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# **KYT-22XX**

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<b>APPROVAL</b>		

<b>RESP. DEPT.</b>	<b>R &amp; D</b>		<b>ORIGINATOR</b>			
<b>APPROVAL &amp; CONFIRMATION</b>	<b>DEPT.</b>	Int'l Sales				
	<b>APPROVAL BY</b>					
	<b>DEPT.</b>				<b>DOC. CON</b>	<b>APP.</b>
	<b>APPROVED BY</b>					

**● REVISION HISTORY**

<b>CHECK</b>	<b>DATE</b>	<b>DESCRIPTION</b>	<b>REV.</b>	<b>PAGE</b>
1	2007.01.11	Preliminary	X1	20
2	2007.03.10	REV_A	A	18
3	2007.04.20	Change the Technical Drawing	B	18

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## 1. Overview

All the processes and operations of KYT-22XX are monitored by its intelligent Microprocessor, which makes itself self-recover function from faulty running.

KYT-22XX has a function to takes an Error card back to the bin. This function is called “Capture“.

KYT-2200C 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.

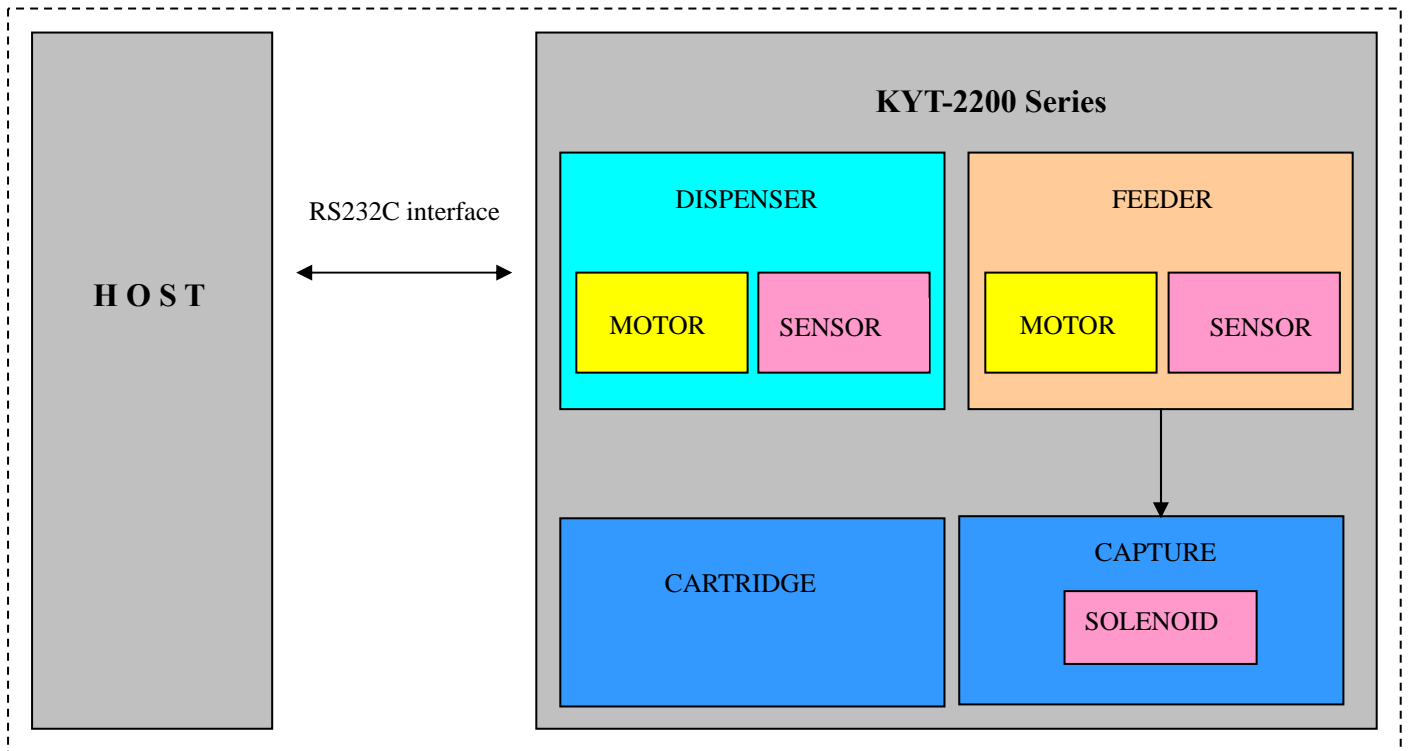
Card thickness adjustable from 0.22mm up to 1.0mm.

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

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### 3. System Block Diagram



### 4. Environmental Requirements

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

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

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## 5. Specifications.

### 5.1. Model.

MODEL	KYT-221X	KYT-222X	KYT-223X	KYT-224X
Dimensions (W x L x H) mm	104 x 282 x 183	104 x 282 x 269	104 x 282 x 349	104 x 282 x 499
Card Dispensing Time (Sec)	1.7	1.7	1.7	1.7
Max. Card Loading Capacity	100pcs	200pcs	300pcs	500pcs
	In case of 0.76 mm card			
Total Weight (Kg)	2.6kg	2.6kg	2.6kg	2.6kg
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	0.22 ~ 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  $\pm 5\%$ , Min 2.5A) .

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

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INTERFACE	FUNCTION	TYPE	CAPACITY	THICKNESS
T: RS-232C	2: DISPENSER	2: SINGLE STACKER & Capture Module (Plastic Module)	1: 100 PCS	1: 0.2T
			2: 200 PCS	2: 0.38T
			3: 300 PCS	3: 0.5T
			4: 500 PCS	4: 0.76T
				5: 0.84T
				6: 1.0T

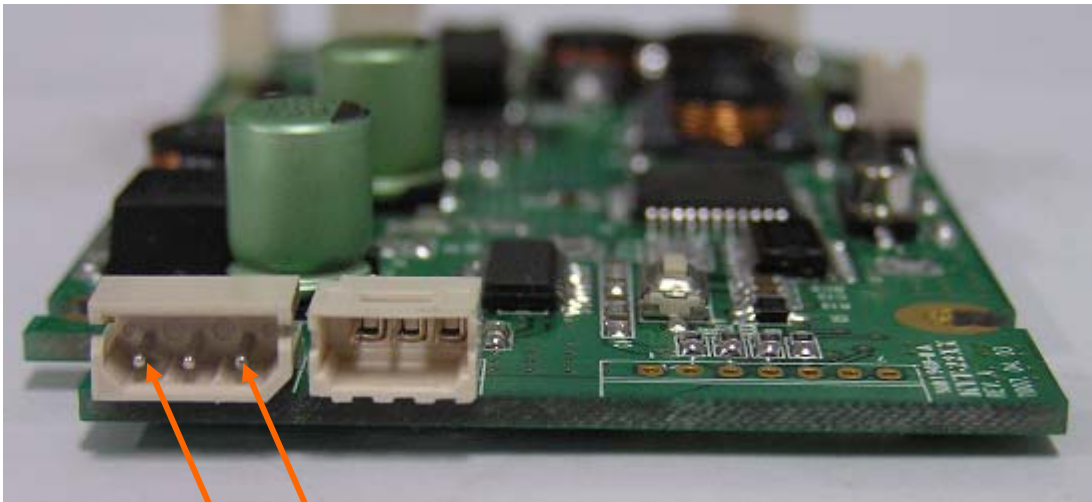
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## 6. DC Power Connector

6.1. Part Number : 5268-03 (MOLEX)

6.2. Power Connector Pin Table (PCB side).

- Connector number : J6



①      ③

Pin NO	Signal Name	Direction
1	DC +24V	Input
2	Not use	
3	GND	

6.3. Power cable configuration

PIN 3 : BLACK - GND

PIN 1 : RED - +24VDC

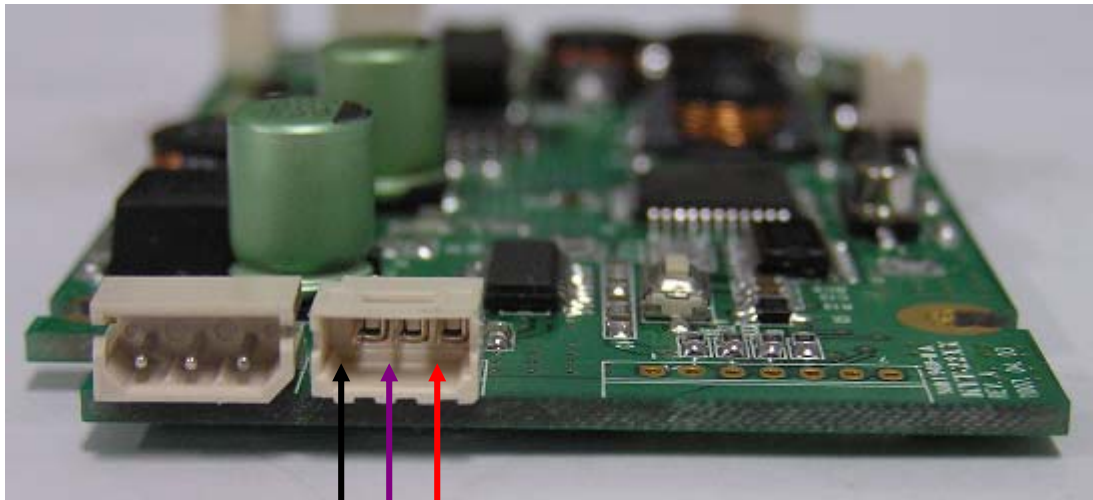


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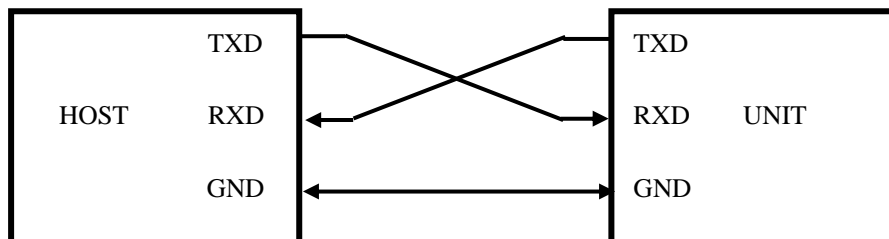
## 7. Interface

7.1. Part Number : 53015-0310(Molex) , Connector number : J7

. Connect Pin Table(PCB side)



1 : RXD  
2 : TXD  
3 : GND



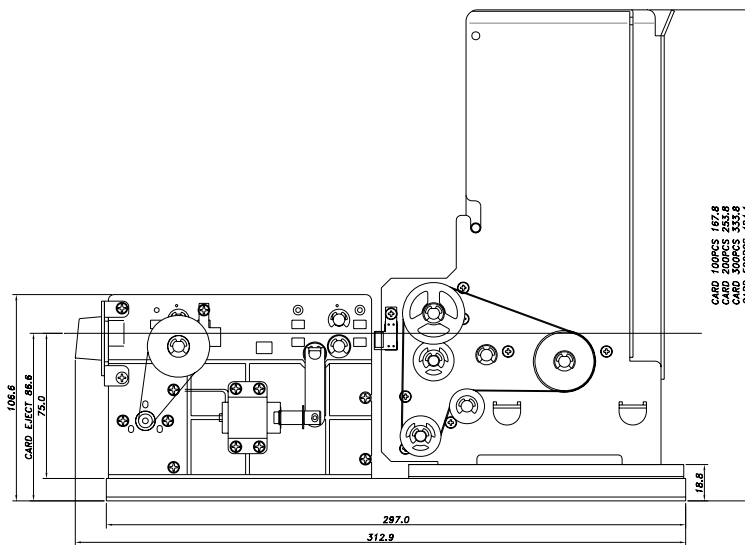
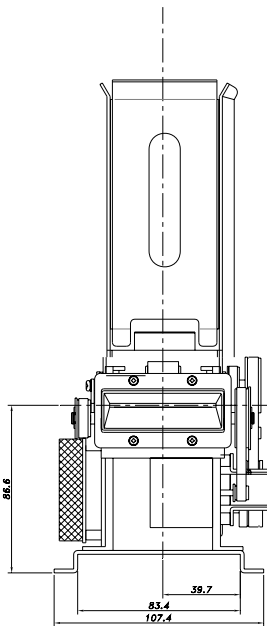
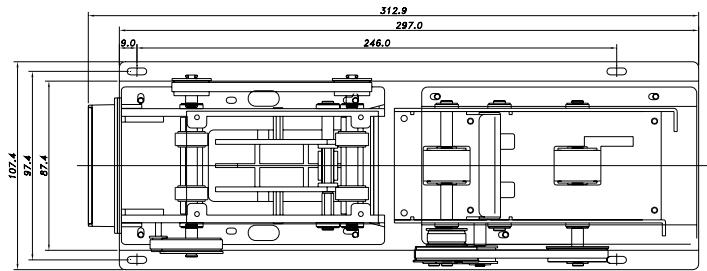
Pin No	Index	Remark
1	RXD	Receive
2	TXD	Transmit
3	GND	S.G

. Communication Method

- Asynchronous, Half duplex.
- Baud Rate : 9600, 19200BPS (Default : 9600BPS)
- Data Length : 8Bits
- Parity : None
- Stop Bit : 1Bit

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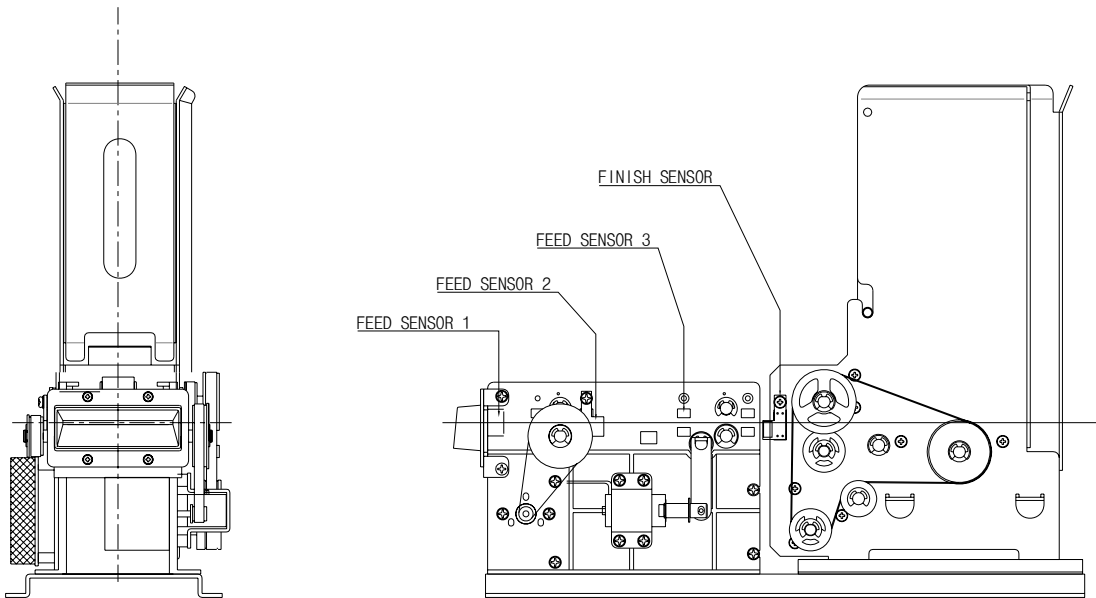
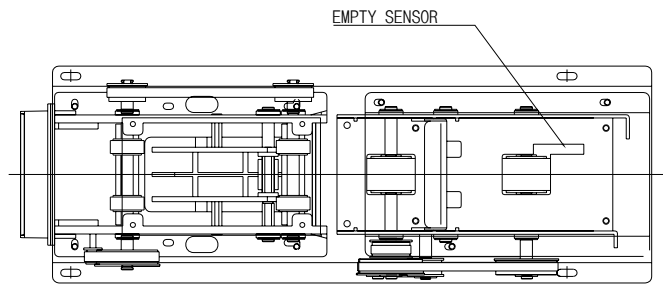
## 8. Technical Drawing



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<Sensor & Motor & Solenoid Name>

Connector No	Remark
J2	Dispenser Motor
J3	Finish Sensor
J5	Empty Sensor
J8	Feed Sensor 1
J10	Solenoid
J11	Feed Motor
J12	Feed Sensor 2
J13	Feed Sensor 3



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## 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

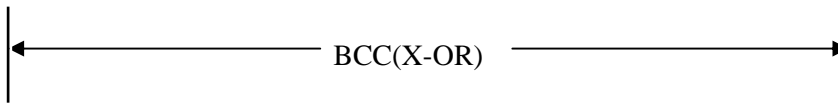
### 9.2. Frame Format

Command structure

STX	Command	ETX	BCC
-----	---------	-----	-----

Response structure

STX	Status	Status	ETX	BCC
-----	--------	--------	-----	-----

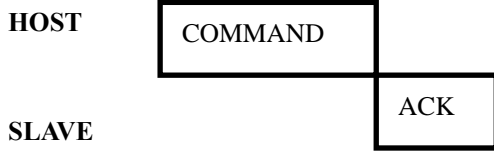


$$BCC = STX \wedge (\text{Command and Status}) \wedge ETX$$

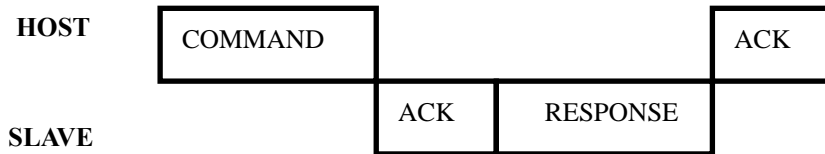
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### 9.3. Communication Protocol Sequence

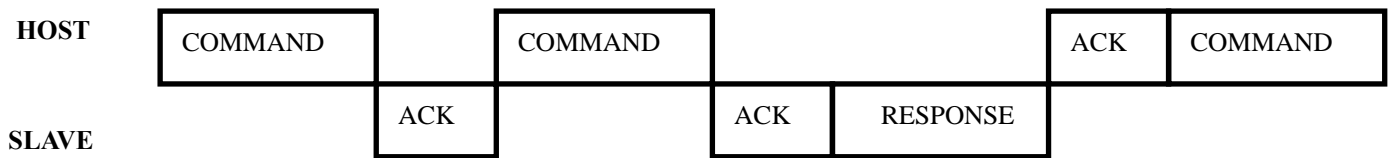
#### CASE 1)



#### CASE 2) Request Command (0x31)



#### CASE 2-1)

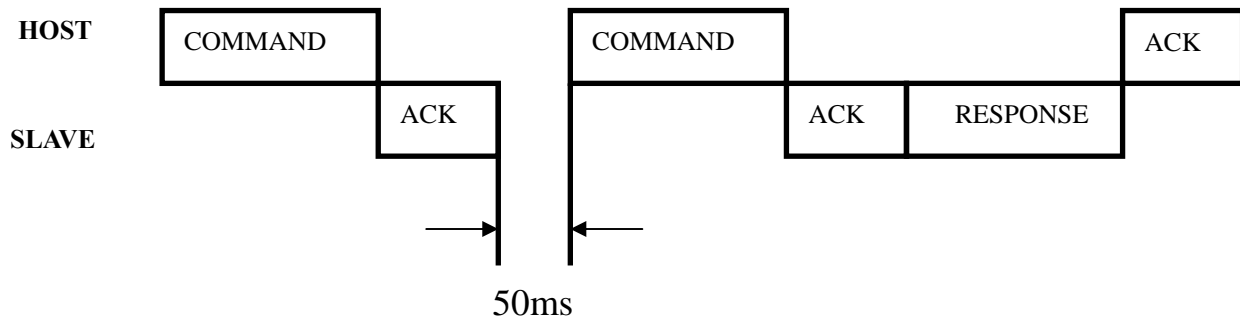


#### CASE 2-2)



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CASE 2-3)



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	
	0x43	Feed In	
	0x44	Feed Out	
	0x45	Capture	
	0x46	Feed Stop	
	0x47	Feed Hold	
	0x48	Feeder Stand By	
Baud Rate Set	0x60	Rom Version	
	0x50	9600 BPS Setting	Default
Wait Time Set	0x51	19200 BPS Setting	
	0xF0	1sec Setting	
	0xF1	2sec Setting	
	0xF2	3sec Setting	Default
	0xF3	4sec Setting	
	0xF4	5sec Setting	

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## 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

7	6	5	4	3	2	1	0
1	0	0	0	0	0	0	0

Data	Status	Remark
0x80	Good	Normal
0x81	Dispenser Jam	Dispenser Motor Jam
0x82	Feed Jam	Feed Motor Jam .
0xc0	Busy	Ready

☞ Status Data Format ( 2 byte) – Cf) Page 10

7	6	5	4	3	2	1	0
1	0	0	0	0	0	0	0

Data	Status	Remark
0x80	Good	Normal
0x81	Card Empty	Dispenser Card Empty
0x82	Dispenser Sensor Detection.	Dispenser Sensor detect Card
0x84	Sensor#1 Detection	Feed Sensor detect Card
0x88	Sensor#2 Detection	
0x90	Sensor#3 Detection	

### 10.2.3. Issue

: Dispense the card. And completely eject it from the feeder module.

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(0x40)	ETX	BCC
-----	---------------	-----	-----

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#### 10.2.4. Issue Feeder Stand By

: Dispense the card and move it between Sensor#1 and Sensor#3.

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(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.

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(0x42)	ETX	BCC
-----	---------------	-----	-----

#### 10.2.6 Feed In

: In the case that the card is present in the feeder module, move it to the stacker direction.

While moved, if Finish Sensor detects the card, the unit makes it stop.

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 in waiting time, move to Finish Sensor.

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(0x43)	ETX	BCC
-----	---------------	-----	-----

#### 10.2.7 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
-----	---------------	-----	-----

#### 10.2.8 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.

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
-----	---------------	-----	-----



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#### 10.2.9 Feed Stop

: This command stops the card when moving the card in the feeder module.  
But that does not concern in the case that the card is not present in the feeder module.

☞ Command Packet

STX	Command(0x44)	ETX	BCC
-----	---------------	-----	-----

#### 10.2.10 Feed Hold

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

#### 10.2.11. 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
-----	---------------	-----	-----

#### 10.2.12. Waiting time setting.

: After executing the command such as Capture, Feed In, Feeder Stand By, if the card is not present in the feeder module, It is waiting time(1~5 seconds) for spinning the feeder motor in reverse direction until the feeder sensors detect the card from the outside.

### 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.

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10.2.11. 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
-----	---------------	-----	-----

10.2.12. Waiting time setting.

: After executing the command such as Capture, Feed In, Feeder Stand By, if the card is not present in the feeder module, It is waiting time(1~5 seconds) for spinning the feeder motor in reverse direction until the feeder sensors detect the card from the outside.

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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.