

HCR 360

PC/SC Software Installation Guide

Hybrid Card Reader, RS232 Interface, PC/SC Compatible
Device Driver and Demo Application

UIC EC/DC Document PM042-P
16 May 2005

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PREFACE

This guide explains how to install the PC/SC device driver for UIC HCR360 hybrid card reader. The firmware of HCR360 have to be set up in order to enable PC/SC operating mode, which is different from general HCR360 EMV certified mode. The PC/SC model of HCR360 have factory default of PC/SC mode enabled.

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1. Introduction

PC/SC specification is defined by Microsoft and other leading vendors to specify smart card readers' common programming interfaces and control mechanisms on PC.

HCR360 PC/SC version combines firmware and software to conform PC/SC specification, Which provides access to ISO-7816 T=0 / T=1 compatible smart cards, and reading memory cards (see supported memory cards on HCR360 programming manual) and reading magnetic stripe card (MSR, ISO7811 compatible, 3 tracks). To access memory card or MSR, proprietary defined control codes (also know as PC/SC Vendor IOCTL) are defined to help application programs control the driver and hardware.

For more information, please refer to:

PC/SC Workgroup <http://www.pcscworkgroup.com/>

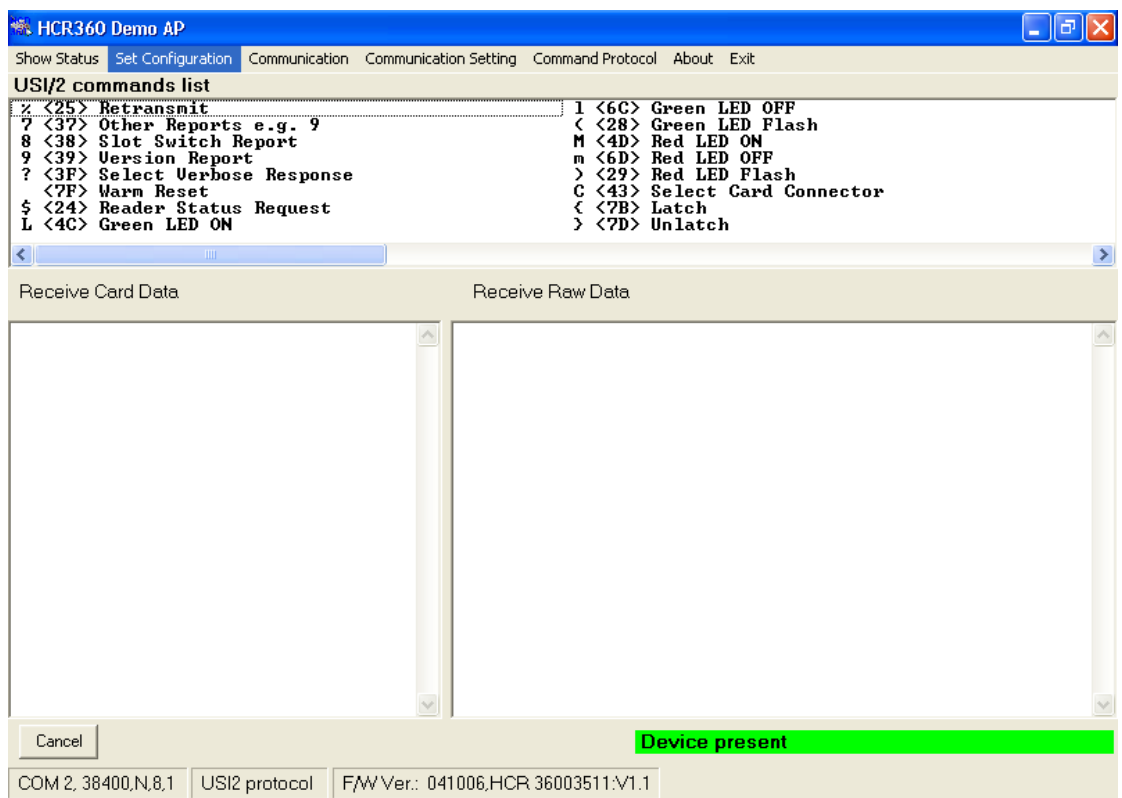
Microsoft® MSDN website.

2. Device Driver Setup

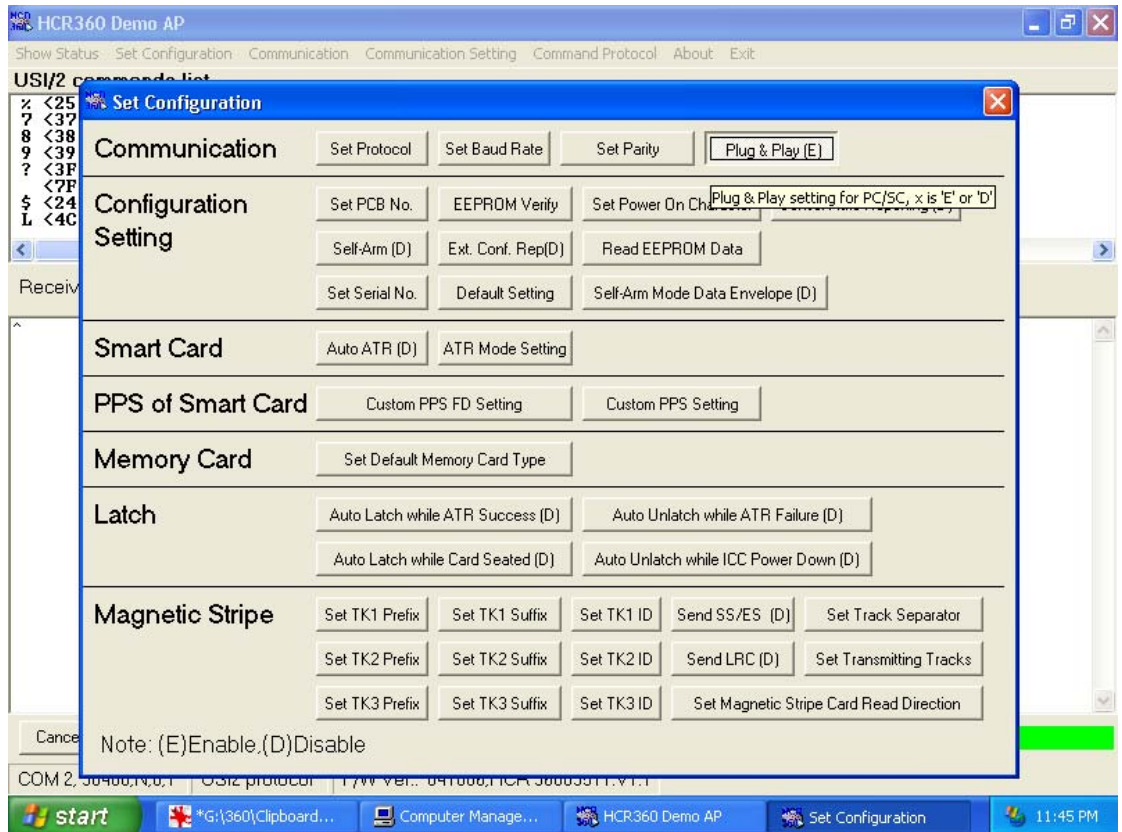
Enable PC/SC mode (optional)

These steps are only applied to HCR360 previously shipped without PC/SC mode enabled and wish to cooperate with PC/SC-aware applications.

1. Acquire HCR360 PC/SC enabled cable (UIC P/N#: 5611292001) and demo application 360DAX21 from UIC.
2. Install and launch 360DAX21



3. On the main screen of 330DAX21, press “**Set configuration**” on the menu bar.

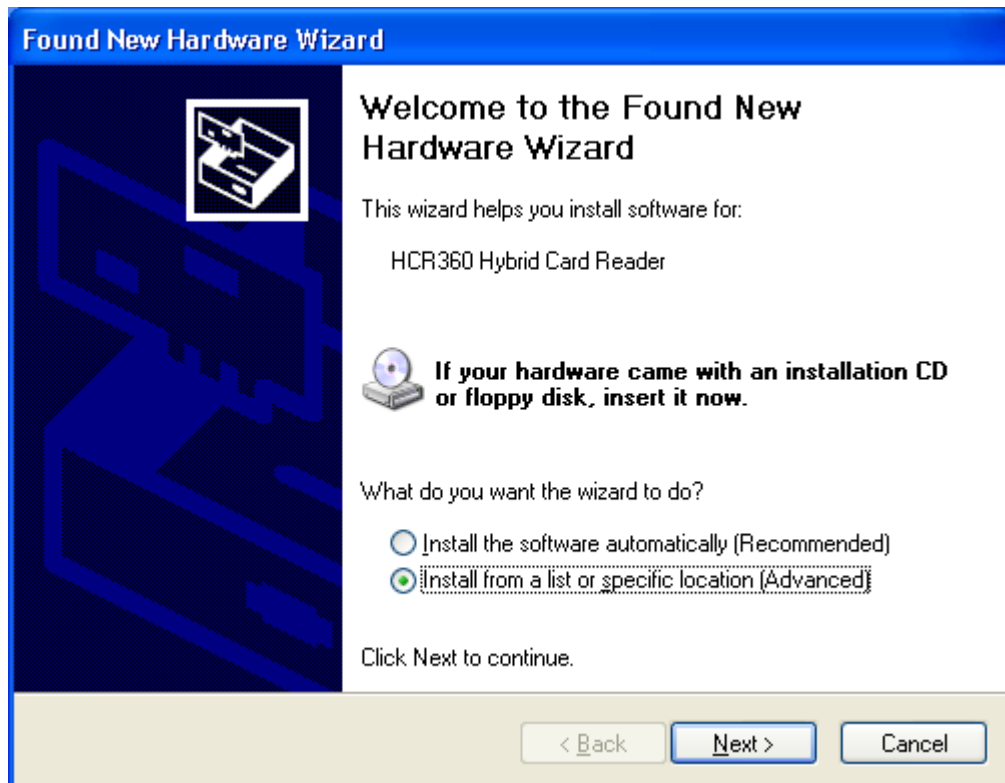


4. At "Set Configuration" form, press "**Plug & Play**" to make the following (D) change to (E), which means plug and play enabled.
5. Reboot windows or open device manager to scan for new device.

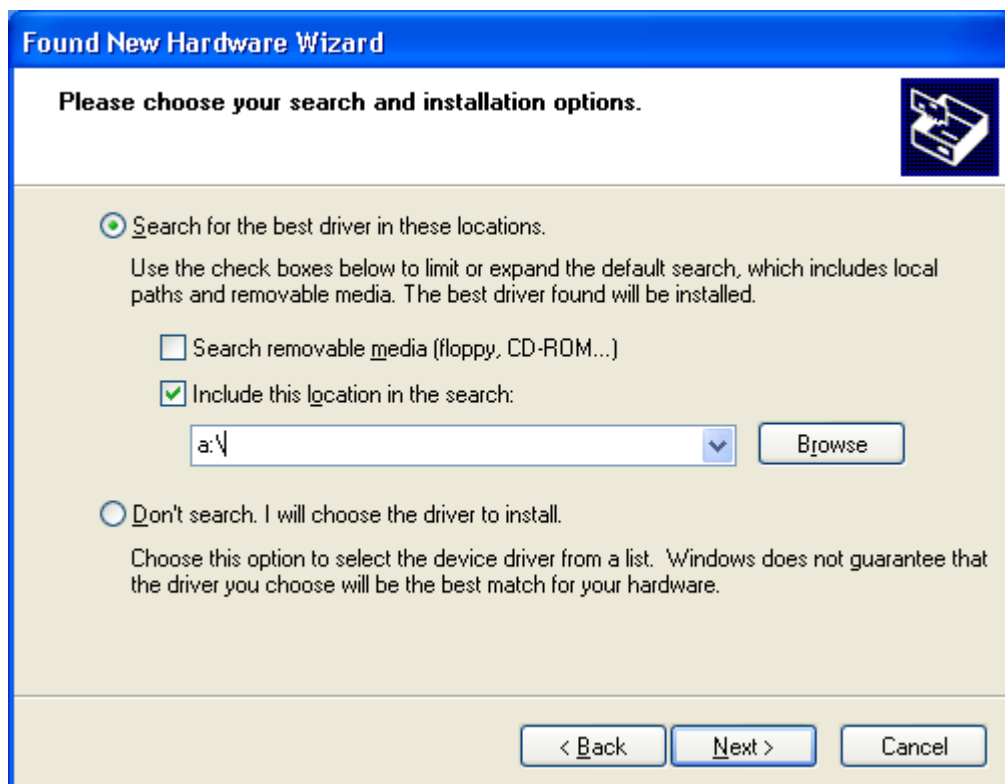
Install Device driver

(RS232 version, Windows 2000 and XP)

1. Plug HCR360 (with PC/SC feature enabled) into PC's RS232 port and reboot, this dialogue box should appear, Click "NEXT" to continue.



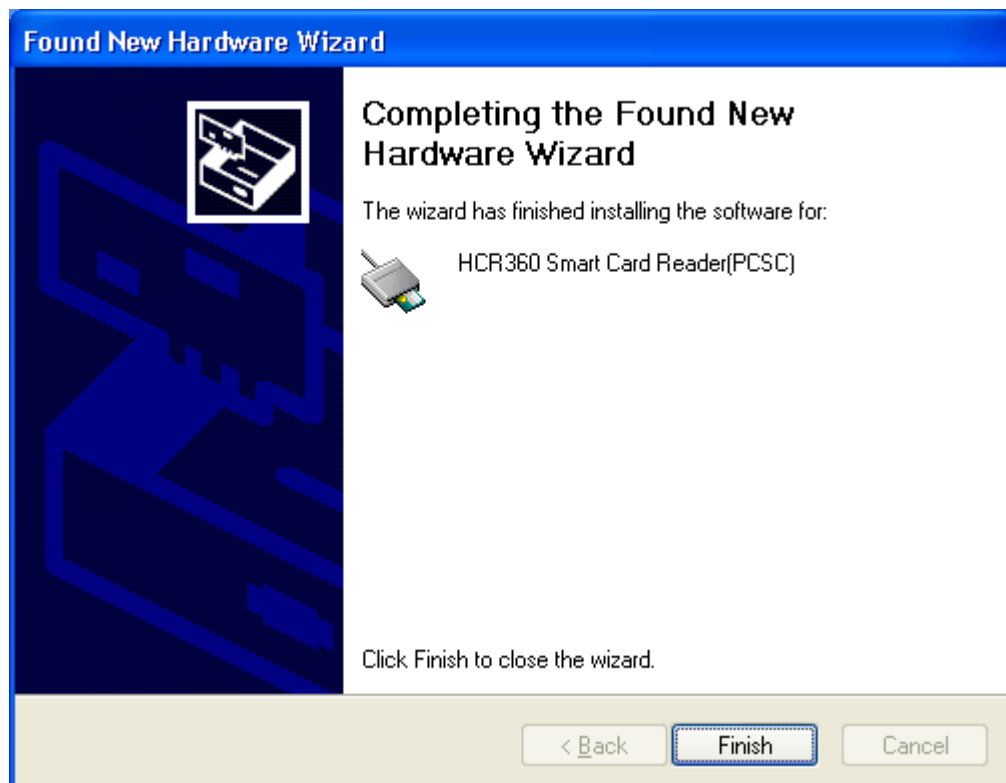
2. Choose "Search for the best driver in these locations", specify the PC/SC driver (hcr360w2k.inf) path, and click "NEXT" to continue.



3. When Windows warn about digital signature, click "YES" to continue.



4. Windows will show a dialogue box to indicate that driver has been installed. Press "Finish" to leave.



Install Device driver

(USB version, Windows 2000 and XP)

HCR360 USB version utilize a USB to RS232 bridge chip and accompanied driver to simulate a virtual RS232 port.

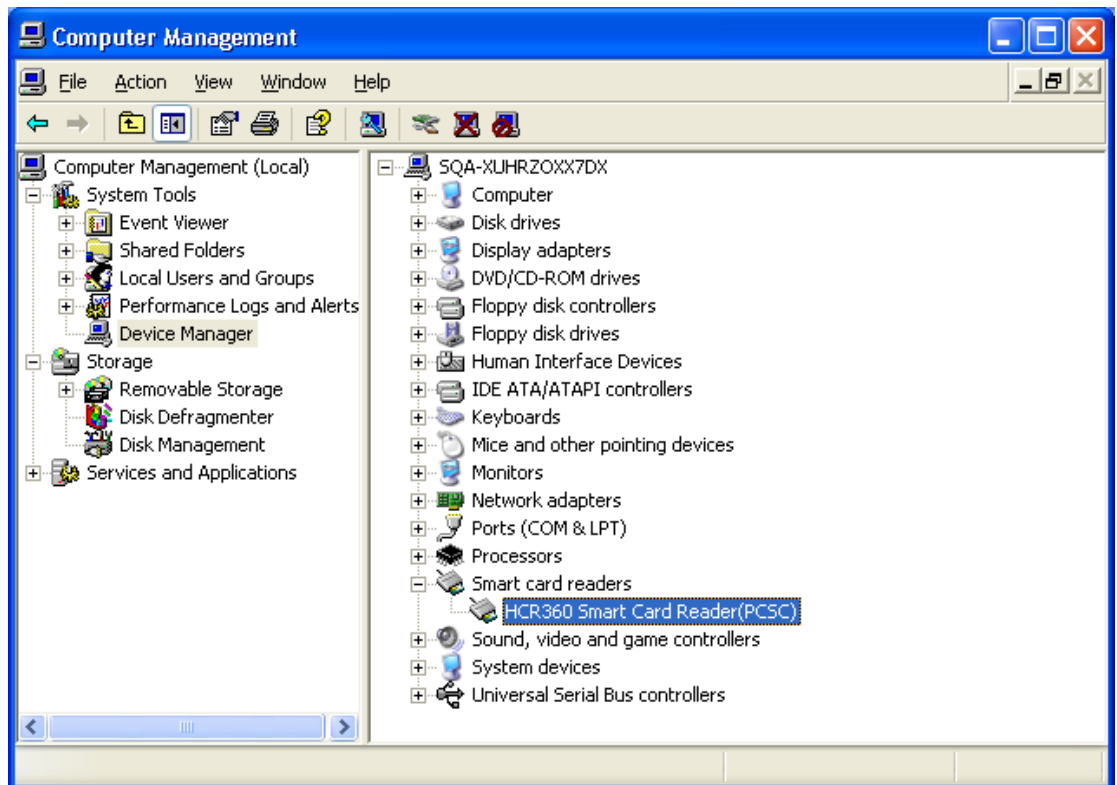
1. Plug HCR360 USB into USB port of the host computer, and Windows will ask driver for new USB device.
2. Select the path of USB bridge chip driver (ser2pl.inf) in the driver disc.
3. Let windows finish the USB bridge installation.
4. Windows will continue to ask for HCR360 PC/SC driver.
5. Follow step (2) thru (4) of RS232 procedure of driver installation.

Verify that Driver correctly installed

1. To confirm installation, right-click "My Computer" icon on Windows desktop, and click "Manage" when the popup menu appears.

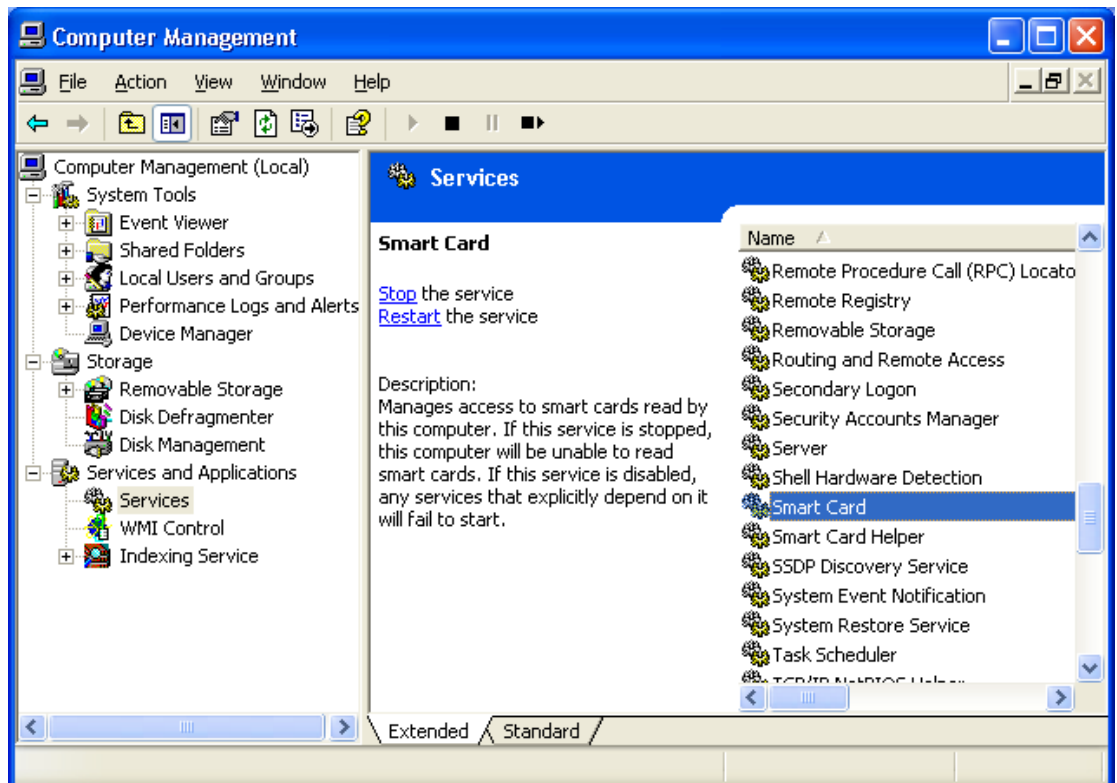


2. Click "Device Manager" and check if "HCR360 Smart Card Reader(PCSC)" appears and work normally.

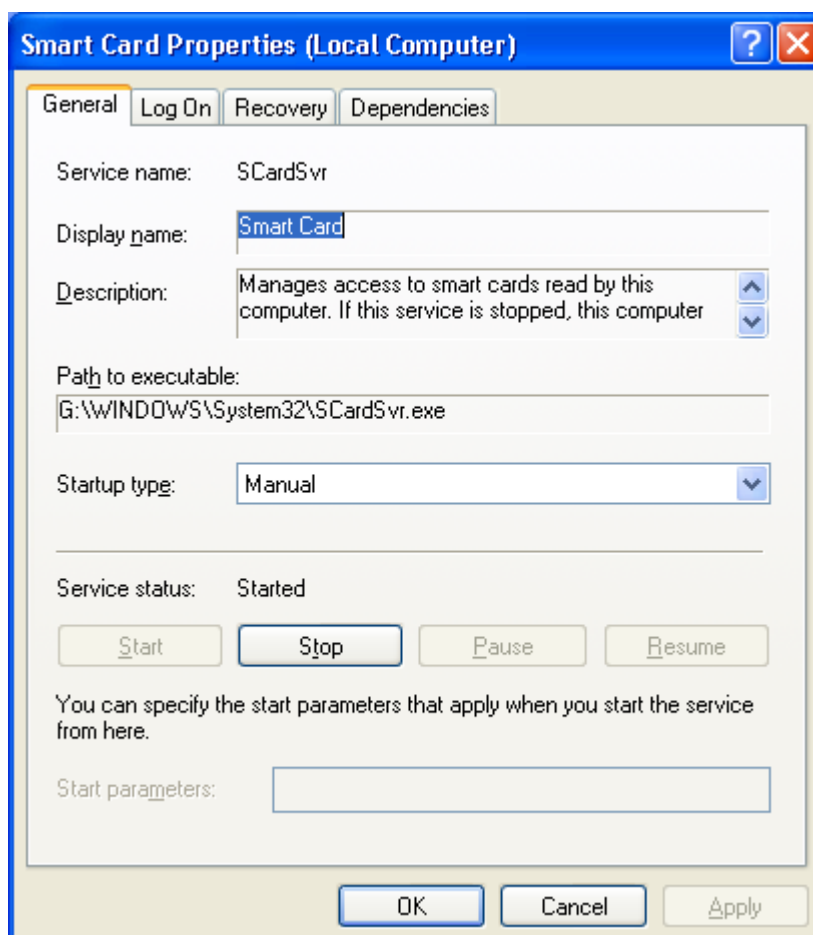


Enable Windows Smart Card Service

1. In the same computer management window, click "Services and applications" in left panel, then click "Services". Check if the "Smart Card" is started. PC/SC compatible application cannot work without this service. If Smart card service not started, double-click this entry.



2. Click "Start" to enable Smart Card service. Click OK to close window. Now HCR360 should be work correctly.



3. HCR360 Vendor I/O Control Codes

Programmer writing application can use Windows smart card API "SCardControl"
2nd parameter *dwControlCode* to send these codes.

Usage:

1. Connect to Reader Directly

```
SCardConnect (hContext, szReaderName, SCARD_SHARE_DIRECT, 0,  
phCardHandle, pdwActiveProtocol);
```

2. Send vendor IOCTLs:

```
ScardControl ( hCardHandle, dwControlCode, lpInBuffer, nInBufferSize,  
lpOutBuffer, nOutBufferSize, lpBytesReturned );
```

Parameter statements:

HANDLE hCardHandle :	Handle to smartcard
DWORD dwControlCode :	Vendor IOCTL codes
LPCVOID lpInBuffer :	Pointer to byte array for storing input data
DWORD nInBufferSize :	Length of input buffer
LPCVOID lpoutbuffer :	Pointer to byte array for storing output data
DWORD nOutBufferSize :	Length of output buffer
LPDWORD lpBytesReturned :	Pointer to a DWORD variable, system will set the read readed byte counts here

Function Name	IOCTL Code	Description
IOCTL_HCR360_FWQUERY	SCARD_CTL_CODE(2048) //0x312000	Query HCR360 Firmware version string, string will return in lpOutBuffer (this buffer should >=32bytes), string length return in lpBytesReturned .
IOCTL_HCR360_COLDNST	SCARD_CTL_CODE(2053) //0x312014	Cold reset (activate) the smart card in current selected interface, ATR will return in lpOutBuffer , ATR length return in lpBytesReturned lpOutBuffer should >= 33bytes HCR360 will put a '*' in lpOutBuffer if there is no ATR returned (such as memory card)
IOCTL_HCR360_DEACTIV	SCARD_CTL_CODE(2054) //0x312018	Deactivate the smart card in current selected interface HCR360 will put a '^' as acknowledgement in lpOutBuffer . Which should >= 1byte
IOCTL_HCR360_SELPRIM	SCARD_CTL_CODE(2055) //0x31201C	Select the primary interface (access cards in main slot) lpOutBuffer should >= 1byte for acknowledgement character '^'

IOCTL_HCR360_SELSAM1	SCARD_CTL_CODE(2056) <i>//0x312020</i>	Select SAM1 interface (access cards in SAM1) <i>lpOutBuffer</i> should >= 1byte for acknowledgement character '^'
IOCTL_HCR360_SELSAM2	SCARD_CTL_CODE(2057) <i>//0x312024</i>	Select SAM2 interface (access cards in SAM2) <i>lpOutBuffer</i> should >= 1byte for acknowledgement character '^'
IOCTL_HCR360_SELSAM3	SCARD_CTL_CODE(2058) <i>//0x312028</i>	Select SAM3 interface (access cards in SAM3) <i>lpOutBuffer</i> should >= 1byte for acknowledgement character '^'
IOCTL_HCR360_SELSAM4	SCARD_CTL_CODE(2059) <i>//0x31202C</i>	Select SAM4 interface (access cards in SAM4) <i>lpOutBuffer</i> should >= 1byte for acknowledgement character '^'
IOCTL_HCR360_RAWIO	SCARD_CTL_CODE(2060) <i>//0x312030</i>	Exchange commands and responds to smart card in current selected interface. User should put command and data of USI2 protocol without header and LRC trailer in <i>lpInBuffer</i> , the response will return in <i>lpOutBuffer</i> and the number of bytes returned store in <i>lpBytesReturned</i> . <i>lpOutBuffer</i> should <= 288bytes Apply to both CPU and memory cards.

IOCTL_HCR360_READMSR	SCARD_CTL_CODE(2061) //0x312034	Query latest Magnetic Card swipe from HCR360. The step to read a magnetic card as follows: 1. Insert magnetic card 2. Completely eject card, magnetic stripe data will be read during card removing. 3. Issue this command DATA FORMAT: Track data will be decoded by HCR360 firmware, strip SS and ES character, add <CR> (0x0D) between each tracks. A single '+' in track data means an empty track, a single '*' in track data means reading error. NOTE: 260bytes <= <i>lpOutBuffer</i> <= 288bytes
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