









RD200/300 Tool OPERATION MANUAL



V02.10

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Model description

Model	Picture	Difference description
RD200-M1		HF RFID Desktop Reader Frequency: 13.56 MHz Support tag: ISO-14443A / Mifare Ultralight / NTAG203
RD200-MIC		HF RFID Desktop Reader Frequency: 13.56 MHz Support tag: ISO-15693 / ISO-14443A / ISO-14443B / Felica / NTAG203
RD200-LF		LF RFID Desktop Reader Frequency: 125 KHz Support tag: EM4100 compatible class / SYRIS/ FDX-B(ISO11784)
RD200-U1		UHF RFID Desktop Reader Frequency: 860~960MHz Support tag: Compatible with EPC Class 1 Gen 2;ISO-18000-6C
RD300-H1-G		HF RFID Desktop Reader Frequency: 13.56 MHz Support tag: ISO15693 / ISO14443A(Mifare) / ISO14443B / DESFire / NTAG203
RD300-FH1-G		HF RFID and Fingerprint Desktop Reader High accuracy and high recognition speed Optical Fingerprint Sensor Frequency: 13.56 MHz Support tag: ISO15693 / ISO14443A(Mifare) / ISO14443B / DESFire / NTAG203
RD300-L1-G		LF RFID Desktop Reader Frequency: 125 KHz Support tag: EM4100 compatible class / SYRIS/ FDX-B(ISO11784)
RD300-FL1-G		LF RFID and Fingerprint Desktop Reader High accuracy and high recognition speed Optical Fingerprint Sensor Frequency: 125 KHz Support tag: EM4100 compatible class / SYRIS/ FDX-B(ISO11784)

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.



The image shows a software window titled "USB Mode". Inside the window, there is a label "USB Mode:" followed by a dropdown menu. The dropdown menu is currently set to "USB Keyboard Emulation". Below the dropdown menu, there are two buttons: "Set" and "Get Current Setting".

Driver installation (For change to virtual COM port mode)

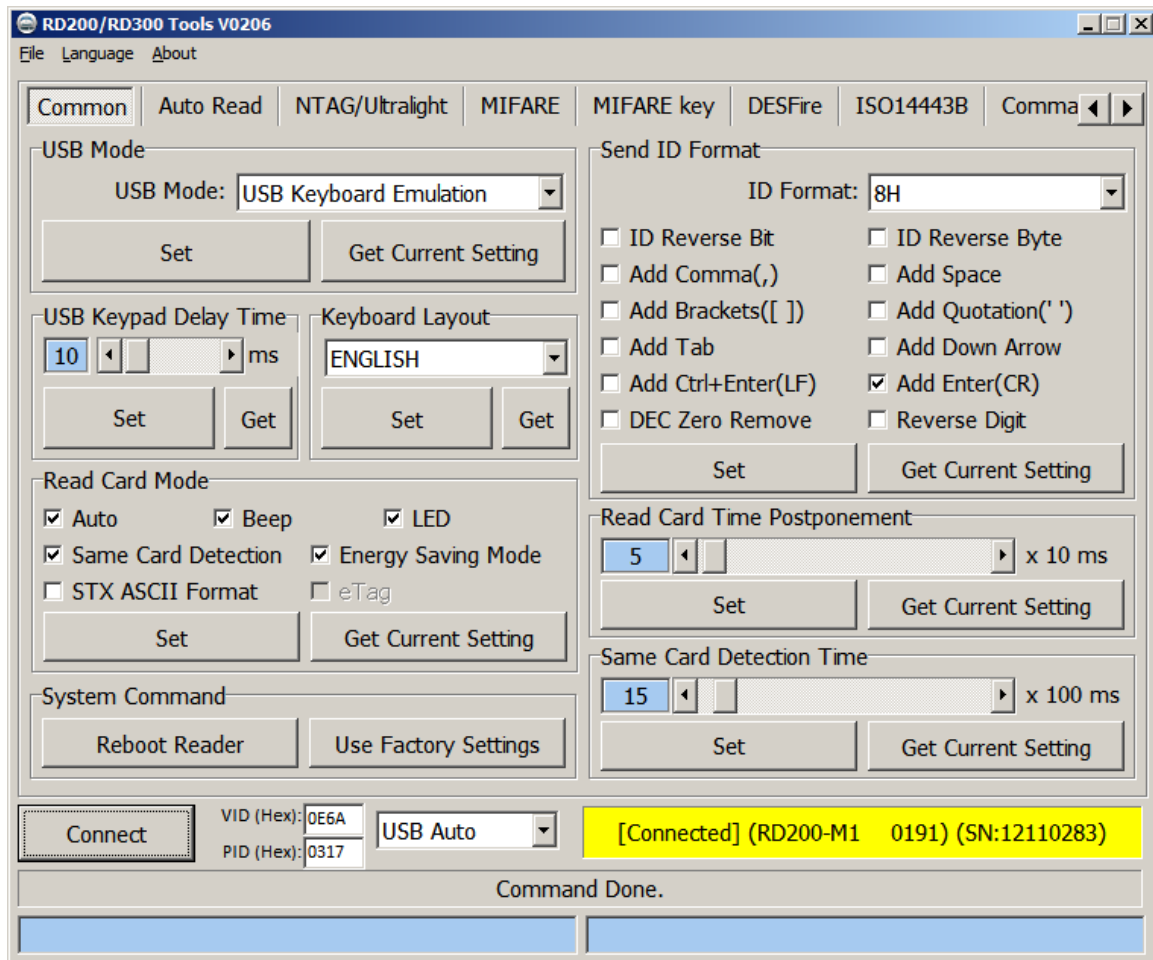
1. Follow firmware update procedure to change virtual COM port mode firmware.
(ex. RD200_U1_COM_V0191_20150316.SYB)
2. Connect RD200/RD300, system will automatically pop-up the "Found New Hardware Wizard" window for install the driver.



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

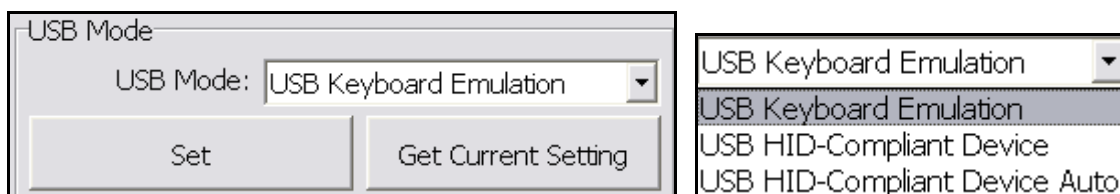


Common Setting



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 :

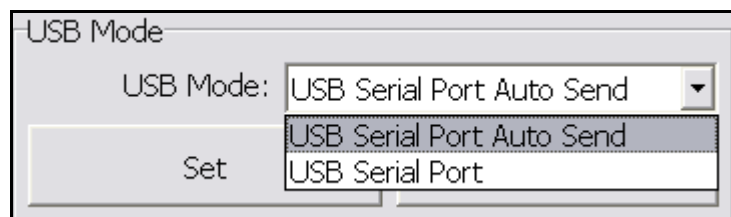
Device response data when received protocol command, and the data will be queued in device buffer.

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 :

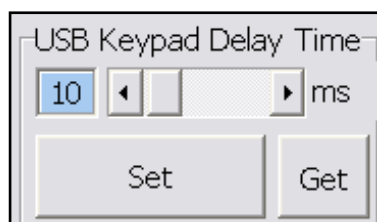
The device send UID to host terminal after read card.

USB Serial Port :

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

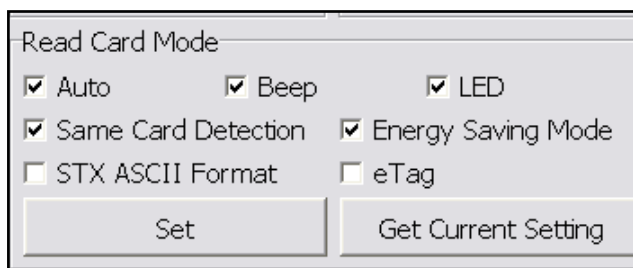
3. USB Keypad Delay Time

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

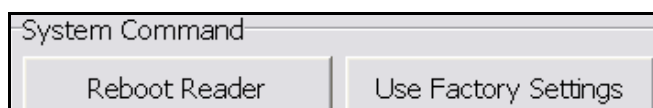
☐ STX ASCII Format ☐ eTag

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.

The ID format example as below:

ID Format	Example Result
4H	58E8
6H	D558E8
8H	00D558E8
10H	1800D558E8
16H	0000001800D558E8
32H	0000000000000000000000001800D558E8
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'

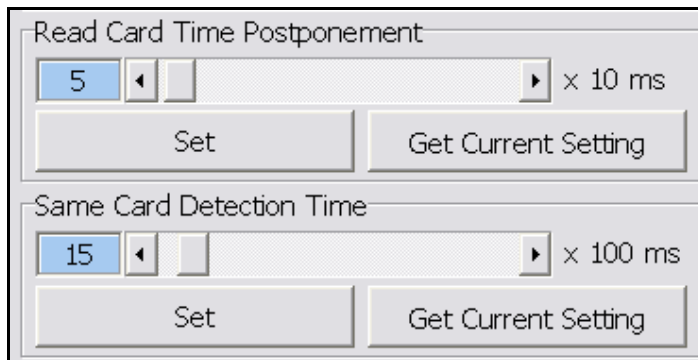
7. Read Card Time Postponement / Same Card Detection Time

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**

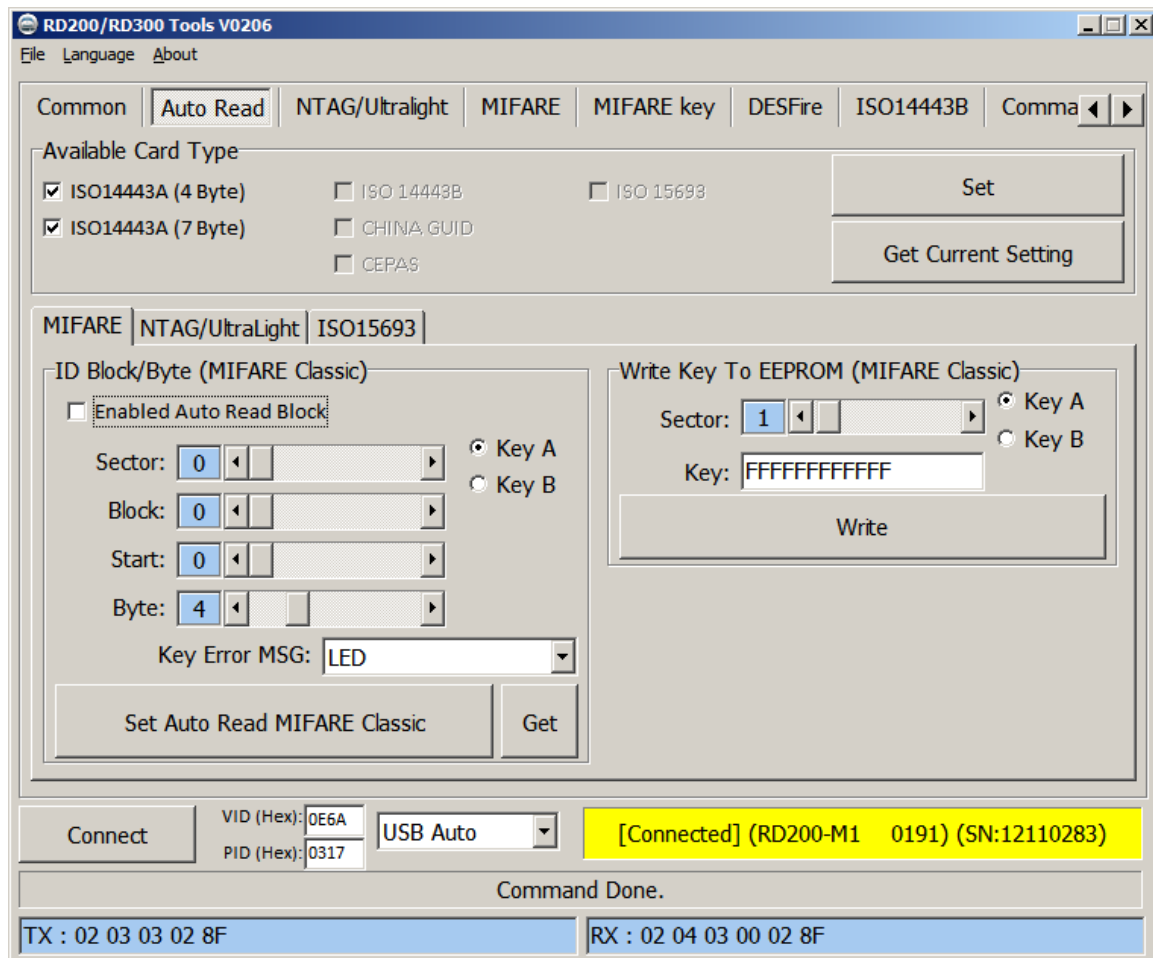
Setting to read current setting from the reader.



The image shows a software window with two sections. The top section is titled "Read Card Time Postponement" and contains a numeric input field with the value "5", a left arrow button, a right arrow button, and the text "x 10 ms". Below this are two buttons: "Set" and "Get Current Setting". The bottom section is titled "Same Card Detection Time" and contains a numeric input field with the value "15", a left arrow button, a right arrow button, and the text "x 100 ms". Below this are 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 displays the 'NFC NTAG203/Ultralight' tab of a software application. The interface is divided into several sections:

- Card Data Read/Write Test:** Includes a 'Block' dropdown set to '7', fields for 'Read Card Data' (HEX and ASCII), and a 'Write Card Data' section with radio buttons for 'HEX' (selected) and 'ASCII'. The ASCII field contains '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, a text area shows the decoded data: '堆?@+□qH L?' and 'D^0?,U iley.com.tw/chinese/02_blog/00_overv'. A 'Read Card All Data' button and a 'NO:' field with the value '16' are also present.
- URL Address:** A section for writing a URL to the tag. It shows a text area with 'E11012000103A010440312D1010E5501' (labeled 'Block 3-6') and 'iley.com.tw/chin'. Below this, another text area shows '696C65792E636F6D2E74772F6368696E' (labeled 'Block 7-10'). 'Read' and 'Write' buttons are at the bottom.
- UID:** A section showing the tag's UID as '049CB69A402B8000' with a 'UID' button next to it.

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))

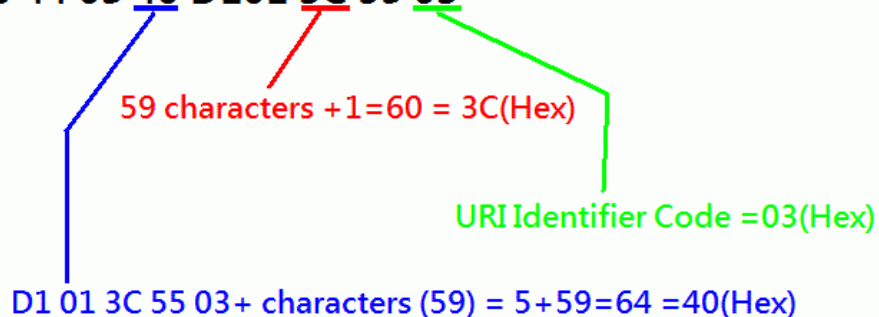
String is "ftp.syris.com/index.php?folder=U1ISSVNfUkZJRF9EVkQvUkQyMDA="

(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 Updat. The MIFARE tab is active, displaying controls for card data read/write tests. On the left, there's a 'Card Data Read/Write Test' section with fields for Sector (1), Block (0), and Key (FFFFFFFFFFFF). It also has radio buttons for Key A and Key B, and a checkbox for EEPROM. Below this are fields for Read Card Data (HEX and ASCII) and a 'Read Card Data' button. The 'Write Card Data' section has radio buttons for HEX and ASCII, a text field for data, and a 'Write Card Data' button. On the right, there's a 'Read Card All Data' section with a large blue area for data display, a 'Read Card All Data' button, and a 'Read Write Card Loop' button. At the bottom right, there are input fields for 'NO' (16) and 'NUM' (3).

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 in the software. The 'Write Key To Card' section on the left 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', and an 'Access bits' field containing 'FF078069'. A large 'Issue MIFARE Card' button is at the bottom. The right section, 'Access bits (key)', shows configurations for 'Block 0', 'Block 1', and 'Block 2'. Each block has 'Read', 'Write', 'INC', and 'DEC' sub-sections with radio buttons for 'A/B', 'B', and 'never'. Additionally, there are 'Key A' and 'Key B' sections for each block with 'Read' and 'Write' 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, and the 'New key' section with 'Key A' and 'Key B' fields both containing 'FFFFFFFF'. The 'Access bits' field contains 'FF078069'. The 'Issue MIFARE Card' button is visible at the bottom.

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 organized 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. In the Block 1 section, there is an additional "Access bits" sub-section with Read and Write options, each having three radio button options: A, B, and never.

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

LF Card (RD200-LF 125KHz only)

This function can let user to set all available 125kHz card types, after ticked the items then click **Set** to finish the setting procedure, or click **Get Current Setting** to read current setting from the reader.

Common | Auto Read | NFC NTAG203/Ultralight | MIFARE | MIFARE key | **LF Card** | EPC/eTag | ◀ ▶

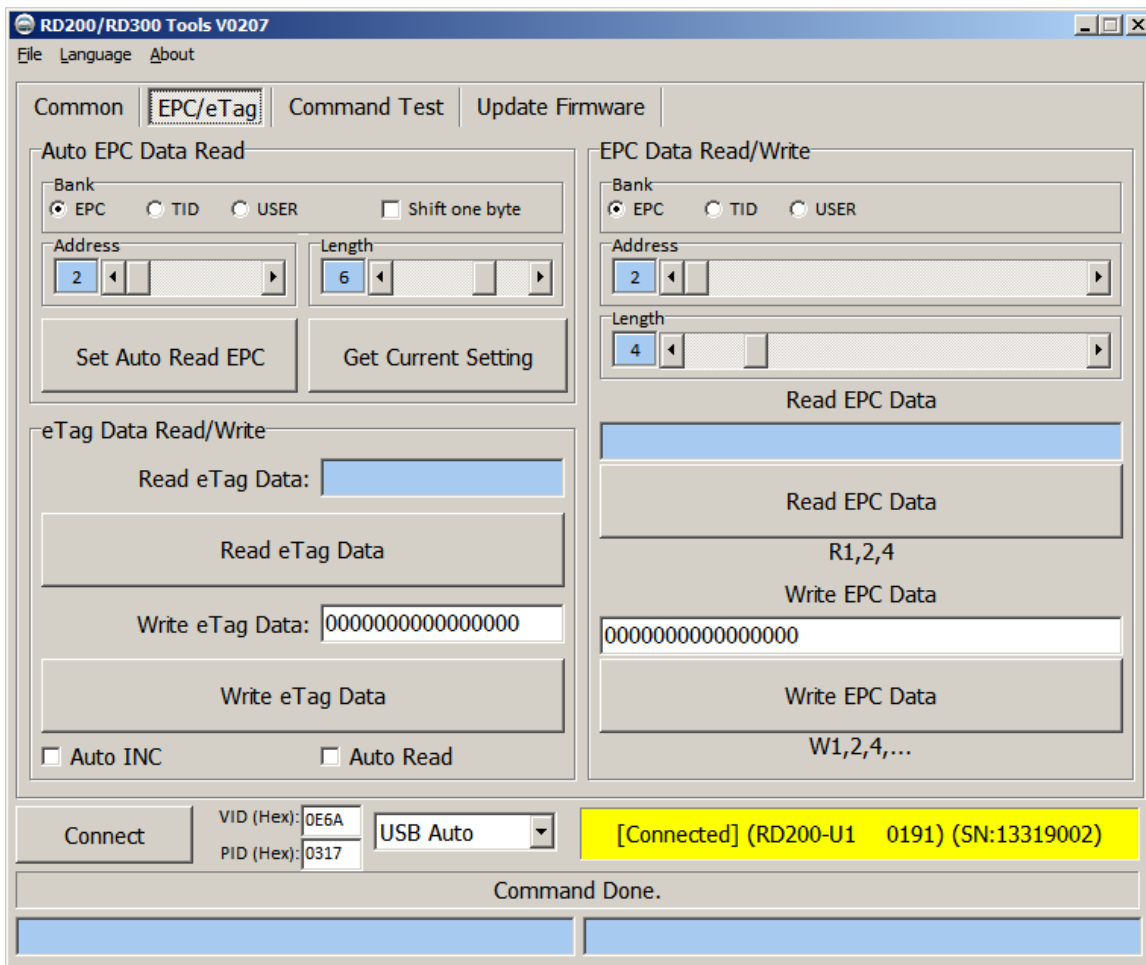
Available Card Type

☒ EM/TEMIC - 125 kHz ☐ SYRIS - 125 kHz ☐ SECURITY - 125 kHz

☐ FDX-B (ISO11784) - 134.2 kHz

Set Get Current Setting

EPC/eTag (RD200-U1 UHF reader only)



1. Auto EPC Data Read : Select correct bank(EPC, TID or USER), address and length to setup RD200-U1 auto read data.
Shift one byte: auto read data will shift a byte.
ex. Unselect shift one byte : 012DF30008DD97B5230F02BD
Select shift one byte : 0012DF30008DD97B5230F02
2. eTag Data Read/Write: Read/Write test function for Taiwan freeway eTag.
3. EPC Data Read/Write: Test read/write EPC tag data in this area.

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 values on the right. The commands are: Request, Transparent #1, Transparent #2, Transparent #3, Get China Card GUID, and Get CEPAS Card CID. The hex values for the first three are 05 00 00, 1D 00 00 00 00 00 00 00, and 0D 00 00 00 00 respectively. Below the command list, there are fields for VID (Hex): 0E6A, PID (Hex): 0317, and a dropdown menu set to 'USB Auto'. 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	Hex Value
Request	05 00 00
Transparent #1	1D 00 00 00 00 00 00 00
Transparent #2	0D 00 00 00 00
Transparent #3	
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', 'ISO15693 Config', and 'Transparent'. The 'Card Data Read/Write Test' section on the right includes 'Block' and 'Blocks' spinners, 'Read Block Data' and 'Write Block Data' buttons, and a text field for 'Write Block Data' containing 'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'. The bottom status bar shows 'Connect', VID (Hex): 0E6A, PID (Hex): 0317, USB Auto, and a yellow status bar with '[Connected] (RD300-FH1 0206) (SN:15149002)'. The 'Command Error!' section 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

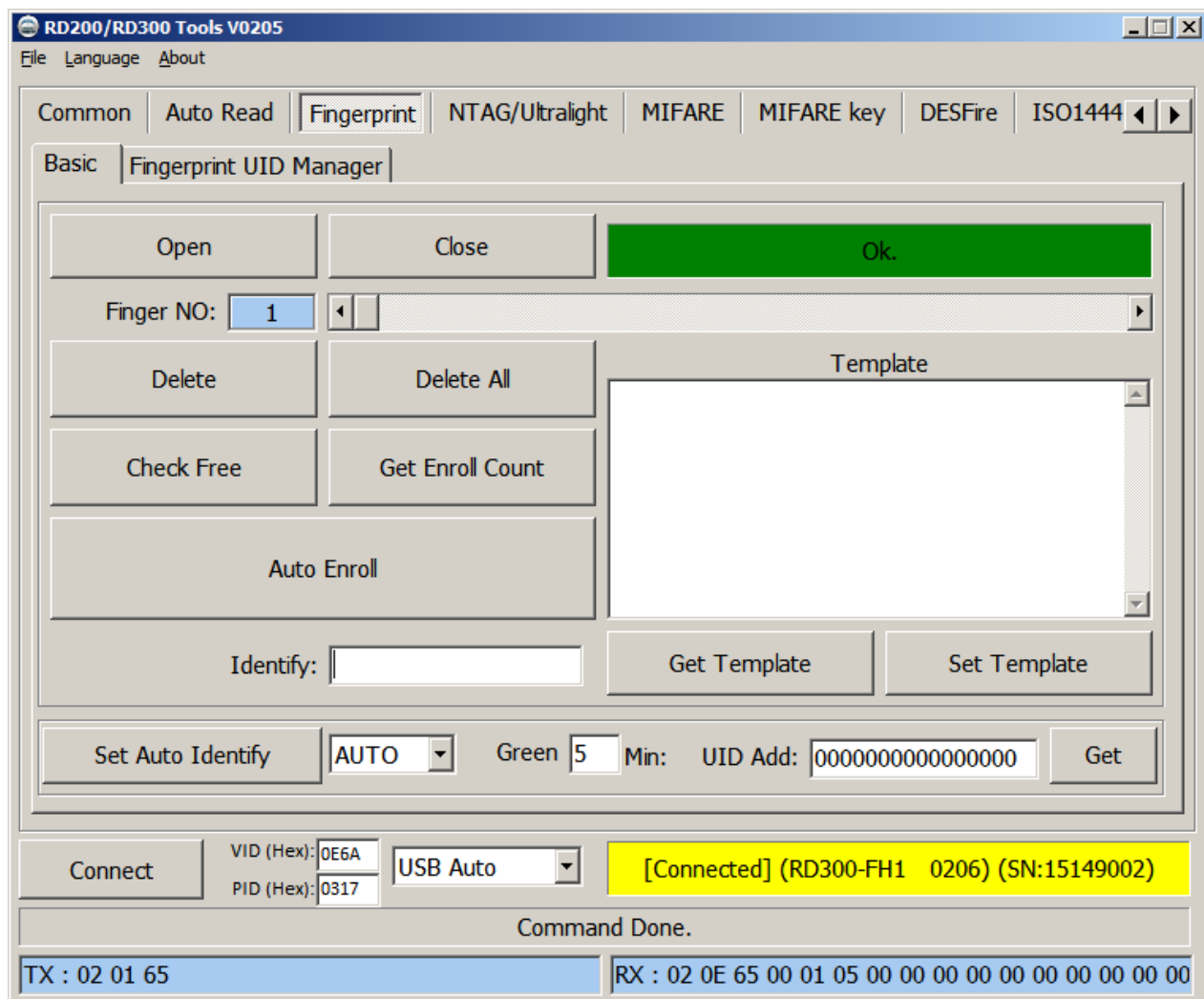
Connect VID (Hex): 0E6A PID (Hex): 0317 USB Auto [Connected] (RD300-FH1 0206) (SN:15149002)

Command Error!

TX : 02 01 21 RX : 02 02 21 01

Fingerprint (RD300-FH1 only)

A. Basic



1. **Open / Close** : Setup fingerprint sensor enable/ disable.
2. **Finger No**: RD300-FH1 support 2000 fingerprints. Select from 0 to 1999 to config fingerprint.
3. **Delete**: Delete selected fingerprint number (Finger No).
4. **Delete all**: Delete all fingerprints.
5. **Check Free**: Check selected fingerprint number is in use or free.
6. **Get Enroll Count**: Check how many fingerprint numbers was used.
7. **Auto Enroll**: Select fingerprint number and click auto Enroll to save fingerprint to reader.
8. **Template**: Fingerprint's template. Every fingerprint have unique template.
9. **Identify**: Identification of the capture fingerprint with database number.
10. **Set Auto Identify**: Default is auto, set to off will disable fingerprint recognition.
11. **Green**: Setup fingerprint sensor auto sleep timing. Default is 5 minutes.
12. **UID Add**: Change prefix to fingerprint numbers.

B. Fingerprint UID Manager

RD200/RD300 Tools V0206

File Language About

Common Auto Read **Fingerprint** NTAG/Ultralight MIFARE MIFARE key DESFire ISO1444

Basic Fingerprint UID Manager

NO	UID	Note	Templat
0001	0000000000000001		
0002	0000000000000002		
0003	0000000000000003		
0004	0000000000000004		
0005	0000000000000005		
0006	0000000000000006		
0007	0000000000000007		
0008	0000000000000008		
0009	0000000000000009		
0010	000000000000000A		
0011	000000000000000B		0422500
0012	000000000000000C		

NO: 1 TO 12 ☒ Template

Read Data Write Data

Load Form File

Save To File

Random All UID Initial All UID

NO: 0001 UID: 0000000000000000

Note:

Template:

Add Update

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

Command Done.

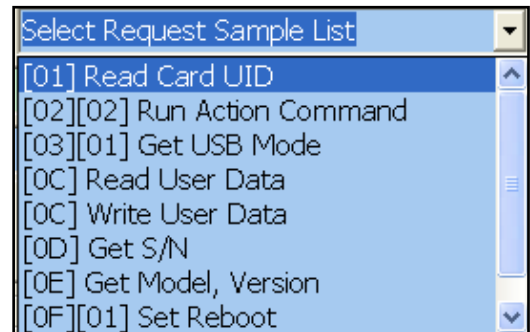
TX : 02 04 66 00 00 0C RX : 02 05 66 01 00 00 0C

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.

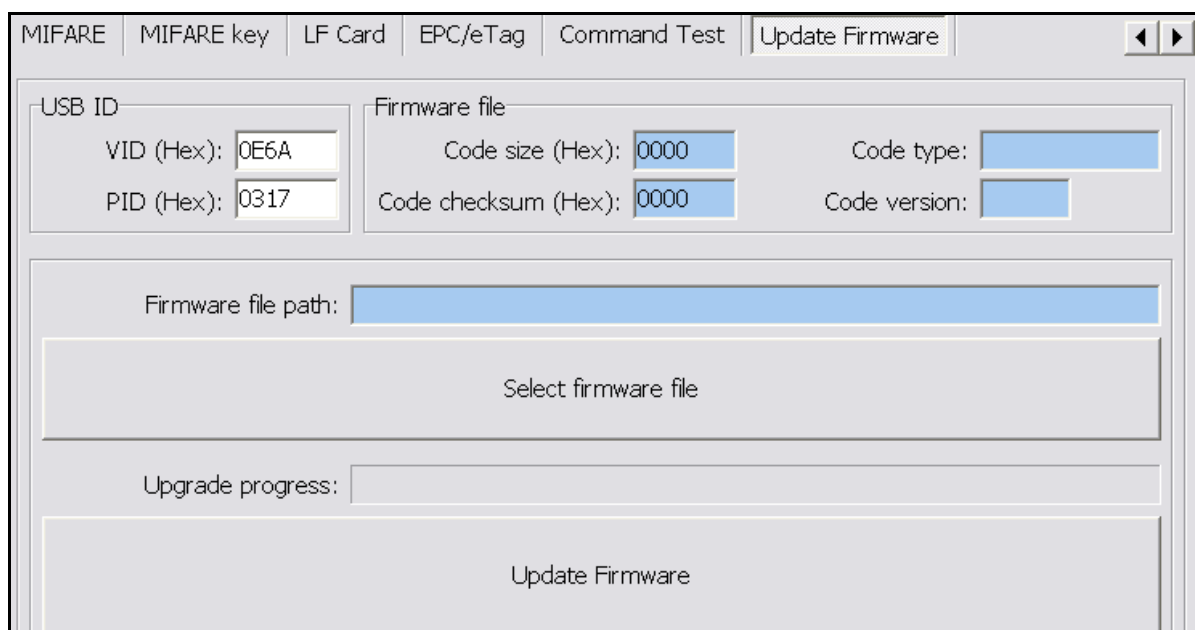


The firmware update steps as below:

Step 1. Click Select firmware file

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

Step 3. Click Update Firmware to finish the firmware update



FCC INFORMATION

The Federal Communication Commission Radio Frequency Interference Statement includes the following paragraph:

The 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 instruction, may cause harmful interference to radio communication. However, there is no grantee 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.