TOSHIBA

Windows POS Terminal

TEC OPOS Control

MSR OPOS Application Programmer's Guide for MCR-STA10

4th Edition: 20 Apr, 2012

TOSHIBA TEC CORPORATION

Revision Record

No. EAA-02479

MSR OPOS Application Programmer's Guide for MCR-STA10

Rev. No.	Date	Pages	Description
1	14 Jun, 2007	---	First Release
2	05 Oct, 2009	1	Changes were made to support POSReady 2009
3	08 Nov, 2010	1	Changes were made to support Windows 7
4	20 Apr, 2012	all	Change Format

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1. Magnetic Stripe Reader

1.1. MCR-STA10 MSR CONTROL ["MCRRMS"]

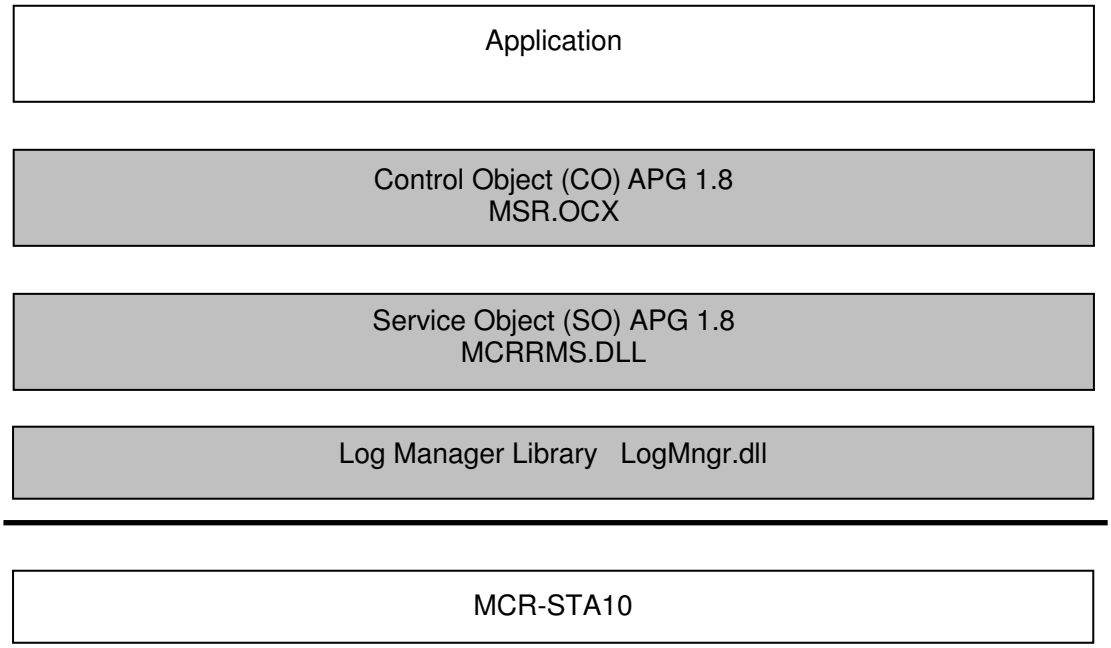
1.1.1. Applicable Model and Operating Systems

Model	Interface	Device Name (*1)
ST-A10 Serial MSR (MCR-STA10)	RS232 I/F	"MCRRMS"
Operating System		
Windows 2000 Windows XP Professional Windows Vista Business Windows 7 Professional Windows Embedded for Point of Service(WEPOS) Windows Embedded POSReady 2009 Windows Embedded POSReady 7		

(*1) Device names are used by the Open method.

1.1.2. Software Structure

The software structure of the MCR-STA10 MSR Control is as shown below.



MCR-STA10 MSR Control – Software Structure

1.1.3. Functions

Functions supported	Functions not supported
Error report about card level	Power notification
Error report about track level	Read JIS Type-I, JIS Type-II track
Read ISO track (1, 2, 3)	Collection of statistics
	Reset of statistics
	Change of statistics
	Read start and end code

MCR-STA10 MSR Control – Functions

Only the properties defined by the device are listed.

Common property	Value
ControlObjectDescription	"TEC OPOS MSR Control Object"
ControlObjectVersion	"1008XXX" **(*1)**
ServiceObjectDescription	"TEC OPOS MCRRMS MSR Service Object"
ServiceObjectVersion	"1008XXX" **(*1)**
DeviceDescription	"RMSxy-abc RS232 MSR"
DeviceName	"MCRRMS"
CapPowerReporting	OPOS_PR_NONE
CapStatisticsReporting	FALSE
CapUpdateStatistics	FALSE
Exclusive property	**Value**
CapISO	TRUE
CapJISOne	FALSE
CapJISTwo	FALSE
CapTransmitSentinels	FALSE

(*1) Build version is indicated as "XXX" because this document may not be revised every time the module is updated.

MCRRMS MSR Control – Property Values (in part)

1.1.4. CheckHealth Method Specifications

1) Internal Level (OPOS_CH_INTERNAL)

Value (ResultCode)	CheckHealthText	Meaning
OPOS_E_ILLEGAL	"Internal Hcheck:Illegal"	Not supported

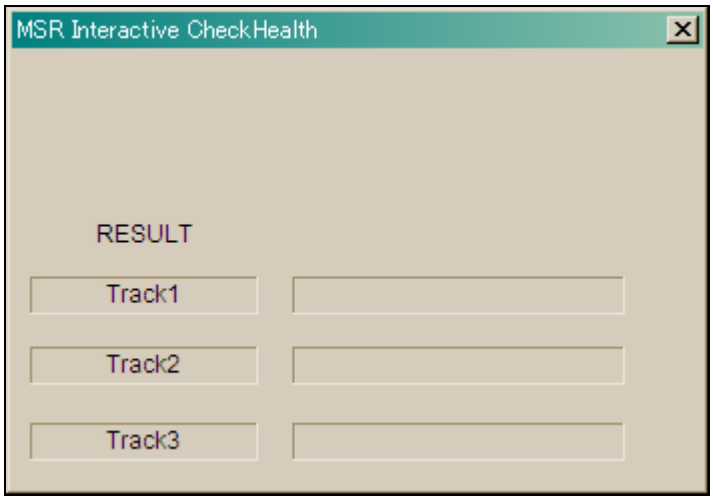
2) External Level

This asks the device for a permission to insert a card. Insertion of the card is prohibited if this request succeeds.

Value (ResultCode)	CheckHealthText	Meaning
OPOS_E_ILLEGAL	"External Hcheck:Illegal"	Not supported

3) Interactive Level (OPOS_CH_INTERACTIVE)

This displays the following dialog box. When a card is inserted, data is checked and the result is stored in CheckHealthText.



Result Messages

Message	Description
Normal End	Succeeded to read data.
Data Error	Failed to read data.
No Data	No data

Value (ResultCode)	CheckHealthText	Meaning
OPOS_SUCCESS	"Interactive Hcheck:Successful"	Completed successfully
OPOS_E_FAILURE	"Interactive Hcheck:Data Error"	Completed abnormally
OPOS_E_ILLEGAL	"External HCheck:Driver Error"	Driver error
OPOS_E_DISABLED	"HCheck: Disabled"	DeviceEnabled=TRUE has not been executed.
OPOS_E_NOTCLAIMED	"Hcheck:Exclusive"	ClaimDevice has not been executed

Note: For ResultCode/CheckHealthText, the last value entered will be retained.

1.1.5. DirectIO Specifications

This Control supports no functions using the DirectIO method.

1.1.6. OPOS Registry

The MCR-STA10 contains the following configuration information:

HKEY_LOCAL_MACHINE\SOFTWARE\OLEforRetail\ServiceOPOS\MSR\MCRRMS

General	"TEC.MCRRMS"
Service	"C:\OPOS\TEC\MCRRMS.DLL"
Description	"RMSxy-abc RS232 MSR"
Version	"1.8"
Port	"COM1" – "COM8"
DebugLogLevel	"0" | "1" | "2"
DebugLogFile	"C:\TEC\OPOS\LOG\MCRRMS.LOG"

Service	Filename of Service Object
Description	Brief explanation of Service Object
Version	Version number of Service Object
Port	Name of communication port Can be set from the control panel
DebugLogLevel	Specifies a level for recording a log in a file specified by DebugLogFile. 0: Log is not output. 1: Level where a log is recorded mainly at a time of error 2: Level where OPOS operations can be traced using a log.
DebugLogFile	Specifies a log file with path which records OPOS operations. If a folder does not exist, no log is kept.

MCR-STA10 MSR Control – Registries

1.1.7. Limitations and Precautions

1) DeviceEnabled Property

The device cannot enable or disable itself. Even when DeviceEnabled is set to FALSE, the device can read data of a magnetic card, but the MCRRMS MSR OPOS Control discards the data read by the device. This means, even when a sound, which notifies a user that the data has been successfully read, is generated, the data is not sent to the application.

2) ResultCodedExtended for ErrorEvent

When an error exists in magnetic data, the device cannot obtain an error code. It can detect the error but cannot identify which error is occurring among start code error, end code error, parity error, or LRC error defined by the OPOS.

When an error occurs, the MCRRMS MSR OPOS Control notifies the application of an error with OPOS_E_FAILURE.

In the event of an error, ErrorEvent values are as follows:

- When the ErrorReportingType property is MSR_ERT_CARD
  ResultCode=OPOS_E_EXTENDED,ResultCodeExtended=OPOS_E_FAILURE

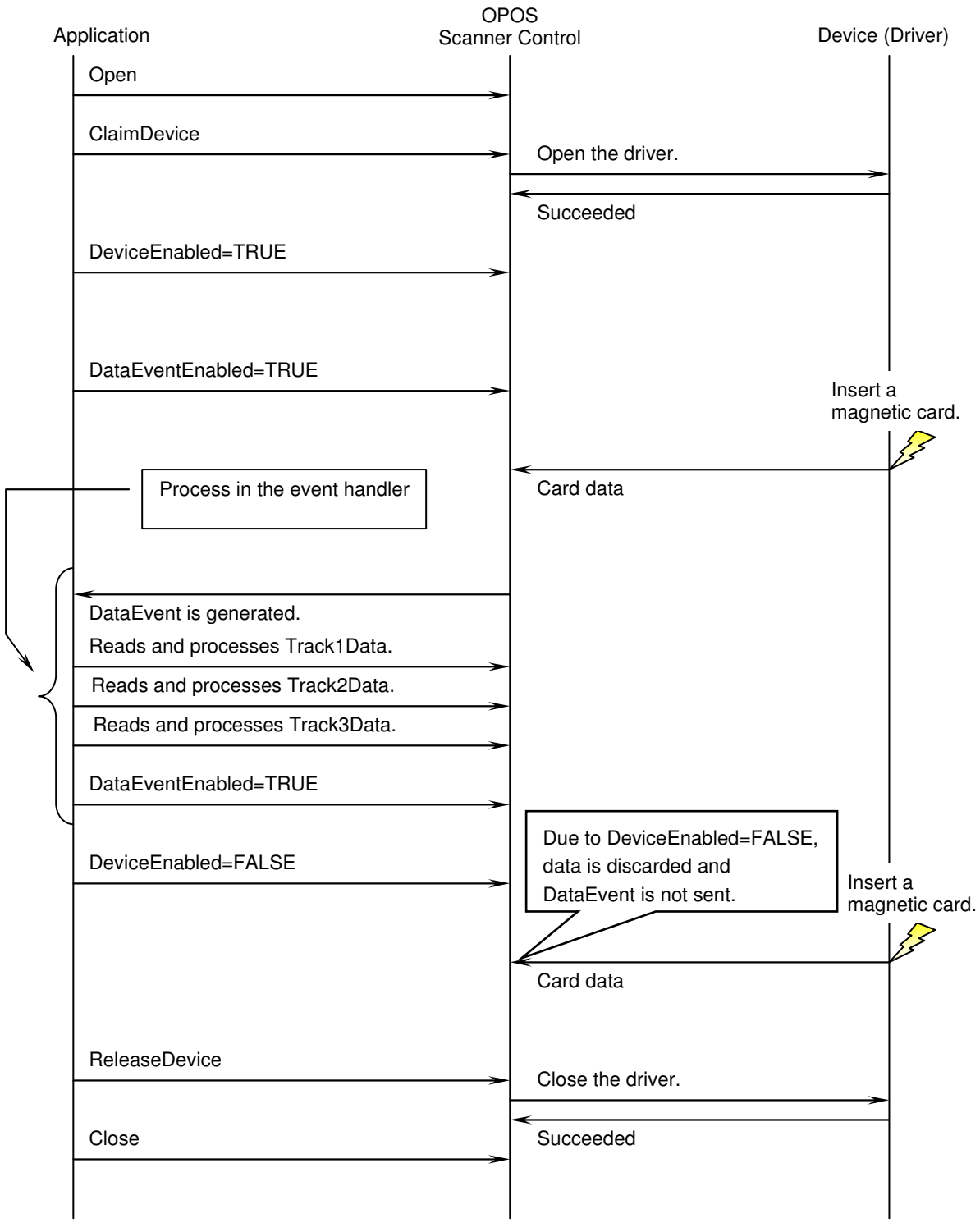
- When the ErrorReportingType property is MSR_ERT_TRACK
  ResultCode=OPOS_E_EXTENDED,ResultCodeExtended=track level status (Status of each track is OPOS_E_FAILURE.)

3) Operation of TracksToRead property

Reading accuracy and reading speed cannot be controlled by this property.

1.1.8. Usage Example

This section gives a sequence diagram to show an operation flow from reading data on an ISO track of a magnetic card to a close operation.



1.1.9. Log

A log for this Control is not disclosed.

1.1.10. Result When Property/Method is Executed

The OPOS Control notifies the user of a result when a property/method is executed.

The table below shows the ResultCode Property values and OpenResult Property values described in this document.

ResultCode	Value
OPOS_SUCCESS	0
OPOS_E_CLOSED	101
OPOS_E_CLAIMED	102
OPOS_E_NOTCLAIMED	103
OPOS_E_NOSERVICE	104
OPOS_E_DISABLED	105
OPOS_E_ILLEGAL	106
OPOS_E_NOHARDWARE	107
OPOS_E_OFFLINE	108
OPOS_E_NOEXIST	109
OPOS_E_EXISTS	110
OPOS_E_FAILURE	111
OPOS_E_TIMEOUT	112
OPOS_E_BUSY	113
OPOS_E_EXTENDED	114

OpenResult	Value
OPOS_OR_ALREADYOPEN	301
OPOS_OR_REGBADNAM	302
OPOS_OR_REGPROGID	303
OPOS_OR_CREATE	304
OPOS_OR_BADIF	305
OPOS_OR_FAILEDOPEN	306
OPOS_OR_BADVERSION	307
OPOS_ORS_NOPORT	401
OPOS_ORS_NOTSUPPORTED	402
OPOS_ORS_CONFIG	403
OPOS_ORS_SPECIFIC	450
OPOS_ORS_BADCO	451
OPOS_ORS_RESOURCEFAIL	452
OPOS_ORS_ALREADYOPENED	453

1) Results When Property is Executed
The table below gives the results common to all available properties and those unique to certain property.

Property	ResultCode	Meaning	Error Handling
Common properties	OPOS_SUCCESS	Property setting was completed successfully.	–
	OPOS_E_CLOSED	The device has been closed.	Open the device using the Open method, then perform a setting again.
BinaryConversion	OPOS_E_ILLEGAL	An invalid parameter value was specified.	Specify a valid parameter value.
DeviceEnabled	OPOS_E_NOTCLAIMED	Exclusive access has been granted.	Execute the Claim method, then perform a setting again.
	OPOS_E_NOHARDWARE	The device is not connected or its power is not turned on.	Make sure the device is connected and its power is on, then perform a setting again. If the error occurs again, make sure the COM port setting of the Device Manager and the port number of the registry are correct. When the OPOS control has been properly installed, install the driver kit of the applicable POS model again, then perform a setting again. If the error still persists, then investigate the error.
	OPOS_E_BUSY	An attempt was made to change the property while a card is being inserted.	Perform a setting again in the idle mode.
TracksToRead	OPOS_E_ILLEGAL	An invalid value was specified.	Specify a valid value.
ErrorReportingType	OPOS_E_ILLEGAL	An invalid value was specified.	Specify a valid value.

2) Results When Open Method is Executed
The Open method differs from other methods and is separately described.

Value	ResultCode	OpenResult	Meaning	Error Handling
OPOS_SUCCESS	OPOS_SUCCESS	OPOS_SUCCESS	The device was successfully opened.	—
OPOS_E_ILLEGAL	—	OPOS_OR_ALREADYOPEN	The control object has been open.	Make sure the name of the device to be opened is correct.
OPOS_E_NOEXIST	OPOS_E_CLOSED	OPOS_OR_REG_BADNAME	A specified device name does not exist in the registry.	Make sure the name of the device to be opened is correct.
		OPOS_OR_REGPROGID	The service object is not correctly registered.	Register the driver or service object again.
OPOS_E_NOSERVICE	OPOS_E_CLOSED	OPOS_OR_CREATE	The service object is not correctly registered.	Register the driver or service object again.
		OPOS_OR_REGPROGID	The service object is not correctly registered.	Register the driver or service object again.
		OPOS_OR_BADIF	The service object does not support the methods required.	Register the service object again.
		OPOS_OR_FAILEDOPEN	An error occurred in the service object, but the service object does not support the OpenResult property.	Register the service object again and add the registry again.
		OPOS_OR_BADVERSION	The version of the service object is invalid.	Register the service object again.
		OPOS_ORS_CONFIG	The specified OPOS registry for the MSR (MCRRMS) does not exist or is not correct.	Register the service object again and add the registry again
			Reference to the registry failed.	If the registry for the MSR (MCRRMS) is correctly registered, investigate the error.
		OPOS_ORS_RESOURCEFAIL	Creation of a resource to serialize the events failed. Creation of a window to process the events failed.	Investigate the error.
		OPOS_ORS_BADCO	The control object does not support the methods required.	Register a correct control object again.

3) Results When A Method Is Executed

The table below describes the result when each method other than the Open method is executed.

Method	Value/ResultCode	ResultCodeExtended	Meaning	Error Handling
Close	OPOS_SUCCESS	—	The device was successfully closed.	—
	OPOS_E_CLOSED	—	The device has been closed.	—
Claim ClaimDevice	OPOS_SUCCESS	—	Exclusive access has been granted.	—
	OPOS_E_CLOSED	—	The device has been closed.	Open the device using the Open method, then execute the method again.
	OPOS_E_ILLEGAL	—	An invalid timeout parameter was specified.	Specify a valid timeout value.
		—	An even thread was not created. Device input/output thread was not created.	Investigate the error.
	OPOS_E_TIMEOUT	—	While waiting for another application, which has an excessive access to the device, to release the device, a timeout was called.	Execute the method again after another application releases the exclusive access to the device.
Release ReleaseDevice	OPOS_SUCCESS	—	Exclusive access has been released.	—
	OPOS_E_CLOSED	—	The device has been closed.	—
	OPOS_E_ILLEGAL	—	The application does not have an exclusive access to the applicable device.	—
		—	The CheckHealth method is being executed.	Execute the method again after the CheckHealth method is completed.

Method	Value/ResultCode	ResultCodeExtended	Meaning	Error Handling
CheckHealth	OPOS_SUCCESS	—	Health checking procedure was completed properly.	—
	OPOS_E_CLOSED	—	The device has been closed.	Open the device using the Open method, then execute the method again.
	OPOS_E_NOTCLAIMED	—	Exclusive access has not been granted.	Execute the method again after the Claim method is completed.
	OPOS_E_DISABLED	—	The device has been disabled.	Set the DeviceEnabled property to TRUE, then execute the method again.
	OPOS_E_ILLEGAL	—	Unsupported health check level was specified. Or, unexpected result was returned from the driver.	Check the health check level. If a supported health check level was specified, investigate the error.
	OPOS_E_FAILURE	—	An error was found during a health checking procedure. If a level is interactive level, this indicates the result of a user's visual check.	Clear the error, then execute the method again. If no defects are found in the device, investigate the error.
	OPOS_E_NOHARDWARE	—	No response has been returned from the device or the device is not connected.	Check the connection status. If there are no problems with the connection, then install the driver kit for the applicable POS model again, then execute the method again. If the error still persists, investigate the error.
ClearInput	OPOS_SUCCESS	—	An input, which has been in the buffer, was cleared.	—
	OPOS_E_CLOSED	—	The device has been closed.	Open the device using the Open method, then execute the method again.
	OPOS_E_NOTCLAIMED	—	Exclusive access has not been granted.	Execute the Claim method, then execute the method again.