

IS - 3400 V3.0 RFID Reader

ISO 14443-A

ISO 14443-B

ISO 15693

Mifare Classic

Mifare UltraLight

Mifare Plus

Mifare NTAG

ICODE SLIX1, ICODE SLIX2

Encryption AES-128Bit, 3DES

날짜	버전	내용
2012.02.29	V1.0	V 1.0 Release
2012.10.20	V1.4	V 1.4 Release
2017.06.12	V3.0	V 3.0 Release
2017.10.02	V3.1	V 3.0 Release

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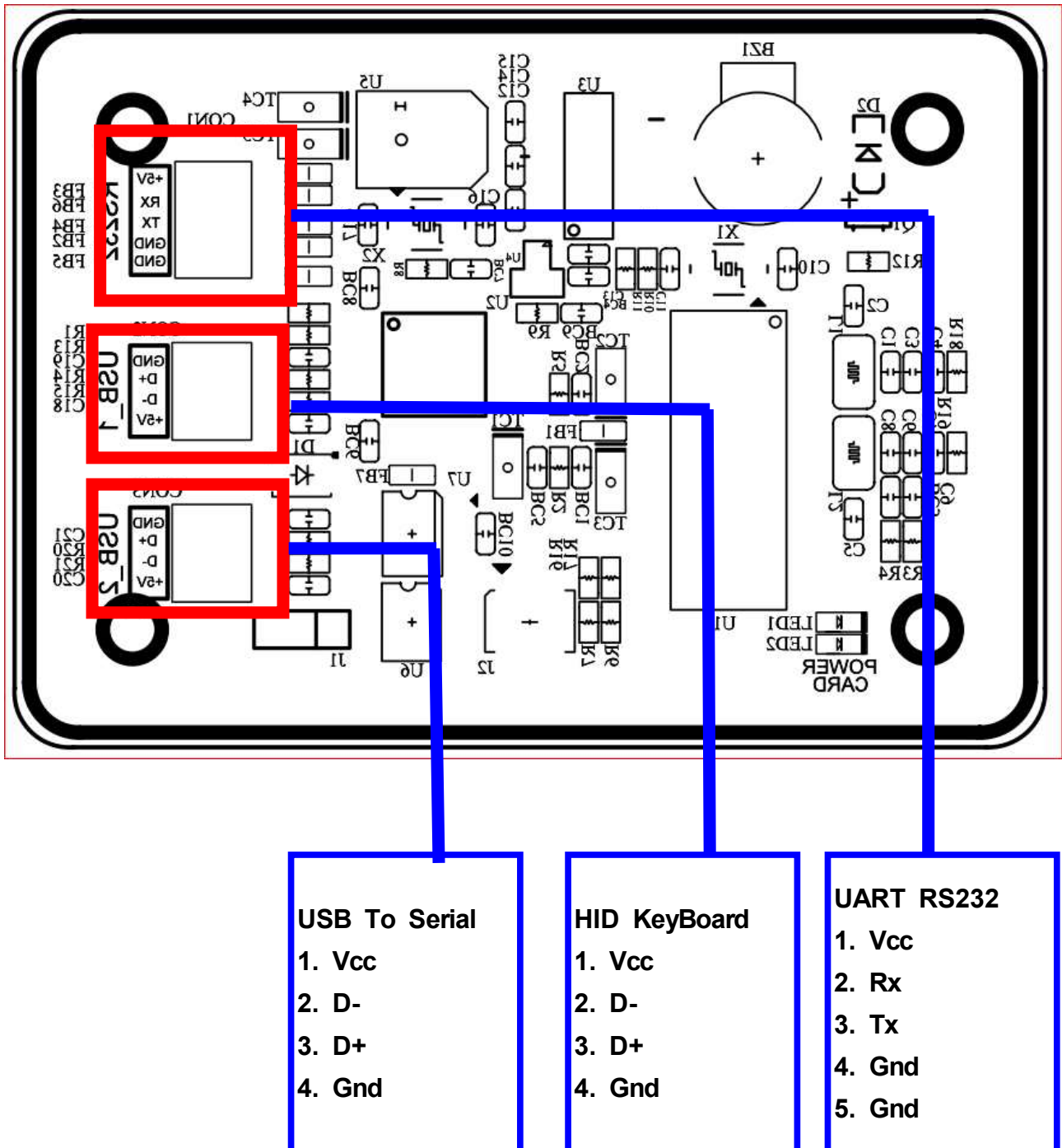
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(Target , PC → IS-3400)

1. Specification

RF Frequency	13.56MHz
Power Supply	4.5 to 5.5V DC Operation
Supply Current	40mA @ 5V
Dimensions	70 x 50 x 6 mm
RF Protocol	ISO14443-A/B, ISO15693 Mifare Classic, Mifare UltraLight, Mifare Plus, Mifare NTAG, ICODE SLIX1, ICODE SLIX 2
Host Interface	RS232, TTL232, USB To Serial(FTDI USB Chip) USB HID Keyboard
Antennna	50-ohm Internal antenna
RF Power	150mW @ 5V
Read Range	50mm internal ant
Anticollision	Support(1tags)

2. IS-3400 V3.0 구성

2.1 Connect 구분



2.2 USB Driver

(1) HID USB KeyBoard

- Driver 설치가 필요 없이 자동으로 인식 됩니다.

(2) USB To Serial Driver

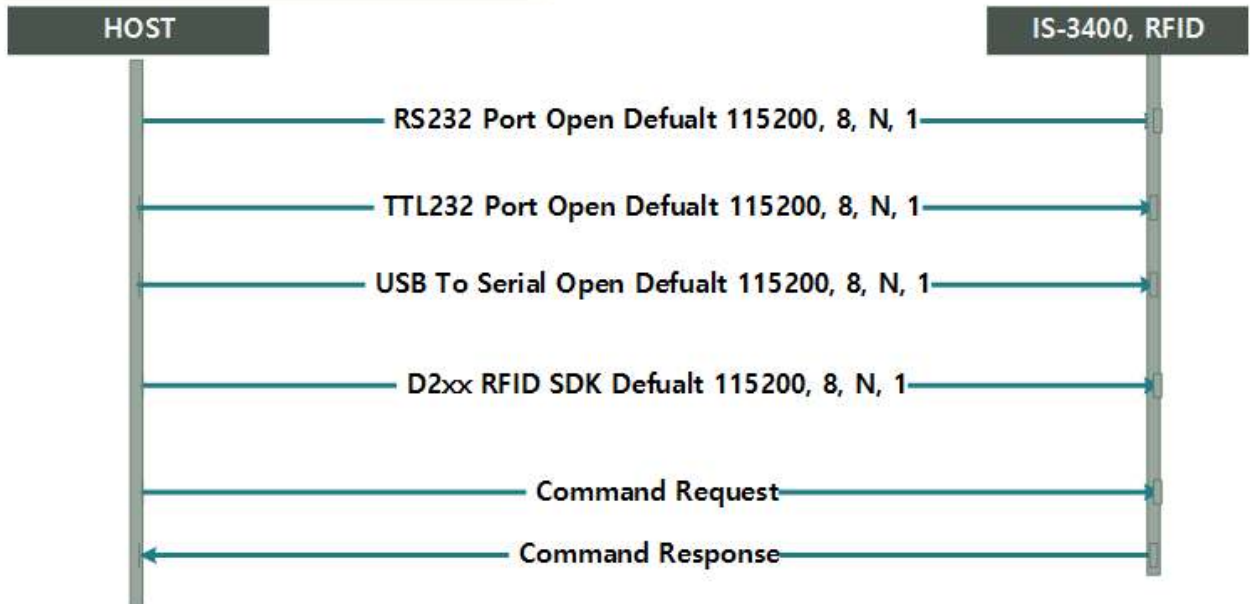
- USB Chip : FTDI230x
- 다운로드 사이트

<http://www.ftdichip.com/Drivers/VCP.htm>

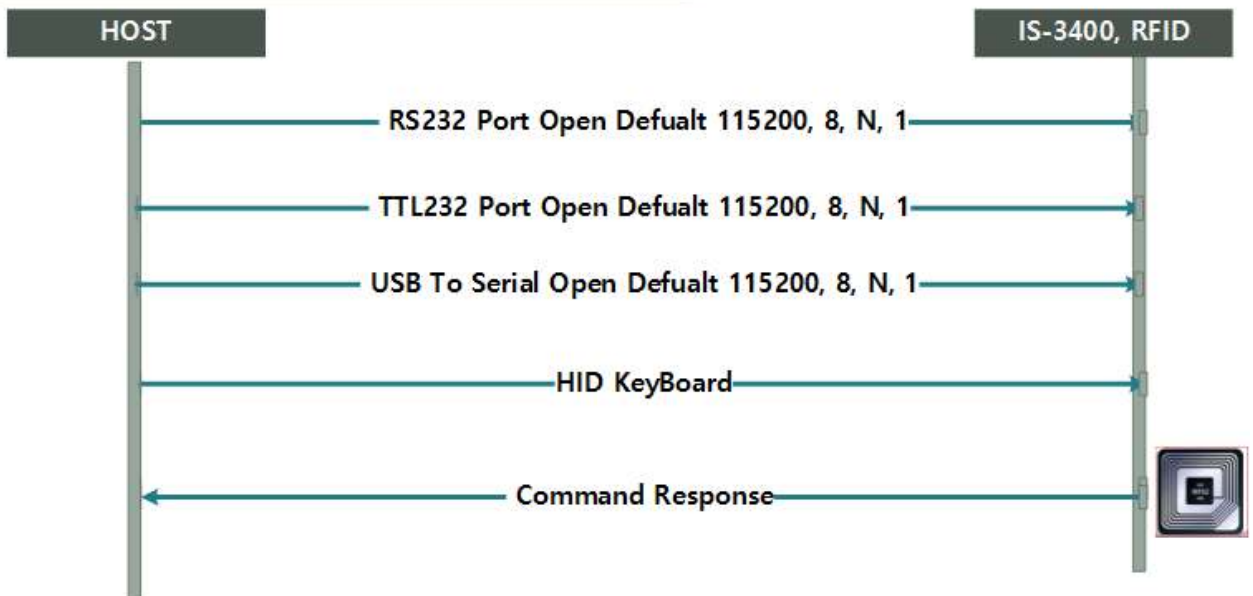


3. IS-3400 RFID 운영 방식

Dummy RFID Reader 방식 지원



Auto Polling RFID Reader 방식 지원



4. ISReaderPro V3.0 사용법

ISReadPro V3.1 Version

Menu Socket Connect

Serial Setup Exit

Common | Crypt Calculator | Packet Crypt | **ISO14443ab** | ISO15693 | ICODE SLIX 2 | ICODE or EAS | Mifare Classic | Mifare UltraLight C | Mifare NTag | Mifare Plus SL3 | ISO7816 SAM | SDK TEST | Auto Res

ISO14443-4AB Active

UID Read: 6F725E17 (Hex) ☒ BuzzerOn

ATS: 0B788081024B4F4E411021 (Hex)

ISO14443-3A Active ISO14443-4A Active ISO14443-3B Active

ISO14443-3A + ISO14443-4A Active (ISO14443-3A + ISO14443-4A) or ISO14443-3B Active

ISO14443 ETC

ISO14443A Halt ISO14443A4 Deselect

ISO1444B Halt

RF Off

ISO14443-4 Data Exchange

Send Data: 0084000010 (Hex)

Receive Data: B8D43B9B3F9B31507FDFD2D2721B9D909000 (Hex)

☒ BuzzerOn ISO14443-4 Data Exchange

PROTOCOL

Send Data Format (Hex)	STX	CMD1	CMD2	Length	Length	Data	Checksum	ETX
01	01	A1		00	00		A2	03

Receive Data Format (Hex)	STX	CMD1	CMD2	State	Length	Length	Data	Checksum	ETX
01	01	21		01	00	0B	0B788081024B4F4E411021	0E	03

Tx/Rx Protocol

Rx: 01 01 21 01 00 0B 0B 78 80 81 02 4B 4F 4E 41 10 21 0E 03

Tx: 01 01 A1 00 00 A2 03

Rx: 01 01 20 01 00 04 8F 72 5E 17 7C 03

Tx: 01 01 A0 00 00 A1 03

Rx: 01 01 30 01 00 12 B8 D4 3B 9B 3F 9B 31 50 7F DF D2 D2 72 1B 9D 90 90 00 4D 03

Tx: 01 01 B8 00 05 00 24 00 00 10 4A 03

RF Power State TCP Socket Serial Connect

4.1 ISO14443A/B 사용법

The screenshot shows the 'ISO14443ab' tab selected in the top menu. The interface is divided into several sections:

- ISO14443-4AB Active:** Contains 'UID Read' and 'ATS' input fields, both with '(Hex)' labels. There is a 'BuzzerOn' checkbox.
- ISO14443 ETC:** Contains buttons for 'ISO14443A Halt' and 'ISO14443B Halt'.
- ISO14443-4 Data Exchange:** Contains 'Send Data' and 'Receive Data' input fields, both with '(Hex)' labels. There is a 'BuzzerOn' checkbox and a button labeled 'ISO14443-4 Data Exchange'.

Red circles 1 through 8 highlight specific buttons in the interface:

- ISO14443-3A Active
- ISO14443-4A Active
- ISO14443-3B Active
- ISO14443-3A + ISO14443-4A Active
- (ISO14443-3A + ISO14443-4A) or ISO14443-3B Active
- ISO14443A Halt
- ISO14443B Halt
- ISO14443-4 Data Exchange

- ① ISO14443-3A 활성화 명령
- ② ISO14443-3A가 활성화 되어 있을 때, ISO14443-4A 활성화 명령
- ③ ISO14443-3B 활성화 명령
- ④ ISO14443-3A, ISO14443-4A 까지 한번에 활성화 명령
- ⑤ ISO14443-3A, ISO14443-4A 까지 한번에 활성화 명령 또는 ISO14443-3B 활성화 명령
- ⑥ ISO14443A Tag Halt 명령
- ⑦ ISO14443B Tag Halt 명령
- ⑧ ISO14443A/B APDU 명령을 보냅니다.

5. Protocol Format

5.1 Request (Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command1	1	Command	Hex	상위 명령어
Command2	1	Command	Hex	하위 명령어
Data Length	2	Hi Byte	Hex	Packet Lens
Data Length		Low Byte	Hex	
Data	N		Hex	Request Data
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

Command2 수행 후 성공 하면 부저 비프음 발생 명령

Command2 최상위 비트를 1로 만들면 비프음 발생, 최상위 비트가 0이면 비프음 발생 하지 않음

[Exmaple] Card Serial Num 비프음 발생 Command

Command = 0x20 | 0x80;

BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
1	0	1	0	0	0	0	0
비프음 발생		Command					

5.2 Request (Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command1	1	Command	Hex	상위 명령어
Command2	1	Command	Hex	하위 명령어
State	1		Hex	응답의 상태 0x01 : 정상, 0xFF 에러
Data Length	2	Hi Byte	Hex	Packet Lens
Data Length		Low Byte	Hex	
Data	N		Hex	Request Data
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

6. Check Sum 계산법

$$\text{Check Sum} = (\text{BYTE})(\text{Command1} + \text{Command2} + \text{Length}(0) + \text{Length}(1) + \text{Data}(0) + \text{Data}(1) + \text{Data}(n))$$

Example 1:

0x01 0x00 0x16 0x00 0x00 0x16 0x03

CMD1	CMD2	Length(0)	Length(1)	Check Sum
0x00	+	0x16	+	0x00
		+	0x00	0x16

$$0x16 = 0x00 + 0x16 + 0x00 + 0x00$$

◆ Stx, Etx, CheckSum 은 제외

$$\text{Check Sum} = (\text{BYTE})(\text{Command1} + \text{Command2} + \text{STATE} + \text{Length}(0) + \text{Length}(1) + \text{Data}(0) + \text{Data}(1) + \text{Data}(n))$$

Example 1:

0x01 0x00 0x16 0x01 0x00 0x00 0x16 0x03

CMD1	CMD2	STATE	Length(0)	Length(1)	Check Sum
0x00	+	0x16	+	0x01	
		+	0x00	+	0x00
					0x17

$$0x17 = 0x00 + 0x16 + 0x01 + 0x00 + 0x00$$

◆ Stx, Etx, CheckSum 은 제외

7. Protocol (IS014443A/B)

7.1 IS014443-3A Active Request (Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x20	Hex	
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.2 IS014443-3A Active Response (IS-3400 → Target , PC)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x00	Hex	0x00 : Common Command
Command 2	1	0x20	Hex	
STATE	1	0x01, 0xFF	Hex	0x01 : 정상, 0xFF : 실패
Data Length	2	0x00	Hex	Packet Lens
Data Length		4, 7	Hex	
Data	4, 7		Hex	UID
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.3 ISO14443-4A Active Request (Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x21	Hex	
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.4 ISO14443-4A Active Response (IS-3400 → Target , PC)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x00	Hex	0x00 : Common Command
Command 2	1	0x21	Hex	
STATE	1	0x01, 0xFF	Hex	0x01 : 정상, 0xFF : 실패
Data Length	2	0x00	Hex	Packet Lens
Data Length		N	Hex	
Data	N		Hex	ATS
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.5 ISO14443-3A + ISO14443-4A Active Request (Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x22	Hex	
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.6 ISO14443-3A + ISO14443-4A Active Response (IS-3400 → Target , PC)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x00	Hex	0x00 : Common Command
Command 2	1	0x22	Hex	
STATE	1	0x01, 0xFF	Hex	0x01 : 정상, 0xFF : 실패
Data Length	2	0x00	Hex	Packet Lens
Data Length		4, 7	Hex	
Data	4, 7		Hex	UID
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.7 ISO14443-3B Active Request (Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x23	Hex	
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.8 ISO14443-3B Active Response (IS-3400 → Target , PC)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x00	Hex	0x00 : Common Command
Command 2	1	0x23	Hex	
STATE	1	0x01, 0xFF	Hex	0x01 : 정상, 0xFF : 실패
Data Length	2	0x00	Hex	Packet Lens
Data Length		4, 7	Hex	
Data	4, 7		Hex	UID
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.9 (ISO14443-3A + ISO14443-4A Active) or ISO14443-3B Active Request (Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x24	Hex	
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.10 (ISO14443-3A + ISO14443-4A Active) or ISO14443-3B Response (IS-3400 → Target , PC)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x00	Hex	0x00 : Common Command
Command 2	1	0x24	Hex	
STATE	1	0x01, 0xFF	Hex	0x01 : 정상, 0xFF : 실패
Data Length	2	0x00	Hex	Packet Lens
Data Length		4, 7	Hex	
Data	4, 7		Hex	UID
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.11 ISO14443A Halt Request

(Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x2A	Hex	
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.12 ISO14443A Halt Response

(IS-3400 → Target , PC)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x00	Hex	0x00 : Common Command
Command 2	1	0x2A	Hex	
STATE	1	0x01, 0xFF	Hex	0x01 : 정상, 0xFF : 실패
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.13 ISO14443B Halt Request

(Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x2B	Hex	
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.14 ISO14443B Halt Response

(IS-3400 → Target , PC)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x00	Hex	0x00 : Common Command
Command 2	1	0x2B	Hex	
STATE	1	0x01, 0xFF	Hex	0x01 : 정상, 0xFF : 실패
Data Length	2	0x00	Hex	Packet Lens
Data Length		0x00	Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.15 ISO14443A/B APDU Command(Data Exchange) Request (Target , PC → IS-3400)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x30	Hex	
Data Length	2	N	Hex	Packet Lens (1024 Byte)
Data Length		N	Hex	
Data	N		Hex	APDU Command (Data Exchange)
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data

7.16 ISO14443A/B APDU Command(Data Exchange) Response (IS-3400 → Target , PC)

ITEM	BYTE	DESC		REMARK
STX	1	0x01	Hex	Start Data
Command 1	1	0x01	Hex	0x01 : ISO14443A/B Command
Command 2	1	0x30	Hex	
STATE	1	0x01, 0xFF	Hex	0x01 : 정상, 0xFF : 실패
Data Length	2	N	Hex	Packet Lens (1024 Byte)
Data Length		N	Hex	
Data	N		Hex	
Check Sum	1		Hex	“Check Sum 계산법” 참조
ETX	1	03	Hex	End Data