FQ

Ingeniería Electrónica

SMART IDENT

CARD DISPENSER

WITH SEGURITY CARTRIDGE

Preliminary Specifications

User Manual

KSC-2300 Rev. A

KSC-23xx Card Dispenser

With Security Cartridge having its own I.D

	APPROVAL		

RESP. DEPT.	R & D		ORIGINATOR				
APPROVAL & CONFIRMATUON	DEPT.	Int'l Sales					
	APPROVAL BY						
	DEPT.					DOC. CON	APP.
	APPROVED BY						

● REVISION HISTORY

CHECK	DATE	DESCRIPTION	REV.	PAGE
1	2014.03.11	Preliminary	X1	20

CONTENTS

1. Overview

 All the processes and operations of KSC-23XX are monitored by its intelligent Microprocessor,

which makes itself self-recover function from faulty running.

KSC-23XX has a function to takes an Error card back to the bin. This function is called "Capture".

The KSC-23XX has Security cartridges having its own I.D in it.

KSC-23XX series are applied and integrated to following products and systems;

- Prepaid card vending machine

- ID card issuing machine

- Parking card vending machine

- Payphone card vending machine

- Automatic card issuing machine

- Ticketing vending machine

- And more

2. Features

2.1. Card thickness dispensable can be adjusted easily.
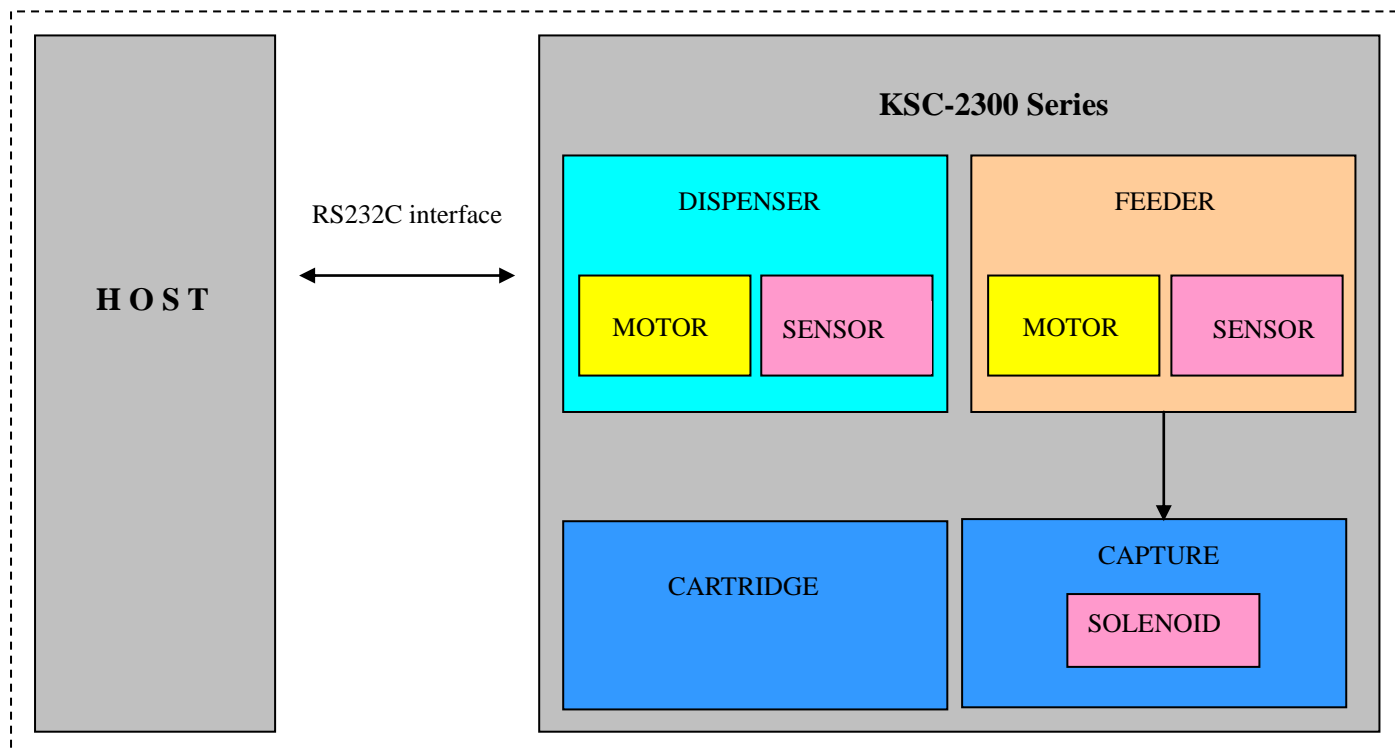
Card thickness adjustable from 0.76mm up to 0.84mm.

2.2. RS232C Interface

A. Baud Rate : changeable(9,600 BPS ⟷ 19,200BPS)

B. Can change position of card (one way direction allowed)

C. With Self-diagnosis function.

D. Easy to control

3. System Block Diagram

4. Environmental Requirements

4.1 Operating Temperature and Humidity: 0~40℃, 0~95% RH

4.2 Conservation Temperature and Humidity: -20~70℃, 0~95% RH

5. Specifications.

5.1. Model.

MODEL	KSC-234X
Dimensions (W x L x H) mm	128 x 321 x 600
Card Dispensing Time (Sec)	1.7
Max. Card Loading Capacity	500pcs
	In case of 0.8 mm card
Total Weight (Kg)	
Applicable Cards	Phone Card, Credit, Debit, Pre_padi, I.C Card, RF Card, Parking Card
Card Material	P.V.C, A.B.S, P.E.T, Etc.
Max. Card Width, Max. Card Length	ISO 7810
Max. Card Thickness	0.75 ~ 1.0 mm

5.2. Power Consumption

5.2.1. DC Motor Driver : Output Current 1.5A Per Channel..

5.2.2. Solenoid Driver : Output Current 0.8A Per Channel.

5.2.3. Input voltage : DC 24V Only (DC ±5%,   Min 2.5A) .

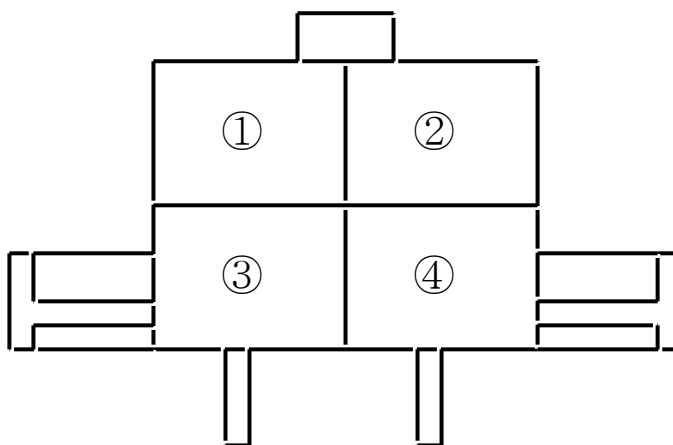5.2.4. Stand By : 44 mA(+5%).

6. DC Power Connector

6.1. Part Number : 5569-04A (MOLEX)

6.2. Power Connector Pin Table (PCB side).

    -   Connector number : J7

Front View (male)

Pin NO	Signal Name	Direction
1	DC +24V	Input
3	GND	`

7. Interface

7.1. RS232C Type.

Part Number : 53015-0310(Molex) , Connector number : JP3

. Connect Pin Table(PCB side)
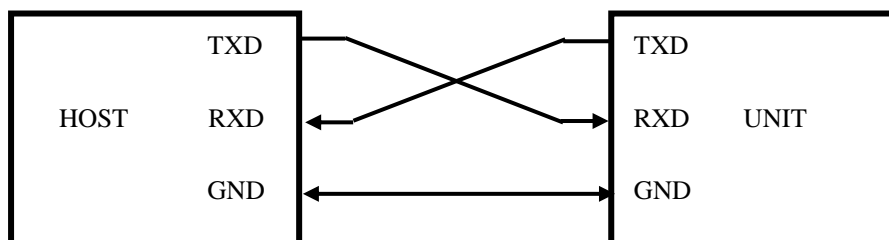
Pin No	Index	Remark
1	TXD	Transmit
2	RXD	Receive
3	GND	S.G

. Communication Method

- Asynchronous, Half duplex.

- Baud Rate   : 9600, 19200BPS (Default : 9600BPS)

- Data Length   : 8Bits

- Parity : None

- Stop Bit : 1Bit

7.2. RS422 Type.
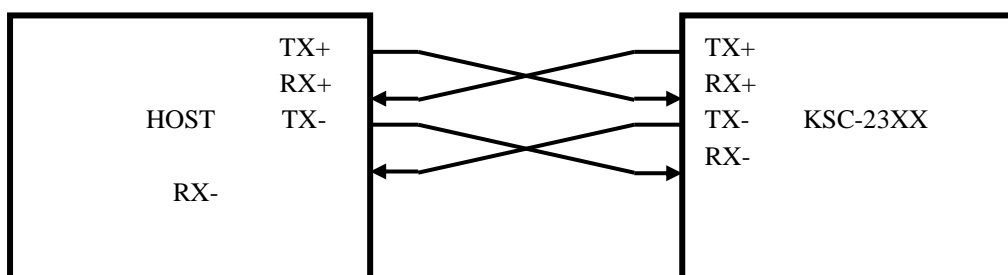
CASE 1) Part Number : D-SUB CONNECTOR(FEMALE)

Pin No	INDEX	Remark
1	TX+-	
4	RX+	
6	TX-	
8	RX-	

8. Technical Drawing
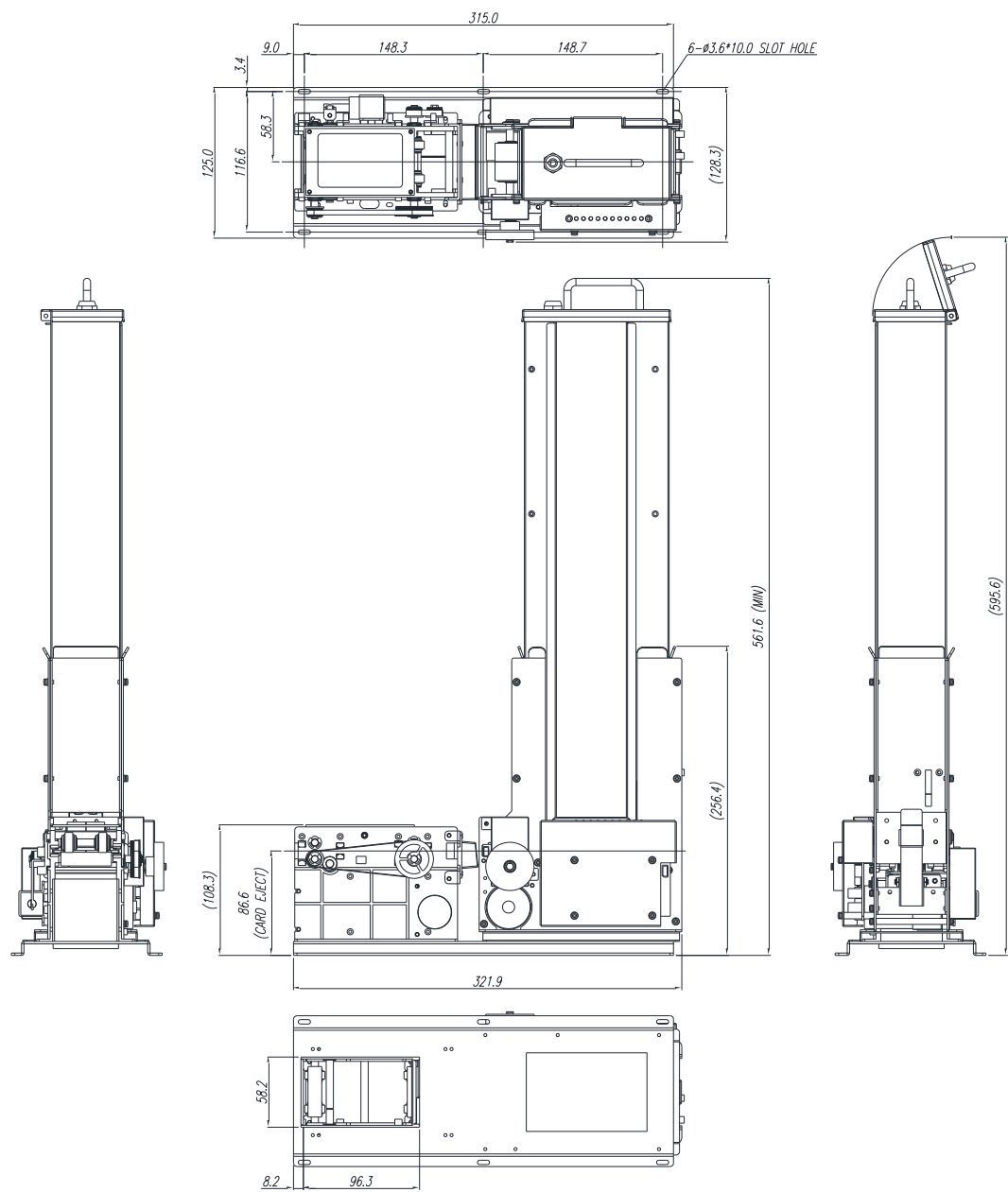
9. RS232C Interface

9.1. Control Characters

NANE	Hex Value	Description
STX	02	Start of Text
ETX	03	End of Text
EOT	04	End of Transmission
ENQ	05	Enquiry
ACK	06	Positive Acknowledge
NAK	15	Negative Acknowledge
CAN	18	Cancel

9.2. Frame Format

Command structure

STX	Command	ETX	BCC

Response structure

STX	Status	Status	ETX	BCC

BCC(X-OR)

BCC = STX ^ (Command and Status) ^ ETX

9.3. Communication Protocol Sequence

CASE 1)

HOST	COMMAND	
SLAVE		ACK

CASE 2) Request Command (0x31)
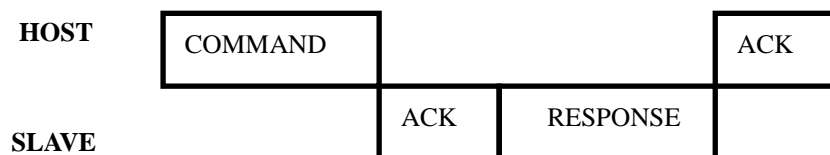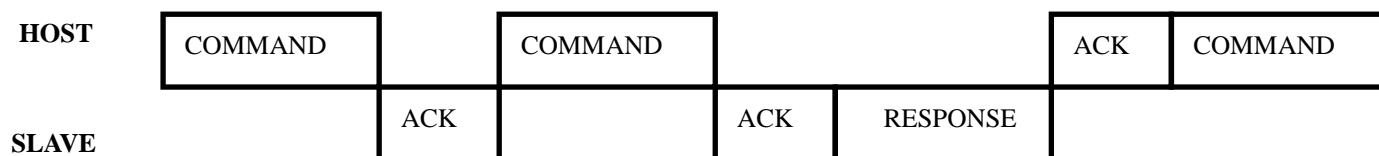
HOST	COMMAND			ACK
SLAVE		ACK	RESPONSE	

CASE 2-1)

HOST	COMMAND	COMMAND			ACK	COMMAND
SLAVE		ACK		ACK	RESPONSE	

CASE 2-2)

HOST	COMMAND	COMMAND			ACK
SLAVE		ACK		ACK	RESPONSE

HOST	COMMAND	COMMAND			ACK
SLAVE		CAN		ACK	RESPONSE

HOST	COMMAND	COMMAND			ACK
SLAVE		NAK		ACK	RESPONSE

CASE 2-3)
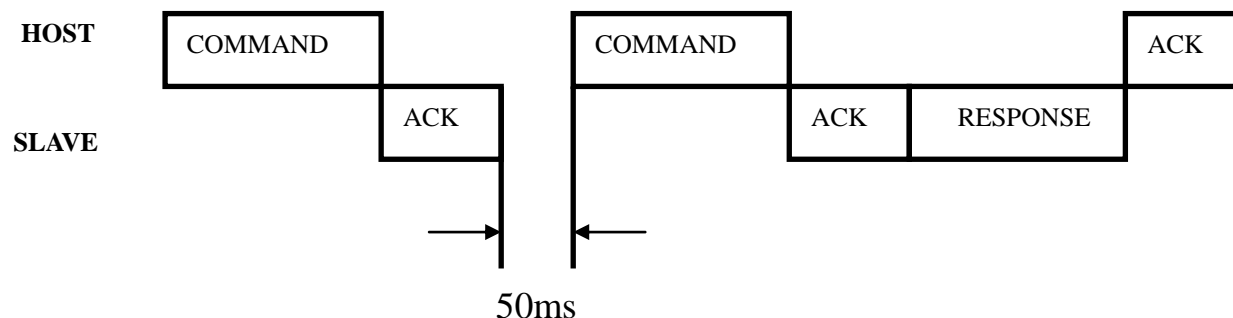
50ms

cf)   To change Baud Rate , send command 50mS after receiving   ACK .

10.1. Command Sets List

	Command	Description	Note
Clear	0x30	Error Clear	
Request	0x31	Status Request	
Issue	0x40	Issue	
Move	0x41	Issue Feeder Stand By	
	0x44	Feed Out	
	0x45	Capture	
	0x47	Feed Hold	
	0x48	Feeder Stand By	
	0x60	Rom Version	
Baud Rate Set	0x50	9600 BPS Setting	Default
	0x51	19200 BPS Setting	
Cartridge Memory	0xA6	Cartridge ID Write	
	0x90	Cartridge ID Read	
	0xAA	Write Number of Cards	
	0x96	Read Number of Cards	

10.2. Command Details

10.2.1. Clear

: Clear Motor Jam bit of   Status Request Command Response

※ Command Packet

STX	Command(0x30)	ETX	BCC

10.2.2. Status Request.

: Host's Request for status of dispenser

Command Packet

STX	Command(0x31)	ETX	BCC

※   Response Packet

STX	Status 1	Status 2	ETX	BCC

※   Status Data Format (1 byte) – Cf) Page 10

<DROP TYPE>

1) Status1

7	6	5	4	3	2	1	0
1 (Always)	Busy Flag	-	-	Two Card Flag	Hook Sensor	Feeder Jam Flag	Dispenser Jam Flag

Bit	0	1
0	No Card Jam of the Dispenser,	Card Jam of the Dispenser
1	No Card Jam of the Feeder,	Card Jam of the Feeder
2	Hook sensor didn't detect a card,	Hook sensor detected a card
3	No Two Card in the Feeder,	There are two Card in the Feeder
4	Feeder sensor4 didn't detect a card ,	Feeder sensor4 detected a card
5	**Reserved**	
6	Machine is not busy,	Machine is busy.(moving a card).
7	This flag is always set to 1.	

2) Status2 **cartridge.**

7	6	5	4	3	2	1	0
1 (Always)	Feeder Sensor4	Feeder Sensor3	Finish Sensor	Feeder Sensor2	Feeder Sensor1	Cartridge Sensor	Card Empty

Bit	Status	
0	There are Card in the Stacker,	There is no Card in the Stacker
1	Cartridge sensor didn't detect a card	Cartridge sensor detected a card
2	Feeder sensor1 didn't detect a card ,	Feeder sensor1 detected a card
3	Feeder sensor2 didn't detect a card ,	Feeder sensor2 detected a card
4	Finish sensor didn't detect a card ,	Finish sensor detected a card
5	Feeder sensor3 didn't detect a card ,	Feeder sensor3 detected a card
6	Feeder sensor4 didn't detect a card ,	Feeder sensor4 detected a card
7	This flag is always set to 1.	

Feeder sensor4

Feeder sensor3

Feeder sensor2

Hook sensor

Feeder sensor1

Cartridge sensor

Finish sensor

Empty Sensor
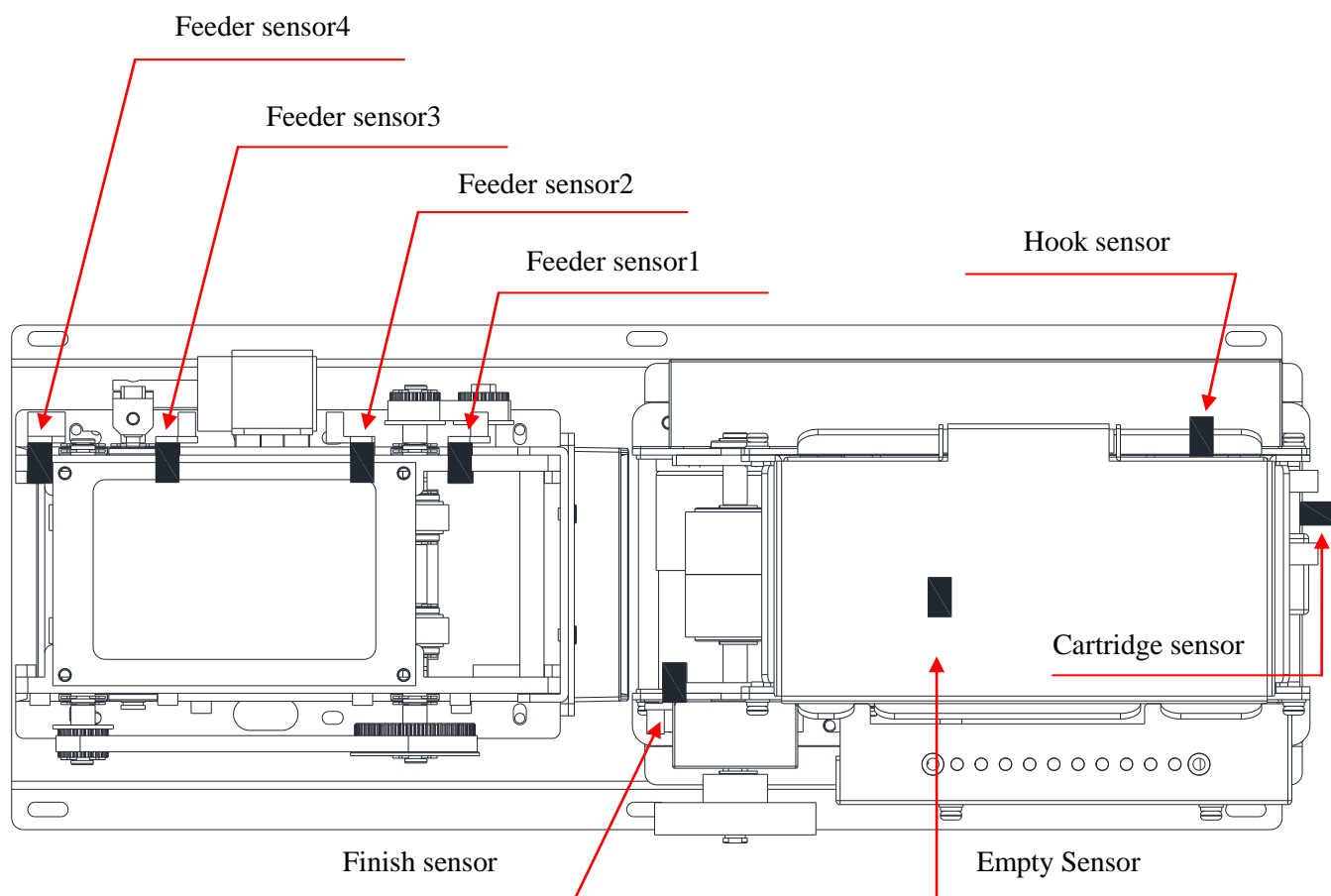
10.2.3. Issue
: Dispense the card. And completely eject it from the feeder module.

※ Command Packet
STX	Command(0x40)	ETX	BCC

10.2.4. Issue Feeder Stand By
: Dispense the card and move it between Sensor#1 and Sensor#3.

※ Command Packet
STX	Command(0x41)	ETX	BCC

10.2.5 Feeder Stand By.
: In the case that the card is present in the feeder module, move the card between Sensor#1, Sensor#3.
If the card is not present in the feeder module, spin the feeder motor in the reverse direction during waiting time(1~5 seconds). And then if Sensor1 detect the card, move it between Sensor#1 and Sensor#3.

※ Command Packet
STX	Command(0x48)	ETX	BCC

10.2.6 Feed Out

: When the card is present in the feeder module, completely eject the card.

While only feeder module sensors detect the card, if the unit receives "Feed Stop" command, the unit makes the card stop at once.

※ Command Packet

STX	Command(0x44)	ETX	BCC

10.2.7 Capture

: When the card is present in the feeder module, capture the card.

If card is not present in the feeder module, spin the feeder motor in reverse direction during waiting time (1~5 seconds).

And then if Sensor 1 detect the card in waiting time, capture it.

※ Command Packet

STX	Command(0x45)	ETX	BCC

10.2.8 Feed Hold

: Move the card to the outlet. And stop the card in Sensor#3.

※ Command Packet

STX	Command(0x47)	ETX	BCC

10.2.9. Baud Rate Set.

: Baud Rate Setting.(After ACK receive, next Command should be transmitted after 50ms)

※ Command Packet (9600BPS)

STX	Command(0x50)	ETX	BCC

※ Command Packet (19200BPS)

STX	Command(0x51)	ETX	BCC

10.2.10. Get Cartridge ID.

*Before executing this command, user has to insert a cartridge and lock up at the cartridge.

※ Command Packet .

STX	0x90	ETX	BCC

※ Positive Response Packet.

STX	Data0	Data1	Data2	Data3	Data4	ETX	BCC

Cartridge UID 5 BYTE[Hex]

※ Negative Response Packet

STX	0xFF	0xFF	0xFF	0xFF	0xFF	ETX	BCC

10.2.11. Write Cartridge ID.

*Before executing this command, user has to insert a cartridge and lock up at the cartridge.
※ Command Packet .

STX	0xA6	UID[5BYTE]	ETX	BCC

*Does not use the ID "FF FF FF FF FF", it is reserved.

※ Positive Response Packet.

STX	0x80	0x80	0x80	0x80	0x80	ETX	BCC

※ Negative Response Packet

STX	0xFF	0xFF	0xFF	0xFF	0xFF	ETX	BCC

10.2.12. Get the Number of the Cards in the Cartridge.

*Before executing this command, user has to insert a cartridge and lock up at the cartridge.

※ Command Packet .

STX	0x96	ETX	BCC

※ Positive Response Packet.

STX	Data0	Data1	Data2	Data3	Data4	ETX	BCC
	LSB				MSB		

Cartridge   UID 5 BYTE[Hex]

※ Negative Response Packet

STX	0xFF	0xFF	0xFF	0xFF	0xFF	ETX	BCC

10.2.13. Write the Number of the Cards in the Cartridge.
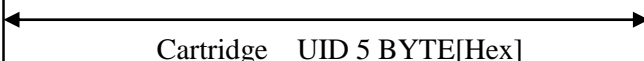
*Before executing this command, user has to insert a cartridge and lock up at the cartridge.
※ Command Packet .

STX	0xA6	DATA	ETX	BCC

DATA : the Number of the Cards in the Cartridge (5Bytes)
*The Maximum capacity is 500 cards.

Data0	Data1	Data2	Data3	Data4
0xF4	0x01	0x00	0x00	0x00

※ Positive Response Packet.

STX	0x80	0x80	0x80	0x80	0x80	ETX	BCC

※ Negative Response Packet

STX	0xFF	0xFF	0xFF	0xFF	0xFF	ETX	BCC

11. Status of the card jam and the way to deal with the card jam

      11.1.1 Dispenser Jam

        : Cannot use Issue, Issue Feeder Stand By commands.

        (All jam is canceled and you can use these command, if Clear command is executed)

        But Can use the feeder commands such as Capture, Feed In, Feed Out, Feed Hold, Feeder Stand By ..

      11.1.2 Feeder Jam

        : Cannot use all command except Status Request commands.

        (All jam is canceled and you can use all command, if Clear command is executed)

      11.1.3 In the case that card is detected by Finish Sensor and Feed Sensor 3 at the same time.

        : Cannot use Issue, Issue Feeder Stand By commands.

        But can use the feeder commands such as Capture, Feed In, Feed Out, Feed Hold, Feeder Stand By.

10.2.13 Get Cartridge ID.
   *Before executing this command, user has to insert a cartridge and lock up at the cartridge.

※ Command Packet (9600BPS)

STX	Command(0x90)	ETX	BCC

※ Response Packet

STX	Status 1	Status 2	ETX	BCC

11. Status of the card jam and the way to deal with the card jam

   11.1.1 Dispenser Jam
      : Cannot use Issue, Issue Feeder Stand By commands.
      (All jam is canceled and you can use these command, if Clear command is executed)
      But Can use the feeder commands such as Capture, Feed In, Feed Out, Feed Hold, Feeder Stand By ..
   11.1.2 Feeder Jam
      : Cannot use all command except Status Request commands.
      (All jam is canceled and you can use all command, if Clear command is executed)
   11.1.3 In the case that card is detected by Finish Sensor and Feed Sensor 3 at the same time.
      : Cannot use Issue, Issue Feeder Stand By commands.
      But can use the feeder commands such as Capture, Feed In, Feed Out, Feed Hold, Feeder Stand By.