SL500 Communication Protocol

1. Master and Slave

The reader is slave device, not active send data until received command form host

2. Communication Protocol

2.1 Host Command Format

Command head + Length + Device ID + Command code + Parameter + verification

Command head:	2 bytes, 0xAABB
Length:	2 bytes, designate continuous bytes, from the Device ID to verification In this reader, the first byte is effective, the second byte remain 0
Deveice ID:	2 bytes
Command code:	2 bytes
Parameter:	n bytes (maybe blank)
Verification:	1 byte, each byte is XOR from Equipment ID to the last byte of the Parameter

Notice: If any byte from Length to Verification equals to AA, add one byte 00 to distinguish the Command head, but the Length byte do not change

Example: write data (0x00112233445566778899AABBCCDDEEFF) into block 1

Host send: AABB1600000009020100112233445566778899AA00BBCCDDEEFF0A

2.2 Reader answer format

Command head + Length + Equipment ID + Command code + Status + Data Range + verification

Command head:	2 bytes, 0xAABB
Length:	2 bytes, designate continuous bytes, from the Device ID to verification In this reader, the first byte is effective, the second byte remain 0
Deveice ID:	2 bytes
Command code:	2 bytes
Status:	1 byte, 00 = success, Not 0 = fail
Data Range:	return date (maybe blank)
Verification:	1 byte, each byte is XOR from Equipment ID to the last byte of the Data Range

Notice: If any byte from Length to Verification equals to AA, add one byte 00 to distinguish the Command head, but the Length byte do not change

Example: read data (0x00112233445566778899AABBCCDDEEFF) from block 1

SL500 return: AABB1600000009020000112233445566778899AA00BBCCDDEEFF0B

3. Command Explanation

The reader will respond each correspondingly command, "Respond date: none" as below means the only "Data Range" is blank.

3.1 System Function

3.1.1 rf_init_com

Function: Set baud rate
Command code: 0x0101
Parameter: 00=4800
01=9600
02=14400
03=19200
04=28800
05=38400
06=57600
07=115200
Remark: default baud rate is 19200 bps after power on
Respond date: none
Example:
Host send: AABB0600000001010303
SL500 return: AA BB 06 00 11 12 01 01 00 03

3.1.2 rf_get_model

Function: Read the reader model and product number
Command code: 0x0401
Parameter: 2 bytes device ID
Respond date: reader model
Example:
Host send: AABB05000000040105
SL500 return: AA BB 11 00 11 12 04 01 00 53 4C 35 30 30 4C 2D 30 36 30 38 43

3.1.3 rf_init_device_number

Function: Set device ID
Command code: 0x0201
Parameter: 2 bytes device ID
Remark: the reader only respond to the command that device ID is in accord with itself or equals to 0x0000
Respond date: none

3.1.4 rf_get_device_number

Function: Read Equipment ID
Command code: 0x0301
Parameter: none
Respond date: 2 bytes device ID

3.1.5 int WINAPI rf_beep

Function: Set buzz
Command code: 0x0601
Parameter: 1byte buzz time, unit 10MS
Respond date: none

3.1.6 rf_light

Function: Set LED color
Command code: 0x0701
Parameter: 00 = off
01 = red
02 = green
03 = yellow
Respond date: none

3.1.7 rf_init_type

Function: Set reader RF working mode
Command code: 0x0801
Parameter: 1byte
'A': set TYPE_A mode
'B': set TYPE_B mode
'1': set ISO15693 mode
Respond date: none

3.1.8 rf_antenna_sta

Function: Manage RF transmit
Command code: 0x0C01
Parameter: 00 = off
Not 0 = on
Respond date: none

3.2 ISO14443A : Mifare Function

3.2.1 rf_request

Function: ReqA
Command code: 0x0102
Parameter: 0x26 = REQ_STD
0x52 = REQ_ALL
Respond date: 2 bytes card type code

3.2.2 rf_anticoll

Function: Anticollision
Command code: 0x0202
Parameter: none
Respond date: 4 bytes card serial number

3.2.3 rf_select

Function: Select card
Command code: 0x0302
Parameter: 4 bytes card serial number
Respond date: 1 byte card capacity code

3.2.4 rf_halt

Function: Halt
Command code: 0x0402
Parameter: none
Respond date: none

3.2.5 rf_M1_authentication2

Function: validate Mifare card key
Command code: 0x0702
Parameter: 1BYTE code validate mode(MODEL) + 1BYTE absolute block number + 6 bytes key
MODEL = 0x60: validate KeyA
MODEL = 0x61: validate KeyB
Respond date: none

3.2.6 rf_M1_read

Function: Read block
Command code: 0x0802
Parameter: 1 byte absolute block address
Respond date: 16 bytes date

3.2.7 rf_M1_write

Function: write block
Command code: 0x0902
Parameter: 1 byte absolute block address + 16 bytes written date
Respond date: none

3.2.8 rf_M1_initval

Function: initialize purse
Command code: 0x0A02

Parameter: 1 byte absolute block address + 4 bytes initial value(low bytes in the former)
Respond date: none

3.2.9 rf_M1_readval

Function: read purse value
Command code: 0x0B02
Parameter: 1 byte absolute block address
Respond date: 4 bytes value(low bytes in the former)

3.2.10 rf_M1_decrement

Function: decrement
Command code: 0x0C02
Parameter: 1 byte absolute block address + 4 bytes decrement value(low bytes in the Former)
Respond date: none

3.2.11 rf_M1_increment

Function: increment
Command code: 0x0D02
Parameter: 1 byte absolute block address + 4 bytes increase value
Respond date: none

3.2.12 rf_M1_restore

Function: transfer a certain block date into card buffer
Command code: 0x0E02
Parameter: 1 byte absolute block address
Respond date: none

3.2.13 rf_M1_transfer

Function: write the date in the card buffer into certain block of card
Command code: 0x0F02
Parameter: 1 byte absolute block address
Respond date: none

3.2.14 rf_ul_select

Function: Ultralight card Anticoll and Select
Command code: 0x1202
Parameter: none
Respond date: 7 bytes ultralight UID

3.2.15 rf_ul_write

Function: Write a page of data into ultra light card
Command code: 0x1302
Parameter: 1 byte page address + 4 bytes written date
Respond date: none

3.2.15 rf_typea_rst

Function: Request MifareProX and reset
Command code: 0x1002
Parameter: 0x26 = REQ_STD
0x52 = REQ_ALL
Respond date: 4 bytes CSN + ATS information

3.2.16 rf_cos_command

Function: Exchange transparent data according with T = CL protocol

Command code: 0x1102

Parameter: COS command

Respond date:

3.3 ISO14443B Function

3.3.1 rf_atqb

Function: RTQB and Attrib
Command code: 0x0103
Parameter: RTQB mode code, 0=REQB, 1=WUPB
Respond date: ATQB Response

3.3.2 rf_at020_check

Function: rf_at020_check
Command code: 0x0104
Parameter: 8 bytes password
Respond date: none

3.3.3 rf_at020_read

Function: Read a page of data from AT88RF020
Command code: 0x0204
Parameter: 1 byte page address
Respond date: 8 bytes read data

3.3.4 rf_at020_write

Function: Write a page of data into AT88RF020
Command code: 0x0304
Parameter: 1 byte page address + 8 bytes written data
Respond date: none

3.3.5 rf_at020_lock

Function: AT88RF020 LOCK operation
Command code: 0x0404
Parameter: 4 bytes
Respond date: none

3.3.6 rf_at020_count

Function: AT88RF020 take count
Command code: 0x0504
Parameter: 6 bytes signature
Respond date: none

3.3.7 rf_at020_count

Function: AT88RF020 take count
Command code: 0x0504
Parameter: 6 bytes signature
Respond date: none

3.3.8 rf_st_select

Function: Req ST card (SR176/SRIX4K)
Command code: 0x0105
Parameter: none
Respond date: 1 byte chip ID number

3.3.9 rf_st_completion

Function: Set ST card into DESACTIVED status
Command code: 0x0205
Parameter: none
Respond date: none

3.3.10 rf_sr176_readblock

Function: Read one block of data from SR176
Command code: 0x0305
Parameter: 1 byte block address
Respond date: 1 byte data

3.3.11 rf_sr176_writeblock

Function: Write one block of data to SR176
Command code: 0x0405
Parameter: 1 byte block address + 1 byte written data
Respond date: none

3.3.12 rf_sr176_protectblock

Function: Lock SR176
Command code: 0x0505
Parameter: 1 byte lockreg
Respond date: none

3.3.13 rf_srix4k_readblock

Function: Read one block of data from SRIX4K
Command code: 0x0605
Parameter: 1 byte block address
Respond date: 4 bytes data

3.3.14 rf_srix4k_writeblock

Function: Write 1 block data to SRIX4K
Command code: 0x0705
Parameter: 1 byte block address
Respond date: 4 bytes written data

3.3.15 rf_srix4k_getuid

Function: Get SRIX4K UID
Command code: 0x0905
Parameter: 8 byte UID
Respond date: none

3.4 ISO15693 Function

3.4.1. ISO15693_Inventorys (Multi Card)

Command code: 0x0010
Parameter: none
Respond date: 9 * n bytes, 9 bytes in a stream,
the structure of every stream is: 1byte DSFID + 8byte UID

3.4.2. ISO15693_Inventory (Single card)

Command code: 0x0110
Parameter: none
Respond date: 9 bytes, 1 byte DSFID + 8 bytes UID

3.4.3. ISO15693_Reset_To_Ready

Command code: 0x0210
Parameter: 1 byte model + 8 bytes UID
Respond date: none

3.4.4. ISO15693_Select

Command code: 0x0310
Parameter: 8 bytes UID
Respond date: none

3.4.5. ISO15693_Reset_To_Ready

Command code: 0x0410
Parameter: 1 byte model + 8 bytes UID
Respond date: none

model: bit0=Select_flag, bit1=Addres_flag, bit2=Option_flag,below is the same

3.3.6. ISO15693_Read

Command code: 0x0510
Parameter: 1 byte model + 8 bytes UID + 1 byte initial block number
+ 1 byte block number
Respond date: read date

3.4.7. ISO15693_Write

Command code: 0x0610
Parameter: 1 byte model + 8 bytes UID + 1 byte block number
+ 4 bytes written date
Respond date: none

3.4.8. ISO15693_Lock_Block

Command code: 0x0710
Parameter: 1 byte model + 8 bytes UID + 1 bytes block number
Respond date: none

3.4.9. ISO15693_Write_AFI

Command code: 0x0810
Parameter: 1 byte model + 8 bytes UID + 1 byte written date
Respond date: none

3.4.10. ISO15693_Lock_AFI

Command code: 0x0910

Parameter: 1 byte model + 8 bytes UID
Respond date: none

3.4.11. ISO15693_Write_DSFID

Command code: 0x0A10
Parameter: 1 byte model + 8 bytes UID + 1 byte written date
Respond date: none

3.4.12. ISO15693_Lock_DSFID

Command code: 0x0B02
Parameter: 1 byte model + 8 bytes UID
Respond date: none

3.4.13. ISO15693_Get_System_Information

Command code: 0x0C10
Parameter: 1 byte model + 8 bytes UID
Respond date: 8 bytes UID + 1 byte DSFID + 1 byte AFI

3.4.14. ISO15693_Get_Block_Security

Command code: 0x0D10
Parameter: 1 byte model + 8 bytes UID + 1 byte initial block number
+ 1 byte block number
Respond date: n bytes lock state, every byte correspond to a block

3.4.15. Srf55vp_Read (Infineon tag special)

Command code: 0x1010
Parameter: 8 bytes UID + 1 byte page number
Respond date: 8 bytes read date

3.4.16. SRF55V_Inventorys (Infineon tag special)

Command code: 0x1410
Parameter: 1 byte AFI
Respond date: 9 * n bytes, 9 bytes in a stream,
the structure of every stream is: 1byte DSFID + 8byte UID