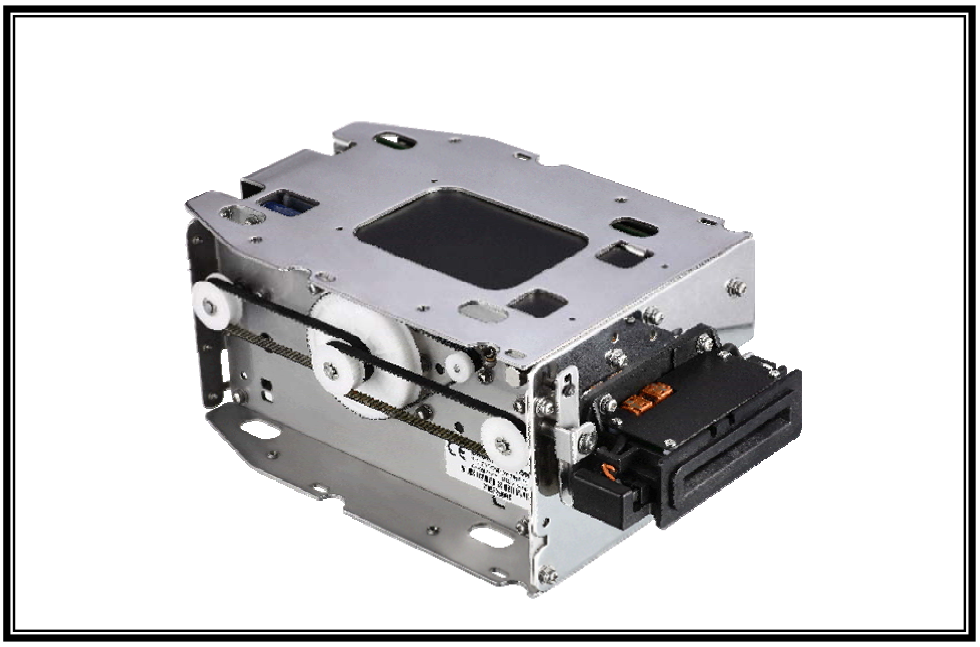
PRODUCT SPECIFICATION

CRT-350 SERIES
MOTOR CARD READER/WRITER



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CONTENT

1. General View

CRT-350 are series of motor card reader/writer of Magnetic/IC/RF card equipments, with function of "Motor front /rear insert/ejection."

Main features:

- 3 in one: IC card, magnetic card and RFID card read/write, the three features can be used alone or simultaneously;
- Lo-Co & Hi-Co Options: Choose to encode Mag card in Lo-Co or Hi-Co by changing mag head and other parts;
- Auto card insertion/ejection: Auto insertion, card in, out or captured can be controlled;
- Multiplied card transportation: Insert and eject the card from both front and rear side, card move in the reader, clear up the disabled card;
- Two kind shutter option: Electric and high security shutter option;
- Other Options: Power off protection Board; PSAM board (4/8 SAM card connectors);
- Multi-functions: Deal with abnormal cards, power off, special maintains occasions
- Multi-communication Protocols: Compatible with several different communication protocols;
- ROHS compliant & Customized service

2. Model Specification

CRT-350- (□ □ □) □ □ — □ □ □

Customers' Code
00: Standard Product
XX:Customer Name
20：Figure 1
50：Figure 2

Eg: Zhengtong, ZT

Function
I: Contact IC card
C: RF card
M: Magnetic card 3 tracks
E: IC card + RF card)
F: RF card + Mag card
G: IC card + Mag card
H: Can operate all 3 kinds of cards
W: Specified PCB board

SAM/SIM Card
Y: With PSAM board
N: Without PSAM board

Shutter
D: CRT-380D (Electric shutter)
E: CRT-380E (Electric shutter with high security function)

Customers Series No.
From 1 to 9

Communication
U: USB
R: RS-232

Mag Card Operation
X: No mag head
R: Mag card 3 tracks read only
L: Lo-Co Mag card 3 tracks R/W
H: Hi-Co Mag card 3 tracks R/W

*CRT-350 consists of three kinds of figures, the core mechanism and the communication are the same;

CRT-350-(001)XX-XXX mechanism compliant to Company O

CRT-350-(201)XX-XXX Mechanism compliant to Company S

CRT-350-(501)XX-XXX Mechanism compliant to Company K

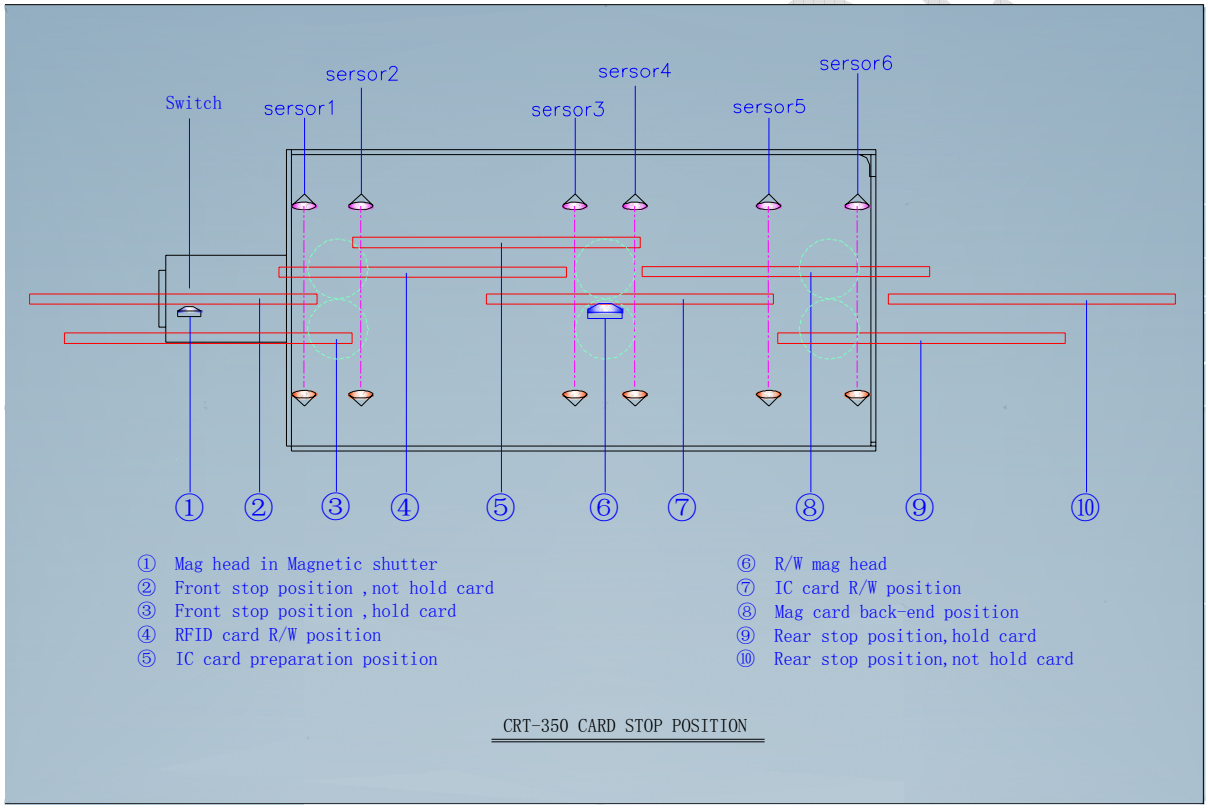
*Standard cable

Communication cable: L-350-COM-15 length 150cm

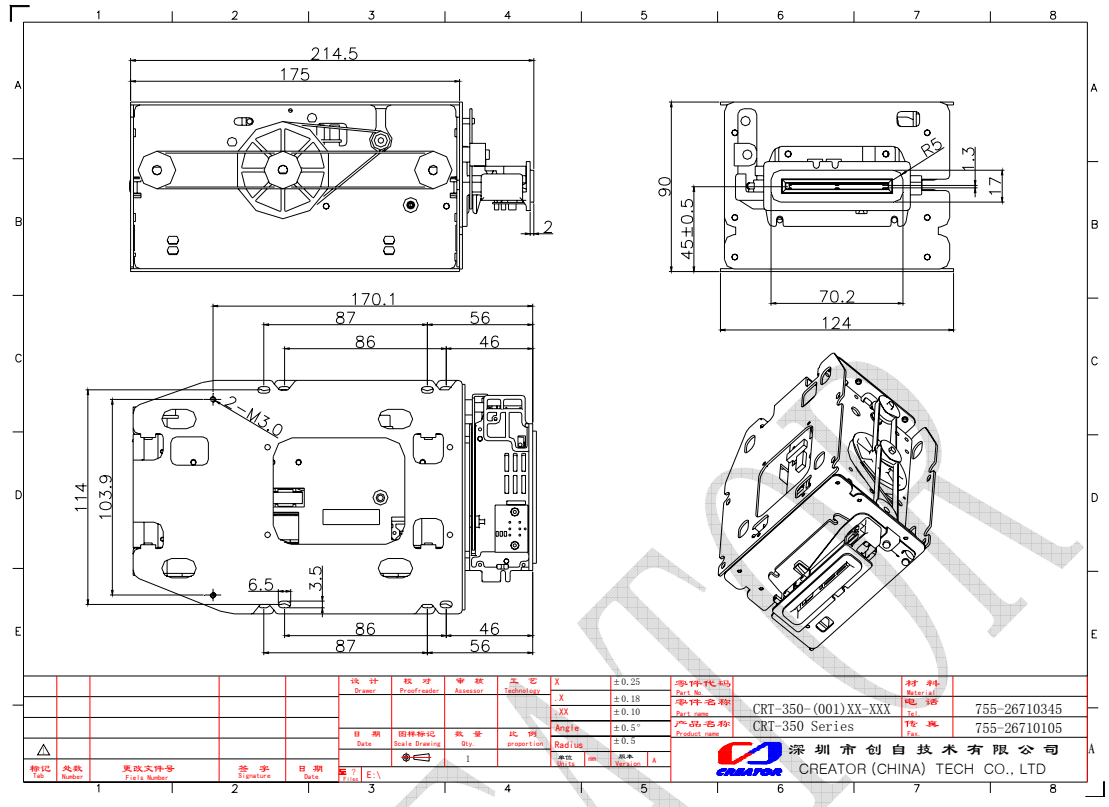
Power cable: L-350-POW-20 length 200cm

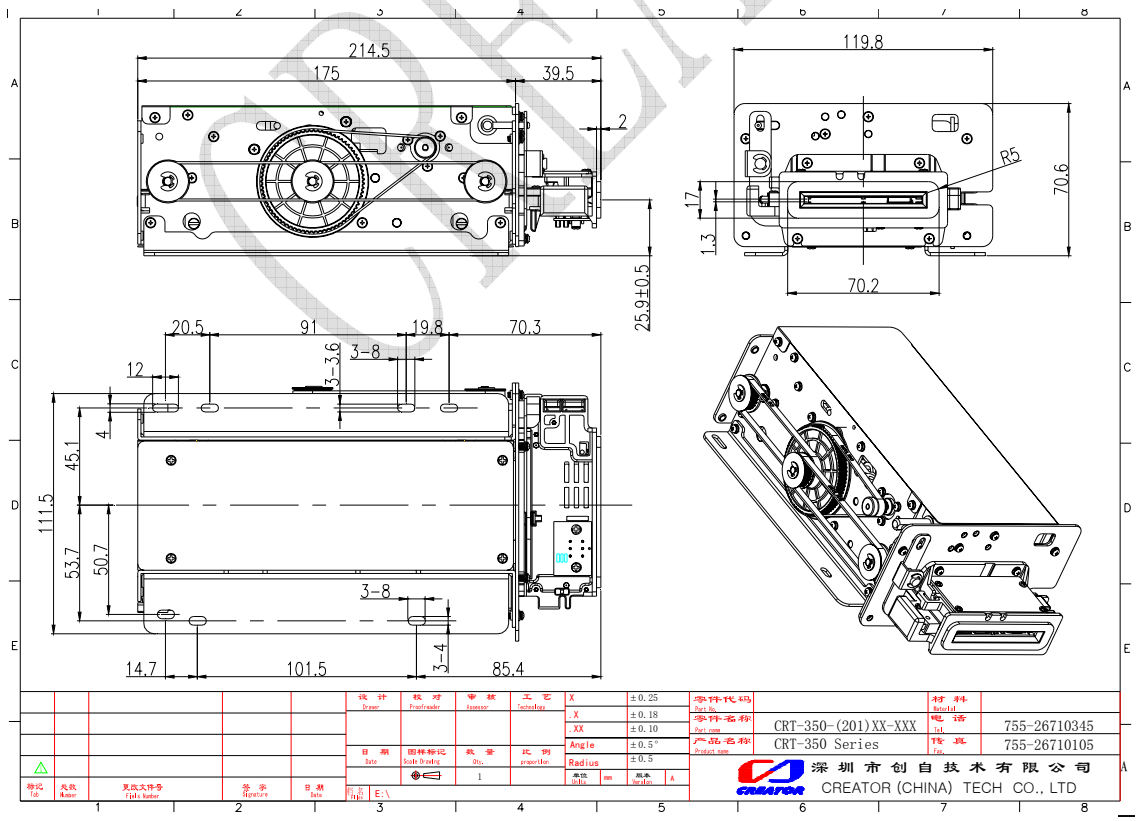
*Option: PSAM board（4 SAM slot） CRT-305B

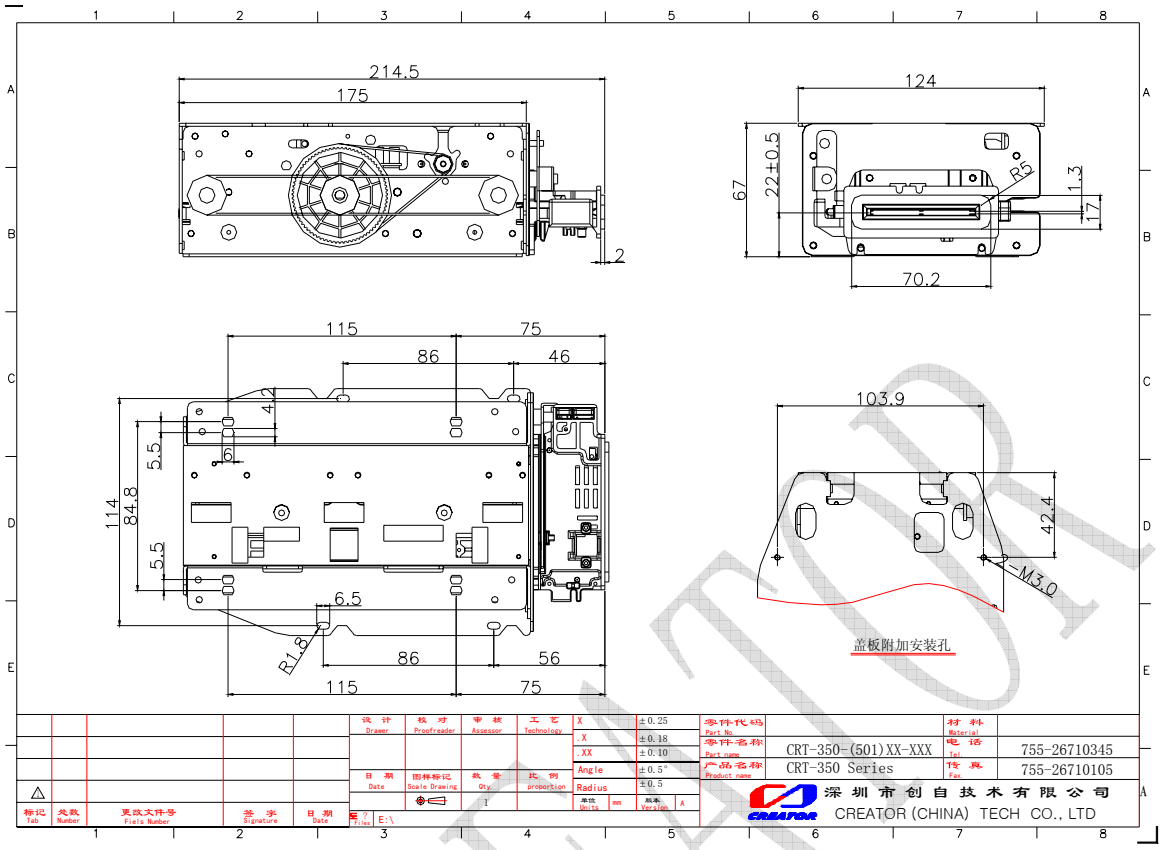
3. Structure and Card Stop Position



4. Structure and Dimensional Drawing






214.5
175
2
124
67
22±0.5
R5
1.3
17
70.2
115
75
86
46
4.2
6
5.5
114
84.8
5.5
6.5
R1.8
86
56
115
75
103.9
42.4
M3.0
盖板附加安装孔
CRT-350-(501)XX-XXX
CRT-350 Series
深圳市创自技术有限公司
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755-26710105

5. Card Type

5.1 Magnetic Card Standard

(1) Physical characteristics: Accordance with ISO7810, ISO7811

(2) Card dimensions: Accordance with ISO ISO7810ID-1- type card

(3) Embossing: Accordance with ISO7811-1, -3

(4) Recording format: Accordance with ISO7811-2, -4, -5, -6

(5) Recordable capacity: Track 1 (IATA): 79 characters max (6 bit+1 parity)
Track 2 (ABA): 40 characters max (4 bit+1 parity)
Track 3 (MINTS): 107 characters max (4 bit+1 parity)

(6) Recording method: Two Frequency Coherent Phase Recording

(7) Allowance of card warp: 2mm max.

(8) Coercive force: 24k~320k A/m (300~4000 Oe) +/-10%

(9) Reading capability (ex-work standard): Can read Q card (TC-JS, TC-JT, JC-JI, TC-A) and 10% magnetic card with weak magnetism.

5.2 Contact IC Card (ISO7816 & EMV 2000)

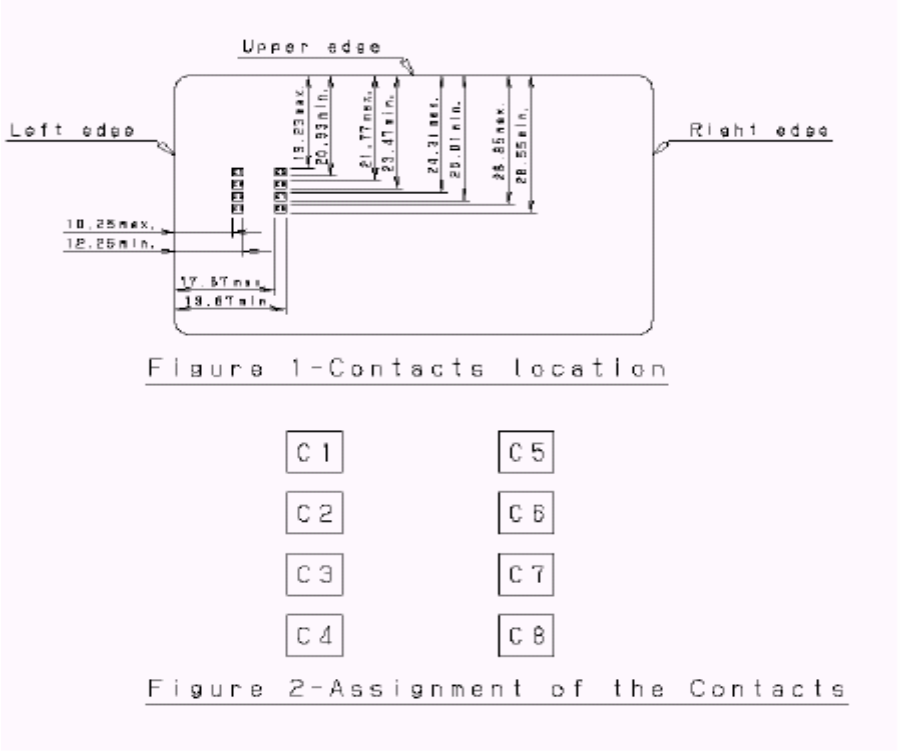


Figure 1-Contacts location

Figure 2-Assignment of the Contacts

Notes:

(1) Can operate cards of following types: T=0/T=1 CPU /SIM card, 24CXX, SLE4442, SLE4428,AT88SC102, AT88SC1604, AT88SC1608, AT45D01;

(2) Can support PIS /PPS frequency conversion operation

(3) Standard card R/W position: IC card R/W position

5.3 RFID Card, Mifare, Type A

Mifare 1 S50/S70/UL is in accordance with ISO14443 International Standard.

Standard R/W position: In front of the mag head.

5.4 Abnormal card

(1)Card thickness：0.2mm – 1.2mm

If the thickness between 0.2mm-0.6mm and 1.0mm-1.2mm, the probability of failure of card movement will double. Please state your special requirement when your place an order.

(2)Card Shape：Meet Standard，Flawless

Please not a card with hole or a defective card could lead to card movement failure.

(3)When an abnormal card (longer/shorter/narrower) enter the card reader, it will be ejected automatically.

(4)Abnormal card: short card<80mm

Long card>92mm

6. Operation Environment

6.1 IC Card Contacts Module

(1) Landing contacts;
(2) Number of contacts: 8PIN;
(3) Material of contacts/plating, beryllium copper/Gold over nickel (gilt thickness: 40u min.);
(4) FPC output (TTL).

6.2 Card Carrying System

(1) Power source : DC motor
(2) Card carrying mechanism : Gear wheels and belts
(3) Card insertion/ejection direction : Front and rear side ejection
(4) Card carrying speed : 50cm/s
(5) Card location director : 6 groups of sensor
Note: Sometimes can not detect high transparent card for the infrared rays can go through it.
(6) Noise : ≤80dB

6.3 Main Body Structure

(1) Plastic body: PC+20%GF 94V-2;
(2) Fixed bracket, Stainless Steel, passed 96 h Salt Spray test
(3) Insulation resistance: ≥10M ohm min, DC500V
(4) Weight: CRT-350-(001) 1.75kg
CRT-350-(201) 1.35kg
CRT-350-(501) 1.48kg

6.4 Shutter

(1) Normal electric shutter-- CRT-380D:
Functions: Card detection switch, to detect the width of the card.
Mag signal detection sensor, to detect 3 tracks of mag card
Shutter detection switch
(2) High secured electric shutter – CRT-380E
Functions: All functions of CRT-380D
Special Hook, to prevent from the card being stolen

Special design to inhale the card vibrately, which can functionally prevent the card's information from being stolen.

(3) Length of Card out of reader in the font or rear

Stop rear, hold card: 56mm ± 2mm

Stop front, hold card: 27mm ± 2mm

Stop front, not hold card: 36mm ± 2mm

6.5 Operation Condition

Operation temperature/humidity: 0℃—50℃/ 0—90%(non-condensing)

Storage temperature/humidity: -10℃—75℃/0—90%(non-condensing)

6.6 Voltage and Current

(1) Working voltage: DC 24V ±10%

(2) Static current: 90mA

(3) Max peak current value: 800mA

(4)EMC compliant

6.7 Reliability/Durability

(1) Vibration: No defect in all items of the characters under normal condition after exposed 15min.each on X, Y and Z directions of 2mm amplitude, from 10 to 50Hz/min vibrate.

(2) Shock: No defect in all items of the characteristics under normal condition after shocked one time on X, Y and Z directions of 294M/S^2, 11ms peak acceleration shock.
Normal condition: 20+/-5℃, 35～60%RH. The durability is based on the test environment.

6.8 Durability

(1) Gering: min 1,000,000 cycles

(2) Mag head: min 1,000,000 cycles

(3) Contact pin and the landing device: 500,000 cycles

6.9 MTBF(Lab standard condition)

(1) Gearing：<1/10,000

(2) Mag card operation: <1/1000

（3）IC card operation：<1/1000

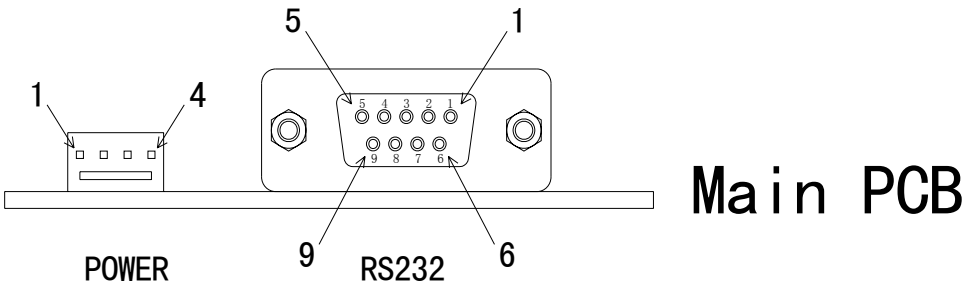
6.10 Electrical Supply

(1) Com. Interface: RS232(DB9 standard connector)

(2) Com. Speed: 9600bps (ex-work),and 19200/38400/57600pcs for customization

(3) Com. Cable: DB9 connector F/M, UL certified RVVP cable, net length: 1.5m

(4) Electrical sketch map:



（5）RS232 connection

Pin	Signal name	I/O	Function
1	--		
2	TXD	O	Transmit Data
3	RXD	I	Receive Data
4	--		
5	GND	…	Ground (0V)
6	--		
7	RTS	O	Request To Send
8	CTS	I	Clear To Send
9	--		

（6）Power connection

Pin	Signal name	Function
1	+24V	+24V DC
2	GND	Power Ground (0V)
3	GND	Power Ground (0V)
4	BPS	Backup power supply

7. Operation Mode and Cautions

7.1 Card Movement

(1)After the card in from front side, it will go directly to the appointed card stop position, and then need to get command from the superior controller to operate the card reading.

(2) After the card in from rear side, it will go to the appointed card stop position directly.

(3) Without Mag head in the card reader, the card will go to the appointed card stop position directly whatever it is from the front side or rear side.

7.2 Magnetic Card Reading:

(1)The host sends the mag card reading command first, then the card will move one time between the front and rear side, and then store the data into RAM, and upload it to the host in the form required.

(2) If the data cannot be correctly read after the first reading, the reader will automatically reread the card for N times (according to the times set in EEPROM), until the data is read correctly.

(3) When the "re-upload" command is sent by the host, the reader will only upload the data again to the host in the form required, but without any card movement this time.

(4) If the data is binary system, the reader will not do any verification.

(5) if the data is read out when the card is moving from the rear to the front, the reader will automatically change it to sort of data read from front- to –rear.

7.3 Magnetic Card Writing

(1) Ensure the type of card is in accordance with the reader, or the unknown mistakes will happen.

(2) The reader will move the card to the position in front of the magnetic head, and then write during the card's front-to-rear transportation.

(3) Then the reader will verify the writing data from the "card writing operation" in ways of 'card reading operation', and then upload the results.

(4) If the data to be written is of binary system, the reader will not verify the writing data from the "card writing operation", but upload the results directly.

7.4 Contact IC Card Operation

Move the card to IC card operation position successfully, and then operate on the IC card (Including Auto test the card type command)

7.5 RFID Card Operation

Move the card to the position in front of the mag head, and then operate on the RF card.

7.6 Deal with abnormal cards

(1) Abnormal card means the size of the card is different from the ISO standard cards.

(2) Abnormal card enter: When enters, the reader notice that the card is abnormal, it will eject the card out automatically.

(3) Abnormal card eject: If there is abnormal card in the reader, here are 3 ways to eject it out:

a. Eject card from front: Use the eject card subassembly, use the button on it to eject the card out from front.

b. Eject card from rear: Use "Eject abnormal card from rear side", reader will eject the card from rear immediately.

c. To deal with the very short abnormal cards, whether the card is at the gate or in the reader, use "Eject abnormal card from rear side" command and at the mean while insert a standard card into the reader, the reader will eject both cards out automatically.

d. To deal with extra-long abnormal card: use "Eject the card from front/rear side" just as normal cards.