



**MSR600U iButton Reader Windows SDK**  
Dongguan Yixin Technology Co., Ltd. <http://www.kprinter.cn>

# MSR600 Magnetic Card Reader SDK Specification (for Windows) V1.00



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# 1.Product

## 3. 1. Product description

### 1. 1. 1 brief

MS600U is a usb interface magnetic card reader, The special decoding IC with excellent performance is adopted, which has the characteristics of low power consumption, strong anti-interference ability, high decoding success rate and strong decoding ability for weak magnetic card. The card reader complies with ISO and aamva standards, and can swipe the card in two directions. The card reader does not need external power adapter to take power from the computer host.

## 3. 2. classification

The products are divided into two categories:

### 1. 1. 2 Without iButton card reader

As shown in figure 1



figure 1 with out iButton card reader

### 1. 1. 3 With iButton card reader

As shown in figure 2



figure 2 with iButton card reader

## 3. 3. Data upload mode

### 1. 3. 1 HID Keyboard

Analog keyboard. In this mode, it is equivalent to an external keyboard device.



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When swiping card directly or the status of iButton changes, the data can be displayed directly in the text editor. Reference resources [iButton status](#).

### 1. 3. 2 HID Custom

In this mode, the card reading data needs to be processed and displayed by computer software, that is, calling “[MSR600 DecodeAutoTransData](#)” repeatedly in the thread for data analysis and processing, and the detailed development process refers to the [development process](#) part.

#### Remarks:

- 1、The card reader's data upload mode can be set by calling [MRS600 MagMode](#), and the processing mode can refer to the [data upload mode](#).
- 2、The iButton data upload mode can be set by calling [MSR600\\_iBtnMode](#), and the processing mode can refer to the [data upload mode](#).
- 3、If card reader with iButton, all call [MSR600 iBtn\\*](#) function will failed.

### 3. 4. iButton Status

#### 1. 4. 1 closed state

As shown in figure 3





figure 3 iButton close state

## 1. 4. 2 Removed state

As shown in figure 4



figure 4 iButton removed state

## 1. 4. 3 Data upload trigger

When the status of iButton changes, data upload will be triggered.

### 1. 4. 3. 1 Close state ---> removed status

Upload iButton Status: 0x062, and upload withDraw information of iButton, if you not call "[MSR600 iBtnWithDraw](#)", the default withDraw data='remove'

### 1. 4. 3. 2 removed status ---> Close state

Upload iButton Status: 0x062, upload Data format= prefix string + iButton's card number + suffix string will be uploaded, if you not call "[MSR600 iBtnPrefixSuffix](#)", the default prefix and suffix are is null string.

#### **Remark:**

The iButton data upload mode can be set by calling [MSR600 iBtnMode](#). The processing mode can refer to the [data upload mode](#).



## 2.Directory structure

Directory structure as shown in figure 5:

名称	修改日期	类型	大小
Demo	2019/10/19 0:37	文件夹	
library	2019/10/19 0:30	文件夹	
MS600_SDK(Windows)_cn.doc	2019/10/19 0:48	Microsoft Office...	2,138 KB
MS600_SDK(Windows)_cn.pdf	2019/10/19 0:48	Foxit Reader Plu...	1,237 KB
MS600_SDK(Windows)_en.doc	2019/10/17 22:15	Microsoft Office...	2,174 KB
MS600_SDK(Windows)_en.pdf	2019/10/19 0:49	Foxit Reader Plu...	1,289 KB

figure 5 Directory structure

### 2. 1. demo directory

Under Linux, the source code of calling demo program and demo program of msr600 dynamic library is as shown in figure 6 below.:

名称	修改日期	类型
cs_demo	2019/10/19 0:35	文件夹
cs_demo_src	2019/10/19 0:39	文件夹
vc_demo	2019/10/19 0:31	文件夹
vc_demo_src	2019/10/19 0:32	文件夹

figure 6 demo directory

### 2. 2. Library directory

The required library files for secondary development (the dependency directory must be installed before using), as shown in Figure 8

名称	修改日期	类型	大小
MSR600U_DLL.dll	2019/10/19 0:24	应用程序扩展	23 KB
MSR600U_DLL.h	2019/10/12 1:24	C/C++ Header	12 KB
MSR600U_DLL.lib	2019/10/19 0:24	Object File Library	7 KB





figure 7 Librarydirectory

### 3.development process

The overall development process is shown in figure 8:

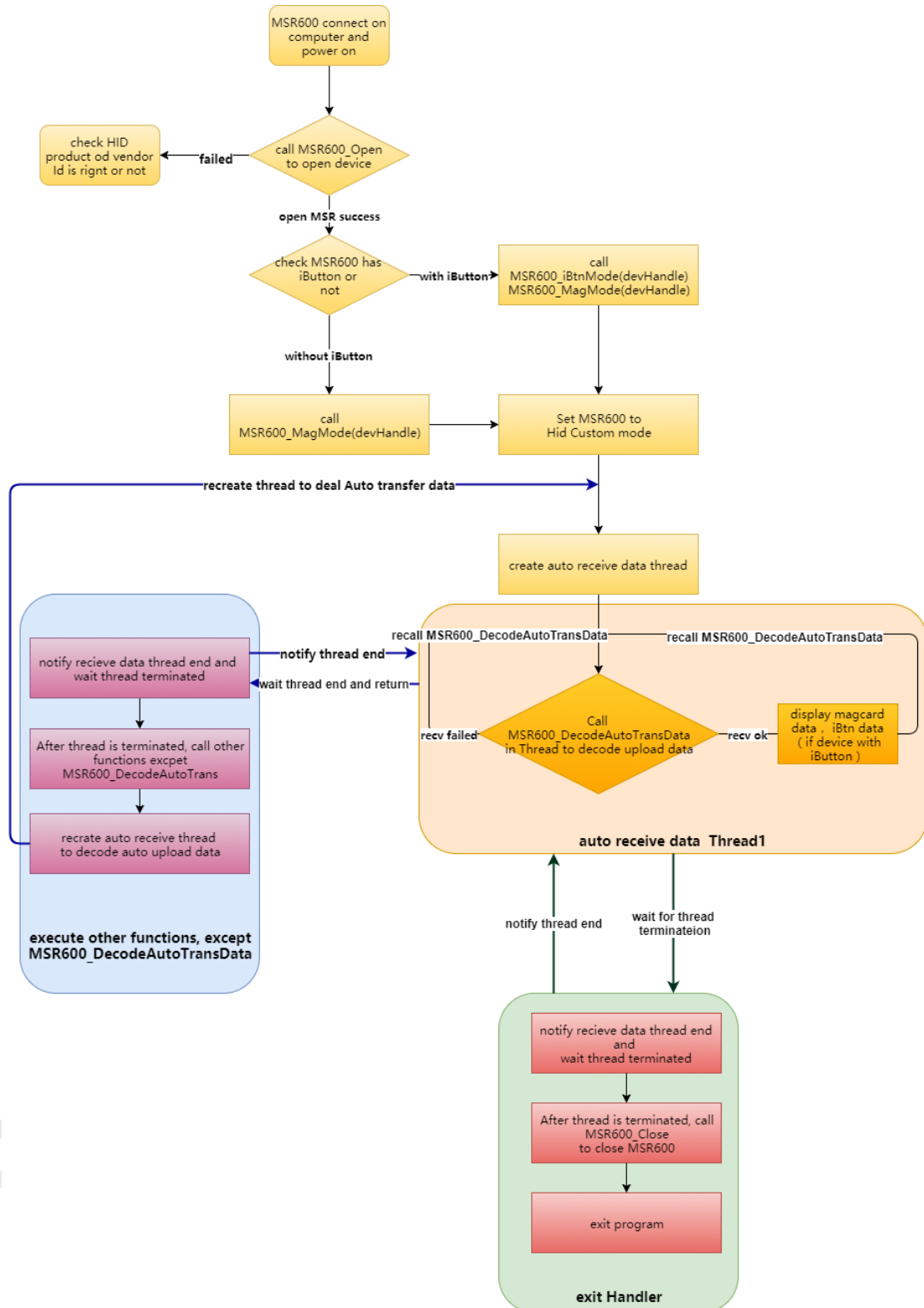


figure 8 Development process

Explain:

- 1、 Call [MSR600\\_MagMode\(\)](#) or [MSR600\\_iBtnMode\(\)](#) to set the device



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data upload mode to hid custom mode.

2、Start the thread, call [MSR600\\_DecodeAutoTransData\(\)](#), if it called successfully, then display the magnetic card information or withdraw data or card number of iButton. If you want [MSR600\\_DecodeAutoTransData\(\)](#) called successfully, you should swipe card or remove iButton or close iButton.

3、Before executing other command functions, make sure the thread in step 2 is ended. Once other command was executed, you should restart thread in step 2.

4、When the device needs to be shut down or the program needs to exit, first stop the thread in step 2 , then close the corresponding device by calling [MSR600\\_Close\(\)](#).

## 4.Function specification

### 6. 1. macro and self-definition variable

#### 6. 1. 1 macro

#define	CMD_OK	0
#define	CMD_WRONG_PARAM	1
#define	CMD_TIME_OUT	2
#define	CMD_FAILED	3
#define	PID	0x572B
#define	VID	0x0483



## 6. 1. 2 self-definition variable

```
enum PORT_TYPE {  
    UNKNOWN_PORT = -1,  
    COM_PORT = 0,  
    USB_PORT = 1  
};
```

## 6. 2. Device operation function

### 6. 2. 1 MSR600\_Open

**name:** MSR600\_Open

**description:** Open MSR600 device, you should know product id and vendor id by [Windows look up Hid details](#); or you should known com

port

or baudrate

**params:**

[in] portType	port type: COM_PORT: serial port, USB_PORT=usb port
[in] szPort	serial port , such as"com1", "com2"
[in] baudRate:	baud rate , valid range:4800, 9600, 19200, 38400
[in] nProductId	product id of MSR600
[in] nVendorId	vendor id of MSR600

**return:**

success:	the <a href="#">handle</a> of MSR600
fail:	NULL

HANDLE MSR600\_Open(  
 PORT\_TYPE portType,



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```
char *szPort,  
unsigned int baudRate,  
int nProductId,  
int nVendorId  
);
```

### 6. 2. 2 MSR600\_Close

**name:** MSR600\_Close

**description:** Close MSR600 device. If you call [MSR600\\_Open](#) successfully, by calling this function to close MSR600 device. After closing MSR600, set handle variable is NULL.

**params:** [in] devHandle      Handle to the device, by calling  
[MSR600\\_Open](#) successfully  
[in] portType      port type: COM\_PORT: serial port,  
USB\_PORT=usb port

**return:**      success:      CMD\_OK  
                 fail:      other value

```
int MSR600_Close(  
HANDLE devHandle,  
PORT_TYPE portType  
);
```

### 6. 2. 3 MSR600\_FwVer

**name:** MSR600\_FwVer

**description:** get MSR600's fire ware version

**params:** [in] devHandle      Handle to the device, by calling



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[MSR600\\_Open](#) successfully

[in] portType      port type: COM\_PORT: serial port,  
USB\_PORT=usb port

[out]pVersionInfo      store version string

[in] nWaitTimeOut      timeout waiting for command response

**return:**      success:      CMD\_OK

fail:      other value

```
int MSR600_FwVer(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    char *pVersionInfo,  
    int nWaitTimeOut=2500);
```

## 6. 3. Hid Custom Mode data Decode

### 6. 3. 1 MSR600\_DecomposeAutoTransData

**name:**      MSR600\_DecomposeAutoTransData

**description:**      get MSR600 auto upload data, then decode it. Before using  
this function, you should call [MSR600\\_MagMode\(\)](#), to set  
transProtocol = 1, to let MSR600 is HidCustom mode;

If MSR600 has iButton device, you should call

[MSR600\\_iBtnMode\(\)](#) at the same time, set

transProtocol=1, dataFormat=0, to let iButton is HidCustom  
mode, or else you can't get auto upload data.

In Hid Custom mode, swiping card or withdrawing iButton or  
closing iButton, data auto upload will be triggered.

**params:**      [in] devHandle      Handle to the device, by calling

[MSR600\\_Open](#) successfully



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[in] portType	port type: COM_PORT: serial port, USB_PORT=usb port
[out]pD_Type	magnetic card data format, Refer to MRS600 communication protocol for details
[out]pEncrypMode	magnetic card encrypt mode, Refer to MRS600 communication protocol for details
[out]pDeviceId	device id
[out]pT1_Status	Y: read track1 successfully; other: failed
[out]pT1_Len	the length of track1
[out]pT1_Data	the data of track1
[out]pT2_Status	Y: read track2 successfully; other: failed
[out]pT2_Len	the length of track2
[out]pT2_Data	the data of track2
[out]pT3_Status	Y: read track3 successfully; other: failed
[out]pT3_Len	the length of track3
[out]pT3_Data	the data of track3
[out]piBtnStatus	iButton status  0x62: iButton was withdraw  0x61: iButton was closed
[out]pCardNo	store ibutton card number or withdraw data
[out]pCardNoLen	iButton card number length or withdraw data length
[in] nWaitTimeOut	timeout waiting for command response
<b>return:</b>	success: CMD_OK; fail: other value



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```
int MSR600_DecodeAutoTransData(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    BYTE *pD_Type,  
    BYTE *pEncrypMode,  
    int *pDeviceId,  
    BYTE *pT1_Status, BYTE *pT1_Len, BYTE *pT1_Data,  
    BYTE *pT2_Status, BYTE *pT2_Len, BYTE *pT2_Data,  
    BYTE *pT3_Status, BYTE *pT3_Len, BYTE *pT3_Data,  
    BYTE *piBtnStatus, BYTE *pCardNo, BYTE *pCardNoLen,  
    int nWaitTimeOut = 1500);
```

## 6. 4. Reader operation function

### 6. 4. 1 MSR600\_MagMode

**name:** MSR600\_MagMode

**description:** MSR600 magnetic data transmit mode control

**params:**

[in] devHandle	Handle to the device, by calling <a href="#">MSR600_Open</a> successfully
[in] portType	port type: COM_PORT: serial port, USB_PORT=usb port
[in] transProtocol	<b>0=HID Keyboard</b> , Analog keyboard. In this mode, it is equivalent to an external keyboard device. When swiping the card directly, the data can be displayed directly in the text editor; <b>1=HID Custom</b> In this mode, card reading





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data needs to be processed by computer

program, by calling

[MSR600\\_DecodeAutoTransData](#) to

display data

[in]nWaitTimeOut timeout waiting for command response

**return:** success: CMD\_OK

fail: other value

```
int MSR600_MagMode(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    BYTE transProtocol = 1,  
    int nWaitTimeOut = 2500  
);
```

### 6. 4. 2 MSR600\_MagDataFormat

**name:** MSR600\_MagDataFormat

**description:** MSR600 magnetic card data format setting

**params:**

[in] devHandle	Handle to the device, by calling <a href="#">MSR600_Open</a> successfully
[in] portType	port type: COM_PORT: serial port, USB_PORT=usb port
[in] t1SS	start sentinel of track1, default value ‘%’
[in] t1ES	end sentinel of track1, default value ‘?’
[in] t2SS	start sentinel of track2, default value ‘;’
[in] t2ES	end sentinel of track2, default value ‘?’
[in] t3SS	start sentinel of track3, default value ‘+’
[in] t3ES	end sentinel of track3, default value ‘?’
[in] outputT1	out put track1: true=output, false=no



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[in] outputT2	out put track2: true=output, false=no
[in] outputT3	out put track3: true=output, false=no
[in] endChar	After whole packet was uploaded, the end char of packet
	0X58: Enter
	0X2B: Tab
	0: NULL
	others: the Ascii value of character
[in] nWaitTimeOut	timeout waiting for command response
<b>return:</b>	
success:	CMD_OK
fail:	other value

int MSR600\_MagDataFormat(

    HANDLE devHandle,

    PORT\_TYPE portType,

    BYTE t1SS = '%', BYTE t1ES = '?',

    BYTE t2SS = ';', BYTE t2ES = '?',

    BYTE t3SS = '+', BYTE t3ES = '?',

    bool outputT1 = true,

    bool outputT2 = true,

    bool outputT3 = true,

    BYTE endChar = 0,

    int nWaitTimeOut = 2500

);

### 6. 4. 3 MSR600\_MagReset

**name:** MSR600\_MagReset

**description:** MSR600 magnetic card reader reset to default option



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Default option: transMode = **HID Keyboard**, analog keyboard

start sentinel of track1, default value '%'

end sentinel of track1, default value '?'

start sentinel of track2, default value ';'

end sentinel of track2, default value '?'

start sentinel of track3, default value '+'

end sentinel of track3, default value '?'

out put track1: true

out put track2: true

out put track3: true

Package end char: 0X58 = Enter

**params:** [in] devHandle Handle to the device, by calling  
[MSR600\\_Open](#) successfully  
[in] portType port type: COM\_PORT: serial port,  
USB\_PORT=usb port  
[in] nWaitTimeOut timeout waiting for command response

**return:** success: CMD\_OK;  
fail: other value

```
int MSR600_MagReset(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    int nWaitTimeOut = 2500  
);
```

### 6. 4. 4 MSR600\_MagGetOption

**name:** MSR600\_MagGetOption

**description:** Get MSR600 magnetic card reader current option

**params:** [in] devHandle Handle to the device, by calling



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[MSR600\\_Open](#) successfully

[in] portType            port type: COM\_PORT: serial port,  
                          USB\_PORT=usb port

[out]pTransProtocol    **0=HID Keyboard** , Analog keyboard. In

this mode, it is equivalent to an

external keyboard device. When swiping

the card directly, the data can be

displayed directly in the text editor;

**1=HID Custom** In this mode, card reading

data needs to be processed by computer

program, by calling

[MSR600\\_DecodeAutoTransData](#) to

display data

[out]pT1SS            start sentinel of track1

[out]pT1ES            end sentinel of track1

[out]pT2SS            start sentinel of track2

[out]pT2ES            end sentinel of track2

[out]pT3SS            start sentinel of track3

[out]pT3ES            end sentinel of track3

[out]pOutputT1        flag output for track1:  
                          1=output, 0=not output

[out]pOutputT2        flag output for track2:  
                          1=output, 0=not output

[out]pOutputT3        flag output for track3:  
                          1=output, 0=not output

[out]pEndChar        After whole packet was uploaded, the  
                          end char of packet

0X58:    Enter

0X2B:    Tab



0: NULL  
others: the Ascii value of character  
[out]nWaitTimeOut timeout waiting for command response  
**return:** success: CMD\_OK;  
fail: other value

```
int MSR600_MagGetOption(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    BYTE* pTransProtocol,  
    BYTE* pT1SS, BYTE *pT1ES,  
    BYTE* pT2SS, BYTE *pT2ES,  
    BYTE* pT3SS, BYTE *pT3ES,  
    BYTE* pOutputT1,  
    BYTE* pOutputT2,  
    BYTE* pOutputT3,  
    BYTE* pEndChar,  
    int nWaitTimeOut = 2500  
);
```

## 6. 5. iButton operation function

### 6. 5. 1 MSR600\_iBtnMode

**name:** MSR600\_iBtnMode  
**description:** MSR600 iButton data transfer mode  
**params:** [in] devHandle Handle to the device, by calling [MSR600\\_Open](#) successfully  
[in] portType port type: COM\_PORT: serial port, USB\_PORT=usb port



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[in] transProtocol     **0=HID Keyboard** , Analog keyboard. In this mode, it is equivalent to an external keyboard device. When swiping the card directly, the data can be displayed directly in the text editor;

**1=HID Custom** In this mode, card reading data needs to be processed by computer program, by calling

[MSR600\\_DecodeAutoTransData](#) to display data

[in] dataFormat     0: transfer data as hex,  
1: transfer data as decimal

[in] nWaitTimeOut     timeout waiting for command response

**return:**     success:     CMD\_OK;  
             fail:     other value

```
int MSR600_iBtnMode(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    BYTE transProtocol=1,  
    BYTE dataFormat=0,  
    int nWaitTimeOut = 2500  
);
```

### 6. 5. 2 MSR600\_iBtnEndChar

**name:**     MSR600\_iBtnEndChar

**description:**     set MSR600 iButton's package end char



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**params:**

[in] devHandle	Handle to the device, by calling <a href="#">MSR600_Open</a> successfully
[in] portType	port type: COM_PORT: serial port, USB_PORT=usb port
[in] endChar	package end char 0X58: Enter 0X2B: Tab 0: null string Other char: ASCII value of char
[in] nWaitTimeOut	timeout waiting for command response

**return:**

success:	CMD_OK;
fail:	other value

```
int MSR600_iBtnEndChar(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    BYTE endChar=0,  
    int nWaitTimeOut = 2500  
);
```

### 6. 5. 3 MSR600\_iBtnWithdraw

**name:** MSR600\_iBtnWithdraw

**description:** Set MSR600 iBtn's withDraw data, when iBtn removed from device, iBtn will upload 'withDraw data'. default withdraw data is 'remove'.

**params:**

[in] devHandle	Handle to the device, by calling <a href="#">MSR600_Open</a> successfully
[in] portType	port type: COM_PORT: serial port, USB_PORT=usb port



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[in] pDrawData      withdraw data string , max length = 15  
[in] drawLen      the length of withdraw data, max value = 15

[in] nWaitTimeOut      timeout waiting for command response

**return:**      success:      CMD\_OK;  
             fail:      other value

```
int MSR600_iBtnWithdraw(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    BYTE *pDrawData,  
    int drawLen,  
    int nWaitTimeOut = 2500  
);
```

### 6. 5. 4 MSR600\_iBtnPrefixSuffix

**name:**      MSR600\_iBtnPrefixSuffix

**description:**      Set MSR600 iBtn's prefix string and suffix string. When iBtn was attached to device, card number was upload by device.  
Data format: prefix string + card number + suffix string

**params:**      [in] devHandle      Handle to the device, by calling [MSR600\\_Open](#) successfully  
                 [in] portType      port type: COM\_PORT: serial port, USB\_PORT=usb port  
                 [in] pPreFix      prefix string, max length = 15  
                 [in] preFixLen      the length of prefix string  
                 [in] pSurfix      suffix string, max length = 15  
                 [in] surFixLen      the length of suffix string  
                 [in] nWaitTimeOut      timeout waiting for command response





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**return:** success: CMD\_OK;  
fail: other value

```
int MSR600_iBtnPrefixSuffix(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    BYTE* pPrefix, int preFixLen,  
    BYTE* pSurfix, int surFixLen,  
    int nWaitTimeOut = 2500  
);
```

### 6. 5. 5 MSR600\_iBtnReset

**name:** MSR600\_iBtnReset

**description:** MSR600 iButton reset to default state

iButton default: data transfer mode is **0: HID Keyboard**,

Analog keyboard. In this mode, it is equivalent to an external keyboard device.

When swiping the card directly, the data can be displayed directly in the text editor

Data format = hex mode

Package end char: Enter(0x58)

Withdraw data : 'remove'

Prefix string = null string

suffix string = null string

**params:** [in] devHandle Handle to the device, by calling

[MSR600\\_Open](#) successfully

[in] portType port type: COM\_PORT: serial port,  
USB\_PORT=usb port

[in] nWaitTimeOut timeout waiting for command response



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**return:** success: CMD\_OK;  
fail: other value

```
int MSR600_iBtnReset(  
    HANDLE devHandle,  
    PORT_TYPE portType,  
    int nWaitTimeOut = 2500);
```

### 6. 5. 6 MSR600\_iBtnGetOption

**name:** MSR600\_iBtnGetOption

**description:** MSR600 get iBtn current option

**params:**

[in] devHandle	Handle to the device, by calling <a href="#">MSR600_Open</a> successfully
[in] portType	port type: COM_PORT: serial port, USB_PORT=usb port
[out]pTransProtocol	<b>0=HID Keyboard</b> , Analog keyboard. In this mode, it is equivalent to an external keyboard device. When swiping the card directly, the data can be displayed directly in the text editor; <b>1=HID Custom</b> In this mode, card reading data needs to be processed by computer program, by calling <a href="#">MSR600_DecodeAutoTransData</a> to display data
[out]pDataFormat	0: transfer hex data 1: transfer decimal data
[out]pEndChar	package end char



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0X58: Enter

0X2B: Tab

0: null string

Other char: ASCII value of char

[out]pWithdrawLen the length of withdraw data

[out]pWithdraw withdraw data

[out]pPreFixLen the length of prefix

[out]pSubffixLen the length of suffix

[out]pPreFix prefix string

[out] pSuffix suffix string

[in] nWaitTimeOut timeout waiting for command response

**return:** success: CMD\_OK;

fail: other value

int MSR600\_iBtnGetOption(  
HANDLE devHandle,  
PORT\_TYPE portType,  
BYTE \*pTransProtocol,  
BYTE \*pDataFormat,  
BYTE \*pEndChar,  
BYTE \*pWithdrawLen,  
BYTE \*pWithdraw,  
BYTE \*pPreFixLen,  
BYTE \*pSubffixLen,  
BYTE \*pPreFix,  
BYTE \*pSuffix,  
int nWaitTimeOut = 2500  
);



## 5. Other problem

### 6. 1. Windows look up Hid details

Check hid product id and vendor id as figure 9 below:

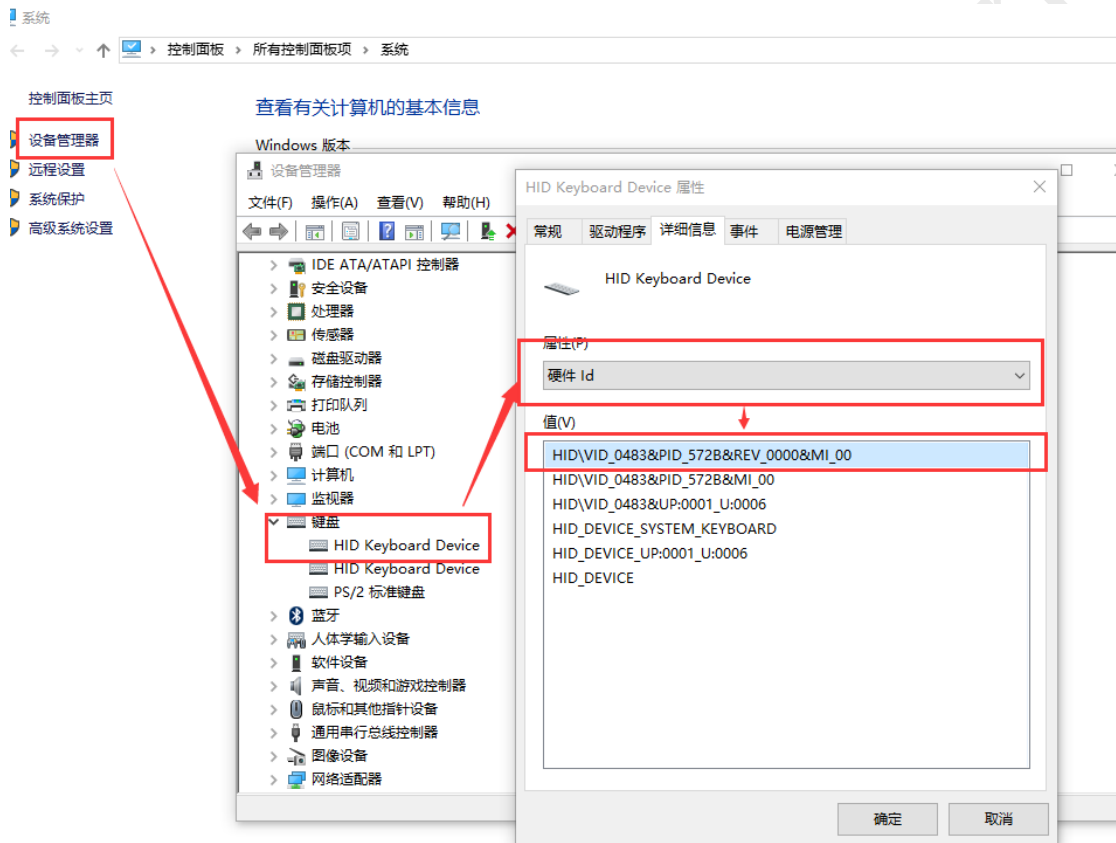


figure 9 look up hid information