

SUM-1356M Specification

1 Summary

SUM-1356M contactless card Read/Write module was designed base on MF RC500 or MF RC531 series PCD product of Philips. Users need not take care how to control the PCD. Just send command to module over UART could operate contactless card with fully functions.

SUM1356M Support Mifare One, auto request selectable when working with Mifare One.

2 Characteristic

2.1 Completely operation of Mifare One through simple command set.

2.2 Communication Protocol:

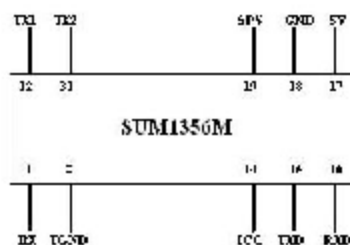
2.2.1 UART: Suitable for PC and 8 bits UART MCU/DSP baud rate 19200bps.

2.3 Auto request default, need not send request command frequently. Indicate a low level (0) when card in the antenna area.

2.4 Build in watchdog.

3 Dimensions and Pins

尺寸: 20*41.5(mm)



3.1 SUM-1356M

3.2 Dimensions of module

Product Name	Type	(mm)
Module	SUM1356M	41.5 × 20
Antenna	SUM-TX02	75.0 × 50.0

3.3 Package

The package of the module is same as DIP32. Just some Pins are not be use.

3.4 Pins function

Pin	Function	Description
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1	RX	Antenna receive
2	TGND	Antenna GND
14	ICC	Card in/out indicate 0: card in; 1: card out
15	TXD	UART TXD
16	RXD	UART RXD
17	VCC	VCC
18	GND	GND
19	SPS	1: UART
31	TX1	Antenna output 1
32	TX2	Antenna output 2

4 DC characteristic

Parameter	Min	Typ	Max	Units
Power supply	4.5	5.0	5.5	V
Current consumption	12	50	70	mA
Module start up time	200	400	500	mS
Operating temperature	-25		+85	°C
Storage temperature	-40		+125	°C
Com port switch time		200		mS

5 Protocols

5.1 UART protocols of Commands

5.1.1 Asynchronous half duplex

5.1.2 Baud rate: 19200bps

5.1.3 Data package format: Start header + Command length + Command + Data + Checksum

5.1.4 Start header: 0xAA 0xBB, if there is 0xAA in data package, and then **MUST** add a 0x00

follow to distinguish start header. But Command length will **NOT** increase.

5.1.5 Command length: number of bytes from Command length to the last byte of Data.

5.1.6 Command: command of this package.

5.1.7 Data: parameters and the other data, maybe empty.

5.1.8 Checksum: Exclusive OR (XOR) result from Command length byte to the last byte of data.

5.2 UART protocol of Data return format

5.2.1 Success:

Command header + Command length + Command just received + Data + Checksum

5.2.2 Failure:

Command header + Command length + (0xFF - Command just received) + Checksum

6 List of commands

6.1 List of commands

	Command name		Command length	Command byte	Data and description
1	Module control	Send	0x03	0x11	1 byte working model antenna status → Bit0=0: OFF Bit0=1: ON Auto request → Bit1=0: OFF Bit1=1: ON
		Return	0x02	0x11	
2	Set IDLE	Send	0x03	0x12	
		Return	0x02	0x12	
3	Request	Send	0x03	0x20	1 byte request model Request model =0: request all =1: Request not halted
		Success return	0x06	0x20	4 bytes card serial number
		Failure return	0x02	0xDF	
4	Read block	Send	0x0A	0x21	1 byte key identification + 1 byte block number + 6 bytes key key identification =0: key A =1: key B block number = 0-63(S50) = 0-255(S70)
		Success return	0x12	0x21	16 bytes data
		Failure return	0x02	0xDE	
5	Read Sector (4 blocks)	Send	0x0A	0x29	1 byte key identification + 1 byte block number + 6 bytes key key identification =0: key A =1: key B Sector number = 0-15(S50) = 0-63(S70)

		Success return	0x42	0x29	64 bytes data
		Failure return	0x02	0xD6	
6	Write block	Send	0x1A	0x22	1 byte key identification + 1 byte block number + 6 bytes key + 16 bytes data to write
		Success return	0x02	0x22	
		Failure return	0x02	0xDD	
7	Initialize purse	Send	0x0E	0x23	1 byte key identification + 1 byte block number + 6 bytes key + 4 bytes purse value (LSB first)
		Success return	0x02	0x23	
		Failure return	0x02	0xDC	
8	Read purse	Send	0x0A	0x24	1 byte key identification + 1 byte block number + 6 bytes key
		Success return	0x06	0x24	4 bytes purse value (LSB first)
		Failure return	0x02	0xDB	
9	Purse increment	Send	0x0E	0x25	1 byte key identification + 1 byte block number + 6 bytes key + 4 bytes increment value (LSB first)
		Success return	0x02	0x25	
		Failure return	0x02	0xDA	
10	Purse decrement	Send	0x0E	0x26	1 byte key identification + 1 byte block number + 6 bytes key + 4 bytes decrement value (LSB first)
		Success return	0x02	0x26	
		Failure return	0x02	0xD9	
11	Backup purse	Send	0x0B	0x27	1 byte key identification + 1 byte current purse block number + 1 byte backup to block number + 6 bytes key
		Success return	0x02	0x27	
		Failure return	0x02	0xD8	

		return			
12	Card halt	Send	0x02	0x28	
		Success return	0x02	0x28	
		Failure return	0x02	0xD7	
13	Load password	Send	0x09	0x2D	1 byte password number (0~31) + 6 byte password
		Success return	0x02	0x2D	
		Failure return	0x02	0xD2	

7 Example

0xAABB 0A210001FFFFFFFFFFFF2A read block 1

0xAABB 0A2100FFFFFFFFFFFFD4 read block 255 (S70)

0xAABB 1A220001FFFFFFFFFFFF1234567890ABCDEF1234567890ABCDEF39 write block

0xAABB 03200023 polling card

0xAABB 021210 sleep