USB HID Keyboard Simulator IC Card Reader

General Technical Manual

(Revision 2.24)

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Please read this manual carefully before using. If any problem, please feel free to contact us, we will offer satisfied answer ASAP.

Contents

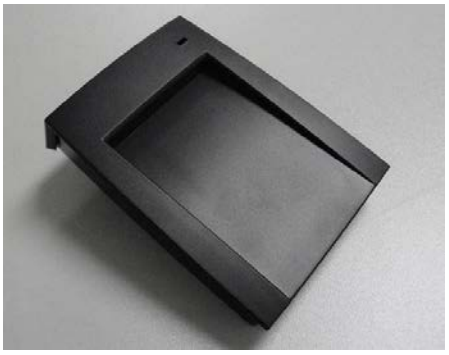
1 Introduction

MR762x and MR763x Desktop Contactless IC Card Reader use USB interface (HID standard, keyboard simulator). In the systems of Windows, Linux and other PC systems support USB keyboard, the Reader simulate the USB keyboard to output the Card data. We supply configuration software. Under the software, user could configure complex read card method to implement much type of uses.

The reader supports the ISO14443 and ISO15693 compliant tags. The output data could be UID and/or Card data. And the output mode could be ASCII, Decimal, or Hexadecimal. For more configuration details, please refer to the following datasheet.

We supply many configuration templates. Uses could modify the template to fit the demands. And we will help users to make the configuration to resolve all the problems. Contact us is the most important thing.

2 Product Models

Product Model	RF Protocol	Photo
MR762A	ISO14443A	
MR762C	ISO14443A ISO14443B	
MR762G	ISO15693	
MR762H	ISO14443A ISO14443B ISO15693	
MR763A	ISO14443A	
MR763C	ISO14443A ISO14443B	
MR7621A	ISO14443A	
MR7621C	ISO14443A ISO14443B	
MR7621G	ISO15693	
MR7621H	ISO14443A ISO14443B ISO15693	
MR7631A	ISO14443A	
MR7631C	ISO14443A ISO14443B	
MR7622C	ISO14443A ISO14443B	
MR7622G	ISO15693	
MR7622H	ISO14443A ISO14443B ISO15693	

JMY608A	ISO14443A	
JMY608C	ISO14443A ISO14443B	
JMY608G	ISO15693	
JMY609A	ISO14443A	
JMY609C	ISO14443A ISO14443B	

3 Reader Installation

The Reader interface is USB HID class. The USB interface of reader is a keyboard simulator. The driver installation process is same to install a USB keyboard. The OS will automatic process the driver installation. What to do of users is plug USB header of reader to PC and wait.

After driver installation, the Host will show two Devices. One is HID Keyboard Device use for data output; another is HID-compliant device use for configuration.

4 TransConfig

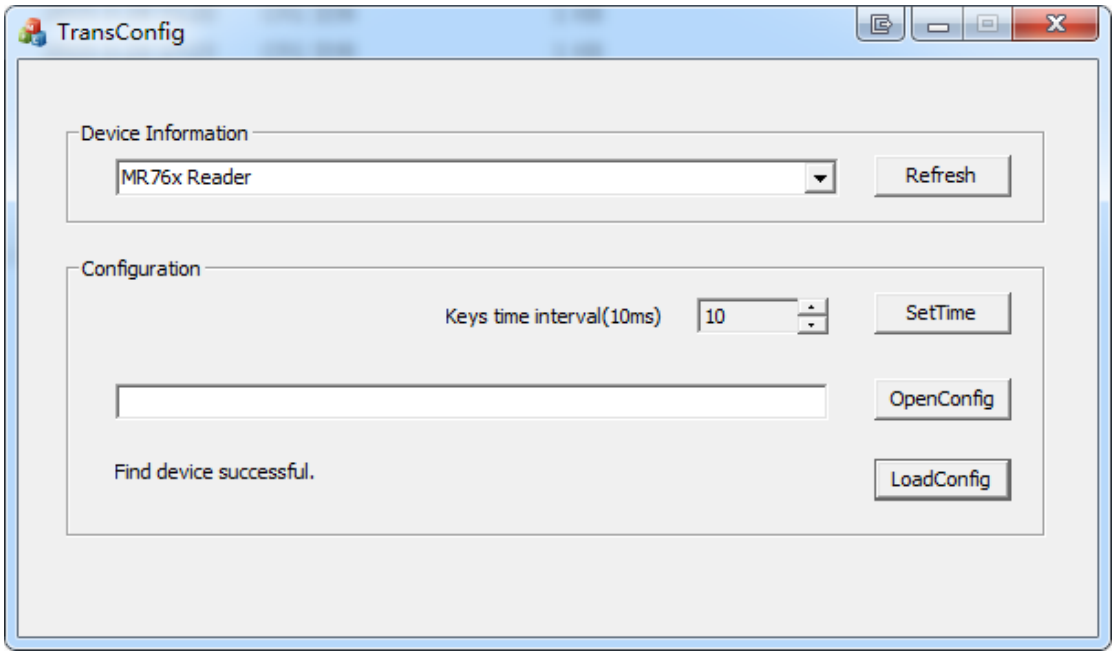
"TransConfig.exe" is the Configuration tool for MR76x Series RFID Readers. Please refer to the following detailed configuration instructions.

1, Click the "Refresh" button;

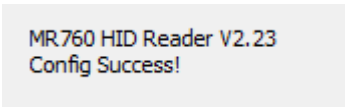
2, Choose the correct Current Operated Reader in "Device Information" Window;

3, Click the "OpenConfig" button to choose the correct script;

4, Click the "LoadConfig" button.



If succeed, it will be showed like the following:



5 Description of commands

5.1 List of commands

Commands	Meaning
0x1x	SAM Card operation
0x2x	CPU Card operation
0x3x	Output operation
0x4x	RAM operation
0x5x	MIFARE Card operation
0x6x	Ultra Light Card operation
0x8x	ISO15693 Card operation

5.2 SAM Card Operation

DATA[0]	DATA[1~31]
CMD	APDU

CMD: 0x11 Data (APDU) to be sent to SAM Card, Returned Data will be stored in RAM1.

0x12 Data (APDU) to be sent to SAM Card, Returned Data will be stored in RAM2.

APDU: COS Command

5.3 CPU Card Operation

DATA[0]	DATA[1~31]
CMD	COS

CMD: 0x21 Data (APDU) to be sent to CPU Card, Returned Data will be stored in RAM1.

0x22 Data (APDU) to be sent to CPU Card, Returned Data will be stored in RAM2.

APDU: COS Command

5.4 Output Operation

5.4.1 Data Output in Decimal Mode

DATA[0]	DATA[1]	DATA[2]	DATA[3]	DATA[4]
CMD	Mode	PARA	Start	Length

CMD: 0x31 RAM1 data output

0x32 RAM2 data output

0x33 SNR output

Mode: 0x11 each byte of "the Returned Data" will be output in Decimal Mode

0x12 every 2bytes of "the Returned Data" will be output in Decimal Mode

0x13 every 3bytes of "the Returned Data" will be output in Decimal Mode

0x14 every 4bytes of "the Returned Data" will be output in Decimal Mode

PARA: 0x40 acquiring data byte length neat, the front zeros string, the default backend zeros (for the data source).

0x80 no zero initial output, the default zero output (for the output data)

0x00 by default processing

Start: the start byte of the output data

Length: the length of the output data

Note: If in SNR output mode, you can choose use "Start" and "Length" or not.

Example:

1) ----------

Every 2bytes of "the Returned SNR/Data" will be output in Decimal Mode, if the SNR/Data is not neat, backend zeros.

Script Command: 33 12 40

Source Data: 04 23 BB E1 ED 25 80

Convert Data: 0423 BBE1 ED25 0080

Output Data: 01059 48097 60709 00128

Every 2bytes of "the Returned SNR/Data" will be output in Decimal Mode, if the SNR/Data is not neat, the front zeros string.

Script Command: 33 12 00

Source Data: 04 23 bb e1 ed 25 80

Convert Data: 0423 bbe1 ed25 8000

Output Data: 01059 48097 60709 32768

2) ----------

Every 2bytes of "the Returned SNR/Data" will be output in Decimal Mode, no zero initial output.

Script Command: 33 12 80

Source Data: 04 23 bb e1 ed 25 80

Convert Data: 0423 bbe1 ed25 8000

Output Data: 1059 48097 60709 32768

Every 2bytes of "the Returned SNR/Data" will be output in Decimal Mode, if the SNR/Data is not neat, the front zeros string.

Script Command: 33 12 00

Source Data: 04 23 bb e1 ed 25 80

Convert Data: 0423 bbe1 ed25 8000

Output Data: 01059 48097 60709 32768

Note: the data source is the original data to be read from the Card. the User could edit the data output mode in script according to the concrete needs, then load the configured script into the Reader.

In example1): Card SNR is "0x04 23 bb e1 ed 25 80". Also it is data source. According to User's need, we got the Convert Data (0x0423 bbe1 ed25 8000) by configuration.

Every 2bytes of "the Returned SNR/Data" will be output in Decimal Mode according to the Script Command rule. And the Max. Decimal converted data is "65536". So for "0x0423" is changed to "01059" in Decimal. Finally the Decimal output data is "01059 48097 60709 32768".

5.4.2 Data Output in Hexadecimal Mode

DATA[0]	DATA[1]	DATA[2]	DATA[3]	DATA[4]
CMD	Mode	PARA	Start	Length

CMD: 0x31 RAM1 data output

0x32 RAM2 data output

0x33 SNR output

Mode: 0x20 data source will be directly output in Hexadecimal Mode

0x22 output data in "CapsLock" mode and not be locked

PARA: 0x00 data source will be directly output

0x01 invert byte

0x02 Higher nibble change to Lower nibble; Lower nibble change to Higher nibble

0x04 In Byte, High and low bit-swap

0x08 String output by order

Start: the start byte of the output data

Length: the length of the output data

Note: If in SNR output mode, you can choose use "Start" and "Length" or not.

Example:

1) Output MIFARE Ultralight Card SNR in "Capital" and Hexadecimal Mode

Script Command: 33 22 00

Source Data: 04 23 BB E1 ED 25 80

Output Data: 04 23 BB E1 ED 25 80

2) Output MIFARE Ultralight Card SNR in "Lower case" and Hexadecimal Mode

Script Command: 33 20 00

Source Data: 04 23 BB E1 ED 25 80

Output Data: 04 23 bb e1 ed 25 80

3) Output MIFARE Ultralight Card SNR in "Invert" and" In Byte, High and low bit-swap" Mode

Script Command: 33 20 03

Source Data: 04 23 BB E1 ED 25 80

High and low 4bits-swap: 40 32 bb 1e de 52 08

Invert Bit: bf cd 44 e1 21 ad f7

Output Data: bf cd 44 e1 21 ad f7

5.4.3 KeyValue Output

DATA[0]	DATA[1]	DATA[2]
CMD	Key 1	Key 2

CMD: 0x30

Key1: 0x30 No Key value

0x31 Key Ctrl

0x32 Key Shift

0x34 Key Alt

Key2: Reference to Appendix A

Example:

Output "Key Enter"

Script Command: 30 30 58

5.4.4 Data Output in ASCII Mode

DATA[0]	DATA[1]	DATA[2]
0x30	50	00

CMD: 0x30 output current data

Example:

Output the Strings (jinmuyudianziyouxiangongsi) in current data when swipe the Card

Script Command: 30 50 00 6A 69 6E 6D 75 79 75 64 69 61 6E 7A 69 79 6F 75 78 69 61 6E 67 6F 6E 67 73 69

Data Output: "jinmuyudianziyouxiangongsi"

5.5 RAM Operation

5.5.1 Data Copy

DATA[0]	DATA[1]	DATA[2]	DATA[3]	DATA[4]
Source	Target	Source Start Addr.	Target Start Addr.	Length

Data Source: 0x40 the current data is the source data

0x41 the RAM1 data is the source data

0x42 the RAM2 data is the source data

0x43 SNR is the source data

Target: 0x01 copy source data and store it into RAM1

0x02 copy source data and store it into RAM2

Example:

SNR is the source data, and copy it in RAM1. Output in Hexadecimal Mode

Script Command: 43 01 00 00 0A

Script Command: 31 20 00 00 0A

Data Output: 04 23 bb e1 ed 25 80

5.5.2 Mathematical Operation

DATA[0]	DATA[1]	DATA[2]	DATA[3]
Source	Operation Mode	Source Operation Addr.	Data

Data Source: 0x40 the current data is the source data

0x41 the RAM1 data is the source data

0x42 the RAM2 data is the source data

0x43 SNR is the source data

Operation Mode: 0x10 Additions

0x20 Subtractions

Source Operation Addr. 1byte, only for one byte

Data: 0x00-0xFF

Example:

The first byte of SNR of "MIFARE Ultralight Card" plus 0x02, then output SNR

1) SNR output

Script Command: 33 20 00

2) The first byte of SNR of "MIFARE Ultralight Card" plus 0x02

Script Command: 43 10 00 02

3) SNR output

Script Command: 33 20 00

Data Output: 0423bbe1ed2580

0623bbe1ed2580

5.5.3 DataValue Convert Operation

DATA[0]	DATA[1]	DATA[2]

Source	Operation Mode	Source Operation Addr.

Data Source: 0x40 the current data is the source data

0x41 the RAM1 data is the source data

0x42 the RAM2 data is the source data

0x43 SNR is the source data

Operation Mode: 0x30 BCD to HEX Mode

0x40 HEX to BCD Mode

Source Operation Addr. 1byte, only for one byte

Example:

The second byte of SNR of "MIFARE Ultralight Card" in "BCD to HEX Mode conversion", and output the SNR

1) SNR output

Script Command: 33 20 00

2) The second byte of SNR of "MIFARE Ultralight Card" in "BCD to HEX Mode conversion"

Script Command: 43 30 01

3) SNR output

Script Command: 33 20 00

Data Output: 0423bbe1ed2580

0417bbe1ed2580

5.6 MIFARE Card Operation

DATA[0]	DATA[1]	DATA[2]	DATA[3~9]
Data Store Addr.	Block Addr.	KeyType	Key(6 bytes)

Data Store Addr.: 0x51 the returned data for MIFARE Card Operation is stored in RAM1

0x52 the returned data for MIFARE Card Operation is stored in RAM2

KeyType: 0x60 Key A

0x61 Key B

Example:

Store the data of block1 to RAM1, Output in Hexadecimal Mode

Script Command: 51 04 60 FFFFFFFFFFFF

Script Command: 31 20 00 00 10

Data Output: 22 22 cd 2b dd dd 32 d4 22 22 cd 2b 04 fb 04 fb

5.7 MIFARE UltraLight Card Operation

DATA[0]	DATA[1]

Data Store Addr.	Start Block Addr.

Data Store Addr.: 0x61 the returned data is stored in RAM1

0x62 the returned data is stored in RAM2

Example:

Store the data in block09~0C to RAM1, Output in Hexadecimal Mode

Script Command: 61 09

Script Command: 31 20 00 00 10

Data Output: 09090909 0a0a0a0a 00000000 00000000

5.8 ISO15693 Card Operation

DATA[0]	DATA[1]
Data Store Addr.	Block Addr.

Data Store Addr.: 0x81 the returned data is stored in RAM1

0x82 the returned data is stored in RAM2

5.9 Reader Version Read

To read the Reader version, the version will be output in ASCII Mode.

Example:

Host Send:

0xF1	FF	Checksum

6 Appendix A

Key Name	HID Usage ID
Enter	0x58
Backspace	0x2A
Tab	0x2B
Space	0x2C
Right Arrow	0x4F
Left Arrow	0x50
Down Arrow	0x51
Up Arrow	0x52

For other key value, please refer to the file" USB HID to PS2 Scan Code Translation Table.pdf ".

7 Document updates

Revision	Date	Update information
V2.22	2015-05-04	First publish version.
V2.23	2015-01-29	Modify chapter of reader installation