1. Introduction

1.1. W1981-PLUS Contact Smart Card Reader

- ✧ Support ISO 7816 T=0/T=1 Contact Smart Card
- ✧ Compatible with Microsoft USB-CCID driver
- ✧ compliant with PBOC2.0 Level1 and EMV2000 Level1 standard
- ✧ Full-speed USB Communications
- ✧ Support Hot-swappable
- ✧ Supports Windows2000/XP/2003/Vista/Win7 environment.
- ✧ IC card reader Technical Specification
- ✧ Implemented as an USB full speed device with bulk transfer endpoint
- ✧ support pc smart card industry standard-pc/sc 1.1
- ✧ support microsoft smart card for windows
- ✧ certificated by emv 4.0 specification
- ✧ support the universal serial bus specification,version 1.1
- ✧ based on iso7816 implementation

1.2. Specifications

parameter	**specifications**
contact card types	Support T0, T1 protocol, I2C memory card, SLE4418, SLE4428, SLE4432, SLE4442, AT88SC1608, AT45D041, B-CAS card in Japan. Support 3V/5V card

USB interface rate	Up to 12Mbps
contact card slot rate	Default rate 9600bps，support PPS（9600 – 224K）
Operating System	2000/2003/XP/Vista/win 7
working Current	≤300mA
Supply Voltage	DC5V (from USB)
Dimensions（H×W×D）	55*65*13（mm）
Working Temperature	0℃ ~ 50℃
Working Humidity	20% ~ 90%
MTBF	5000H

2. Driver Installation

2.1 Installation Sequence

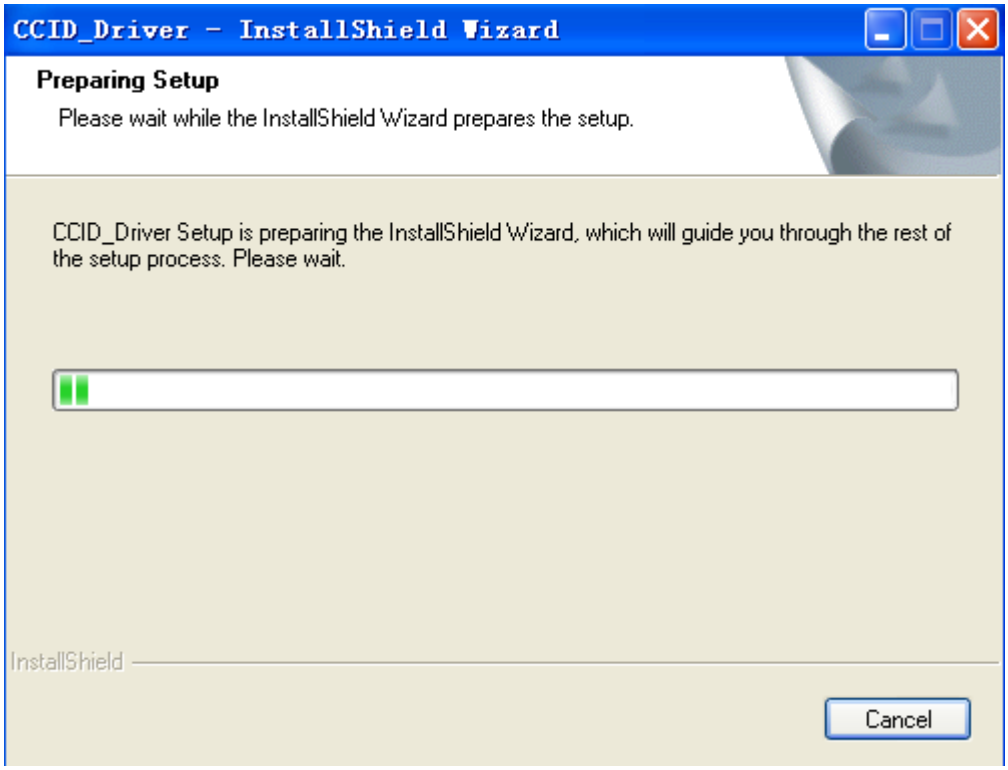
Identification of W1981-PLUS Can be finished automatically by the PC that installed with Vista or win 7 operating system..

In the PC with 2000/2003/XP operating system,There need CCID driver to install. You can download the driver from www.watchdata.com.

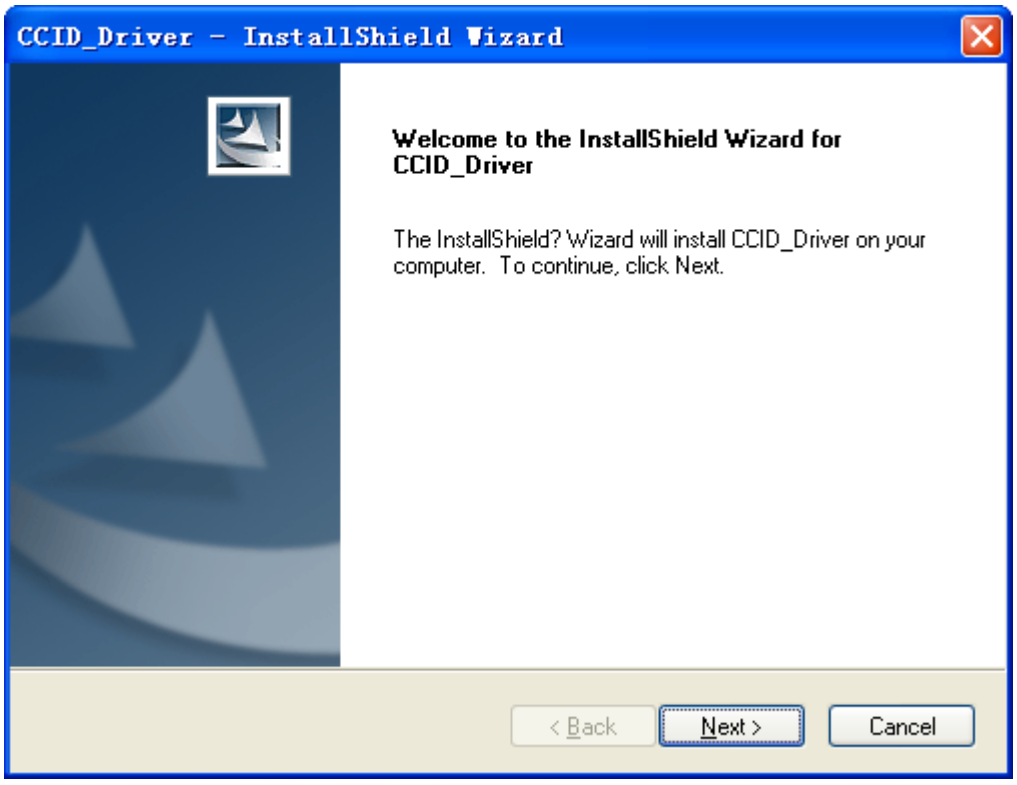
There are two ways to install the CCID driver, one is run “setup.exe”, the other is through Found New Hardware Wizard running by the PC automatically when the device was plugged in .

Method I:

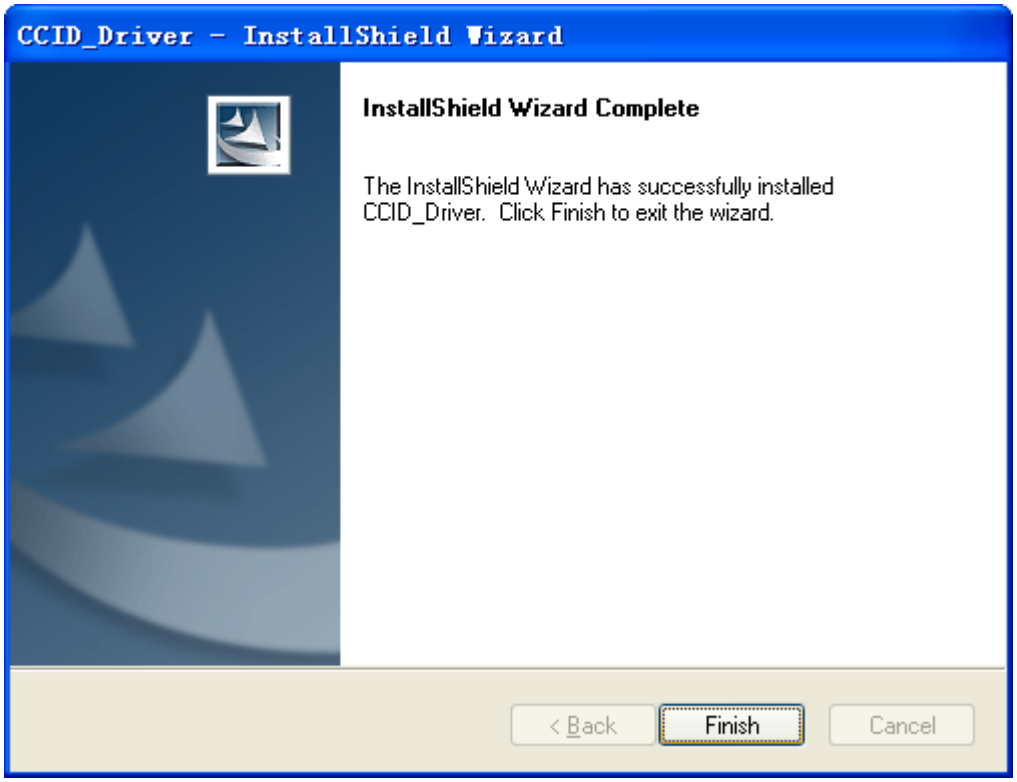
1） run the setup.exe in the folder of CCID_DRIVER SETUP,and waiting



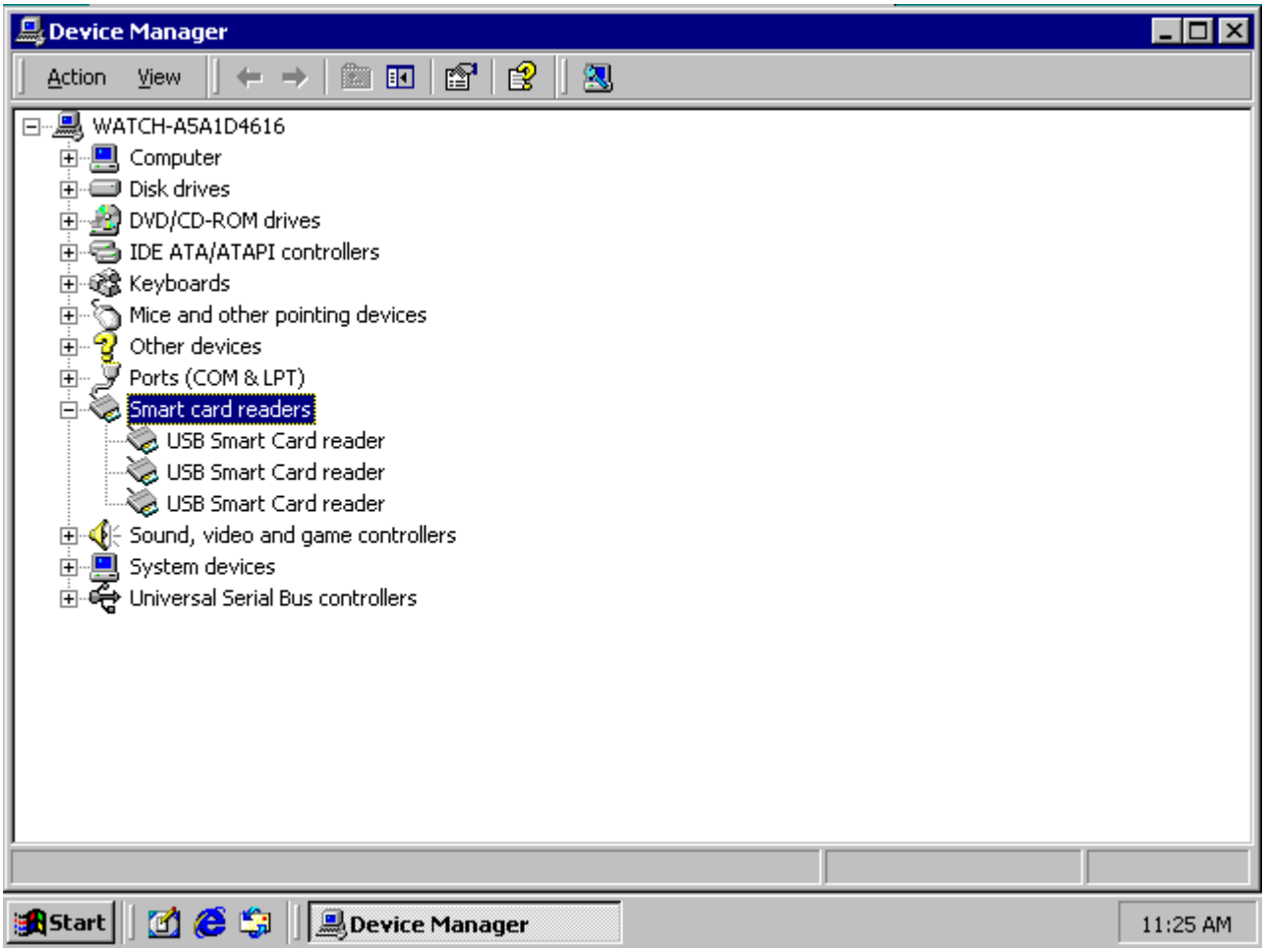
2） click the “Next>” button



3） click the “finish” button



After correct installation, you will find the " USB Smart Card Reader" in the explorer .

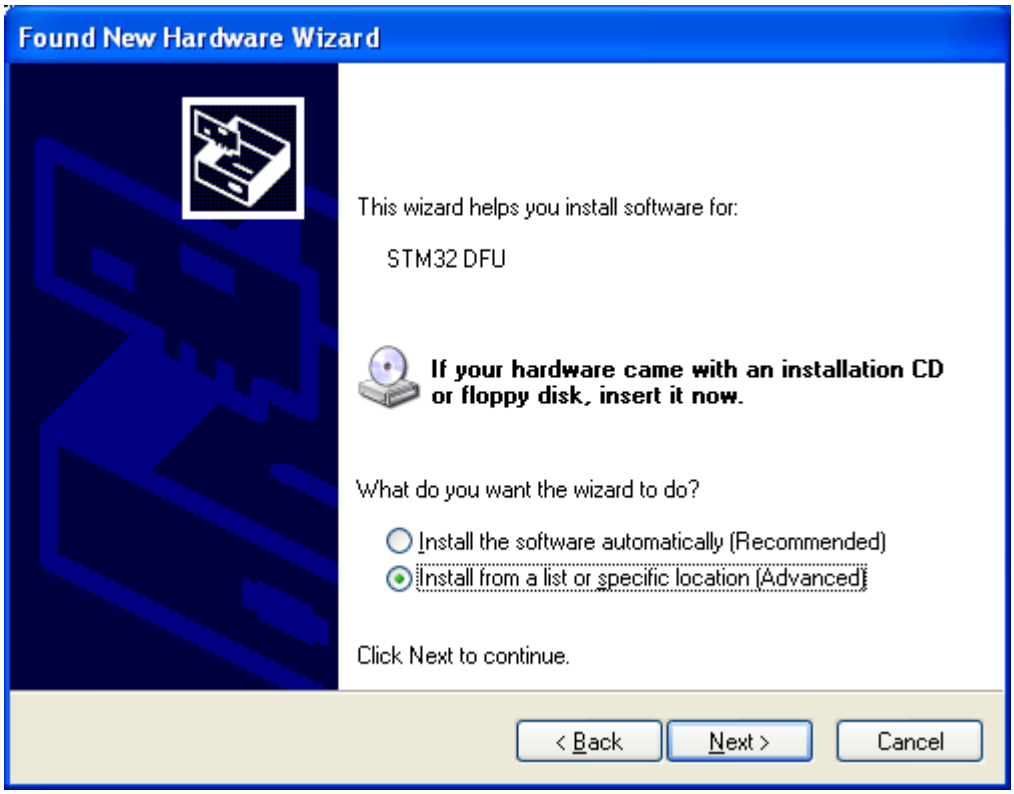


Method Ⅱ:

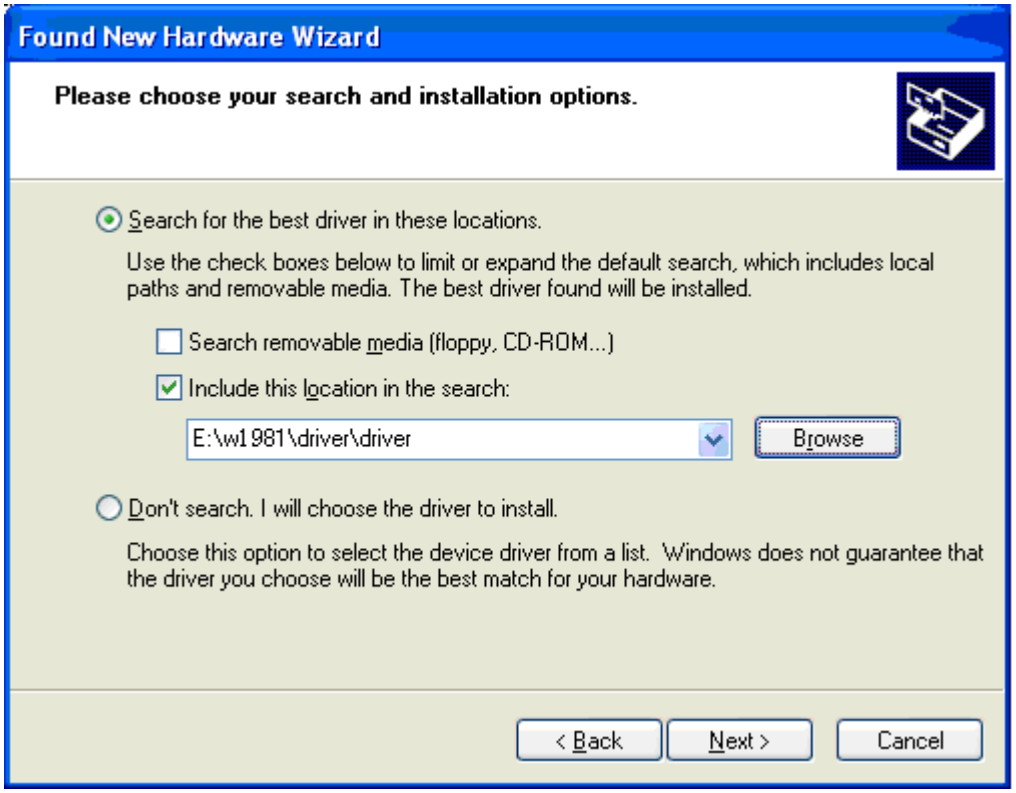
1) plug the reader in PC:

2) select the option as the followed picture shows, then click the “next” button

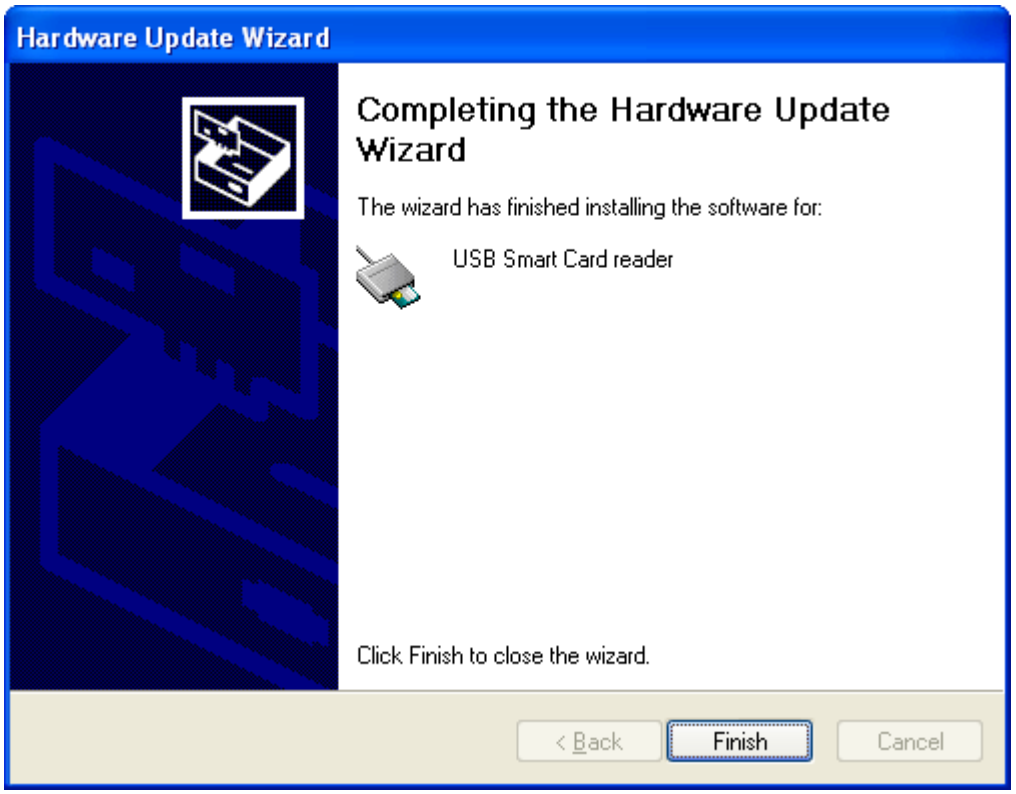
3) select the option as the followed picture shows, then click the “next” button



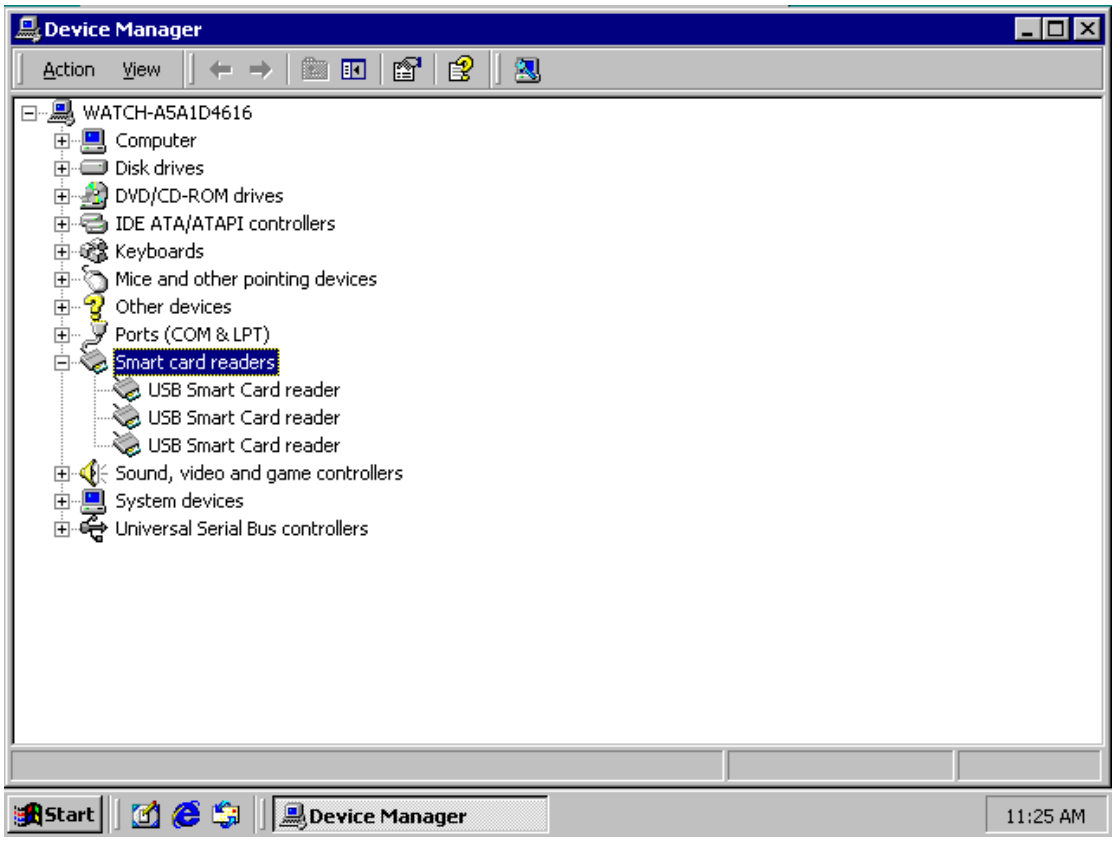
4) select the option as the followed picture shows, click the “Browse” button, select the folder that the driver saved in , then click the “Next” button



5) click the “Finish” button, finish the installation.



6) After correct installation, you will find the“ USB Smart Card Reader”in the explorer



3. Communication Protocol

Communication protocol between the pc and the reader is compliant with the CCID protocol. There are some examples that can make the users understood how to send the APDU command to the card through the reader .

Note: All the numbers in the commands are hexadecimal.

3.1 APDU command format from the PC to the reader

Information field	Identifier	Length	Description
The head of APDU ommand	Type	1	CCID Command
	Length	4	Length of Abdata
	Slot	1	Code of slot
	Bseq	1	Code of result
	bBwi	1	Time of block waiting
	Level Param	2	Communication level parameter

APDU command	Abdata	1	Send data to Reader

Example 1: Get random Command

6f 05000000 00 f1 00 0000 0084000008

↓ ↓ ↓ ↓ ↓ ↓ ↓

Type Length Slot Bseq bBwi Level Abdata

3.2 APDU Response format from the reader to PC

Click the 'close' button at upper right corner to exit WatchSAFE ND 3.4 User Interface.

Information field	Identifier	Length	Description
The head of APDU ommand	Type	1	CCID command
	Length	4	Length of Abdata
	Slot	1	Code of slot
	Bseq	1	Code of result
	Bstatus	1	State of slot
	bError	1	Error message of slot
	Bchain Param	1	Return parameter
APDU command	Abdata	1	Return data from Reader

Example 1: Returm Message：

80 0a000000 00 1b 00 00 00 c3f5bae6e9487cd99000

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

Type Len Slot Bseq Bstatus bError BchainParam Abdata

3.3 Power on Command of the reader

information field	Identifier	Length	Description
The head of APDU ommand	Type	1	CCID command
	Length	4	Length，default=00000000h
	Slot	1	Code of slot
	Bseq	1	Code of result
	Power Select	1	Voltage support
APDU command	AbRFU	2	RFU

Example 1：Power on command

62 00000000 00 02 01 0000

↓ ↓ ↓ ↓ ↓ ↓

Type Length Slot Bseq Power Select AbRFU

3.4 Response of Power on Command

information field	Identifier	Length	Description
The head of APDU ommand	Type	1	CCID command
	Length	4	Length of Abdata
	Slot	1	Code of slot
	Bseq	1	Code of result
	Bstatus	1	State of slot
	bError	1	Error message of slot
	BchainParam	1	Return parameter
APDU command	Abdata	1	Return data from Reader

Example 1：Return Message after power on

80 11000000 00 02 01 00 00 3b6d000057443778878693011edf010a1a

↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

Type Len Slot Bseq Bstatus bError BchainParam Abdata

3.5 Power off command of the reader

information field	Identifier	Length	Description
The head of APDU ommand	Type	1	CCID command
	Length	4	Length，default=00000000h
	Slot	1	Code of slot
	Bseq	1	Code of result
APDU command	AbRFU	2	RFU

Example 1：Power off command

63 00000000 00 01 000000

↓ ↓ ↓ ↓ ↓

Type Length Slot Bseq AbRFU

3.6 Response of Power off command

information field	Identifier	Length	Description

The head of APDU ommand	Type	1	CCID command
	Length	4	Length of Abdata
	Slot	1	Code of slot
	Bseq	1	Code of result
	Bstatus	1	State of slot
	bError	1	Error message of slot
	BClockstatus	1	Clock state

Example 1: Return Message after power off

81 00000000 00 01 01 00 00

↓ ↓ ↓ ↓ ↓ ↓ ↓

Type Len Slot Bseq Bstatus bError BClockstatus

4. Benefits

- ✧ **Simple:** Plug and play simplicity for users
- ✧ **Interactive:** LED light displays power and communication status
- ✧ **Conveniently:** small and portable, easy to use
- ✧ **Application Rich:** Ideal for expanding online services and offering simple and secure access to partners, customers and mobile workers from any location

5. Typical Applications

- ✧ Online Banking
- ✧ E-government
- ✧ Traffic
- ✧ Customs
- ✧ Customized applications

6. Compliance Statement

15.19(a)(3)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

15.21

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

The product is in conformity with the essential requirements and other relevant requirements of the EMC Directive (2004/104/EC). The product is in conformity with the following standards and/or other normative documents: EN 55022:2010, EN 55024:2010.