

CRT-570-(KX3) MB-ANL-S (with scanner)

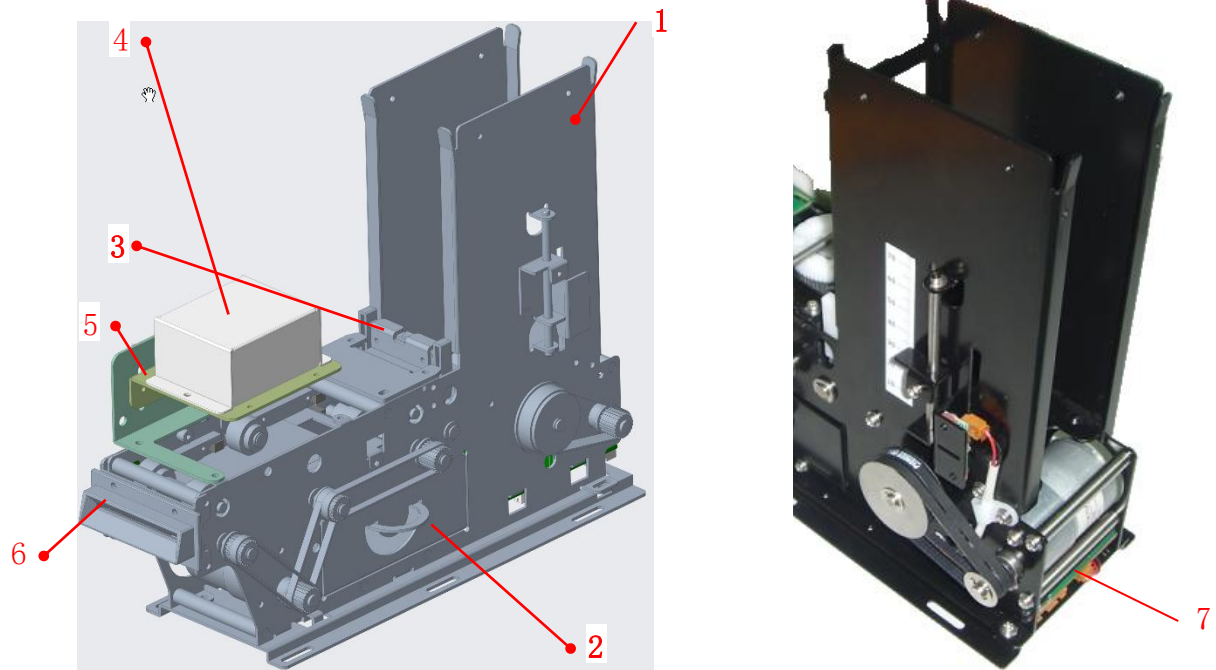
Product Manual

Modification History of the version

Version	Date	Content
1.0	2023.08.16	First release

- welcome to use Creator product
- Please read the product specifications carefully before using this card issuing machine

CRT-570-(KX3)MB-ANL-S components:



- | | |
|---------------------------|----------------------|
| 1-----side blade | 2-----error card bin |
| 3-----baffle component | 4-----scan module |
| 5-----bracket for scanner | 6-----J type bezel |
| 7-----main PCBA | |

Warning: Power supply never exceed 30Voltage, otherwise the machine will be damaged

! ! !

Catalogue

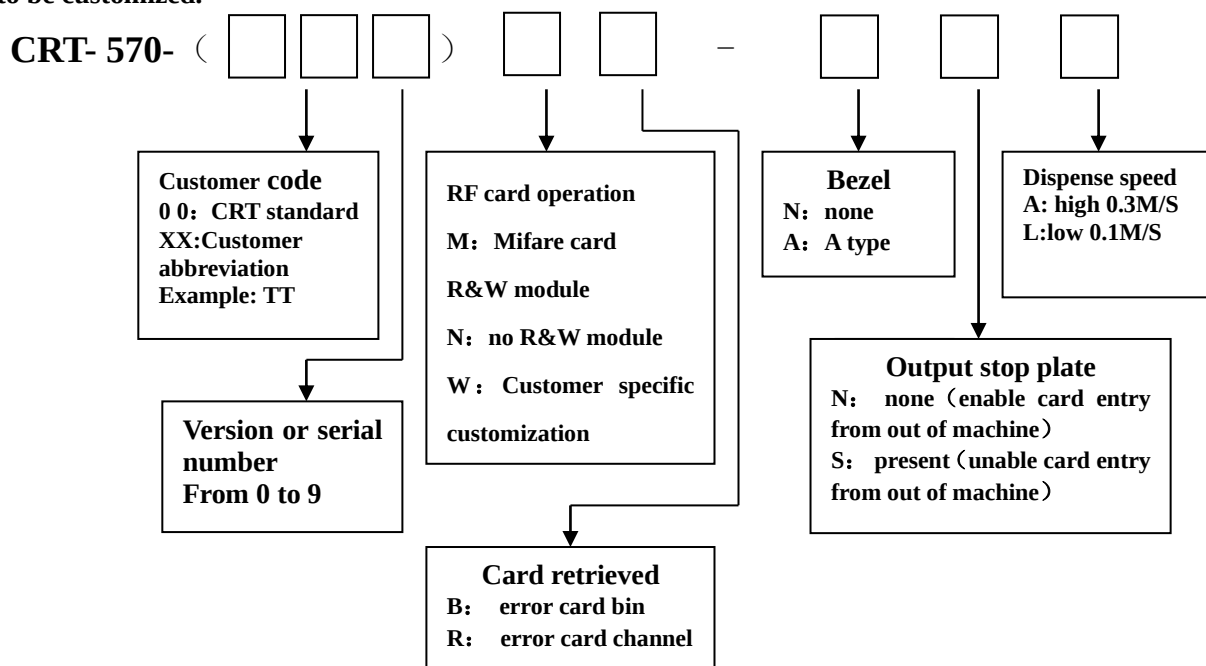
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1. Product Function Overview

CRT-570-(KX3)MB-ANL-S feature:

- ◆ Equipped with barcode scanning function, support one-dimension barcode, such as EAN13, UPC-A, UPC-E1, Code128, Code39, CodaBar etc;
- ◆ Equipped with QR code scanning function, supports scanning QR codes such as QR Code, PDF417, DataMatrix (ECC200), etc
- ◆ Capable of dispensing cards from the card stack or retrieving various types of cards from external;
- ◆ With a specific error card bin, it also can be modified to a channel for the cards retrieved;
- ◆ With function of detecting the card empty, pre-empty, and full of error card bin;
- ◆ RS-232C interface;

Note: it is calibrated as a 0.76 mm standard card in ex-work. if needs to support cards of other thicknesses, it needs to be customized.



2. Technical Specification

Items	Specification
Power	DC 24V±5%

Current Consumption	Static Current: 100 mA Peak Current: 1500 mA
Interface Type	RS-232C
Card Dimension	Width:53.92~54.18 mm, Length: 85.47~85.90 mm Ex-work: 0.76 mm, Other thickness needs to be customized
Dispense Speed	Approx. 0.3m/s
Load Quantity	Maximum loading capacity 185pcs of 0.76mm thickness card (Standard capacity without additional card stack) Short stack 60pcs Long stack 170pcs Extra long stack 300pcs
Pre-card empty	20-80pcs±2pcs (Ex-work: 40pcs of 0.76mm)
Lifetime	Transportation: 500,000 Min
Error Rate	Bar code: <1/1000, Note: the card is a standard perfect card
MTBF	>100,000 hours (Electric parts) Notes: 250 times/day, 25 days/month, 300 hours/month
Environment	Operation: 0℃~50℃, 0~90 % RH (Non-condensing) Storage: -25℃~80℃, 0~95 % RH (Non-condensing)
Reliability	A. Vibration: No defect in all items of the characteristics under normal condition after exposed 15min. each on X, Y and Z directions of 2mm amplitude, from 10 to 50Hz/min vibrate. B. Shock: No defect in all items of the characteristics under normal condition after shock one time on X, Y and Z directions of 294M/S ² , 11ms peak acceleration shock.
On-line Download	IAP on-line downloading
Net Weight	Around 2.7 kg (Without package)
RoHS	Compliant to RoHS

3. Interface description and schematic diagram

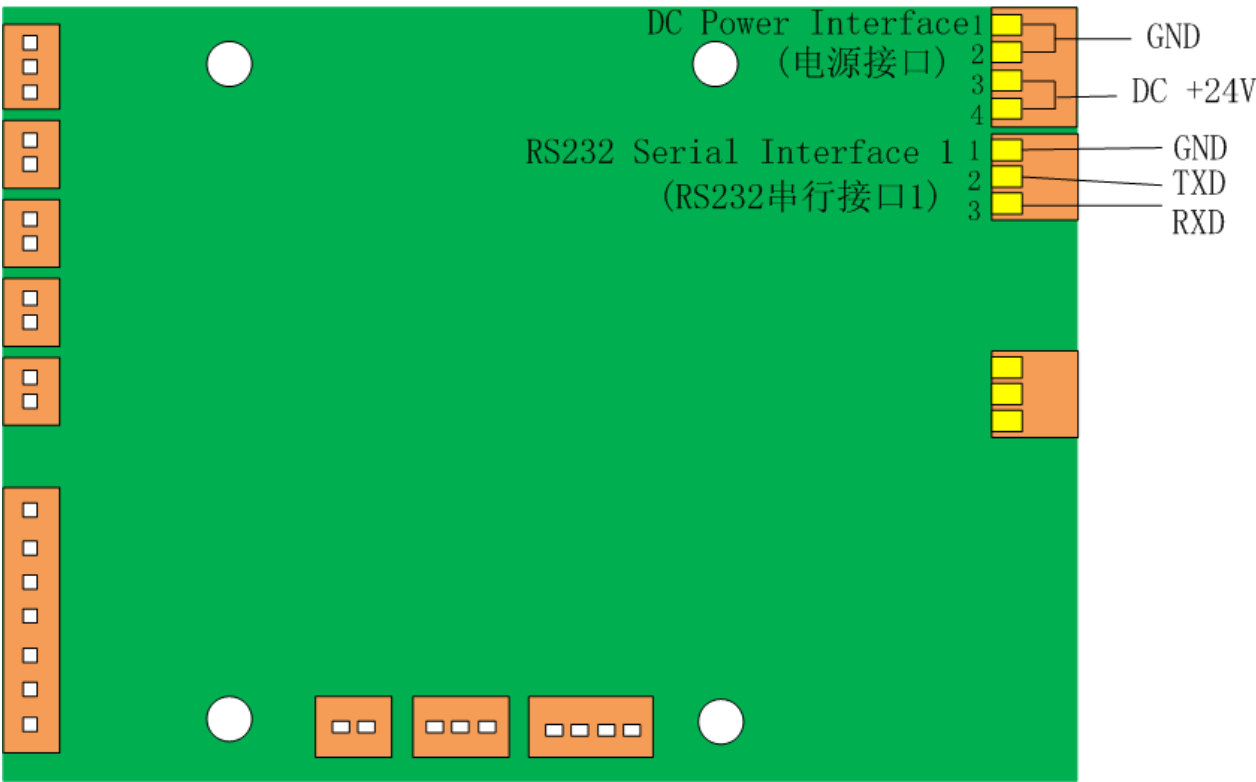
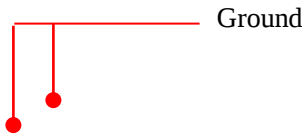
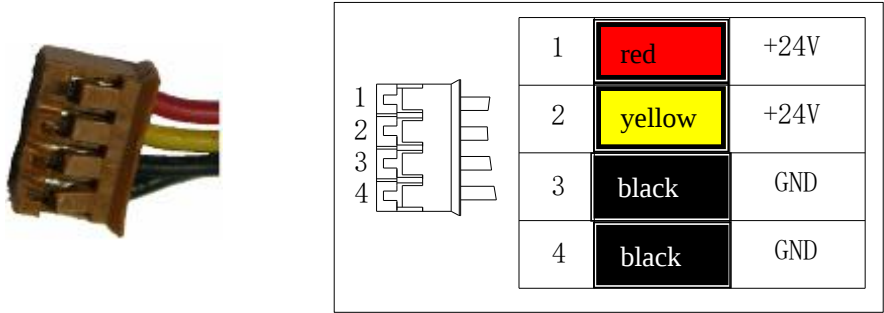


Figure 1: Schematic diagram of CRT-570 main board interface



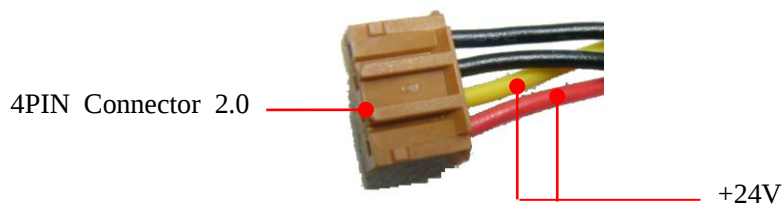


Figure 2: 4 PIN Power

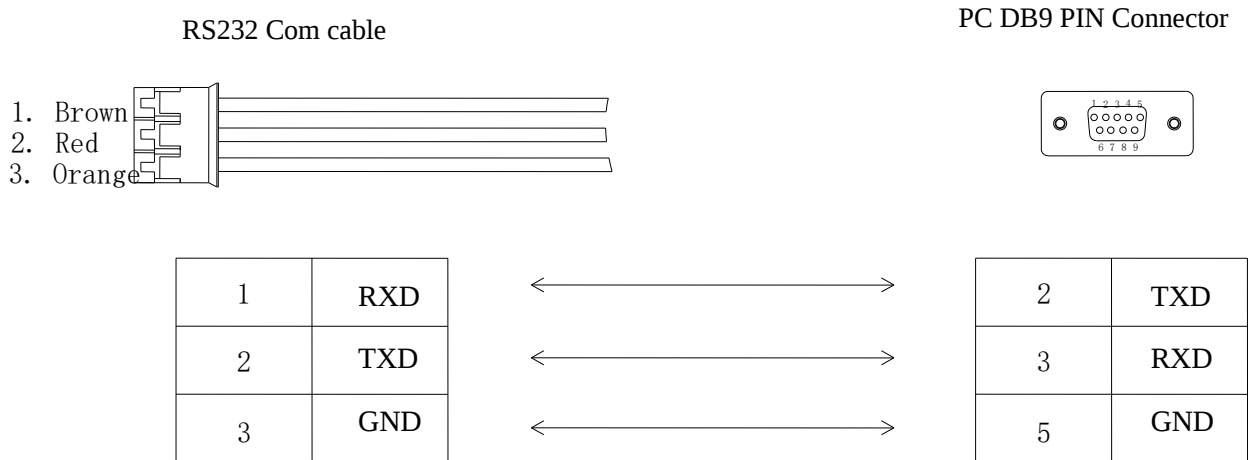
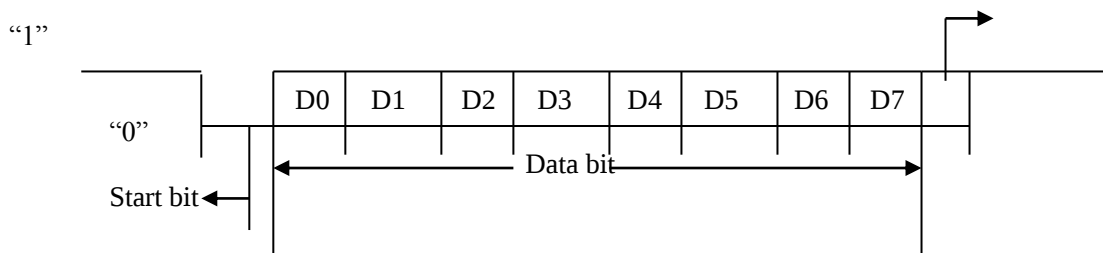


Figure 3: 3 PIN serial port cable and computer DP 9PIN socket connection

4. RS232 communication Protocol (For dispenser)

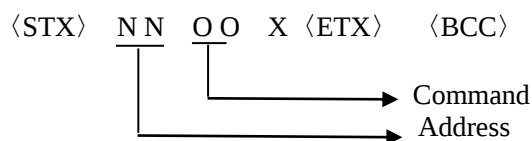
4.1 Communication Protocol

Baud rate (BPS)	:	Set by the host (Default: 9600 bps)
Communication type	:	Asynchronous communication
Transmit type	:	Half duplex
Data frame details		
Start bit	:	1 bit
Data bit	:	8 bits
Parity bit	:	None
Stop bit	:	1 bit



4.2 Command Structure

4.2.1 Send Command



<STX> : 02H, Frame starting

<ETX> : 03H, Frame ending

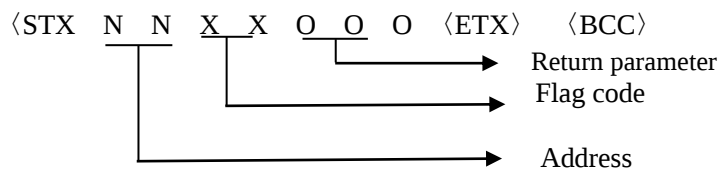
<BCC> : <STX> $\oplus$ 0 $\oplus$ 0 $\oplus$ <ETX> , block parity

“N”: One ASCII Character, with high and low address values

“O”: One ASCII Character (Command data)

“X”: One ASCII Character for Parameter of extending (Possible to be no data)

4.2.2 Return command



<STX> : 02H, Frame starting

<ETX> : 03H, Frame ending

<BCC> : <STX> $\oplus$ 0 $\oplus$ 0 $\oplus$ <ETX> , block parity

“N”: One ASCII Character, with high and low address values

“O”: One ASCII Character (Command data)

“X”: One ASCII Character for Parameter of extending (Possible to be no data)

4.3 Basic Command Code

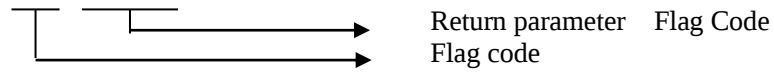
Command (ASCII)	Content	Return Message
DC	Dispense card to exit	< 06H>
CP	Card capture	< 06H>
RF	Status checking	Ref: RF status checking return
AP	High-class status checking	Ref: AP status checking return
RS	Reset	< 06H>

4.3.1 Check status request

<STX> N N R F <ETX><BCC>

Check status response

<STX> N N S F 0 0 0 <ETX><BCC>



Definition of Flag Code:

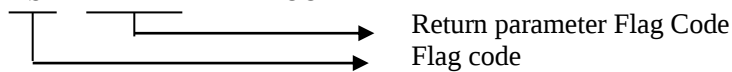
HEX	BIN			STATUS
800	1 0 0 0	0 0 0 0	0 0 0 0	Dispense card
400	0 1 0 0	0 0 0 0	0 0 0 0	Capture card
200	0 0 1 0	0 0 0 0	0 0 0 0	Card Dispense Error
100	0 0 0 1	0 0 0 0	0 0 0 0	Card Capture Error
080	0 0 0 0	1 0 0 0	0 0 0 0	No Card Capture
040	0 0 0 0	0 1 0 0	0 0 0 0	Overlapping Card
020	0 0 0 0	0 0 1 0	0 0 0 0	Jamming Card
010	0 0 0 0	0 0 0 1	0 0 0 0	Card Pre-empty Status
008	0 0 0 0	0 0 0 0	1 0 0 0	Card Empty Status
004	0 0 0 0	0 0 0 0	0 1 0 0	Dispense-Sensor Status
002	0 0 0 0	0 0 0 0	0 0 1 0	Capture-Sensor 2 Status
001	0 0 0 0	0 0 0 0	0 0 0 1	Capture-Sensor 1 Status

4.3.2 Advanced status check request

<STX> N N A P <ETX><BCC>

Advanced status check response

<STX> N N S F 0 0 0 0 <ETX><BCC>



Definition of Flag Code

HEX	BIN				STATUS
8000					(Reserve)
4000					(Reserve)
2000	0 0 1 0	0 0 0 0	0 0 0 0	0 0 0 0	Failure Alarm (Sensor Invalid)
1000	0 0 0 1	0 0 0 0	0 0 0 0	0 0 0 0	Error Card Bin Full
0800	0 0 0 0	1 0 0 0	0 0 0 0	0 0 0 0	Card Dispensing
0400	0 0 0 0	0 1 0 0	0 0 0 0	0 0 0 0	Card Capturing
0200	0 0 0 0	0 0 1 0	0 0 0 0	0 0 0 0	Card Dispense Error
0100	0 0 0 0	0 0 0 1	0 0 0 0	0 0 0 0	Card Capture Error
0080	0 0 0 0	0 0 0 0	1 0 0 0	0 0 0 0	No Card Capture
0040	0 0 0 0	0 0 0 0	0 1 0 0	0 0 0 0	Card Overlapped
0020	0 0 0 0	0 0 0 0	0 0 1 0	0 0 0 0	Card Jam
0010	0 0 0 0	0 0 0 0	0 0 0 1	0 0 0 0	Card Pre-empty
0008	0 0 0 0	0 0 0 0	0 0 0 0	1 0 0 0	Card Empty-Sensor Status
0004	0 0 0 0	0 0 0 0	0 0 0 0	0 1 0 0	Dispense-Sensor Status
0002	0 0 0 0	0 0 0 0	0 0 0 0	0 0 1 0	Capture-Sensor 2 Status
0001	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	Capture-Sensor 1 Status

4.4 Extend CRT Command

4.4.1 Command List For Dispenser

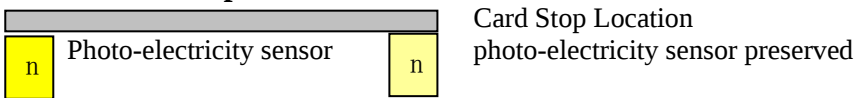
Command	Parameter Description	Return
“FC”+ Position	Send the card to the designated location (refer to 4.5.2) Position and Position Correspondence Table Position 0x30 Specify position 0 Position 0x34 Specify position 1 Position 0x37 Specify position 6 Position 0x32 Specify position 3 Position 0x31 Specify position 4 Position 0x36 Specify position 5 Position 0x33 Specify position 2 Position 0x40 Specify position 2	< 06H>
“CS”+ Position	Set baud rate Set Baud Rate (Positions have 2-5, respectively representing 4800BPS-38400BPS).	< 06H>
“IN”+ Parameter	Card front entry setting: Parameter= 0x30 unable = 0x31 enable, directly move to error card bin = 0x32 enable, stop at No.2 position	<06H>
“SI”	Check the setting status of card inserted from the dispenser mouth	SI +Parameter(similar to RF command returned)
“BI”	Read Bar code	BI + Bar code data
“0xA4,0x30”	Query firmware version	Version information

Note:

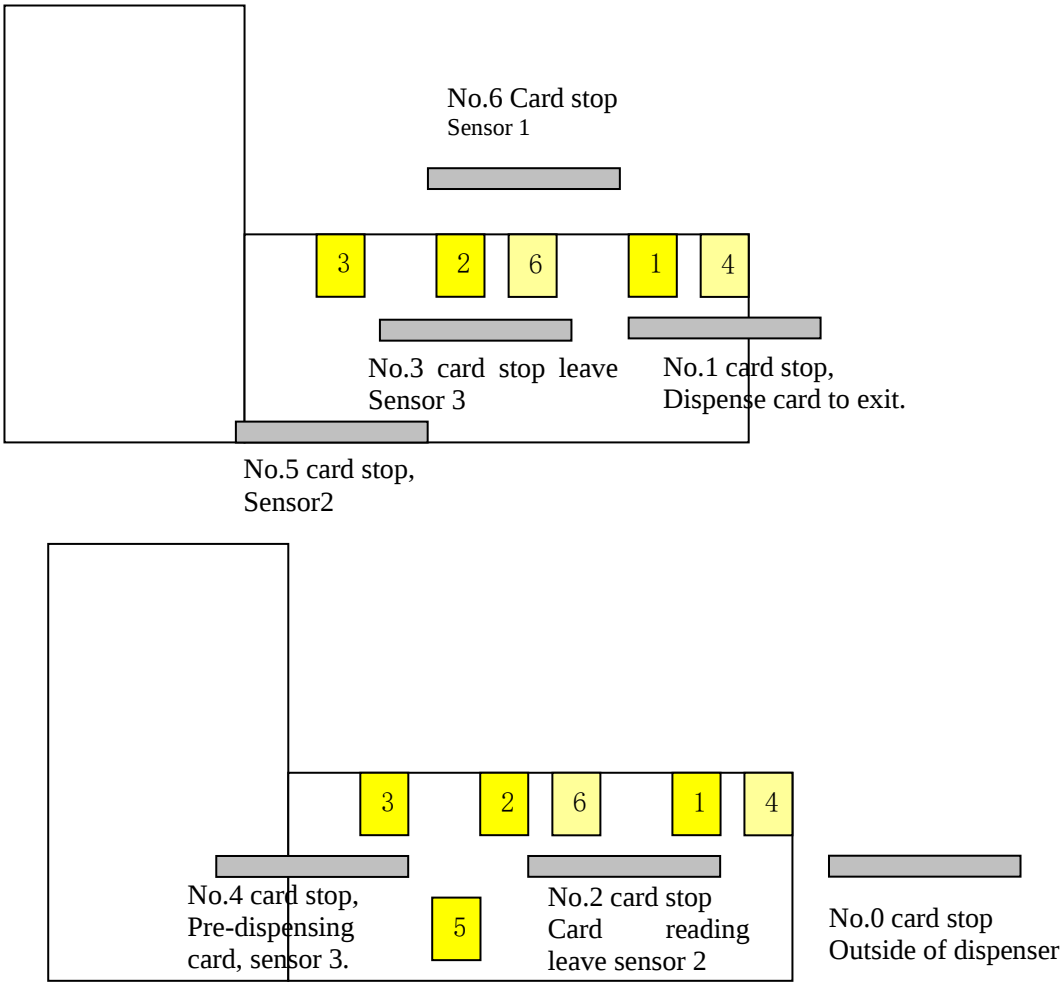
- 1.“4” is the position for card pre-dispensing, program will execute “pre-dispensing” automatically(Except press “Reset” key stroke on the dispenser by hand); Execute “FC+4”, no any reaction for this command, and this will cause unpredictable damage, so please don’t use this command in a hurry。
2. The operation of checking status for “SI” inserting card from dispenser mouth is similar to “RF” and “AP”. The parameter of command returned with 1byte is same as the “IN” parameter。
3. “IN”is an operation command for EEPROM. The setting status will not be affected even if it is power on or reset, that means the last setting is still valid when power on. And it is defaulted that the card is captured to the error card bin when ex-work。
4. The "BI" command is a command for the scanner to read bar code card information. When the bar code card appears at the corresponding card reading position, executing this command will return all information of the bar code card。

4.5 Specification of Photo-electricity Sensor and Card Stop Location

4.5.1 Definition of Graph



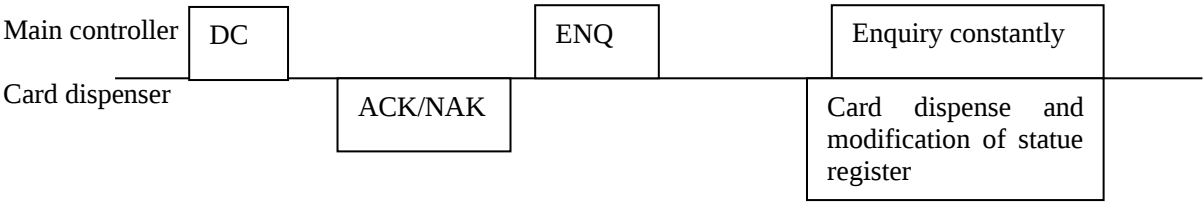
4.5.2 Sketch Map of Card Stop Location and Photo-electricity Sensor



4.6 Communication Sample

4.6.1 Card Dispensing

Main controller : 〈STX〉 ADDR DC 〈ETX〉 〈BCC〉
Card dispenser : Send ACK, responsible for card dispensing and modification of status of register

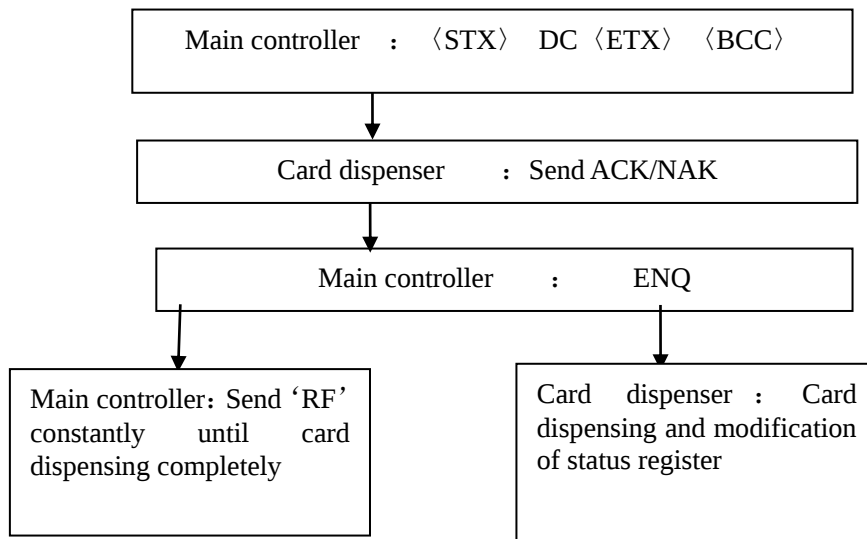


There into: 〈ACK〉 : 06H

〈NAK〉 : 15H

〈ENQ〉 : 05H

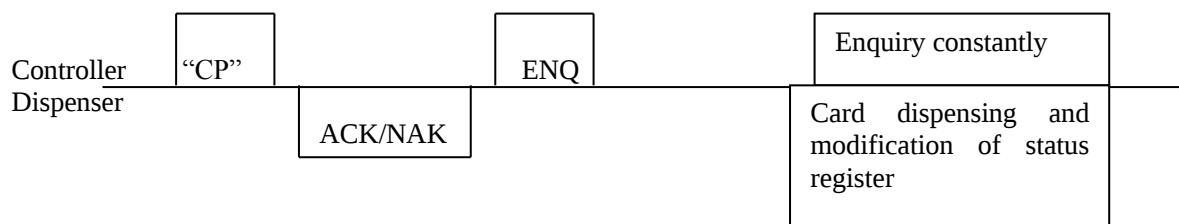
Procedure as follow::



4.6.2 Card Capture (The Procedure is Similar to Card Dispensing)

Main controller : 〈STX〉 ADDR CP 〈ETX〉 〈BCC〉

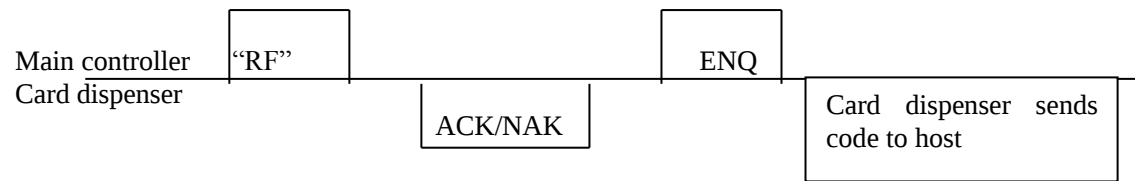
Card dispensing : Send ACK, responsible for card dispensing and modification of status of register



4.6.3 Status Require

Main controller : <STX> ADDR RF <ETX> <BCC>

Card dispenser : Send ACK, receive ENQ, then send <STX> ADDR SF OOO <ETX>



5. Scanner communication protocol

The scanner module is a functional extension module of the CRT-570, and its related operation commands are not processed as third-party data, but rather part of the internal operation commands of the CRT-570. The expansion of the scanner function module will not affect the operation of other functions of the CRT-570. The main operation can be divided into two steps:

1): “FC”+0X40 command (The main function is to send the bar code card to the standard readable position of the bar code card)

Command transfer format:

STX	‘F’	‘C’	0X40	BCC
-----	-----	-----	------	-----

2): “BI” command (The main function is to read and upload information from barcode cards)

Command transfer format:

STX	‘B’	‘I’	BCC
-----	-----	-----	-----

Command return package:

STX	‘B’	‘I’	RLEN	DATA	ETX	BCC
-----	-----	-----	------	------	-----	-----

Explanation: [1] RLEN: the actual length of the returned DATA, which is 1 byte in length.

When RLEN is 0 byte, it indicates failing read message, and when RLEN is greater than 1 byte, it indicates successful reading message code

[2] DATA: Returned bar code information package

6. Precautions for use

- 1) Prohibit to warm swap, otherwise the PCBA may be damaged.
- 2) Scanner is fixed on dispenser after production. So in the normal situation, please don't adjust the position of scanner on bracket.
- 3) Do not hit or wave bracket of scanner
- 4) Keep machine clean and non-oil
- 5) The red button on the base is for manual reset, do not push it when the machine is running well.

7. Preventive & maintenance

After a long time usage, factors such as the machine's transportation mechanism wear and tear, dust

on sensor will influence the performance of the machine, and hence it should be maintained on a constant basis. The maintenance instruction is the following:

1) Daily Maintenance Work:

- ① Clean the transportation roller and press roller via alcohol cotton or cloth.

Note: To clean, it is necessary to first remove the U-shaped card adjustment mechanism and scanning component (see figure), further cleaning of the transmission and compression rollers.

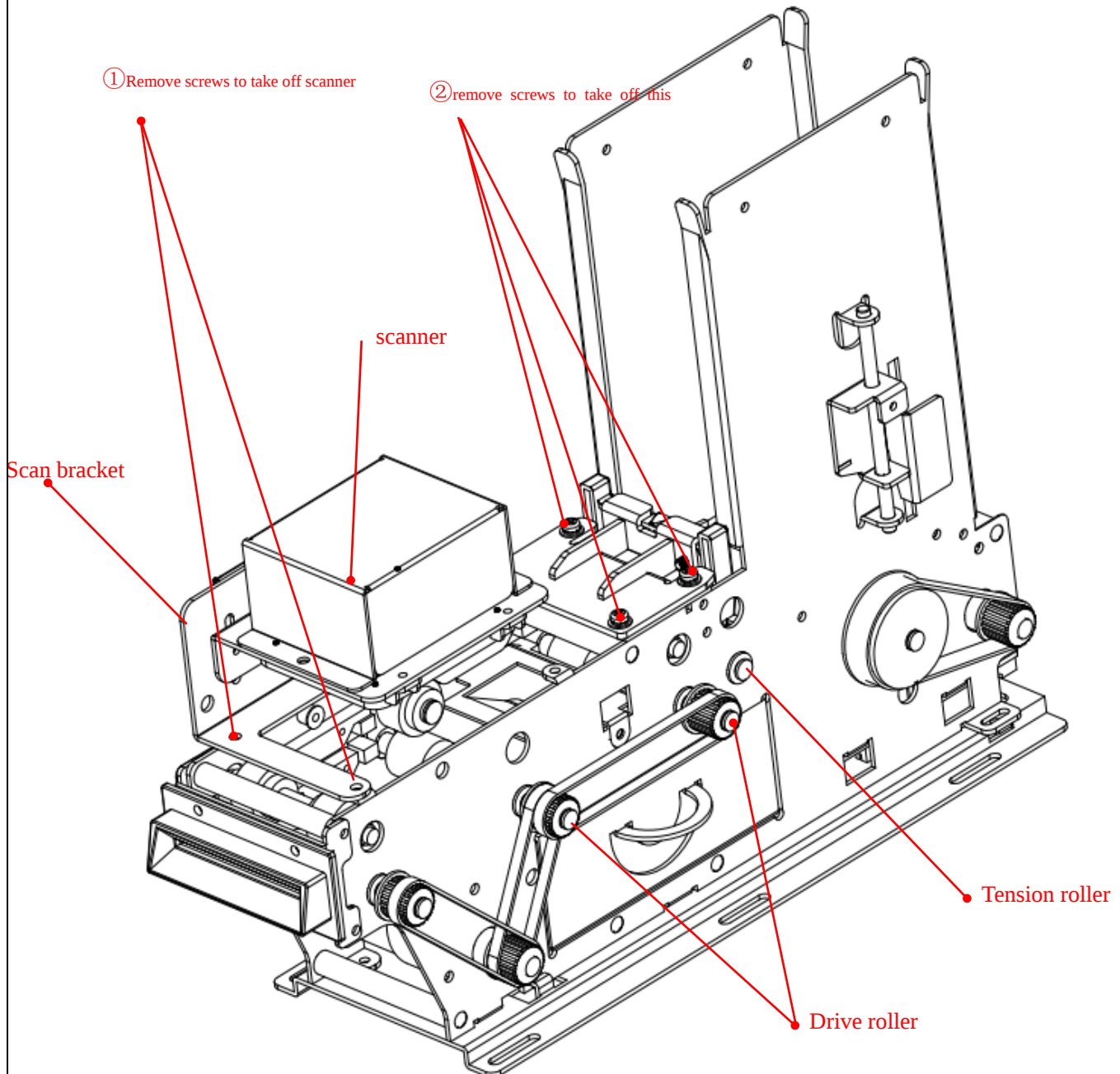


Figure 4 Removing the card adjustment mechanism and scanning component

- ② Clean the sensor board. When sensor board is dusted, the performance of machine will be heavily influence. Please see the following picture and use brush to clean the scanner. (The disassembly steps are shown in Figure 5 and the cleaning is shown in Figure 6)

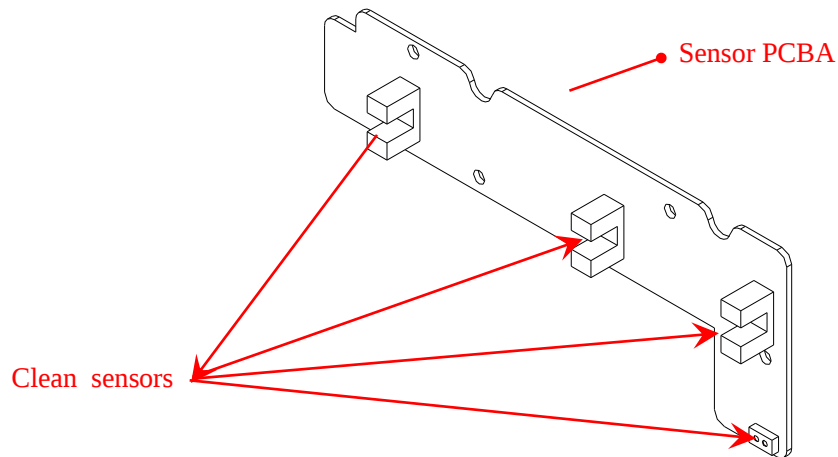
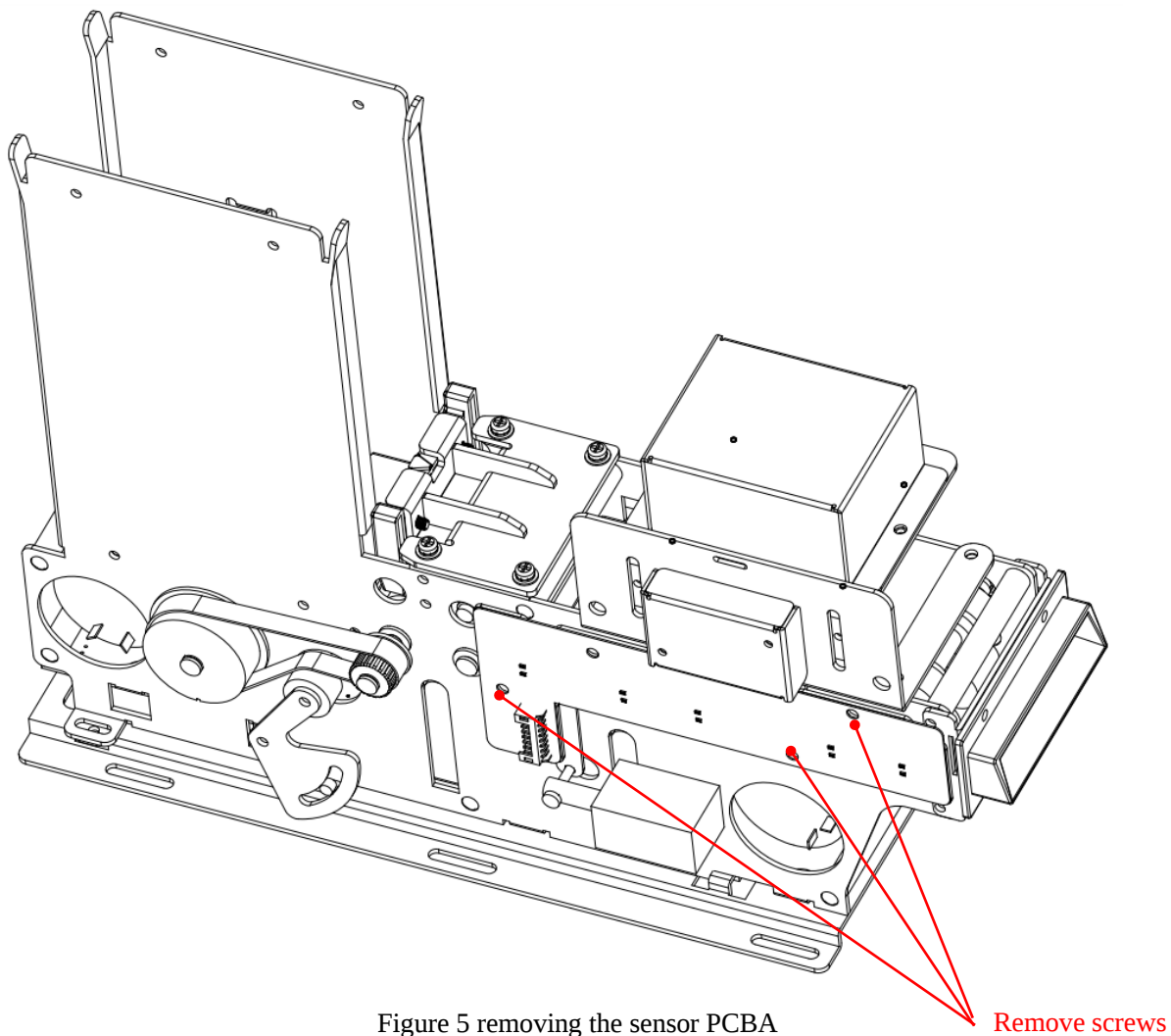


Figure 6 Schematic diagram of sensor PCBA

- ③ Check the card is bend or oiled, if the card is bend or oiled, please clean or abandon this card
- ④ Check the mechanism part is loose or not
- ⑤ Check the belt is loose or not, if loose, please adjust tension roller. (See Figure 5 tension device)

2) maintenance routine

- ① Roller maintenance. Recommend maintenance once every 3,000 dispense

② Scanner maintenance. Use brush to clean the dust on scan head as the following figure. (See Figure 7)

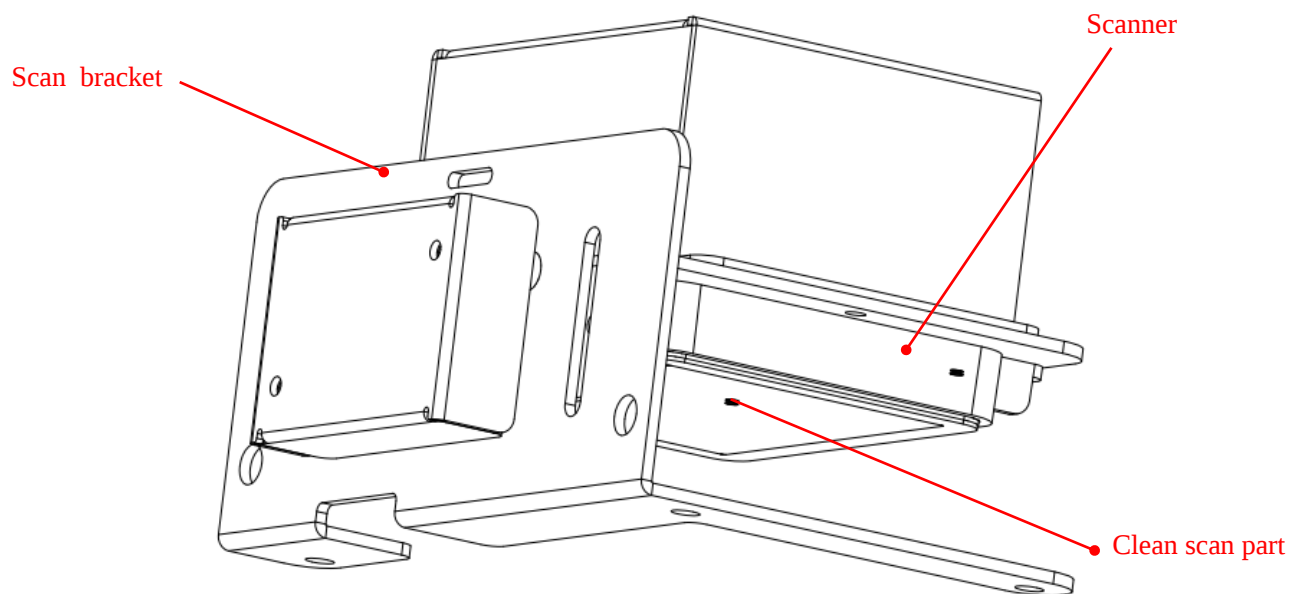


Figure 7 Cleaning of the scanning head

8. Structural Outline Drawing

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