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# **Card Issuing Machine for IC Card**

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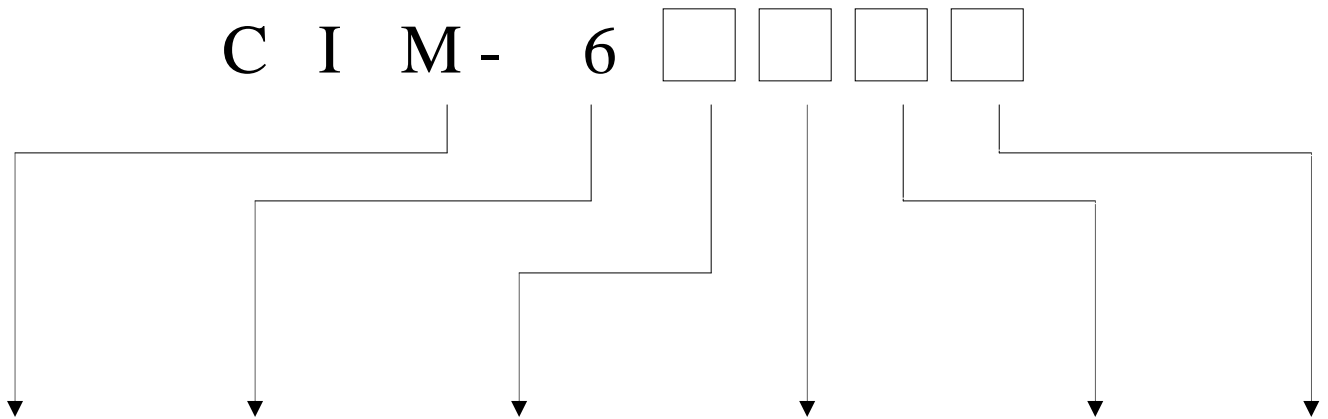
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REVISION HISTORY

| No | DATE       | DESCRIPTION         | REV | PAGE | F/W Name |
|----|------------|---------------------|-----|------|----------|
| 1  | 2006.05. . | Preliminary Version | X1  | 40   |          |
|    |            |                     |     |      |          |
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## MODEL NAME INFORMATION



| Interface | Function                 | MS / IC / RF   | Track   | Option   | Thickness  |
|-----------|--------------------------|--|---|--|--|
| RS-232    | 6 : Card Issuing Machine | 1 : MS Only<br>2 : MS & IC-Contact<br>3 : MS & RF<br>4 : MS & IC & RF<br>5 : IC-Contact Only<br>6 : RF Only<br>7 : IC-Contact & RF<br>9 : Customer | 0 : Without Magnetic<br>1 : ISO 1 Track<br>2 : ISO 2 Track<br>3 : ISO 3 Track<br>4 : ISO 1,2 Track<br>5 : ISO 1,3 Track<br>6 : ISO 2,3 Track<br>7 : ISO 1,2,3 Track | 0 : Without Bezel<br>1 : LOW-CO<br>2 : HI-CO<br>3 : LOW-CO & Shutter<br>4 : HI-CO & Shutter<br>5 : Shutter<br>6 : LOW-CO & Bezel<br>7 : HI-CO & Bezel<br>8 : Bezel | A : 0.2T<br>B : 0.38T<br>C : 0.5T<br><b>D : 0.76T</b><br>E : 0.84T<br>F : 1.0T |

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## **C O N T E N T S**

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## **OVERVIEW**

CIM64XX Series is a set of card issuing machine for the magnetic, IC, and RF card in conjunction with the KYT2600 and KYT3000 series. This model can be used for magnetic card conforming to the ISO7816-2 standard and most of the IC cards conforming with the ISO7816-4 T=0,T=1. Additionally, this model also can be used for the RF card conforming to the MIFARE.

This model simplified the command for magnetic card, minimize the delay time occurs in the communication data processing, and improved the speed due to function to issue the all tracks at a time.

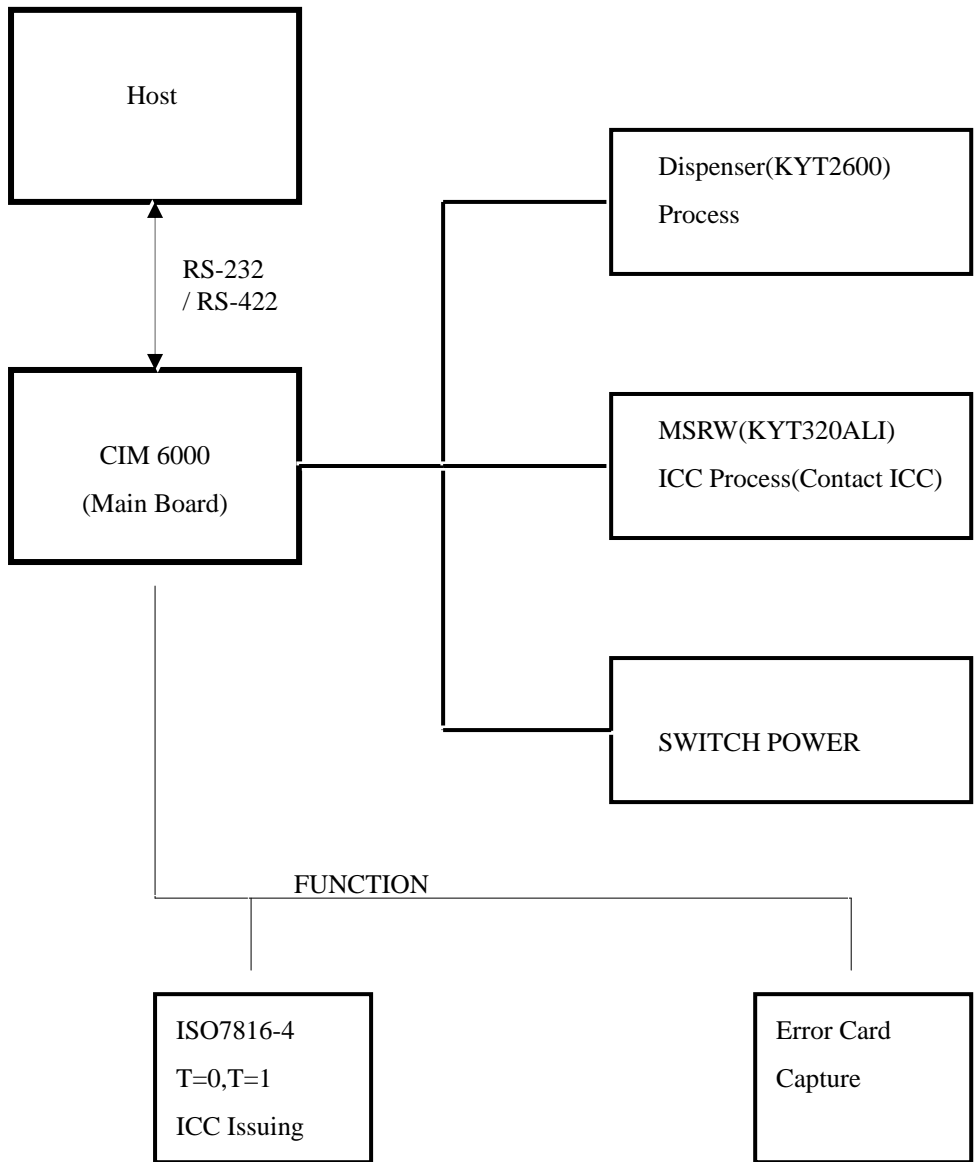
This model has the following advantages:

- 1) Remove the latency due to the user-based card exchange, by loading 600 PCS(0.76 mm card) at a time.
- 2) Use the different type of card using two stackers.

As an automatic issuing machine, this model can be used in issuing most types of credit card and debit card in financial area.

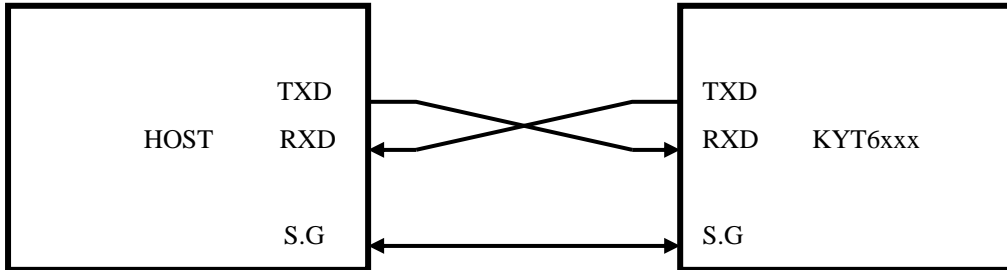
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## SYSTEM BLOCK DIAGRAM



|               |                                  |            |             |             |
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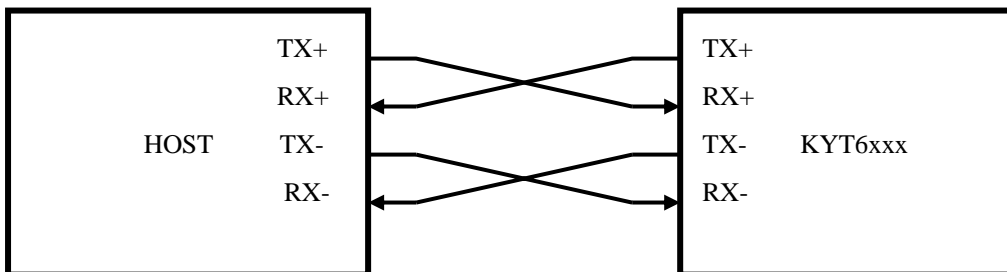
◆ *RS – 232 Connection*



CASE 1) Part Number : RED-9S-LNA(HIROSE)

| Pin No | INDEX | Remark        |
|--------|-------|---------------|
| 2      | RXD   | Receive       |
| 3      | TXD   | Transmit      |
| 5      | S.G   | Signal Ground |

◆ *RS422 Connection*



CASE 1) Part Number : RED-9S-LNA(HIROSE)

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

|               |                                  |            |             |             |
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## **SPECIFICATIONS**

### ◆ *basic functions*

|                    | Spec                           | Remark |
|--------------------|--------------------------------|--------|
| Dimension          | 247mm(W) x 399mm(L) x 388mm(H) |        |
| Weight             |                                |        |
| Input power        | AC 220V                        |        |
| Card Feeding Speed | 510mm/Sec ±10%                 |        |

### ◆ *Environment Requirements*

Operating Locus : in door use Only

Ambient Temperature

Storage : -20 °C to 70 °C(No functional error to be found in 12 hours after returning to normal environment)

Operating : 5 °C to 50°C (In 0°C to +5°C range, all specifications but 'Warped card' to be satisfied)

Ambient Relative Humidity

Storage : 0% to 95% RH(No functional error to be found in 12 hours after returning to normal environment)

Operating : 5 % 90% RH(No Condensation)

Vibration

: Amplitude 2mm, 10 to 50 Hz in X, Y, Z directions for 30min, 2G or less

Shock Endurance

: 30G, 11ms

Encoding Speed : 2.3 ~ 5 Sec/Card

Life Time : More than 500,000card passes(1pass : one forward and backward)

Error Rate : Less than 3/1,000 cycle(Test Card : KYT Standard)



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### ◆ *Controller Environment*

#### Communication

: RS422 OR RS232C Interface

: Baud Rate – 9600 BPS

– 19200 BPS

– 38400BPS(Default)

– 57600BPS

: 8Data bit, 1 Start bit, None Parity bit, 1 Stop Bit

CPU : V25, 16MHz

RAM : 1Mbit

ROM : 512Kbit

Flash : 4Mbit(Expandable)

RTC

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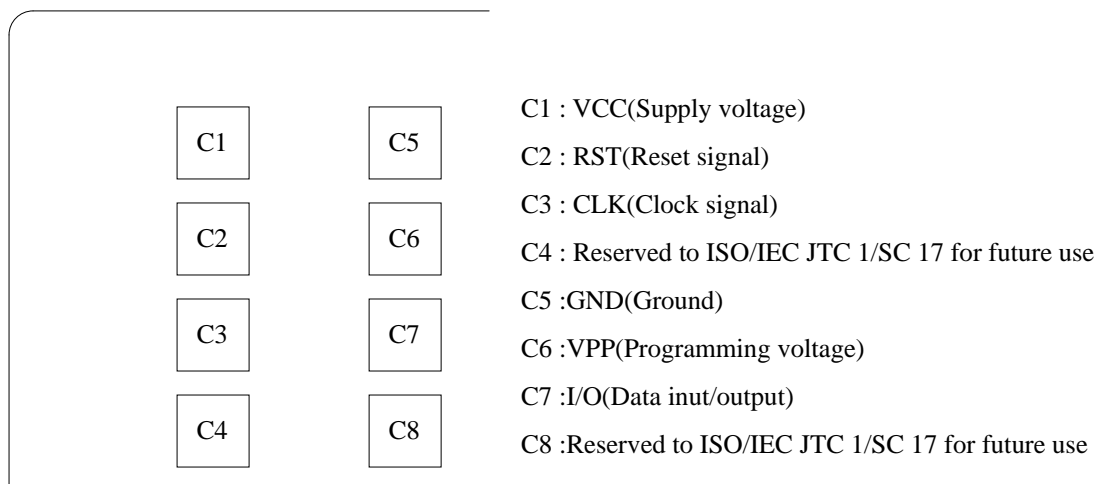
## IC CARD PROCESS

This model provides most type of IC card compliant to ISO7816 T=0,T=1 .

◆ *Processing time* : Less than 1 Sec

◆ *Number and Location of the contacts on IC Card*

: Number and location of the contacts on IC Card is specified in ISO 7816-2 figure 2  
Refer to Appendix A.



◆ *Power Consumption*

Motor Starting or Reversing : Less than 310mA(50mSec)  
 Card Feed & Reading : Less than 690mA  
 Card Feed & Writing : Less than 700mA  
 Steady state : Less than 180mA

◆ *Life and Reliability*

IC Contact : Approximately 1,000,000 passes  
 Error Rate : 3/1000 cycle

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## COMMUNICATION INTERFACE

### ◆ *Communication Method*

Asynchronous, Half duplex.

Baud Rate : 9600 – 57600Bps , Default : 38400Bps

Start Bit : 1Bit

Data Length : 8Bit

Parity : None

Stop Bit : 1Bit

### ◆ *Communication Protocol Format*

#### 1 *Command Frame Format.*

|     |      |        |     |     |      |     |     |
|-----|------|--------|-----|-----|------|-----|-----|
| SOH | Null | Length | STX | CMD | DATA | ETX | BCC |
|-----|------|--------|-----|-----|------|-----|-----|

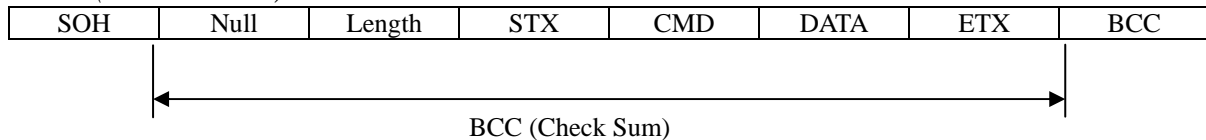
#### 2 *Positive Response Frame Format*

|     |      |        |     |     |      |      |      |     |     |
|-----|------|--------|-----|-----|------|------|------|-----|-----|
| SOH | Null | Length | STX | CMD | GOOD | 0x01 | DATA | ETX | BCC |
|-----|------|--------|-----|-----|------|------|------|-----|-----|

#### 3 *Negative Response Frame Format*

|     |      |        |     |     |        |      |     |     |
|-----|------|--------|-----|-----|--------|------|-----|-----|
| SOH | Null | Length | STX | CMD | E-Code | 0x00 | ETX | BCC |
|-----|------|--------|-----|-----|--------|------|-----|-----|

#### 4 *BCC (Check Sum)*



Command Frame BCC = Null ^ Length ^ STX ^ CMD ^ DATA ^ ETX.

Positive Response BCC = Null ^ Length ^ STX ^ CMD ^ GOOD ^ 0x01 ^ DATA ^ ETX.

Negative Response BCC = Null ^ Length ^ STX ^ CMD ^ E-Code ^ ETX.

|               |                                  |            |             |             |
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### 5. Explanatory note of technical words

| Name   | Detail  |
|--------|---|
| Null   | Reserved. Always 0x00.                          |
| Length | Data Length from the CMD to DATA.               |
| CMD    | Instruction Code (3 Bytes)                      |
| GOOD   | Normal Execution : 0x0000 (2 Bytes)             |
| E-Code | Command Failed: Refer to "Error Code" (2 Bytes) |
| BCC    | Check Sum.                                      |

<Length>, <E-Code>

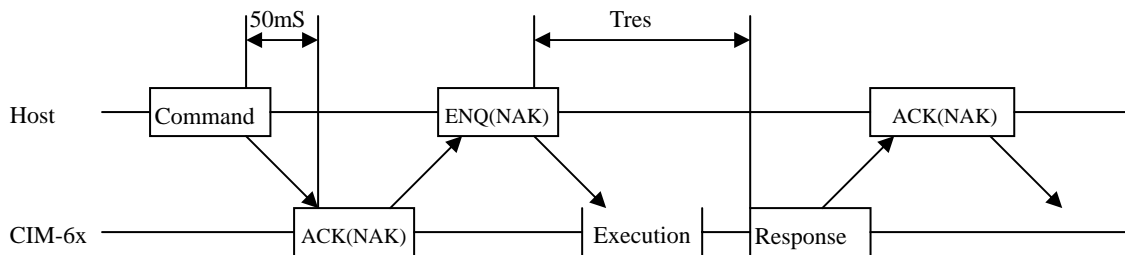
|           |          |
|-----------|----------|
| High Byte | Low Byte |
|-----------|----------|

### 6. Control Characters

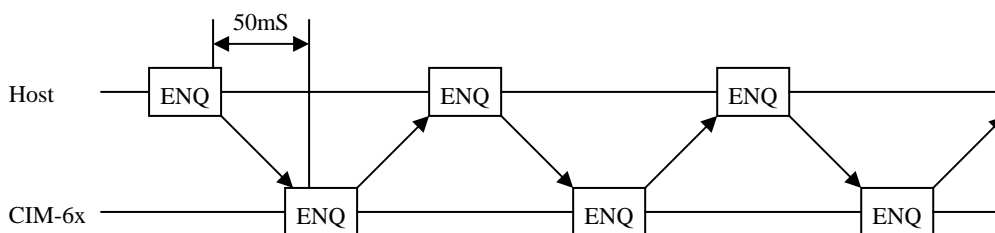
| Name | Hex Value | Detail               |
|------|-----------|----------------------|
| SOH  | 0x01      | Start of Header      |
| STX  | 0x02      | Start of Text        |
| ETX  | 0x03      | End of Text          |
| ENQ  | 0x05      | Enquiry              |
| ACK  | 0x06      | Positive Acknowledge |
| NAK  | 0x15      | Negative Acknowledge |
| CAN  | 0x18      | Cancel               |

## 7 COMMUNICATION SEQUENCE / TIMING

### 7.1 Command



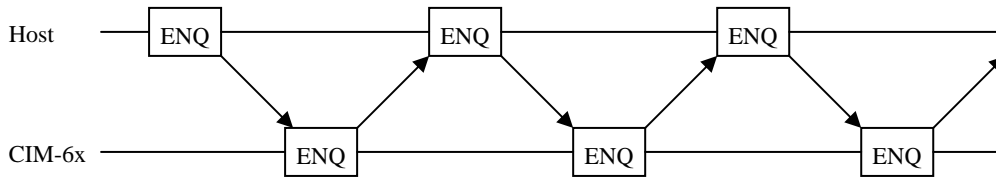
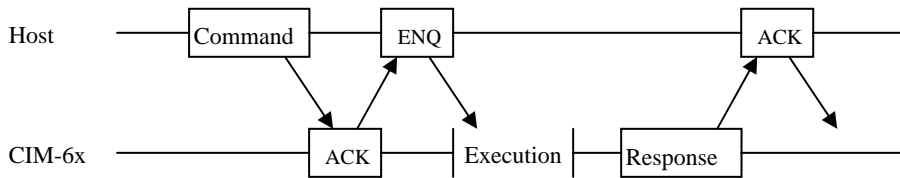
### 7.2 Inquiry



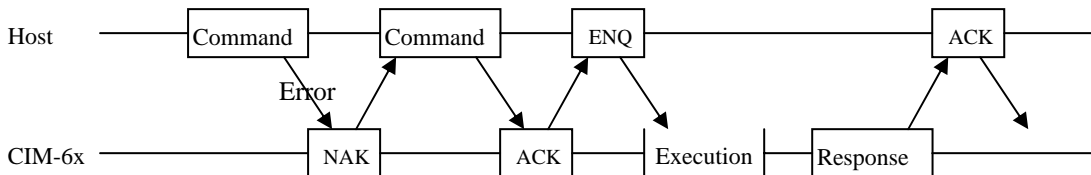
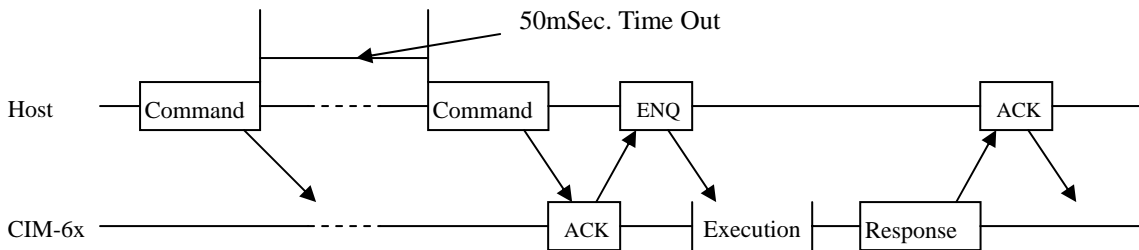
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### 7.3 Sequence

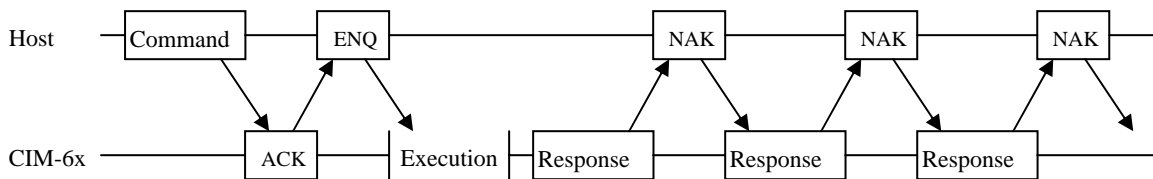
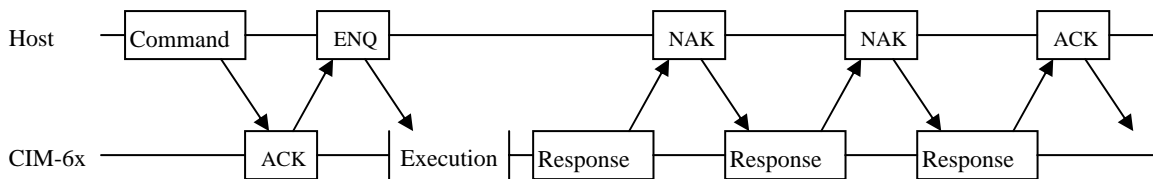
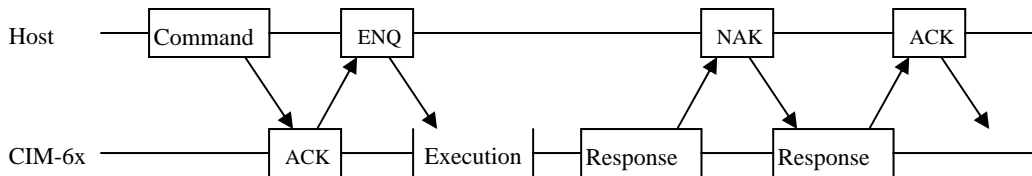
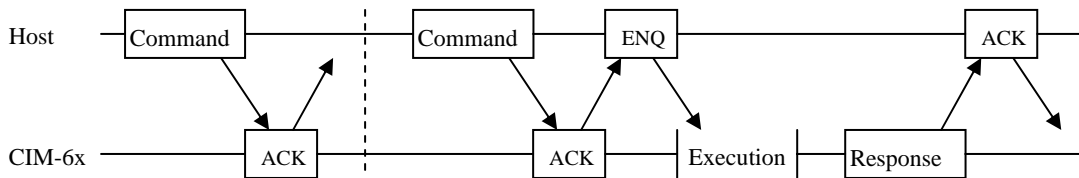
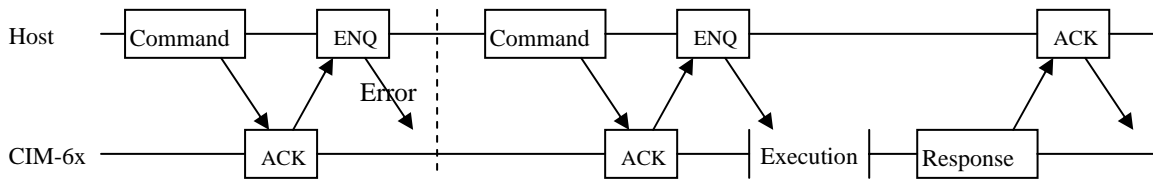
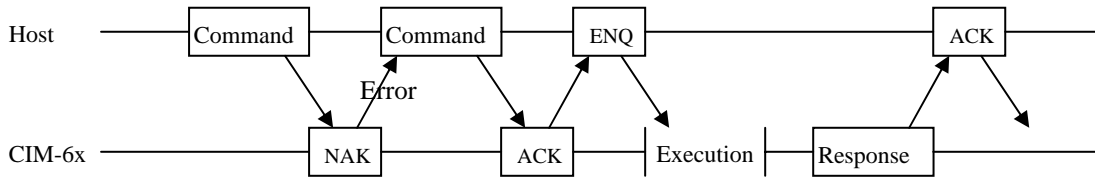
#### 7.3.1 General



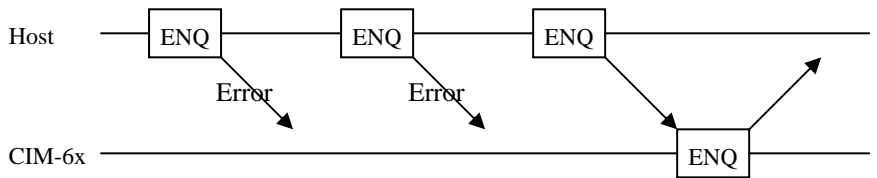
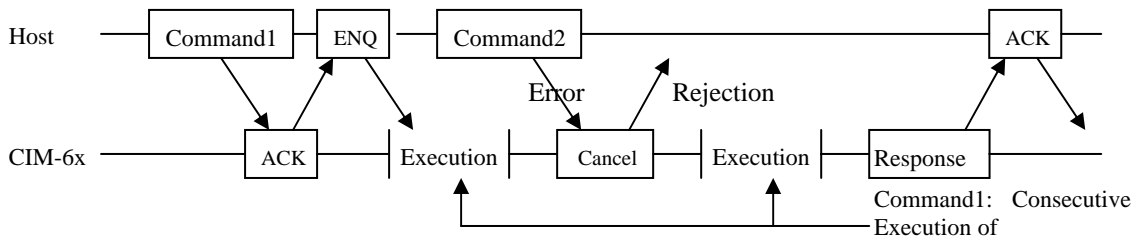
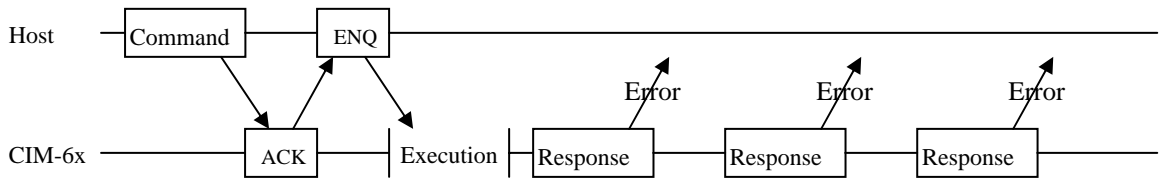
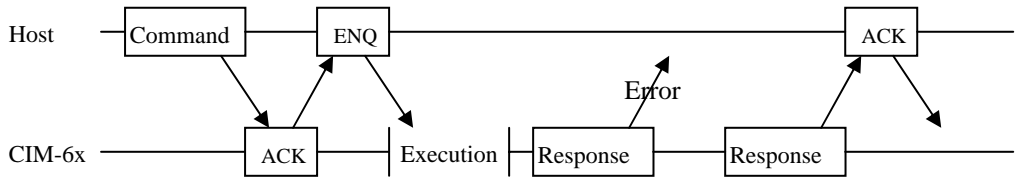
#### 7.3.2 Error1



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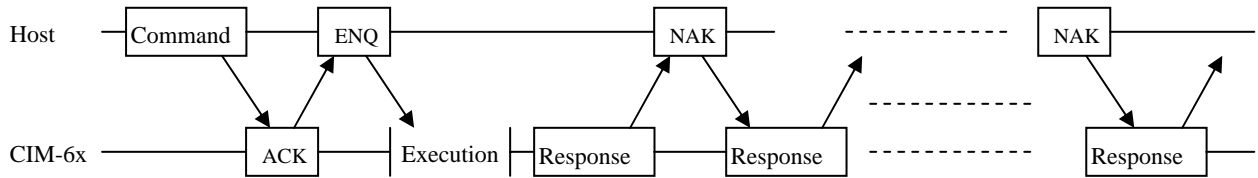
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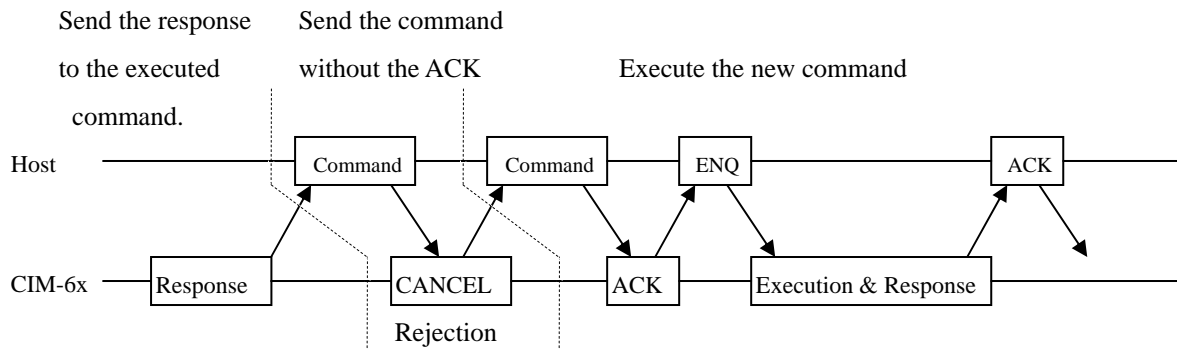
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### 7.3.3 Error2

- When received the NAK packet consecutively.



- When the Host sends the command without the ACK packet.

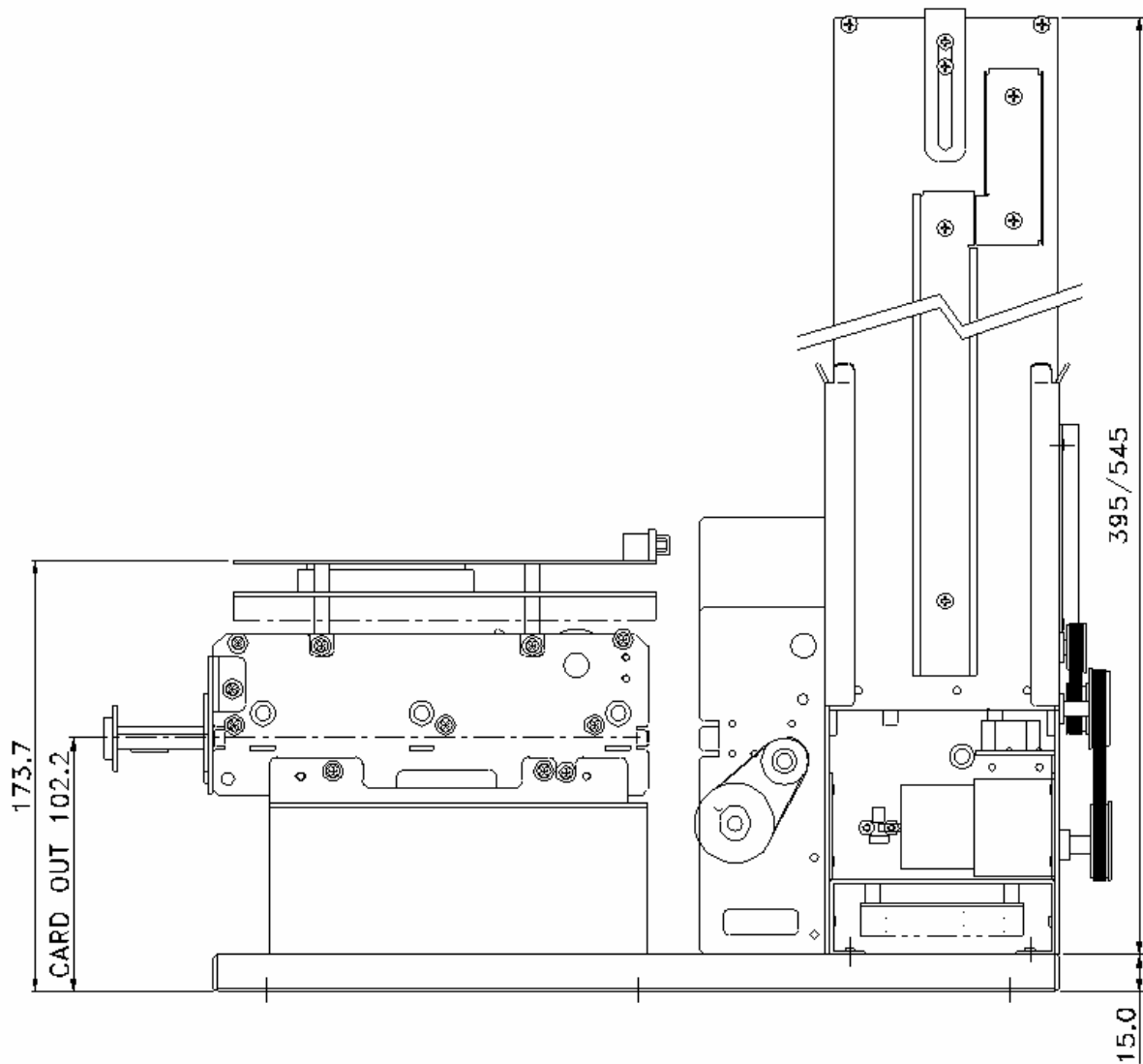


The terminal should ignore the command received before it sends the ACK packet, send the CANCEL packet. The second command will be treated as the ACK packet and executed with no ACK.



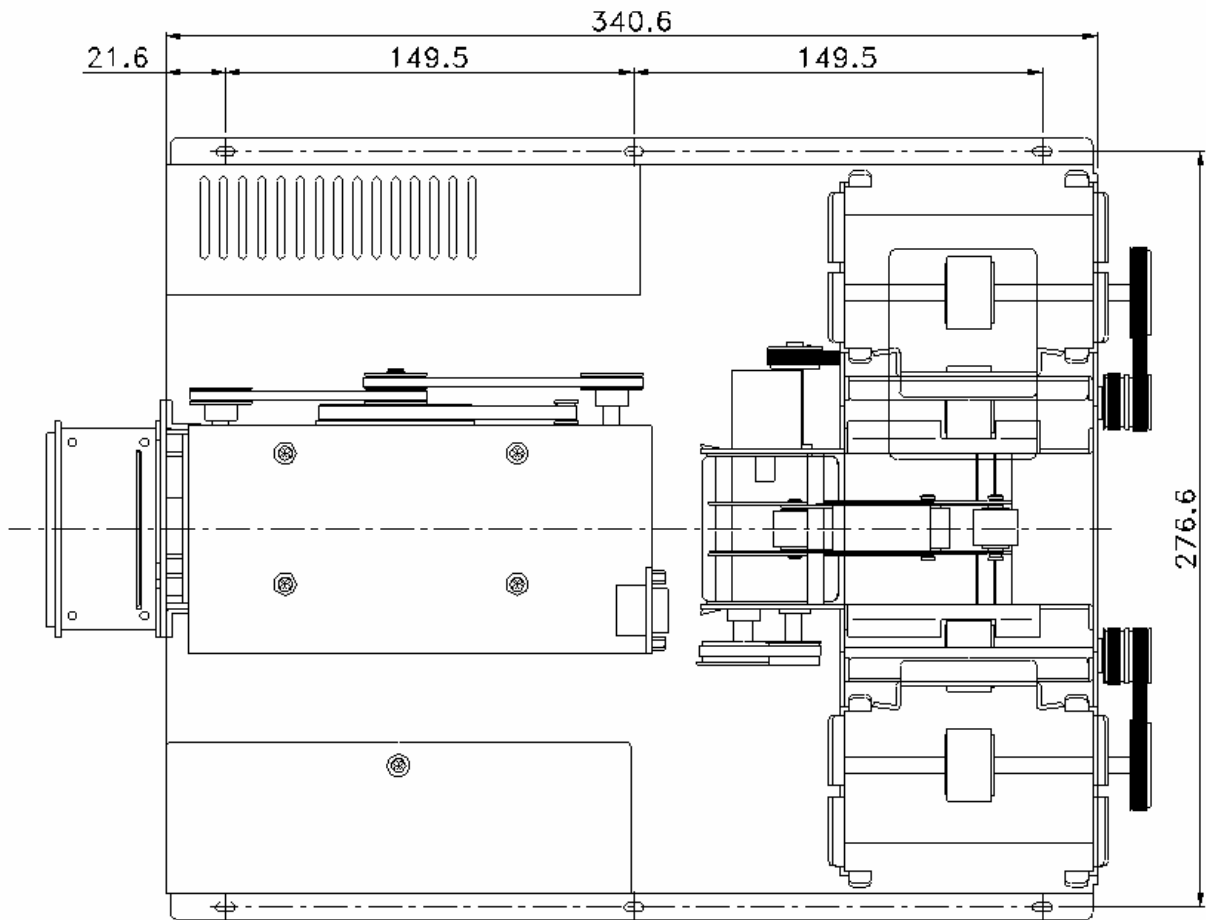
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## TECHNICAL DRAWING



< SIDE VIEW >

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< TOP VIEW >

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## COMMAND DETAIL

### ◆ *Command List*

|         | Item       | Cm0 | Cm1 | Cm2 | Detail                 | Note     |
|---------|------------|-----|-----|-----|------------------------|----------|
| COMMON  | STATUS     | 'C' | '1' | '1' | Get Model              |          |
|         |            | 'C' | '1' | '2' | Get Firmware Version   |          |
|         |            | 'C' | '1' | '3' | Get Stacker            |          |
|         |            | 'C' | '1' | '4' | Get Status List        |          |
|         |            | 'C' | '1' | '6' | Get Card Position      |          |
|         | SETTING_1  | 'C' | '2' | '1' | Set RTC IC             | Check    |
|         |            | 'C' | '2' | '3' | Set Capture Time       | Check    |
|         |            | 'C' | '2' | '4' | Set Retry Count        | Check    |
|         |            | 'C' | '2' | '5' | Set Buzz On/Off Cont.  | Check    |
|         | MOVE       | 'C' | '3' | '1' | Card Move From Stacker |          |
|         |            | 'C' | '3' | '2' | Card Move To ...       |          |
|         |            | 'C' | '3' | '4' | Card Capture           | Backward |
|         |            | 'C' | '3' | '6' | Card Eject (Drop Mode) | Forward  |
|         |            | 'C' | '3' | '7' | Card Eject (Hold Mode) | Forward  |
|         | SETTING_2  | C   | '4' | '2' | Software Reset         |          |
|         |            | C   | '4' | '3' | IC PTS Change          |          |
| IC CARD | IC CONTROL | 'I' | '2' | '1' | IC Card Reset          |          |
|         |            | 'I' | '2' | '2' | IC Card Direct Control |          |

|               |                                  |            |             |             |
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◆ *Common*

These are the command set that all the CIM-6000 Series use. These commands include the terminal setting and the card movement related commands.

The 'STATUS' commands provide the function to check the current terminal status and the errors occurred during the command execution.

The 'SETTING' commands consist of commands for setting the terminal and these commands is easy to use because the same command can use for both setting and checking the terminal.

The 'MOVE' commands consist of commands used commonly like the card eject and capture command.

**Commands Set:**

| Item     | Cm0 | Cm1 | Cm2 | Detail                 | Note     |
|----------|-----|-----|-----|------------------------|----------|
| STATUS   | 'C' | '1' | '1' | Get Model              |          |
|          | 'C' | '1' | '2' | Get Firmware Version   |          |
|          | 'C' | '1' | '3' | Get Stacker            |          |
|          | 'C' | '1' | '4' | Get Status List        |          |
|          | 'C' | '1' | '6' | Get Card Position      |          |
| SETTING1 | 'C' | '2' | '1' | Set RTC IC             | Check    |
|          | 'C' | '2' | '3' | Set Capture Time       | Check    |
|          | 'C' | '2' | '4' | Set Retry Count        | Check    |
|          | 'C' | '2' | '5' | Set Buzz On/Off Cont.  | Check    |
| MOVE     | 'C' | '3' | '1' | Card Move In Stacker   |          |
|          | 'C' | '3' | '2' | Card Move To ...       |          |
|          | 'C' | '3' | '4' | Card Capture           | Backward |
|          | 'C' | '3' | '6' | Card Eject (Drop Mode) | Forward  |
|          | 'C' | '3' | '7' | Card Eject (Hold Mode) | Forward  |
| SETTING2 | 'C' | '4' | '2' | S/W Reset              |          |
|          | C   | '4' | '3' | IC PTS Change          |          |

|               |                                  |            |             |             |
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## 1 STATUS / SETTING

1.1 “C11” : It is to check out Model number of CIM-6000.

☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C11” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “C11” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C11” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure

|                 |
|-----------------|
| Model No        |
| 30 Byte (ASCII) |

1.2 “C12” : It is to check out Firmware Version of CIM-6000

☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C12” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “C12” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C12” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure

|                 |
|-----------------|
| VERSION         |
| 30 Byte (ASCII) |

|               |                                  |            |             |             |
|---------------|----------------------------------|------------|-------------|-------------|
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1.3 “C13” : It is check out status of Stacker of CIM-6000

☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C13” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “C13” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C13” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure

|             |             |
|-------------|-------------|
| Stacker 1   | Stacker 2   |
| 1Byte (Hex) | 1Byte (Hex) |

☞ Data Variable

<Stacker1>

| Code | Status             |
|------|--------------------|
| 0x01 | Stacker #1 Good    |
| 0x02 | Stacker #1 Warning |
| 0x03 | Stacker #1 Empty   |

<Stacker2>

| Code | Status             |
|------|--------------------|
| 0x01 | Stacker #2 Good    |
| 0x02 | Stacker #2 Warning |
| 0x03 | Stacker #2 Empty   |

☞ Note

| Stacker Status    | Detail                               |
|-------------------|--------------------------------------|
| ‘Stacker Good’    | Too many cards loading <sup>1)</sup> |
| ‘Stacker Warning’ | Too few cards loading <sup>1)</sup>  |
| ‘Stacker Empty’   | No cards in stacker                  |

1) The stacker status is detected by the sensor behind the stacker. The number of cards can be changed.

1.4 “C14” : It is to check out current Status of CIM-6000

☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C14” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

☞ Positive Response Format

|     |      |    |        |       |      |     |      |     |     |
|-----|------|----|--------|-------|------|-----|------|-----|-----|
| SOH | Null | HL | Length | “C14” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|----|--------|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C14” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure

|                |          |                |
|----------------|----------|----------------|
| Error Code (1) | ---      | Error Code (N) |
| High Byte      | Low Byte |                |
| 2Byte          |          |                |

☞ Note

You can identify the stacker status, motor status, card status (jamming) and communication status through the Error Code in the response data structure.

|               |                                  |            |             |             |
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1.5 “C16” : It is to check out current card position of CIM-6000

☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C16” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

☞ Positive Response Format

|     |      |        |     |       |      |      |      |     |     |
|-----|------|--------|-----|-------|------|------|------|-----|-----|
| SOH | Null | Length | STX | “C16” | GOOD | 0x01 | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|------|------|-----|-----|

☞ Negative Response Format

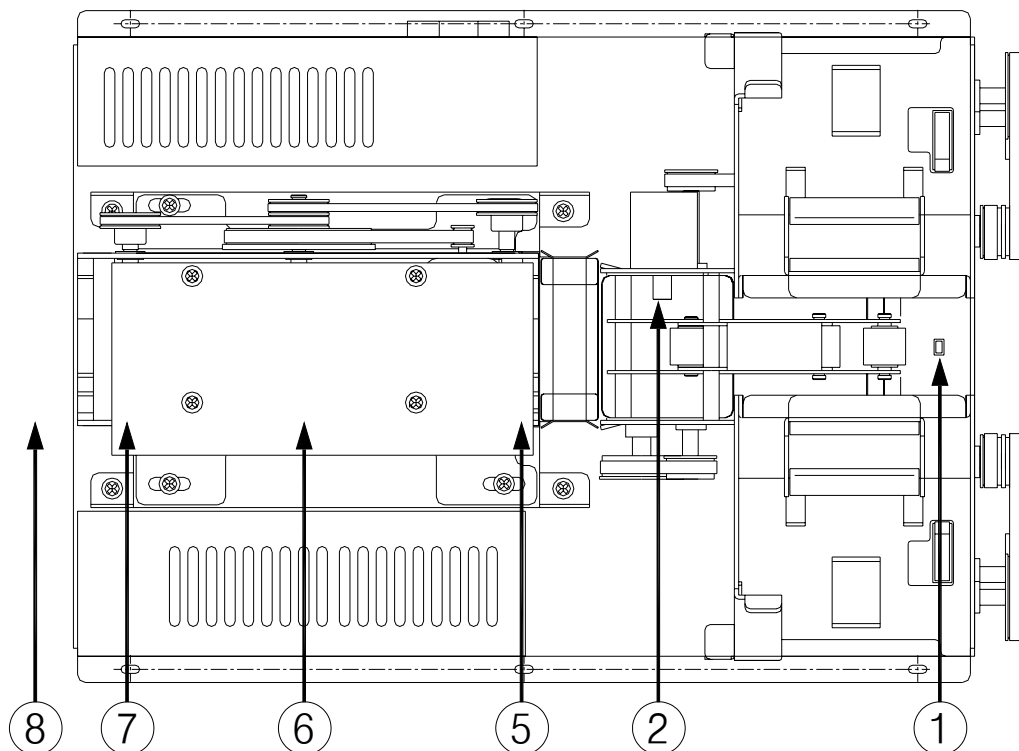
|     |      |        |     |       |        |      |     |     |
|-----|------|--------|-----|-------|--------|------|-----|-----|
| SOH | Null | Length | STX | “C16” | E-Code | 0x00 | ETX | Bcc |
|-----|------|--------|-----|-------|--------|------|-----|-----|

☞ Response Data Structure

|               |
|---------------|
| Card Position |
| 1Byte (Hex)   |

<Card Position>

| Number | Code | Sensor |
|--------|------|--------|
| 1      | 0x01 | SEN1   |
| 2      | 0x02 | SEN2   |
| 3      | 0x04 | SEN3   |
| 4      | 0x08 | SEN4   |
| 5      | 0x10 | SEN5   |
| 6      | 0x20 | SEN6   |
| 7      | 0x40 | SEN7   |
| 8      | 0x80 | SEN8   |



|               |                                  |            |             |             |
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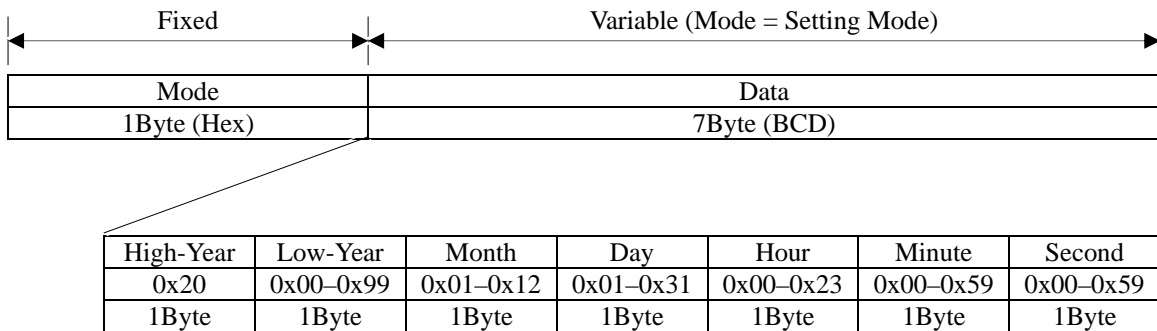
## 2 SETTING

### 2.1 “C21” : It is to set or to check ‘RTC IC’.

#### ☞ Command Format

|     |      |        |     |       |      |     |     |
|-----|------|--------|-----|-------|------|-----|-----|
| SOH | Null | Length | STX | “C21” | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|

#### ☞ Command Data Structure



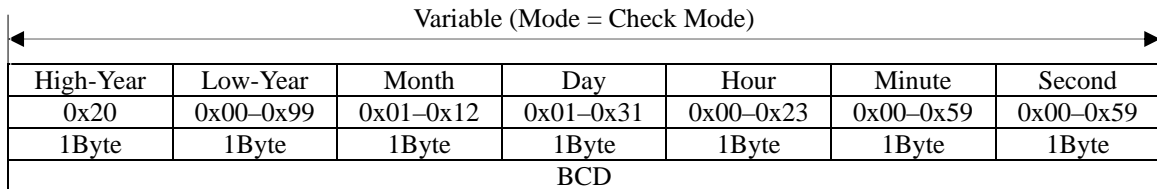
#### ☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “C21” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

#### ☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C21” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

#### ☞ Response Data Structure



#### ☞ Data Variable

<Mode>

| Code | Mode           | Detail         |
|------|----------------|----------------|
| 0x01 | ‘Setting Mode’ | Set ‘RTC IC’   |
| 0x02 | ‘Check Mode’   | Check ‘RTC IC’ |

#### ☞ Note

‘Day’ is changeable due to the value of ‘Month’.



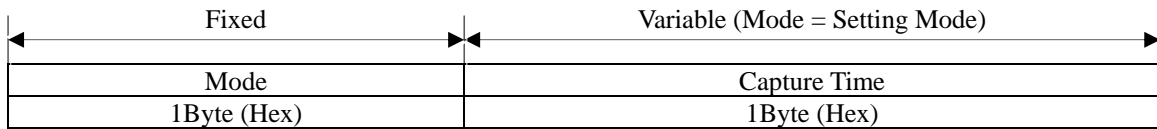
|               |                                  |            |             |             |
|---------------|----------------------------------|------------|-------------|-------------|
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2.2 “C23” : It is to set or to check ‘Capture Time’.

☞ Command Format

|     |      |        |     |       |      |     |     |
|-----|------|--------|-----|-------|------|-----|-----|
| SOH | Null | Length | STX | “C23” | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|

☞ Command Data Structure



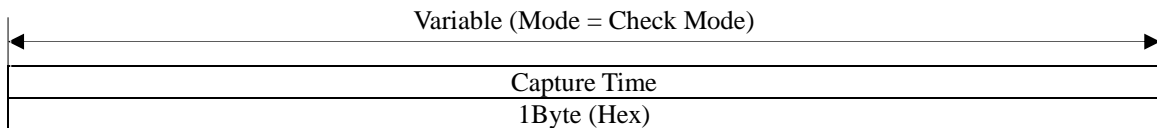
☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “C23” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C23” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure



☞ Data Variable

<Mode>

| Code | Mode           | Detail               |
|------|----------------|----------------------|
| 0x01 | ‘Setting Mode’ | Set ‘Capture Time’   |
| 0x02 | ‘Check Mode’   | Check ‘Capture Time’ |

<Capture Time>

| Code | Setting | Detail                              | Note    |
|------|---------|-------------------------------------|---------|
| 0x00 | NON     | ‘Capture Time’ not set              | Default |
| 0x01 | 10Sec   | ‘Capture Time’ to be set 10 seconds |         |
| 0x02 | 20Sec   | ‘Capture Time’ to be set 20 seconds |         |
| 0x03 | 30Sec   | ‘Capture Time’ to be set 30 seconds |         |
| 0x04 | 40Sec   | ‘Capture Time’ to be set 40 seconds |         |
| 0x05 | 50Sec   | ‘Capture Time’ to be set 50 seconds |         |
| 0x06 | 60Sec   | ‘Capture Time’ to be set 60 seconds |         |

☞ Note

‘Capture Time’ Function

In Hold mode, if user doesn’t pull out the card from the terminal in ‘Capture Time’ period, it gets back the card automatically.

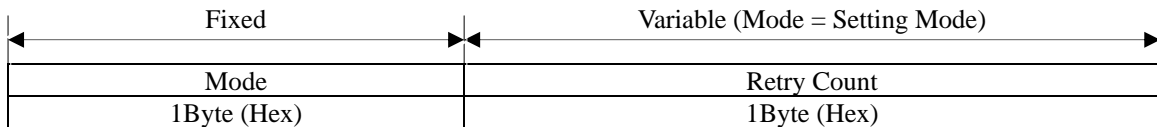
|               |                                  |            |             |             |
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2.3 “C24” : It is to set or to check ‘Retry Count’.

☞ Command Format

|     |      |        |     |       |      |     |     |
|-----|------|--------|-----|-------|------|-----|-----|
| SOH | Null | Length | STX | “C24” | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|

☞ Command Data Structure



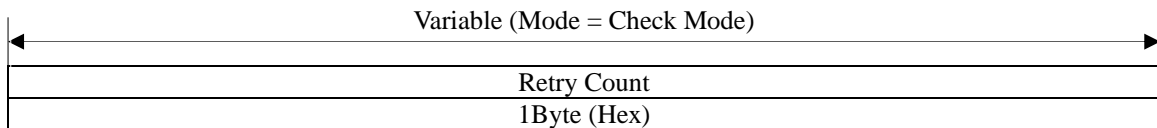
☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “C24” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C24” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure



☞ Data Variable

<Mode>

| Code | Mode           | Detail              |
|------|----------------|---------------------|
| 0x01 | ‘Setting Mode’ | Set ‘Retry Count’   |
| 0x02 | ‘Check Mode’   | Check ‘Retry Count’ |

<Retry Count>

| Code | Setting     | Detail                         | Note    |
|------|-------------|--------------------------------|---------|
| 0x00 | NON         | Do not retry                   |         |
| 0x01 | Once        | Execute the instruction again. |         |
| 0x02 | Twice       | Retry it twice                 |         |
| 0x03 | Three times | Retry it three times           | Default |

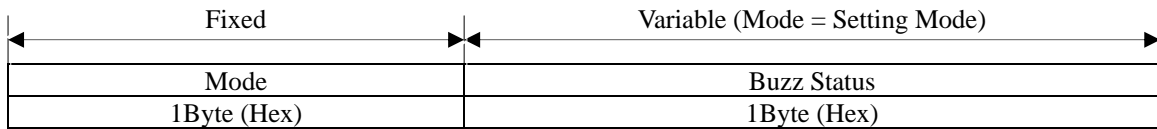
|               |                                  |            |             |             |
|---------------|----------------------------------|------------|-------------|-------------|
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2.4 “C25” : It is to set or to check ‘Buzz Control’.

☞ Command Format

|     |      |        |     |       |      |     |     |
|-----|------|--------|-----|-------|------|-----|-----|
| SOH | Null | Length | STX | “C25” | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|

☞ Command Data Structure



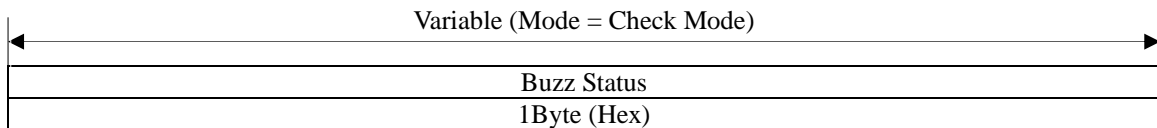
☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “C25” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C25” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure



☞ Data Variable

<Mode>

| Code | Mode           | Detail               |
|------|----------------|----------------------|
| 0x01 | ‘Setting Mode’ | Set ‘Buzz Control’   |
| 0x02 | ‘Check Mode’   | Check ‘Buzz Control’ |

<Buzz Status>

| Code | Setting  | Detail   | Note    |
|------|----------|----------|---------|
| 0x01 | Buzz Off | Buzz Off |         |
| 0x02 | Buzz On  | Buzz On  | Default |

☞ Note

|               |                                  |            |             |             |
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## 2.5 “C42” : Software RESET for Main Board

### ☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C42” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

### ☞ Positive Response Format

|     |      |        |     |       |      |      |     |     |
|-----|------|--------|-----|-------|------|------|-----|-----|
| SOH | Null | Length | STX | “C42” | GOOD | 0x01 | ETX | Bcc |
|-----|------|--------|-----|-------|------|------|-----|-----|

### ☞ Negative Response Format

|     |      |        |     |       |        |      |     |     |
|-----|------|--------|-----|-------|--------|------|-----|-----|
| SOH | Null | Length | STX | “C42” | E-Code | 0x00 | ETX | Bcc |
|-----|------|--------|-----|-------|--------|------|-----|-----|

### ☞ Note

This “C42” Software RESET command is effective for CIM6000 MAIN BOARD only.

Card Dispenser and Card Reader is not RESETed.

With this software RESET, all the data setted at CIM-5000 return to DEFAULT value.

After “RESET”, minimum 5 seconds is required before running to get secure operation.

## 2.6 “C43” : Extension command

### ☞ Command Format

|     |      |        |     |       |      |     |     |
|-----|------|--------|-----|-------|------|-----|-----|
| SOH | Null | Length | STX | “C43” | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|

### 2.6.1 Select the card Protocol or Speed & IC interface module baud rate

#### ☞ Command Data Structure

| 1'st Byte | 2'st Byte               |    |    |                         |    |    |    |    | REMARK                                 |
|-----------|-------------------------|----|----|-------------------------|----|----|----|----|--|
| Code      | B7                      | B6 | B5 | B4                      | B3 | B2 | B1 | B0 |  |
| 00H       | 0                       | 0  | 0  | 0                       | 0  | 0  | 0  | 1  | Use for ICC interface device only      |
|           |                         |    |    |                         | 0  | 0  | 1  | 0  |  |
|           |                         |    |    |                         | 0  | 0  | 1  | 1  |  |
|           | 0                       | 0  | 0  | 1                       | 0  | 0  | 0  | 1  | PPS(PTS) Application<br>Ref) ISO7916-3 |
|           |                         |    |    |                         | 0  | 0  | 1  | 0  |  |
|           |                         |    |    |                         | 0  | 0  | 1  | 1  |  |
| 2 ~ FH    |                         |    |    | Reserved for future use |    |    |    |    |  |
| 01H~FFH   | Reserved for future use |    |    |                         |    |    |    |    |  |

|               |                                  |            |             |             |
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<High Nibble of 2'st Byte>

| Code  | Decryption   |
|-------|--|
| 0000b | - Change the baud rate of IC Interface device.<br>- Baud rate: Refer to following "Low Nibble of 2'st Byte" table.   |
| 00001 | Value for the card to support PTS command . (Refer to ISO7816-3)<br>- Change the baud rate of IC Interface device and IC card.<br>- Baud rate: Refer to following "Low Nibble of 2'st Byte" table. |

<Low Nibble of 2'st Byte>

| Code  | Decryption |
|-------|------------|
| 0001b | 9600bps    |
| 0010b | 19200bps   |
| 0011b | 38400bps   |

☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | "C43" | GOOD | '1' | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Command Data Structure

|             |            |                      |
|-------------|------------|----------------------|
| Length_High | Length_Low | PPS DATA             |
| 2Byte       |            | N Byte               |
|             |            | ←————— Length —————→ |

P.S)

DATA Structure: The response value of the PPS request and length of the response value.

If 4Byte(PPSS, PPS0, PPS1, PCK) is the correct value, the executing is normal.

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | "C43" | E-Code | '0' | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

|               |                                  |            |             |             |
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### 3 MOVE

3.1 “C31” : It is to take a card from Stacker and to move it to Card Reader / Writer Module.

☞ Command Format

|     |      |        |     |       |      |     |     |
|-----|------|--------|-----|-------|------|-----|-----|
| SOH | Null | Length | STX | “C31” | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|

☞ Command Data Structure

|             |             |
|-------------|-------------|
| Stacker     | Module      |
| 1Byte (Hex) | 1Byte (Hex) |

☞ Positive Response Format

|     |      |        |     |       |      |     |     |     |
|-----|------|--------|-----|-------|------|-----|-----|-----|
| SOH | Null | Length | STX | “C31” | GOOD | ‘1’ | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C31” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Data Variable

<Stacker>

| Code | Setting   | Detail                       |
|------|-----------|------------------------------|
| 0x01 | Stacker 1 | Select Stacker 1             |
| 0x02 | Stacker 2 | Select Stacker 2             |
| 0x03 | Auto      | Select Stacker automatically |

<Module>

| Code | Setting | Detail                        |
|------|---------|-------------------------------|
| 0x01 | MSRW    | Card transport to MSRW Module |
| 0x02 | IC      | Card transport to IC Module   |
| 0x03 | RF      | Card transport to RF Module   |

3.2 “C32” : It is take card to Card Reader / Writer Module

☞ Command Format

|     |      |        |     |       |      |     |     |
|-----|------|--------|-----|-------|------|-----|-----|
| SOH | Null | Length | STX | “C32” | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|

☞ Command Data Structure

|             |
|-------------|
| Module      |
| 1Byte (Hex) |

☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “C32” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C32” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Data Variable

<Module>

| Code | Setting | Detail                        |
|------|---------|-------------------------------|
| 0x01 | MSRW    | Card transport to MSRW Module |
| 0x02 | IC      | Card transport to IC Module   |
| 0x03 | RF      | Card transport to RF Module   |

|               |                                  |            |             |             |
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### 3.3 “C34” : It takes card to Bin Box (Capture)

#### ☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C34” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

#### ☞ Positive Response Format

|     |      |        |     |       |      |     |     |     |
|-----|------|--------|-----|-------|------|-----|-----|-----|
| SOH | Null | Length | STX | “C34” | GOOD | ‘1’ | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|-----|

#### ☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C34” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

#### ☞ Details

Capture card is stored in Bin Box in the back of CIM-6X0. If the Box is full, it causes an error.

### 3.4 “C36” : Dispense the card to front and Drop it out of the unit.

#### ☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C36” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

#### ☞ Positive Response Format

|     |      |        |     |       |      |     |     |     |
|-----|------|--------|-----|-------|------|-----|-----|-----|
| SOH | Null | Length | STX | “C36” | GOOD | ‘1’ | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|-----|

#### ☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C36” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

#### ☞ Note

The CIM-6xxx model with bezel or shutter can not use “C36” command.

### 3.5 “C37” : Dispense the card to front and hold it at the exit roller of the unit.

#### ☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “C37” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

#### ☞ Positive Response Format

|     |      |        |     |       |      |     |     |     |
|-----|------|--------|-----|-------|------|-----|-----|-----|
| SOH | Null | Length | STX | “C37” | GOOD | ‘1’ | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|-----|

#### ☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “C37” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

|               |                                  |            |             |             |
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◆ *IC CARD*

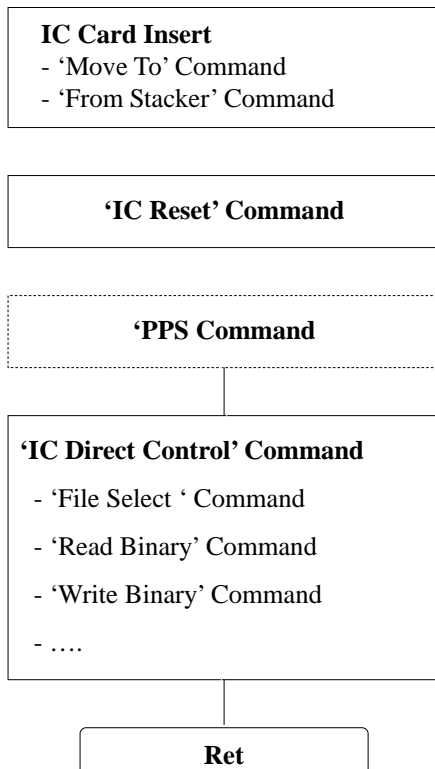
This section describes the commands that can use at the IC card and Memory card.

The IC card should conform to the ISO7816-4 T=0 and T=1 , these cards is available

The applicable models in the CIM6000 Series are the CIM620, CIM640, CIM650, CIM670, and the available commands are as follows.

| Item       | Cm0 | Cm1 | Cm2 | Detail                 | Note |
|------------|-----|-----|-----|------------------------|------|
| IC CONTROL | 'T' | '2' | '1' | IC Card Reset          |      |
|            | 'T' | '2' | '2' | IC Card Direct Control |      |
|            | 'C' | '4' | '3' | Ref) Section 2.6.1     |      |

Select the card Protocol or Speed & IC module baud rate



Option :.you can select use or not use according to necessity  
Ref) Section 2.6.1(page 27)



|               |                                  |            |             |             |
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## 1 IC CONTROL

### 1.1 “I21” : Reset the IC card and receive the ATR from card.

☞ Command Format

|     |      |        |     |       |     |     |
|-----|------|--------|-----|-------|-----|-----|
| SOH | Null | Length | STX | “I21” | ETX | Bcc |
|-----|------|--------|-----|-------|-----|-----|

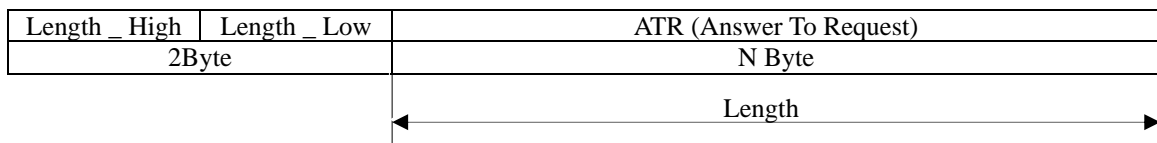
☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “I21” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “I21” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure



☞ Example

SAMSUNG SCOS ATR

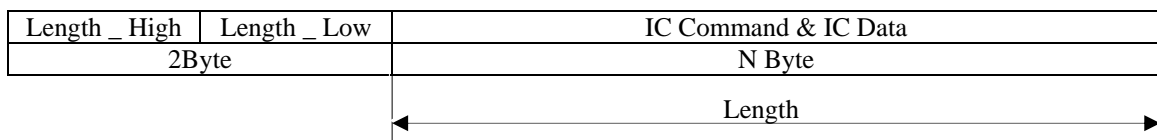
|            |      |      |      |      |      |      |      |      |
|------------|------|------|------|------|------|------|------|------|
| High 8Byte | 0x3B | 0x6B | 0x00 | 0x00 | 0x80 | 0x31 | 0x80 | 0x63 |
| Low 7Byte  | 0x53 | 0x46 | 0x01 | 0x83 | 0x03 | 0x90 | 0x00 |      |

### 1.2 “I22” : Control the card conforming to the ISO 7816 T = 0 and T =1 , ISO 7816 – 4 standard directly.

☞ Command Format

|     |      |        |     |       |      |     |     |
|-----|------|--------|-----|-------|------|-----|-----|
| SOH | Null | Length | STX | “I22” | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|-----|

☞ Command Data Structure



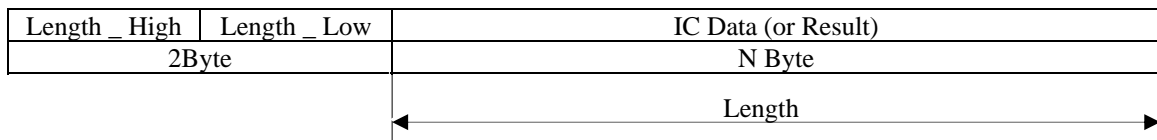
☞ Positive Response Format

|     |      |        |     |       |      |     |      |     |     |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|
| SOH | Null | Length | STX | “I22” | GOOD | ‘1’ | DATA | ETX | Bcc |
|-----|------|--------|-----|-------|------|-----|------|-----|-----|

☞ Negative Response Format

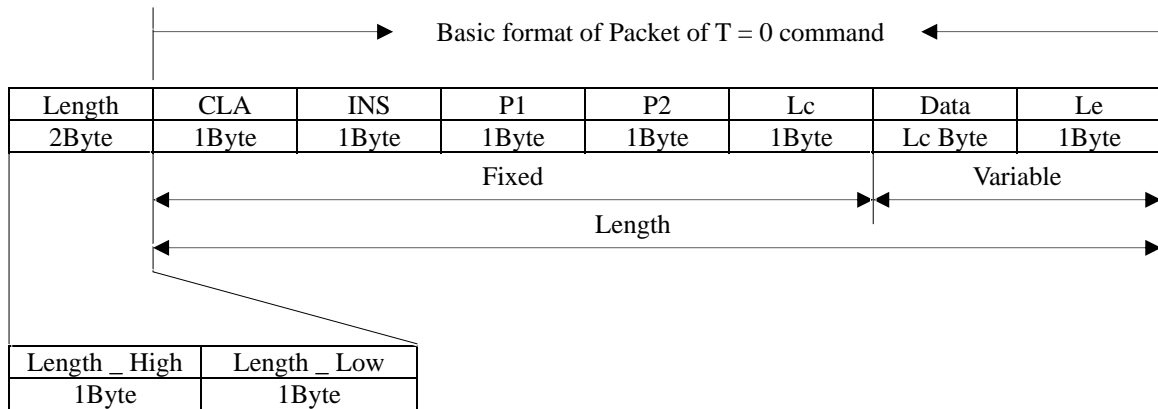
|     |      |        |     |       |        |     |     |     |
|-----|------|--------|-----|-------|--------|-----|-----|-----|
| SOH | Null | Length | STX | “I22” | E-Code | ‘0’ | ETX | Bcc |
|-----|------|--------|-----|-------|--------|-----|-----|-----|

☞ Response Data Structure



|               |                                  |            |             |             |
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IC Command & IC Data Structure



| CLA  | Class                        | Note            |
|------|------------------------------|-----------------|
| INS  | Instruction                  |                 |
| P1   | Offset(High Value)           |                 |
| P2   | Offset(Low Value)            |                 |
| Lc   | A number of data to transfer | Max Value : 255 |
| Data | Data to Transfer             |                 |
| Le   | A number of data to receive  |                 |

Format of T = 0 Command

| Command                       | INS Code (Hex Value) |
|-------------------------------|----------------------|
| Read Binary Command           | B0                   |
| Write Binary Command          | D0                   |
| Update Binary Command         | D6                   |
| Erase Binary Command          | 0E                   |
| Read Record(s) Command        | B2                   |
| Write Record Command          | D2                   |
| Append Record Command         | E2                   |
| Update Record Command         | DC                   |
| Get Data Command              | CA                   |
| Put Data Command              | DA                   |
| Select File Command           | A4                   |
| Verify Command                | 20                   |
| Internal Authenticate Command | 88                   |
| External Authenticate Command | 82                   |
| Get Challenge Command         | 84                   |
| Manage Channel Command        | 70                   |

For more information, refer to the ISO 7816 – 4 standard.

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## ERROR DETAIL

### <GOOD>

Code : 0x0000

Description: Normal Execution

Procedures: None

### <NOT\_DEFINE\_COMMAND>

Code : 0x2001

Description : Using the command that does not defined in this model.

Action : Use the valid command in this model.

### <NOT\_USE\_COMMAND>

Code : 0x2002

Description : Not available command in this model.

Action : Use the valid command in this model.

### <COMM\_FRAME\_ERROR>

Code : 0x2003

Description : Sending the command that has the invalid communication frame.

Action : Check the data format and the corresponding module specification.

### <CARD\_JAM>

Code : 0x2004

Description : When the card is jammed.

Action : Remove the jammed card.

### <NO\_CARD>

Code : 0x2005

Description : No cards.

Action : Insert the card.

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<CARD\_PRESENT>

Code : 0x2006

Description : When the card exists already in the terminal.

Action : Eject the card.

<BUSY>

Code : 0x2007

Description : When the terminal is running or busy.

Action : Wait until the previous operation is completed.

<DISPENSER\_ERROR>

Code : 0x2100

Description : Not Applicable Dispenser.

Action : Reset the terminal and exchange the dispenser..

<DISPENSER\_COMM\_ERROR>

Code : 0x2101

Description : Dispenser communication error

Action : Check the communication line and reset the terminal.

<STACKER1\_ERROR>

Code : 0x2102

Description : The first STACKER ERROR

Action : Be sure that the card is loaded at the first stacker.

<STACKER2\_ERROR>

Code : 0x2103

Description: The second STACKER ERROR

Action : Be sure that the card is loaded at the second stacker.

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<ALL\_EMPTY>

Code : 0x2104

Description : No cards at both the first and second stacker.

Action : Load the card in the stacker.

<STACKER1\_EMPTY>

Code : 0x2105

Description : No card at the first stacker.

Action : Load the card at the first stacker.

<STACKER2\_EMPTY>

Code : 0x2106

Description : No card at the second stacker.

Action : Load the card at the second stacker.

<STACKER1\_WARNING>

Code : 0x2107

Description : Too few cards in the first stacker.

Action : Load the card at the first stacker.

<STACKER2\_WARNING>

Code : 0x2108

Description : Too few cards in the second stacker.

Action : Load the card at the second stacker.

<ERROR\_BIN\_FULL>

Code : 0x2109

Description : Too many cards in the 'CAPTURE BOX'.

Action : Keep the capture box empty.

<MSRW\_ERROR>

Code : 0x2200

Description : The MS Reader/Writer that cannot use in this model.

Action : Change the MS Reader/Writer.

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<MSRW\_COMM\_ERROR>

Code : 0x2201

Description : The MS Reader/Writer communication error.

Action : Check the communication line and reset the terminal.

<MSRW\_WRITE\_ERROR>

Code : 0x2202

Description : Error when the MS Reader/Writer is writing on the card.

Action : Clean the header and check the card.

<MSRW\_READ\_ERROR>

Code : 0x2203

Description : Error when the MS Reader/Writer is reading on the card.

Action : Clean the header and check the card.

<IC\_CONTACT\_ERROR>

Code : 0x2204

Description : Error while the terminal contacts the IC card.

Action : Be sure that the current card is an IC card.

<IC\_CONTROL\_ERROR>

Code : 0x2205

Description : Error while the terminal executes the IC card command.

Action : Check if the command is able to use in the contacted card.

<RF\_ERROR>

Code : 0x2300

Description : Unavailable RF module.

Action : Change the RF MODULE

<RF\_COMM\_ERROR>

Code : 0x2301

Description : Communication error at the RF Module.

Action : Check the connection socket

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<RF\_AUTHEN\_ERROR>

Code : 0x2302

Description : Authentication Error at the RF Module.

Action : Change the 'SECRET KEY'

<RF\_WRITE\_ERROR>

Code : 0x2303

Description : Error while the terminal writes at the RF Card.

Action : Be sure that the card exists in the detection range.

<RF\_READ\_ERROR>

Code : 0x2304

Description : Error while the terminal reads at the RF Card.

Action: Be sure that the card exists in the detection range.

<RF\_DETECT\_ERROR>

Error Code : 0x2305

Description : No RF Card.

Action : Insert the RF Card into the terminal.

<RF\_AMOUNT\_ERROR>

Error Code : 0x2306

Description : RF Card

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## Precautions

1. Check if the card exists in stacker. Otherwise, it may not issue the card.

2. Check the communication line

- 1) Communication Port, Baud, Parity, and Data Bit, etc.
- 2) The COM2 port is not available just now.

3. Check the 'CAPTURE BOX'.

The 'BIN FULL' error might be caused, if you turn on the power in condition that the card exists in the 'CAPTURE BOX' behind the terminal.