

## RFT-23X SERIE S

*DESKTOP RF CARD READER/WRITER*



## CONTENTS

1. OVERVIEW
2. BASIC SPECIFICATION
3. SPECIFICATION
4. COMMUNICATION PROTOCOL

## 1. OVERVIEW

RFM-23x series is a high performance desktop RF card reader/writer, it can support ISO14443A/B & ISO15693, provide RS232, USB interface, and it can be used in access control, public telephones, electric meters etc.

## 2. BASIC SPECIFICATION

Model	Function	List separator	Interface
<b>RFM-13:</b> 13.56MHz RF card reader/writer	<b>0.</b> Mifare 1 reader/writer <b>1.</b> ISO14443A/B <b>2.</b> ISO14443A/B & 15693	-	<b>0:</b> RS232 <b>2:</b> USB
Model	Dimension L*W*H (mm)	Remark	
RFT23x-0	122*99*32 (mm)	RS232 interface	
RFT23x-2		USB interface	

## 3. SPECIFICATION

Voltage	+5VDC (± 5%)	
Current	<150mA	
Card Type	ISO14443A/B & ISO15693	
Distance	0~8cm	
Interface	RS232, USB	
Bard Rate	9600(default)~115200 BPS	
Temperature	Operating: 0°C~ + 60°C;	Storage: -20°C~ + 60°C
Humidity	Operating: 20 %~ 90% RH;	Storage: 5% ~ 95% RH
Dimension	122mm( L )x99mm( W )x32mm( H )	

## 4. COMMUNICATION PROTOCOL

### 4.1 Protocol format:

STX ADDR LEN CMD/STU DATA BCC

STX: Communication start character, 1 byte, 0x02

ADDR: Device Addr, 1 byte, 0 can be used in any addr

LEN: Data length, 1 byte, data length of CMD/STU+DATA

CMD/STU: Command byte (Host->Reader) or Status byte (Reader-

>Host), 1byte DATA: Data information, byte is not specified. Can be not existed

BCC: Section checking character, 1 byte, the XOR value of all the bytes except STX, BCC

## 4.2 Command:

	Function	Send/Return		Date and explain
1	Get Version number	send command	0x21	-
		correct return	0x00	Device version number (the length is not specified)
2	Set Wiegand Mode	send command	0x22	on-off (1 byte)+ alarm mode (1 byte) on-off 1=0: turn off Wiegand Mode =1: turn on Wiegand Mode alarm mode: alarm control byte in Wiegand Mode Bit0 1 read auto alarm : 0 = prohibit; 1 = allow Bit1 1 out control LED and buzzer (via GPIO0 and GPIO1) 0 = prohibit; 1= allow <i>Note: The setting will be valid after reset</i>
		correct return	0x00	-
3	Set Baud Rate	send command	0x23	Baud Rate options byte(1byte) Baud Rate options byte 1=0: 9600 BPS =1: 19200 BPS =2: 38400 BPS =3: 57600 BPS =4: 115200 BPS <i>Note: The setting will be valid after reset</i>
		correct return	0x00	-
4	Set Device Addr	send command	0x24	Device Addr (1 byte) Device Addr 1=0~255
		correct return	0x00	-
5	Get Device Addr	send command	0x25	-
		correct return	0x00	Device Addr (1 byte)
6	Get Device SNR	send command	0x27	-
		correct return	0x00	Device series number (8 byte)
7	Set RF	send command	0x2A	RF control byte (1 byte) RF control byte 1=0 off =1 on
		correct return	0x00	-
8	Device _Control LED control	send command	0x2B	LED1 (1 byte) + LED2 (1 byte) LED 1 1=0 turn off LED 1 =1 turn on LED1 LED2 1=0 turn off LED2 =1 turn on LED2
		correct return	0x00	-

9	Buzzer_Control	send command	0x2C	Beeping time control byte (1 byte) Beeping time control byte $\acute{I}$ 1~255, unit:10ms
		correct return	0x00	-
10	Device Reset	send command	0x2D	-
		correct return	0x00	-
11	Request	send command	0x31	Request mode(1byte) Request mode $\acute{I}$ = 0x52 request all card = 0x26 request card which is not in IDLE status
		correct return	0x00	Card type (2 byte)
12	Anti collide	send command	0x32	Request card parameter (1 byte) Request card parameter $\acute{I}$ = 0x93 no.1 = 0x95 no.2 = 0x97 no.3
		correct return	0x00	Card series No. (4 byte)
13	Select card	send command	0x33	Request card parameter (1 byte) + Card series No. Request card parameter $\acute{I}$ = 0x93 no.1 = 0x95 no.2 = 0x97 no.3
		correct return	0x00	SAK (1 byte)
14	Halt	send command	0x34	<i>Note: Halt the card</i>
		correct return	0x00	
15	Load Key	send command	0x35	Key (6 byte)
		correct return	0x00	-
16	Load Key From EE	send command	0x36	Key mode (1 byte) + key series No. (1 byte) Key mode $\acute{I}$ = 0x60 KeyA = 0x61 KeyB Key series No. $\acute{I}$ = 0~15
		correct return	0x00	-
17	Authentication	send command	0x37	Authentication mode (1 byte) + block No. (1 byte) + card series No. (4 byte) Authentication mode $\acute{I}$ = 0x60 KeyA = 0x61 KeyB Block No. $\acute{I}$ = 0~64 (S50) or 0~255 (S70)
		correct return	0x00	-
18	Read	send command	0x38	Block No. (1 byte) + block quantity (1 byte) No. $\acute{I}$ = 0~64 (S50) or 0~255 (S70) Block quantity $\acute{I}$ = 1~4
		correct return	0x00	Block data (16 byte * block quantity)
				Block No. (1 byte) + block quantity (1 byte) + block data (16 byte * )

		send command	0x39	block quantity)
19	Write			No. Í = 0~64 (S50) or 0~255 (S70)
				Block quantity Í = 1~4
		correct return	0x00	-
		send command	0x3A	Value mode (1 byte) + Block No. (1 byte) + Value (4 byte) Value mode Í = 0xC0 Decrease value (DecValue) = 0xC1 Increase value (IncValue)
20	Value			
				= 0xC2 Restore value (Restore) Block No. Í = 0~64 (S50) or 0~255 (S70)
		correct return	0x00	-
		send command	0x3B	Block No. (1 byte)
21	Transfer			Block No. Í = 0~64 (S50) or 0~255 (S70)
		correct return	0x00	-
		send command	0x3C	Key mode (1 byte) + key series No. (1 byte) + key (6 byte) Key mode Í = 0x60 KeyA
22	Store Key To EE			= 0x61 KeyB
				Key series No. Í = 0~15
		correct return	0x00	-
		send command	0x30	CRC allow bit ( 1byte) + data (Reader to VICC)
23	Generic_ISO14443A			
		return correct	0x00	Card return data (VICC to Reader)
		send command	0x60	Data (Reader to VICC)
24	Generic_ISO14443B			
		return correct	0x00	Card return data (VICC to Reader)
		send command	0x70	Data (Reader to VICC)
25	Generic_ISO15693			
		return correct	0x00	Card return data (VICC to Reader)
		send command	0x71	<Flags> (1 byte) <AFI> (1 byte) <Mask length> (1byte) <UID> (8 byte)
26	ISO15693_Inventory			
		return correct	0x00	Card return data (VICC to Reader)

#### 4.3 Status code returned.

Code	Description
0x00	normal
0x01	error Í No card
0x02	error Í Anticoll error
0x03	error Í Bit counter error
0x04	error Í Return data error
0x05	error Í Authentication error