

EZ PC/SC Series Contactless Card API Reference Manual

Version 1.0

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Revision History

Version	Date	Editor	Description
V1.0	2010.07.30	Arthur	Created

1 Introduction

This document is the reference manual to access Contactless card for Castles PC/SC contactless reader.

2 API Reference

2.1 CasCLGetSN()

Retrieve Card Serial Number from the card

```
CasCLGetSN(  
    IN SCARDHANDLE hCard,  
    OUT LPBYTE pbCSNBuffer,  
    IN DWORD cbCSNBufferSize,  
    OUT LPDWORD pcbCSNLength );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

pbCSNBuffer

Card serial number.

cbCSNBufferSize

Receive buffer size.

pcbCSNLength

Length of card serial number.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.2 CasMifareAuth ()

Perform the CRYPTO1 (Mifare Classic) card authentication with the key data.

```
CasMifareAuth(  
    IN SCARDHANDLE hCard,  
    IN BYTE bKeyType,  
    IN BYTE bBlockNumber,  
    IN BYTE* baKey,  
    IN BYTE *baCSN );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

bKeyType

Authenticate with Key A or Key B.

0x60 : Key A

0x61 : Key B

bBlockNumber

The block that need to be authenticated.

baKey

The contents of the key.

baCSN

Card Serial Number returned from **CasCLGetSN()**.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.3 CasMifareReadBlock ()

Read the content of the specific block (16 bytes) from the PICC.

```
CasMifareReadBlock(
```

```
IN SCARDHANDLE hCard,  
IN BYTE bBlockNumber,  
OUT BYTE *baRBuf );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

bBlockNumber

The block that need to be readed.

baRBuf

The contents of the block.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.4 CasMifareWriteBlock ()

Write the content of the specific block (16 bytes) to the PICC.

```
CasMifareWriteBlock(  
IN SCARDHANDLE hCard,  
IN BYTE bBlockNumber,  
IN BYTE *baSBuf );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

bBlockNumber

The block that need to be written.

baSBuf

The data to be written .

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.5 CasMifareIncrement ()

Value blocks operation function , increment the block value.

Please note that this function will not change the value on card if not follow by CasMifareTransfer() immediately

```
CasMifareIncrement(  
    IN SCARDHANDLE hCard,  
    IN BYTE bBlockNumber,  
    IN UINT iValue );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

bBlockNumber

The block that need to be increased.

iValue

The amount to be added to the value block

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.6 CasMifareDecrement ()

Value blocks operation function, decrement the block value

Please note that this function will not change the value on card if not follow by CasMifareTransfer() immediately

```
CasMifareDecrement(  
    IN SCARDHANDLE hCard,  
    IN BYTE bBlockNumber,  
    IN UINT iValue );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

bBlockNumber

The block that need to be decreased.

iVaule

The amount to be subtracted from the value block

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.7 CasMifareRestore ()

Value blocks operation function, restore the value of internal register from block number

```
CasMifareRestore(  
    IN SCARDHANDLE hCard,  
    IN BYTE bBlockNumber );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

bBlockNumber

The block that need to be read.

(From #1 To # 63, except for sector trailers #3, #7, ...,#63)

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.8 CasMifareTransfer ()

Value blocks operation function, transfer the value of internal register to block number

```
CasMifareTransfer(  
    IN SCARDHANDLE hCard,  
    IN BYTE bBlockNumber );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

bBlockNumber

The block that need to be transfered.

(From #1 To # 63, except for sector trailers #3, #7, ...,#63)

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.9 CasMifareReadE2 ()

Read the contents from the EEPROM of RC5XX.

```
CasMifareReadE2(  
    IN SCARDHANDLE hCard,  
    IN UINT uiAddress,  
    IN BYTE bLen,  
    OUT BYTE *baRBuf );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

uiAddress

The address that the data will be read. (From 0x00 To 0x7F)

bLen

Length of the data.

baRBuf

The contents of the data.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.10 CasMifareWriteE2 ()

Write the data into the EEPROM of RC5XX.

Please don't write address from 0x10 to 0x7F

```
CasMifareWriteE2(  
    IN SCARDHANDLE hCard,  
    IN UINT uiAddress,  
    IN BYTE bLen,
```

```
IN BYTE *baSBuf );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

uiAddress

The address that the data will be written. (From 0x80 To 0x1FF)

bLen

Length of the data

baSBuf

The contents of the data

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.11 CasMifareAuthE2 ()

Perform the CRYPTO1 (Mifare Classic) card authentication with the key located at the EEPROM of RC531.

```
CasMifareAuthE2(  
    IN SCARDHANDLE hCard,  
    IN BYTE bKeyType,  
    IN BYTE bBlockNumber,  
    IN UINT uiAddress,  
    IN BYTE *baCSN );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

bKeyType

Authenticate with Key A or Key B.

0x60 : Key A

0x61 : Key B

bBlockNumber

The block that need to be authenticated.

uiAddress

The address that the key being placed. (From 0x80 To 0x1FF)

baCSN

Card Serial Number returned from **CasCLGetSN()**.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.12 CasiCLASSTransparent ()

iCLASS card access function.

Please Noted that this command only support the reader model EZ710AU

```
CasiCLASSTransparent(  
    IN SCARDHANDLE hCard,  
    IN LPCBYTE pbSendBuffer,  
    IN DWORD cbSendLength,  
    OUT LPBYTE pbRecvBuffer,  
    IN DWORD cbRecvBufferSize,  
    OUT LPDWORD pcbRecvLength );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

pbSendBuffer

iCLASS command

cbSendLength

Length of iCLASS command.

pbRecvBuffer

Response data.

cbRecvBufferSize

Receive buffer size.

pccRecvLength

Receive data length.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.13 CasCLSetTimeout ()

Setup the minimum timeout value for contactless operation.

```
CasCLSetTimeout(  
    IN SCARDHANDLE hCard,  
    IN ULONG ulTimeout );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

ulTimeout

Timeout value.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.14 CasCLEnterDirectMode ()

Disable the automatical polling and enter the direct access mode. Call this function before calling CasFelicaPoll()

```
CasCLEnterDirectMode (  
    IN SCARDHANDLE hCard );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.15 CasCLExitDirectMode ()

Exit the direct access and resume the automatical polling function.

```
CasCLExitDirectMode (  
    IN SCARDHANDLE hCard );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.16 CasFelicaPoll ()

Felica card polling function. Call this function to poll for any Felica on the field

Please Noted that this command only support the reader model EZ710BU

```
CasFelicaPoll(  
    IN SCARDHANDLE hCard,  
    OUT LPBYTE pbRecvBuffer,  
    IN DWORD cbRecvBufferSize,  
    OUT LPDWORD pcbRecvLength );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

pbRecvBuffer

Response data for manufacture ID and manufacture parameter.

cbRecvBufferSize

Receive buffer size.

pcbRecvLength

Receive data length.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

2.17 CasFelicaTransparent ()

Felica card access function.

Please Noted that this command only support the reader model EZ710BU

```
CasFelicaTransparent(  

```

```
IN SCARDHANDLE hCard,  
IN USHORT usTimeout,  
IN LPCBYTE pbSendBuffer,  
IN DWORD cbSendLength,  
OUT LPBYTE pbRecvBuffer,  
IN DWORD cbRecvBufferSize,  
OUT LPDWORD pcbRecvLength );
```

Parameters

hCard

Handle to the reference value returned from **CasConnect()**.

usTimeout

Timeout value.

pbSendBuffer

Felica card command.

cbSendLength

Send data length

pbRecvBuffer

Response data

cbRecvBufferSize

Receive buffer size.

pcbRecvLength

Receive data length.

Return Values

If the function...	The return value is...
Succeeds	SCARD_S_SUCCESS.
Fails	An error code (see Error Codes for a list of all error codes).

3 Contactless Card Error Codes

This section describes the primary error codes returned by smart card functions.

Error	Definition	Description
SCARD_MI_CRCERR	0x801000A0	PICC response with CRC error
SCARD_MI_AUTHERR	0x801000A1	Mifare authen error

SCARD_MI_PARITYERR	0x801000A2	PICC response with parity error
SCARD_MI_CODEERR	0x801000A3	Received Mifare NAK
SCARD_MI_NOTAUTHERR	0x801000A4	Mifare have not been authenticated
SCARD_MI_BITCOUNTErr	0x801000A5	PICC response with error bit length
SCARD_MI_BYTECOUNTErr	0x801000A6	PICC response with error number of byte
SCARD_MI_OVFLERR	0x801000A7	Internal FIFO overflow
SCARD_MI_FRAMINGERR	0x801000A8	PICC response with invalid frame
SCARD_MI_COLLERR	0x801000A9	Collision have been detected
SCARD_MI_ACCESSTIMEOUT	0x801000AA	PICC not response
SCARD_MI_CODINGERR	0x801000AB	PICC response with bit-coding error
SCARD_MI_PROTOCOLERR	0x801000AC	T=CL protocol error
SCARD_MI_RFERR	0x801000AD	Antenna hardware error
SCARD_MI_TEMPERR	0x801000AE	Temperature
SCARD_MI_WRERR	0x801000AF	EEPROM write error
SCARD_MI_VALERR	0x801000B0	PICC response with error value
SCARD_MI_OTHERERR	0x801000B1	Unspecific error
SCARD_MI_NOTSUPPORT	0x801000B2	Command not support