/W	✓	true / false	<a href="#">(See DeviceEnable in 2.5. Detail on POS printer service object)</a>
FreezeEvents	R/W	✓	true / false	
OutputId	R	✓	Increment (+1)	<a href="#">(See OutPutId property / OutputCompleteEvent event in 2.5. Detail on POS printer service object)</a>
PowerNotify	R/W	✓	PowerNotification.Disabled (Power notification is not supplied.) PowerNotification.Enabled (Information on power notification is supplied.)	
PowerState	R	✓	Online and Ready state: PowerState.Online(2001) Not Ready state: PowerState.Offline(2003)	
State	R	✓		For the case other than ControlState.Idle, refer to the State property in "UnifiedPOS Retail Peripheral Architecture Version 1.12".
SynchronizingObject	R/W	✓		
ServiceObjectDescription	R	✓	CITIZEN Service Object for Thermal PosPrinter ver 1.12.*.*	
ServiceObjectVersion	R	✓	1.12.*.*	
DeviceDescription	R	✓	CITIZEN Thermal POSPrinter	
DeviceName	R	✓	CT-S310_*	
CapCharacterSet	R	✓	CharacterSetCapability.Kanji	
CapConcurrentJrnRec	R		false	Unsupported hardware
CapConcurrentJrnSlp	R		false	Unsupported hardware
CapConcurrentPageMode	R		false	Unsupported hardware
CapConcurrentRecSlp	R		false	Unsupported hardware
CapCoverSensor	R	✓	true: With cover open sensor	
CapMapCharacterSet	R	✓	true	
CapTransaction	R	✓	true: Batch processing of characters is possible.	
CapJrnPresent	R		false	Unsupported hardware
CapJrn2Color	R		false	Unsupported hardware
CapJrnBold	R		false	Unsupported hardware
CapJrnDHigh	R		false	Unsupported hardware
CapJrnDWide	R		false	Unsupported hardware
CapJrnDWideDHigh	R		false	Unsupported hardware
CapJrnEmptySensor	R		false	Unsupported hardware
CapJrnItalic	R		false	Unsupported hardware



Property	Attribute	Status of support by the driver (CT-S 310_*)	Notes
CapJrnNearEndSensor	R	false	Unsupported hardware
CapJrnUnderline	R	false	Unsupported hardware
CapJrnCartridgeSensor	R	PrinterCartridgeSensors.None	Unsupported hardware
CapJrnColor	R	PrinterColors.None	Unsupported hardware
CapRecPresent	R	✓ true: Receipt is possible.	
CapRec2Color	R	✓ true: 2-color printing is possible.	Using paper printable in 2 colors
CapRecBarCode	R	✓ true: Barcode printing is possible.	
CapRecBitmap	R	✓ true: Bitmap printing is possible.	
CapRecBold	R	✓ true: Bold attribute setting is possible.	
CapRecDHigh	R	✓ true: Double height attribute setting is possible.	
CapRecDWide	R	✓ true: Double width setting is possible.	
CapRecDWideDHigh	R	✓ true: Quadruple attribute setting is possible.	
CapRecEmptySensor	R	✓ true: Paper-Out sensor is active.	
CapRecItalic	R	false	Unsupported hardware
CapRecLeft90	R	✓ true: 90-degree CCW rotation attribute setting is possible.	
CapRecNearEndSensor	R	✓ true: With Paper Near-End sensor	
CapRecPaperCut	R	✓	
CapRecRight90	R	✓ true: 90-degree CW rotation attribute setting is possible.	
CapRecRotate180	R	✓ true: 180-degree rotation attribute setting is possible.	
CapRecStamp	R	false	Not supported
CapRecUnderline	R	✓ true: Underline attribute setting is possible.	
CapRecCartridgeSensor	R	✓ PrinterCartridgeSensors.None	
CapRecColor	R	✓ PrinterColors.Primary   PrinterColors.Custom1	
CapRecMarkFeed	R	✓ PrinterMarkFeeds.Cutter	
CapRecPageMode	R	✓ true	
CapRecRuledLine	R		Unsupported hardware
CapSlpPresent	R	false	Unsupported hardware
CapSlpFullSlip	R	false	Unsupported hardware
CapSlp2Color	R	false	Unsupported hardware
CapSlpBarCode	R	false	Unsupported hardware
CapSlpBitmap	R	false	Unsupported hardware
CapSlpBold	R	false	Unsupported hardware
CapSlpDHigh	R	false	Unsupported hardware
CapSlpDWide	R	false	Unsupported hardware
CapSlpDWideDHigh	R	false	Unsupported hardware
CapSlpEmptySensor	R	false	Unsupported hardware
CapSlpItalic	R	false	Unsupported hardware
CapSlpLeft90	R	false	Unsupported hardware
CapSlpNearEndSensor	R	false	Unsupported hardware
CapSlpRight90	R	false	Unsupported hardware
CapSlpRotate180	R	false	Unsupported hardware
CapSlpUnderline	R	false	Unsupported hardware
CapSlpBothSidesPrint	R	false	Unsupported hardware
CapSlpCartridgeSensor	R	PrinterCartridgeSensors.None	Unsupported hardware
CapSlpColor	R	PrinterColors.None	Unsupported hardware
CapSlpPageMode	R	false	Unsupported hardware
CapSlpRuledLine	R		Unsupported hardware
AsyncMode	R/W	✓ true false (Default value)	<a href="#">(See AsyncMode property in 2.5. Detail on POS printer service object)</a>

Property	Attribute	Status of support by the driver (CT-S 310_*)	Notes
CartridgeNotify	R/W	PrinterCartridgeNotify.Disabled	Unsupported hardware
CharacterSet	R/W	✓ Setting values of Configuration Utility	
CharacterSetList	R	✓ 255: User Defined 437: Code437 850: Code850 Multilingual 860: Code860 Portugal 863: Code863 Canada-French 865: Code865 Norway 852: Code852 EasternEurope 858: Code858 864: Code864 Arabic 874: Code874 Thai Code 18 866: Code866 Russia 857: Code857 Turkey 932: KANA 998: ASCII 999: Windows Code 1252: Windows Code	
CoverOpen	R	✓ true: POS printer cover is open. false: POS printer cover is closed.	
ErrorLevel	R	✓ PrinterErrorLevel.None PrinterErrorLevel.Recoverable PrinterErrorLevel.Fatal	<a href="#">(See ErrorLevel property in 2.5. Detail on POS printer service object)</a>
ErrorStation	R	✓ PrinterStation.Receipt	
ErrorString	R	✓ Description on present error is retained.	
FontTypefaceList	R	✓ Font A,B,C	
FlagWhenIdle	R/W	✓	
MapCharacterSet	R/W	✓ true	
MapMode	R/W	✓ MapMode.Dots (Default value) MapMode.Twips MapMode.English MapMode.Metric	
PageModeArea	R	✓ X=RecLineWidth,Y=936	
PageModeDescriptor	R	✓ Logical sum of PageModeDescriptors.Barcode, PageModeDescriptors.BarcodeRotate, PageModeDescriptors.Bitmap, and PageModeDescriptors.BitmapRotate	
PageModeHorizontalPosition	R	✓ 0 (Default value)	
PageModePrintArea	R	✓ X=0 Y=0 Width=0 Height=0 (Default value)	
PageModePrintDirection	R	✓ PageModePrintDirection.LeftToRight (Default value) PageModePrintDirection.BottomToTop PageModePrintDirection.RightToLeft PageModePrintDirection.TopToBottom	
PageModeStation	R	✓ PrinterStation.None (Default value) PrinterStation.Receipt	
PageModeVerticalPosition	R	✓ 0 (Default value)	
RotateSpecial	R/W	✓ Rotation.Normal Rotation.Right90 Rotation.Left90 Rotation.Rotate180	<a href="#">(See PrintBarcode method /RotateSpecial property in 2.5. Detail on POS printer service object)</a>
JrnLineChars	R/W	0	Unsupported hardware
JrnLineCharsList	R	Null int array	Unsupported hardware
JrnLineHeight	R/W	0	Unsupported hardware
JrnLineSpacing	R/W	0	Unsupported hardware
JrnLineWidth	R	0	Unsupported hardware
JrnLetterQuality	R/W	false	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S 310_*)		Notes
JrnEmpty	R		false	Unsupported hardware
JrnNearEnd	R		false	Unsupported hardware
JrnCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
JrnCurrentCartridge	R/W		PrinterColors.None	Unsupported hardware
RecLineChars	R/W	✓	ErrorCode.Success (Normal setting) ErrorCode.Illegal (Illegal line character width is specified.)	The font size varies by the set value. The set value is selected with the RecLineCharsList property (See <a href="#">RecLineChars / RecLineCharsList properties in 2.5. Detail on POS printer service object</a> )
RecLineCharsList	R	✓	58 mm paper "30,40,45" "32,42,48" 80 mm paper "42,56,63" "48,64,72"	(See <a href="#">RecLineChars / RecLineCharsList properties in 2.5. Detail on POS printer service object</a> )
RecLineHeight	R/W	✓	The value is not reflected upon writing.	The value is changed according to the RecLineChars property.
RecLineSpacing	R/W	✓		If the value is smaller than RecLineHeight, the value is changed according to the RecLineHeight property.
RecLineWidth	R	✓		
RecLetterQuality	R/W			Not supported
RecEmpty	R	✓	true: Receipt paper out false: With receipt paper	
RecNearEnd	R	✓		
RecSidewaysMaxLines	R	✓		(See <a href="#">RecSidewaysMaxLines property in 2.5. Detail on POS printer service object</a> )
RecSidewaysMaxChars	R	✓		(See <a href="#">RecSidewaysMaxChars property in 2.5. Detail on POS printer service object</a> )
RecLinesToPaperCut	R	✓		
RecBarCodeRotationList	R	✓	Rotation.Normal, Rotation.Right90, Rotation.Left90, Rotation.Rotate180	
RecCartridgeState	R		PrinterCartridgeStates.Unknown	Not supported
RecCurrentCartridge	R/W	✓	PrinterColors.Primary, PrinterColors.Custom1	
RecBitmapRotationList	R	✓	Rotation.Normal, Rotation.Right90, Rotation.Left90, Rotation.Rotate180	
SlpLineChars	R/W		0	Unsupported hardware
SlpLineCharsList	R		Null int array	Unsupported hardware
SlpLineHeight	R/W		0	Unsupported hardware
SlpLineSpacing	R/W		0	Unsupported hardware
SlpLineWidth	R		0	Unsupported hardware
SlpLetterQuality	R/W		false	Unsupported hardware
SlpEmpty	R		false	Unsupported hardware
SlpNearEnd	R		false	Unsupported hardware
SlpSidewaysMaxLines	R		0	Unsupported hardware
SlpSidewaysMaxChars	R		0	Unsupported hardware
SlpMaxLines	R		0	Unsupported hardware
SlpLinesNearEndToEnd	R		0	Unsupported hardware
SlpBarCodeRotationList	R		Null Rotation array	Unsupported hardware
SlpBitmapRotationList	R		Null Rotation array	Unsupported hardware
SlpPrintSide	R		PrinterSide.Unknown	Unsupported hardware
SlpCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
SlpCurrentCartridge	R/W		PrinterColors.None	Unsupported hardware

**CT-S310II**

Property	Attribute	Status of support by the driver (CT-S310II_*)		Notes
AutoDisable	R/W		Not applicable with POPrinter	
CapCompareFirmwareVersion	R		false	Not supported
CapPowerReporting	R	✓	PowerReporting.Standard	
CapStatisticsReporting	R	✓	true	
CapUpdateFirmware	R		false	Not supported
CapUpdateStatistics	R		false	Not supported
CheckHealthText	R	✓	"External HCheck: Successful" "External HCheck: Not Responding"	
Claimed	R	✓	true / false	
DataCount	R		Not applicable with POSPrinter	
DataEventEnabled	R/W		Not applicable with POSPrinter	
DeviceEnabled	R/W	✓	true / false	(See DeviceEnable in 2.5. Detail on POS printer service object).
FreezeEvents	R/W	✓	true / false	
OutputId	R	✓	Increment (+1)	(See OutPutId property / OutputCompleteEvent event in 2.5. Detail on POS printer service object)
PowerNotify	R/W	✓	PowerNotification.Disabled (Power notification is not supplied.) PowerNotification.Enabled (Information on power notification is supplied.)	
PowerState	R	✓	Online and Ready state: PowerState.Online(2001) Not Ready state: PowerState.Offline(2003)	
State	R	✓		For the case other than ControlState.Idle, refer to the State property in "UnifiedPOS Retail Peripheral Architecture Version 1.12".
SynchronizingObject	R/W	✓		
ServiceObjectDescription	R	✓	CITIZEN Service Object for Thermal PosPrinter ver 1.12.*.*	
ServiceObjectVersion	R	✓	1.12.*.*	
DeviceDescription	R	✓	CITIZEN Thermal POSPrinter	
DeviceName	R	✓	CT-S310II_*	
CapCharacterSet	R	✓	CharacterSetCapability.Kanji	
CapConcurrentJrnRec	R		false	Unsupported hardware
CapConcurrentJrnSlp	R		false	Unsupported hardware
CapConcurrentPageMode	R		false	Unsupported hardware
CapConcurrentRecSlp	R		false	Unsupported hardware
CapCoverSensor	R	✓	true: With cover open sensor	
CapMapCharacterSet	R	✓	true	
CapTransaction	R	✓	true: Batch processing of characters is possible.	
CapJrnPresent	R		false	Unsupported hardware
CapJrn2Color	R		false	Unsupported hardware
CapJrnBold	R		false	Unsupported hardware
CapJrnDHigh	R		false	Unsupported hardware
CapJrnDWide	R		false	Unsupported hardware
CapJrnDWideDHigh	R		false	Unsupported hardware
CapJrnEmptySensor	R		false	Unsupported hardware
CapJrnItalic	R		false	Unsupported hardware
CapJrnNearEndSensor	R		false	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S310II_*)	Notes
CapJrnUnderline	R	false	Unsupported hardware
CapJrnCartridgeSensor	R	PrinterCartridgeSensors.None	Unsupported hardware
CapJrnColor	R	PrinterColors.None	Unsupported hardware
CapRecPresent	R	✓ true: Receipt is possible.	
CapRec2Color	R	false	Unsupported hardware
CapRecBarCode	R	✓ true: Barcode printing is possible.	
CapRecBitmap	R	✓ true: Bitmap printing is possible.	
CapRecBold	R	✓ true: Bold attribute setting is possible.	
CapRecDHigh	R	✓ true: Double height attribute setting is possible.	
CapRecDWide	R	✓ true: Double width setting is possible.	
CapRecDWideDHigh	R	✓ true: Quadruple attribute setting is possible.	
CapRecEmptySensor	R	✓ true: Paper-Out sensor is active.	
CapRecItalic	R	false	Unsupported hardware
CapRecLeft90	R	✓ true: 90-degree CCW rotation attribute setting is possible.	
CapRecNearEndSensor	R	false	Unsupported hardware
CapRecPaperCut	R	✓	
CapRecRight90	R	✓ true: 90-degree CW rotation attribute setting is possible.	
CapRecRotate180	R	✓ true: 180-degree rotation attribute setting is possible.	
CapRecStamp	R	False	Not supported
CapRecUnderline	R	✓ true: Underline attribute setting is possible	
CapRecCartridgeSensor	R	✓ PrinterCartridgeSensors.None	
CapRecColor	R	PrinterColors.Primary	Unsupported hardware
CapRecMarkFeed	R	PrinterMarkFeeds.None	Unsupported hardware
CapRecPageMode	R	✓ true	
CapRecRuledLine	R		Unsupported hardware
CapSlpPresent	R	false	Unsupported hardware
CapSlpFullSlip	R	false	Unsupported hardware
CapSlp2Color	R	false	Unsupported hardware
CapSlpBarCode	R	false	Unsupported hardware
CapSlpBitmap	R	false	Unsupported hardware
CapSlpBold	R	false	Unsupported hardware
CapSlpDHigh	R	false	Unsupported hardware
CapSlpDWide	R	false	Unsupported hardware
CapSlpDWideDHigh	R	false	Unsupported hardware
CapSlpEmptySensor	R	false	Unsupported hardware
CapSlpItalic	R	false	Unsupported hardware
CapSlpLeft90	R	false	Unsupported hardware
CapSlpNearEndSensor	R	false	Unsupported hardware
CapSlpRight90	R	false	Unsupported hardware
CapSlpRotate180	R	false	Unsupported hardware
CapSlpUnderline	R	false	Unsupported hardware
CapSlpBothSidesPrint	R	false	Unsupported hardware
CapSlpCartridgeSensor	R	PrinterCartridgeSensors.None	Unsupported hardware
CapSlpColor	R	PrinterColors.None	Unsupported hardware
CapSlpPageMode	R	false	Unsupported hardware
CapSlpRuledLine	R		Unsupported hardware
AsyncMode	R/W	✓ true false (Default value)	<a href="#">(See AsyncMode property in 2.5. Detail on POS printer service object)</a>
CartridgeNotify	R/W	PrinterCartridgeNotify.Disabled	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S3101I_*)	Notes
CharacterSet	R/W	✓ Setting values of Configuration Utility	
CharacterSetList	R	✓ 255: User Defined 437: Code437 850: Code850 Multilingual 860: Code860 Portugal 863: Code863 Canada-French 865: Code865 Norway 852: Code852 EasternEurope 858: Code858 864: Code864 Arabic 874: Code874 Thai Code 18 866: Code866 Russia 857: Code857 Turkey 932: KANA 998: ASCII 999: Windows Code 1252: Windows Code	
CoverOpen	R	✓ true: POS printer cover is open. false: POS printer cover is closed.	
ErrorLevel	R	✓ PrinterErrorLevel.None PrinterErrorLevel.Recoverable PrinterErrorLevel.Fatal	<a href="#">(See ErrorLevel property in 2.5. Detail on POS printer service object)</a>
ErrorStation	R	✓ PrinterStation.Receipt	
ErrorString	R	✓ Description on present error is retained.	
FontTypefaceList	R	✓ Font A,B,C	
FlagWhenIdle	R/W	✓	
MapCharacterSet	R/W	✓ true	
MapMode	R/W	✓ MapMode.Dots (Default value) MapMode.Twips MapMode.English MapMode.Metric	
PageModeArea	R	✓ X=RecLineWidth,Y=936	
PageModeDescriptor	R	✓ Logical sum of PageModeDescriptors.Barcode, PageModeDescriptors.BarcodeRotate, PageModeDescriptors.Bitmap, and PageModeDescriptors.BitmapRotate	
PageModeHorizontalPosition	R	✓ 0 (Default value)	
PageModePrintArea	R	✓ X=0 Y=0 Width=0 Height=0 (Default value)	
PageModePrintDirection	R	✓ PageModePrintDirection.LeftToRight (Default value) PageModePrintDirection.BottomToTop PageModePrintDirection.RightToLeft PageModePrintDirection.TopToBottom	
PageModeStation	R	✓ PrinterStation.None (Default value) PrinterStation.Receipt	
PageModeVerticalPosition	R	✓ 0 (Default value)	
RotateSpecial	R/W	✓ Rotation.Normal Rotation.Right90 Rotation.Left90 Rotation.Rotate180	<a href="#">(See PrintBarcode method /RotateSpecial property in 2.5. Detail on POS printer service object)</a>
JrnLineChars	R/W	0	Unsupported hardware
JrnLineCharsList	R	Null int array	Unsupported hardware
JrnLineHeight	R/W	0	Unsupported hardware
JrnLineSpacing	R/W	0	Unsupported hardware
JrnLineWidth	R	0	Unsupported hardware
JrnLetterQuality	R/W	false	Unsupported hardware
JrnEmpty	R	false	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S310II_*)		Notes
JrnNearEnd	R		false	Unsupported hardware
JrnCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
JrnCurrentCartridge	R/W		PrinterColors.None	Unsupported hardware
RecLineChars	R/W	✓	ErrorCode.Success (Normal setting) ErrorCode.Illegal (Illegal line character width is specified.)	The font size varies by the set value. The set value is selected with the RecLineCharsList property (See <a href="#">RecLineChars / RecLineCharsList properties in 2.5. Detail on POS printer service object</a> ).
RecLineCharsList	R	✓	58mm paper "30,40,45" "32,42,48" "35,46,52" 80mm paper "42,56,64" "48,64,72"	(See <a href="#">RecLineChars / RecLineCharsList properties in 2.5. Detail on POS printer service object</a> ).
RecLineHeight	R/W	✓	The value is not reflected upon writing.	The value is changed according to the RecLineChars property.
RecLineSpacing	R/W	✓		If the value is smaller than RecLineHeight, the value is changed according to the RecLineHeight property.
RecLineWidth	R	✓		
RecLetterQuality	R/W			Not supported
RecEmpty	R	✓	true: Receipt paper out false: With receipt paper	
RecNearEnd	R		false	Unsupported hardware
RecSidewaysMaxLines	R	✓		(See <a href="#">RecSidewaysMaxLines property in 2.5. Detail on POS printer service object</a> ).
RecSidewaysMaxChars	R	✓		(See <a href="#">RecSidewaysMaxChars property in 2.5. Detail on POS printer service object</a> ).
RecLinesToPaperCut	R	✓		
RecBarCodeRotationList	R	✓	Rotation.Normal, Rotation.Right90, Rotation.Left90, Rotation.Rotate180	
RecCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
RecCurrentCartridge	R/W		PrinterColors.Primary	
RecBitmapRotationList	R	✓	Rotation.Normal, Rotation.Right90, Rotation.Left90, Rotation.Rotate180	
SlpLineChars	R/W		0	Unsupported hardware
SlpLineCharsList	R		Null int array	Unsupported hardware
SlpLineHeight	R/W		0	Unsupported hardware
SlpLineSpacing	R/W		0	Unsupported hardware
SlpLineWidth	R		0	Unsupported hardware
SlpLetterQuality	R/W		false	Unsupported hardware
SlpEmpty	R		false	Unsupported hardware
SlpNearEnd	R		false	Unsupported hardware
SlpSidewaysMaxLines	R		0	Unsupported hardware
SlpSidewaysMaxChars	R		0	Unsupported hardware
SlpMaxLines	R		0	Unsupported hardware
SlpLinesNearEndToEnd	R		0	Unsupported hardware
SlpBarCodeRotationList	R		Null Rotation array	Unsupported hardware
SlpBitmapRotationList	R		Null Rotation array	Unsupported hardware
SlpPrintSide	R		PrinterSide.Unknown	Unsupported hardware
SlpCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
SlpCurrentCartridge	R/W		PrinterColors.None	Unsupported hardware



**CT-S601/651/801/851**

Property	Attribute	Status of support by the driver (CT-S601_*, CT-S651_*, CT-S801_*, CT-S851_*)		Notes
AutoDisable	R/W		Not applicable with POSPrinter	
CapCompareFirmwareVersion	R		false	Not supported
CapPowerReporting	R	✓	PowerReporting.Standard	
CapStatisticsReporting	R	✓	true	
CapUpdateFirmware	R		false	Not supported
CapUpdateStatistics	R		false	
CheckHealthText	R	✓	"External HCheck: Successful" "External HCheck: Not Responding"	
Claimed	R	✓	true / false	
DataCount	R		Not applicable with POSPrinter	
DataEventEnabled	R/W		Not applicable with POSPrinter	
DeviceEnabled	R/W	✓	true / false	<a href="#">(See DeviceEnable in 2.5. Detail on POS printer service object)</a>
FreezeEvents	R/W	✓	true / false	
OutputId	R	✓	Increment (+1)	<a href="#">(See OutPutId property / OutputCompleteEvent event in 2.5. Detail on POS printer service object)</a>
PowerNotify	R/W	✓	PowerNotification.Disabled (Power notification is not supplied.) PowerNotification.Enabled (Information on power notification is supplied.)	
PowerState	R	✓	Online and Ready state: PowerState.Online(2001) Not Ready state: PowerState.Offline(2003)	
State	R	✓		For the case other than ControlState.Idle, refer to the State property in "UnifiedPOS Retail Peripheral Architecture Version 1.12".
SynchronizingObject	R/W	✓		
ServiceObjectDescription	R	✓	CITIZEN Service Object for Thermal PosPrinter ver 1.12.*.*	
ServiceObjectVersion	R	✓	1.12.*.*	
DeviceDescription	R	✓	CITIZEN Thermal POSPrinter	
DeviceName	R	✓	CT-S601: CT-S601_* CT-S651: CT-S651_* CT-S801: CT-S801_* CT-S851: CT-S851_*	
CapCharacterSet	R	✓	CharacterSetCapability.Kanji	
CapConcurrentJrnRec	R		false	Unsupported hardware
CapConcurrentJrnSlp	R		false	Unsupported hardware
CapConcurrentPageMode	R		false	Unsupported hardware
CapConcurrentRecSlp	R		false	Unsupported hardware
CapCoverSensor	R	✓	true: With cover open sensor	
CapMapCharacterSet	R	✓	true	
CapTransaction	R	✓	true: Batch processing of characters is possible.	
CapJrnPresent	R		false	Unsupported hardware
CapJrn2Color	R		false	Unsupported hardware
CapJrnBold	R		false	Unsupported hardware
CapJrnDHigh	R		false	Unsupported hardware
CapJrnDWide	R		false	Unsupported hardware
CapJrnDWideDHigh	R		false	Unsupported hardware



Property	Attribute	Status of support by the driver (CT-S601_*, CT-S651_*, CT-S801_*, CT-S851_*)	Notes
CapJrnEmptySensor	R	false	Unsupported hardware
CapJrnItalic	R	false	Unsupported hardware
CapJrnNearEndSensor	R	false	Unsupported hardware
CapJrnUnderline	R	false	Unsupported hardware
CapJrnCartridgeSensor	R	PrinterCartridgeSensors.None	Unsupported hardware
CapJrnColor	R	PrinterColors.None	Unsupported hardware
CapRecPresent	R	✓ true: Receipt is possible.	
CapRec2Color	R	✓ true: 2-color printing is possible.	Using paper printable in 2 colors
CapRecBarCode	R	✓ true: Barcode printing is possible.	
CapRecBitmap	R	✓ true: Bitmap printing is possible.	
CapRecBold	R	✓ true: Bold attribute setting is possible.	
CapRecDHigh	R	✓ true: Double height attribute setting is possible.	
CapRecDWide	R	✓ true: Double width setting is possible.	
CapRecDWideDHigh	R	✓ true: Quadruple attribute setting is possible.	
CapRecEmptySensor	R	✓ true: Paper-Out sensor is active.	
CapRecItalic	R	false	Unsupported hardware
CapRecLeft90	R	✓ true: 90-degree CCW rotation attribute setting is possible.	
CapRecNearEndSensor	R	✓ true: With Paper Near-End sensor	
CapRecPaperCut	R	✓	
CapRecRight90	R	✓ true: 90-degree CW rotation attribute setting is possible.	
CapRecRotate180	R	✓ true: 180-degree rotation attribute setting is possible.	
CapRecStamp	R	False	Not supported
CapRecUnderline	R	✓ true: Underline attribute setting is possible	
CapRecCartridgeSensor	R	✓ PrinterCartridgeSensors.None	
CapRecColor	R	✓ PrinterColors.Primary   PrinterColors.Custom1	
CapRecMarkFeed	R	✓ PrinterMarkFeeds.Cutter	
CapRecPageMode	R	✓ true	
CapRecRuledLine	R		
CapSlpPresent	R	false	Unsupported hardware
CapSlpFullSlip	R	false	Unsupported hardware
CapSlp2Color	R	false	Unsupported hardware
CapSlpBarCode	R	false	Unsupported hardware
CapSlpBitmap	R	false	Unsupported hardware
CapSlpBold	R	false	Unsupported hardware
CapSlpDHigh	R	false	Unsupported hardware
CapSlpDWide	R	false	Unsupported hardware
CapSlpDWideDHigh	R	false	Unsupported hardware
CapSlpEmptySensor	R	false	Unsupported hardware
CapSlpItalic	R	false	Unsupported hardware
CapSlpLeft90	R	false	Unsupported hardware
CapSlpNearEndSensor	R	false	Unsupported hardware
CapSlpRight90	R	false	Unsupported hardware
CapSlpRotate180	R	false	Unsupported hardware
CapSlpUnderline	R	false	Unsupported hardware
CapSlpBothSidesPrint	R	false	Unsupported hardware
CapSlpCartridgeSensor	R	PrinterCartridgeSensors.None	Unsupported hardware
CapSlpColor	R	PrinterColors.None	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S601_*, CT-S651_*, CT-S801_*, CT-S851_*)	Notes
CapSlpPageMode	R	false	Unsupported hardware
CapSlpRuledLine	R		Unsupported hardware
AsyncMode	R/W	✓ true false (Default value)	<a href="#">(See AsyncMode property in 2.5. Detail on POS printer service object)</a>
CartridgeNotify	R/W	PrinterCartridgeNotify.Disabled	Unsupported hardware
CharacterSet	R/W	✓ Setting values of Configuration Utility	
CharacterSetList	R	✓ 255: User Defined 437: Code437 850: Code850 Multilingual 860: Code860 Portugal 863: Code863 Canada-French 865: Code865 Norway 852: Code852 EasternEurope 858: Code858 864: Code864 Arabic 874: Code874 Thai Code 18 866: Code866 Russia 857: Code857 Turkey 932: KANA 998: ASCII 999: Windows Code 1252: Windows Code	
CoverOpen	R	✓ true: POS printer cover is open. false: POS printer cover is closed.	
ErrorLevel	R	✓ PrinterErrorLevel.None PrinterErrorLevel.Recoverable PrinterErrorLevel.Fatal	<a href="#">(See ErrorLevel property in 2.5. Detail on POS printer service object)</a>
ErrorStation	R	✓ PrinterStation.Receipt	
ErrorString	R	✓ Description on present error is retained.	
FontTypefaceList	R	✓ Font A,B,C	
FlagWhenIdle	R/W	✓	
MapCharacterSet	R/W	✓ true	
MapMode	R/W	✓ MapMode.Dots (Default value) MapMode.Twips MapMode.English MapMode.Metric	
PageModeArea	R	✓ X=RecLineWidth,Y=936	
PageModeDescriptor	R	✓ Logical sum of PageModeDescriptors.Barcode, PageModeDescriptors.BarcodeRotate, PageModeDescriptors.Bitmap, and PageModeDescriptors.BitmapRotate	
PageModeHorizontalPosition	R	✓ 0 (Default value)	
PageModePrintArea	R	✓ X=0 Y=0 Width=0 Height=0 (Default value)	
PageModePrintDirection	R	✓ PageModePrintDirection.LeftToRight (Default value) PageModePrintDirection.BottomToTop PageModePrintDirection.RightToLeft PageModePrintDirection.TopToBottom	
PageModeStation	R	✓ PrinterStation.None (Default value) PrinterStation.Receipt	
PageModeVerticalPosition	R	✓ 0 (Default value)	
RotateSpecial	R/W	✓ Rotation.Normal Rotation.Right90 Rotation.Left90 Rotation.Rotate180	<a href="#">(See PrintBarcode method /RotateSpecial property in 2.5. Detail on POS printer service object)</a>
JrnLineChars	R/W	0	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S601_*, CT-S651_*, CT-S801_*, CT-S851_*)		Notes
JrnLineCharsList	R		Null int array	Unsupported hardware
JrnLineHeight	R/W		0	Unsupported hardware
JrnLineSpacing	R/W		0	Unsupported hardware
JrnLineWidth	R		0	Unsupported hardware
JrnLetterQuality	R/W		false	Unsupported hardware
JrnEmpty	R		false	Unsupported hardware
JrnNearEnd	R		false	Unsupported hardware
JrnCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
JrnCurrentCartridge	R/W		PrinterColors.None	Unsupported hardware
RecLineChars	R/W	✓	ErrorCode.Success (Normal setting) ErrorCode.Illegal (Illegal line character width is specified.)	The font size varies by the set value. The set value is selected with the RecLineCharsList property (See <a href="#">RecLineChars / RecLineCharsList properties in 2.5. Detail on POS printer service object</a> )
RecLineCharsList	R	✓	58mm paper "30,40,45" "32,42,48" "35,46,42" 60mm paper "36,48,54" 80mm paper "42,56,64" "48,64,72" 83mm paper "53,71,80"	(See <a href="#">RecLineChars / RecLineCharsList properties in 2.5. Detail on POS printer service object</a> )
RecLineHeight	R/W	✓	The value is not reflected upon writing.	The value is changed according to the RecLineChars property.
RecLineSpacing	R/W	✓		If the value is smaller than RecLineHeight, the value is changed according to the RecLineHeight property.
RecLineWidth	R	✓		
RecLetterQuality	R/W			Not supported
RecEmpty	R	✓	true: Receipt paper out false: With receipt paper	
RecNearEnd	R	✓		
RecSidewaysMaxLines	R	✓		(See <a href="#">RecSidewaysMaxLines property in 2.5. Detail on POS printer service object</a> )
RecSidewaysMaxChars	R	✓		(See <a href="#">RecSidewaysMaxChars property in 2.5. Detail on POS printer service object</a> )
RecLinesToPaperCut	R	✓		
RecBarCodeRotationList	R	✓	Rotation.Normal, Rotation.Right90, Rotation.Left90, Rotation.Rotate180	
RecCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
RecCurrentCartridge	R/W	✓	PrinterColors.Primary, PrinterColors.Custom1	
RecBitmapRotationList	R	✓	Rotation.Normal, Rotation.Right90, Rotation.Left90, Rotation.Rotate180	
SlpLineChars	R/W		0	Unsupported hardware
SlpLineCharsList	R		Null int array	Unsupported hardware
SlpLineHeight	R/W		0	Unsupported hardware
SlpLineSpacing	R/W		0	Unsupported hardware
SlpLineWidth	R		0	Unsupported hardware
SlpLetterQuality	R/W		false	Unsupported hardware
SlpEmpty	R		false	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S601_*, CT-S651_*, CT-S801_*, CT-S851_*)	Notes
SlpNearEnd	R	false	Unsupported hardware
SlpSidewaysMaxLines	R	0	Unsupported hardware
SlpSidewaysMaxChars	R	0	Unsupported hardware
SlpMaxLines	R	0	Unsupported hardware
SlpLinesNearEndToEnd	R	0	Unsupported hardware
SlpBarCodeRotationList	R	Null Rotation array	Unsupported hardware
SlpBitmapRotationList	R	Null Rotation array	Unsupported hardware
SlpPrintSide	R	PrinterSide.Unknown	Unsupported hardware
SlpCartridgeState	R	PrinterCartridgeStates.Unknown	Unsupported hardware
SlpCurrentCartridge	R/W	PrinterColors.None	Unsupported hardware

**CT-S2000**

Property	Attribute	Status of support by the driver (CT-S2000_*)		Notes
AutoDisable	R/W		Not applicable with POSPrinter	
CapCompareFirmwareVersion	R		false	Not supported
CapPowerReporting	R	✓	PowerReporting.Standard	
CapStatisticsReporting	R	✓	true	
CapUpdateFirmware	R		false	Not supported
CapUpdateStatistics	R		false	
CheckHealthText	R	✓	"External HCheck: Successful" "External HCheck: Not Responding"	
Claimed	R	✓	true / false	
DataCount	R		Not applicable with POSPrinter	
DataEventEnabled	R/W		Not applicable with POSPrinter	
DeviceEnabled	R/W	✓	true / false	(See DeviceEnable in 2.5. Detail on POS printer service object).
FreezeEvents	R/W	✓	true / false	
OutputId	R	✓	Increment (+1)	(See OutPutId property / OutputCompleteEvent event in 2.5. Detail on POS printer service object)
PowerNotify	R/W	✓	PowerNotification.Disabled (Power notification is not supplied.) PowerNotification.Enabled (Information on power notification is supplied.)	
PowerState	R	✓	Online and Ready state: PowerState.Online(2001) Not Ready state: PowerState.Offline(2003)	
State	R	✓		For the case other than ControlState.Idle, refer to the State property in "UnifiedPOS Retail Peripheral Architecture Version 1.12".
SynchronizingObject	R/W	✓		
ServiceObjectDescription	R	✓	CITIZEN Service Object for Thermal PosPrinter ver 1.12.*.*	
ServiceObjectVersion	R	✓	1.12.*.*	
DeviceDescription	R	✓	CITIZEN Thermal POSPrinter	
DeviceName	R	✓	CT-S2000_*	
CapCharacterSet	R	✓	CharacterSetCapability.Kanji	
CapConcurrentJrnRec	R		false	Unsupported hardware
CapConcurrentJrnSlp	R		false	Unsupported hardware
CapConcurrentPageMode	R		false	Unsupported hardware
CapConcurrentRecSlp	R		false	Unsupported hardware
CapCoverSensor	R	✓	true: With cover open sensor	
CapMapCharacterSet	R	✓	true	
CapTransaction	R	✓	true: Batch processing of characters is possible.	
CapJrnPresent	R		false	Unsupported hardware
CapJrn2Color	R		false	Unsupported hardware
CapJrnBold	R		false	Unsupported hardware
CapJrnDHigh	R		false	Unsupported hardware
CapJrnDWide	R		false	Unsupported hardware
CapJrnDWideDHigh	R		false	Unsupported hardware
CapJrnEmptySensor	R		false	Unsupported hardware
CapJrnItalic	R		false	Unsupported hardware
CapJrnNearEndSensor	R		false	Unsupported hardware
CapJrnUnderline	R		false	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S2000_*)	Notes
CapJrnCartridgeSensor	R	PrinterCartridgeSensors.None	Unsupported hardware
CapJrnColor	R	PrinterColors.None	Unsupported hardware
CapRecPresent	R	✓ true: Receipt is possible.	
CapRec2Color	R	✓ true: 2-color printing is possible.	Using paper printable in 2 colors
CapRecBarCode	R	✓ true: Barcode printing is possible.	
CapRecBitmap	R	✓ true: Bitmap printing is possible.	
CapRecBold	R	✓ true: Bold attribute setting is possible.	
CapRecDHigh	R	✓ true: Double height attribute setting is possible.	
CapRecDWide	R	✓ true: Double width setting is possible.	
CapRecDWideDHigh	R	✓ true: Quadruple attribute setting is possible.	
CapRecEmptySensor	R	✓ true: Paper-Out sensor is active. false: Paper-Out sensor is non-active.	
CapRecItalic	R	false	Unsupported hardware
CapRecLeft90	R	✓ true: 90-degree CCW rotation attribute setting is possible.	
CapRecNearEndSensor	R	✓ true: With Paper Near-End sensor	
CapRecPaperCut	R	✓	
CapRecRight90	R	✓ true: 90-degree CW rotation attribute setting is possible.	
CapRecRotate180	R	✓ true: 180-degree rotation attribute setting is possible.	
CapRecStamp	R	false	Not supported
CapRecUnderline	R	✓ true: Underline attribute setting is possible	
CapRecCartridgeSensor	R	✓ PrinterCartridgeSensors.None	
CapRecColor	R	✓ PrinterColors.Primary   PrinterColors.Custom1	
CapRecMarkFeed	R	✓ PrinterMarkFeeds.Cutter	
CapRecPageMode	R	✓ true	
CapRecRuledLine	R		Not supported
CapSlpPresent	R	false	Unsupported hardware
CapSlpFullSlip	R	false	Unsupported hardware
CapSlp2Color	R	false	Unsupported hardware
CapSlpBarCode	R	false	Unsupported hardware
CapSlpBitmap	R	false	Unsupported hardware
CapSlpBold	R	false	Unsupported hardware
CapSlpDHigh	R	false	Unsupported hardware
CapSlpDWide	R	false	Unsupported hardware
CapSlpDWideDHigh	R	false	Unsupported hardware
CapSlpEmptySensor	R	false	Unsupported hardware
CapSlpItalic	R	false	Unsupported hardware
CapSlpLeft90	R	false	Unsupported hardware
CapSlpNearEndSensor	R	false	Unsupported hardware
CapSlpRight90	R	false	Unsupported hardware
CapSlpRotate180	R	false	Unsupported hardware
CapSlpUnderline	R	false	Unsupported hardware
CapSlpBothSidesPrint	R	false	Unsupported hardware
CapSlpCartridgeSensor	R	PrinterCartridgeSensors.None	Unsupported hardware
CapSlpColor	R	PrinterColors.None	Unsupported hardware
CapSlpPageMode	R	false	Unsupported hardware
CapSlpRuledLine	R		Unsupported hardware
AsyncMode	R/W	✓ true false (Default value)	<a href="#">(See AsyncMode property in 2.5. Detail on POS printer service object)</a>
CartridgeNotify	R/W	PrinterCartridgeNotify.Disabled	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S2000_*)	Notes
CharacterSet	R/W	✓ Setting values of Configuration Utility	
CharacterSetList	R	✓ 255: User Defined 437: Code437 850: Code850 Multilingual 860: Code860 Portugal 863: Code863 Canada-French 865: Code865 Norway 852: Code852 EasternEurope 858: Code858 864: Code864 Arabic 874: Code874 Thai Code 18 866: Code866 Russia 857: Code857 Turkey 932: KANA 998: ASCII 999: Windows Code 1252: Windows Code	
CoverOpen	R	✓ true: POS printer cover is open. false: POS printer cover is closed.	
ErrorLevel	R	✓ PrinterErrorLevel.None PrinterErrorLevel.Recoverable PrinterErrorLevel.Fatal	<a href="#">(See ErrorLevel property in 2.5. Detail on POS printer service object)</a>
ErrorStation	R	✓ PrinterStation.Receipt	
ErrorString	R	✓ Description on present error is retained.	
FontTypefaceList	R	✓ Font A,B,C	
FlagWhenIdle	R/W	✓	
MapCharacterSet	R/W	✓ true	
MapMode	R/W	✓ MapMode.Dots (Default value) MapMode.Twips MapMode.English MapMode.Metric	
PageModeArea	R	✓ X=RecLineWidth,Y=936	
PageModeDescriptor	R	✓ Logical sum of PageModeDescriptors.Barcode, PageModeDescriptors.BarcodeRotate, PageModeDescriptors.Bitmap, and PageModeDescriptors.BitmapRotate	
PageModeHorizontalPosition	R	✓ 0 (Default value)	
PageModePrintArea	R	✓ X=0 Y=0 Width=0 Height=0 (Default value)	
PageModePrintDirection	R	✓ PageModePrintDirection.LeftToRight (Default value) PageModePrintDirection.BottomToTop PageModePrintDirection.RightToLeft PageModePrintDirection.TopToBottom	
PageModeStation	R	✓ PrinterStation.None (Default value) PrinterStation.Receipt	
PageModeVerticalPosition	R	✓ 0 (Default value)	
RotateSpecial	R/W	✓ Rotation.Normal Rotation.Right90 Rotation.Left90 Rotation.Rotate180	<a href="#">(See PrintBarcode method /RotateSpecial property in 2.5. Detail on POS printer service object)</a>
JrnLineChars	R/W	0	Unsupported hardware
JrnLineCharsList	R	Null int array	Unsupported hardware
JrnLineHeight	R/W	0	Unsupported hardware
JrnLineSpacing	R/W	0	Unsupported hardware
JrnLineWidth	R	0	Unsupported hardware
JrnLetterQuality	R/W	false	Unsupported hardware
JrnEmpty	R	false	Unsupported hardware

Property	Attribute	Status of support by the driver (CT-S2000_*)		Notes
JrnNearEnd	R		false	Unsupported hardware
JrnCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
JrnCurrentCartridge	R/W		PrinterColors.None	Unsupported hardware
RecLineChars	R/W	✓	ErrorCode.Success (Normal setting) ErrorCode.Illegal (Illegal line character width is specified.)	The font size varies by the set value. The set value is selected with the RecLineCharsList property (See <a href="#">RecLineChars / RecLineCharsList properties in 2.5. Detail on POS printer service object</a> )
RecLineCharsList	R	✓	58mm paper "30,40,45" "32,42,48" "35,46,42" 60mm paper "36,48,54" 80mm paper "42,56,64" "48,64,72" 83mm paper "53,71,80"	(See <a href="#">RecLineChars / RecLineCharsList properties in 2.5. Detail on POS printer service object</a> )
RecLineHeight	R/W	✓	The value is not reflected upon writing.	The value is changed according to the RecLineChars property.
RecLineSpacing	R/W	✓		If the value is smaller than RecLineHeight, the value is changed according to the RecLineHeight property.
RecLineWidth	R	✓		
RecLetterQuality	R/W			Not supported
RecEmpty	R	✓	true: Receipt paper out false: With receipt paper	
RecNearEnd	R	✓		
RecSidewaysMaxLines	R	✓		(See <a href="#">RecSidewaysMaxLines property in 2.5. Detail on POS printer service object</a> )
RecSidewaysMaxChars	R	✓		(See <a href="#">RecSidewaysMaxChars property in 2.5. Detail on POS printer service object</a> )
RecLinesToPaperCut	R	✓		
RecBarCodeRotationList	R	✓	Rotation.Normal, Rotation.Right90, Rotation.Left90, Rotation.Rotate180	
RecCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
RecCurrentCartridge	R/W	✓	PrinterColors.Primary, PrinterColors.Custom1	
RecBitmapRotationList	R	✓	Rotation.Normal, Rotation.Right90, Rotation.Left90, Rotation.Rotate180	
SlpLineChars	R/W		0	Unsupported hardware
SlpLineCharsList	R		Null int array	Unsupported hardware
SlpLineHeight	R/W		0	Unsupported hardware
SlpLineSpacing	R/W		0	Unsupported hardware
SlpLineWidth	R		0	Unsupported hardware
SlpLetterQuality	R/W		false	Unsupported hardware
SlpEmpty	R		false	Unsupported hardware
SlpNearEnd	R		false	Unsupported hardware
SlpSidewaysMaxLines	R		0	Unsupported hardware
SlpSidewaysMaxChars	R		0	Unsupported hardware
SlpMaxLines	R		0	Unsupported hardware
SlpLinesNearEndToEnd	R		0	Unsupported hardware
SlpBarCodeRotationList	R		Null Rotation array	Unsupported hardware
SlpBitmapRotationList	R		Null Rotation array	Unsupported hardware



Property	Attribute	Status of support by the driver (CT-S2000_*)		Notes
SlpPrintSide	R		PrinterSide.Unknown	Unsupported hardware
SlpCartridgeState	R		PrinterCartridgeStates.Unknown	Unsupported hardware
SlpCurrentCartridge	R/W		PrinterColors.None	Unsupported hardware

## 2.3. POS Printer Service Object and Escape Sequence Relations

### CT-S310

Escape Sequence		Status of support by the driver (CT-S310_*)		Notes
Paper cut	ESC #P	✓	0-100	
Feed and paper cut	ESC #fP	✓	0-100	
Feed, cut, and stamp print	ESC #sP		Not supported	
Bitmap print	ESC #B	✓	1-20 Specifies Bitmap number registered by the SetBitmap method. Printing is carried out in raster bit image or NV bit image mode.	The printing position after Bitmap printing returns to the initial state (left-aligned) (See <a href="#">SetBitmap method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> ) (See <a href="#">PageModePrint method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> )
BarCode print	ESC #R	✓		
Top logo print	ESC tL	✓		
Bottom logo print	ESC bL	✓		
Stamp print	ESC sL		Not supported	
Multi-line feed	ESC #IF	✓		
Unit feed	ESC #uF	✓		
Reverse feed	ESC #rF		Not supported	
Pass through embedded data	ESC #E	✓		
Font type specification	ESC #fT	✓	1 Font A, 2 Font B, 3 Font C	
Bold	ESC bC	✓		
Cancel of bold	ESC !bC	✓		
Underline	ESC #uC	✓	Range of # value specification # = 0: No underline # = 1: 1-dot underline # = 2: 2-dot underline	When characters in different vertical scale factors exist on the same line, the baseline of these characters is not aligned so the level of the underline becomes different.
Cancel of underline	ESC !uC	✓		
Italic	ESC iC		Not supported	
Custom color	ESC #rC	✓		Effective only when dedicated 2-color paper is used. Do not use this escape sequence with normal thermal paper.
Red	ESC rC	✓		Effective only when dedicated 2-color paper is used. Do not use this escape sequence with normal thermal paper.
Reverse character character	ESC rvC	✓		
Cancel of reverse	ESC !rvC	✓		
Shaded character	ESC #sC		Not supported	
Standard	ESC 1C	✓		
Double width	ESC 2C	✓		
Double height	ESC 3C	✓		
Quadruple	ESC 4C	✓		
Horizontal magnification	ESC #hC	✓	1-8	
Vertical magnification	ESC #vC	✓	1-8	
Color specification	ESC #fC		Not supported	
Left adjustment	ESC lA	✓		
Centering	ESC cA	✓		
Right adjustment	ESC rA	✓		
Normal	ESC N	✓		
Subscript	ESC tbC		Not supported	
Superscript	ESC tpC		Not supported	

**CT-S310II**

Escape Sequence		Status of support by the driver (CT-S310II_*)		Notes
Paper cut	ESC #P	✓	0-100	
Feed and paper cut	ESC #fP	✓	0-100	
Feed, cut, and stamp print	ESC #sP		Not supported	
Bitmap print	ESC #B	✓	1-20 Specifies Bitmap number registered by the SetBitmap method. Printing is carried out in raster bit image or NV bit image mode.	The printing position after Bitmap printing returns to the initial state (left-aligned) (See <a href="#">SetBitmap method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> ) (See <a href="#">PageModePrint method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> )
BarCode print	ESC #R	✓		
Top logo print	ESC tL	✓		
Bottom logo print	ESC bL	✓		
Stamp print	ESC sL		Not supported	
Multi-line feed	ESC #IF	✓		
Unit feed	ESC #uF	✓		
Reverse feed	ESC #rF		Not supported	
Pass through embedded data	ESC #E	✓		
Font type specification	ESC #fT	✓		
Bold	ESC bC	✓		
Cancel of bold	ESC !bC	✓		
Underline	ESC #uC	✓	Range of # value specification # = 0: No underline # = 1: 1-dot underline # = 2: 2-dot underline	When characters in different vertical scale factors exist on the same line, the baseline of these characters is not aligned so the level of the underline becomes different.
Cancel of underline	ESC !uC	✓		
Italic	ESC iC		Not supported	
Custom color	ESC #rC		Not supported	
Red	ESC rC		Not supported	
Reverse character character	ESC rvC	✓		
Cancel of reverse	ESC !rvC	✓		
Shaded character	ESC #sC		Not supported	
Standard	ESC 1C	✓		
Double width	ESC 2C	✓		
Double height	ESC 3C	✓		
Quadruple	ESC 4C	✓		
Horizontal magnification	ESC #hC	✓	1-8	
Vertical magnification	ESC #vC	✓	1-8	
Color specification	ESC #fC		Not supported	
Left adjustment	ESC lA	✓		
Centering	ESC cA	✓		
Right adjustment	ESC rA	✓		
Normal	ESC N	✓		
Subscript	ESC tbC		Not supported	
Superscript	ESC tpC		Not supported	

**CT-S601/651/801/851**

Escape Sequence		Status of support by the driver (CT-S601_*, CT-S651_*, CT-S801_*,CT-S851_*)		Notes
Paper cut	ESC #P	✓	0-100	
Feed and paper cut	ESC #fP	✓	0-100	
Feed, cut, and stamp print	ESC #sP			Not supported
Bitmap print	ESC #B	✓	1-20 Specifies Bitmap number registered by the SetBitmap method. Printing is carried out in raster bit image or NV bit image mode.	The printing position after Bitmap printing returns to the initial state (left-aligned) (See <a href="#">SetBitmap method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> ) (See <a href="#">PageModePrint method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> )
BarCode print	ESC #R	✓		
Top logo print	ESC tL	✓		
Bottom logo print	ESC bL	✓		
Stamp print	ESC sL			Not supported
Multi-line feed	ESC #IF	✓		
Unit feed	ESC #uF	✓		
Reverse feed	ESC #rF			Not supported
Pass through embedded data	ESC #E	✓		
Font type specification	ESC #fT	✓		
Bold	ESC bC	✓		
Cancel of bold	ESC !bC	✓		
Underline	ESC #uC	✓	Range of # value specification # = 0: No underline # = 1: 1-dot underline # = 2: 2-dot underline	When characters in different vertical scale factors exist on the same line, the baseline of these characters is not aligned so the level of the underline becomes different.
Cancel of underline	ESC !uC	✓		
Italic	ESC iC		Not supported	
Custom color	ESC #rC	✓		Effective only when dedicated 2-color paper is used. Do not use this escape sequence with normal thermal paper.
Red	ESC rC	✓		Effective only when dedicated 2-color paper is used. Do not use this escape sequence with normal thermal paper.
Reverse character character	ESC rvC	✓		
Cancel of reverse	ESC !rvC	✓		
Shaded character	ESC #sC		Not supported	
Standard	ESC 1C	✓		
Double width	ESC 2C	✓		
Double height	ESC 3C	✓		
Quadruple	ESC 4C	✓		
Horizontal magnification	ESC #hC	✓	1-8	
Vertical magnification	ESC #vC	✓	1-8	
Color specification	ESC #fC		Not supported	
Left adjustment	ESC lA	✓		
Centering	ESC cA	✓		
Right adjustment	ESC rA	✓		
Normal	ESC N	✓		
Subscript	ESC tbC		Not supported	
Superscript	ESC tpC		Not supported	

**CT-S2000**

Escape Sequence		Status of support by the driver (CT-S2000_*)		Notes
Paper cut	ESC #P	✓	0-100	
Feed and paper cut	ESC #fP	✓	0-100	
Feed, cut, and stamp print	ESC #sP		Not supported	
Bitmap print	ESC #B	✓	1-20 Specifies Bitmap number registered by the SetBitmap method. Printing is carried out in raster bit image or NV bit image mode.	The printing position after Bitmap printing returns to the initial state (left-aligned) (See <a href="#">SetBitmap method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> ) (See <a href="#">PageModePrint method / ESC #B escape sequence in 2.5. Detail on POS printer service object</a> )
BarCode print	ESC #R	✓		
Top logo print	ESC tL	✓		
Bottom logo print	ESC bL	✓		
Stamp print	ESC sL		Not supported	
Multi-line feed	ESC #fF	✓		
Unit feed	ESC #uF	✓		
Reverse feed	ESC #rF		Not supported	
Pass through embedded data	ESC #E	✓		
Font type specification	ESC #fT	✓		
Bold	ESC bC	✓		
Cancel of bold	ESC !bC	✓		
Underline	ESC #uC	✓	Range of # value specification # = 0: No underline # = 1: 1-dot underline # = 2: 2-dot underline	When characters in different vertical scale factors exist on the same line, the baseline of these characters is not aligned so the level of the underline becomes different.
Cancel of underline	ESC !uC	✓		
Italic	ESC iC			Not supported
Custom color	ESC #rC	✓		Effective only when dedicated 2-color paper is used. Do not use this escape sequence with normal thermal paper.
Red	ESC rC	✓		Effective only when dedicated 2-color paper is used. Do not use this escape sequence with normal thermal paper.
Reverse character character	ESC rvC	✓		
Cancel of reverse	ESC !rvC	✓		
Shaded character	ESC #sC		Not supported	
Standard	ESC 1C	✓		
Double width	ESC 2C	✓		
Double height	ESC 3C	✓		
Quadruple	ESC 4C	✓		
Horizontal magnification	ESC #hC	✓	1-8	
Vertical magnification	ESC #vC	✓	1-8	
Color specification	ESC #fC		Not supported	
Left adjustment	ESC lA	✓		
Centering	ESC cA	✓		
Right adjustment	ESC rA	✓		
Normal	ESC N	✓		
Subscript	ESC tbC		Not supported	
Superscript	ESC tpC		Not supported	

## 2.4. POS Printer Service Object and Event Relations

### CT-S310

Event	Status of support by the driver (CT-S310_*)		Notes
DataEvent		Not applicable with POSPrinter	
DirectIOEvent		Not supported	
ErrorEvent	✓		
OutputCompleteEvent	✓	Increment (+1)	<a href="#">(See OutPutID property / OutputCompleteEvent event in 2.5. Detail on POS printer service object)</a>
StatusUpdateEvent	✓		

### CT-S310II

Event	Status of support by the driver (CT-S310II_*)		Notes
DataEvent		Not applicable with POSPrinter	
DirectIOEvent		Not supported	
ErrorEvent	✓		
OutputCompleteEvent	✓	Increment (+1)	<a href="#">(See OutPutID property / OutputCompleteEvent event in 2.5. Detail on POS printer service object)</a>
StatusUpdateEvent	✓		

### CT-S601/651/801/851

Event	Status of support by the driver (CT-S601_*, CT-S651_*, CT-S801_*,CT-S851_*)		Notes
DataEvent		Not applicable with POSPrinter	
DirectIOEvent		Not supported	
ErrorEvent	✓		
OutputCompleteEvent	✓	Increment (+1)	<a href="#">(See OutPutID property / OutputCompleteEvent event in 2.5. Detail on POS printer service object)</a>
StatusUpdateEvent	✓		

### CT-S2000

Event	Status of support by the driver (CT-S2000_*)		Notes
DataEvent		Not applicable with POSPrinter	
DirectIOEvent		Not supported	
ErrorEvent	✓		
OutputCompleteEvent	✓	Increment (+1)	<a href="#">(See OutPutID property / OutputCompleteEvent event in 2.5. Detail on POS printer service object)</a>
StatusUpdateEvent	✓		

## 2.5. Detail on POS Printer Service Object

### Claim method

When this method is executed while connected to the network and the PosControlException exception occurs under the condition below, the following CITIZEN-extended error code is stored in ErrorCode and ErrorCodeExtended.

Condition	ErrorCode	ErrorCodeExtended
A device other than a CITIZEN printer is connected	ErrorCode.Illegal	60001
There is no response from the printer and the communication cannot be established (1) The printer is not connected (2) The printer is not powered on (3) The handle of the interface port cannot be obtained	ErrorCode.Illegal	60002
The printer is connected, but the following error has occurred (1) The cover is opened (2) There is no paper (3) The auto-cutter error has occurred due to a paper jam (4) A non-recoverable error has occurred due to circuit failure	ErrorCode.Illegal	60003

### DeviceEnable property

When this property is set to Enable while not connected to the network and the following error occurs under the condition below, the following CITIZEN-extended error code is stored in ErrorCode and ErrorCodeExtended.

Condition	ErrorCode	ErrorCodeExtended
A device other than a CITIZEN printer is connected	ErrorCode. Extended	60001
There is no response from the printer and the communication cannot be established (1) The printer is not connected (2) The printer is not powered on (3) The handle of the interface port cannot be obtained	ErrorCode. Extended	60002
The printer is connected, but the following error has occurred (1) The cover is opened (2) There is no paper (3) The auto-cutter error has occurred due to a paper jam (4) A non-recoverable error has occurred due to circuit failure	ErrorCode. Extended	60003
The status feature of the Windows driver is enabled ("Enable bi-directional support" is on in the Port setting)	ErrorCode. Extended	60004

## **PrintBarcode method / RotateSpecial property**

- **Supported barcodes**

BarcodeSymbology.UPCA, BarcodeSymbology.UPCE, BarcodeSymbology.EAN8,  
BarcodeSymbology.EANJan8, BarcodeSymbology.EAN13, BarcodeSymbology.EANJan13,  
BarcodeSymbology.ITF, BarcodeSymbology.CODABAR, BarcodeSymbology.CODE39,  
BarcodeSymbology.CODE93, BarcodeSymbology.CODE128, BarcodeSymbology.CODE128Parses

- **Printing UPC-E barcode**

The printer prints the input 11- or 12-digit data after reducing it into 8-digit data by using the Zero Suppression of the UPC-E standard. The example of the Zero Suppression is shown below.

The original code is "0-ABCDE-VWXYZ" (11 digits). The printable patterns are as follows:

1) When V - Y are all "0"

"0-ABCDE-0000Z" is printed as "ABCDEZ". In this case, however, Z shall be in the range of 5 - 9.

2) When E and VWXY are all "0"

"0-ABCD0-0000Z" is printed as "ABCDZ4". In this case, the 4 at the end indicates that the manufacturer codes A and D are not "0".

3) When DE and VWX are "0"

"0-ABCD0-0000Z" is printed as "ABCYZ3". In this case, the 3 at the end indicates that A and C are not "0" and ABC is a three-digit number.

4) When DE and VW are "0" and C is "0", "1" or "2"

① When C = "0": "0-AB000-00XYZ" -> "ABXYZ0"

② When C = "1": "0-AB100-00XYZ" -> "ABXYZ1"

③ When C = "2": "0-AB200-00XYZ" -> "ABXYZ2"

Note that the check digit is automatically calculated within the printer. When it is executed with the condition other than the above specified, the printing is not allowed according to the specifications of the printer, resulting in PosControlException(ErrorCode.Illegal).

- **Printing rotated symbol**

The directions of rotation that can be specified are 0, R90, L90 and 180 degrees.

- **Specification ranges of the height (Height parameter) and width (Width parameter) of the barcode**

The specification ranges of these parameters are as follows when the MapMode property is set to PtrMmDots

Height parameter:

1 - 255

Width parameter:

1 - A value of the RecLineWidth property

- **Combination of the RotatePrint method and the PrintBarcode method**

The example of the implementation (Visual Basic for .NET) using the PrintBarcode method and the RotatePrint method is shown below:



```

Public Const PtrBcLeft As Integer = PosPrinter.PrinterBarCodeLeft
Public Const PtrBcCenter As Integer = PosPrinter.PrinterBarCodeCenter
Public Const PtrBcRight As Integer = PosPrinter.PrinterBarCodeRight

Public Const PtrBcTextNone As BarCodeTextPosition = BarCodeTextPosition.None
Public Const PtrBcTextBelow As BarCodeTextPosition = BarCodeTextPosition.Below
Public Const PtrBcTextAbove As BarCodeTextPosition = BarCodeTextPosition.Above

Dim Station As PrinterStation = PrinterStation.Receipt
dim PtrBcs As BarCodeSymbology = BarCodeSymbology.UPCA

With Printer
    .Open()
    .Claim(1000)
    .DeviceEnabled = True

    .RotatePrint(Station, PrintRotation.Normal)
    .PrintNormal(Station, "Normal" & vbCrLf) ' ①
    .PrintBarCode(Station, "123456789012", PtrBcs, 100, 200, PtrBcLeft, PtrBcTextBelow) ' ②

    .RotatePrint(Station, PrintRotation.Right90 Or PrintRotation.BarCode)
    .PrintNormal(Station, "RIGHT90" & vbCrLf) ' ③
    .PrintBarCode(Station, "123456789012", PtrBcs, 100, 200, PtrBcLeft, PtrBcTextBelow) ' ④

    .RotatePrint(Station, PrintRotation.Left90 Or PrintRotation.BarCode)
    .PrintNormal(Station, "LEFT90" & vbCrLf) ' ⑤
    .PrintBarCode(Station, "123456789012", PtrBcs, 100, 200, PtrBcLeft, PtrBcTextBelow) ' ⑥

    .RotatePrint(Station, PrintRotation.Right90)
    .PrintNormal(Station, "RIGHT90" & vbCrLf) ' ⑦
    .PrintBarCode(Station, "123456789012", PtrBcs, 100, 200, PtrBcLeft, PtrBcTextBelow) ' ⑧

    .RotatePrint(Station, PrintRotation.Left90)
    .PrintNormal(Station, "LEFT90" & vbCrLf) ' ⑨
    .PrintBarCode(Station, "123456789012", PtrBcs, 100, 200, PtrBcLeft, PtrBcTextBelow) ' ⑩

    .RotatePrint(Station, PrintRotation.Normal)
    .DeviceEnabled = False
    .ReleaseDevice()
    .Close()
End With

```

## &lt;Output Result&gt;

The output result will be as follows. ⑧ and ⑩ are not affected by the RotatePrint method and immediately printed.



## **RotatePrint method**

The printing size is dynamically changed up to the value of RecSidewaysMaxChars according to the printing data. The directions of rotation that can be specified are 0, R90, L90 and 180 degrees.

## **SetBitmap method / ESC | #B escape sequence**

The bitmap is registered with the Bitmap number (1 - 20) specified using the SetBitmap method, and the bitmap is printed with the registered number specified in the ESC|#B escape sequence. This driver supports the Raster Bit Image mode and the NV Bit Image mode.

- **Raster Bit Image mode**

The SO itself stores the bitmap using the SetBitmap method. Since the stored bitmap is cleared when the SO is closed, it is necessary to register the bitmap every time the SO is opened.

In this mode, the bitmap is stored including the printing position (the Alignment parameter) specified upon the registration.

The directions of rotation that can be printed are 0, R90, L90 and 180 degrees.

- **NV Bit Image mode**

The SO writes the bitmap into the nonvolatile memory (FlashROM) of the printer using the SetBitmap method. Therefore, it is not necessary to register the bitmap every time the SO is opened.

In this mode, the printing position (the Alignment parameter) specified upon the registration is not saved, and the data is printed from the left most.

The directions of rotation that can be printed are 0 and 180 degrees, and it is not printed

when R90 or L90 degrees is specified.

When the Bitmap number is not registered sequentially,  
it causes PosControlExceptionErrorCode(ErrorCode.Illegal).

Example: When No. 3 is to be registered after No. 1 is registered

- **How to switch the mode**

The driver is set to the Raster Bit Image mode by default. Manipulate the Configuration.xml shown following to change to the NV Bit Image mode.

<Example: CT-S801, Connected I/F: Ethernet, IP Address: 192.168.0.1>

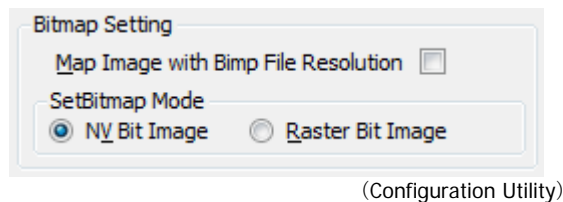
<ServiceObject Type="PosPrinter" Name="CTS801POSPrinter">

<Property> tag within <Device HardwarePath="192.168.0.1\_CT-S801\_1"> tag

Name="UseNVRAM" Value="001" --- NV Bit Image mode

Name="UseNVRAM" Value="000" --- Raster Bit Image mode (Default)

- \* When changing the above setting, use the setting tool (Configuration Utility) of this driver as described in "[1.5. Structure of Configuration.xml](#)".



- **Notes on the NV Bit Image mode**

The time required for the writing processing in the NV Bit Image mode depends on the communication conditions and the performance of the printer. When the writing for the bitmap registration fails, it is required to set the following transmission timeout time value to 10,000 msec or longer in Configuration.xml and conduct the test.

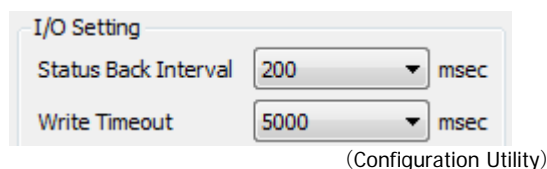
<Example: CT-S801, Connected I/F: Ethernet, IP Address: 192.168.0.1>

<ServiceObject Type="PosPrinter" Name="CTS801POSPrinter">

<Property> tag within <Device HardwarePath="192.168.0.1\_CT-S801\_1"> tag

Name="WriteTimeout" Value="10000" or lonter --- "5000" (Default)

- \* When changing the above setting, use the setting tool (Configuration Utility) of this driver as described in "[1.5. Structure of Configuration.xml](#)".



- \* For the longer life of the printer, it is recommended to register the NV bit image 10 times or less / day.

- **Limit on the registration size in the NV Bit Image mode**

The table below lists the maximum data size and the maximum pixel sizes in X and Y directions of the bitmap data that can be registered in the NV Bit Image mode:

Model	Maximum Data Size	Maximum Pixel Size in X Direction	Maximum Pixel Size in Y Direction
CT-S310 series	256 Kbyte	8184 pixel	2304 pixel
CT-S310II series	384 Kbyte	8184 pixel	2304 pixel
CT-S601/651/801/851 series	384 Kbyte	8184 pixel	2304 pixel
CT-S2000 series	384 Kbyte	8184 pixel	2304 pixel

The printer has a limit in physical size in a lateral direction. The bitmap data exceeding the physical size is discarded by the printer when printed. For more details on the physical size for the printer, refer to the command reference.

The maximum data size is calculated differently for each model.

[For CT-S310/2000 series]

It is controlled as one block (1020 bytes of data + 4 bytes of management information).

One data registration is in multiples of 1024 bytes (rounded up).

Size of the first registration:  $(([\text{Size of Data 1}] + 1019) / 1020) * (1020 + 4)$

Size of the second registration:  $(([\text{Size of Data 2}] + 1019) / 1020) * (1020 + 4)$

. . .

Size of the n-th registration:  $(([\text{Size of Data n}] + 1019) / 1020) * (1020 + 4)$

When the total size of registered data 1 - n (n is 20 at a maximum) exceeds 256 KB, an error occurs.

[For CT-S310II/601/651/801/851 series]

An error occurs when the total of the data size exceeds 384 KB.

- **Bitmap file format**

The file formats that can be specified are BMP, JPG and GIF formats.

## **PrintBitmap method**

It specifies the bitmap file and the printing position, and prints the bitmap. The directions of rotation that can be printed are 0, R90, L90 and 180 degrees

- **Combination of the RotatePrint method and the PrintBitmap method**

The example of the implementation (Visual Basic for .NET) using the PrintBitmap method and the RotatePrint method is shown below:

```
Public Const PtrBmAsIs As Integer = PosPrinter.PrinterBitmapAsIs
Public Const PtrBmLeft As Integer = PosPrinter.PrinterBitmapLeft
Public Const PtrBmCenter As Integer = PosPrinter.PrinterBitmapCenter
Public Const PtrBmRight As Integer = PosPrinter.PrinterBitmapRight

Dim Station As PrinterStation = PrinterStation.Receipt
Dim strBmpfilePath As String = "setbitmap1.bmp"

With Printer
    .Open()
    .Claim(1000)
    .DeviceEnabled = True

    .RotatePrint(Station, PrintRotation.Normal)
    .PrintNormal(Station, "Normal" & vbCrLf) ' ①
    .PrintBitmap(Station, strBmpfilePath, PtrBmAsIs, PtrBmLeft) ' ②
End With
```

```

.RotatePrint(Station, PrintRotation.Right90 Or PrintRotation.Bitmap)
.PrintNormal(Station, "RIGHT90" & vbCrLf) ' ③
.PrintBitmap(Station, strBmpfilePath, PtrBmAsis, PtrBmCenter) ' ④

.RotatePrint(Station, PrintRotation.Left90 Or PrintRotation.Bitmap)
.PrintNormal(Station, "LEFT90" & vbCrLf) ' ⑤
.PrintBitmap(Station, strBmpfilePath, PtrBmAsis, PtrBmRight) ' ⑥

.RotatePrint(Station, PrintRotation.Right90)
.PrintNormal(Station, "RIGHT90" & vbCrLf) ' ⑦
.PrintBitmap(Station, strBmpfilePath, PtrBmAsis, PtrBmRigh) ' ⑧

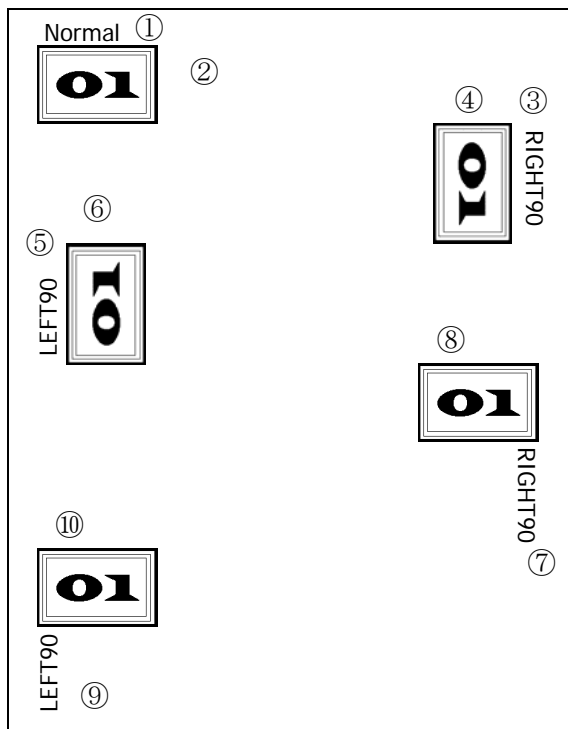
.RotatePrint(Station, PrintRotation.Left90)
.PrintNormal(Station, "LEFT90" & vbCrLf) ' ⑨
.PrintBitmap(Station, strBmpfilePath, PtrBmAsis, PtrBmLeft) ' ⑩

.RotatePrint(Station, PrintRotation.Normal)
.DeviceEnabled = False
.ReleaseDevice()
.Close()
End With

```

#### <Output Result>

The output result will be as follows. ⑧ and ⑩ are not affected by the RotatePrint method and immediately printed.



#### • Bitmap file format

The file formats that can be specified are BMP, JPG and GIF formats.

**AsyncMode property**

- **true**  
The output methods (PrintNormal, PrintTwoNormal, CutPaper, RotatePrint, PrintBarCode and PrintBitmap) are executed asynchronously.
- **false**  
The output methods are printed synchronously. When an error occurs during the asynchronous output, the error event is reported at intervals of about 0.5 seconds.

**ErrorLevel property**

- **PrinterErrorLevel.None**  
Displayed when an error is not detected
- **PrinterErrorLevel.Recoverable**  
Displayed as a recoverable error when there is no paper / the cover is opened
- **PrinterErrorLevel.Fatal**  
Displayed as a nonrecoverable error when an auto cutter error occurs

**OutputId property / OutputCompleteEvent event**

It holds the identifier of the asynchronous output which is started immediately before, and increments it by +1 in the output shown below.

<Example of implementation in Visual Basic for .NET: Output subroutine>

```
Dim i as Integer
Dim PrintStation As PrinterStation

PrintStation = PrinterStation.Receipt

For i = 0 to 10
    OPOSPrinter.PrintNormal(PrintStation, "TEST PRINT" + Str(i) + Chr$(&HD) + Chr$(&HA))
Next i
```

<Example of implementation in Visual Basic for .NET: Event acquisition subroutine>

```
Private Sub posPrinterOutputCompleteEvent(sender As Object, e As OutputCompleteEventArgs)
    Debug.Print "OutputCompleteEvent -> " + Str(e.OutputId)
End Sub
```

<Output Result>

```
OutputCompleteEvent -> 1
OutputCompleteEvent -> 2
OutputCompleteEvent -> 3
OutputCompleteEvent -> 4
OutputCompleteEvent -> 5
OutputCompleteEvent -> 6
OutputCompleteEvent -> 7
OutputCompleteEvent -> 8
OutputCompleteEvent -> 9
OutputCompleteEvent -> 10
OutputCompleteEvent -> 11
```

## RecLineChars/ RecLineCharsList properties

These properties specify the number of one byte characters of the printer font that are printed on one line of paper.

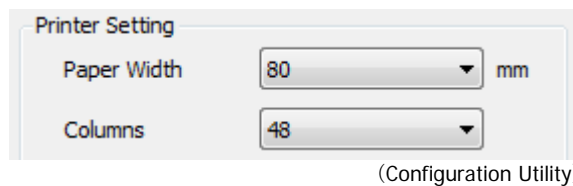
- RecLineChars property: specifies the maximum number of the column of FontA for the specified paper width
- RecLineCharsList property: lists the maximum numbers of the column of FontA, FontB and FontC for the specified paper width

For details of the printer font, refer to the user's manual of the printer.

When setting the default values of the paper width and the maximum number of the column (FontA), manipulate the following Configuration.xml.

```
<Example: CT-S801, Connected I/F: Ethernet, IP Address: 192.168.0.1>
  <ServiceObject Type="PosPrinter" Name="CTS801POSPrinter">
    <Property> tag within <Device HardwarePath="192.168.0.1_CT-S801_1"> tag
    Name="PaperModel" Value="002" --- specifies 80 mm paper
    Name="Column" Value="001" --- specifies 48 columns (FontA)
```

- \* When changing the above setting, use the setting tool (Configuration Utility) of this driver as described in "[1.5. Structure of Configuration.xml](#)"



The values of RecLineChars / RecLineCharsList properties for the "paper width" and the "printer font" of each printer are as listed below:

### CT-S310 series

Paper Size (mm)		FontA(12*24dot)	FontB(9*17dot)	FontC(8*16dot)	RecLineChars	RecLineCharsList
80	58	30	40	45	30	30, 40, 45
		32	42	48	32	32, 42, 48
		42	56	63	42	42, 56, 63
		48	64	72	48	48, 64, 72

### CT-S310II series

Paper Size (mm)		FontA(12*24dot)	FontB(9*24dot)	FontC(8*16dot)	RecLineChars	RecLineCharsList
80	58	30	40	45	30	30, 40, 45
		32	42	48	32	32, 42, 48
		35	46	52	35	35, 46, 52
		42	56	63	42	42, 56, 63
		48	64	72	48	48, 64, 72

**CT-S601/651/801/851 series**

Paper Size (mm)				FontA(12*24dot)	FontB(9*17dot)	FontC(8*16dot)	RecLineChars	RecLineCharsList
83	80	60	58	30	40	45	30	30, 40, 45
			32	42	48	32	32, 42, 48	
		35	46	52	35	35, 46, 52		
					36	48	54	36
				42	56	64	42	42, 56, 64
				48	64	72	48	48, 64, 72
				53	71	80	53	53, 71, 80

**CT-S2000 series**

Paper Size (mm)				FontA(12*24dot)	FontB(9*24dot)	FontC(8*16dot)	RecLineChars	RecLineCharsList
83	80	60	58	30	40	45	30	30, 40, 45
				32	42	48	32	32, 42, 48
				35	46	52	35	35, 46, 52
				36	48	54	36	36, 48, 54
				42	56	64	42	42, 56, 64
				48	64	72	48	48, 64, 72
				53	71	80	53	53, 71, 80

- KANJI font

It is calculated based on a one-byte character as described above. Therefore, when a multi-font KANJI is used, it is basically handled as two characters.

**RecSidewaysMaxChars property**

It is calculated based on a one-byte character.

A KANJI font is basically handled as two characters, but it may not be simply two characters depending on the Font selected with the value of the RecLineChars property.

**RecSidewaysMaxLines property**

It is changed according to the values of the RecLineSpacing property and RecLineChars property. The number of lines may be less than the number of lines that can be actually printed according to the specified value of the RecLineSpacing property.

**StatusUpdateEvent event**

The StatusUpdateEventArgs.Status parameter of this event is for the data specific to the device class, and indicates the change in status of paper and the cover. The values of the Status parameter for the status change of the CITIZEN POS printer are as listed below:

Printer Status	StatusUpdateEvent(StatusUpdateEventArgs.Status)
Opened the Lid	PosCommon.StatusCoverOpen
Paper is taken out	PosCommon.StatusReceiptNearEmpty
Closed the lid without loading paper	PosCommon.StatusCoverOK
	PosCommon.StatusReceiptEmpty

In addition, the printer for which the value of the PowerNotify property, which indicates the type of the power notification function, can be set to PowerNotification.Enabled, can show the change in power status.



## **PageModePrint method / ESC | #B escape sequence**

There are following restrictions on the use of ESC|#B during the page mode printing using the PageModePrint method depending on the registration mode of the bitmap.

- **Raster Bit Image mode**

ESC|#B can be used as in the normal printing.

- **NV Bit Image mode**

ESC|#B cannot be used during the page mode printing.

When it is used, it does not cause an error but nothing is printed.

Note that when ESC|#B is specified in the ValidateData method during the page mode printing, PosControlException(ErrorCode.Illegal) occurs.

## **Function to detect the completion of printing**

In the support model, after the printing output, the driver waits for the printing completion reply from a printer and judge the success / failure of the method.

- Support model

Model	Firmware Version
CT-S310II	DT00-0400 or newer
CT-S601	DL00-2000 or newer
CT-S651	DM00-2000 or newer
CT-S801	DH00-2000 or newer
CT-S851	DK00-2000 or newer

\* With the older firmware than above, this function doesn't work correctly.

Please set this function invalidly when you use a printer that is older than these printers.

- Targeted method

PrintNormal, PrintImmediate, CutPaper, RotatePrint, PrintBarCode, PrintBitmap, TransactionPrint, MarkFeed, PageModePrint, PrintMemoryBitmap

In the support model, the initial value of this driver is enabled of function to detect the completion of printing. To change to disable, perform the following Configuration.xml operation.

<Example: CT-S801, Connected I/F: Ethernet, IP Address: 192.168.0.1>

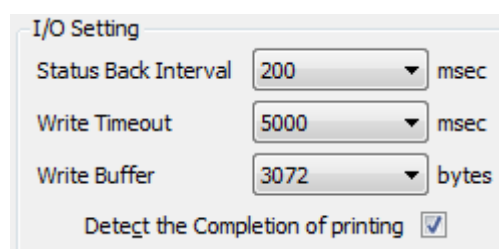
<ServiceObject Type="PosPrinter" Name="CTS801POSPrinter">

<Property> tag within <Device HardwarePath="192.168.0.1\_CT-S801\_1"> tag

Name="CheckResponse" Value="1" --- Function to detect the completion of printing was enable

Name="CheckResponse" Value="0" --- Function to detect the completion of printing was disable

\* When changing the above setting, use the setting tool (Configuration Utility) of this driver as described in "[1.5. Structure of Configuration.xml](#)".



(Configuration Utility)

- \* The function to detect the completion of printing was supported after "CITIZEN POS for .NET Driver Ver.1.12.1.4"

### **Function to evade buffer full when the printer error occurred in the printing output**

In the support model, when a printer becomes the error, the printer clears a buffer automatically and supports a function to keep communication normally.

- Supporte model

Model	Firmware Version
CT-S310II	DT00-0400 or newer
CT-S601	DL00-2000 or newer
CT-S651	DM00-2000 or newer
CT-S801	DH00-2000 or newer
CT-S851	DK00-2000 or newer

- \* The function to evade buffer full when the printer error occurred in the printing output was supported after "CITIZEN POS for .NET Driver Ver.1.12.1.4".

### **Handling of character encoding**

This driver is encoding with the value of the CharSet property, when sending the data of Unicode format to the printer. However, when 255(UserDefined) and encoding are failures, this driver is encoding in the default code page of the system.

### 3. Cash Drawer Service Object

For details and usage of each property, method and event, refer to “UnifiedPOS Retail Peripheral Architecture Version 1.12”.

#### 3.1. Cash Drawer Service and Object Method Relations

##### CT-S310

Method	Status of support by the driver (CT-S310_*.CD*)		Notes
Open	✓		
Close	✓		
Claim	✓		
Release	✓		
CheckHealth	✓	HealthCheckLevel.External	
ClearInput			Not applicable with Drawer.
ClearInputProperties			Not applicable with Drawer.
ClearOutput			Not applicable with Drawer.
CompareFirmWareVersion		ErrorCode.Illegal	Not supported
DirectIO		ErrorCode.Illegal	Not supported
ResetStatistic		ErrorCode.Illegal	Not supported
ResetStatistics		ErrorCode.Illegal	Not supported
RetrieveStatistic		ErrorCode.Illegal	Not supported
RetrieveStatistics		ErrorCode.Illegal	Not supported
UpdateFirmware		ErrorCode.Illegal	Not supported
UpdateStatistic		ErrorCode.Illegal	Not supported
UpdateStatistics		ErrorCode.Illegal	Not supported
OpenDrawer	✓		
WaitForDrawerClose	✓		

##### CT-S310II

Method	Status of support by the driver (CT-S310II_*.CD*)		Notes
Open	✓		
Close	✓		
Claim	✓		
Release	✓		
CheckHealth	✓	HealthCheckLevel.External	
ClearInput			Not applicable with Drawer.
ClearInputProperties			Not applicable with Drawer.
ClearOutput			Not applicable with Drawer.
CompareFirmWareVersion		ErrorCode.Illegal	Not supported
DirectIO		ErrorCode.Illegal	Not supported
ResetStatistic		ErrorCode.Illegal	Not supported
ResetStatistics		ErrorCode.Illegal	Not supported
RetrieveStatistic		ErrorCode.Illegal	Not supported
RetrieveStatistics		ErrorCode.Illegal	Not supported
UpdateFirmware		ErrorCode.Illegal	Not supported
UpdateStatistic		ErrorCode.Illegal	Not supported
UpdateStatistics		ErrorCode.Illegal	Not supported
OpenDrawer	✓		
WaitForDrawerClose	✓		

**CT-S601/651/801/851**

Method	Status of support by the driver (CT-S601_*.CD*, CT-S651_*.CD*, CT-S801_*.CD*,CT-S851_*.CD*)		Notes
Open	✓		
Close	✓		
Claim	✓		
Release	✓		
CheckHealth	✓	HealthCheckLevel.External	
ClearInput			Not applicable with Drawer.
ClearInputProperties			Not applicable with Drawer.
ClearOutput			Not applicable with Drawer.
CompareFirmWareVersion		ErrorCode.Illegal	Not supported
DirectIO		ErrorCode.Illegal	Not supported
ResetStatistic		ErrorCode.Illegal	Not supported
ResetStatistics		ErrorCode.Illegal	Not supported
RetrieveStatistic		ErrorCode.Illegal	Not supported
RetrieveStatistics		ErrorCode.Illegal	Not supported
UpdateFirmware		ErrorCode.Illegal	Not supported
UpdateStatistic		ErrorCode.Illegal	Not supported
UpdateStatistics		ErrorCode.Illegal	Not supported
OpenDrawer	✓		
WaitForDrawerClose	✓		

**CT-S2000**

Method	Status of support by the driver (CT-S2000_*.CD*)		Notes
Open	✓		
Close	✓		
Claim	✓		
Release	✓		
CheckHealth	✓	HealthCheckLevel.External	
ClearInput			Not applicable with Drawer.
ClearInputProperties			Not applicable with Drawer.
ClearOutput			Not applicable with Drawer.
CompareFirmWareVersion		ErrorCode.Illegal	Not supported
DirectIO		ErrorCode.Illegal	Not supported
ResetStatistic		ErrorCode.Illegal	Not supported
ResetStatistics		ErrorCode.Illegal	Not supported
RetrieveStatistic		ErrorCode.Illegal	Not supported
RetrieveStatistics		ErrorCode.Illegal	Not supported
UpdateFirmware		ErrorCode.Illegal	Not supported
UpdateStatistic		ErrorCode.Illegal	Not supported
UpdateStatistics		ErrorCode.Illegal	Not supported
OpenDrawer	✓		
WaitForDrawerClose	✓		

## 3.2. Cash Drawer Service Object and Property Relations

### CT-S310

Property	Attribute	Status of support by the driver (CT-S310_*.CD*)	Notes
AutoDisable	R/W	Not applicable with Drawer.	
CapCompareFirmwareVersion	R	false	Not supported
CapPowerReporting	R	✓ PowerReporting.None	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
CapStatisticsReporting	R	false	Not supported
CapUpdateFirmware	R	false	Not supported
CapUpdateStatistics	R	false	Not supported
CheckHealthText	R	✓ "External HCheck: Successful" "External HCheck: Not Responding"	
Claimed	R	✓ Claim method is successful: true Release method is successful: false	
DataCount	R/W	Not applicable with Drawer.	
DataEventEnabled	R/W	Not applicable with Drawer.	
DeviceEnabled	R/W	✓ true: Device enable false: Device disable	
FreezeEvents	R/W	✓ true: Event notification disabled false: Event notification enabled	
OutputId	R/W	Not applicable with Drawer.	
PowerNotify	R/W	✓ PowerNotification.Disabled (Power notification is not provided) PowerNotification.Enabled (Information on power notification is provided)	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
PowerState	R	✓ PowerState.Unknown	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
State	R	✓	For the case other than ControlState.Idle, refer to the State property in "UnifiedPOS Retail Peripheral Architecture Version 1.12".
SynchronizingObject	R/W	✓	
ServiceObjectDescription	R	✓ CITIZEN Service Object for Cash Drawer ver 1.12.*.*	
ServiceObjectVersion	R	✓ 1.12.*.*	
DeviceDescription	R	✓ CITIZEN Thermal POSPrinter's Cash Drawer	
DeviceName	R	✓ CT-S310_*.CD*	
CapStatus	R	✓	
CapStatusMultiDrawerDetect	R	✓ false	(See <a href="#">CapStatusMultiDrawerDetect property in 3.4 Detail on cash drawer service object</a> )
DrawerOpened	R	✓	

**CT-S310II**

Property	Attribute	Status of support by the driver (CT-S310II_*.CD*)		Notes
AutoDisable	R/W		Not applicable with Drawer.	
CapCompareFirmwareVersion	R		false	Not supported
CapPowerReporting	R	✓	PowerReporting.None	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
CapStatisticsReporting	R		false	Not supported
CapUpdateFirmware	R		false	Not supported
CapUpdateStatistics	R		false	Not supported
CheckHealthText	R	✓	"External HCheck: Successful" "External HCheck: Not Responding"	
Claimed	R	✓	Claim method is successful: true Release method is successful: false	
DataCount	R/W		Not applicable with Drawer.	
DataEventEnabled	R/W		Not applicable with Drawer.	
DeviceEnabled	R/W	✓	true: Device enable false: Device disable	
FreezeEvents	R/W	✓	true: Event notification disabled false: Event notification enabled	
OutputId	R/W		Not applicable with Drawer.	
PowerNotify	R/W	✓	PowerNotification.Disabled (Power notification is not provided) PowerNotification.Enabled (Information on power notification is provided)	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
PowerState	R	✓	PowerState.Unknown	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
State	R	✓		For the case other than ControlState.Idle, refer to the State property in "UnifiedPOS Retail Peripheral Architecture Version 1.12".
SynchronizingObject	R/W	✓		
ServiceObjectDescription	R	✓	CITIZEN Service Object for Cash Drawer ver 1.12.*.*	
ServiceObjectVersion	R	✓	1.12.*.*	
DeviceDescription	R	✓	CITIZEN Thermal POSPrinter's Cash Drawer	
DeviceName	R	✓	CTS310II_*.CD*	
CapStatus	R	✓		
CapStatusMultiDrawerDetect	R	✓	false	(See <a href="#">CapStatusMultiDrawerDetect property in 3.4 Detail on cash drawer service object</a> )
DrawerOpened	R	✓		

**CT-S601/651/801/851**

Property	Attribute	Status of support by the driver (CT-S601_*.CD*, CT-S651_*.CD*, CT-S801_*.CD*,CT-S851_*.CD*)	Notes
AutoDisable	R/W	Not applicable with Drawer.	
CapCompareFirmwareVersion	R	false	Not supported
CapPowerReporting	R	✓ PowerReporting.None	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
CapStatisticsReporting	R	false	Not supported
CapUpdateFirmware	R	false	Not supported
CapUpdateStatistics	R	false	Not supported
CheckHealthText	R	✓ "External HCheck: Successful" "External HCheck: Not Responding"	
Claimed	R	✓ Claim method is successful: true Release method is successful: false	
DataCount	R/W	Not applicable with Drawer.	
DataEventEnabled	R/W	Not applicable with Drawer.	
DeviceEnabled	R/W	✓ true: Device enable false: Device disable	
FreezeEvents	R/W	✓ true: Event notification disabled false: Event notification enabled	
OutputId	R/W		Not applicable with OPOS Drawer.
PowerNotify	R/W	✓ PowerNotification.Disabled (Power notification is not provided) PowerNotification.Enabled (Information on power notification is provided)	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
PowerState	R	✓ PowerState.Unknown	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
State	R	✓	For the case other than ControlState.Idle, refer to the State property in "UnifiedPOS Retail Peripheral Architecture Version 1.12".
SynchronizingObject	R/W	✓	
ServiceObjectDescription	R	✓ CITIZEN Service Object for Cash Drawer ver 1.12.*.*	
ServiceObjectVersion	R	✓ 1.12.*.*	
DeviceDescription	R	✓ CITIZEN Thermal POSPrinter's Cash Drawer	
DeviceName	R	✓ CT-S601: CT-S601_*.CD* CT-S651: CT-S651_*.CD* CT-S801: CT-S801_*.CD* CT-S851: CT-S851_*.CD*	
CapStatus	R	✓	
CapStatusMultiDrawerDetect	R	✓ false	(See <a href="#">CapStatusMultiDrawerDetect property in 3.4 Detail on cash drawer service object</a> )
DrawerOpened	R	✓	

**CT-S2000**

Property	Attribute	Status of support by the driver (CT-S2000_*.CD*)		Notes
AutoDisable	R/W		Not applicable with Drawer.	
CapCompareFirmwareVersion	R		false	Not supported
CapPowerReporting	R	✓	PowerReporting.None	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
CapStatisticsReporting	R		false	Not supported
CapUpdateFirmware	R		false	Not supported
CapUpdateStatistics	R		false	Not supported
CheckHealthText	R	✓	"External HCheck: Successful" "External HCheck: Not Responding"	
Claimed	R	✓	Claim method is successful: true Release method is successful: false	
DataCount	R/W		Not applicable with Drawer.	
DataEventEnabled	R/W		Not applicable with Drawer.	
DeviceEnabled	R/W	✓	true: Device enable false: Device disable	
FreezeEvents	R/W	✓	true: Event notification disabled false: Event notification enabled	
OutputId	R/W		Not applicable with Drawer.	
PowerNotify	R/W	✓	PowerNotification.Disabled (Power notification is not provided) PowerNotification.Enabled (Information on power notification is provided)	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
PowerState	R	✓	PowerState.Unknown	(See <a href="#">CapPowerReporting / Powermotify/ PowerState properties in 3.4 Detail on cash drawer service object</a> )
State	R	✓		For the case other than ControlState.Idle, refer to the State property in "UnifiedPOS Retail Peripheral Architecture Version 1.12".
SynchronizingObject	R/W	✓		
ServiceObjectDescription	R	✓	CITIZEN Service Object for Cash Drawer ver 1.12.*.*	
ServiceObjectVersion	R	✓	1.12.*.*	
DeviceDescription	R	✓	CITIZEN Thermal POSPrinter's Cash Drawer	
DeviceName	R	✓	CT-S2000_*.CD*	
CapStatus	R	✓		
CapStatusMultiDrawerDetect	R	✓	false	(See <a href="#">CapStatusMultiDrawerDetect property in 3.4 Detail on cash drawer service object</a> )
DrawerOpened	R	✓		



### 3.3. Cash Drawer Service Object and Event Relations

#### CT-S310

Event	Status of support by the driver (CT-S310_*.CD*)		Note
DataEvent		Not applicable with Drawer.	
DirectIOEvent		Not supported	
ErrorEvent		Not applicable with Drawer.	
OutputCompleteEvent		Not applicable with Drawer.	
StatusUpdateEvent	✓		

#### CT-S310II

Event	Status of support by the driver (CT-S310II_*.CD*)		Note
DataEvent		Not applicable with Drawer.	
DirectIOEvent		Not supported	
ErrorEvent		Not applicable with Drawer.	
OutputCompleteEvent		Not applicable with Drawer.	
StatusUpdateEvent	✓		

#### CT-S601/651/801/851

Event	Status of support by the driver (CT-S601_*.CD*, CT-S651_*.CD*, CT-S801_*.CD*,CT-S851_*.CD*)		Note
DataEvent		Not applicable with Drawer.	
DirectIOEvent		Not supported	
ErrorEvent		Not applicable with Drawer.	
OutputCompleteEvent		Not applicable with Drawer.	
StatusUpdateEvent	✓		

#### CT-S2000

Event	Status of support by the driver (CT-S2000_*.CD*)		Note
DataEvent		Not applicable with Drawer.	
DirectIOEvent		Not supported	
ErrorEvent		Not applicable with Drawer.	
OutputCompleteEvent		Not applicable with Drawer.	
StatusUpdateEvent	✓		

### 3.4. Detail on Cash Drawer Service Object

#### **CapPowerReporting/ PowerNotify/ PowerState properties**

This service object only supports the cash drawer(s) which is connected to the drawer kick connector on the back of the printer. Therefore, the value of the CapPowerReporting property is "PowerReporting.None".

#### **CapStatusMultiDrawerDetect property**

For this service object, up to two cash drawers can be connected by using a Y-cable for the drawer kick connector on the back of the printer; however, open/close status of each cash drawer cannot be detected separately. Therefore, the value of the CapStatusMultiDrawerDetect property becomes "false".

When the CapStatusMultiDrawerDetect property is "false", only the following status is reported:

- a) All the cash drawers are closed.
- b) One or more cash drawer is opened.

Note that the "Pin3 signal when the drawer is opened" of each drawer has to the same setting when more than one cash drawer is registered through the "POS for .NET driver setting tool"

