RCR-2130

Illuminated half insertion magnetic card reader

Video link: https://youtu.be/ZO0azRzyv5k

CONTENT

1. MODEL LIST

Model	size(mm)			ISO STANDARD			Interface
	H	W	D	I (IATA)	II (ABA)	III (MINTS)	
RCR-2130	101.0 x25.0x87.3			R	R	R	RS232
RCR-2131				R	R	R	TTL
RCR-2132				R	R	R	USB

2.TECHNICAL PARAMETERS

Standard	ISO 7811/2
Track	SO1 (IATA), ISO 2 (ABA), ISO 3 (MINTS)
Recording density	210 BPI 75 BPI 210 BPI
Record characters (half-insertion)	52 Characters 25 Characters 73 Characters
Power	+5V DC ±5%
Bezel	Semi-transparent plastic bezel
Current	65mA(max.)
Head function	Read track width: 1.5mm
Thickness	PVC 0.76 ± 0.08mm
Operating speed	10--150cm/sec
Error rate	Under 0.5%(JSE test card)
Operating position	Indoor
Head life	500,000 times (1 time: slot card at a time)
Operation temperature and humidity	-20°C ~ 70°C, 20 ~ 90% RH
Storage temperature and humidity	-30°C ~ 70°C,Less than 95% RH
Dimension(mm)	101.5(w) x 87.3(L) x 18.5(H)

3.INTERFACE

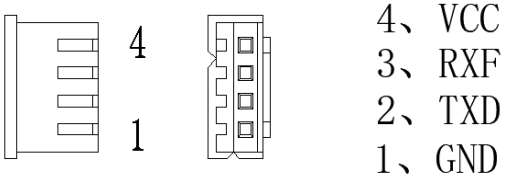
3.1. Physical connection

3.1.1. RS-232 Connection

RS-232 Signal	Host machine (9 pin)	Card machine (4PIN)	Functions
TXD	2	2	Transmitting Data
RXD	3	3	Receiving Data

3.1.2. Card machine interface pin description

Pin No.	Signal Name	Function
1	GND	Ground
2	TXD	Transmitting Data
3	RXD	Receiving Data
4	VCC	Power +5VDC



PH-4P孔座（2.0mm间距）

3.2. Software connection

3.2.1. Factory default

(1) Communication type : Asynchronous half-duplex

(2) Baud rate : 9600 bps (can be set)

(3) Data length : 8 bit no parity

(4) Startup bit : : 1 bit

(5) Stop bit : 1 bit

4. COMMUNICATION PROTOCOL

Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	2 byte	1 byte	1 byte	variable	1 byte

Prologue field		Information field		Epilogue field
HEADER	LEN	EC	DATA	LRC
60h	2 byte	1 byte	variable	1 byte

4.1. Communication Frame Description

Boot Sector (mandatory) -- Frame initiation region, contains the length of information area.
Information Zone (optional) -- Contains the application data.
Check Area (mandatory) -- LRC checksum.

Prologue field		Information field	Epilogue field
HEADER	LEN	INF	LRC
60h	2 byte	1 to 255bytes	1 byte

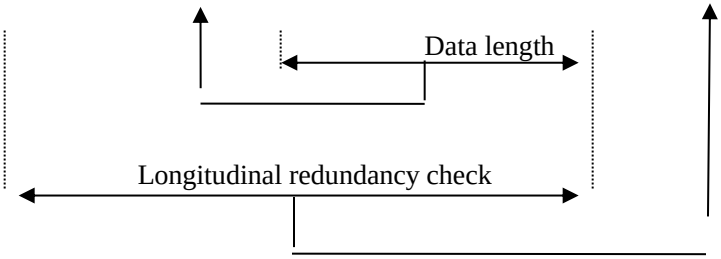


Figure 1 - Block structure

4.2. Frame Elements

4.2.1. Boot Sector (mandatory)

This area is necessary, which consists of two parts: header and length.
(1) Header
Header composed by one byte, used to indicate the start of the frame.
Default header is 0x60h.

(2) Length
Length used to indicate the bytes need to send in the message area.
As chart 1

'00' to 'FF'	Indicate the data length of information area is 0 ~ 255
'100' ~'FFFF	Reserved for future use.

4.2.2. Information Area

Information Area is optional, when exist it contains the application date and non-application of control and status.
The transmitted bytes in the header were indicated by length.
(1) Composition of Information Area
Information Area must consists of a command area of two-byte length and an optional variable–length data zone.

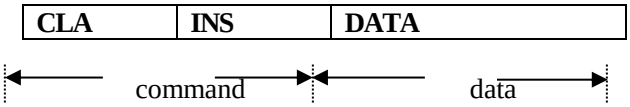


Chart 2 Composition of Information Area

Code	Description	length
CLA	Command Type	1 bit
INS	Instruction Code	1 bit
DATA	Transmitted parameters	Multi bits

Chart 1 - - Composition of Information Area

(2) Response of Information Area
The Response of Information Area consists of one-bit header and variable-length subject.

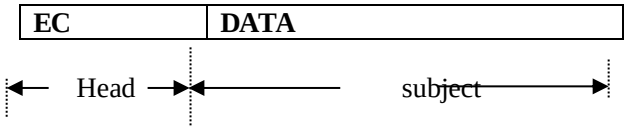


Chart 3-Response of Information Area

Code	Description	Length
EC	Error Code	1bit
DATA	Receiving Data	Multi bits

Chart 2 Response of Information Area

4.2.3. Check Area (mandatory)
The length of LRC Check is one-bit, the LRC Checksum contain the XOR from the head to all bytes of information zone.

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5. COMMAND FORMAT

5.1. Communication code list

Command	CLA	INS	Descriptions
Settings	'C' (43h)	'0' (30h)	Restore Factory Settings
		'1' (31h)	The first track switch
		'2' (32h)	The second track switch
		'3'(33h)	The third track switch
		'4'(34h)	Set the baud rate
		'5'(35h)	The prefix characters of the third track"；"、"+"selector switch
		'6' (36h)	Whether to allow framework characters
		'7' (37h)	Whether to plus the Enter
		'8' (38h)	Read device configuration
		'9' (39h)	Version NO. of read device
		':' (3Ah)	Read device status

5.2. Error Code List

Error Code	Descriptions
'0' (30h)	Normal execution
'1' (31h)	LRC error in communication
'2' (32h)	Command Error
'3' (33h)	Data error

5.3 Control Commands

5.3.1.Restore factory settings

Prologue field		Information field		Epilogue field
HEADER	LEN	CLA	INS	LRC
60h	0002h	'C'(43h)	'0'(30h)	11h
1 byte	2 byte	1 byte	1 byte	1 byte

* Information field (CLA,INS): See section 9.1. for the Command code list .

Prologue field		Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??
1 byte	2 byte	1 byte	1 byte

- Error code byte (EC): See section 5.2. for the Error code list .
- Factory default settings：

  Baud Rate： 9600 bps

Data length： 8-bit no parity
Startup bit： 1 bit
Stop bit： 1 bit
The first track switch： ON（1）
The second track switch： ON（1）
The third track switch： ON（1）
The prefix characters of the third track selector switch： “+”（1）
Whether to allow framework characters： Allow（1）
Whether allow to plus the carriage returns： Allow（1）

5.3.2. The first track switch

Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	‘C’(43h)	‘1’(31h)	01/00	10h/11 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??
1 byte	2 byte	1 byte	1 byte

* Error code byte (EC): See section 9.2. for the Error code list .

5.3.3. The second track switch

Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	‘C’(43h)	‘2’(32h)	01/00	13h/12 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??
1 byte	2 byte	1 byte	1 byte

* Error code byte (EC): See section 9.2. for the Error code list .

5.3.4. The third track switch

Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	'C'(43h)	'3'(33h)	01/00	12h/13 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??
1 byte	2 byte	1 byte	1 byte

* Error code byte (EC): See section 9.2. for the Error code list .

5.3.5. Set the baud rate

Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	'C'(43h)	'4'(34h)	? ?	? ?
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??
1 byte	2 byte	1 byte	1 byte

* Error code byte (EC): See section 9.2. for the Error code list .
*Data : setting baud rate

Data	Baud rate
31	4800
32	9600
33	19200
34	38400
35	57600
36	115200

5.3.6. The prefix characters of the third track“；”、“+”selector switch

Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	‘C’(43h)	‘5’(35h)	01/00	14h/15 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??

* Error code byte (EC): See section 9.2. for the Error code list .

5.3.7. Whether to allow framework characters

Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	‘C’(43h)	‘6’(36h)	01/00	17h/16 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??
1 byte	2 byte	1 byte	1 byte

* Error code byte (EC): See section 9.2. for the Error code list .

5.3.8. Whether to add the Enter

Prologue field		Information field			Epilogue field
HEADER	LEN	CLA	INS	DATA	LRC
60h	0003h	'C'(43h)	'7'(37h)	01/00	16h/17 h
1 byte	2 byte	1 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field	Epilogue field
HEADER	LEN	EC	LRC
60h	0001h	??	??

* Error code byte (EC): See section 9.2. for the Error code list .

5.3.9. Read device configuration

Prologue field		Information field		Epilogue field
HEADER	LEN	CLA	INS	LRC
60h	0002h	'C'(43h)	'8'(38h)	19 h

1 byte	2 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field		Epilogue field
HEADER	LEN	EC	DATA	LRC
60h	0003h	??	??	??
1 byte	2 byte	1 byte	2 byte	1 byte

- Error code byte (EC): See section 9.2. for the Error code list .
- DATA1（bit7 ~ bit0）expression

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
The first track switch status	The second track switch status	The third track switch status			The prefix characters of the third track“ ; ” 、“+”selector switch	Whether to allow framework characters	Whether to add the Enter

- DATA2 expression

Data2	Baud rate
31	4800
32	9600
33	19200
34	38400
35	57600
36	115200

5.3.10. Read the device version No.

Prologue field		Information field		Epilogue field
HEADER	LEN	CLA	INS	LRC
60h	0002h	‘C’(43h)	‘9’(39h)	18 h
1 byte	2 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field		Epilogue field
HEADER	LEN	EC	DATA	LRC
60h	??	??	??	??

- Error code byte (EC): See section 9.2. for the Error code list .
- DATA device version

5.3.11. Read the device status

Prologue field		Information field		Epilogue field
HEADER	LEN	CLA	INS	LRC
60h	0002h	'C'(43h)	':'(3Ah)	1B h
1 byte	2 byte	1 byte	1 byte	1 byte

- Information field (CLA, INS): See section 9.1. for the Command code list .

Prologue field		Information field		Epilogue field
HEADER	LEN	EC	DATA	LRC
60h	0003h	??	??	??
1 byte	2 byte	1 byte	2 byte	1 byte

- Error code byte (EC): See section 9.2. for the Error code list .

- Error code byte (EC): See section 6.2. for the Error code list .
- DATA1 0X30: Micro switch of slots in card machine – ON
  0X31: Micro switch of slots in card machine – OFF
- DATA2 0X30: Micro switch of bottom card machine – ON
  0X31: Micro switch of bottom card machine –OFF

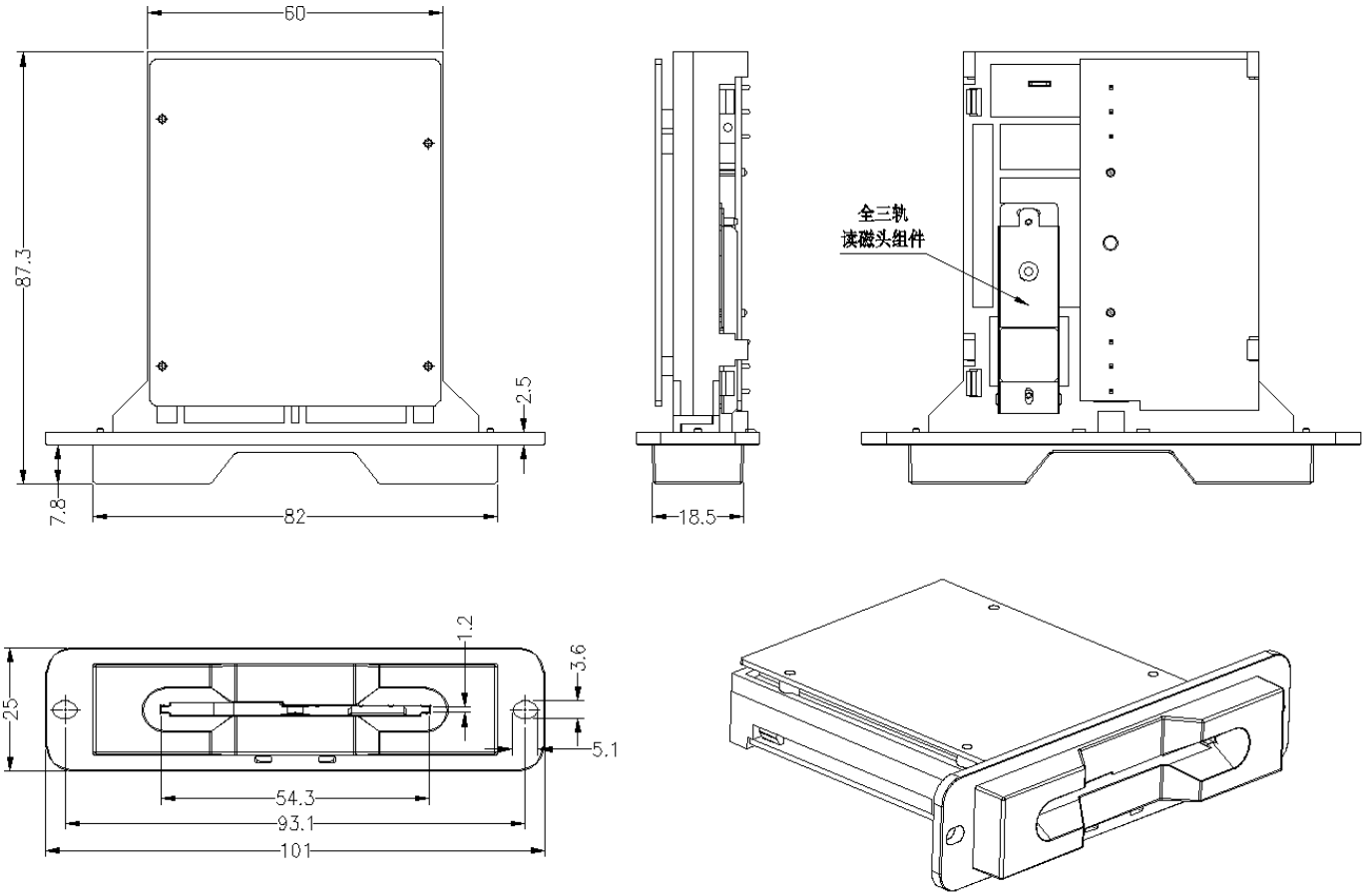
6. DATE FORMAT

Upload data format of swiping card are (exist and permit in all three tracks):

Data of the first track (% DATA ?)
Data of the second track (； DATA ?)
Data of the third track (+ DATA ?)
Card status (0X31H: card in the machine, 0X30H: card out of the machine.)
CR

Framework characters、carriage returns are sent by the setting of the command.

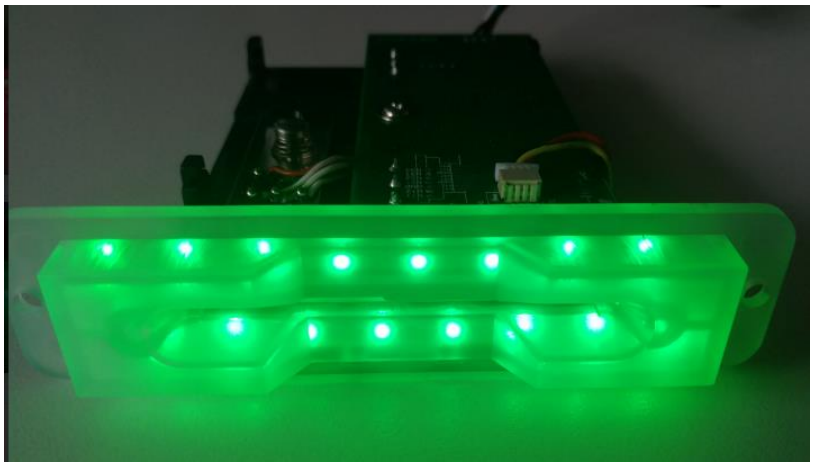
7.DIMENSION



8. LED INDICATOR IN BEZEL

Green LED is on when no card or standby status .
RED LED is on when the card inserted
The Red LED will flash twice when read the wrong data.

No card status



CARD INSERTED