



RD300 Serial USB RFID Reader Protocol Manual

**Document Version
V0220**

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0. Revision History

Date	Version	Description
20 May 2015	0200	Initial version
15 July 2020	0210	Add CPU card function

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1. Introduction

This document specifies how a host controller can configure and command a RFID reader in order to read and write to RFID tags. The content of these messages is based on the type of RFID reader, and this document must be used in conjunction with the reference guide of the specific reader.

The RD300 protocol supports Binary format.

- STX is for a start of transmission. (STX = CHR\$(2) = 0x02)

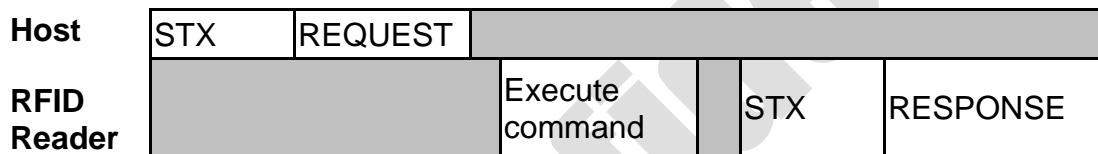


Figure 1 – Binary Request and Response

2. Command Descriptions

Host controller (PC) can send command to control the RD300 via USB virtual com port. And the command is composed of STX and Request message, and the Request message contains MSG LEN, COMMAND and DATA.

MSG LEN Field tells how many bytes are in the host request, not including the <STX> and not including the MSG LEN Field. In the request message, user could put parameters into the {DATA} field to change settings or carry data to the RD300.

Request Command: Host (PC) → RD300



Figure 2.1 – Request Command Format

After host controller sent a command to RD300, it will respond a response message that contains MSG LEN, COMMAND, STATUS and DATA. User could according to the response message to know the request command whether it is success or fail.

Response Data: RD300 → Host (PC)



Figure 2.2 – Response Data Format

<NOTE> Some of the commands are for specific models; the command title will be appended annotation of models, if not, which means that command can be used on all serial models.

2.1 Command Types

RD300 protocol provides 35 types of command to control the reader.

Common Function Commands			
	Command	Description	
1	0x01	Read card data	
2	0x02	Reader action command	
3	0x03	Set reader parameters	
4	0x0C	Read/Write user data in EEPROM inside reader	
5	0x0D	Get serial number of reader	
6	0x0E	Get reader model and firmware version	
7	0x0F	System command	
MIFARE Function Commands			
	Command	Description	
8	0x11	Read MIFARE UID	
9	0x12	Write Key to EEPROM	
10	0x13	Ultralight/NTAG Read Data	
11	0x14	Ultralight/NTAG Write Data	
12	0x15	MIFARE Read Data	
13	0x16	MIFARE Write Data	
ISO15693 Function Commands			
	Command	Description	
14	0x20	ISO15693 Config	
15	0x21	ISO15693 Inventory	
16	0x22	ISO15693 Read Block	
17	0x23	ISO15693 Write Block	
18	0x24	ISO15693 Information	
ISO14443A Function Commands			
	Command	Description	

19	0x30	ISO14443A Config	
20	0x31	ISO14443A DESFire Select	
21	0x32	ISO14443A DESFire Command	
22	0x33	ISO14443A Request	
23	0x34	ISO14443A Anticoll	
24	0x35	ISO14443A Select	
ISO14443B Function Commands			
	Command	Description	
25	0x38	ISO14443B Config	
26	0x39	ISO14443B Request	
27	0x3A	ISO14443B CHINA GUID	
28	0x3B	ISO14443B CEPAS CAN/CSN	
RFID Function Commands			
	Command	Description	
29	0x41	Transparent With CRC	
30	0x42	Transparent Without CRC	
31	0x45	CPU Write SID Key to EEPROM	
32	0x46	CPU Read SID	
33	0x47	CPU Read File	
34	0x48	CPU Write File	

Fingerprint Function Commands			
	Command	Description	
35	0x61	Fingerprint Power	
36	0x62	Fingerprint Check	
37	0x63	Fingerprint Delete	
38	0x64	Fingerprint Enroll	
39	0x65	Fingerprint Identify Set	
40	0x66	Fingerprint Template	
41	0x67	Fingerprint UID	
42	0x6D	Fingerprint Image	
DES1 Function Commands			
43	0x9E	DES1 TX Comand	
44	0x9F	DES1 TX/RX Comand	

Figure 2.1.1 – Command type table

2.2 Read Tag Data (0x01)

*[] is HEX

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[01]		Read card data once and auto-erase before remove card
<STX>	[02]	[01]	[01]	Read card data once and auto-erase after remove card

Figure 2.2.1 – Read tag data – Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[01]	[10]		Command error
<STX>	[02]	[01]	[01]		No card
<STX>	[0A]	[01]	[00]	[XX]*8	Shows up 8 Byte card data

Figure 2.2.2 – Read tag data - Response

2.3 Reader Action Command (0x02)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[02]	[02]	[01]	Restore default action setting
<STX>	[02]	[02]	[02]	Beep + Green light On (0.5 sec)
<STX>	[02]	[02]	[03]	Beep + light Off (0.5 sec)
<STX>	[02]	[02]	[04]	Beep + Green light On (1 sec)
<STX>	[02]	[02]	[05]	Beep + light Off (1 sec)
<STX>	[02]	[02]	[06]	Beep (0.5sec)
<STX>	[02]	[02]	[07]	Bell (1sec)
<STX>	[02]	[02]	[08]	Green light On (1 sec)
<STX>	[02]	[02]	[09]	Light Off (1 sec)
<STX>	[02]	[02]	[11]	Stop sense card
<STX>	[02]	[02]	[12]	Start sense card
<STX>	[02]	[02]	[13]	Turn off the reader for 0.2sec then turn on.

Figure 2.3.1 – Reader action command - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[02]	[10]		Command error
<STX>	[02]	[02]	[00]		Command complete

Figure 2.3.2 – Read action command - Response

2.4 Set Reader Parameter (0x03)

2.4.1 Set USB Mode

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[03]	[01]+{USB Mode}	{USB HID Mode} [01] = HID + Keyboard [02] = HID [03] = HID Auto Send {USB Serial Mode} [01] = Serial Auto Send [02] = Serial Mode

Figure 2.4.1 – Set USB Mode - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[03]	[03]	[00]	USB Mode	Command complete

Figure 2.4.2 – Set USB Mode – Response

2.4.2 Set Read Card Mode

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[03]	[02]+{ReadCardMode}	{ReadCardMode} Bit.0 = Auto Read; 1 = ON, 0 = OFF Bit.1 = Beep; 1 = ON, 0 = OFF Bit.2 = LED; 1 = ON, 0 = OFF Bit.3 = Same Card; 1 = ON, 0 = OFF Bit.4 = Green Mode; 1 = ON, 0 = OFF

Figure 2.4.3 – Set Read Card Mode - Request

Example – How to compute {Read Card Mode} value:

Set "Auto Read", "Beep", "LED", "Same Card" all ON, The value of {Read Card Mode} = 00001111 = [0F].

Read Card Mode							
bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
0	0	0	0	1	1	1	1

Figure 2.4.4 – Example – Read Card Mode

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[04]	[03]	[00]	02+ReadCardMode	Command complete

Figure 2.4.5 – Set Read Card Mode - Response

2.4.3 Keyboard Emulation Format

Request				
	LEN	CMD	{DATA}	Description
<STX>	[05]	[03]	[03]+{UID Format + Reverse UID + Add Type}	<p>{UID Format} – UID Sending Format [01]=4H; [02]=5D; [03]=6H; [04]=8D; [05]=8H; [06]=10D; [07]=10H; [08]=13D; [09]=16H; [0A]=4D; [0B]=ASC; [0C]=32H;</p> <p>{Reverse UID} – Reverse UID [01]=Normal; [02]=Reverse Byte; [03]=Reverse Bit</p> <p>{Add Type} – Add Separation Symbol and Enter Bit.0=Comma(,); Bit.1=Add ([]); Bit.2=Add (' '); Bit.3=Add Space; Bit.4=Add Up; Bit.5=Add Down; Bit.6=Add Left; Bit.7=Add Enter(CR+LF);</p>

Figure 2.4.6 – Keyboard Simulation Format - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[06]	[03]	[00]	[03]+UID Format + Reverse UID+ Add Type	Command complete

Figure 2.4.7 –Keyboard Simulation Format - Response

2.4.4 Read Card Postponement Time

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[03]	[04] + {Postponement Time}	Postponement Time [00] - [FF] (Default: 5) Unit: 10ms

Figure 2.4.8 – Read Card Postponement Time - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[04]	[03]	[00]	[04]+ Postponement Time	Command complete

Figure 2.4.9 – Read Card Postponement Time - Response

2.4.5 Same Card Detection Time

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[03]	[05] + {Detection Time}	Detection Time [00] – [FF] (Default: 15) Unit: 100ms

Figure 2.4.10 – Same Card Detection Time - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[04]	[03]	[00]	[05] + Detection Time	Command complete

Figure 2.4.11 – Same Card Detection Time - Response

2.4.6 Keypad Delay Time

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[03]	[06] + {Delay Time}	Delay Time [00] – [FF] (Default: 10) Unit: ms

Figure 2.4.12 – Keypad Delay Time - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[04]	[03]	[00]	[06] + Delay Time	Command complete

Figure 2.4.13– Keypad Delay Time - Response

2.4.7 Mifare Reading Sector Setting

Request				
	LEN	CMD	{DATA}	Description
<STX>	[09]	[03]	[11] + {ReadSector + ReadBlock + ReadStart + ReadByte + ReadKey + ReadMsg+ ReadData }	[ReadSector] – Read Sector Number (Default: 0) [ReadBlock] – Read Block Number (Default: 0) [ReadStart] – The start byte of read block (Default: 0) [ReadByte] – The number of byte of read block (Default: 4) [ReadKey] -- Verifying condition (Default: 0) 0=KeyA 1=KeyB [ReadMsg] – Set reader action when reading (Default: 0) Bit.0=LED Bit.1=BELL [ReadData] – Set reader block enable (Default: 0)

Figure 2.4.14 – Mifare Reading Sector Setting - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[0A]	[03]	[00]	[11] + [ReadSector] + [ReadBlock] + [ReadStart] + [ReadByte] + [ReadKey] + [ReadMsg] +[ReadData]	Command complete

Figure 2.4.15 – Mifare Reading Sector Setting - Response

2.4.8 NTAG/UltraLight Read Block Setting

Request				
	LEN	CMD	{DATA}	Description
<STX>	[06]	[03]	[12] + {ReadBlock+ ReadStart+ReadByte+ReadData}	[ReadBlock] – Read block number (Default: 0) [ReadStart] -- The start byte of read block (Default: 0) [ReadByte] – The number of byte of read block (Default: 4) [ReadData] – Set reader block enable (Default: 0)

Figure 2.4.16 – NTAG/UltraLight Read Block Setting - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[06]	[03]	[00]	[12] + [ReadBlock] + [ReadStart] + [ReadByte] +[ReadData]	Command complete

Figure 2.4.17 –NTAG/UltraLight Read Block Setting - Response

2.4.9 ISO15693 Read Block Setting

Request				
	LEN	CMD	{DATA}	Description
<STX>	[06]	[03]	[21] + {ReadBlock+ ReadStart+ReadByte+ReadData}	[ReadBlock] – Read block number (Default: 0) [ReadStart] -- The start byte of read block (Default: 0) [ReadByte] – The number of byte of read block (Default: 4) [ReadData] – Set reader block enable (Default: 0)

Figure 2.4.18 – ISO15693 Read Block Setting - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[06]	[03]	[00]	[21] + [ReadBlock] + [ReadStart] + [ReadByte] +[ReadData]	Command complete

Figure 2.4.19 – ISO15693 Read Block Setting - Response

2.4.10 Set RFID Read Card Type

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[03]	[23] + {CardType}	[Card Type] Bit.0 = ISO14443A – 4Byte Bit.1 = ISO14443A – 7Byte Bit.2 = ISO15693 Bit.3 = ISO14443B Bit.4 = ISO14443B GUID Bit.5 = ISO14443B CEPAS

Figure 2.4.20– Set RFID Read Card Type - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[04]	[03]	[00]	[23] + [CardType]	Command complete

Figure 2.4.21–Set RFID Read Card Type - Response

2.5 Read/Write User Data on EEPROM (0x0C)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[LEN]	[0C]	[AddrHigh] + [AddrLow] + [Num]	[AddrHigh]&[AddrLow] - The address range of read that value is [00]-[FF] [Num] – Number of read
<STX>	[LEN]	[0C]	[AddrHigh] + [AddrLow] + [Num] + [Data]*8	[AddrHigh]&[AddrLow] - The address range of writing that value is [00]-[FF] [Num] – Number of writing [Data]*8 – Enter the 8 HEX numbers

Figure 2.5.1 – Read/Write User Data on EEPROM - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[LEN]	[0C]	[10]		Command error
<STX>	[LEN]	[0C]	[00]	[AddrHigh] + [AddrLow] + [Num] + [Data]*Num	Response data

Figure 2.5.2 – Read/Write User Data on EEPROM – Response

2.6 Get Serial Number of Reader (0x0D)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[0D]		Get serial number of reader

Figure 2.6.1 – Get Serial Number of Reader - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[0D]	[10]		Command error
<STX>	[0A]	[0D]	[00]	[Data]*8	Command complete Check "Response Data" - "ASCII" column for decimal number

Figure 2.6.2 –Get Serial Number of Reader - Response

2.7 Get Reader Model & Firmware Version (0x0E)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[0E]		Get reader model name & firmware version

Figure 2.7.1 – Get Reader Model Name & Firmware Version- Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[0E]	[10]		Command error
<STX>	[12]	[0E]	[00]	[Data]*16	Command complete Check "Response Data" - "ASCII" column for readable data

Figure 2.7.2 –Get Reader Model Name & Firmware Version - Response

2.8 System Command (0x0F)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[02]	[0F]	[01]	Reboot
<STX>	[02]	[0F]	[02]	Restore default setting

Figure 2.8.1 – System Command- Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[0F]	[10]		Command error
<STX>	[02]	[0F]	[00]		Command complete

Figure 2.8.2 – System Command - Response

3. Mifare Function Commands

We separate the part of Mifare function commands in this section that commands are available for RFID Reader.

3.1 Read Mifare UID (0x11)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[11]		Read Mifare card UID

Figure 3.1.1 – Read Mifare UID - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[11]	[10]		Command error
<STX>	[02]	[11]	[01]		No card
<STX>	[06]	[11]	[00]	[Data]*4	Command complete

Figure 3.1.2 – Read Mifare UID – Response

3.2 Write Key to EEPROM (0x12)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[0A]	[12]	[Key Type] + [Key Value] + [Sector Number]	[Key Type]: [60] = KeyA, [61] = KeyB [Key Value]: e.g. [FF FF FF FF FF FF] [Sector Number]: e.g. [01]

Figure 3.2.1 – Write Key to EEPROM - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[12]	[10]		Command error
<STX>	[02]	[12]	[00]		Command complete

Figure 3.2.2 – Write Key to EEPROM - Response

3.3 Ultralight/NTAG Read Data (0x13)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[04]	[13]	[00] + [00] + [Block Number]	[Block Number]: e.g. [00]

Figure 3.3.1 –Ultralight/NTAG Read Data - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[13]	[10]		Command error
<STX>	[02]	[13]	[01]		No card or invalid Key
<STX>	[12]	[13]	[00]	[Data]*16	Command complete

Figure 3.3.2 –Ultralight/NTAG Read Data - Response

3.4 Ultralight/NTAG Write Data (0x14)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[14]	[14]	[00] + [00] + [Block Number] + [Data]*16	[Block Number]: e.g. [00] [Data]: e.g. [FF FF FF FF FF FF FF FF FF FF FF FF]

Figure 3.4.1 –Ultralight/NTAG Write Data - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[14]	[10]		Command error
<STX>	[02]	[14]	[01]		No card or invalid Key
<STX>	[12]	[14]	[00]	[Data]*16	Command complete

Figure 3.4.2 –Ultralight/NTAG Write Data - Response

3.5 Read Data (0x15)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[04]	[15]	[Key Type] + [Sector Number] + [Block Number]	[Key Type]: [60] = KeyA, [61] = KeyB [Sector Number]: e.g. [01] [Block Number]: e.g. [00]
<STX>	[0A]	[15]	[Key Type] + [Key Value] + [Sector Number] + [Block Number]	[Key Type]: [60] = KeyA, [61] = KeyB [Key Value]: e.g. [FF FF FF FF FF FF] [Sector Number]: e.g. [01] [Block Number]: e.g. [00]

Figure 3.5.1 – Read Data - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[15]	[10]		Command error
<STX>	[02]	[15]	[01]		No card or invalid Key
<STX>	[12]	[15]	[00]	[Data]*16	Command complete

Figure 3.5.2 – Read Data - Response

3.6 Write Data (0x16)

Request					
	LEN	CMD	{DATA}	Description	
<STX>	[14]	[16]	[Key Type] + [Sector Number] + [Block Number] + [Data]*16	[Key Type]: [60] = KeyA, [61] = KeyB [Sector Number]: e.g. [01] [Block Number]: e.g. [00] [Data]: e.g. [FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF]	
<STX>	[1A]	[16]	[Key Type] + [Key Value] + [Sector Number] + [Block Number] + [Data]*16	[Key Type]: [60] = KeyA, [61] = KeyB [Key Value]: e.g. [FF FF FF FF FF FF] [Sector Number]: e.g. [01] [Block Number]: e.g. [00] [Data]: e.g. [FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF]	

Figure 3.6.1 – Write Data - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[16]	[10]		Command error
<STX>	[02]	[16]	[01]		No card or invalid Key
<STX>	[12]	[16]	[00]	[Data]*16	Command complete

Figure 3.6.2 – Write Data – Response

4. ISO15693 Function Commands

We separate the part of ISO15693 function commands in this section that commands are available for RFID Reader.

4.1 ISO15693 Config (0x20)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[20]		ISO15693 Config

Figure 4.1.1 – ISO15693 Config - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[0C]	[20]	[00]	[Data]*10	Command complete

Figure 4.1.2 – ISO15693 Config– Response

4.2 ISO15693 Inventory (0x21)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[21]		ISO15693 Inventory

Figure 4.2.1 – ISO15693 Inventory - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[21]	[10]		Command error
<STX>	[02]	[21]	[01]		No card
<STX>	[0C]	[21]	[00]	[Data]*10	Command complete

Figure 4.2.2 – ISO15693 Inventory – Response

4.3 ISO15693 Read Block (0x22)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[0B]	[22]	[UID] + [Block No] + [Block Number]	[UID]: ex.[F6 0C CF 07 00 01 04 E0] [Block No]: e.g. [00] [Block Number]: e.g. [01]

Figure 4.3.1 – ISO15693 Read Block - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[22]	[10]		Command error
<STX>	[02]	[22]	[01]		No card or invalid Key
<STX>	[07]	[22]	[00]	[Bytes] + [Value]	Command complete [Bytes]: [04] ([Block Number]*4) [Value]: [11 22 33 44]

Figure 4.3.2 – ISO15693 Read Block - Response

4.4 ISO15693 Write Block (0x23)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[0F]	[23]	[UID] + [Block No] + [Block Number] + [Value]	[UID]: ex.[F6 0C CF 07 00 01 04 E0] [Block No]: e.g. [00] [Block Number]: e.g. [01] [Value]: [11 22 33 44]

Figure 4.4.1 – ISO15693 Write Block - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[23]	[10]		Command error
<STX>	[02]	[23]	[01]		No card or invalid Key
<STX>	[07]	[23]	[00]	[Bytes] + [Value]	Command complete [Bytes]: [04] ([Block Number]*4) [Value]: [11 22 33 44]

Figure 4.4.2 – ISO15693 Write Block - Response

4.5 ISO15693 Information (0x24)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[09]	[24]	[UID]	[UID]: ex.[F6 0C CF 07 00 01 04 E0]

Figure 4.5.1 – ISO15693 Information - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[24]	[10]		Command error
<STX>	[02]	[24]	[01]		No card
<STX>	[11]	[24]	[00]	[Data]*15	Command complete

Figure 4.5.2 – ISO15693 Information – Response

5. ISO14443A Function Commands

We separate the part of ISO14443A function commands in this section that commands are available for RFID Reader.

5.1 ISO14443A Config (0x30)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[30]		ISO14443A Config

Figure 5.1.1 – ISO14443A Config - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[30]	[00]		Command complete

Figure 5.1.2 –ISO14443A Config– Response

5.2 DESFire Select (0x31)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[31]		DESFire Select

Figure 5.2.1 –DESFire Select - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[31]	[10]		Command error
<STX>	[02]	[31]	[01]		No card
<STX>	[09]	[31]	[00]	[UID]*7	Command complete

Figure 5.2.2 –DESFire Select– Response

5.3 DESFire Command (0x32)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[XX]	[32]	[Data]	[Data]: TX Command Data

Figure 5.3.1 –DESFire Command - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[32]	[10]		Command error
<STX>	[02]	[32]	[01]		No card or command fail
<STX>	[XX]	[32]	[00]	[Data]	Command complete [Data]: RX Command Data

Figure 5.3.2 –DESFire Command - Response

5.4 ISO14443A Request Command (0x33)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[XX]	[33]	[Data]	[Data]: Flag Command Data

Figure 5.4.1 – ISO14443A Request Command - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[33]	[10]		Command error
<STX>	[02]	[33]	[01]		No card or command fail
<STX>	[XX]	[33]	[00]	[Data]	Command complete [Data]: RX Command Data

Figure 5.4.2 – ISO14443A Request Command - Response

5.5 ISO14443A Anticoll Command (0x34)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[XX]	[34]	[Level]	

Figure 5.4.1 – ISO14443A Anticoll Command - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[34]	[10]		Command error
<STX>	[02]	[34]	[01]		No card or command fail
<STX>	[XX]	[34]	[00]	[Data]	Command complete [Data]: RX Command Data

Figure 5.4.2 – ISO14443A Anticoll Command - Response

5.6 ISO14443A Select Command (0x35)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[XX]	[35]	[Level]	

Figure 5.4.1 – ISO14443A Select Command - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[35]	[10]		Command error
<STX>	[02]	[35]	[01]		No card or command fail
<STX>	[XX]	[35]	[00]	[Data]	Command complete [Data]: RX Command Data

Figure 5.4.2 – ISO14443A Select Command - Response

6. ISO14443B Function Commands

We separate the part of ISO14443B function commands in this section that commands are available for RFID Reader.

6.1 ISO14443B Config (0x38)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[38]		ISO14443B Config

Figure 6.1.1 – ISO14443BConfig - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[38]	[00]		Command complete

Figure 6.1.2 – ISO14443B Config – Response

6.2 ISO14443B Request Select (0x39)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[39]		ISO14443B Request

Figure 6.2.1 – ISO14443B Request Select - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[39]	[10]		Command error
<STX>	[02]	[39]	[01]		No card
<STX>	[XX]	[39]	[00]	[Data]	Command complete

Figure 6.2.2 – ISO14443B Request Select – Response

6.3 ISO14443B CHINA GUID (0x3A)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[3A]		ISO14443B Request

Figure 6.3.1 – ISO14443B CHINA GUID - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[3A]	[10]		Command error
<STX>	[02]	[3A]	[01]		No card
<STX>	[XX]	[3A]	[00]	[Data]	Command complete

Figure 6.3.2 – ISO14443B CHINA GUID – Response

6.4 ISO14443B CEPAS CAN/CSN (0x3B)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[3B]		ISO14443B CEPAS CAN/CSN

Figure 6.4.1 – ISO14443B CEPAS CAN/CSN - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[3B]	[10]		Command error
<STX>	[02]	[3B]	[01]		No card
<STX>	[XX]	[3B]	[00]	[Data]	Command complete

Figure 6.4.2 – ISO14443B CEPAS CAN/CSN– Response

7. RFID Function Commands

We separate the part of RFID function commands in this section that commands are available for RFID Reader.

7.1 Transparent With CRC (0x41)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[XX]	[41]	[Data]	[Data]: TX data

Figure 7.1.1 –Transparent With CRC - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[41]	[10]		Command error
<STX>	[02]	[41]	[01]		No card or transparent command error
<STX>	[XX]	[41]	[00]	[Data]	Command complete [Data]: RX data

Figure 7.1.2 –Transparent With CRC– Response

7.2 Transparent Without CRC (0x42)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[XX]	[42]	[Data]	[Data]: TX data

Figure 7.2.1 – Transparent Without CRC - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[42]	[10]		Command error
<STX>	[02]	[42]	[01]		No card or transparent command error
<STX>	[XX]	[42]	[00]	[Data]	Command complete [Data]: RX data

Figure 7.2.2 – Transparent Without CRC - Response

7.3 CPU Write SID Key to EEPROM (0x45)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[26]	[45]	[AppID] + [FileID] + [KeyNo] + [APPKey] + [SIDKey] + [SIDKey2]	[AppID]: 2 Bytes [FileID]: 2 Bytes [KeyNo]: 1 Bytes (1-8) [APPKey]: 16 Bytes [SIDKey]: 8 Bytes [SIDKey2]: 8 Bytes

Figure 7.3.1 – CPU Write SID Key to EEPROM - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[07]	[45]	[00]	[AppID] + [FileID] + [KeyNo]	Command complete

Figure 7.3.2 – CPU Write SID Key to EEPROM - Response

7.4 CPU Read SID(0x46)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[46]		

Figure 7.4.1 – CPU Read SID - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[0E]	[46]	[00]	[UID] + [SID]	[UID]: 4 Bytes [SID]: 8 Bytes
<STX>	[02]	[46]	[01]		No card or command fail

Figure 7.4.2 – CPU Read SID - Response

7.5 CPU Read File(0x47)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[01]	[47]	[AppID] + [FileID] + [KeyNo] + [AppKey]	[AppID]: 2 Bytes [FileID]: 2 Bytes [KeyNo]: 1 Bytes (1-8) [AppKey]: 16 Bytes (option)

Figure 7.5.1 – CPU Read File - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[26]	[47]	[00]	[UID] + [Data]	[UID]: 4 Bytes [Data]: 32 Bytes
<STX>	[02]	[47]	[01]		No card or command fail

Figure 7.5.2 – CPU Read File - Response

7.6 CPU Write File(0x48)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[35]	[48]	[AppID] + [FileID] + [KeyNo] + [AppKey] + [Data]	[AppID]: 2 Bytes [FileID]: 2 Bytes [KeyNo]: 1 Bytes (1-8) [AppKey]: 16 Bytes (option) [Data]: 32 Bytes

Figure 7.6.1 – CPU Write File - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[06]	[48]	[00]	[UID]	[UID]: 4 Bytes]
<STX>	[02]	[48]	[01]		No card or command fail

Figure 7.6.2 – CPU Write File - Response

8. Fingerprint Function Commands

We separate the part of Fingerprint function commands in this section that commands are available for RFID Reader.

8.1 Fingerprint Power (0x61)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[02]	[61]	[Mode]	[Mode]: 0 = Power ON 1 = Power OFF 2 = LED ON 3 = LED OFF

Figure 8.1.1 – Fingerprint Power - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[61]	[10]		Command error
<STX>	[02]	[61]	[01]		No card or invalid Key

Figure 8.1.2 – Fingerprint Power– Response

8.2 Fingerprint Check (0x62)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[62]	[Fingerprint no]	Check Fingerprint status [Fingerprint no]:[0000]~[07CF]
<STX>	[01]	[62]		Get Enroll Count

Figure 8.2.1 –Fingerprint Check - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[39]	[10]		Command error
<STX>	[05]	[39]	[00]	[Fingerprint no] [status]	[Fingerprint no]:[0000]~[07CF] [Status]:[0000]-[0001] 0 = not use 1 = use
<STX>	[06]	[39]	[00]	[EnrollCount] [status]	[EnrollCount]:[0000]~[07CF] [Status]:[0000]-[0001] 0 = fail 1 = ok

Figure 8.2.2 –Fingerprint Check – Response

8.3 Fingerprint Delete (0x63)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[63]	[Fingerprint no]	Delete Fingerprint [Fingerprint no]:[0000]~[07CF]
<STX>	[03]	[63]	[FAA3]	Delete All Fingerprint

Figure 8.3.1 –Fingerprint Delete - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[63]	[10]		Command error
<STX>	[06]	[63]	[00]	[Fingerprint no] [status]	Delete Fingerprint [Fingerprint no]:[0000]~[07CF] [Status]:[0000]-[0001] 0 = fail 1 = ok
<STX>	[06]	[63]	[00]	[FAA3] [status]	Delete All Fingerprint [Status]:[0000]-[0001] 0 = fail 1 = ok

Figure 8.3.2 –Fingerprint Delete – Response

8.4 Fingerprint Enroll (0x64)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[03]	[64]	[Fingerprint no]	Enroll Fingerprint [Fingerprint no]:[0000]~[07CF]

Figure 8.4.1 – Fingerprint Enroll – Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[64]	[10]		Command error
<STX>	[06]	[64]	[00]	[Fingerprint no] [status]	Enroll Fingerprint [Fingerprint no]:[0000]~[07CF] [Status]:[0000]-[0001] 0 = fail 1 = ok

Figure 8.4.2 – Fingerprint Enroll – Response

8.5 Fingerprint Identify Set (0x65)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[0D]	[65]	[Mode] + [GreenTime] + [Temp] + [ID]	[Mode]: [00]~[01] 0 = off 1 = auto [GreenTime]: [00]~[FF] minute [Temp]: [0000] [ID]: ex.[F6 0C CF 07 00 01 04 E0]

Figure 8.5.1 – Fingerprint Identify Set - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[65]	[10]		Command error
<STX>	[0E]	[65]	[00]	[Mode] + [GreenTime] + [Temp] + [ID]	Command complete [Mode]: [00]~[01] 0 = off 1 = auto [GreenTime]: [00]~[FF] minute [Temp]: [0000] [ID]: ex.[F6 0C CF 07 00 01 04 E0]

Figure 8.5.2 – Fingerprint Identify Set – Response

8.6 Fingerprint Template (0x66)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[04]	[66]	[00] + [Fingerprint No]	Start Get Fingerprint Template [Fingerprint no]:[0000]~[07CF]
<STX>	[04]	[66]	[Page] + [Fingerprint No]	Get Fingerprint Template Data [Page]: [01]~ [0A] [Fingerprint no]:[0000]~[07CF]
<STX>	[36]	[66]	[Page] + [Fingerprint No] + [Template]	Set Fingerprint Template Data [Page]: [01]~ [0A] [Fingerprint no]:[0000]~[07CF] [Template]: 50 Byte (one page)

Figure 8.6.1 – Fingerprint Template - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[66]	[10]		Command error or no fingerprint
<STX>	[05]	[66]	[0X]	[Page] + [Fingerprint No]	Command complete
<STX>	[37]	[66]	[00]	[Page] + [Fingerprint No] + [Template]	Get Fingerprint Template Data [Page]: [01]~ [0A] [Fingerprint no]:[0000]~[07CF] [Template]: 50 Byte (one page)

Figure 8.6.2 –Fingerprint Template - Response

8.7 Fingerprint UID (0x67)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[XX]	[67]	[Fingerprint No] + [Num] + [UID]*num	Set Fingerprint UID [Fingerprint no]:[0000]~[07CF] [Num]: [01]~ [06] [UID]: ex.[F6 0C CF 07 00 01 04 E0]
<STX>	[04]	[67]	[Fingerprint No] + [Num]	Get Fingerprint UID [Fingerprint no]:[0000]~[07CF] [Num]: [01]~ [06]
<STX>	[03]	[67]	[5AA5]	Delete All Fingerprint UID
<STX>	[03]	[67]	[AA55]	Random All Fingerprint UID

Figure 8.7.1 – Fingerprint UID - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[67]	[10]		Command error
<STX>	[02]	[67]	[0X]		Command complete
<STX>	[XX]	[67]	[00]	[Fingerprint No] + [Num] + [UID]*num	Get Fingerprint UID [Fingerprint no]:[0000]~[07CF] [Num]: [01]~ [06] [UID]: ex.[F6 0C CF 07 00 01 04 E0]

Figure 8.7.2 – Fingerprint UID - Response

8.8 Fingerprint Image (0x6D)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[04]	[6D]	[0000] + [Fingerprint No]	Start Get Fingerprint Image [Fingerprint no]:[0000]~[07CF]
<STX>	[04]	[6D]	[Page] + [Fingerprint No]	Get Fingerprint Image Data [Page]: [0001]~ [0190] [Fingerprint no]:[0000]~[07CF]
<STX>	[35]	[6D]	[Page] + [Fingerprint No] + [Image]	Set Fingerprint Image Data [Page]: [01]~ [0A] [Fingerprint no]:[0000]~[07CF] [Image]: 48 Byte (one page)

Figure 8.8.1 –Fingerprint Image - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[6D]	[10]		Command error or no fingerprint
<STX>	[05]	[6D]	[0X]	[Page] + [Fingerprint No]	Command complete
<STX>	[36]	[6D]	[00]	[Page] + [Fingerprint No] + [Image]	Get Fingerprint Image Data [Page]: [0001]~ [0190] [Fingerprint no]:[0000]~[07CF] [Image]: 48 Byte (one page)

Figure 8.8.2 –Fingerprint Image - Response

9. DES Function Commands

9.1 DES TX Command (0x9E)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[??]	[9E]	[CMD DATA]	

Figure 9.1.1 – DES TX Command - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[02]	[9E]	[00]		

Figure 9.1.2 – DES TX Command– Response

9.2 DES TX/RX Command (0x9F)

Request				
	LEN	CMD	{DATA}	Description
<STX>	[??]	[9F]	[CMD DATA]	

Figure 9.2.1 – DES TX/RX Command - Request

Response					
	LEN	CMD	STATUS	{DATA}	Description
<STX>	[??]	[9F]	[00]	[RX DATA]	

Figure 9.2.2 – DES TX/RX Command– Response