FQ

Ingeniería Electrónica

SMART IDENT

CARD ISSUING AND COLLECTING MACHINE

Specifications

User Manual

CIM/CCM-8000 Rev. D

Card Issuing and Collecting Machine

REVISION HISTORY

CHECK	DATE	DESCRIPTION	REV	PAGE
1	2006/10/10	First edition	A	19
2			B	18
3	2007/06/01	Mechanical drawing is modified Cartridge bottom sensor flag is changed	C	18
4	2007/11/02	Collecting function is added	D	19

FQ Ingeniería Electrónica, S.A.

MODEL NAME INFORMATION

CIM/CCM - 8 ☐ ☐ ☐ ☐ ☐ ☐
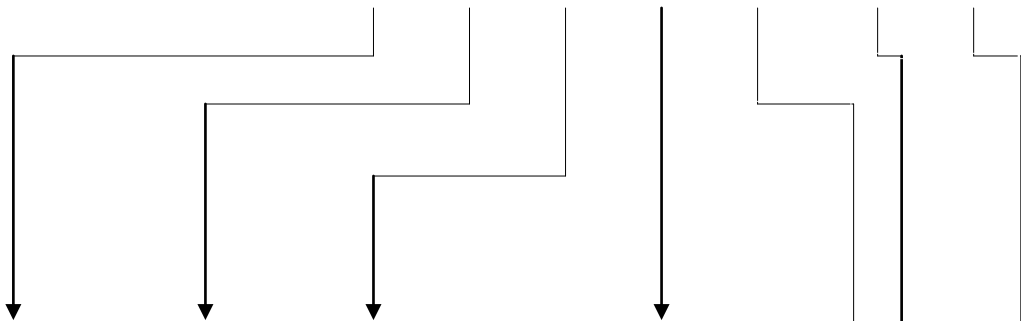
Interface	Function	MS / IC / RF	Track	Option
RS232C	8: Elevator Type Issuing Machine	0 : -	0 : -	0 : - * STANDARD BEZEL : SHORT BEZEL

Thickness		Option II	Option III
A: 0.2T B: 0.38T C: 0.5T D: 0.76T E: 0.84T F: 1.0T	G: 0.2T H: 0.38T I: 0.5T J: 0.76T K: 0.84T L: 1.0T	0:500PCS 1:1000PCS 2:1500PCS	
| With capture box	| Without capture box		

C O N T E N T S

1. Preview

Intelligent card dispenser CIM/CCM-8000 series is a product incorporated with new conception, having big capacity card loading station, and designed for easy integration onto automatic issuing and collecting equipment.

CIM/CCM-8000 series are applied and integrated to following products and systems;

- Prepaid card vending machine

- ID card issuing and collecting machine

- Parking card vending machine

- Payphone card vending machine

- Automatic card issuing and collecting machine

- Ticketing vending machine

- And more

2. Features

1) Card Loading Capacity
   - 0.2mm card loading capacity : 3,200 cards/stacker
   - 0.76mm card loading capacity : 850 cards/stacker

2) Easy adjustment of dispensable card gap (Thickness) by 2 screws.
   - Adjustable gap: 0.2 to 1.00 mm

4) Card Capture Function
   - An error card is captured.

5) Interface : RS-232 C Interface

6) It is easy to control card stop, card dispensing and card capture by microprocessor.

7) Card empty check function.

3. System Block Diagram
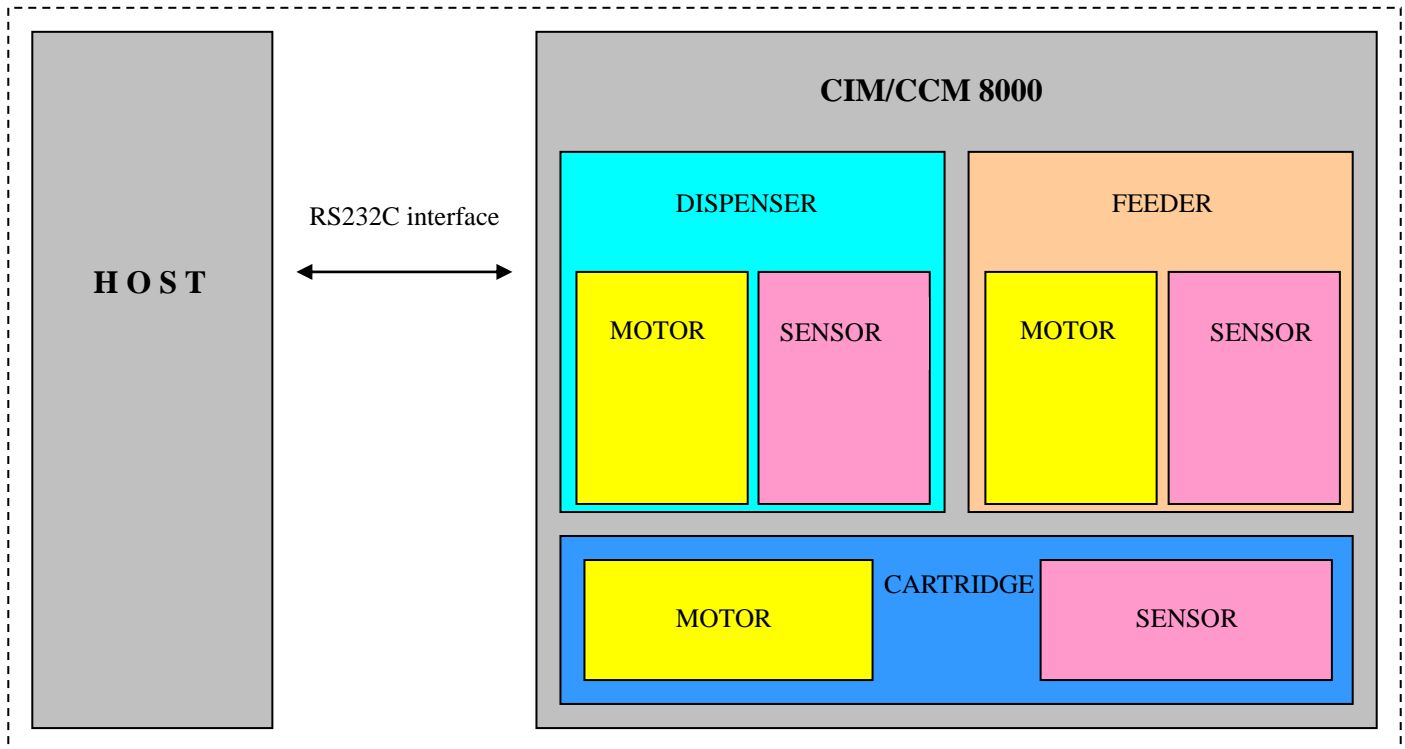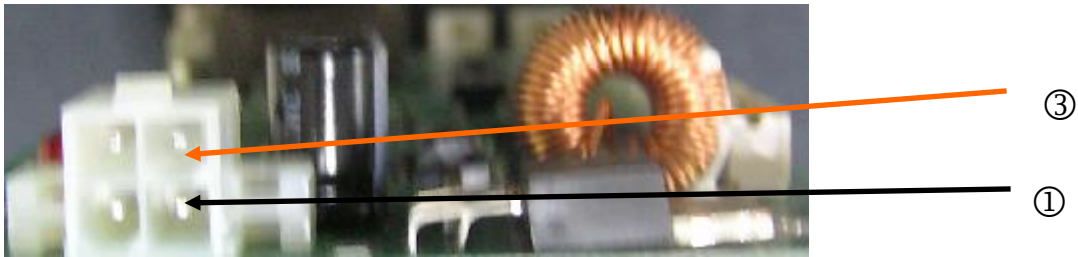

4. Specification

MODEL	CIM/CCM-8000
Card Loading Capacity (Card thickness : 0.76mm)	850 cards
Dispensing speed (sec)	1
Card applicable	Phone Card, Credit, Debit, Pre-paid, I.C, R/F, Parking Card (Except embossed card)
Dimension	287.8 mm(W) x 224.8 mm(L) x 1010 mm(H)
Card thickness (mm)	0.2 ~ 1.0
Interface	RS-232C
Input power	AC 110V ~ 220V free voltage
Operating temperature	0℃ ~ 55℃
Operating Temperature and Humidity	0 ~ 55℃, 0 ~ 95% RH
Conservation Temperature and Humidity	-20 ~ 70℃, 0 ~ 95% RH
Operation locus	In the cabinet

4.1. DC Power

. Part Number : 5569-04A(MOLEX)

. Power Connector Pin Table (PCB side)

. Connector number: J3

Pin NO	Signal Name	Direction
1	GND	
2	Don't use	Input
3	+24VDC	
4	Don't use	

. Power cable configuration

PIN 1 : BLACK (OR GREEN) - GND

PIN 3 : YELLOW - +24VDC

4.2 Interface

  4.4.1. RS 232C model

    . Part Number : 5504F1-09P-02A-01-F1(Neltron) , Connector number : P2

    . Connect Pin Table (PCB side)

5 : GND
3 : TXD
2 : RXD

HOST
3 TXD
2 RXD
5 GND

TXD 3
RXD 2 UNIT
GND 5
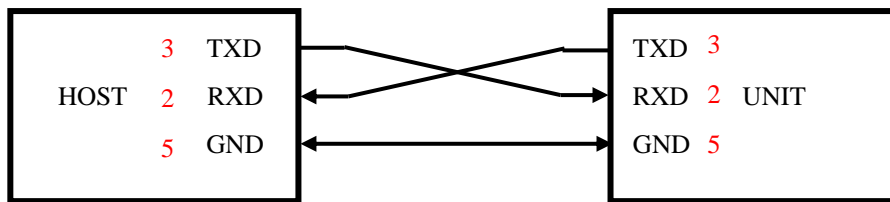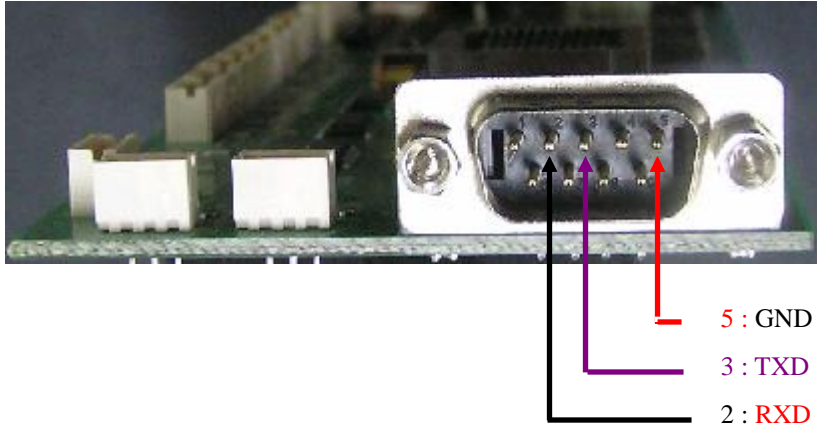
Pin No	INDEX	Remark
2	RXD	Receive
3	TXD	Transmit
5	GND	S.G

. Communication Method

  - Asynchronous, Half duplex.

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

  - Data Length : 8Bits   - Parity : None   - Stop Bit : 1Bit

5. Technical Drawing

With Shutter

With Bezel

CARD CAPACITY	(A)	(B)	(C)	(D)	(E)
500 EA	630	552.2	586		
1000 EA	1010	931.6	500	390	470
1500 EA	1390	1312.2	700	700	660
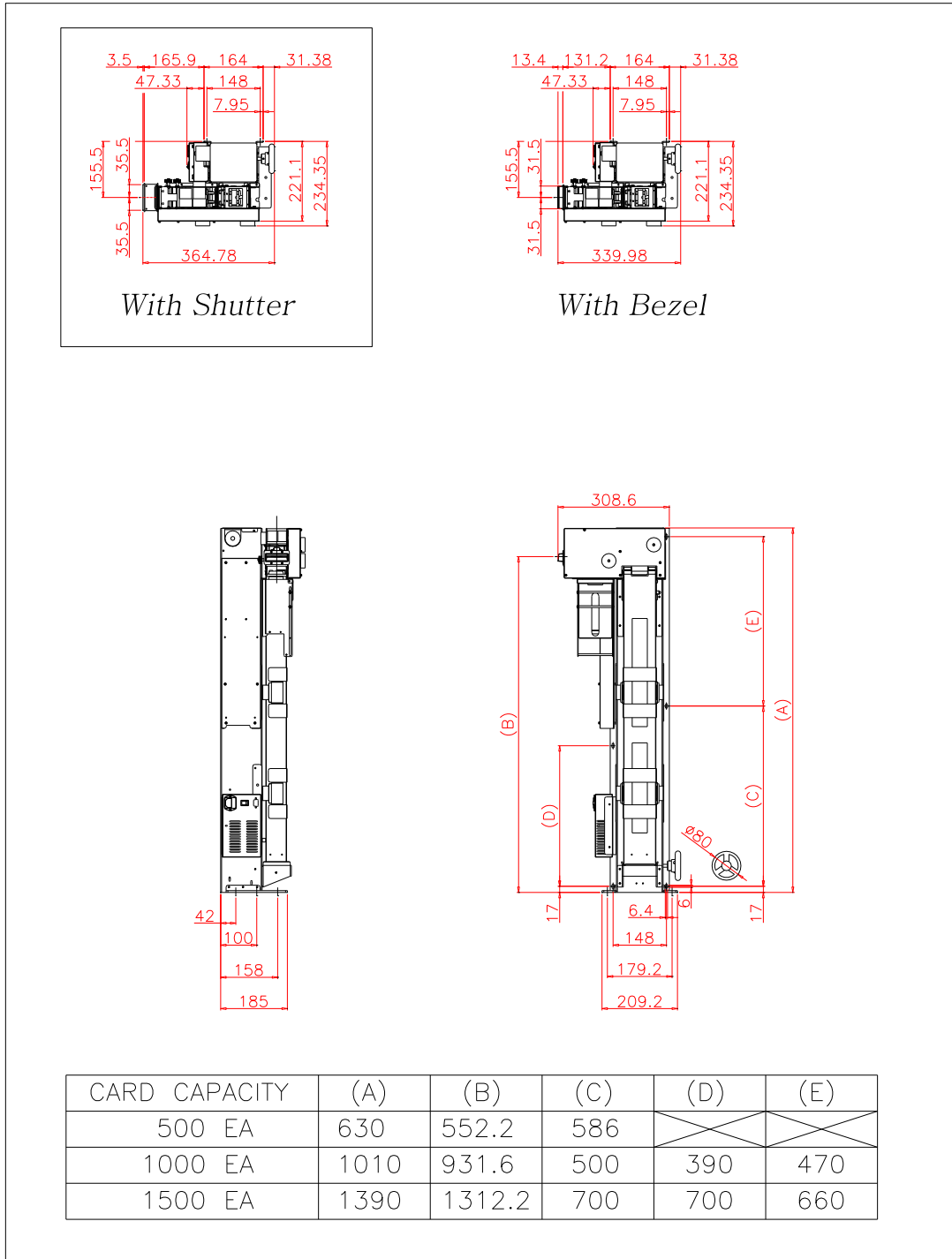
6. RS232C Interface

6.1. 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

6.2. Frame Format

Command structure

STX	Command	ETX	BCC

Response structure

STX	Status1	Status2	Status3	ETX	BCC

BCC(XOR)

6.3. Communication Protocol Sequence

CASE 1)

HOST 　　[COMMAND]　　　　　　#. REMARKS: Except ENQ Command.

SLAVE 　　　　[ACK]

CASE 2) Request Command (0x31)
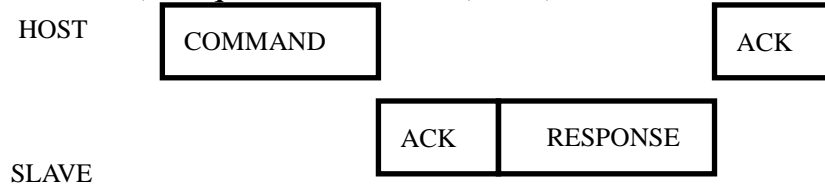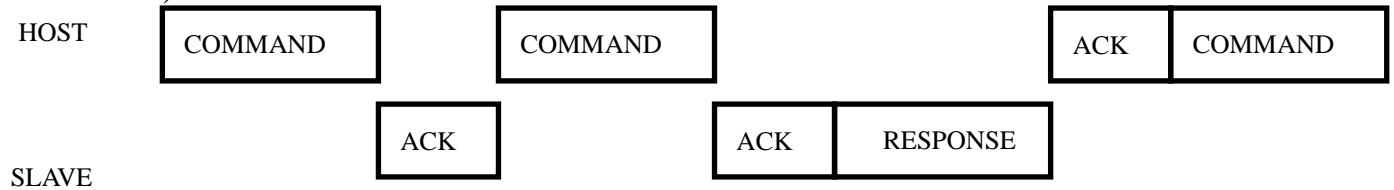
HOST 　　[COMMAND]　　　　　　　　[ACK]

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]

CASE 2-3)

HOST: COMMAND — COMMAND — ACK

SLAVE: ACK — ACK — RESPONSE
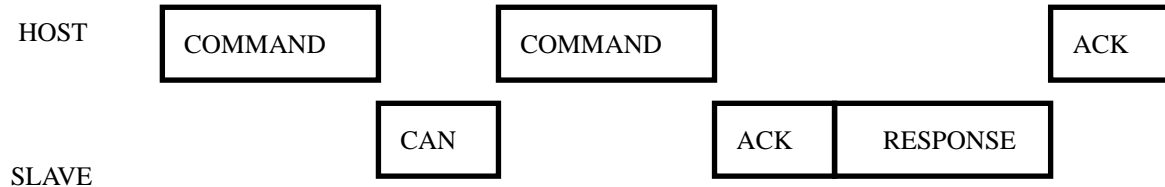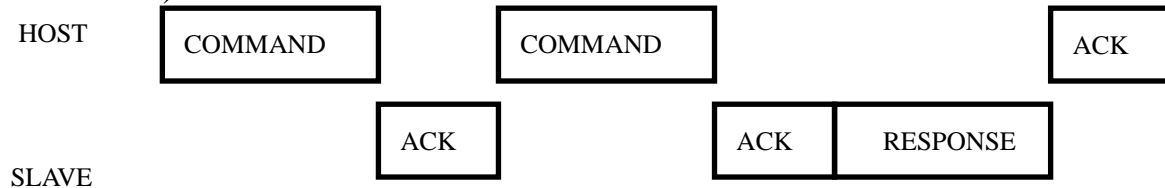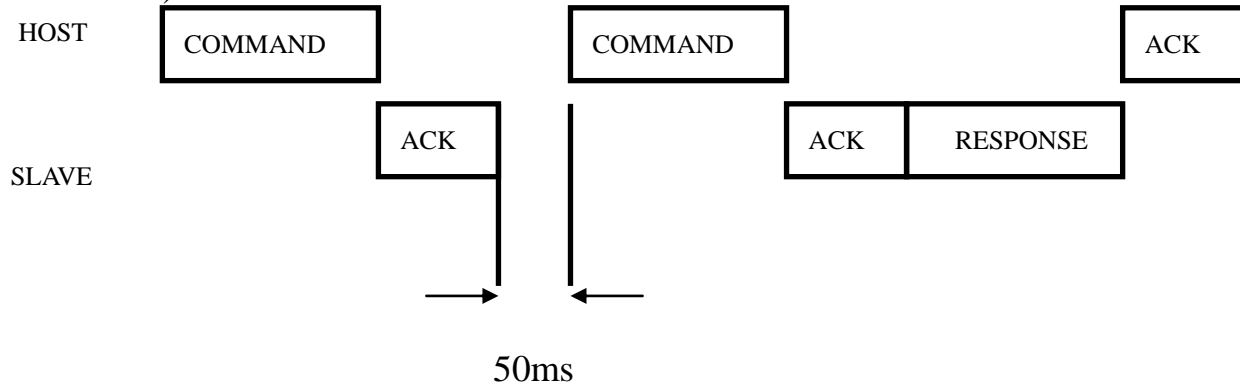
50ms

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

6.4. Command Sets List

	Command	Description	Note
Clear	0x30	Error Clear	
Request	0x31	Status Request	
Move	0x40	Dispensing(Drop)	
	0x41	Dispensing and Stand By	
	0x42	Cartridge Feeding	
	0x43	Capture	
	0x44	Feed In	
	0x45	Feed Out(Drop)	
	0x46	Feed Stop	
	0x47	Feed Out(Hold)	
	0x48	Feed Stand By	
	0x4B	Dispensing(Hold)	
	0x70	Collecting	
	0x71	Lift down for collecting	
	0x72	Lift down	
Baud Rate Set	0x50	9600 BPS Setting	
	0x51	19200 BPS Setting	
Rom version	0x60	Rom version	

6.5. Command Details

6.5.1. Clear

: Clear Motor Jam bit of the response of the Status Request Command.

※ Command Packet

STX	Command(0x30)	ETX	BCC

6.5.2. Status Request.

  : Host's Request for status of dispenser.

  Command Packet

STX	Command(0x31)	ETX	BCC

※ Response Packet

STX	ST1	ST2	ST3	ETX	BCC

※ 1st Status Data Format – Cf) Page 17

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

Bit	Status	
	1	0
7 Bit	1(Constancy)	-
6 Bit	Busy	Ready
5 Bit	Feeder Motor Jam	Good.
4 Bit	System Stop	Good.
3 Bit	Card Charging Sensor Error	Good.
2 Bit	Non-use	
1 Bit	Dispenser Motor Jam.	Good.
0 Bit	Cartridge Motor Jam.	Good.

bit	Status
7 Bit	Constant 1
6 Bit	
5 Bit	Jammed status while feeding the card.
4 Bit	Operation has been stopped because of Main Motor Stop Sensor Detection or both of charging sensor error.
3 Bit	An error is occurred in one sensor between two charging sensor.
2 Bit	Non-use
1 Bit	Jammed status while dispensing the card.
0 Bit	Failed status while raising the lift of the cartridge.

※ 2nd Status Data Format　– Cf) Page 17

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

Data	Status	
	1	0
7 Bit	1(Constancy)	-
6 Bit	Inside sensor detection	No Detection.
5 Bit	Cartridge sensor detection	No Detection.
4 Bit	Main motor stop sensor detection	No Detection.
3 Bit	Card presence sensor detection	Cartridge is empty
2 Bit	Card charging sensor detection.	No Detection.
1 Bit	There aren't many cards left in the cartridge. (Warning sensor)	Good
0 Bit	Dispenser Finish Sensor detection	No Detection.

※ 3rd Status Data Format　– Cf) Page 17

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

Data	Status	
	1	0
7 Bit	1(Constancy)	-
6 Bit	Non-use	
5 Bit	Cartridge bottom sensor	No Detection.
4 Bit	Full sensor for collecting	No Detection.
3 Bit	charging sensor for collecting	No Detection.
2 Bit	Feeder #3 sensor detection.	No Detection.
1 Bit	Feeder #2 sensor detection.	No Detection.
0 Bit	Feeder #1 sensor detection.	No Detection.

6.5.3. Dispensing (Drop).

: The card is completely ejected from the stacker to the outlet.

※　Command Packet

STX	Command(0x40)	ETX	BCC

6.5.4. Dispensing and Stand By

: Dispense the card and move it to the middle of the feeder module.

※　Command Packet

STX	Command(0x41)	ETX	BCC

6.5.5. Cartridge Feeding.

Raise the card in the cartridge until charging sensor detects the card.

If the card is not detected within 25 seconds, the unit is stopped.

※ Command Packet

STX	Command(0x42)	ETX	BCC

6.5.6. Capture

: If the card is located at the feeder sensor #1or #2, the unit captures the card.

※ Command Packet

STX	Command(0x43)	ETX	BCC

6.5.7. Feed In.

:If the card is located at feeder sensor #1 or #2, move the card to direction of the stacker, and the card stop if dispenser sensor detects the card.

While feeder sensor #1 or #2 detects the card, if the unit receives "Feed Stop" command, the unit makes the card stop at once.

※ Command Packet

STX	Command(0x44)	ETX	BCC

6.5.8. Feed Out

: If the card is located at feeder sensor #1 or #2, the unit ejects the card perfectly.

While feeder sensor #1 or #2 detects the card, if the unit receives "Feed Stop" command, the unit make the card stop at once.

※ Command Packet

STX	Command(0x45)	ETX	BCC

6.5.9. Feed Stop.

: The unit makes the card stop when moving the card between Feeder part.

But the motion of the dispenser has no relation

※ Command Packet

STX	Command(0x46)	ETX	BCC

6.5.10. Feed Stand By

　　: If the card is located at feeder sensor #1 or #2, move the card to the middle of the feeder module.

　※　Command Packet

STX	Command(0x48)	ETX	BCC

6.5.11. Dispensing (hold).

: Dispense the card. And then stop the card at Feeder sensor #2

　※　Command Packet

STX	Command(0x4B)	ETX	BCC

6.5.12. Collecting.

: Collect the card to the cartridge.

　※　Command Packet

STX	Command(0x70)	ETX	BCC

6.5.13. Lift down for collecting.

: Lower the lift for collecting.

　※　Command Packet

STX	Command(0x71)	ETX	BCC

6.5.14. Lift down

: Lower the lift to the bottom.

　※　Command Packet

STX	Command(0x72)	ETX	BCC

6.5.15. 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

6.5.16. ROM Version

: Confirm the version of the ROM.

※ Command Packet

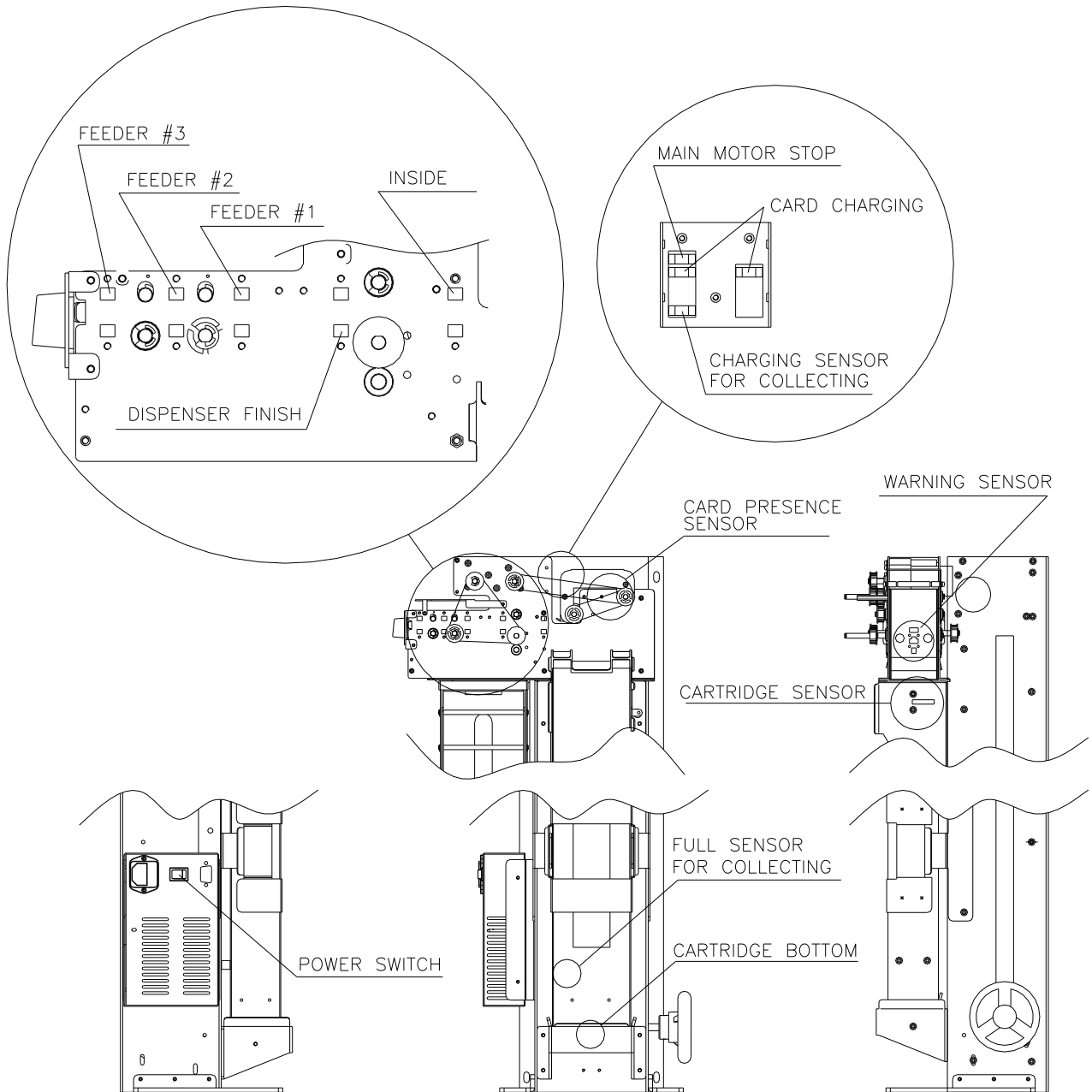| STX	Command(0x60)	ETX	BCC

After transmitting above command, you can confirm the response by transmitting Status Command.

Example of Response structure (Ver1.00)

STX	0x31	0x30	0x30	ETX	BCC

※ Sensor Position.

※ RS232C Control example for host program.

```
                    ┌──────────────────────────┐
                    │          Start        ○  │
                    └──────────────────────────┘
                                │
         ┌──────────────────────┼──────────────────┐
         │                      ▼                   │
         │    Transmit "dispensing" or "collecting" │
         │              command                     │
         │                      │                   │
         │                      ▼                   │
         │    Receive "status request" command      │
         │                      │                   │
         │                      ▼          YES       │
         │            ◇ Busy flag ==1 ◇──────────────┘
         │                      │ NO
         │                      ▼             NO
         │            ◇ Each jam bit ==1 ○ ◇─────────►
         │                      │ YES
         │                      ▼
         │    Transmit "error clear" command
         └──────────────────────┘
```

1. Connect the power cable.
2. Connect the CIM/CCM-8000 unit to the host computer through the RS232C interface cable.
3. Load the cards in the cartridge. And install the cartridge in the CIM/CCM-8000 unit.
4. Raise the lift manually.
5. Turn on the power supply.

Refer to the 1st status byte in "6.5.2. Status Request." part.