

RD200/300 Tool

OPERATION MANUAL



V02.06

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Installation

The default setting of USB Mode is **USB Keyboard Emulation**. This Keyboard mode would send an "Enter" signal when read the card. If user let cursor focus on "Set" button and read the card that will press the "Set" button at the same time.



Driver installation (For change to virtual COM port mode)

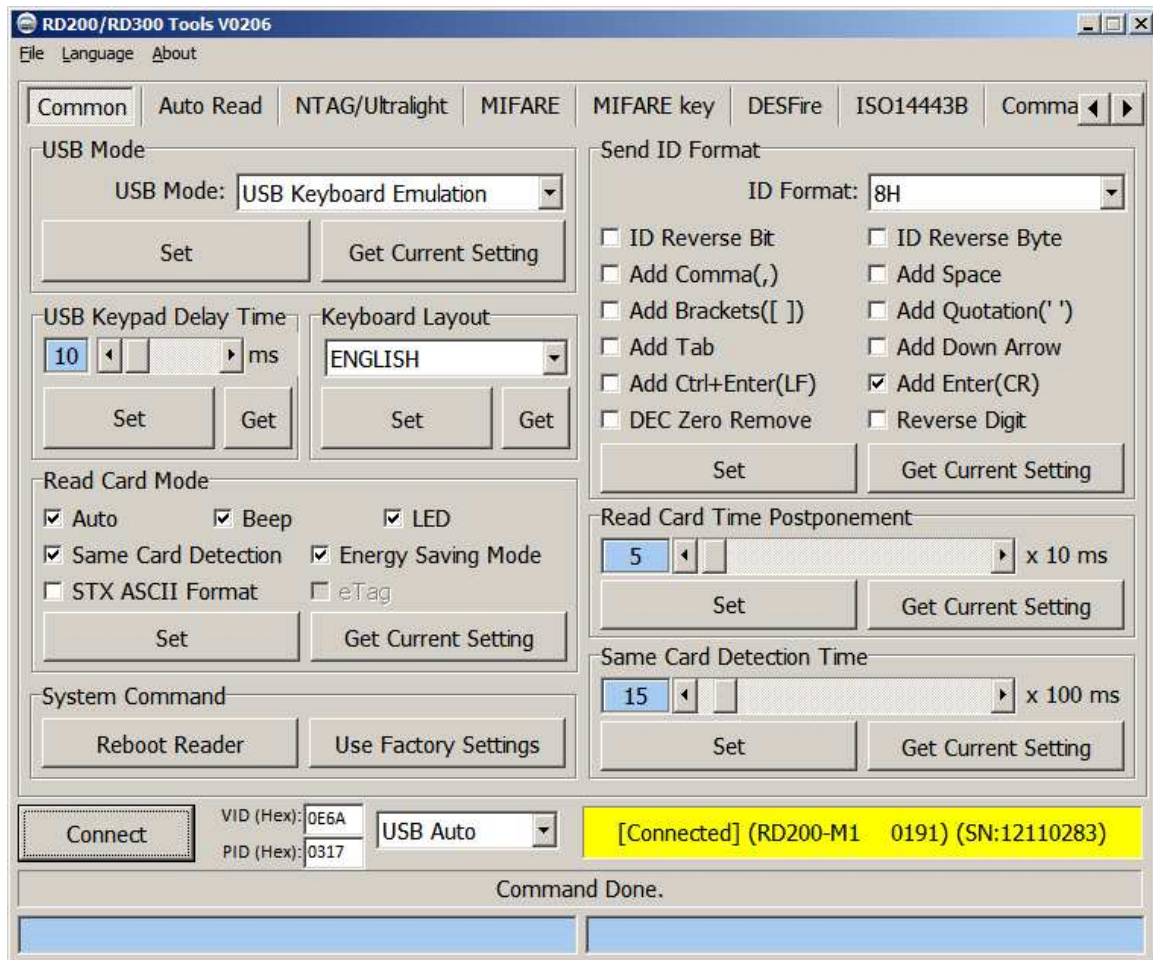
1. Follow firmware update procedure to change virtual COM port mode firmware.
(ex. RD200_U1_COM_V0191_20150316.SYB)
2. Connect RD200/RD300, system will automatically pop-up the "Found New Hardware Wizard" window for install the driver.



3. Allocate the driver folder, and then complete the installation.
(SYRIS_RFID_DVD\RD200\Driver)

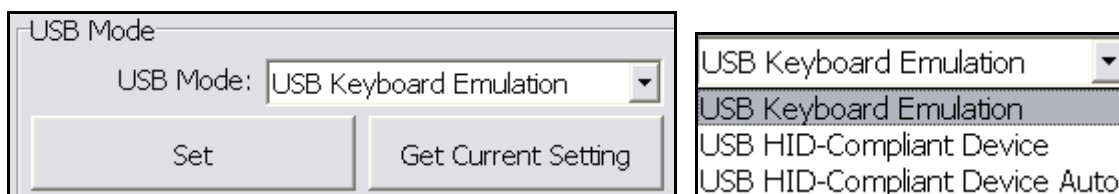


Common Setting



1. USB Mode

There are three selections of USB modes in "USB auto" connection, after selected the mode then click **Set** to finish the setting procedure, or click **Get Current Setting** to read current setting from the reader.



USB Keyboard Emulation :

The device can emulate keyboard to send character or string to host terminal.

USB HID-Compliant Device :

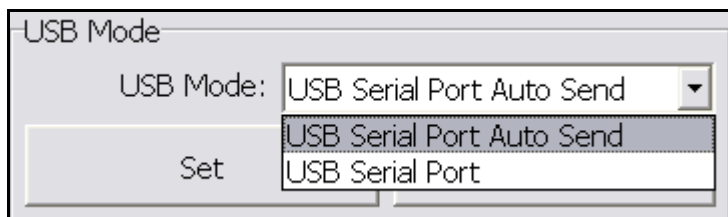
Device response data when received protocol command, and the data will be queued in device buffer.

USB HID-Compliant Device Auto Send :

The device sends UID to host terminal after read card.

2. Virtual COM Port mode (Need update firmware)

There are two selections of USB modes in "COM x" connection.



USB Serial Port Auto Send :

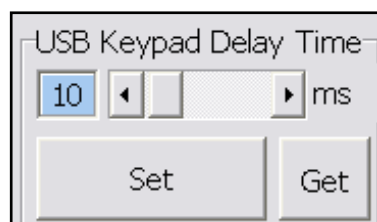
The device send UID to host terminal after read card.

USB Serial Port :

Device response data when received protocol command, and the data will be queued in device buffer.

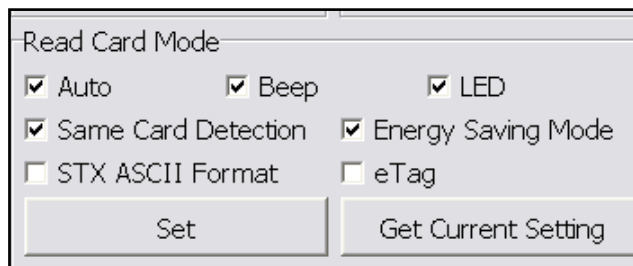
3. USB Keypad Delay Time

In this mode, you can set keypad delay timing to reduce the key code sending speed when read tag.



4. Read Card Mode

In this mode, program provided different options for user to choose, after ticked the options, just click **Set** to finish the setting procedure, or click **Get Current Setting** to read current setting from the reader.



Read Card Mode

☒ Auto ☒ Beep ☒ LED

☒ Same Card Detection ☒ Energy Saving Mode

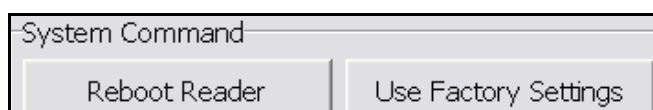
☐ STX ASCII Format ☐ eTag

Set **Get Current Setting**

Options	Descriptions
Auto	Automatically read card
Beep	Prompt the beep sound or not.
LED	Flash the LED when read the card.
Same Card Detection	If continuously read the same card, user has to wait around 1.5 sec then could read again.
Energy Saving Mode	Provide more energy saving method. (It is not recommend to use in writing card blocks or several cards)
eTag	Read Taiwan ETC eTag format.

5. System Command

This tool provides two system commands; user can use **Reboot Reader** to reboot the RD200 reader. The other command is **Use Factory Default Settings** which can restore the reader settings to initial settings.



System Command

Reboot Reader **Use Factory Settings**

6. Send ID Format

This tool provide many ID format to choose, such as 4~16 numbers of hexadecimal and 4~13 numbers of decimal.

Also can put comma, space...etc. into the ID format, after ticked the items then click **Set** to finish the setting procedure, or click **Get**

Current Setting to read current setting from the reader.

Send ID Format

ID Format: 8H

<input type="checkbox"/> ID Reverse Bit	<input type="checkbox"/> ID Reverse Byte
<input type="checkbox"/> Add Comma(,)	<input type="checkbox"/> Add Space
<input type="checkbox"/> Add Brackets([])	<input type="checkbox"/> Add Quotation(' ')
<input type="checkbox"/> Add Tab	<input type="checkbox"/> Add Down Arrow
<input type="checkbox"/> Add Ctrl+Enter(LF)	<input checked="" type="checkbox"/> Add Enter(CR)
<input type="checkbox"/> DEC Zero Remove	<input type="checkbox"/> Reverse Digit

Set Get Current Setting

The ID format example as below:

ID Format	Example Result
4H	58E8
6H	D558E8
8H	00D558E8
10H	1800D558E8
16H	0000001800D558E8
32H	00000000000000000000001800D558E8
5D	47295
8D	01226943
10D	0001226943
13D	0098785474751
4D	6493
FDX (LF only)	000000001226943
16H + Card ID Reverse	E858D50018000000
16H + Comma	0000001800D558E8,
16H + Brackets	[0000001800D558E8]
4D + Space	1928 1928
16H + Quotation	'0000001800D558E8'

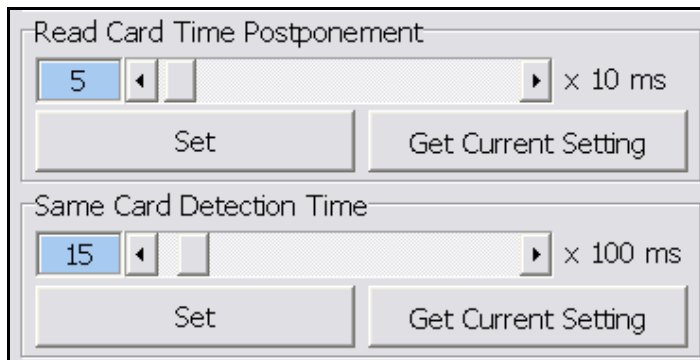
7. Read Card Time Postponement / Same Card Detection Time

Read Card Time Postponement: The intermission time of card reading.

Same Card Detection Time: The intermission time of same card detection.

After adjusted the time then click **Set** to finish the setting procedure, or click **Get Current**

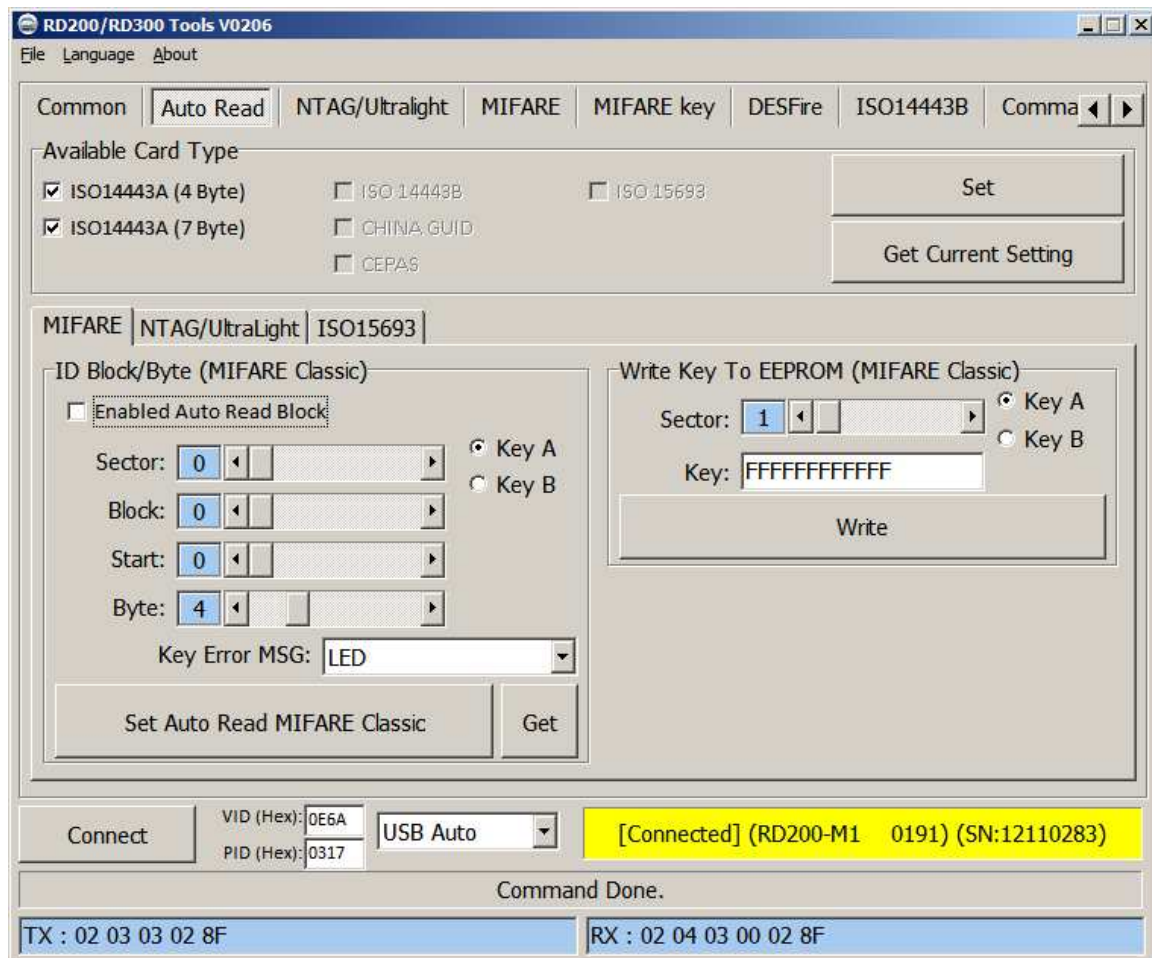
Setting to read current setting from the reader.



The screenshot shows a software window with two sections. The first section, titled "Read Card Time Postponement", features a numeric input field with the value "5", a spinner control, and a unit label "x 10 ms". Below this are two buttons: "Set" and "Get Current Setting". The second section, titled "Same Card Detection Time", features a numeric input field with the value "15", a spinner control, and a unit label "x 100 ms". Below this are also two buttons: "Set" and "Get Current Setting".

Auto Read (13.56 MHz only)

- Available card type: Setup read card type.
- Set auto read Mifare Class or Ultralight in this tab to read specific block automatically.
 1. Enable and select correct block.
 2. Click set auto read.
 3. Reader will always read selected block automatically.



- Write Key to EEPROM: Save your Mifare key to reader.

NTAG/Ultralight (13.56 MHz only)

1. Read Card Data: Select correct block to read NFC tag's data.
2. Write Card Data: Select correct block to write NFC tag's data.
(Recommend select HEX code to write.)
3. UID : Read tag's UID
4. Read Card All Data: Input max block number in "NO" and start to read all data.
5. URL address: This is a simple demo to read/write URL to tag.

The screenshot shows the 'NFC NTAG203/Ultralight' tab selected in the software. The interface is divided into several sections:

- Card Data Read/Write Test:** Includes a 'Block' dropdown set to 7, and input fields for 'Read Card Data' (HEX and ASCII) and 'Write Card Data' (HEX and ASCII). The 'Write Card Data' section has radio buttons for 'HEX' and 'ASCII', with 'ASCII' selected and the value 'syris.com/'.
- Read Card All Data:** A large text area displaying the full card data in hexadecimal: 00:049CB6A69A402B8071480000E1101200, 04:0103A010440330D1012C5501696C6579, 08:2E636F6D2E74772F6368696E6573652F, 12:30325F626C6F672F30305F6F76657276. Below this is a text area showing the URL 'D^0?,U iley.com.tw/chinese/02_blog/00_overv' and a 'Read Card All Data' button.
- URL Address:** A section for writing a URL to the tag. It shows a text area with 'E11012000103A010440312D1010E5501' (Block 3-6) and 'iley.com.tw/chin' (Block 7-10). There are 'Read' and 'Write' buttons.
- UID:** A section for reading the tag's UID. It shows a text area with '049CB69A402B8000' and a 'UID' button.

For example

Write a URL to NTAG203. (NDEF specification)

<http://ftp.syris.com/index.php?folder=U1ISSVNfUkZJRF9EVkQvUkQyMDA=>

URI is "<http://>" (URI Identifier Code =03(Hex))

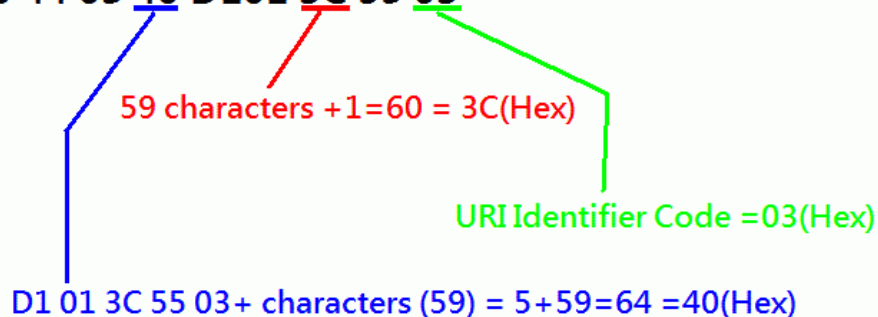
String is "ftp.syris.com/index.php?folder=U1ISSVNfUkZJRF9EVkQvUkQyMDA="

(Total 59 characters)

You need write block with RD200 tool as blow.

BLOCK 3

E11012000103A010 44 03 40 D101 3C 55 03



BLOCK 7

HEX : 6674702E73797269732E636F6D2F696E

=ASCII : ftp.syris.com/in

BLOCK 11

HEX: 6465782E7068703F666F6C6465723D55

=ASCII : dex.php?folder=U

BLOCK 15

316C5353564E66556B5A4A5246394556

=ASCII : 1ISSVNfUkZJRF9EV

<http://ftp.syris.com/index.php?folder=U1ISSVNfUkZJRF9EVkQvUkQyMDA=>

BLOCK 19

6B5176556B51794D44413D0000000000

=ASCII : kQvUkQyMDA=

MIFARE (Mifare only)

✖Please set the MIFARE Key before you change the Key in EEPROM.

The following sections will describe the different functions as below.

The screenshot shows a software interface with several tabs: Common, Auto Read, NFC NTAG203/Ultralight, MIFARE (selected), MIFARE key, Command Test, and Update. The MIFARE tab is active, displaying controls for card data read/write tests. On the left, there are sections for 'Card Data Read/Write Test' and 'Write Card Data'. The 'Card Data Read/Write Test' section includes dropdowns for Sector (1) and Block (0), radio buttons for Key A and Key B, a Key input field (FFFFFFFFFFFF), and an EEPROM checkbox. Below these are fields for HEX and ASCII data, and a 'Read Card Data' button. The 'Write Card Data' section includes radio buttons for HEX and ASCII, a data input field, and a 'Write Card Data' button. On the right, there is a large 'Read Card All Data' area with a 'Read Card All Data' button and a 'Read Write Card Loop' button. At the bottom right, there are 'NO' and 'NUM' settings with values 16 and 3 respectively.

1. Card Data Read/Write Test

When user intend to read/write the card data that could tick the "EEPROM" to use the "Key" in the EEPROM (the prerequisite is the "Key" must has been stored in EEPROM already) or manually input the Key value for verifying.

Then select correct block and fill out the Read or Write Card Data field and click **UID** 、 **Read Card Data** or **Write Card Data** to finish the read/write action.

2. Read Card All Data

Click **Read Card All Data** or **Read Card All Data Loop** to read card data.

MIFARE Key

The screenshot shows the 'MIFARE key' tab of a software interface. On the left, the 'Write Key To Card' section includes a 'Sector' dropdown set to '1', an 'Old key' field with 'FFFFFFFF' and radio buttons for 'Key A' and 'Key B', a 'New key' section with 'Key A' and 'Key B' fields both containing 'FFFFFFFF', an 'Access bits' field with 'FF078069', and a large 'Issue MIFARE Card' button. On the right, the 'Access bits (key)' section shows configurations for 'Block 0', 'Block 1', and 'Block 2'. Each block has 'Read', 'Write', 'INC', and 'DEC' sub-sections, each with radio buttons for 'A/B', 'B', and 'never'. Additionally, there are 'Key A' and 'Key B' sections for each block, each with 'Read' and 'Write' sub-sections and radio buttons for 'A', 'B', and 'never'.

1. Write KEY to Card

User can write key value to card, the steps as below:

1. Allocate a Sector
2. Input Old key value and select Key A or B
3. Input New Key A or Key B value
4. Click **Issue MIFARE Card** to update the Key value.

Note 1: "Access bits" value will auto-compute by the program.

Note 2: The Old key must be correct otherwise the program will shows up an error message.

Note 3: The default value of Key A and Key B are "FFFFFFFF"

Note 4: The access bits control the rights of memory access using the secret keys A and B.

Note 5: Please use Key A to change Key B at first time.

This is a close-up of the 'Write Key To Card' section from the main interface. It shows the 'Sector' dropdown set to '1', the 'Old key' field with 'FFFFFFFF' and 'Key A' selected, the 'New key' section with 'Key A' and 'Key B' fields both containing 'FFFFFFFF', the 'Access bits' field with 'FF078069', and the 'Issue MIFARE Card' button.

2. Access bits (KEY)

User can set the verifying conditions for read/write or other actions.

Read: Read block.

Write: Write block.

INC: Add transfer restore.

DEC: Subtract transfer restore.

A/B: Verify Key A or Key B

A: Only verify Key A

B: Only verify Key B

never: will not verify any Key

Please refer to MIFARE specification for more detail.

The screenshot shows a software interface titled "Access bits (key)". It is divided into three main sections for Block 0, Block 1, and Block 2. Each block section contains four sub-sections: Read, Write, INC, and DEC. Each of these sub-sections has three radio button options: A/B, B, and never. Additionally, there are two sections for Key A and Key B, each with Read and Write sub-sections, each having three radio button options: A, B, and never. The interface is designed for configuring access permissions for different blocks and keys.

Block	Action	Read	Write	INC	DEC
Block 0	Read	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B
	Write	<input type="radio"/> B	<input type="radio"/> B	<input type="radio"/> B	<input type="radio"/> B
	INC	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never
	DEC	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never
Block 1	Read	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B
	Write	<input type="radio"/> B	<input type="radio"/> B	<input type="radio"/> B	<input type="radio"/> B
	INC	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never
	DEC	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never
Block 2	Read	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B	<input checked="" type="radio"/> A/B
	Write	<input type="radio"/> B	<input type="radio"/> B	<input type="radio"/> B	<input type="radio"/> B
	INC	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never
	DEC	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never	<input type="radio"/> never

Key	Action	Read	Write
Key A	Read	<input checked="" type="radio"/> never	<input checked="" type="radio"/> A
	Write	<input type="radio"/> B	<input type="radio"/> never
Key B	Read	<input checked="" type="radio"/> A	<input checked="" type="radio"/> A
	Write	<input type="radio"/> never	<input type="radio"/> B

DESFire (13.56MHz only)

Provide to test DESFire command.

The screenshot shows the 'RD200/RD300 Tools V0206' application window. The 'DESFire' tab is selected in the top menu. The 'DESFire Command Test' section is active, displaying a list of commands on the left and their corresponding hex values on the right. The commands are: ISO14443A Config, DESFire Select+RSTS+PPS, Send APDU (First), Send APDU (Second), Send APDU (Third), Transparent With CRC, and Transparent Without CRC. The hex values are: 90 60 00 00 00, 90 AF 00 00 00, 90 AF 00 00 00, 0A 00 90 60 00 00 00, and 26. The 'Connect' button is visible, and the status bar shows '[Connected] (RD200-M1 0191) (SN:12110283)'. The 'TX' field contains '02 01 30' and the 'RX' field is empty.

Command	Hex Value
ISO14443A Config	
DESFire Select+RSTS+PPS	
Send APDU (First)	90 60 00 00 00
Send APDU (Second)	90 AF 00 00 00
Send APDU (Third)	90 AF 00 00 00
Transparent With CRC	0A 00 90 60 00 00 00
Transparent Without CRC	26

TX : 02 01 30 RX :

ISO 14443B (13.56MHz only)

Provide to test ISO 14443B command.

The screenshot shows the 'RD200/RD300 Tools V0206' application window. The 'ISO14443B' tab is selected in the top menu. The 'ISO14443B Command Test' section is active, displaying a list of commands on the left and their corresponding hex data on the right. The commands are: Request, Transparent #1, Transparent #2, Transparent #3, Get China Card GUID, and Get CEPAS Card CID. The data for these commands is: Request (empty), Transparent #1 (05 00 00), Transparent #2 (1D 00 00 00 00 00 00 00), Transparent #3 (0D 00 00 00 00), Get China Card GUID (empty), and Get CEPAS Card CID (empty). Below the command list, there is a 'Connect' button, VID (Hex) 0E6A, PID (Hex) 0317, and a 'USB Auto' dropdown menu. A yellow status bar indicates '[Connected] (RD200-M1 0191) (SN:12110283)'. At the bottom, there is a 'Command Error!' section and a TX/RX data display showing 'TX : 02 01 30' and 'RX : '.

Command	Data
Request	
Transparent #1	05 00 00
Transparent #2	1D 00 00 00 00 00 00 00
Transparent #3	0D 00 00 00 00
Get China Card GUID	
Get CEPAS Card CID	

VID (Hex): 0E6A
PID (Hex): 0317
USB Auto

[Connected] (RD200-M1 0191) (SN:12110283)

Command Error!

TX : 02 01 30
RX :

ISO 15693 (RD200-MIC & RD300 MHz supported)

Provide to test ISO 15693 command.

The screenshot shows the 'RD200/RD300 Tools V0205' application window. The 'ISO15693' tab is selected in the top menu. The 'ISO15693 Command' section on the left contains buttons for 'Inventory', 'Information', and 'Transparent'. The 'ISO15693 Transparent' section includes an 'ISO15693 Config' button, a status indicator 'Auto Read Card Disable 10 Sec', and a 'Transparent' button. Below these is a text field containing '24 01 00'. The 'Card Data Read/Write Test' section on the right has 'Block' and 'Blocks' spinners set to 0 and 4 respectively. It includes 'Read Block Data' and 'Write Block Data' buttons. The 'Write Block Data' field is filled with 'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'. At the bottom, a 'Connect' button is next to 'VID (Hex): 0E6A' and 'PID (Hex): 0317'. A dropdown menu is set to 'USB Auto'. A yellow status bar displays '[Connected] (RD300-FH1 0206) (SN:15149002)'. Below this is a 'Command Error!' label. The bottom status bar shows 'TX : 02 01 21' and 'RX : 02 02 21 01'.

RD200/RD300 Tools V0205

File Language About

NTAG/Ultralight MIFARE MIFARE key DESFire ISO14443B **ISO15693** Command Test U ◀ ▶

ISO15693 Command

Inventory

Information

ISO15693 Transparent

ISO15693 Config

Auto Read Card Disable 10 Sec

Transparent

24 01 00

Card Data Read/Write Test

Block: 0

Blocks: 4

Read Block Data:

Read Block Data

Write Block Data:

FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

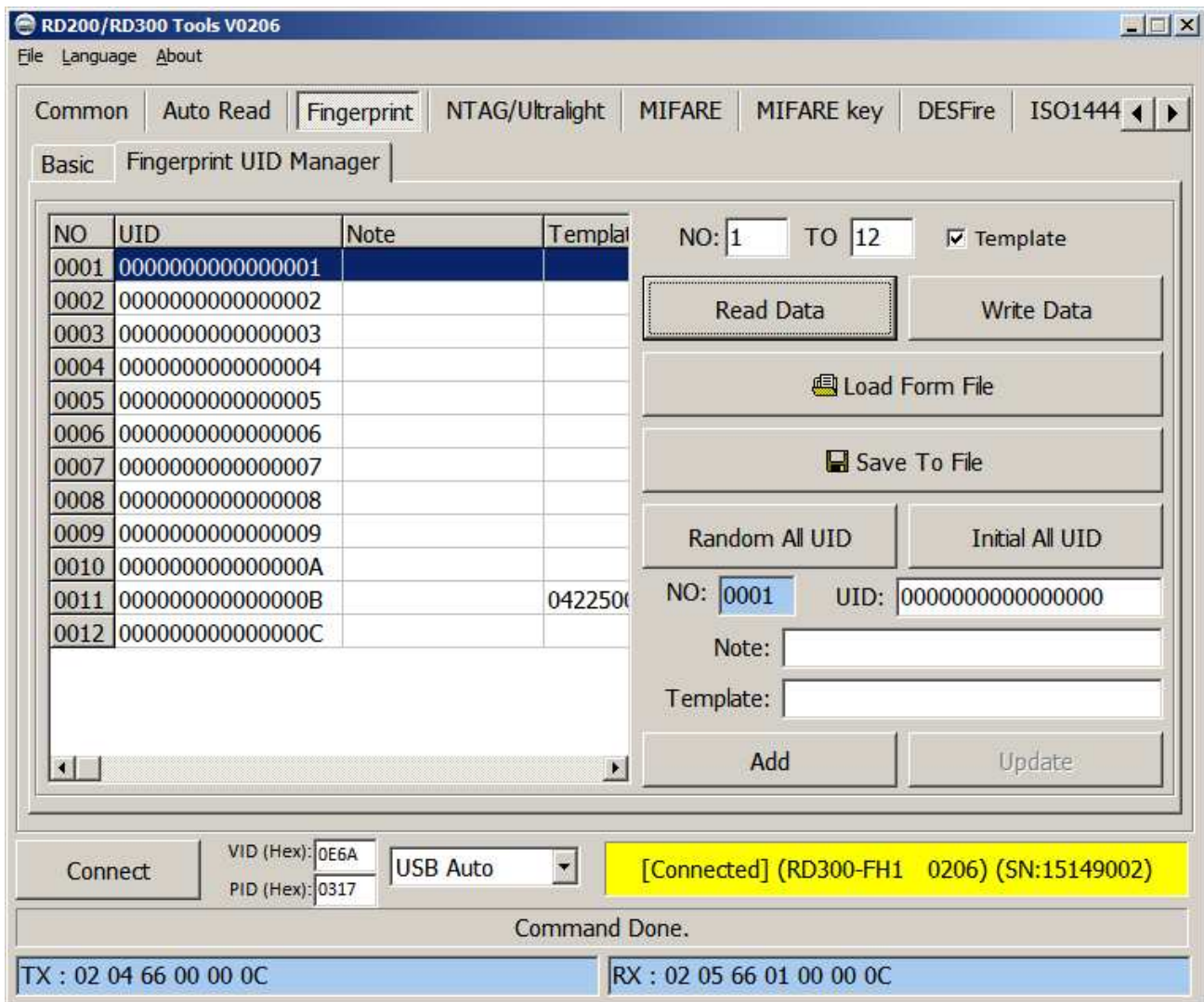
Write Block Data

Connect VID (Hex): 0E6A PID (Hex): 0317 USB Auto [Connected] (RD300-FH1 0206) (SN:15149002)

Command Error!

TX : 02 01 21 RX : 02 02 21 01

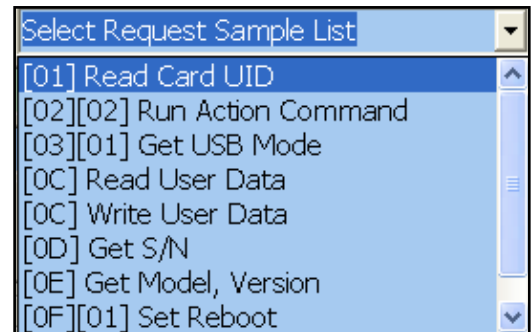
B. Fingerprint UID Manager



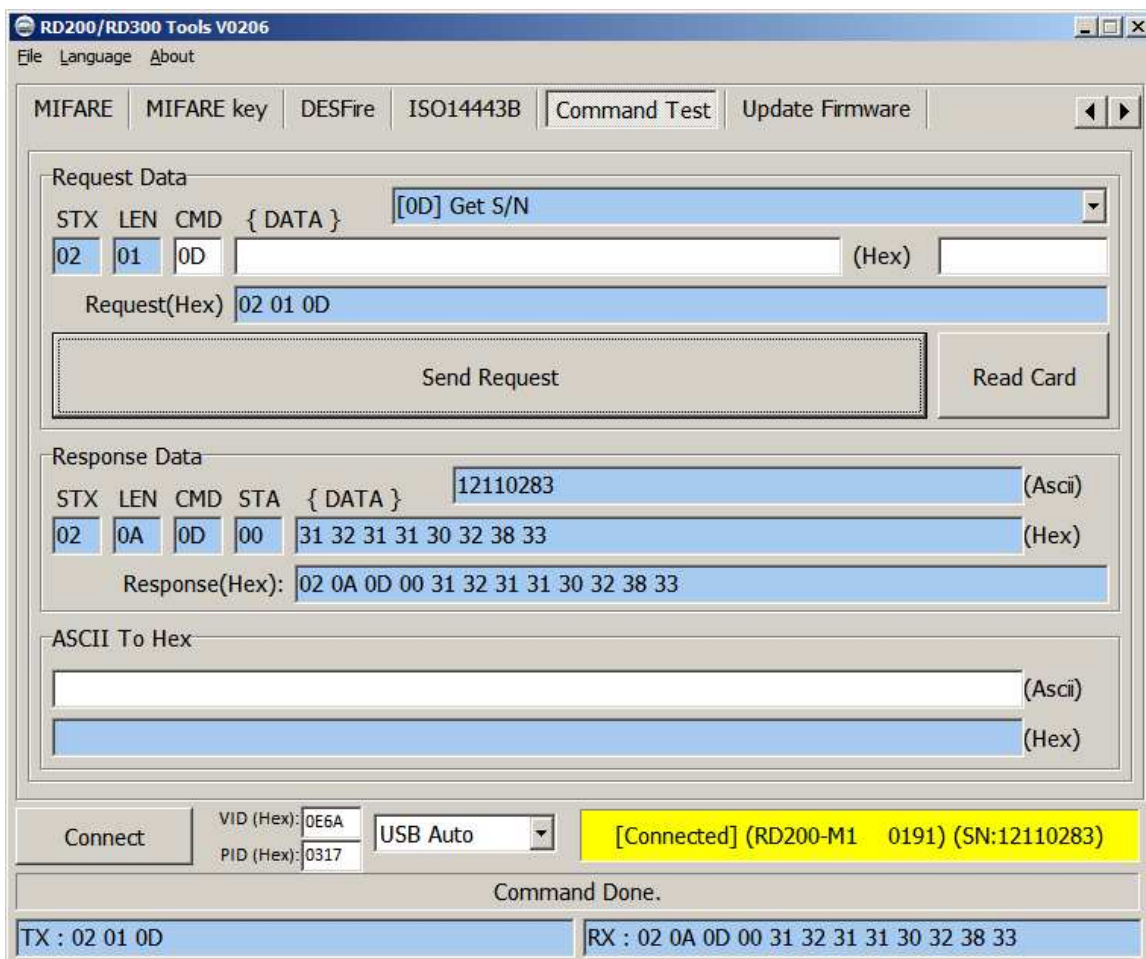
1. **Read Data:** Select number range to read fingerprint database in reader.
2. **Write Data:** Select number range to write fingerprint database in reader.
3. **Load Form File:** Load "uid.txt" file.
4. **Save to File:** Save current data to txt file.(uid.txt)
5. **Random All UID:** Set fingerprint's UID to random value.
6. **Initial All UID:** Set fingerprint's UID to default value.
7. **Add / Update:** Add / modify specific fingerprint's UID, note and template.
(Only add / modify to screen, please don't forget save to file.)

Command Test

This page provides several command examples, user can choose the example from the Request Sample List, or directly input the CMD and {DATA} to test the command.



1. Click **Send Request** to send command to reader,
Click **Read Card** to read card data.
2. The response data of the request command are all display on Response Data fields.
3. The bottom of screen function is a utility to convert ASCII characters to Hexadecimal.



Firmware Update

Before update the firmware, system will pop up a warning message window.

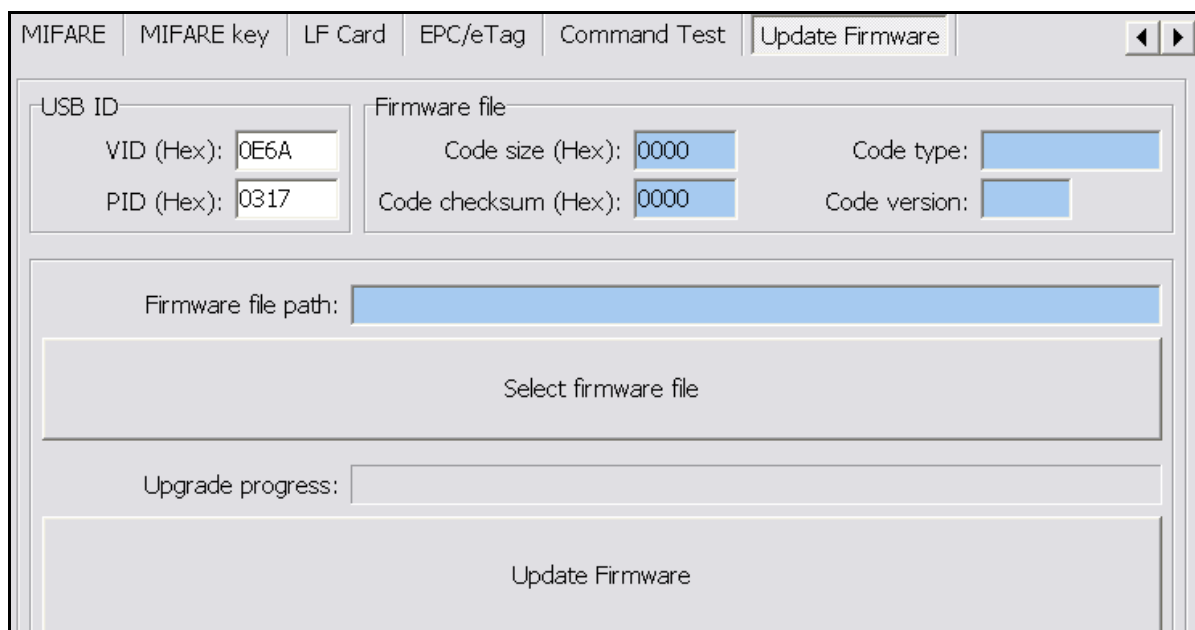


The firmware update steps as below:

Step 1. Click Select firmware file

Step 2. Choose a firmware file (*.SYB)

Step 3. Click Update Firmware to finish the firmware update



FCC Statement

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.

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.