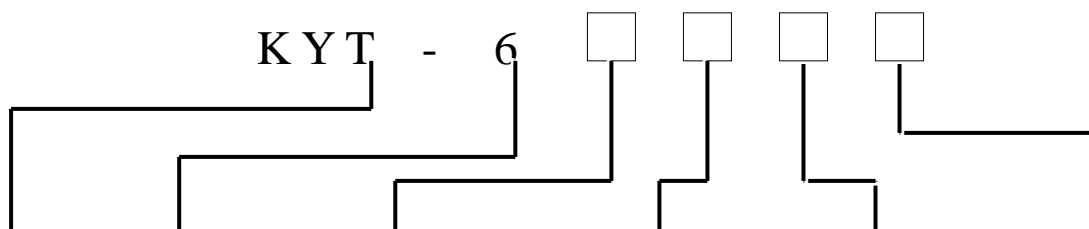


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MODEL NAME INFORMATION



| Interface Type | Function | Magnetic/IC | Track | Option | Option II |
|----------------|--|---|--|-----------------------------|-----------|
| T : RS232 | 6: MOTORIZED TERMINAL UNIT MS/IC CARD READER | 0 : - 1 : IC ONLY 2 : MS READ ONLY 3 : MS R/W 4 : - 5 : MS(READ ONLY) + IC 6 : MS(R/W) + IC | 0 : - 1 : ISO-1 2 : ISO-2 3 : ISO-3 4 : ISO-1,2 5 : ISO-1,3 6 : ISO-2,3 7 : ISO-1,2,3 | 0 :- 1:LOW-CO 2:HI-CO | R: RF |

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION : Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

♣ **KYT6371A is FCC Certified.**

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

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| 1. Overview | | 4. |
| 2. System Block Diagram | | 4. |
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| 4. Environment Requirements | | 5. |
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1. OVERVIEW

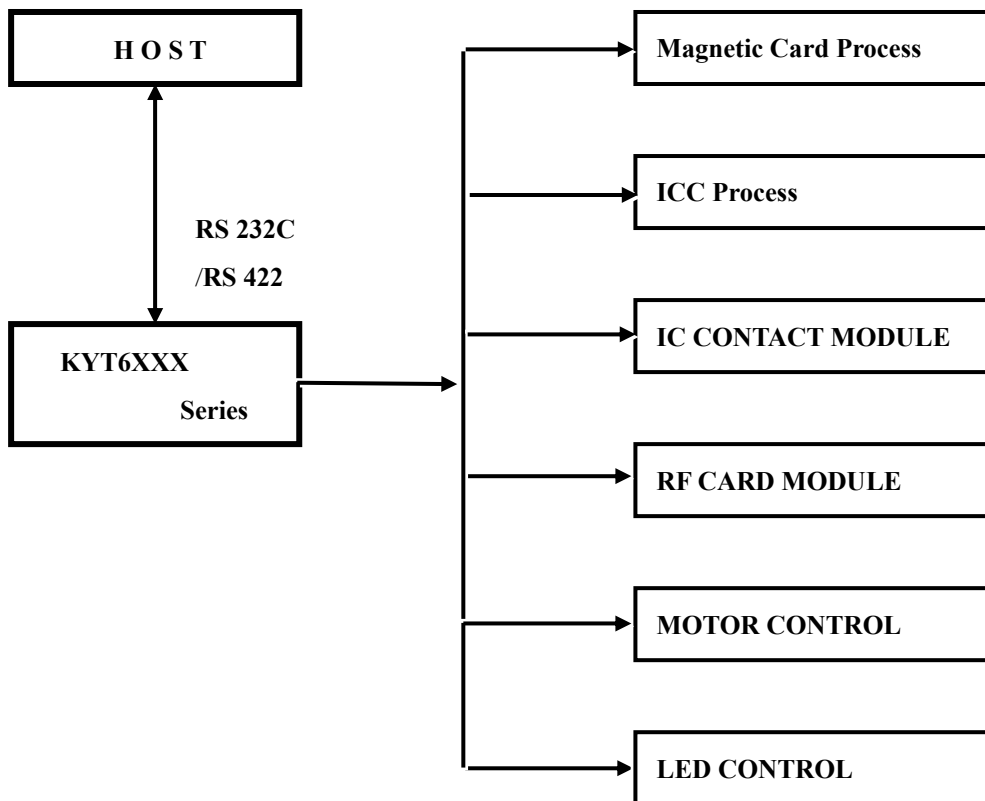
This specification is for the KYT-6XXX Series Motorized Magnetic and or IC Card Reader/Writer. In meeting customer's applications, intended data can be written and read through RS-232C communication.

This model has a function that is a reading writing a IC card confirming to ISO 7816 Part 1 – Part4(T=0, T=1) card.

KYT-6XXX Series has very compact and robust structure providing high reliability and long life.

KYT-6XXX series is suitable for Banking Terminals, Credit/Debit Card System, Auto ID and Access Control Application.

2. System Block Diagram



| | | | | |
|---------------|---|------------|-------------|-------------|
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3. Features

- 3.1 Magnetic Stripe reading Triple tracks.
- 3.2 RS-232C interface with a HOST.
- 3.3 IC Card read and writers.
- 3.4 Support T=0 and T=1 protocol.

4. Environmental Requirements

- 4.1 Operating Locus : in door use Only
- 4.2 Operating Temperature and Humidity : 5°C to 50°C(In 0°C to +5°C range, all specifications but 'Warped card' to be satisfied)
- 4.3 Conservation Temperature and humidity : 5% to 80% RH(No Codensation)
- 4.4 Vibration : Amplitude 2mm, 10 to 50Hz X,Y,Z directions for 30min, 2G or less
- 4.5 Shock Resistance : Up to 30, 11msec

5. Specifications

- 5.1 Card Standard : ISO7811, ISO7816
- 5.2 Recording

| | ISO Track 1 | ISO Track 2 | ISO Track 3 |
|-----------------|------------------------------|-------------|-------------|
| BPI | 210 | 75 | 210 |
| Capacity | Max 79 | Max 40 | Max 107 |
| Reading Methods | F2F | | |
| Length | Variable | | |
| Card thickness | Plastic : 0.76 (+-) 0.08mm | | |

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5.3 Power Consumption

5.3.1 Input voltage :

KYT6xxx : AC 220V ((+-) 5%)

KYT6xxxA :

- AC/DC adapter input : AC 100V/DC220V
- AC/DC adapter output : DC +24V((+-) 5%) – 2.4A

5.4 IC Contact Resistance : Less than 0.5Ω

5.5 IC Contact Force : 0.2N ~ 0.6N

5.6 Card Feeding Speed : 280mm/Sec((+-) 20%)

5.7 Weight : 3.6KG.

◆ Communication Environment

Asynchronous, Half duplex.

Baud Rate : 9600, 19200, 38400, 57600 BPS (Default : 19200 BPS)

Start Bit : 1Bit

Data Length : 8Bits

Parity : None

Stop Bit : 1Bit

6. Magnetic Card Process

KYT6XXX Series is able encode data on all three tracks of ISO 1,2 and 3 in one Pass, which makes read/write process time shorter. It is a basic standard option to Read and Write to Low-co card. Optionally Hi-Co Card is read/Write.

◆ Power Consumption

Motor Starting or Reversing : Less than 250 mA

Card Feed & Reading : Less than 280 mA

Card Feed & Writing : Less than 450 mA

Steady state : Less than 80 mA

◆ Life and Reliability.

Life of Head : Approximately 500,000 passes

Error Rate : 5/1000 cycle.

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- ◆ Warped Cards : This term refers to an evenly warped card having a height from the top of the convex surface to the base of the warped edge.

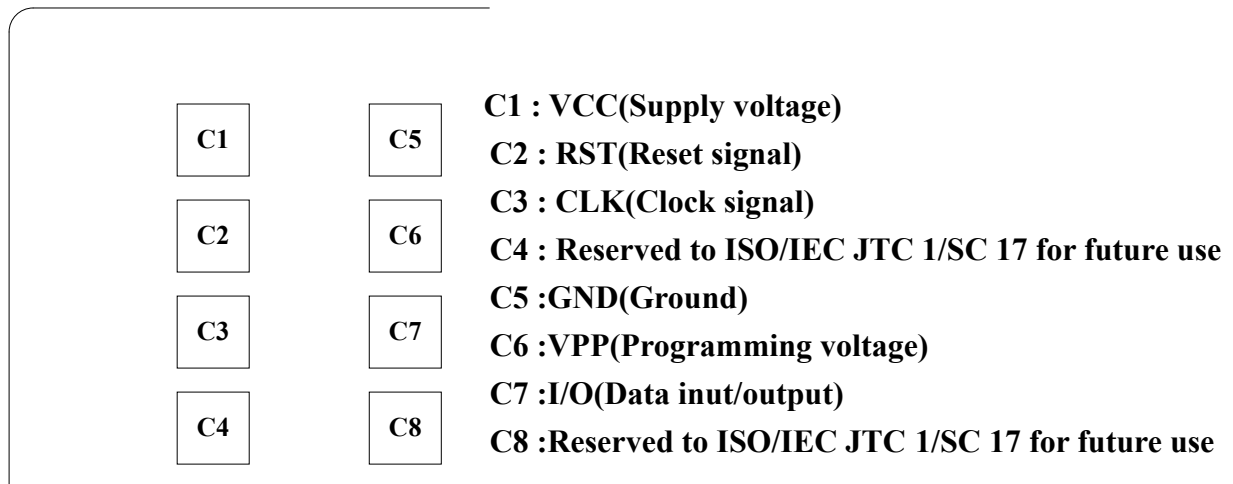


H : 3.00mm Max. for card jamming

7. IC Card Process

KYT-6XXX accepts most of IC cards supporting ISO7816 T=0 and T=1.

- ◆ 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 250mA |
| Card Feed & Reading /Writing | : | Less than 500mA |
| Steady state | : | Less than 80mA |

| | | | | |
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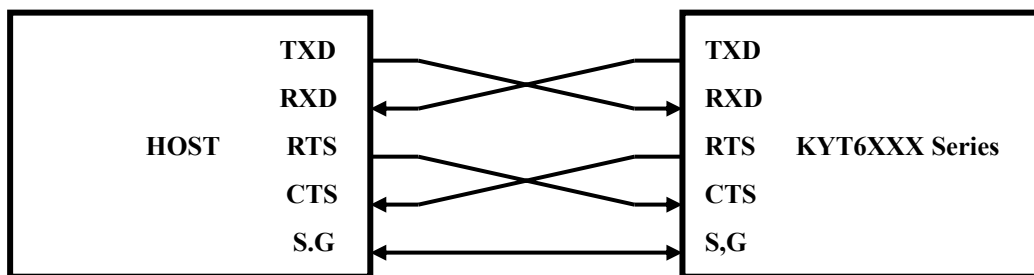
◆Life and Reliability

IC Contact : Approximately 1,000,000 Passes.(Min)

Error Rate : 5/1000 cycle.

8. Interface Requirement

8.1 RS-232C Interface



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

Location Number : P1

| Pin No | INDEX | Remark |
|--------|-------|-----------------|
| 2 | RXD | Receive |
| 3 | TXD | Transmit |
| 7 | RTS | Request to Send |
| 8 | CTS | Clear to Send |
| 5 | S.G | Signal Ground |

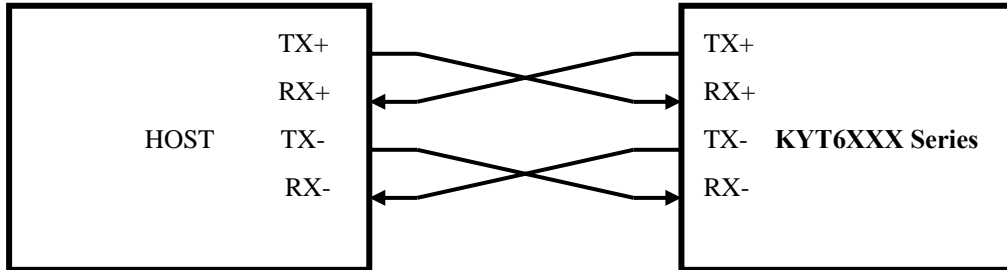
CASE 2) Part Number : 53015-0510(MOLEX)

Location Number : CN1

| Pin No | INDEX | Remark |
|--------|-------|-----------------|
| 1 | RTS | Request to Send |
| 2 | RXD | Receive |
| 3 | TXD | Transmit |
| 4 | CTS | Clear to Send |
| 5 | GND | Signal Ground |

| | | | | |
|---------------|---|------------|-------------|-------------|
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8.2 RS-422 Interface

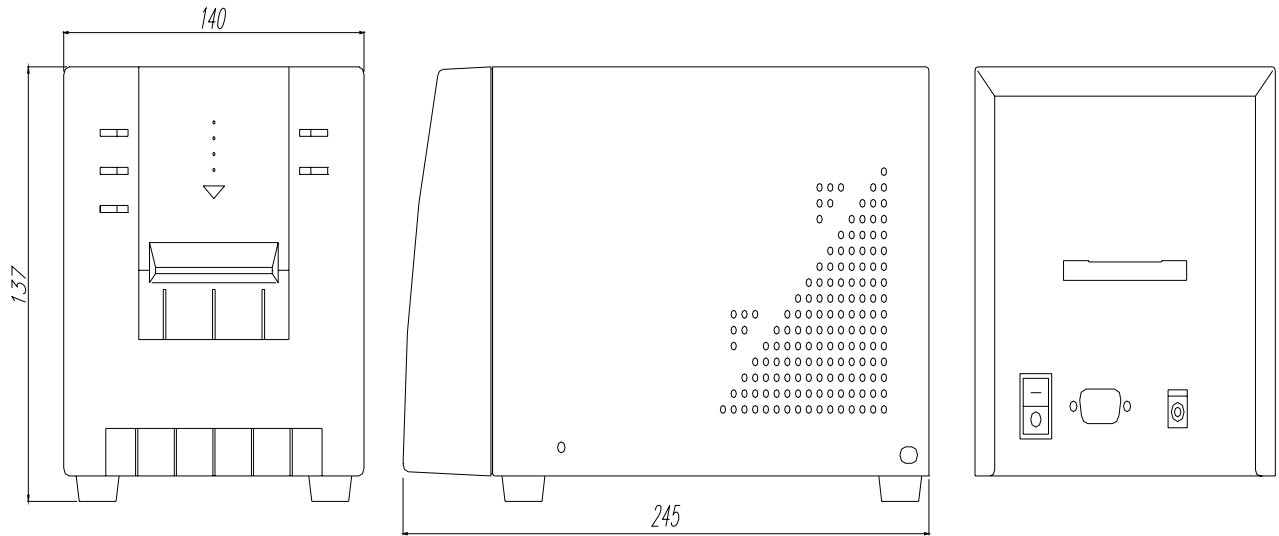


CASE 1) Part Number : D-SUB CONNECTOR(FEMALE)

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

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9. Technical Drawing



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Interface

Motorized Magnetic and IC Card and RF Card Reader/Writer

MODEL : KYT-6XXX

| | | | | |
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1. Communication Method

- 1.1. Asynchronous, Half duplex.
- 1.2. Baud Rate : 9600, 19200 38400, 57600BPS(Default : 19200 BPS)
- 1.3. Start Bit : 1Bit
- 1.4. Data Length : 8Bits
- 1.5. Parity : None
- 1.6. Stop Bit : 1Bit

2. Control Characters

| NANE | Hex Value | Description |
|------|-----------|----------------------|
| SOH | 01 | Start of Header |
| 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 |
| | | |

3. Frame Format

3.1. Command structure

| | | | | | | | | | |
|-----|------|----|----|-----|---|------|---|-----|-----|
| SOH | Code | Cm | Pm | STX | : | DATA | : | ETX | BCC |
|-----|------|----|----|-----|---|------|---|-----|-----|

Ref.) Command Sets List

3.2. Response structure

3.2.1. Positive Packet structure

| | | | | | | | | | | | |
|-----|------|----|----|-----|-----|--------|---|------|---|-----|-----|
| SOH | Code | Cm | Pm | STX | 'P' | STATUS | : | DATA | : | ETX | BCC |
|-----|------|----|----|-----|-----|--------|---|------|---|-----|-----|

3.2.2. Negative Packet structure

| | | | | | | | | | |
|-----|------|----|----|-----|-----|-----|-----|-----|-----|
| SOH | Code | Cm | Pm | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|------|----|----|-----|-----|-----|-----|-----|-----|

|----- BCC(XOR) -----|

Ref.) Negative Response Code List

| | | | | |
|---------------|---|------------|-------------|-------------|
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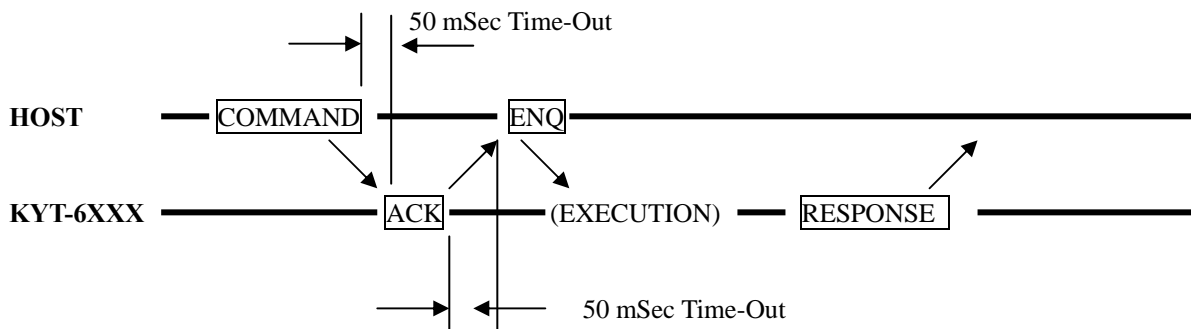
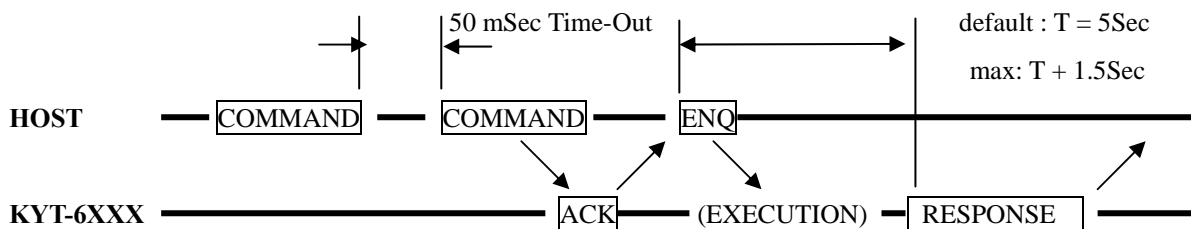
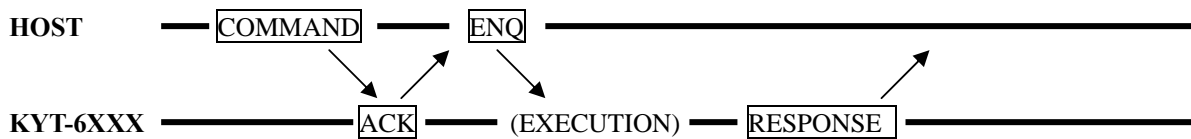
3.3.3 STATUS Structure Format

| | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|
| BIT 7 | BIT 6 | BIT 5 | BIT 4 | BIT 3 | BIT 2 | BIT 1 | BIT 0 |
|-------|-------|-------|-------|-------|-------|-------|-------|

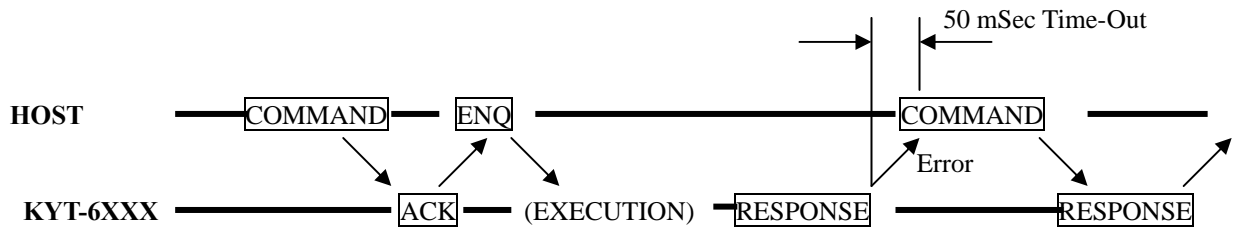
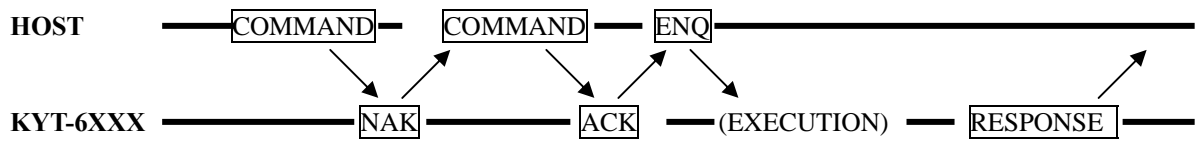
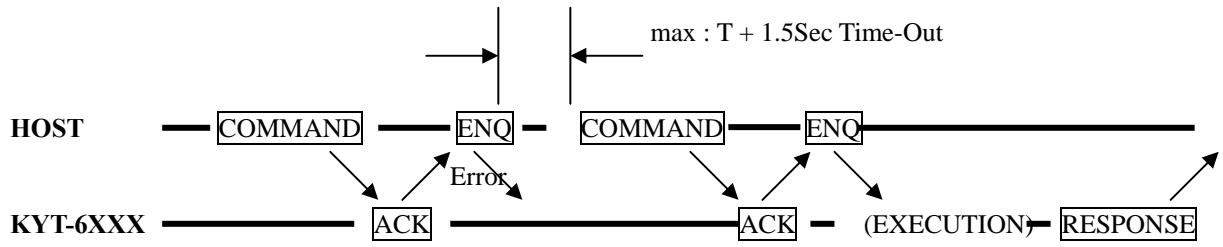
| BIT | Description | REMARK |
|-----|--|------------|
| 7 | If Card Remained inside the unit (Yes: 1, No: 0) | |
| 6 | Approval to insert Card (Yes: 1, No: 0) | |
| 5 | X | 0: Default |
| 4 | 1 – RTS/CTS Setting Up 0 – RTS/CTS Removal | |
| 3 | X | |
| 2 | X | |
| 1 | X | |
| 0 | X | |

4. Communication Protocol Sequence & Timing

(T : Time Setting Value(Refer to “C90”))



| | | | | |
|---------------|---|------------|-------------|-------------|
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- Exception : If Card "STAND-BY" Time is designated as longer than 5 Sec., designate time + 5 Sec

| | | | | |
|---------------|---|------------|-------------|-------------|
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5. Command Sets List

| | Code | Cm | Pm | Description | Note |
|-----------------|------|-----|-----|---|------------------------------------|
| Initialize | 43h | 30h | 30h | Initialize after forward direction Card discharge | |
| | 43h | 30h | 31h | Initialize after reverse direction Card discharge | |
| | 43h | 30h | 32h | Initialize after transfer to "STAND-BY" mode | |
| Request | 43h | 31h | 30h | Read present Card location | |
| | 43h | 31h | 31h | Read F/W Version of unit | |
| Card Control | 43h | 32h | 30h | Approve to insert Card | Card Insertion Approval setting |
| | 43h | 32h | 31h | Prohibit to insert Card | |
| Moving | 43h | 33h | 30h | Card Forward Direction Discharge | |
| | 43h | 33h | 31h | Card Reverse Direction Discharge (Capture) | |
| | 43h | 33h | 32h | Transfer to "STAND-BY" mode | |
| | 43h | 33h | 33h | Card movement(FRONT ->REAR) | |
| | 43h | 33h | 34h | Card ejection to the front | |
| | 43h | 33h | 35h | Card Entry(M/S No Check) | |
| | 43h | 33h | 36h | Card Entry After M/S Check | Pre_Head |
| | 43h | 33h | 41h | IC Card Accept & Contact | IC Control |
| M/S Read | 43h | 34h | 30h | 1 Track Data Reading | |
| | 43h | 34h | 31h | 2 Track Data Reading | |
| | 43h | 34h | 32h | 3 Track Data Reading | |
| | 43h | 34h | 33h | 1,2,3 All Track Data Reading | |
| | 43h | 34h | 35h | 1 Track Reading after Card Insertion STAND-BY | |
| | 43h | 34h | 36h | 2 Track Reading after Card Insertion STAND-BY | |
| | 43h | 34h | 37h | 3 Track Reading after Card Insertion STAND-BY | |
| | 43h | 34h | 38h | 1,2,3 All Track Reading after Card Insertion STAND-BY | |
| M/S Write | 43h | 35h | 30h | 1 Track Data Writing | |
| | 43h | 35h | 31h | 2 Track Data Writing | |
| | 43h | 35h | 32h | 3 Track Data Writing | |
| | 43h | 35h | 35h | 1 Track Writing after Card Insertion STAND-BY | |
| | 43h | 35h | 36h | 2 Track Writing after Card Insertion STAND-BY | |
| | 43h | 35h | 37h | 3 Track Writing after Card Insertion STAND-BY | |
| IC Card Control | 43h | 36h | 35h | IC Direct Control | IC Contact Option |
| | 43h | 36h | 38h | IC Card Reset | |
| RF Card Control | 52h | 31h | 30h | Identify the sector and block set at terminal. | |
| | 52h | 31h | 31h | Identify whether if the antenna detect the card. | |
| | 52h | 31h | 32h | Change the sector and block set at terminal. | |
| | 52h | 31h | 33h | authentication key Read (KeyA or KeyB). | |
| | 52h | 31h | 34h | Get the RF Card's serial. | |
| | 52h | 31h | 35h | Select the authentication key: KeyA or KeyB. | |
| | 52h | 32h | 30h | RF Card Data(balance or character) Read. | |
| | 52h | 32h | 31h | RF Card Data (balance) Read. | |
| | 52h | 32h | 32h | RF Card Data (balance) Write. | |
| | 52h | 32h | 33h | RF Card Data (balance or character) Write. | |
| | 52h | 32h | 34h | Increment the balance of card to the specified amount. | |
| | 52h | 32h | 35h | Decrement the balance of card to the specified amount.. | |

| | | | | |
|---------------|---|------------|-------------|-------------|
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| | Code | Cm | Pm | Description | Note |
|----------------|------|-----|-----|---|------|
| | 52h | 32h | 41h | RF Card Data(balance or character) Read. | |
| | 52h | 32h | 42h | RF Card Data (balance) Read. | |
| | 52h | 32h | 43h | RF Card Data (balance) Write. | |
| | 52h | 32h | 44h | RF Card Data (balance or character) Write. | |
| | 52h | 32h | 45h | Increment the balance of card to the specified amount. | |
| | 52h | 32h | 46h | Decrement the balance of card to the specified amount.. | |
| | 52h | 33h | 30h | RF Card Key Change(Access Condition Data Exclude). | |
| | 52h | 33h | 31h | RF Card Key Change(Access Condition Data inclusion). | |
| | 52h | 33h | 32h | Module Key Change. | |
| | 52h | 34h | 30h | Power On (The carrier wave emitted in antenna.) | |
| | 52h | 34h | 31h | Power Off(The carrier wave not emitted in antenna.) | |
| Retry Set | 43h | 37h | 30h | Retry 0 | |
| | 43h | 37h | 31h | Retry 1 | |
| | 43h | 37h | 32h | Retry 2 | |
| | 43h | 37h | 33h | Retry 3 | |
| | 43h | 37h | 34h | Retry 4 | |
| Cleaning | 43h | 38h | 30h | Head Cleaning | |
| Buzzer Control | 43h | 38h | 31h | Good Buzzer On | |
| | 43h | 38h | 32h | Error Buzzer On | |
| Setting | 43h | 39h | 30h | Card Wait Time Set | |
| | 43h | 39h | 31h | Series(RTS,CTS) Setting | |
| | 43h | 39h | 32h | Series(RTS,CTS) Cancellation | |
| | 43h | 39h | 33h | Baud Rate Setting | |

| | | | | |
|---------------|---|------------|-------------|-------------|
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6. Negative Response Code List

| NO | ST1 | ST2 | Description | NOTE |
|----|-----|-----|---------------------------|------|
| 1 | '0' | '1' | Command Not Define | |
| 2 | '0' | '2' | No Card | |
| 3 | '0' | '3' | Fail Card | |
| 4 | '0' | '4' | Card JAM Error | |
| 5 | '0' | '5' | Data Fail | |
| 6 | '0' | '6' | Time Out | |
| 7 | '0' | '7' | Write Error | |
| 8 | '0' | '8' | Blank Error | |
| 9 | '0' | '9' | Pre_Amble Error | |
| 10 | '1' | '0' | Parity Error | |
| 11 | '1' | '1' | Post_Amble Error | |
| 12 | '1' | '2' | LRC Error | |
| 13 | '1' | '4' | IC Card Contact Error | |
| 14 | '1' | '5' | IC Card Control Error | |
| 15 | '1' | '6' | IC Read Error | |
| 16 | '1' | '7' | IC Write Error | |
| 17 | '1' | '8' | Not Define | |
| 18 | '1' | '9' | RF POWER On Error | |
| 19 | '2' | '0' | RF Card Authentic Error | |
| 20 | '2' | '1' | RF Card Select Error | |
| 21 | '2' | '2' | RF Card Anticllsion Error | |
| 22 | '2' | '3' | RF Card Read Error | |
| 23 | '2' | '4' | RF Card Write Error | |
| 24 | '2' | '5' | RF Card Inc Error | |
| 25 | '2' | '6' | RF Card Dec Error | |
| 26 | '2' | '7' | RF Card Value Error | |
| 27 | '2' | '8' | Sector or Block Error | |
| 28 | '2' | '9' | RC500 Init Error | |

| | | | | |
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7. Command Detail

7.1 Initialize

7.1.1 “C00” : If Card Remained inside the unit, Initialize after forward direction

Card discharge

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '0' | '0' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '0' | '0' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '0' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.1.2 “C01” : If Card Remained inside the unit, initialize after reverse direction

Card discharge (Capture)

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '0' | '1' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '0' | '1' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '0' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.1.3 “C02” : If Card Remained inside the unit , Initialize after transfer to
“STAND-BY” mode

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '0' | '2' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '0' | '2' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '0' | '2' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.2 Request

7.2.1 “C10” : Read exact Card location

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '1' | '0' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '1' | '0' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | | | | | | |
|---|---|---|-------|-------|-------|-------|-------|
| X | X | X | BIT 4 | BIT 3 | BIT 2 | BIT 1 | BIT 0 |
|---|---|---|-------|-------|-------|-------|-------|

BIT

- 4 : Sensor 5(Front Sw : Shutter Model)
- 3 : Sensor 4
- 2 : Sensor 3
- 1 : Sensor 2
- 0 : Sensor 1

Refer To DRAWING

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '1' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.2.1 “C11” : F/W Version Read

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '1' | '1' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '1' | '1' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | | | |
|-----|----|-----|----|----|
| 'V' | X1 | '.' | X2 | X3 |
|-----|----|-----|----|----|

Ex) “V1.00”

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '1' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.3 Card Control

7.3.1 “C20” : Approval Card Insertion into the unit.

When this command is sent to card reader , card reader takes a card into its body after the card is detected by sensors. And all following processes are executed according to commands .

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '2' | '0' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '2' | '0' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '2' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.3.2 “C21” : Prohibit Card Insertion into the unit

This is a command to disable above command “C20” .

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '2' | '1' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '2' | '1' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '2' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.4 Card Moving

7.4.1 “C30” : If Card Remained inside the unit, forward direction Card Discharge(EJECT)

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '0' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '3' | '0' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.4.2 “C31” : If Card Remained inside the unit, reverse direction Card Discharge(CAPTURE)

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '1' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '3' | '1' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.4.3 “C32” : If Card Remained inside the unit, transfer to “READ STANDBY” mode

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '2' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '3' | '2' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '2' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.4.4 “C33” : If Card Remained inside the unit, transfer to “WRITE STANDBY” mode (Function “C32” identical)

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '3' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '3' | '3' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '3' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.4.5 “C34” : Card ejection to the front if card is inside MSRW.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '4' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '3' | '4' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '4' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.4.6 “C35” : After receiving this command, Card Reader stands by for insertion of a card for defined time duration. After checking the insertion of a card, Card Reader takes in the card.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '5' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '3' | '5' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '5' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.4.7 “C36” : After receiving this command, Card Reader stands by for insertion of a card defined time duration. Realizing the card insertion, Card Reader takes in the card after checking if data (i.e, bits) is written on magnetic stripe(Pre_Head setting)

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '6' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '3' | '6' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | '6' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.4.8 “C3A” : Card Reader considers the checked card IC card if Card Reader receives this command After making contact with IC card ,Card Reader stands by for IC card control command.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | 'A' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '3' | 'A' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '3' | 'A' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.5 Magnetic Data Read

7.5.1 “C40” : If Card Remained inside the unit , Track Data Read

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '0' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '4' | '0' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA : 1 – 76 Byte ASCII String

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.5.2 “C41” : If Card Remained inside the unit, 2 Track Data Read

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '1' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '4' | '1' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA : 1 – 37 Byte ASCII String

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.5.3 “C42” : If Card Remained inside the unit, 3 Track Data Read

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '2' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '4' | '2' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA : 1 – 104 Byte ISCII String

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '2' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.5.4 “C43” : If Card Remained inside the unit, ALL Track(1, 2, 3 Track) Data Read

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '3' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '4' | '3' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | | | |
|--------------|-----|--------------|-----|--------------|
| 1 Track Data | 00h | 2 Track Data | 00h | 3 Track Data |
|--------------|-----|--------------|-----|--------------|

Return Negative Code in case of Read Error

(Ref. : Negative Response Code List)

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '3' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.5.5 “C45” : If No Card Remained inside the unit, STAND-BY for specified time and Read 1 TRACK Data if Card is inserted.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '5' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '4' | '5' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA : 1 – 76 Byte ASCII String

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '5' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.5.6 “C46” : If No Card Remained inside the unit, STAND-BY for specified time and Read 2 TRACK Data if Card is inserted.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '6' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '4' | '6' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA : 1 – 37 Byte ASCII String

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '6' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.5.7 “C47” : If No Card Remained inside the unit, STAND-BY for specified time and Read 3 TRACK Data if Card is inserted.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '7' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '4' | '7' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA : 1 – 104 Byte ASCII String

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '7' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.5.8 “C48” : If No Card Remained inside the unit, STAND-BY for specified time and Read 1,2,3 all TRACK Data if Card is inserted.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '8' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '4' | '8' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | | | |
|--------------|-----|--------------|-----|--------------|
| 1 Track Data | 00h | 2 Track Data | 00h | 3 Track Data |
|--------------|-----|--------------|-----|--------------|

Return Negative Code in case of Read Error

(Ref. : Negative Response Code List)

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '4' | '8' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.6 Magnetic Data Write

7.6.1 “C50” : If Card Remained inside the unit, 1 Track Data Write

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '5' | '0' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA : 1 – 76 Byte ASCII(ALPHA_NEMERIC) String

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '5' | '0' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '5' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.6.2 “C51” : If Card Remained inside the unit, 2 Track Data Write

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '5' | '1' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA : 1 – 37 Byte ASCII(NUMERIC Only) String

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '5' | '1' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '5' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.6.3 “C52” : If Card Remained inside the unit, 3 Track Data Write

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '5' | '2' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA : 1 – 104 Byte ASCII(NUMERIC) String

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '5' | '2' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '5' | '2' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.6.5 “C55” : If No Card Remained inside the unit, STAND-BY for specified time and Write 1 TRACK Data if Card is inserted.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '5' | '5' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA : 1 – 76 Byte ASCII(ALPHA_NEMERIC) String

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '5' | '5' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '5' | '5' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.6.6 “C56” : If No Card Remained inside the unit, STAND-BY for specified time and Write 2 TRACK Data if Card is inserted.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '5' | '6' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA : 1 – 37 Byte ASCII(NUMERIC Only) String

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '5' | '6' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '5' | '6' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.6.7 “C57” : If No Card Remained inside the unit, STAND-BY for specified time and Write 3 TRACK Data if Card is inserted.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '5' | '7' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA : 1 – 104 Byte ASCII(NUMERIC) String

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '5' | '7' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '5' | '7' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.7 IC Card Control

7.7.1 “C65” : ICC Direct Control

This is a command for operation under ISO 7816 T= 0 . Accordingly , user can handle all IC cards conforming to ISO 7816 – 4 and T = 0, T=1.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '6' | '5' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '6' | '5' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

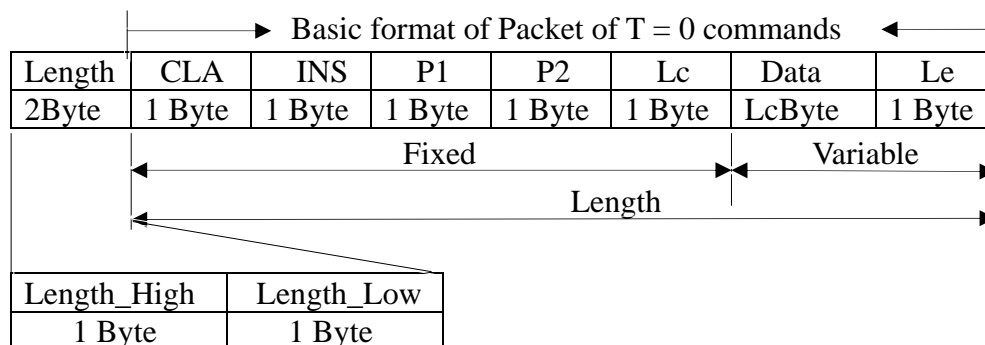
DATA Structure

| | | |
|--------------|------------|--------|
| Length_High | Length_Low | RESULT |
| 2BYTE Length | | Length |

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '6' | '5' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

- Note : Add to Data block of above Command Packet Command Packet specified in ISO 7816-4 APDU.



| | | | | |
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| | | |
|-------------|------------------------------|----------------|
| CLA | Class | |
| 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 is composed of followings ;

| 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 details, refer to ISO 7816-4 .

| | | | | |
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7.7.2 “C68” : Command for sending Reset Signal Contacted IC Card and for receiving ATR from IC Card.

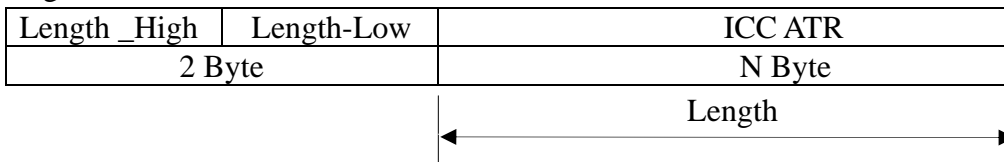
Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '6' | '8' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'C' | '6' | '8' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA of above Positive Response Packet is ATR data received from IC card after Reset signal is sent to IC card . The format of DATA is as follows ;



EX)

| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 3B | 6B | 00 | 00 | 80 | 31 | 90 | 63 | 53 | 46 | 01 | 83 | 03 | 90 | 00 |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '6' | '8' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.8 RF Card Control

7.8.1 "R10" : Identify the sector and block set at terminal.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '1' | '0' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'R' | '1' | '0' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|--------|
| Length_High | Length_Low | RESULT |
| 2BYTE Length | | Length |

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '1' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.2 "R11" : Identify whether if the antenna detect the card.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '1' | '1' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'R' | '1' | '1' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|--------|
| Length_High | Length_Low | RESULT |
| 2BYTE Length | | Length |

Result Structure.

| Result | Detail |
|--------|-------------------------------|
| 0x00 | Card Non-Detection(= No Card) |
| 0x01 | Card Detection |

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '1' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
|---------------|---|------------|-------------|-------------|
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7.8.3 “R12” : Change the sector and block set at terminal.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'R' | '1' | '2' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|--------------|
| Length_High | Length_Low | Sector&Block |
| 2BYTE Length | | Length |

Result Structure.

| | |
|--------|--------|
| BYTE | |
| 1 Byte | Sector |
| 2 Byte | Block |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'R' | '1' | '2' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '1' | '2' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.4 “R13” : authentication key Read (KeyA or KeyB).

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '1' | '3' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | 'R' | '1' | '3' | STX | 'P' | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|--------|
| Length_High | Length_Low | RESULT |
| 2BYTE Length | | Length |

Result Structure.

| | |
|--------|--------------|
| Result | |
| 0x00 | Secret key A |
| 0x01 | Secret key B |

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '1' | '3' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.8.5 “R14” : Get the RF Card’s serial.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘1’ | ‘4’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | ‘R’ | ‘1’ | ‘3’ | STX | ‘P’ | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|--------|
| Length_High | Length_Low | RESULT |
| 4BYTE Length | | Length |

Result Structure.

| | | |
|-----|--|-----|
| LSB | | MSB |
|-----|--|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘1’ | ‘4’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.6 “R15” : Select the authentication key: KeyA or KeyB.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘1’ | ‘5’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|-----------------|--------------|-----------------|
| Length_High | Length_Low | Secret key Data |
| 1BYTE Length | | Length |
| Secret key Data | | |
| 0x00 | Secret key A | |
| 0x01 | Secret key B | |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘1’ | ‘5’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘1’ | ‘5’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.8.6 “R20” : RF Card Data(balance or character) Read.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘0’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘0’ | STX | ‘P’ | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-----------|
| Length_High | Length_Low | Read Data |
| 16BYTE Length | | Length |

Read Data Structure.

| | | | | | |
|-------|-------|-------|-----|-------|-------|
| D0 | D1 | D2 | --- | D14 | D15 |
| 1Byte | 1Byte | 1Byte | --- | 1Byte | 1Byte |

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘0’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.7 “R21” : RF Card Data (balance) Read.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘1’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘1’ | STX | ‘P’ | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|-----------|
| Length_High | Length_Low | Read Data |
| 4BYTE Length | | Length |

Result Structure.

| | | | |
|-------|-------|-------|-------|
| D0 | D1 | D2 | D3 |
| 1Byte | 1Byte | 1Byte | 1Byte |

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘1’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.8.8 “R22” : RF Card Data (balance) Write.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘2’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|------------|
| Length_High | Length_Low | Write Data |
| 4BYTE Length | | Length |

Write Data Structure : 0x00000000 ~ 0xffffffff

| | | | |
|-------|-------|-------|-------|
| D0 | D1 | D2 | D3 |
| 1Byte | 1Byte | 1Byte | 1Byte |

Ex) DATA(balance) : ‘1000’

| | | | |
|------|------|------|------|
| D0 | D1 | D2 | D3 |
| 0xe8 | 0x03 | 0x00 | 0x00 |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘2’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘2’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.9 “R23” : RF Card Data (balance or character) Write.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘3’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-----------|
| Length_High | Length_Low | Read Data |
| 16BYTE Length | | Length |

Data Structure.

| | | | | | |
|-------|-------|-------|-----|-------|-------|
| D0 | D1 | D2 | --- | D14 | D15 |
| 1Byte | 1Byte | 1Byte | --- | 1Byte | 1Byte |

Ex) DATA(character) : ‘KYTRONICS’

| | | | | | | | | | |
|------|------|------|------|------|-----|------|------|------|------|
| D0 | D1 | D2 | D3 | D4 | --- | D12 | D13 | D14 | D15 |
| 0x4b | 0x59 | 0x54 | 0x52 | 0x4f | --- | 0x00 | 0x00 | 0x00 | 0x00 |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘3’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘3’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.8.10 “R24” : Increment the balance of card to the specified amount.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘4’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|----------------|
| Length_High | Length_Low | Increment Data |
| 4BYTE Length | | Length |

Increment Data Structure : 0x00000000 ~ 0xffffffff

| | | | |
|-------|-------|-------|-------|
| D0 | D1 | D2 | D3 |
| 1Byte | 1Byte | 1Byte | 1Byte |

Ex) DATA(balance) : ‘1000’

| | | | |
|------|------|------|------|
| D0 | D1 | D2 | D3 |
| 0xe8 | 0x03 | 0x00 | 0x00 |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘4’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘4’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.11 “R25” : Decrement the balance of card to the specified amount..

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘5’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|----------------|
| Length_High | Length_Low | Decrement Data |
| 16BYTE Length | | Length |

Decrement Data Structure : 0x00000000 ~ 0xffffffff

| | | | | | |
|-------|-------|-------|-----|-------|-------|
| D0 | D1 | D2 | --- | D14 | D15 |
| 1Byte | 1Byte | 1Byte | --- | 1Byte | 1Byte |

Ex) DATA(balance) : ‘1000’

| | | | |
|------|------|------|------|
| D0 | D1 | D2 | D3 |
| 0xe8 | 0x03 | 0x00 | 0x00 |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘5’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘5’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.8.12 “R2A” : RF Card Data(balance or character) Read.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘A’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|-----------------------------|
| Length_High | Length_Low | Secret key&Sector&Block&Key |
| 9BYTE Length | | Length |

Ex) Secret key&Sector&Block&Key Structure

| | | | | | | | | |
|------------|--------|-------|-------|-------|-------|-------|-------|-------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| Secret key | Sector | Block | Key 0 | Key 1 | Key 2 | Key 3 | Key 4 | Key 5 |

Ex) Secret : Key A, Sector : 0, Block : 0, Key Value : 0xff,0xff,0xff,0xff,0xff,0xff

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| 0x00 | 0x00 | 0x00 | 0xff | 0xff | 0xff | 0xff | 0xff | 0xff |

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘A’ | STX | ‘P’ | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-----------|
| Length_High | Length_Low | Read Data |
| 16BYTE Length | | Length |

Read Data Structure.

| | | | | | |
|-------|-------|-------|-----|-------|-------|
| D0 | D1 | D2 | --- | D14 | D15 |
| 1Byte | 1Byte | 1Byte | --- | 1Byte | 1Byte |

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘0’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.13 “R2B” : RF Card Data (balance) Read.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘B’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|--------------|------------|-----------------------------|
| Length_High | Length_Low | Secret key&Sector&Block&Key |
| 9BYTE Length | | Length |

Ex) Secret key&Sector&Block&Key Structure

| | | | | | | | | |
|------------|--------|-------|-------|-------|-------|-------|-------|-------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| Secret key | Sector | Block | Key 0 | Key 1 | Key 2 | Key 3 | Key 4 | Key 5 |

Ex) Secret : Key A, Sector : 0, Block : 0, Key Value : 0xff,0xff,0xff,0xff,0xff,0xff

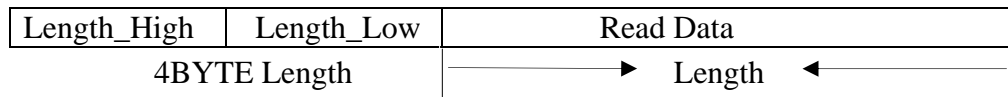
| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| 0x00 | 0x00 | 0x00 | 0xff | 0xff | 0xff | 0xff | 0xff | 0xff |

Positive Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘B’ | STX | ‘P’ | STATUS | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|------|-----|-----|

| | | | | |
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DATA Structure



Result Structure.

| | | | |
|-------|-------|-------|-------|
| D0 | D1 | D2 | D3 |
| 1Byte | 1Byte | 1Byte | 1Byte |

Negative Response Packet

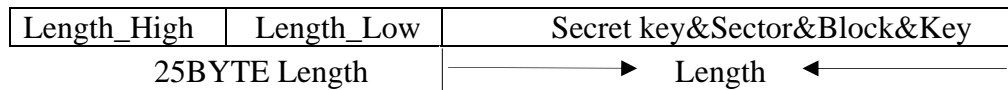
| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '2' | 'B' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.14 "R2C" : RF Card Data (balance) Write.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'R' | '2' | 'C' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure



Ex) Secret key&Sector&Block&Key Structure

| | | | | | | | | |
|--------------|--------|-------|-------|-------|-------|-------|-------|-------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| Secret key | Sector | Block | Key 0 | Key 1 | Key 2 | Key 3 | Key 4 | Key 5 |
| V9 | V10 | V11 | V12 | | | | | |
| B0 | B1 | B2 | B3 | | | | | |
| Balance Data | | | | | | | | |

Ex) Secret : Key A, Sector : 0, Block : 0, Key Value : 0xff,0xff,0xff,0xff,0xff,0xff

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| 0x00 | 0x00 | 0x00 | 0xff | 0xff | 0xff | 0xff | 0xff | 0xff |

DATA(balance) : '1000'

| | | | |
|------|------|------|------|
| B0 | B1 | B2 | B3 |
| 0xe8 | 0x03 | 0x00 | 0x00 |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'R' | '2' | '3' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '2' | '3' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.8.15 “R2D” : RF Card Data (balance or character) Write.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘D’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-----------------------------|
| Length_High | Length_Low | Secret key&Sector&Block&Key |
| 25BYTE Length | | Length |

Ex) Secret key&Sector&Block&Key Structure

| | | | | | | | | |
|---------------------------|--------|-------|-------|-------|-------|-------|-------|-------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| Secret key | Sector | Block | Key 0 | Key 1 | Key 2 | Key 3 | Key 4 | Key 5 |
| V9 | V10 | V11 | V12 | V13 | --- | V21 | V22 | V23 |
| D0 | D1 | D2 | D3 | D4 | --- | D12 | D13 | D14 |
| Balance or Character Data | | | | | | | | |

Ex) Secret : Key A, Sector : 0, Block : 0, Key Value : 0xff,0xff,0xff,0xff,0xff,0xff

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| 0x00 | 0x00 | 0x00 | 0xff | 0xff | 0xff | 0xff | 0xff | 0xff |

DATA(Character) : ‘KYTRONICS’

Ex) DATA(character) : ‘KYTRONICS’

| | | | | | | | | |
|------|------|------|------|------|-----|------|------|------|
| V9 | V10 | V11 | V12 | V13 | --- | V21 | V22 | V23 |
| 0x4b | 0x59 | 0x54 | 0x52 | 0x4f | --- | 0x00 | 0x00 | 0x00 |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘D’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘D’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.16 “R2E” : Increment the balance of card to the specified amount.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘E’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-----------------------------|
| Length_High | Length_Low | Secret key&Sector&Block&Key |
| 13BYTE Length | | Length |

Ex) Secret key&Sector&Block&Key Structure

| | | | | | | | | |
|--------------|--------|-------|-------|-------|-------|-------|-------|-------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| Secret key | Sector | Block | Key 0 | Key 1 | Key 2 | Key 3 | Key 4 | Key 5 |
| V9 | V10 | V11 | V12 | | | | | |
| B0 | B1 | B2 | B3 | | | | | |
| Balance Data | | | | | | | | |

Ex) Secret : Key A, Sector : 0, Block : 0, Key Value : 0xff,0xff,0xff,0xff,0xff,0xff

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| 0x00 | 0x00 | 0x00 | 0xff | 0xff | 0xff | 0xff | 0xff | 0xff |

| | | | | |
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DATA(balance) : '1000'

| | | | |
|------|------|------|------|
| V9 | V10 | V11 | V12 |
| 0xe8 | 0x03 | 0x00 | 0x00 |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'R' | '2' | 'E' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '2' | 'E' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.17 "R2F" : Decrement the balance of card to the specified amount..

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'R' | '2' | 'F' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-----------------------------|
| Length_High | Length_Low | Secret key&Sector&Block&Key |
| 13BYTE Length | | Length |

Ex) Secret key&Sector&Block&Key Structure

| | | | | | | | | |
|--------------|--------|-------|-------|-------|-------|-------|-------|-------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| Secret key | Sector | Block | Key 0 | Key 1 | Key 2 | Key 3 | Key 4 | Key 5 |
| V9 | V10 | V11 | V12 | | | | | |
| B0 | B1 | B2 | B3 | | | | | |
| Balance Data | | | | | | | | |

Ex) Secret : Key A, Sector : 0, Block : 0, Key Value : 0xff,0xff,0xff,0xff,0xff,0xff

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| 0x00 | 0x00 | 0x00 | 0xff | 0xff | 0xff | 0xff | 0xff | 0xff |

DATA(balance) : '1000'

| | | | |
|------|------|------|------|
| V9 | V10 | V11 | V12 |
| 0xe8 | 0x03 | 0x00 | 0x00 |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'R' | '2' | 'F' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'R' | '2' | 'F' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.8.18 “R30” : RF Card Key Change(Access Condition Data Exclude).

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘0’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-----------------------------|
| Length_High | Length_Low | Secret key&Sector&Block&Key |
| 13BYTE Length | | Length |

Ex) Secret key&Sector&Block&Key Structure

| | | | | | | |
|--------------|--------|--------|--------|--------|--------|--------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 |
| Sector | Key A0 | Key A1 | KeyA 2 | KeyA 3 | Key A4 | KeyA 5 |
| Secret key A | | | | | | |
| V7 | V8 | V9 | V10 | V11 | V12 | |
| KeyB0 | KeyB1 | KeyB2 | KeyB3 | KeyB4 | KeyB5 | |
| Secret key B | | | | | | |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘0’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘0’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.19 “R31” : RF Card Key Change(Access Condition Data inclusion).

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘1’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-------------------|
| Length_High | Length_Low | Secret key&Sector |
| 17BYTE Length | | Length |

Ex) Secret key&Sector&Block&Key Structure

| | | | | | | | | |
|--------------|-------|--------------|-------|-------|--------|--------|--------|------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 |
| Sector | KeyA0 | KeyA1 | KeyA2 | KeyA3 | KeyA 4 | KeyA 5 | Acc0 | Acc1 |
| Secret key A | | | | | | | Access | |
| V9 | V10 | V11 | V12 | V13 | V14 | V15 | V16 | |
| Acc3 | Acc4 | KeyB0 | KeyB1 | KeyB2 | KeyB3 | KetB4 | Keyb5 | |
| Condition | | Secret key B | | | | | | |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘1’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘1’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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7.8.20 “R32” : Module Key Change.

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘2’ | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA Structure

| | | |
|---------------|------------|-----------------------------|
| Length_High | Length_Low | Secret key&Sector&Block&Key |
| 13BYTE Length | | Length |

Ex) Secret key&Sector&Block&Key Structure

| | | | | | | |
|--------------|--------|--------|--------|--------|--------|--------|
| V0 | V1 | V2 | V3 | V4 | V5 | V6 |
| Sector | Key A0 | Key A1 | KeyA 2 | KeyA 3 | Key A4 | KeyA 5 |
| Secret key A | | | | | | |
| V7 | V8 | V9 | V10 | V11 | V12 | |
| KeyB0 | KeyB1 | KeyB2 | KeyB3 | KeyB4 | KeyB5 | |
| Secret key B | | | | | | |

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘2’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘3’ | ‘2’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.21 “R40” : Power On (The carrier wave emitted in antenna.)

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘4’ | ‘0’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘F’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘2’ | ‘F’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.8.22 “R41” : Power Off(The carrier wave not emitted in antenna.)

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘4’ | ‘1’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘R’ | ‘4’ | ‘1’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘R’ | ‘4’ | ‘1’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.9 Retry Setting

7.9.1 “C70” : No RETRY in case of Data Error

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '7' | '0' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '7' | '0' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '7' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.9.2 “C71” : Set Read RETRY 1 time in case of Data Error

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '7' | '1' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '7' | '1' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '7' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.9.3 “C72” : Set Read RETRY 2 time in case of Data Error

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '7' | '2' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '7' | '2' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '7' | '2' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.9.4 “C73” : Set Read RETRY 3 time in case of Data Error

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '7' | '3' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '7' | '3' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '7' | '3' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.9.5 “C74” : Set Read RETRY 4 time in case of Data Error

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘C’ | ‘7’ | ‘4’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘C’ | ‘7’ | ‘4’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘C’ | ‘7’ | ‘4’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.10 Head Cleaning

7.10.1 “C80” : Head Cleaning If No Card Remained inside the unit, STAND-BY for specified time and reciprocate 5 times and eject Cleaning Card if Card is inserted.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘0’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘0’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘0’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.10.2 “C81” : Command for activating Buzzer once.

Example) To indicate that a command runs “Good” .

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘1’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘1’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘1’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.10.3 “C82” : Command for activating Buzzer twice

Example) To indicate that a command runs “In Error”.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘2’ | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘2’ | STX | ‘P’ | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | ‘C’ | ‘8’ | ‘2’ | STX | ‘N’ | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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7.11 Setting

7.11.1 "C90" : Card Wait Time Set

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '9' | '0' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA : Card STAND-BY time to be inserted (sec : "1" – "9")

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '9' | '0' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '9' | '0' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.11.2 "C91" : Series(RTS,CTS) Set.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '9' | '1' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '9' | '1' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '9' | '1' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.11.3 "C92" : Series(RTS,CTS) Cancellation.

Command Packet

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '9' | '2' | STX | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '9' | '2' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '9' | '2' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

7.11.4 "C95" : Baud Rate Setting

Command Packet

| | | | | | | | |
|-----|-----|-----|-----|-----|------|-----|-----|
| SOH | 'C' | '9' | '5' | STX | DATA | ETX | BCC |
|-----|-----|-----|-----|-----|------|-----|-----|

DATA :

'0' – 9600 BPS

'1' – 19200 BPS(Default)

'2' – 38400 BPS

'3' – 57600 BPS

Positive Response Packet

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| SOH | 'C' | '9' | '5' | STX | 'P' | STATUS | ETX | BCC |
|-----|-----|-----|-----|-----|-----|--------|-----|-----|

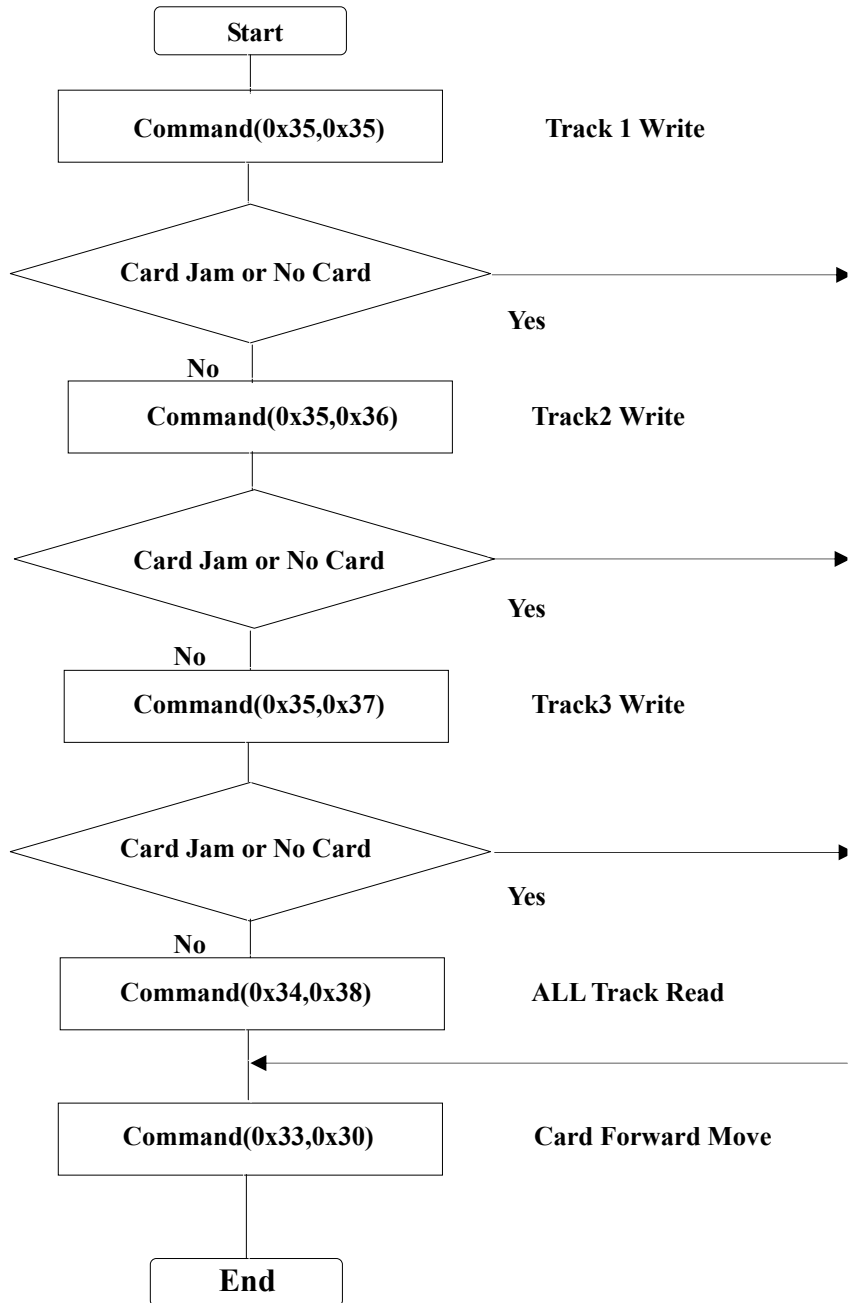
Negative Response Packet

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SOH | 'C' | '9' | '5' | STX | 'N' | ST1 | ST2 | ETX | BCC |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | |
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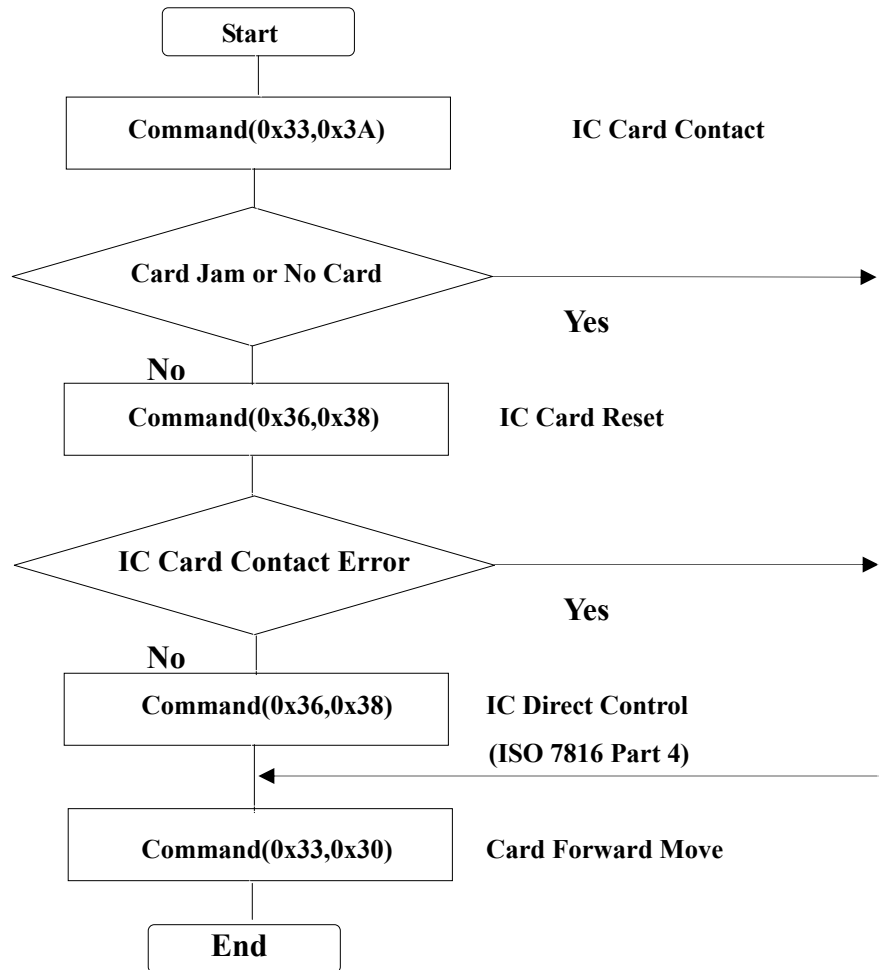
<Flow Chart>

1. Magnetic Card.



| | | | | |
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2. IC Card.



| | | | | |
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3. RF Card(Read).

