Standard PC/SC Series IC Card Reader

General Technical Manual

(Revision 2.63)

Jinmuyu Electronics Co., Ltd

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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

Document update records

Date	Revision	Update information
June 14, 2016	R2.30	Update device controller part and modify sample code.
July 1, 2016	R2.32	Add comments
August 18, 2017	R2.35	Fix spell errors.
April 22, 2018	R2.37	Add chapter 7.21 and 7.22
May 5, 2018	R2.38	Add chapter 5.3 and 5.5
May 8, 2018	R2.39	Fix spelling errors Fix chapter 5.5 7.7 and 7.22
July 26,2018	R2.40	Add MR881 comments Fix chapter 5.4
Aug 1,2018	R2.50	Fix spelling errors Fix command description
October 10, 2018	R2.52	Add fast boot function and set method
February 20, 2021	R2.63	Add Sam card instruction introduction Fix spell errors

1 Introduction

This document is suitable for MR791, MR7911, MR801, MR811, MR8111 and MR881 and so on.

The above mentioned RFID Readersare designed according to USB PC/SC standard. It uses the Microsoft CCID driver and standard operation method, so you could refer to other standard PC/SC documents too.

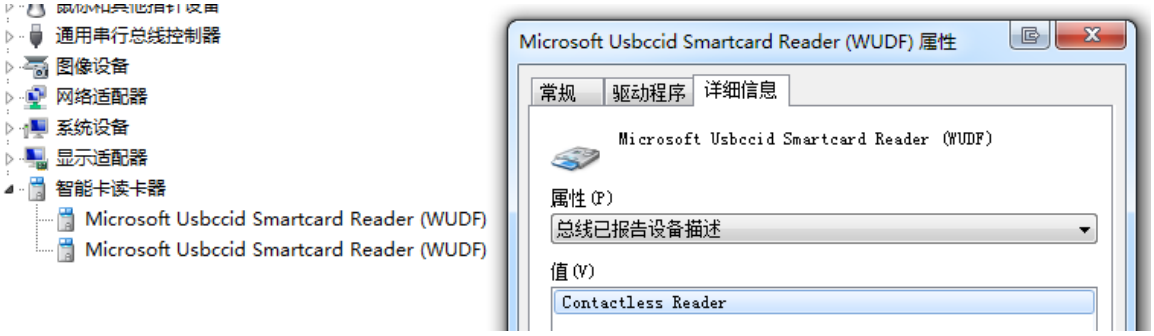
2 Driver Installation and System Identification

If your PC systemis no CCID driver, it will remind you to install the driver when the PC/SC Reader connects with your PC via USB interface at the first time. But no worry, we can offer you the CCID driver, you can get it from our website or we will send it to you by mail.

After installation successfully, it will show you two Smart Card Readers-- "Microsoft Usbccid Smartcard Reader (WUDF)" in your PC Device Manager, like the following picture.

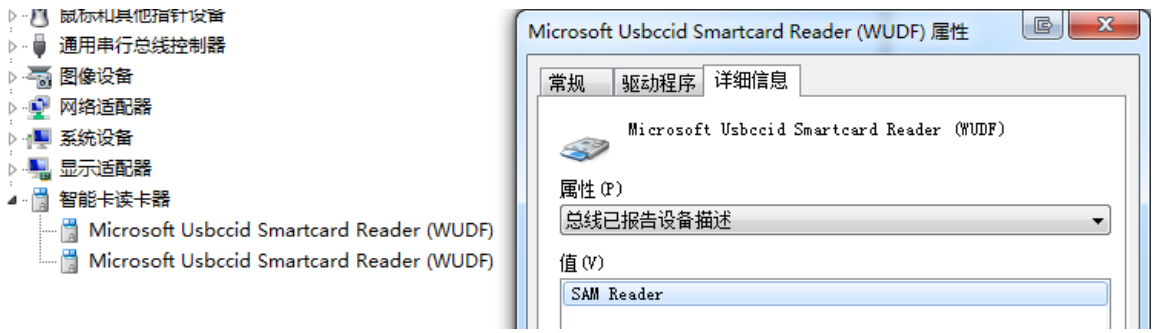
2.1 Contactless Reader

The Reader can Read/Write the Contactless Smart Card and Memory Card within the Antenna fields.



2.2 SAM Reader

Also it can operate ISO7816 SAM cards in the Reader internal SAM slots.

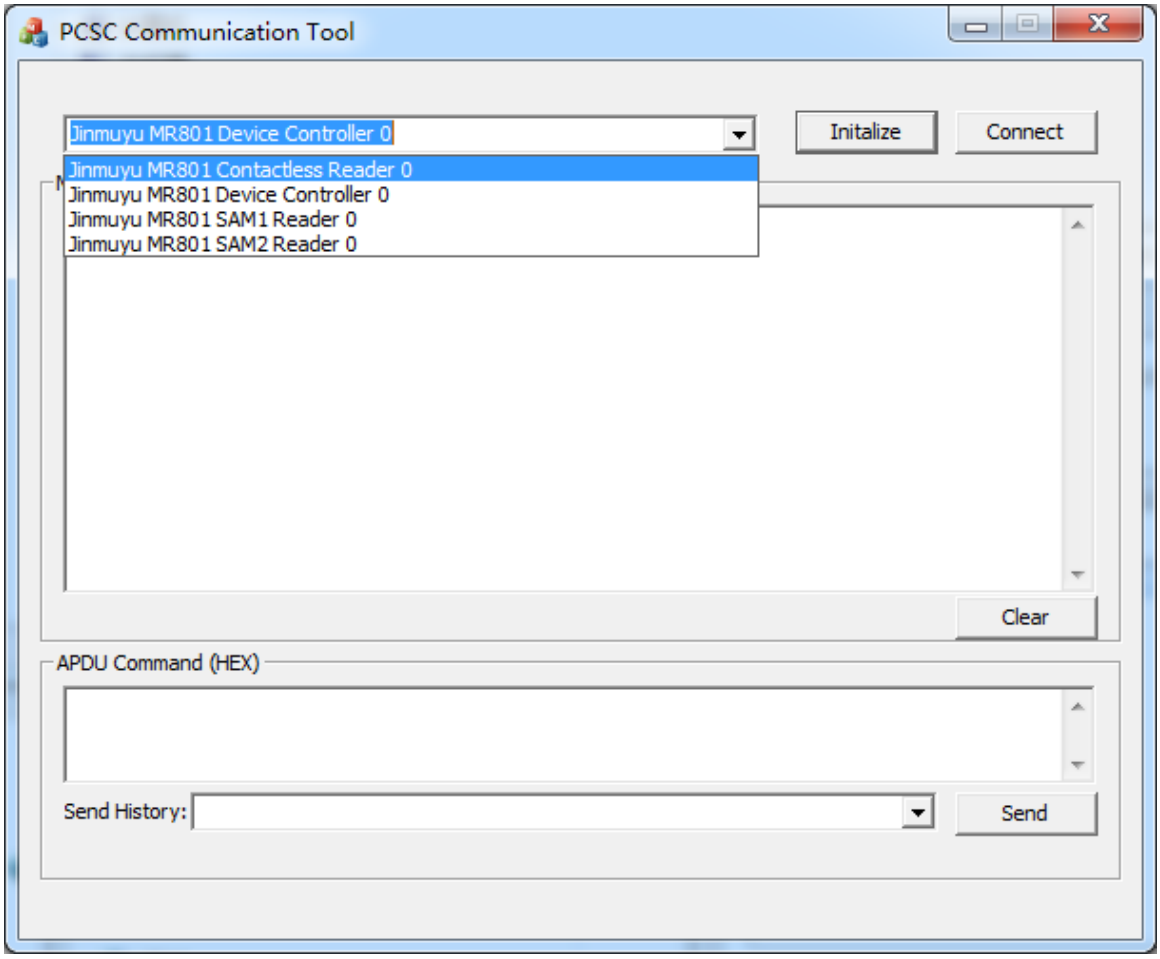


2.3 Device Controller

Device controller is the way to operate miscellany. Like LCD, buzzer and etc.

3 PC Software

First opening "PC/SC Communication Tool",then to click"Initialize" button, there are several Readers will be shown like the following picture.



These 4 devices explain below:

Jinmuyu MR801 Contactless Reader 0: MR801 IC card reader contactless channel

Jinmuyu MR801 Device Controller 0: MR801 IC device control channel

Jinmuyu MR801 SAM1 Reader 0: MR801 IC card reader SAM1 channel

Jinmuyu MR801 SAM2 Reader 0: MR801 ICcard reader SAM2 channel

4 PICC Interface Description

4.1 ATRGeneration

If the reader detects a PICC, an ATR will be sent to the PCSC driver for identifying the PICC.Because these readers are standard PC/SC device, you could refer to other standard documents too.

4.2 ATR format for ISO 14443 Part 3 PICCs

Byte No.	Value(Hex)	Designation	Description
0	3B	Initial Header	
1	8N	T0	Higher nibble 8 means no TA1, TB1, and TC1 only TD1 is following. Lower nibble n is the number of historical bytes (HistByte 0 to HistByte n-1).
2	80	TD1	Higher nibble 8 means no TA2, TB2, and TC2 only TD2 is following. Lower nibble 0 means T = 0.
3	01	TD2	Higher nibble 0 means no TA3, TB3, TC3, TD3 following. Lower nibble 1 means T = 1.
4 to 3+N	80	T1	Category indicator byte, 80 means A status indicator may be present in an optional COMPACT-TLV data object.
	4F	Tk	Application identifier Presence indicator
	0C		Length
	RID		Registered application provider identifier:(RID) # A0 00 00 03 06h
	SS		Byte for Standard
	C0…C1		Bytes for Card Name
	00000000h	RFU	RFU # 00 00 00 00h
4+N	UU	TCK	XOR of all the bytes T0 to Tk

4.3 ATR format for ISO 14443 Part 4 PICCs

Byte Nr	Value(Hex)	Designation	Description
0	3B	Initial Header	
1	8N	T0	Higher nibble 8 means no TA1, TB1, and TC1 only TD1 is following. Lower nibble n is the number of historical bytes (HistByte 0 to HistByte n-1).
2	80	TD1	Higher nibble 8 means no TA2, TB2, and TC2 only TD2 is following. Lower nibble 0 means T = 0.
3	01	TD2	Higher nibble 0 means no TA3, TB3, TC3, TD3 following. Lower nibble 1 means T = 1.
4 to 3+N	XX	T1	Historical bytes: ISO14443A: The historical bytes from ATS response. Refer to the ISO14443-4 specification. ISO14443B: The higher layer response from the ATTRIB response. Refer to the ISO14443-3 specification.
	XX xx XX	Tk	
4+N	UU	TCK	XOR of bytes T0 to Tk

5 Contactless Reader Commands

5.1 Operation Prepare

Please to confirm that the card could be support by the reader before you operate the card.

Connect the reader to PC and wait the reader startup. Place the card on the reader and the reader will prompt by LED and Buzzer. Startup the PC/SC operation software (PCSC Communication Tools) supplied by JINMUYU. Select the proper channel and click “Connect” button. If connect successful, you can operate the card by input APDU now.

5.2 Get Data

This command will retrieve the SNR or ATS of the present card.

APDU Format:

Command	CLA	INS	P1	P2	Le
GetData	FF	CA	00/01	00	00

Answer:

Response Format (UID + 2 Bytes) if P1 = 00

Response	Data				
Result	UID(LSB)	--	UID(MSB)	SW1	SW2

Get ATS of a ISO 14443 A card (ATS + 2 Bytes) if P1 = 01

Response	Data		
Result	ATS	SW1	SW2

Response State:

Result	SW1 SW2	Meaning
Success	90 00	The operation is completed successfully.
Error	63 00	The operation is failed.
Error	6A 81	No such function

5.3 ISO14443-4 CPU Card Command

Input APDU and send will implement theoperation of the card.

5.4 Direct RF Transaction

Send data stream over RF interface to card and receive the data.

APDU format 1:

Command	CLA	INS	P1	P2	Lc	Data
Transaction	FF	00	00	00	LEN	RF Data

LEN: the length of RF Data

RF Data: the data will send over RF interface

Response	Data Out		
Result	Data	SW1	SW2

APDU format 2:

Command	CLA	INS	P1	P2	Lc	CMD	TMO	Data
Transaction	FF	00	FF	FF	LEN	CMD	FWI	RF Data

LEN: the length of Data

CMD: 0: Send commands and receive data.

1: Send only.

TMO: Timeout parameter. Operate the M1 card, FWI = 4. When CMD=1, this byte is meaningless

RF Data: the data will send over RF interface

Answer:

Response	Data Out		
Result	Data	SW1	SW2

5.5 MIFARE ClassicCards Commands（T=CLEmulation）

These parts describe the operation of MIFARE/Ultralight. PC sends APDU to reader. Reader analyzes and executes the APDU and sends back the result. The APDU is not same to smart card.

5.5.1 Load Keys

This command will load the keys into the reader. The key will be of two different types; the reader key and the card key. This command can be used for all kinds of contactless cards.

Reader Key: 16 bytes, use for encrypt application data. The encryption is 3DES. Max. 1 key.

Card Key: 16 bytes, this is the card key. It could be authenticating the memory card. Max. 32 keys.

APDU Format:

Command	CLA	INS	P1	P2	Lc	Data
Load Keys	FF	82	Key Structure	Key Index	Key length	KeyData

Key Structure: 1byte

b7	b6	b5	b4	b3	b2	b1	b0	Description
X								0: Card Key; 1 Reader Key
	X							0: Plain Transmission, 1: Secured Transmission
		X						0: Keys are loaded into volatile memory 1: Keys are loaded into non-volatile memory.
			0	0	0	0	0	RFU

The non-volatile Key, which is stored in the Flash of the Reader, has write cycle limitation. Users need pay more attention to it.

Key Index:1byte

0x00 ~ 0x31 when loading card key

0x00, the Reader can store 1Reader Key.

Key Length:1byte

When loading the Reader Key, the length of the Key must be 16bytes, or the Reader will return fail.

When loading the Card Key by way of plaintext, the Reader no any restriction for the Key length.

When loading the Card Key by way of ciphertext, the Key length must be 8bytes or 16bytes.

Key:N byte

Answer:

Response	Data Out	
Result	SW1	SW2

5.5.2 Authentication

The application specific the key used for the MIFARE 1K/4K card authentication. The specific key must be already in the reader.Two typeauthentication keys: KEY_A and KEY_B.

APDU Format:

Command	CLA	INS	P1	P2	Lc	Data
Authentication	FF	86	00	00	05	Data

Data:

Byte1	Byte2	Byte3	Byte4	Byte5
Version (0x01)	00	Block Number	KeyType	Key Index

Block Number: 1 Byte. This is the memory block number to be authenticated.

Key Type: 1 Byte

0x60 = Key is used as a KEY_A key for authentication.

0x61 = Key is used as a KEY_B key for authentication.

Key Index: 1 Byte

0x00 ~ 0x1F = Key Index.

Answer:

Response	Data Out	
Result	SW1	SW2

5.5.3 ReadBinaryBlocks

This command is used for retrieving “data blocks” from the PICC. The data block/trailer block must be authenticated first.

APDU Format:

Command	CLA	INS	P1	P2	Le
Read Blocks	FF	B0	00	Block Number	Len

Block Number: 1Byte.The block to be accessed

Len: 1Byte. An integer multiple of 16 bytes

Answer:

Response	Data Out		
Result	Data	SW1	SW2

5.5.4 UpdateBinaryBlocks

This command is used for writing “data blocks” into the PICC. The data block/trailer block must be authenticated.

Update Binary APDU Format (4 or 16 + 5 Bytes)

Command	CLA	INS	P1	P2	Lc	Data
Update Blocks	FF	D6	00	Block Number	Len	Data

Block Number: 1Byte.The starting block to be updated.

Len: 1Byte.

16*n(n>0) bytes for MIFARE 1K/4K.

4*n(n>0) bytes for MIFARE Ultra light.

Block Data: The data will be written into the binary block/blocks.

5.5.5 ValueBlockOperation

These commands increment/decrement the value of a purse block.

APDU Format:

Command	CLA	INS	P1	P2	Lc	Data
Value Operation	FF	D7	00	Block Number	05	Data

Block Number: 1 Byte, The value block to be manipulated.

Data: VB_OP(1Byte)**+ VB_Value**(4Byte)

VB_OP:

0x00 = Store the VB_Value into the block. The block will then be converted to a value block.

0x01 = Increment the value of the value block by the VB_Value.

This command is only valid for value block.

0x02 = Decrement the value of the value block by the VB_Value.

This command is only valid for value block.

VB_Value: The value used for value manipulation. The value is a signed long integer with LSB first.

Answer:

Response	Data Out	
Result	SW1	SW2

5.5.6 ReadValueBlock

This command is used for retrieving the value from the value block. This command is only valid for value block.

APDU Format:

Command	CLA	INS	P1	P2	Lc
ReadValueBlock	FF	B1	00	Block Number	04

Block Number:1 Byte,the value block to be accessed.

Answer:

Response	Data Out		
Result	Value	SW1	SW2

Value: 4Bytes.The value returned from the card. The value is a signed long integer.

5.5.7 RestoreValueBlock

This command is used to copy a value from a value block to another value block.

APDU Format:

Command	CLA	INS	P1	P2	Lc	Data	
Restore	FF	D7	00	SourceBlock	02	03	Target Block

Source Block: 1 Byte,the value of the source value block will be copied to the target value block.

Target Block: 1 Byte,the value block to be restored. The source and target value blocks must be in the same sector.

Answer:

Response	Data Out	
Result	SW1	SW2

5.6 Contactless Smart Card Operation Loop

5.6.1 ISO14443-4Card Operation

Basic Operation Loop:

Step 1 PuttheCPU card into ContactlessReader antenna field

Step 2 Connect Contactless Reader

Step 3 SendAPDU command

Example:

Get 8bytes Random

Send: 0xFF 00 FB 00 08 07 DA 04 0C 0C 01 00 01

Receive: 0x90 00

5.6.2 MIFARE 1K/4KCard Operation

Basic Operation Loop:

Step 1 Put theMIFARE 1K/4K card into Contactless Reader antenna field

Step 2 Connect Contactless Reader

Step 3 SendMIFARE 1K/4K card operation commands

Example:

Loading Reader Key

Send: 0xFF 82 A0 00 10 00 11 22 33 44 55 66 77 88 99 AA BB CC DD EE FF

Receive: 0x90 00

Loading Card Key, Number 00h

Send: 0xFF 82 00 00 06 FF FF FF FF FF FF

Receive: 0x90 00

Ciphertext Load Card Key, Number 01h, The key plaintext is { FF FF FF FF FF FF **}**

Send: 0xFF 82 60 01 08 C0 D6 1E B0 84 F9 43 57

Receive: 0x90 00

Get Data

Send: 0xFF CA 00 00 00

Receive: 0x03 12 94 DD 90 00

Authenticate 04 Block Via Type A Key Which Is Stored In 00 Position.

Send: 0xFF 86 00 00 05 01 00 04 60 00

Receive: 0x90 00

Write Data Into 04 Block

Send: 0xFF D6 00 04 10 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 00

Receive: 0x90 00

Read Data From 04/05 Block

Send: 0xFF B0 00 04 20

Receive: 0x01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 00 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 90 00

Purse Initialization

Send: 0xFF D7 00 04 05 00 00000000

Receive: 0x90 00

Purse Increment

Send: FF D7 00 04 05 01 05000000

Receive: 0x90 00

Purse Decrement

Send: FF D7 00 04 05 02 0A000000

Receive: 0x90 00

Purse Copy

Send: 0xFF D7 00 04 02 03 05

Receive: 0x90 00

Read Purse Value

Send: 0xFF B1 00 05 04

Receive: 0xF6 FF FF FF 90 00

5.6.3 MIFAREUltra Light Card Operation

BasicOperation Loop:

Step 1 Put the MIFARE Ultra Lightcard into Contactless Reader antenna field

Step 2 Connect Contactless Reader

Step 3 Send MIFARE Ultra Light card operation commands

Example:

Loading Card Key, Number 05h

Send: 0xFF 82 20 05 10 49 45 4D 4B 41 45 52 42 21 4E 41 43 55 4F 59 46

Receive: 0x90 00

Get Data

Send: 0xFF CA 00 00 00

Receive: 0x04 0E 8B 8A 7C 3B 80 90 00

Mifare Ultralight C certification

Send: 0xFF 86 00 00 05 01 00 00 00 05

Receive: 0x90 00

Write data into 4 block

Send: 0xFF D6 00 04 04 00 01 02 03

Receive: 0x90 00

Write data into 5~7 block

Send: 0xFF D6 00 05 0C 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F

Receive: 0x90 00

Read data from 4~12 block

Send: 0xFF B0 00 04 20

Receive: 0x00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 90 00

6 SAM Readers Commands

IMPORTANT: SAM(s) need to install before the reader power up. After connect to SAM readers, users could send APDU to SAM directly.

For the MR881 card reader, the operation of SAM card requires the DEVICE Controller to be connected, and the default automatically selects the SAM1 card.

7 Device Controller Commands

This part of APDU is about the operation of “DEVICE” controller.

The “DEVICE”controller is included these components: LCD, RTC, FLASH MEMORY, LED, and BUZZER.

7.1 Switch Current Operating Smart Card

This function is aim to switch SAM card.

Note: Format 1 is only supported by MR88x, and Format 2 is supported by MR88x, MR79xx.

APDU Format 1:

Command	Class	INS	P1	P2	Lc	Data
SwitchCard	FF	00	FA	00	01	CurSmartCard

APDU Format 2:

Command	Class	INS	P1	P2	Lc	Data
SwitchCard	FF	00	61	00	01	CurSmartCard

CurSmartCard:

0x00 - StandardCPUCard

0x01 - SAM1Card

0x02 - SAM2Card

0x03 - SAM3Card

0x04 - SAM4Card

Answer:

Response	Data Out	
Result	SW1	SW2

7.2 Reset SAM Card

Reset SAM card manually.

Note: Format 1 is only supported by MR88x, and Format 2 is supported by MR88x, MR79xx.

APDU Format 1:

Command	Class	INS	P1	P2	Lc	Data
RstCard	FF	00	60	00	01	SAMNo

APDU Format 2:

Command	Class	INS	P1	P2	Lc	Data
RstCard	FF	00	60	00	03	Parameter

Parameter: SAMNO(1Byte) + **RSTBOUND**(1Byte) + **SAMPPS**(1Byte)

SAMNO:

0x00 - StandardCPUCard

0x01 - SAM1Card

0x02 - SAM2Card

0x03 - SAM3Card

0x04 - SAM4Card

RSTBOUND：Reset Baud Rate

SAMPPS：Communication Baud Rate

0x00 - 9600

0x01 - 19200

0x02 - 38400

0x03 - 55800

0x04 - 57600

0x05 - 115200

0x06 - 230400

Answer:

Response	Data Out		
Result	ATR	SW1	SW2

7.3 Set PPSS of SAM Card

Note: This command only supported by MR801/MR811/MR8111/MR881.

This is the PPS command of ISO7816. It is need to be the 1st APDU of the SAM card after reset.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
SetSamBaud	FF	00	60	10	02	SAMn+Baudrate

SAMn:

0x00 - StandardCPUCard

0x01 - SAM1Card

0x02 - SAM2Card

0x03 - SAM3Card

0x04 - SAM4Card

Baudrate:

0x00 - 9600(Default)

0x01 - 19200

0x02 - 38400

0x03 - 55800

0x04 - 57600

0x05 - 115200

0x06 - 230400

Answer:

Response	Data Out	
Result	SW1	SW2

7.4 Automatically Set SAM Baud Rate (Set PPS)

Note: This command only supported by MR801/MR811/MR8111/MR881.

This function is aim to according to SAM Reset Information (ATR) parameters in the automatic set of SAM baudrate.Default is not enable. This parameter is set to save when power is off.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
AutoSetBaud	FF	00	60	14	01	Status

Status:

0x00: disenable

0x01: enable

Answer:

Response	Data Out	
Result	SW1	SW2

7.5 Set SAM Baud Rate after Reset

Note: This command only supported by MR801/MR811/MR8111/MR881.

This function is aim to set SAM Baud Rate after Reset. The SAM card slots which can be supported by each Reader are different. (MR800 has 2 SAM slots). Usually, the default SAM Baud Rate after Reset is 9600bps. Before sending GetData APDU to Reset SAM card, if you want to modify the SAM Baud Rate after Reset, you can use this APDU command to set the new Baud Rate Value. (Note: this SAM card must support the Baud Rate to be set). This parameter is set to save when power is off.

APDU Format:

Command	**Class**	**INS**	**P1**	**P2**	**Lc**	**Data**	
SetRstSamBaud	FF	00	60	11	02	SAMn	Baudrate

SAMn:

0x00 - StandardCPUCard

0x01 - SAM1Card

0x02 - SAM2Card

0x03 - SAM3Card

0x04 - SAM4Card

Baudrate:

0x00 - 9600(Default)

0x01 - 19200

0x02 - 38400

0x03 - 55800

0x04 - 57600

0x05 - 115200

0x06 – 230400

Answer:

Response	Data Out	
Result	SW1	SW2

7.6 Read Default Baud Rate of SAM Card

Note: This command only supported by MR801/MR811/MR8111/MR881.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
ReadRstBaud	FF	00	60	12	01	SAMn

SAMn:

0x00 - StandardCPUCard

0x01 - SAM1Card

0x02 - SAM2Card

0x03 - SAM3Card

0x04 - SAM4Card

Answer:

Response	**Data Out**		
Result	RstBaud	SW1	SW2

RstBaud:

0x00 - 9600(Default)

0x01 - 19200

0x02 - 38400

0x03 - 55800

0x04 - 57600

0x05 - 115200

0x06 – 230400

Example:

Reset SAM1

Send: 0xFF 00 60 00 01 01

Receive: 0x3B 6C 00 02 43 21 86 38 07 54 42 00 16 0E 62 3B 90 00

Set PPS 38400

Send: 0xFF 00 60 10 02 01 02

Receive: 0x90 00

Get Random

Send: 0x00 84 00 00 08

Receive: 0xF9 B5 69 7A CC 39 D0 DE 90 00

Set SAM2 Reset Baud Rate 38400

Send: 0xFF 00 60 11 02 02 02

Receive: 0x90 00

Read Default Baud Rate Of SAM2

Send: 0xFF 00 60 12 01 02

Receive: 02 90 00

Reset SAM2

Send: 0xFF 00 60 00 01 02

Receive: 0x3B 69 00 00 44 01 9F 92 D9 29 47 25 20 90 00

Get Random

Send: 0x00 84 00 00 08

Receive: 0x15 1E A3 53 C4 BC 73 34 90 00

7.7 Set Card Operation Mode

Some ISO14443-4 card combined with a MIFARE 1 card. The SAK will indicate it is a ISO14443-4 card. This command is use for set the reader to operate the card by mothed of MIFARE 1.

APDU Format:

Command	CLA	INS	P1	P2	Lc	Data
Set Mode	FF	00	FF	10	01	SETTING

SETTING:

0x00: Operate the card use ISO14443-4 mothed

0x01: Operate the card use MIFARE 1 mothed

Note: remove card is needed after this command.

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Get Random

Send: 0xFF 00 FF 10 01 01

Receive: 0x90 00

7.8 RTC Time Initialize

Initialize theInternal Clock of the Reader.

APDU Format:

Command	Class	INS	P1	P2	Le	Data
InitialRTC	FF	00	FB	00	08	Time

Time:

Year (High Byte) + Year(Low Byte) + Month + Date + Hour + Minute + Second + Week

Example:

2010 - 4 - 12 12:01:00 Monday : Time in hex = 0x07 DA 04 0C 0C 01 00 01

Answer:

Response	Data Out	
Result	SW1	SW2

7.9 RTC Time Read

Read time from RTC of reader.

APDU Format:

Command	Class	INS	P1	P2	Lc
ReadRTC	FF	00	FB	01	08

Answer:

Response	Data Out		
Result	Time	SW1	SW2

Time:

Year (High Byte) + Year(Low Byte) + Month + Date + Hour + Minute + Second + Week

Example:

2010 - 4 - 12 12:01:00 Monday : Time in hex = 0x07 DA 04 0C 0C 01 00 01

Set and Read Time

Send: 0xFF 00 FB 00 08 07 DA 04 0C 0C 01 00 01

Receive: 0x90 00

Send: 0xFF 00 FB 01 08

Receive: 0x07 DA 04 0C 0C 03 15 01 90 00

7.10 RTC TimeDisplay on LCD Format Set

Set the time display format on LCD.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
DisTime	FF	00	FB	02	03	Data

Data: EnableFag(1Byte) + Line(1Byte) + Column(1Byte)

EnableFag: Date display enable (0-Disable, 1-Enable)

Line: The start display line (0~7 or 0~12) (LCD resolution:128*64 or 240*128)

Column: The start display column (0~127 or 0~239)(Same as above)

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Time Display OFF

Send: 0xFF 00 FB 02 03 00 00 00

Receive: 0x90 00

Time Display ON

Send: 0xFF 00 FB 02 03 01 03 05

Receive: 0x90 00

7.11 RTC DateDisplay on LCD Format Set

Set the date display format on LCD.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
DisDate	FF	00	FB	03	03	Data

Data: EnableFag(1Byte) + Line(1Byte) + Column(1Byte)

EnableFag: Date display enable (0-Disable, 1-Enable)

Line: The start display line (0~7 or 0~12) (LCD resolution:128*64 or 240*128)

Column: The start display column (0~127 or 0~239)(Same as above)

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Date Display OFF

Send: 0xFF 00 FB 03 03 00 00 00

Receive: 0x90 00

Date Display ON

Send: 0xFF 00 FB 03 03 01 03 05

Receive: 0x90 00

7.12 Set The Date Display Format

MR88x special instruction.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
DateFormat	FF	00	FB	04	01	USdateformat

Usdateformat:

0x00 : YYYY-MM-DD(Default)

0x01 : MM-DD-YYYY

Answer:

Response	Data Out	
Result	SW1	SW2

7.13 Set Non-English Font Display

Switch none-English font display method. (Any Language could be support, contact us please)

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
Display Font	FF	00	FC	00	01	FontType

FontType:

0x01: Simplify Chinese

0x02: Traditional Chinese

0x03: Russian

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Send: 0xFF 00 FC 00 01 01

Receive: 0x90 00

7.14 Read Non-English Font Display Setting

Read the setting of none-English font display.

APDU Format:

Command	Class	INS	P1	P2	Le
Read Font	FF	00	FC	01	01

Answer:

Response	Data Out		
Result	CharacterSet	SW1	SW2

Example:

Send: 0xFF 00 FC 00 01 02

Receive: 0x90 00

Send: 0xFF 00 FC 01 01

Receive: 0x02 90 00

7.15 Set Display Font Pixel

MR88x special instruction.

MR881 support 16, 24 and 32 pixel display fonts. This instruction could switch the display font pixel.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
SetFontPixel	FF	00	FC	0A	01	FontPiexl

FontPiexl:

0x00 = 16pixel

0x01 = 24pixel

0x02 = 32pixel (system default, not save after repower)

Answer:

Response	Data Out	
Result	SW1	SW2

Remark: Russian support 32 pixel only.

Example:

Send: FF 00 FC 0A 01 00

Receive: 90 00

7.16 LCD Display Text on LCD

Display Text on LCD.

One Chinese font - 2Byte; One English font - 1Byte; One Russian font - 1Byte.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
DisplayText	FF	00	FC	02	nByte	Data

Data: Configure(1Byte) + **Row**(1Byte) + **Column**(1Byte) + **DisplayData**(nBytes)

Configure:

Bit	Value	Instructions
B0	0	Positive Display
	1	Negative Display
B2~B1	00	Before showing new information on the screen, no any delete the old ones
	01	Before showing new information on the screen, only to clear the row of the showed screen
	10	Before showing new information on the screen, delete the all old ones
B3	0	BackLight off
	1	BackLight on
B7~b4	RFU	RFU

Row:

Value	Instructions
0~7	LCD resolution 128*64(1Row = 16 dot High)
0~7	LCD resolution 240*128 32 pixel font (1Row = 32 dot High)
0~0x09	LCD resolution 240*128 24 pixel font (1Row = 24 dot High)
0~0x0F	LCD resolution 240*128 16 pixel font (1Row = 16 dot High)

Column: (0~7 or 0~12) (LCD resolution:128*64 or 240*128)

Display Data: One Chinese font - 2Byte, One ASCII or Russian font – 1Byte.

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Showing "JINMUYU" on the top left corner of LCD displayer with "Positive Display", "Before showing new information on the screen, no any delete the old ones" and"BackLight off" .

Send: 0xFF 00 FC 02 09 00 00 00 BD F0 C4 BE D3 EA

Receive: 0x90 00

7.17 LCD Display Character String at Any Point

MR88x special instruction.

This function is aim to set the specified number of characterson LCD at ANY POINT.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
DisplayText	FF	00	FC	09	nByte	Data

Data: Configure(1Byte) + **Row**(1Byte) + **Column**(1Byte) + **DisplayData**(nBytes)

Configure:

Bit	Value	Instructions
B0	0	Positive Display
	1	Negative Display
B1	RFU	RFU
B2	0	keep screen
	1	clear screen
B3	0	BackLight off
	1	BackLight on
B5~B4	01	display character with 16 pixel font
	10	display character with 24 pixel font
	11	display character with 32 pixel font
B7~b6	RFU	RFU

Row: 0 ~ 127 dot

Column: 0 ~ 239 dot

Display Data: One Chinese font - 2Byte, One ASCII or Russian font – 1Byte.

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Showing "JINMUYU" on the top left corner of LCD displayer with "Positive Display", "Before showing new information on the screen, no any delete the old ones" and"BackLight off" .

Send: 0xFF 00 FC 02 09 00 00 00 BD F0 C4 BE D3 EA

Receive: 0x90 00

7.18 LCD Display Picture (Directly send picture data)

This function is aim to display the specified size picture. If the showing picture is large, it needs several times to be displayed.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
DisPicture	FF	00	FC	03	nByte	Data

Data: Configure(1Byte) + **Row**(1Byte) + **Column**(1Byte) + **PictureWidth**(1Byte) + **PictureHigh**(1Byte) + **DisplayData**(nBytes)

Configure:

Bit	Value	Instructions
B0	0	Positive Display
	1	Negative Display
B2~B1	00	Before showing new information on the screen, no any delete the old ones
	01	Before showing new information on the screen, only to clear the row of the showed screen
	10	Before showing new information on the screen, delete the all old ones
B3	0	BackLight off
	1	BackLight on
B7~b4	RFU	RFU

Row（1Row = 8 dot High）: 0~7 or 0~15(LCD resolution:128*64 or 240*128)

Column:0 ~ 127 or 0~239 (Same as above)

PictureWidth: 1~128 or 0~240, Width of the picture(Same as above)

PictureHigh: 1~8 or 0~16, Picture height(Same as above)

DisplayData: Picture data to be displayed (Bytes = Width*Height)

Answer:

Response	Data Out	
Result	SW1	SW2

7.19 Delete Row on LCD

MR80x special instruction.

For the convenience of the screen to be cleared, the user can remove fonts or picture according to each row.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
EraseLCD	FF	00	FC	04	01	Row

Row（1Row = 8 dot High）: "Bit0 ~ Bit7" means 0 to 7 rows. (0-keep, 1- delete)

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Delete the whole rows on the LCD

Send: 0xFF 00 FC 04 01 FF

Receive: 0x90 00

7.20 Delete Row on LCD

MR88x special instruction.

For the convenience of the screen to be cleared, the user can remove fonts or picture according to each row.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
EraseLCD	FF	00	FC	04	02	Row

Row（1Row = 8 dot High）: "Bit0 ~ Bit15" means 0 to 15 rows. (0-keep, 1- delete)

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Delete the whole rows on the LCD

Send: 0xFF 00 FC 04 02 FFFF

Receive: 0x90 00

7.21 Set Boot Screen on LCD

This function is aim to set the boot screen on LCD when power on. If no setting, it will show the default screen. All of the screen pictures will be stored in Flash AT45DB321.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
PowerOnPIC	FF	00	FC	05	08	Data

Date: Enable(1Byte) + **SaveAddr**(2Byte) + **Width**(1Byte) + **High**(1Byte) + **StartLine**(1Byte) + **StartColumn**(1Byte) + **Time**(1Byte)

Enable: 0-Enable Boot Screen, 1-Disable Boot Screen

SaveAddr: Save the Boot Screen in the Flash; Address LSB first

Width: Width of the image (1~128 or 1~240)(LCD resolution:128*64 or 240*128)

High: Image height (1~8 or 1~16) (Same as above)

StartLine: Displaystart line (0~7 or 1~15) (Same as above)

StartColumn: Display start column (0~127 or 1~239) (Same as above)

Time: To set the time of the Boot Screen (Unit: S)

Answer:

Response	Data Out	
Result	SW1	SW2

Note:

If the Boot Screen OFF, the following parameters are meaningless.

The Boot Screen stored in external FLASH of the reader. Thefonts stored totallyin the 1303(0~1302) Blocks with MR801, 10360(0 ~ 10359) blocks with MR881, the user can not erase or set the above Blocks. Forusers' use the block number is 1303 ~ 8191 of MR801, forusers' use the block number is 10360~ 16383 of MR881, each block size is 512 bytes.

Before the Boot Screen Enable, the Screen picture data need be written into the Flash "SaveAddr" via "FlashWrite APDU" command. If the picture is larger than 512 bytes, the extra bytes will be written into the following block.

The image dimension = Width*High

Example:

Set a Boot Screen picture, the picture is 128*64. (The picture data need be written into the FLASH)

Send:

FF 00 FD 01 84 05 17 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 01 07 3F 3F 3F

1F 07 01 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Receive: 90 00

Send:

FF 00 FD 01 84 05 17 00 80
00 00 00 00 00 00 00 00 00 00 7C 7F 7F7F 3F 3F
3F 3F 1F 1F1F 0F 0F 07 07 03 7F FF FF FF FF FF
FF FFFF 7D 03 07 07 0F 0F 1F 1F1F 3F 3F 3F 3F
7F 7F7F 78 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 01 03 03 0D 39 71 31 0D 07 07
03 03 01 00 00 04 04 04 04 05 07 7F 27 05 04 04
0C 0C 00 00 30 37 37 37 35 34 3F 3F 37 35 34 37
37 30 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Receive: 90 00

Send:

FF 00 FD 01 84 05 17 01 00
00 00 00 00 00 00 00 00 00 00 C0 F0 FC FF FF
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
BF 7F FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FC F0 80 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 83 A2 32 3A 2E 26 FE FE 26 3E 3A
62 22 02 00 04 0C 18 30 60 C0 00 FF 00 C0 60 30
18 18 08 00 00 FF FE 20 B8 90 FE FE 20 BA 03 FF
FC 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Receive: 90 00

Send:

FF 00 FD 01 84 05 17 01 80
00 00 00 06 0F 0F 1F 1F 3F 3F 7F 7F7F7F7F BF
FF EF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF F6 FF FF FF 7F
7F 7F 7F 7F 3F 3F 1F 1F 0F 0F 07 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Receive: 90 00

Send:

FF 00 FD 01 84 05 18 00 00
00 00 00 00 00 00 80 80 C0 C0 E0 E0E0 E3 EF DF

FF 7F FF FF FF FF FF FF FF FF FF FF FF FF FF FF

FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF EF

E3 E0 E0 E0 C0 C0 80 80 00 00 00 00 00 00 00 00

00 00 00 00 00 00 08 0E 06 01 05 05 05 1F 1D 05

05 05 01 00 00 02 0E 0C 09 0B 08 08 08 08 08 0B

0F 0C 00 00 00 00 0F 0F 09 0F 0F 00 0F 09 09 0F

0F 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Receive: 90 00

Send:

FF 00 FD 01 84 05 18 00 80

00 00 00 00 00 00 00 00 00 00 03 1F FF FF FF FF

FF FF FF FF FF FF FF FE FE FC FF FF FF FF FF FF

FF EF FF FB FC FE FE FF FF FF FF FF FF FF FF FF

FF FF 1F 01 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 C0 C0 FF FF 87 36 5C 6C 27 7F 7D

05 C4 8C 00 00 04 06 06 F6 D6 96 96 96 96 96 96

BF B8 00 00 44 64 EF EF 5C F7 EF E0 EF B4 DC 6F

6F 6C 28 00 00 00 00 00 00 00 00 00 00 00 00 00

Receive: 90 00

Send:

FF 00 FD 01 84 05 18 01 00

00 00 00 00 00 00 00 00 00 00 E0 E0E0E0E0 C0

C0 C0 80 80 80 00 00 00 00 00 F0 FC FE FF FF FF

FF FE F8 E0 00 00 00 00 00 80 80 80 C0 C0C0 E0

E0 E0 E0 E0 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 80 80 40 40 C0 80 80 00 00

80 C0 40 00 00 00 00 00 00 00 00 00 80 80 C0 C0

80 00 00 00 00 00 C0 C0 80 C0 80 00 C0 80 80 C0

80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Receive: 90 00

Send:

FF 00 FD 01 84 05 18 01 80

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 C0 C0C0

80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Receive: 90 00

Send: FF 00 FC 05 08 01 17 05 80 08 00 00 05

Receive: 90 00

7.22 Set Standby Screen on LCD

This function is aim to set the standby screen. If no setting, after finished the User's interface display, it won't return to the standby screen. All pictureswill be stored in FLASH.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
IdlePIC	FF	00	FC	06	08	Data

Date: Configure (1Byte) + **SaveAddr**(2Byte) + **Width**(1Byte) + **High**(1Byte) + **StartLine**(1Byte) + **StartColumn**(1Byte) + **Time**(1Byte)

Configure:

Bit	Value	Instructions
B0	0	Enable Standby Screen
	1	Disable Standby Screen
B2~B1	00	Before showing new information on the screen, no any delete the old ones
	01	Before showing new information on the screen, only to clear the row of the showed screen
	10	Before showing new information on the screen, delete the all old ones
B3	0	BackLight off
	1	BackLight on
B7~b4	RFU	RFU

SaveAddr: Save the Boot Screen in the Flash; Address LSB first

Width: Width of the image (1~128 or 1~240)(LCD resolution:128*64 or 240*128)

High: Image height (1~8 or 1~16) (Same as above)

StartLine: Displaystart line (0~7 or 1~15) (Same as above)

StartColumn: Display start column (0~127 or 1~239) (Same as above)

Time: Set operation interval time, if no further operation, then the LCD screen enter into the standby screen (Unit: S).

Answer:

Response	Data Out	
Result	SW1	SW2

Note:

If the standby Screen OFF, the following parameters are meaningless.

The standby Screen stored in external FLASH of the reader. Thefonts stored totallyin the 1303(0~1302) Blocks with MR801, 10360(0 ~ 10359) blocks with MR881, the user can not erase or set the above Blocks. Forusers' use the block number is 1303 ~ 8191 of MR801, forusers' use the block number is 10360~ 16383 of MR881, each block size is 512 bytes.

Before the StandbyScreen Enable, the Screen picture data need be written into the Flash SaveAddr via "FlashWrite APDU" command. If the picture is larger than 512 bytes, the extra bytes will be written into the following block.

The image dimension = Width*High

As to how to operate, please refer to the SDK for "Set Boot Screen on LCD", but notice the storage address in FLASH.

7.23 LCD Backlight Control

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
LCDBackLight	FF	00	FC	07	02	Mode + Time

Mode:

00 - OFF

01 - ON

02 - Specified time on (Time data is valid)

Time: Only in "Mode=2"are valid (Unit:S)

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

LCD BackLight is on and last 15s

Send: 0xFF 00 FC 07 02 02 0F

Receive: 0x90 00

7.24 LCD Display a Screen Stored in FLASH

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
DisplayPIC	FF	00	FC	08	09	Data

Data: Configure (1Byte) + **DisAddr**(2Byte) + **Width**(1Byte) + **High**(1Byte) + **StartLine**(1Byte) + **StartColumn**(1Byte)

Configure:

Bit	Value	Instructions
B0	RFU	RFU
B2~B1	00	Before showing new information on the screen, no any delete the old ones
	01	Before showing new information on the screen, only to clear the row of the showed screen
	10	Before showing new information on the screen, delete the all old ones
B3	0	BackLight off
	1	BackLight on
B7~B4	RFU	RFU

DisAddr:the savedAddress in the Flash; LSB first.

Width: Width of the image (1~128 or 1~240)(LCD resolution:128*64 or 240*128)

High: Image height (1~8 or 1~16) (Same as above)

StartLine: Displaystart line (0~7 or 1~15) (Same as above)

StartColumn: Display start column (0~127 or 1~239) (Same as above)

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Display the Screen Picture from Address1303 in FLASH

Send: 0xFF 00 FC 08 09 0C 17 05 80 08 00 00

Receive: 0x90 00

7.25 Read Data from FLASH

The Flash on MR801/MR811 is AT45DB321 (MR881 isAT45DB641).From address0 to address1302, these are used to store the fonts (MR881 is address0 to address10359), so please don't read or write them.For users' use the block number is 1303 ~ 8191 of MR801/MR811, for users' use the block number is 10360~ 16383 of MR881, each block size is 512 bytes.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
ReadFlash	FF	00	FD	00	06	Data

Data: BlockAddr (2Byte) + **ByteAddr**(2Byte) + **Len**(2Byte)

BlockAddr: Block Address (MSB first)

ByteAddr: The start byte address in Block (MSB first)

Len : The length of Byte to be read (MSB first),Len≤256

Answer:

Response	Data Out		
Result	Flash Data	SW1	SW2

Example:

Read 2bytes from Block2 in Flash, the start address is 0002

Send: 0xFF 00 FD 00 06 00 02 00 02 00 02

Receive: 0x18 08 90 00

7.26 Write Data to FLASH

The Flash on MR801/MR811 is AT45DB321 (MR881 isAT45DB641).From address0 to address1302, these are used to store the fonts (MR881 is address0 to address10359), so please don't read or write them. For users' use the block number is 1303 ~ 8191 of MR801/MR811, for users' use the block number is 10360~ 16383 of MR881, each block size is 512 bytes.

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
WriteFlash	FF	00	FD	01	04+n	Data

Data: BlockAddr (2Byte) + **ByteAddr**(2Byte) + **nData** (nBytes)

BlockAddr: Block Address (MSB first)

ByteAddr: The start byte address in Block (MSB first)

nData: Data to be written

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Write 1bytes into Block0616 in Flash, the start address is 0002

Send: 0xFF 00 FD 01 05 06 16 00 02 01

Receive: 0x90 00

7.27 Get Device SNR

APDU Format:

Command	Class	INS	P1	P2	Le
GetSNR	FF	00	FF	00	0A

Answer:

Response	Data Out		
Result	Product SNR	SW1	SW2

Example:

Send: 0xFF 00 FF 00 0A

Receive: 0x01 05 07 09 09 04 03 08 06 09 90 00

7.28 Get Hardware and Firmware Version

APDU Format:

Command	Class	INS	P1	P2	Le
GetVer	FF	00	FF	01	04

Answer:

Response	Data Out		
Result	HandwareVer（2Byte）+ Software Ver（2Byte）	SW1	SW2

Example:

Send: 0xFF 00 FF 01 04

Receive: 0x01 00 02 02 90 00

7.29 Set LED

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
LEDCtr	FF	00	FF	02	05	Data

Data:LEDstate(1Byte)+**StateMask**(1Byte)+**T1**(1Byte)+**T2** (1Byte)+**Number**(1Byte)

LEDState:

BIT0 = Red light final state (1 - ON, 0 - OFF)

BIT1 = Green light final state (1 - ON, 0 - OFF)

BIT2 = Blue light final state (1 - ON, 0 - OFF)

BIT3 = Yellow light final state (1 - ON, 0 - OFF)

BIT4 = Red light flashing in the initial state (1 - ON, 0 - OFF)

BIT5 = Green light flashing in the initial state (1 - ON, 0 - OFF)

BIT6 = Blue light flashing in the initial state (1 - ON, 0 - OFF)

BIT7 = Yellow light flashing in the initial state (1 - ON, 0 - OFF)

StateMask:

BIT0 = Red state update mask (1 - Update, 0- Maintenance)

BIT1 = Green state update mask (1 - Update, 0- Maintenance)

BIT2 = Blue state update mask (1 - Update, 0- Maintenance)

BIT3 = Yellow state update mask (1 - Update, 0- Maintenance)

BIT4~7: RFU

T1/T2: T1, T2 time (Unit: 100ms), T = T1+T2

Number: Times

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Four kinds of lights twinkle two times. And then all of them are OFF

Send: 0xFF 00 FF 02 05 F0 0F 0F0F 02

Receive: 0x90 00

Red twinkles two times. And then light ON

Send: 0xFF 00 FF 02 05 11 01 0F 0F 02

Receive: 0x90 00

Yellow twinkles, and then Red is ON. This state will be executed two times.

Send: 0xFF 00 FF 02 05 81 09 0F 0F 02

Receive: 0x90 00

7.30 Set Buzzer

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
BuzzerCtr	FF	00	FF	03	05	Data

Data: BeepState(1Byte)+**StateMask**(1Byte)+**T1**(1Byte)+**T2** (1Byte)+**Number**(1Byte)

BeepStatus:

BIT0 = BEEP final state (1 - ON, 0 - OFF)

BIT4 = BEEP initial state (1 - ON, 0 - OFF)

StatusMask:

BIT0 = Buzzer status update mask (1 - Update, 0 - Maintenance)

BIT4~7 RFU

T1/T2: T1, T2 time (Unit: 100ms), T = T1+T2

Number: Times

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Buzzer beeps two times with status update mask. This state will be executed two times.

Send: 0xFF 00 FF 03 05 08 01 0F 0F 02

Receive: 0x90 00

7.31 Set Card Encryption Mode

APDU Format:

Command	Class	INS	P1	P2	Lc	Data
EncrMode	FF	00	FF	05	01	EncryptMode

EncryptMode:

0x00-Philips

0x01-Shanghai Standard

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Set Shanghai Encryption Mode

Send: 0xFF 00 FF 05 01 01

Receive: 0x90 00

7.32 Reader Reset to Factory Default (Repower on)

APDU Format:

Command	Class	INS	P1	P2	Le
FactoryDefault	FF	00	FF	06	00

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Send: 0xFF 00 FF 06 00

Receive: 0x90 00

7.33 Reader Reboot

APDU Format:

Command	Class	INS	P1	P2	Le
Reboot	FF	00	FF	07	00

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Send: 0xFF 00 FF 07 00

Receive: 0x90 00

7.34 Set Fast Boot

The reader could be set Fast Boot. It could be quickly to ready.

APDU Format:

Command	Class	INS	P1	P2	Le	Data
SetFastBoot	FF	00	FF	08	01	Para

Para: 0: normal boot; 1: fast boot

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Send: 0xFF 00 FF 08 01 01

Receive: 0x90 00

7.35 Get Setting of Fast Boot

Get the setting of Fast Boot.

APDU Format:

Command	Class	INS	P1	P2	Le
GetPara	FF	00	FF	08	00

Answer:

Response	Data Out		
Result	Setting	SW1	SW2

Setting: 0: normal boot; 1: fast boot

Example:

Send: 0xFF 00 FF 08 00

Receive: 0x00 90 00

7.36 Get Setting of Buzzer and LED Indicator Parameter

Get the setting of buzzer and LED working mode when card in and out RF field.

APDU Format:

Command	Class	INS	P1	P2	Le
GetParameter	FF	00	FF	21	00

Answer:

Response	Data Out		
Result	Parameter	SW1	SW2

Example:

Send: 0xFF 00 FF 21 00

Receive: 0x03 90 00 (parameter default 0x03)

7.37 Set Buzzer and LED Indicator Parameter

Set buzzer and LED indicator working mode when card in and out of the RF filed.

APDU Format:

Command	Class	INS	P1	P2	Le	Data
SetParameter	FF	00	FF	21	01	Parameter

Answer:

Response	Data Out	
Result	SW1	SW2

Example:

Send: 0xFF 00 FF 21 01 03

Receive: 0x90 00

bit	parameter	description	option
B7~B2	0	RFU	0
B1	LED	Set buzzer and LED indicator enable or disable	1 = enable0 = disable
B0	buzzer		1 = enable0 = disable

------ End of file ------