CRT-570 (with RFID module）Issuing Machine

CREATOR (CHINA) TECH CO., LTD.

ADD: 2F， M-10 building Centre area

Hi-tech industrial park Shenzhen China.

TEL:+86 755 26710727

FAX:+86 755 26710105

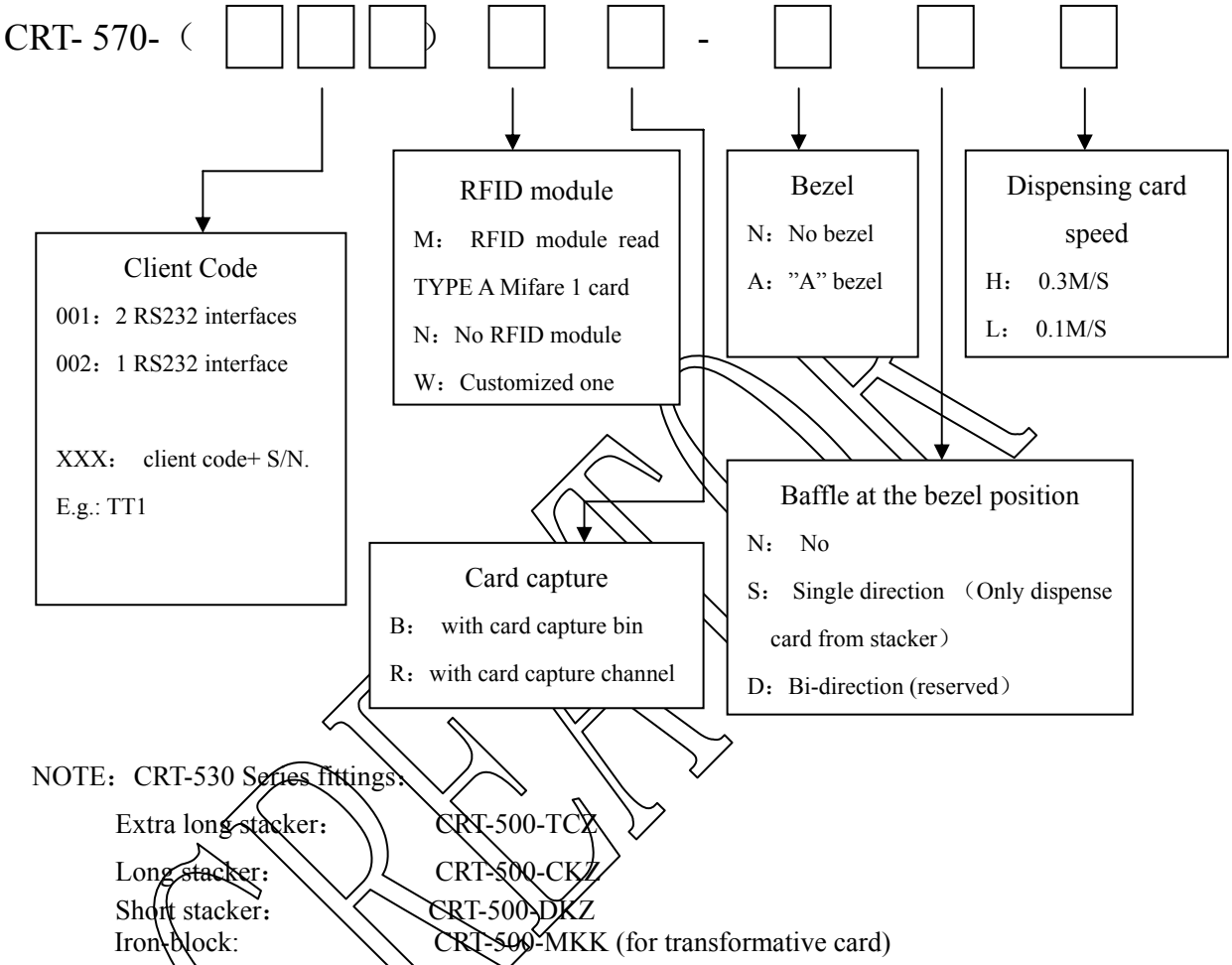
EMAIL:iris@china-creator.com

Http://www.china-creator.com

Contents

1. OVERVIEW

CRT-570 is card issuing machine, which not only can read/write the RFID card, but also can dispense card, meanwhile card can be captured when the user doesn't take the card or there is any error during operation.



NOTE：CRT-530 Series fittings:

Extra long stacker：	CRT-500-TCZ
Long stacker：	CRT-500-CKZ
Short stacker：	CRT-500-DKZ
Iron-block:	CRT-500-MKK (for transformative card)

2. General Specification

1) Power supply	DC 24 V ± 10%（dispenser）
	DC 5 V ± 5%（RFID module）
2) Current consumption	Static current 0.1A
	Peak current during operation 1.5A (700mA in normal condition)
3) Card feeding-out speed	0.1m/s OR 0.3m/s approx.
4) Interface	RS-232C
5) Card standard	size: 55×86 mm
	thickness: 0.2mm--2.0mm（ex-work:0.8mm, i.e.: red point）
6) Weight	2.5 Kg approx
7) Dimension	Refer to the enclosed mechanical drawing
8) Card stacking capability	185pcs in case of 0.76 mm card

(can be set to 1000pcs max)
Stacker adding fitting: Short: 60PCS;
Long: 170PCS
Extra Long:285PCS

9) Card pre-empty detection	20~80pcs±2pcs
10) Environmental conditions	Operation :-10 ~50℃, 0 ~ 90 % RH (without condensing) Storage :-20 ~ 85℃ , 0 ~ 90 % RH (without condensing)

3. Function:

1) Detection function
To detect the card empty, card pre-empty or being full of error card bin.

2) Doubled card dispensing prevention function
Mechanical design, one motor forward, the other motor backward operation, to fundamentally prevent 2 cards dispensing at the same time.

3) It can capture unlimited cards if you choose the function of "card capture channel".

4) Easy card thickness adjusting device.
Patent technology, easy to adjust card thickness by revolving graduation of knob.

5) Eyewinkers prevention function
Reflected optical sensing location card is not effected by dust or other eyewinkers. Professional designed shutter to guard against eyewinkers, eyewinkers cannot be inserted from the dispenser exit. Saving the maintain cost.

6) Sensor circuit integration and photoelectricity to ensure the machine's stability and maintain after sale.

7) Pre-dispense function accelerate the speed of dispensing, to keep dispense continuously.

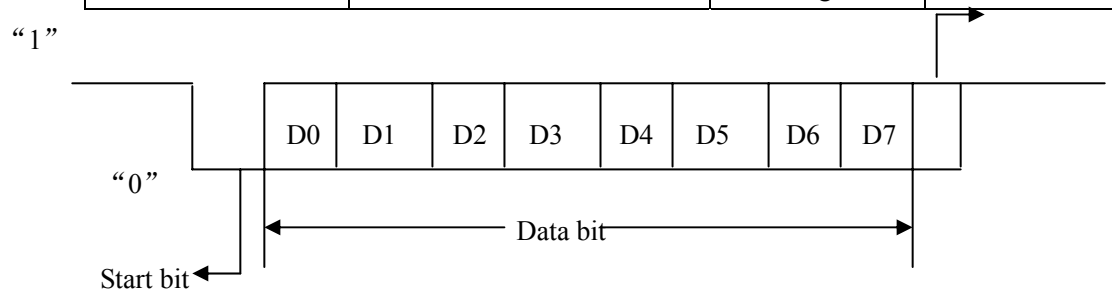
8) Download on line: support ISP download on line.

9). Option for the speed of dispensing card.

4. RS232 Communication (For dispenser)

4.1 RS232 Communication protocol

Baud rate (BPS) : Can be set by the host (Default: 9600 bps)
Communication type : Asynchronous communication
Transmit type : Half duplex
Bit 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〉 O O X 〈ETX〉 〈BCC〉

Command

〈STX〉 ： 0 2 H， frame start

〈ETX〉 ： 0 3 H， frame stop

〈BCC〉 ：〈 S T X 〉⊕ 0 ⊕ 0 ⊕ 〈 E T X 〉, block parity

'O' ： ASCLL of one bit

'X' ： ASCLL of one bit, parameter of extending command(Possible to be without the basic command)

4.2.2 RF Status checking return

<STX> S F ○ ○ ○ <ETX><BCC>

Flag code

Command (send flag)

<STX> : 0 2 (HEX) , Frame start

<ETX> : 0 3 (HEX) , Frame end

<BCC>: <STX> ⊕ 'S' ⊕ 'F' ⊕ 0 ⊕ 0 ⊕ 0 ⊕ <ETX>, Block Check Code

Definition of Flag Code

HEX	BIN	STATUS
800	1 0 0 0 0 0 0 0 0 0 0 0	Dispensing card
400	0 1 0 0 0 0 0 0 0 0 0 0	Capturing 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 Capture card
040	0 0 0 0 0 1 0 0 0 0 0 0	Overlapping cards
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	Disp-Sensor Status
002	0 0 0 0 0 0 0 0 0 0 1 0	Capt-Sensor 2 Status
001	0 0 0 0 0 0 0 0 0 0 0 1	Capt-Sensor 1 Status

4.2.3 AP status checking return

<STX> S F ○○○○ <ETX><BCC>

Flag Code

Command (Send Flag)

<STX> : 0 2 (HEX) , Frame start

<ETX> : 0 3 (HEX) , Frame end

<BCC>: <STX> ⊕ 'S' ⊕ 'F' ⊕ 0 ⊕ 0 ⊕ 0 ⊕ 0 ⊕ <ETX>, Block Check Code

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 is full
0800	0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0	Card Is Dispensing
0400	0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0	Card Is 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 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	Disp-Sensor Status
0002	0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0	Capt-Sensor 2 Status
0001	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1	Capt-Sensor 1 Status

4.3 Basic command code（Compatible with KDE-1500）

Command（ＡＳＣＬＬ）	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>

4.4 Extend CRT Command

4.4. 1For dispenser parts

Command +Parameter	comment	Return
"FC"+ Position	Dispense card to the specified position Dispense card to the indicated position {0，1，2，3，4，5，6}, they are {0x30,0x34,0x33, 0x32,0x31,0x36,0x37}	< 06H>
"CS"+ Position	Set up Baud rate.(0-5, indicate 1200BPS-38400BPS)。	< 06H>
"IN"+ Parameter	Setting of card inserted from dispenser mouth: Parameter =0x30 Prohibit cards in =0x31 Allow cards into error card bin =0x32 Allow cards into card read/write position (I.e. card stop location 2)	<06H>
"SI"	Check the setting status of card inserted from the dispenser mouth	SI +Parameter(similar to RF command returned)

Note：(1) "4"is the position for card pre-dispense, program will execute "pre-dispense" automatically(Except press "Reset" key stoke on the dispenser by hand); Execute "PC+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 a operation command for EEPRON. 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

4.4.2 Communication Command with RFID Module or other 3rd module

Command + Parameter	Return	Comment
"SB"+PM	<06H>	Set the baud rate for CRT-570 with the 3rd module （PM={0x30-0x35}，they are 1200BPS-38400BPS）。
"SE"+DATAB	Returned data package	Comments used to send the 3rd party module

4.4.2.1. Basic principle of CRT-570 with One series port

CRT-601 RFID R/W module modified as a driven parts of CRT-30 special module.(This CRT-530 special module with itself circuit and programe are different from CRT-530 standard version), which is composed a CRT-570, and communicate with PC or host. All the card movement controlled by CRT-530 special module, and R/W cards command with "data not dropped" method, CRT-530 module received the commands from host, then decode the package, and send to CRT-601 module. Then response commands from CRT-601 are sent to host. Under this controlling way, CRT-530 not only can control the CRT-601, also can control the 3rd party module with RS232 communication, which is convenient to extend the CRT-570 in most degree.

4.4.2.2 “SB” command

Command execution method is same as BPS setting for CRT-570

4.4.2.2 "SE" Command

Format of command sending：

STX	'S'	'E'	SLEN	RLEN	TIMEOUT	DATAB	ETX	BCC

Note：

[1]SLEN：it is the length of sending command package, It is 2 bytes. High byte is in front, low byte is behind, Not including RLEN & TIMEOUT, Only for DATAB length

[2] RLEN: It is the estimated biggest DATAC length in the returned package(actually, it would be less than the biggest length or equal to the biggest length), the length is 2 bytes, high byte is in front, low byte is behind.

[3]TIMEOUT：valid value 1-0XFF, each unit is 0.5s.

[4]DATAB Command package：the whole command package for the 3rd module

Retuned command package：

STX`	'S'	'E'	"RLEN"	DATAC	ETX	BCC

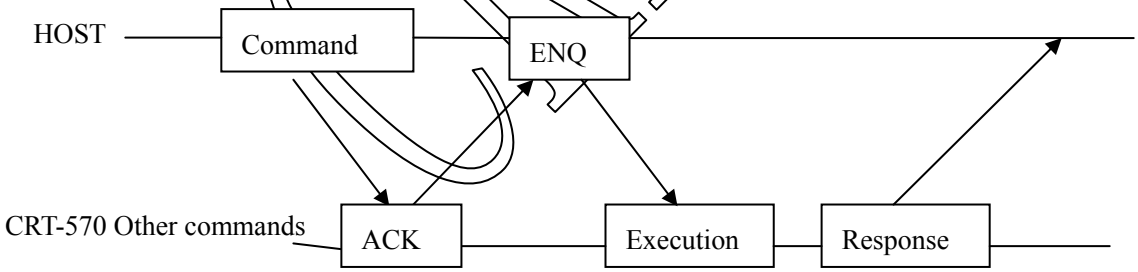
Note：

[1]"RLEN"：Returned DATAC actual length, the length is 2 bytes, high byte is in front, low byte is behind.

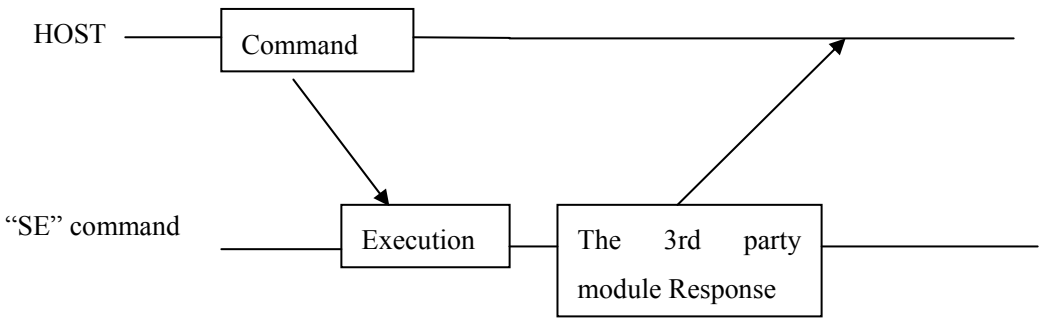
[2]DATAC：Data package returned by the 3rd module。

Attention：SE command execution procedule is different from the other command of CRT-570

Other command execution procedule chart:



"SE" command execution procedule chart：



Therefore, the complete commands of 3rd part's execution course should be composed with 2 groups "SE'.

Note: 3rd party module means the RF ID module integrated by customer.

4.5 Specification of photoelectricity sensor and card stop location

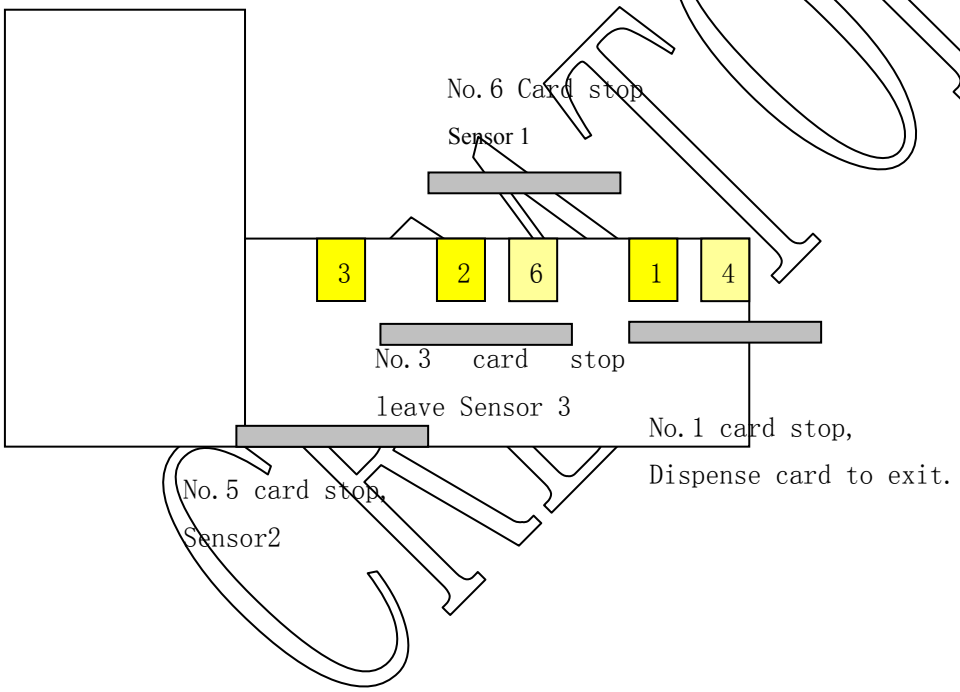
4.5.1 Definition of graph

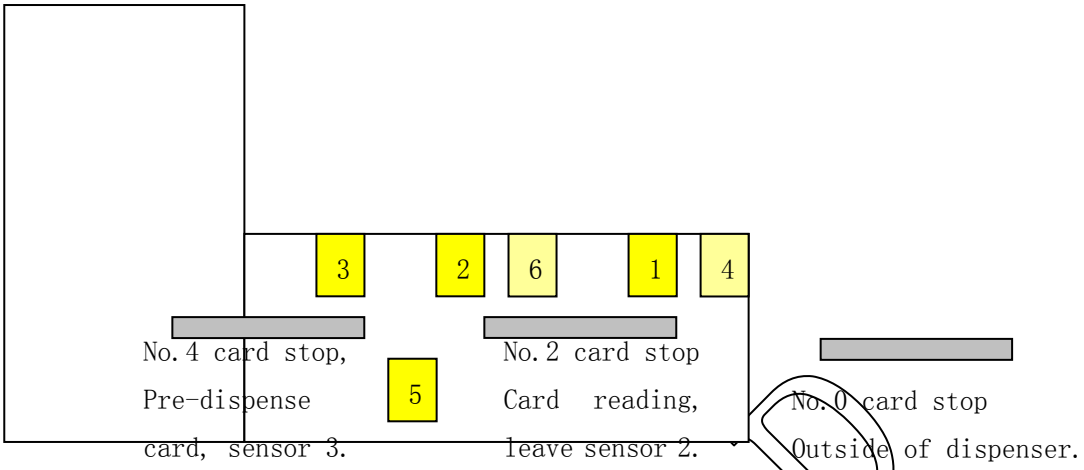
Card Stop Location

n photoelectricity sensor

n photoelectricity sensor preserved

4.5.2 Sketch map of card stop location and photoelectricity sensor



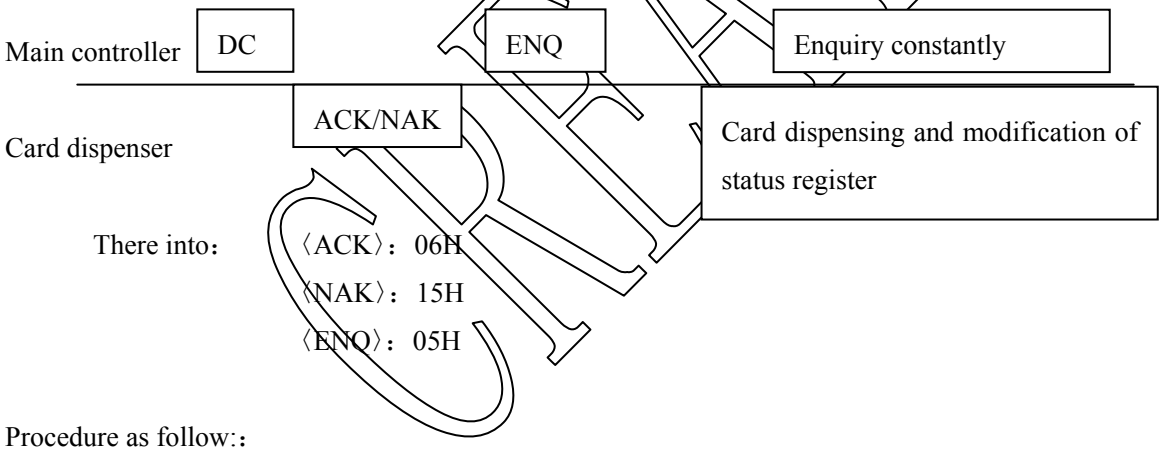


4.6 Communication sample：

4.6.1 Card dispensing

Main controller ：〈STX〉 DC 〈ETX〉〈BCC〉

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

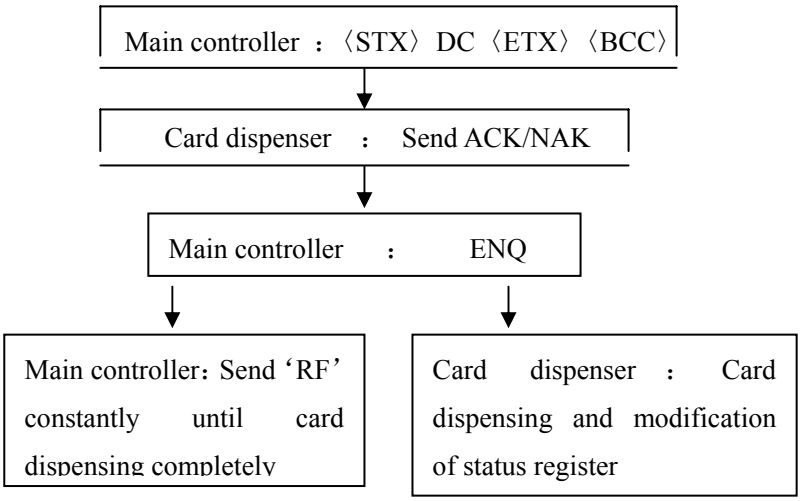


There into： 〈ACK〉：06H

〈NAK〉：15H

〈ENQ〉：05H

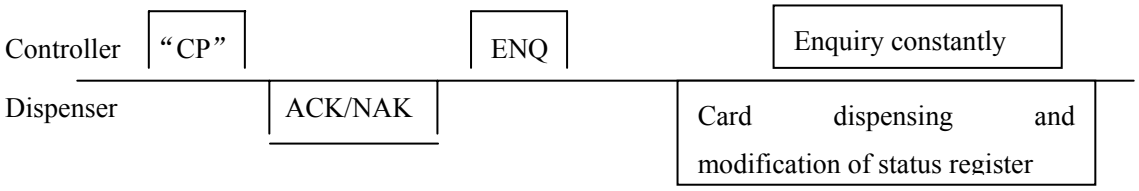
Procedure as follow:：



4.6.2 Card capture（the procedure is similar to card dispensing）

Main controller ：〈STX〉 CP 〈ETX〉〈BCC〉

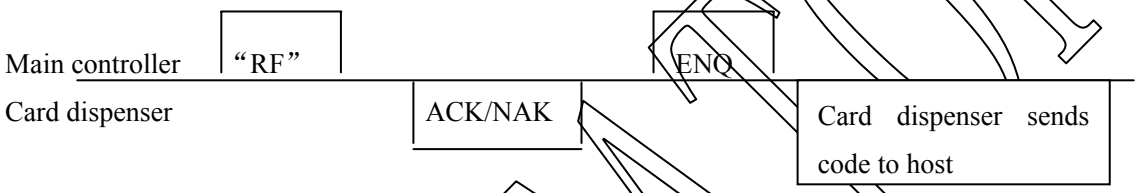
Card dispensing ：Send ACK，responsible for card dispensing and modification of status of register



4.6.3 Status require

Main controller ：〈STX〉 RF 〈ETX〉〈BCC〉

Card dispenser ： Send ACK, receive ENQ, then send 〈STX〉 SF OOO 〈ETX〉



5. ADJUST THE THICKNESS OF CARD DISPENSING

Card thickness can be adjusted by gyration of knob, which makes it easier, simpler and more precise for card or ticket system.

5.1 Procedure of adjustment

The space between card dispensing wheels we set is 0.8mm , the range of the thickness is 0.2mm---2mm. Specific operation as follow: to adjust knob clockwise while dispense thick card. The base is the red point on iron sheet the knob pointed. The thickness increases 0.05mm while adjust one scale, that means it could disperse 0.85mm (+/-0.05mm) standard card. The thickest card dispenser could dispense is 2.0mm (+0.1mm) analogously. To adjust the knob anticlockwise while dispense thin card, the thinnest card dispenser could dispense is 0.2mm (+0.1mm).

5.2 Card thickness adjustment table

No.	Thickness(mm)	Recommend(scale)	Range（scale）	Remark
1	0.25	10Anticlockwise	8-12 Anticlockwise	
2	0.45	7Anticlockwise	6-10 Anticlockwise	
3	0.8	Red point	2 anticlockwise	

			5 clockwise	
4	1.2	8 Clockwise	More than 8 clockwise	

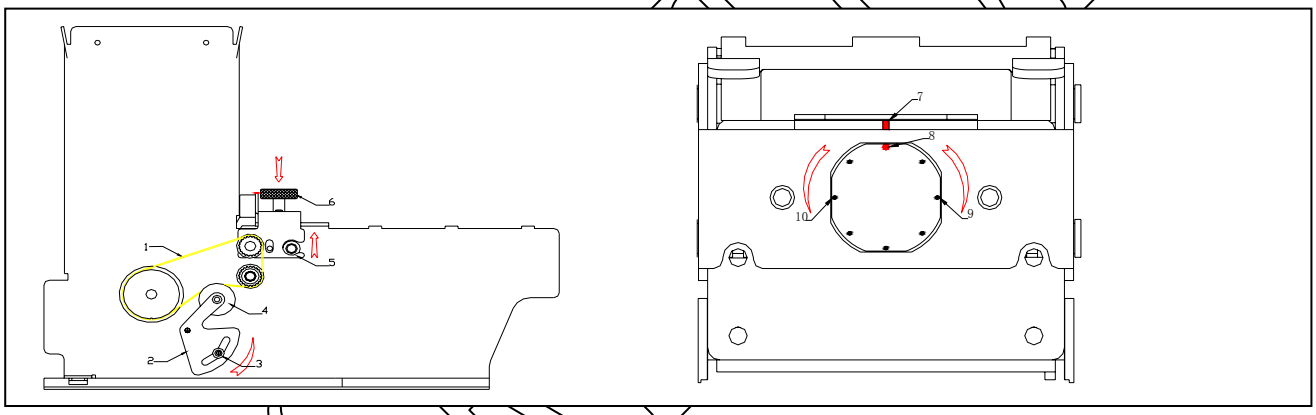
Note：（1）Red point means to dispense 0.8mm card.

（2）Green point means to dispense 0.45mm card

（3）When dispense the card thicker than 0.4mm，Refer to the real adjustment.

Example: how to adjust the space to dispense 1.0mm card

1) To check whether red point scale 8 on the surface of knob pointed to red point 7. Adjust red point scale 8 to point7 if it is not. (adjust anticlockwise if the card thickness thicker than 0.8mm, and clockwise if the card thickness thinner than 0.8mm);
2) To adjust 2 scales clockwise, then scale 10 pointed to red point 7;
3) Install cards to test if the operation finishes.
4） In case of abnormal operation, generally, knob just can be adjusted by tool, but not by hand.



6. MAINTENANCE AND CAUTIONS

6.1 Maintenance

After using for some time or dispensing amount of cards, the dispenser will be serious wearing because of every part is running, so we need to do some maintenance to the machine. The steps as follows:

1）Check the parts of the dispenser. If they become flexible or abnormal, reinforce them.
2）Check the straps of drive wheels. If they become flexible, regulate the position of the elasticity wheel.
3） Use cleaning card or soft cloth with alcohol to clean the dispenser wheel in the bottom of the hopper and the drive wheel.
4）Use soft cloth with alcohol to clean the dirty cards and replace the distortion cards
5) Check the graduation of knob to see whether they are corresponding.

6.2 Cautions for safe use

1） Ensure the power connected with card dispenser is off while repairing the whole machine.

2） Notice the cathode and anode of the machine power while power on for the first time.

3） Notice the Specification of JUMP when using for the first time, because improper JUMP will cause work off or unpredictable status.

4） If you do not use insulation power, external power must not be connected to insulation power, otherwise, PCB will be broken.

5) Prohibit to inset or pull out the receptacle of the port. Otherwise, the circuit of the controller may be spoiled.

6） Ensure the dispenser out of smear. The smear will affect the capability of the dispenser.

7) On the back of dispenser side board, there is a red soft manual "Reset " keystoke. When error or abnormal situation occurs on spot, then engineer can press this keystoke for reset. It is not used in general situation.

8) Red soft "RESET" keystoke function is looked as card coordinating and card return to pre-dispense or capture position when error occurs. Once use "RESET", Pre-dispense will be invalid, until use "DC" and "FC".

9) "RESET" has overtime protection function, when the keystoke is pressed for a long time, then motor will stop automatically to protect itself.

6.3 Caution for program

1）"4"is pre-dispense position, FC command will not has the function of this position.

2）In order to improve the communication speed of the program, condition inspection will just be execute one time when "RESET"; User can "Reset" to check if the condition is correct. (Reset by three ways: press "RESET" on PCB of dispenser bottom, press red soft "RESET" on back of dispenser side board, or by power on/off)

3) Under RS232 mode, sending enquiry command will cause program enter communication interruption processing, which will affect card dispensing and other execution, the time alternation for next enquiry command should be over 200ms.

7．WARRANTY

1) One year guarantee free of charge. Counting from the day that users receive the goods.

2) User sends the goods to us for repairing.

3) Provide after-sale service after exceeding guarantee period. We will take some material fee if need to replace fittings. And we will take some upkeep in the follows situations although it is in guarantee period:

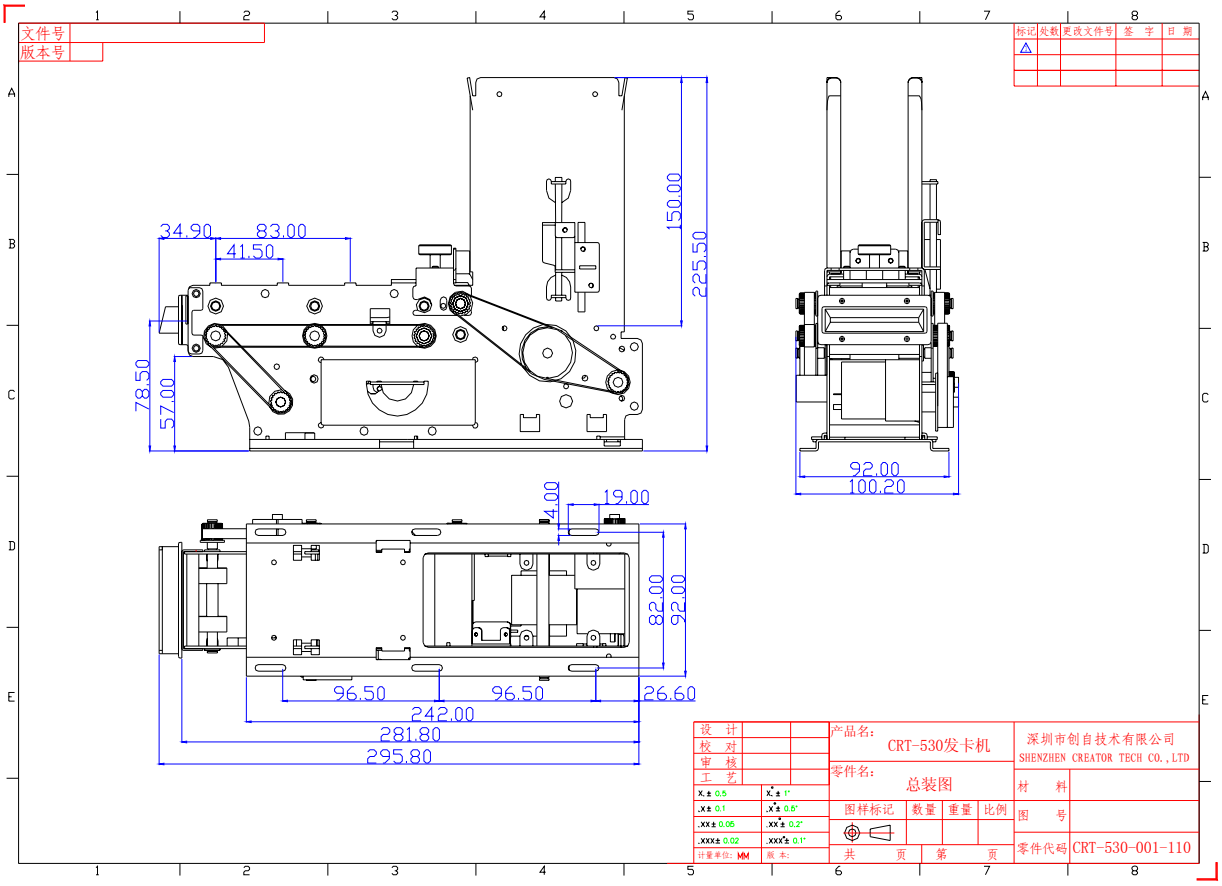
a) Damage and trouble caused artificially;

b) Damage and trouble caused by non-professional operation;

c) Damage and trouble caused by instability of user's power supply;

d) Damage and trouble caused by force majeure, such as earthquake, natural weather etc.。

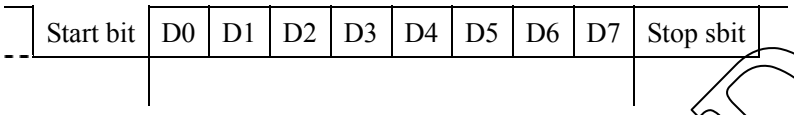
8. Dimension drawing



9. Appendix：RFID Module CRT-601 communication protocol

1. Communication format

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



2. Communication Control Method

The module, as a driven part, start working after receiving command from host 。

3. Command Character

STX (0X02)	Start character of data package
ETX (0X03)	End character of data package
ENQ (0X05)	Sending require command (host -> unit)
ACK (0X06)	Positive answer
NAK (0X15)	Negative answer
EOT (0X04)	Cancel communication

4. Communication Command Structure (Data package format of command and returned information)

STX(0x02)	Command package	ETX(0x03)	BCC

BCC calculating with XOR, BCC=STX ^ Command Package ^ ETX (^ is XOR operator)

E.g. Reset command

0x02	0x00	0x02	0x30	0x30	0x03	BCC

BCC = 0x02 ^ 0x00 ^ 0x02 ^ 0x30 ^ 0x30 ^ 0x03

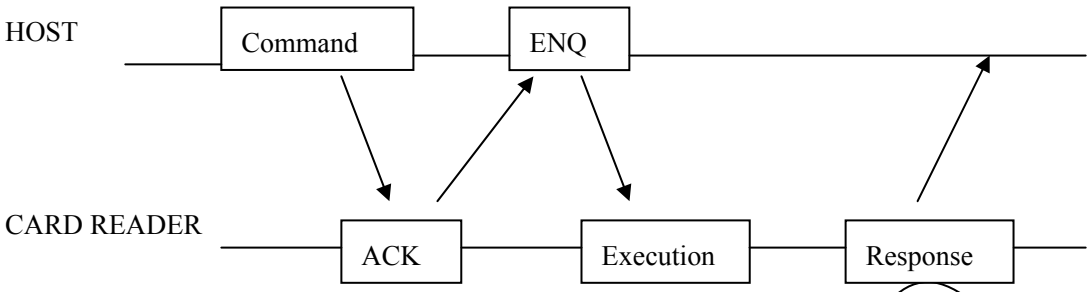
5. Control Command Structure

A C K	N A K	E N Q	E O T

6. Communication Process Descriptions

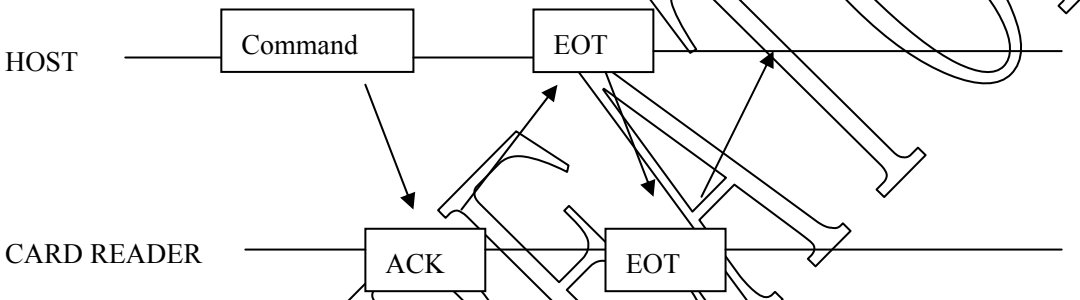
6.1 Normal communication process (command operation)

A Command operation



Host sends command, Reader receives and checks if BCC is correct. Host sends ENQ after return ACK, Reader will execute the relevant operation and return relevant operation information to host according the command.

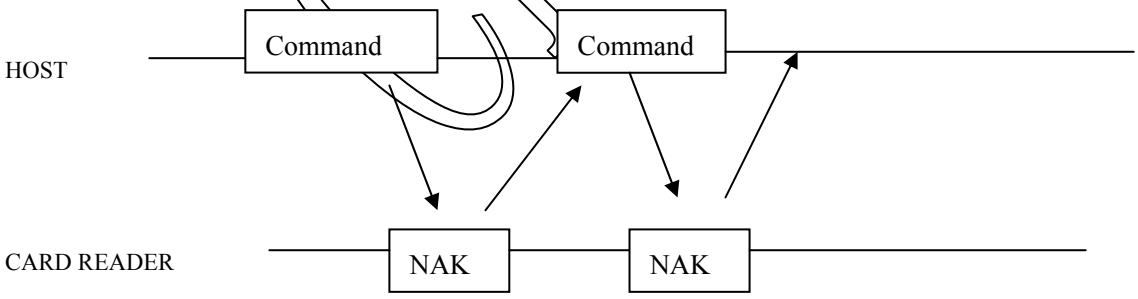
B Cancel Command operation



Host send EOT, Reader end current command status and return EOT, then waiting for Host command.

6.2 Abnormal communication process

A BCC error

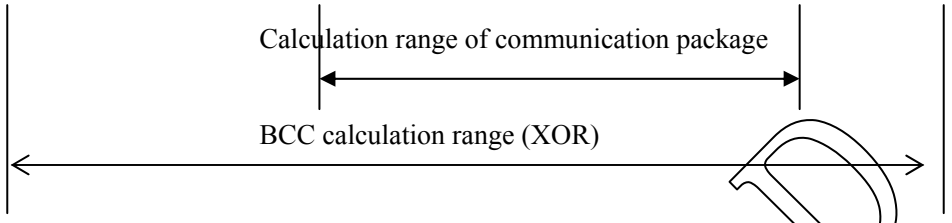


When card reader receives a communication package with BCC error, NAK will be responsed to Host, which means receiving the communication package with BCC error. Host need to check if it is right when sending communication package with BCC . ACK will be responsed to Host when card reader receive a communication package with right BCC。

7. Communication Operation

7.1 Send command data package format

STX (0x02)	Length of communication package (2 byte)	Command byte CM (1 byte)	Command parameter PM (1 byte)	Data package (n byte)	ETX (0x03)	BCC (1 byte)



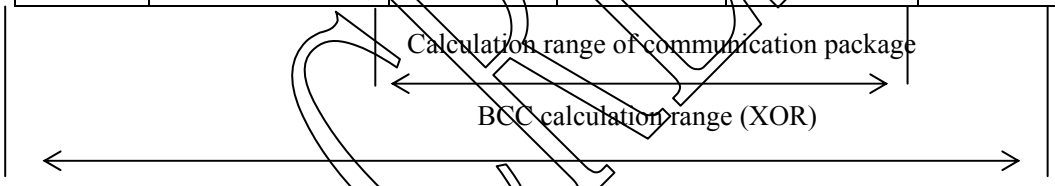
a. n byte: range of n: Max=264 byte. Min=0 byte

b. Communication package in 2 bytes transmit, former one is high byte, behind one is low byte.

7.2 Returned data package format

7.2.1 Normal return

STX (0x02)	Length of communication package (2 byte)	Command byte (1 byte))	Command parameter (1 byte)	Data package (n byte))	ETX (0x03)	BCC (1 byte)

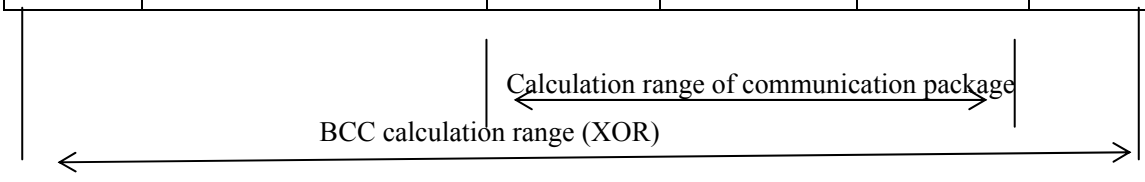


a. n byte: range of n: Max=264 byte. Min=0 byte

b. Returned command byte and command parameter is the operated command byte and command parameter transmit from Host to Reader

7.2.2 Abnormal return

STX (0x02)	Length of communication package (2 byte)	'N'(0X4E) (1 byte)	Command byte CM (1 byte)	Error byte E (1 byte)	ETX (0x03)	BCC (1 byte)



Meaning of error byte:

Error byte E	Description
0x00	Command byte error
0x01	Command parameter error
0x02	Command cannot be executed
0x04	Command data package error

Note: abnormal returned data package shows an abnormal response when host send the communication package including command byte, command parameter, and RFID module.
Error byte E=0X00, means command byte of communication package send by host is undefined, and it is an illegal command.
Error byte E=0X01, means command parameter of communication package send by host is undefined, and it is an illegal command.
Error byte E=0X02, means communication package send by host is not supported, and cannot be executed.
Error byte E=0X04, means communication package send by host is not compliant with the requirement of communication protocol, and the format is error

8. CRT-6XX V1 communication protocol of R/W card

8．1. Mifare 1 Card Operation Command

8.1.1 Seek RF card

HOST sends：

0x02	0x00	0x02	0x35	0x30	0x03	BCC

READER returns：

0x02	0x00	0x03	0x35	0x30	Operation status byte P	0x03	BCC

P= ‘Y’ (0X59)　seek card successfully

P= ‘N’ (0X4E)　fail to seek card

8.1.2 Capture S/N of Mifare 1 card

HOST send：

0x02	0x00	0x02	0x35	0x31	0x03	BCC

READER return：

0x02	0x00	0x07	0x35	0x31	Operation status P	4 byte hex Card S/N	0x03	BCC

P= ‘Y’ (0X59)　capture card S/N successfully and return the card S/N;

P= ‘N’ (0X4E)　fail to capture card S/N and return empty S/N (0X00, 0X00, 0X00, 0X00)

4byte card S/N is transmitted with hex. E.g.: “ C6B272AE”

E.g.：uploaded communication package：0x02 0x00 0x06 0x35 0x31 **0xC6 0xB2 0x72 0xAE** 0x03 BCC

8.1.3 Check Password of Sector

8.1.3.1 Parity Key_A：

HOST send：

0x02	0x00	0x09	0x35	0x32	Sector No.	6 byte hex password	0x03	bcc

READER return：

0x02	0x00	0x04	0x35	0x32	Sector No.	Operation status byte P	0x03	bcc

Operation status byte　P= ‘Y’ (0X59)　password parity successfully

P= ‘0’ (0X30)　fail to seek RF card

P= ‘3’ (0X33)　password error

8.1.3.2 Parity Key_B：

HOST send：

0x02	0x00	0x09	0x35	0x39	Sector No.	6 byte hex password	0x03	bcc

READER return：

0x02	0x00	0x04	0x35	0x39	Sector No.	Operation status byte P	0x03	bcc

Operation status byte　P= ‘Y’ (0X59)　password parity successfully

P= ‘0’ (0X30)　no RF card in

P= ‘3’ (0X33)　password error

Note: Sector No.=0x00~0x28(sector No. for S50 is 0x00~0x0F. sector No. for S70 is 0x00~0x28)

Block No. = 0x00~0x0F（For S50, there are 4 blocks for each sector they are 0x00 0x01 0x02 0x03.)

If need to read/write or other operation, It should be required to verify sector password successfully

8.1.4 Read data on sector

HOST send：

0x02	0x00	0x04	0x35	0x33	Sector No.	Block No.	0x03	BCC

When the card is S50. Sector No.=0x00~0x0F (there are 16 sectors for S50), block No.= 0x00 0x01 0x02 0x03

Reader reads data successfully and returns： P='Y'（0x59）

0x02	0x00	0x15	0x35	0x33	Sector No.	Block No.	Operation status byte P	16 byte hex data	0x03	BCC

Read sector block data successfully and upload 16 byte data

Reader fails to read sector block data and returns：

0x02	0x00	0x05	0x35	0x33	Sector No.	Block No.	Operation status byte P	0x03	BCC

Operation status byte

P= '0' (0X30) cannot seek RF card

P= '1' (0X31) operated sector No. is wrong (not the sector by password checked)

P= '2' (0X32) S/N of operated card error

P= '3' (0X33) password error

P= '4' (0X34) data read error

Note: Sector No.= 0x00 ~0x28 （For S50, the sector No. is 0x00~0x0F）

Block No. = 0x00~0x0F(For S50,there are 4 blocks for each sector, they are 0x00 0x01 0x02 0x03.)

8.1.5 Write data on sector

HOST send：

0x02	0x00	0x14	0x35	0x34	Block No.	16 byte hex data	0x03	BCC

Reader writes data successfully and returns：

0x02	0x00	0x15	0x35	0x34	Sector No.	Block No.	operation status byte P	16 byte hex data	0x03	BCC

operation status byte：P='Y'（0x59）

Write sector block data successfully and upload 16 byte data that is written

Reader fails to write sector block data and returns：

0x02	0x00	0x05	0x35	0x33	Sector No.	Block No.	operation status byte P	0x03	BCC

operation status byte

P= '0' (0X30) cannot seek RF card

P= '1' (0X31) operated sector No. is wrong (not the sector by password checked)

P= '2' (0X32) S/N of operated card error

P= '3' (0X33) password error

P= '4' (0X34) block data written error

Note: Sector No.= 0x00 ~0x28 (For S50, the sector No. is 0x00~0x0F）

Block No. = 0x00~0x0F (For S50,there are 4 blocks for each sector, they are 0x00 0x01 0x02 0x03)

8.1.6 Modify password: This operation can modify password of KEYA only, and change KEYB password to: "0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF"; at the same time modify the storage area to: "0xFF, 0x07, 0x80, 0x69". (Default when ex-work)

HOST Send:

0x02	0x00	0x09	0x35	0x35	Sector No.	6 byte hex password	0x03	bcc

Sector No.= 0x00~0x28 （For S50, Sector No.is 0x00~0x0F， for S70 Sector No. is 0x00 ~0x28）

READER Return:

0x02	0x00	0x04	0x35	0x35	Sector No.	operation status byteP	0x03	bcc

operation status byte

P= 'Y' (0X59) password changed successfully

P= '0' (0X30) cannot seek RF card

P= '1' (0X31) operated sector No. is wrong (not the sector by password checked)

P= '2' (0X32) S/N of operated card error

P= '3' (0X33) password error

To change operation password of sector (KeyA or KeyB) and the storage area completely, write block 3 data of each sector after checking password successfully.

The format as below (see details in PHILIPS M1 card specification)::

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
6 byte KeyA password						4 byte storage area				6 byte KeyB password					

8.1.7 Increment value Operation

HOST send:

0x02	0x00	0x08	0x35	0x37	Sector No.	Block No.	4 byte hex data	0x03	BCC

4 byte hex data is the increased value of appointed sector block (low byte in front, high byte behind). The value cannot be 0; otherwise, operating will be failure.

Eg. The sector 5 block 0 need to increase to 0x10, the 4 byte hex data are: "0x10, 0x00, 0x00, 0x00"

READER Return:

0x02	0x00	0x05	0x35	0x37	Sector No.	Block No.	operation status byteP	0x03	BCC

operation status byte

P= '0 '(0X30) cannot seek RF card

P= '1' (0X31) operated sector No. is wrong (not the sector by password checked)

P= '2' (0X32) S/N of operated card error

P= '3' (0X33) password error

P= '4' (0X34) format of block data error (not written in a value format)

P= '5' (0X35) increment over load

P= 'Y' (0X59) operation successful

Sector No. = 0x00~0x28 （For S50, Sector No. is 0x00 ~0x0F，

Block No. = 0x00 ~0x0E （For S50, Block No. is 0x00 0x01 0x02，

The last block of each sector cannot be done increment value operation

8.1.8 Decrement value operation

HOST Send ：

0x02	0x00	0x08	0x35	0x38	Sector No.	Block No.	4 byte hex data	0x03	BCC

4 byte hex data is the decreased value of appointed sector block (low byte in front, high byte behind). The value cannot be 0; otherwise, operating will be failure.

READER Return：

0x02	0x00	0x05	0x35	0x38	Sector No.	Block No.	operation status byteP	0x03	BCC

operation status byte

P= ‘0’ (0X30) cannot seek RF card

P= ‘1’ (0X31) operated sector No. is wrong (not the sector by password checked)

P= ‘2’ (0X32) S/N of operated card error

P= ‘3’ (0X33) password error

P= ‘4’ (0X34) format of block data error (not written in a value format)）

P= ‘5’ (0X35) decrement over load

P= ‘Y’ (0X59) operation success

Sector No.= 0x00 ~0x28 （For S50, Sector No. is 0x00 ~0x0F）

Block No.= 0x00 ~0x0E （For S50, Block No. is 0x00 0x01 0x02）

The last block of each sector cannot be done decrement value operation

8.1.9 Value initialize: Executed by write block data command, writing 16 byte data according to MIFARE value format. The format as below:

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Value				/Value				Value				Adr	/Adr	Adr	/Adr

Value: the initializing 4 byte value, low byte of the value in front, high byte behind

/Value: value opposite the initializing 4 byte value

Adr: the block address of the initializing value：

Adr= Sector No. X 4 + Block No. (S50: 0-15sector)

/Adr: value opposite of the initializing block address

The last block of each sector cannot be done the initial value operation.

Eg. The sector 5 block 0 initial value is 10, the 16 byte data write to sector block are:

“ 0x0A, 0x00, 0x00, 0x00, 0xF0, 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0x14, 0xEB, 0x14, 0xEB ”

For S70, the sector 39 block 0 initial value is 10, the 16 byte data write to sector block are :

“ 0x0A, 0x00, 0x00, 0x00, 0xF0, 0xFF,0xFF ,0xFF , 0x0A, 0x00, 0x00, 0x00, 0xF0, 0x0F, 0XF0, 0x0F ”

8.1.10 Read value

Executed with reading sector block data command, for the16 byte data format, it should be in MIFARE card value data format. If yes, read the value, if not, reading error alert (error data format).

NOTE: when processing a value operation, the third block of each sector in Sector 0-15 For S50 , are storage for KEYA, control byte, KEYB, which cannot save a value data And notice the address range of the sector when initializing value, increment, decrement, read value.

8.1.11 Control Buzzer

HOST Send：

0x02	0x00	0x03	0x35	0x3F	Beep	0x03	BCC

Beep=0

Beep=1

Operation Return：

0x02	0x00	0x04	0x35	0x3F	Beep	operation status byte P	0x03	BCC

operation status byte

P='Y'（0x59） Success

P='N'（0x4E） Failure

（END）