# FQ

**Ingeniería Electrónica**

*SMART IDENT*

# CARD DISPENSER

# Specifications

## User Manual

# KYT-22xx Card Dispenser

## with Plastic Feeder/Capture Module

| | 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 | 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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# C O N T E N T S

# 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
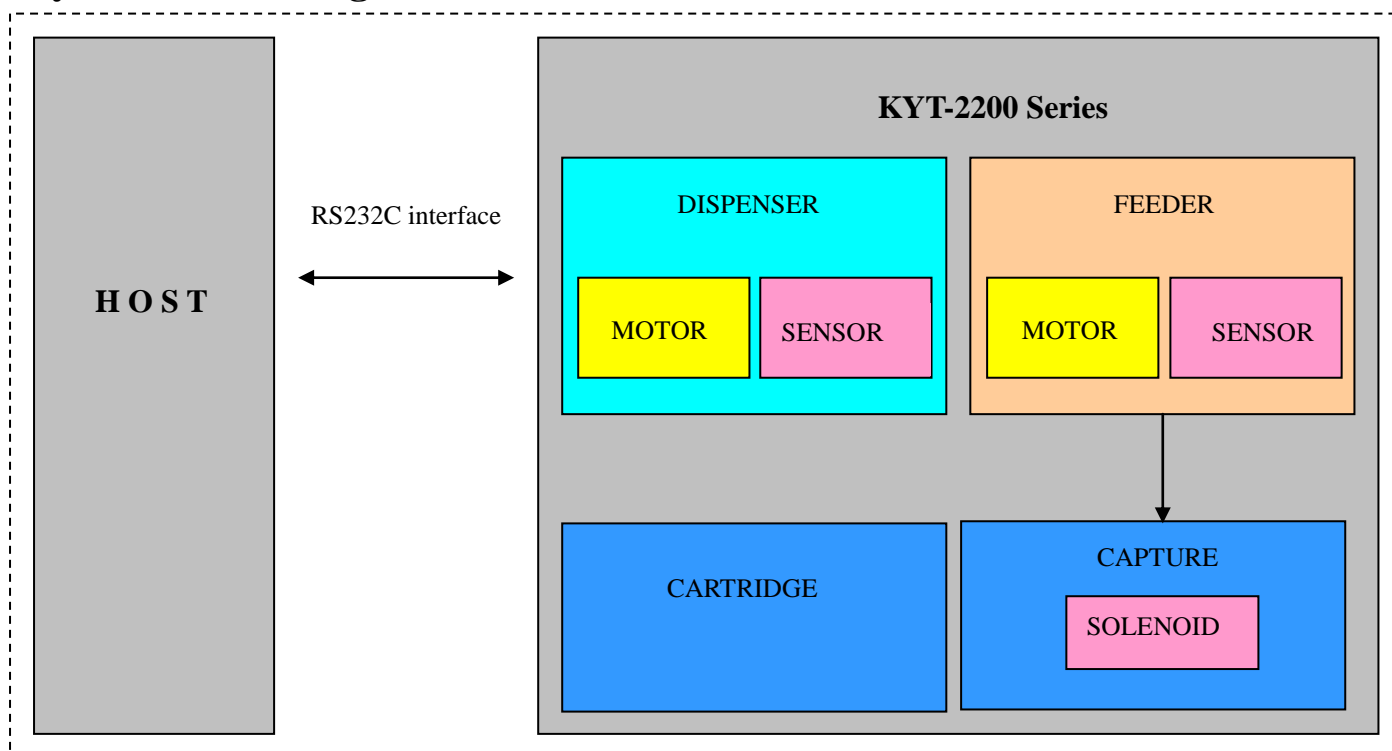
2.1. Card thickness dispensable can be adjusted easily.

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

# 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 | 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 ±5%, Min 2.5A) .

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

K  Y  T  –  2  2  X  X

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

# 6. DC Power Connector

6.1. Part Number : 5268-03 (MOLEX)

6.2. Power Connector Pin Table (PCB side).

- Connector number : J6
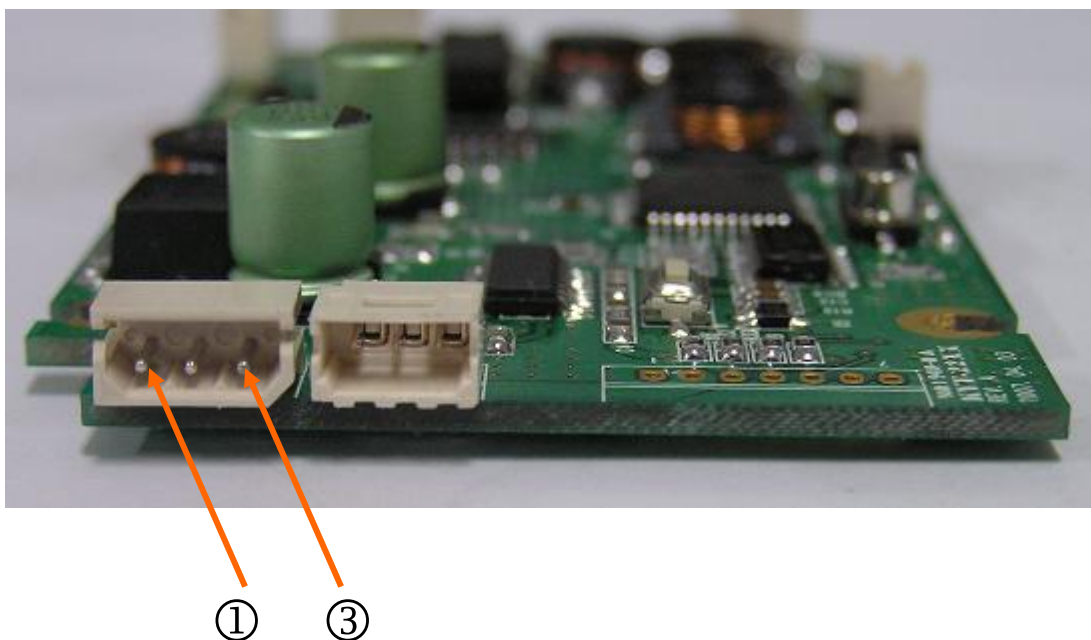


| Pin NO | Signal Name | Direction |
|--------|-------------|-----------|
| 1      | DC +24V     |           |
| 2      | Not use     | Input     |
| 3      | GND         |           |

6.3. Power cable configuration

PIN 3 : BLACK - GND
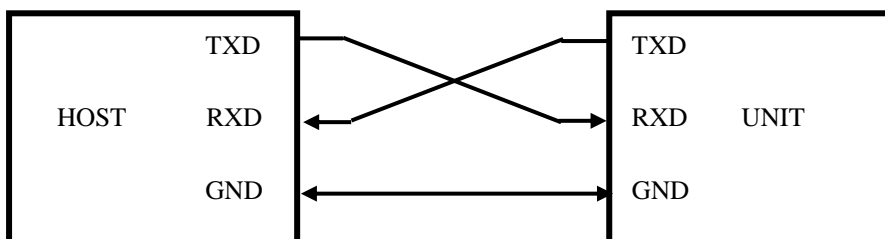
PIN 1 : RED - +24VDC

# 7. Interface

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

. Connect Pin Table(PCB side)
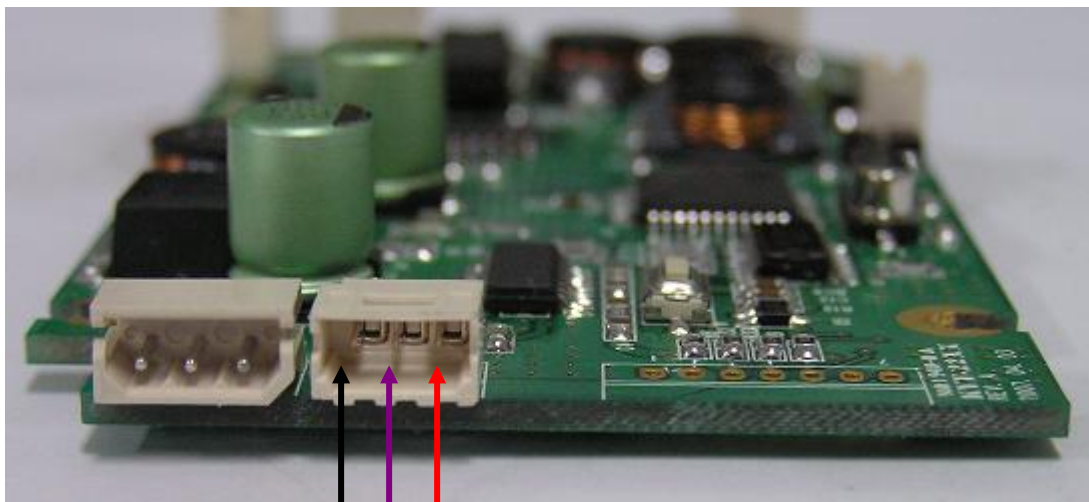
1 : RXD
2 : TXD
3 : GND

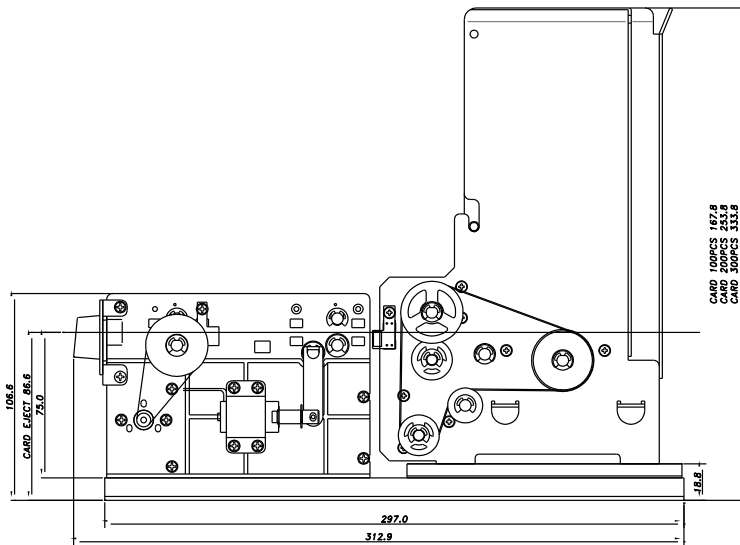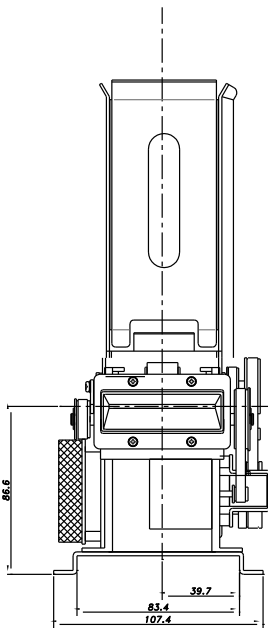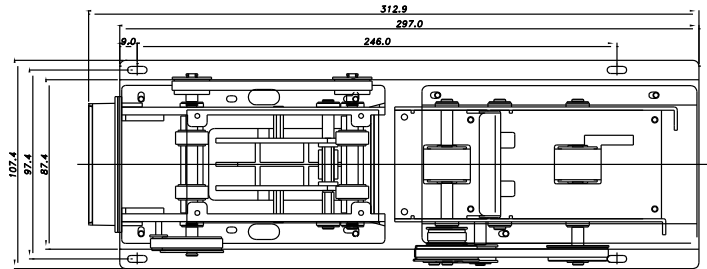| Pin No | Index | Remark |
|---|---|---|
| 1 | RXD | Receive |
| 2 | TXD | Transmit |
| 3 | GND | S.G |

. Communication Method

- Asynchronous, Half duplex.

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

- Data Length   : 8Bits

- Parity : None

- Stop Bit : 1Bit

# 8. Technical Drawing

# <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 |

EMPTY SENSOR

FINISH SENSOR

FEED SENSOR 3

FEED SENSOR 2

FEED SENSOR 1
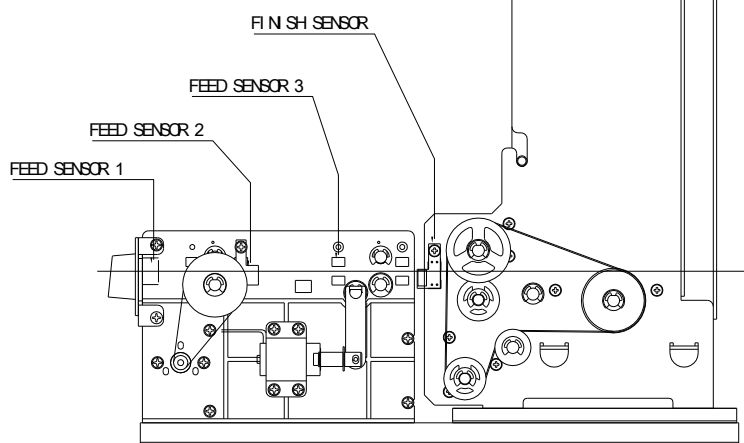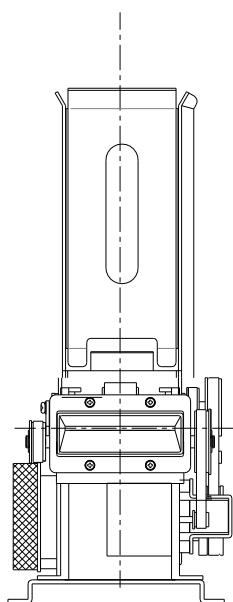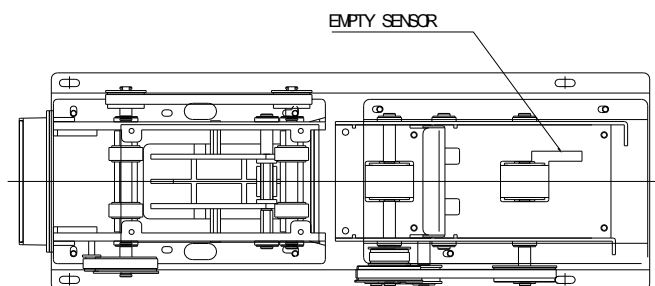
# 9. RS232C Interface

## 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)
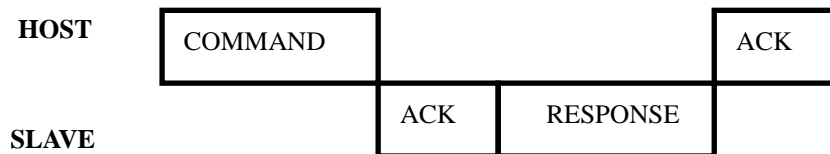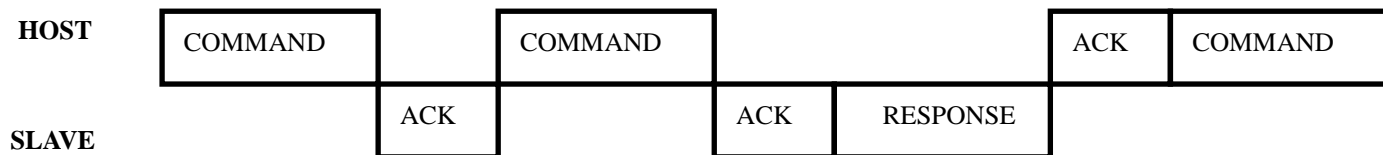
**HOST**  COMMAND — ACK

**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)
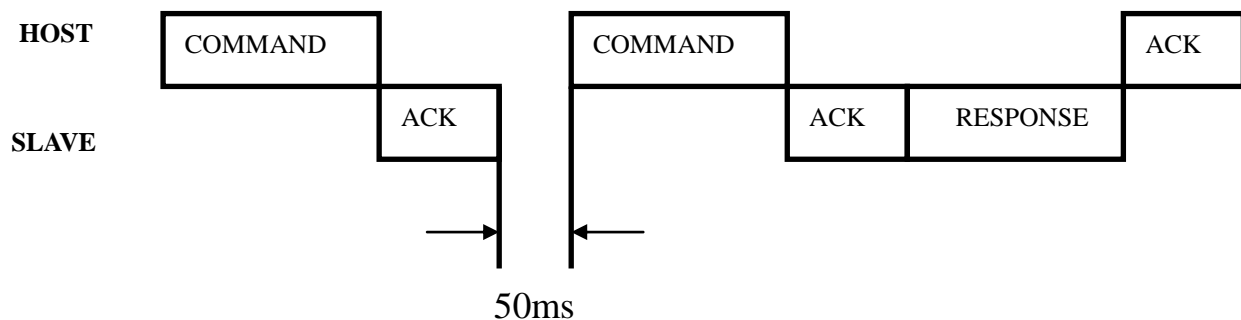


50ms

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

## 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 | |
| 0x88 | Sensor#2 Detection | Feed Sensor detect Card |
| 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 |
|-----|---------------|-----|-----|

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 |
|-----|---------------|-----|-----|

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.

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.
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     : 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.