New 900MHz Reader Control Protocol User Manual

Version Control

Date	Version	Content
2012/05/21	V1.0	Initial version
2015/01/28	V1.1	Remove unused functions, command update

Table of Contents

1. Introduction

Communications protocol definition

Support RS232/ RS485/TCPIP;
The mode of information transmission is asynchronous,
Start bit: 1, date bits: 8, stop bits: 1, no checksum.
Rate of data transmission: 9.6kb/s;

Supervision Unit (SU): like PC or control device;
Supervisory Module (SM): Reader;

The monitoring unit (SU) and the monitor module (SM) communication mode adopts master-slave mode, SU as host computer, SM as lower machine.

SU call SM and issue the command, SM receives the command returns response information, and SU in 1s is not receiving a SM response or receiving response information error, think of the communication process failed.

Note: Communication data is HEX;

2. Data's type and the basic format of protocols

2.1. Data's Type

Two types:

- Command: SU to SM;
- Response: SM to SU;

2.2. Basic format of protocol

Table 2.2-1 basic format of protocols

No.	1	2	3	4	5	6	7
byte	1	2	1	1	1	LENGTH	1
format	SOI	ADR	CID1	CID2	LENGTH	INFO	CHKSUM

Table 2.2-2 basic format of notes

No.	Symbol	significance	Remarks
1	SOI	START OF INFORMATION	Command(7CH) Response(CCH)
2	ADR	Equip address(1～65534),(65535 public address,0 reserve address)	FFFFH
3	CID1	Command: Control identification code (data type description)	
4	CID2	Command: control identification code (action type description) Response: RTN(Return code Table 2-3)	
5	LENGTH	INFO Data Length	
6	INFO	Command: Command information Response: Response data information	
7	CHKSUM	The checksum code	

Table 2-3 Return code (RTN)

No.	RTN Value (HEX)	significance	Remarks
1	00H	Succeed	
2	01H	Fail	
3	32H	Auto send to SU	

2.3. Data Format

CHKSUM data format:

- **CHKSUM Introduction**

The calculation of CHKSUM is in addition to CHKSUM, other characters in 16 hex code values of cumulative sum, the result modulo 256 remainder taking anti - plus 1.

For example：Receive or send data is：“CC 02 01 B1 22 04 BB 12 02 03 88”. The last byte “88” is CHKSUM. Calculate as follows：

‘CC’＋‘02’＋‘01’＋…＋‘22’＋‘04’＋‘BB’＋‘12’ ＋‘02’＋‘03’

= CCH + 02H + 01H + … + 22H + 04H + BBH + 12H + 02H + 03H

= 0278H

0278H mode 256 and the remainder is 78H, 78H anti plus 1 is 88H.

- **CHKSUM Calculate refers:**

```
unsigned char    Checksum ( unsigned char *uBuff, unsigned char uBuffLen)
{
    unsigned char i, uSum =0;
    for(i=0; i<uBuffLen; i++)
    {
        uSum = uSum + uBuff[i];
    }
    uSum = (~uSum) + 1;
    return uSum;
}
```

3. Code Table

CID1、CID2 Code Distribution and Classification as follows :

Table 3-1 Command code Classification (SENIOR CID1)

No.	Content	CID1	Remark
1	ISO18000-6B Identify	01H	
2	ISO18000-6B memory bank action	02H	
3	EPC(GEN 2) Identify Single tag	10H	
4	EPC(GEN 2) Identify Multiple tag	11H	
5	EPC(GEN 2) memory bank action	12H	
6	Basic parameters of reader	81H	
7	Basic Information of reader	82H	
8	Software reset reader	8FH	
9	Encrypted tag	30H	
10	TCPIP Parameters of reader	B9H	
11	Remote IO Output	BBH	
12			

Table 3-2 Command action Classification (CID2)

No.	Content	CID2	Remarks
1	Set command	31H	
2	Get command	32H	
3	Set senior command	21H	
4	Get senior command	22H	

4. Communication Protocol

For the use of this protocol in the protocol code as follows.

Table 4-1 protocol code

No.	Content	CID1	CID2	Remarks
1	ISO18000-6B Identify	01H	32H	
2	ISO18000-6B Write Memory Bank	02H	31H	
3	ISO18000-6B Read Memory Bank	02H	32H	
4	EPC(GEN 2) Identify Single Tag	10H	32H	
5	EPC(GEN 2) Identify Multiple Tag	11H	32H	
6	EPC(GEN 2) Write Memory Bank	12H	31H	
7	EPC(GEN 2) Read Memory Bank	12H	32H	
8	Set Basic Parameters Of Reader	81H	31H	
9	Get Basic Parameters Of Reader	81H	32H	
10	Set Address Of Reader	82H	31H	
11	Get Basic information Of Reader	82H	32H	
12	Software Reset	8FH	31H	
13	Encrypted Tag	30H	31H	
14	Set TCPIP Parameters Of Reader	B9H	21H	
15	Get TCPIP Parameters Of Reader	B9H	22H	
16	Remote IO Output	BBH	21H	
17				

Note: with * command representation is optional command; the reader does not have this feature, if have this feature, should be in accordance with the execution of this agreement. (Hereinafter appearing * place, meaning as described above, not detailed below.)

4.1. ISO18000-6B Identify

Fast acquisition of 6B tag UID data;

4.1.1. Command

CID1: 01H

CID2: 32H

INFO:

- None

Example:

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	01	32	00	0xNN

4.1.2. Response

CID1: 01H

RTN: 00H

INFO:

- AN (8-bit): Antenna Number (Default 0x01)
- UID (variable): Target tag's unique identifier

Example: **AN = 1;**

UID = 0xE2003411B802011383258566;

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	AN	UID(MSB)
CC	FF	FF	01	00	0D	01	E2
00	34	11	B8	02	01	13	83
		UID(LSB)	CHKSUM				
25	85	66	0xNN				

4.2. ISO18000-6B Write Memory bank

Write data to memory bank of 6B tag.

4.2.1. **Command**

CID1: 02H

CID2: 31H

INFO:

- SA (8-bit): Starting Address word pointer
- DL (8-bit): Data Length to write
- DT (variable): Data to write.

Example: **Start Address = 0x12,**

Data Length = 0x08,

Data to write = 0x1234567800000000

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	SA	DL
7C	FF	FF	02	31	0A	12	08
DT(MSB)							DT(LSB)
12	34	56	78	00	00	00	00
CHKSUM							
0xNN							

4.2.2. **Response**

CID1: 02H

RTN: 00H

INFO:

- None

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	CHKSUM
CC	FF	FF	02	00	00	0xNN

4.3. ISO18000-6B Read Memory Bank

Read memory back data of 6B tag

4.3.1. Command

CID1: 02H

CID2: 32H

INFO:

- SA (8-bit): Starting Address word pointer
- DL (8-bit): Data Length to read

Example: **Start Address = 0x12,**

Data Length = 0x08,

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	SA	DL
7C	FF	FF	02	32	02	12	08
CHKSUM							
0xNN							

4.3.2. Response

CID1: 02H

RTN: 00H

INFO:

- AN (8-bit): Antenna Number (Default 0x01)
- DT (variable): Data of read.

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	AN	DT(MSB)
CC	FF	FF	02	00	09	01	12
						DT(LSB)	**CHKSUM**
34	56	78	00	00	00	00	0xNN

4.4. EPC (GEN 2) Identify Single Tag

Fast Identify EPC of single tag;

4.4.1. Command

CID1: 10H

CID2: 32H

INFO:

- None

Example:

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	10	32	00	0xNN

4.4.2. Response

CID1: 10H

RTN: 00H

INFO:

- AN (8-bit): Antenna Number (Default 0x01)
- EPC (variable): Target tag's EPC

Example: **AN = 1;**

EPC = 0xE2003411B802011383258566;

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	AN	EPC(MSB)
CC	FF	FF	10	00	0D	01	E2
00	34	11	B8	02	01	13	83
		EPC(LSB)	CHKSUM				
25	85	66	0xNN				

4.5. EPC (GEN 2) Identify Multiple Tag

Fast Identify EPC of multiple tags;

4.5.1. **Command**

CID1: 11H

CID2: 32H

INFO:

- None

Example:

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	11	32	00	0xNN

4.5.2. **Response**

CID1: 10H

RTN: 00H

INFO:

- TC (8-bit): Tag Count (Default 0x01)
- DL (8-bit): Single tag data length (Fixed length 0x0E, and with single check)
- S_AN (8-bit): Antenna Number (Default 0x01)
- S_EPC (variable): Target tag's EPC
- S_CHK (8-bit): checksum

Example1: **TC = 0x01,**

DL = 0x0E,

S_AN = 0x01;

S_EPC = 0xE2003411B802011383258566;

S_CHK = 0xNN;

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	TC	DL	S_AN
CC	FF	FF	11	00	01	0E	01
S_EPC(MSB)							

E2	00	34	11	B8	02	01	13
			S_EPC(LSB)	**S_CHK**			
83	25	85	66	0xNN			

Example: **TC = 0x02,**

DL = 0x0E,

S_AN = 0x01;

S_EPC = 0xE2003411B802011383258566;

S_CHK = 0xNN;

S_AN = 0x01;

S_EPC = 0xE2003411B802011383258567;

S_CHK = 0xNN;

HEAD	**ADDR(LSB)**	**ADDR(MSB)**	**CID1**	**RTN**	**TC**	**DL**	**S_AN**
CC	FF	FF	11	00	02	0E	01
S_EPC(MSB)							
E2	00	34	11	B8	02	01	13
			S_EPC(LSB)	**S_CHK**	**S_AN**	**S_EPC(MSB)**	
83	25	85	66	0xNN	01	E2	00
34	11	B8	02	01	13	83	25
	S_EPC(LSB)	**S_CHK**					
85	67	0xNN					

4.6. EPC (GEN 2) Write Memory Bank

Write data to memory bank of EPC tag;

4.6.1. **Command**

CID1: 12H

CID2: 31H

INFO:

- MB (8-bit): Target memory bank; 0x00 Reserved, 0x01 EPC, 0x02 TID, 0x03 User
- SA (8-bit): Starting Address byte pointer
- DL (8-bit): Data Length to write (Word Count)
- DT (variable): Data to write.

Example: **Target memory bank = User,**

Start Address = 0x06,

Data Length = 4 word,

Data to write = 0x1234567800000000

HEAD	**ADDR(LSB)**	**ADDR(MSB)**	**CID1**	**CID2**	**LENGTH**	**MB**	**SA**
7C	FF	FF	12	31	0B	03	06
DL	**DT(MSB)**						
04	12	34	56	78	00	00	00

DT(LSB)	CHKSUM
00	0xNN

4.6.2. Response

CID1: 12H

RTN: 00H

INFO:

- None

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	CHKSUM
CC	FF	FF	12	00	00	0xNN

4.7. EPC (GEN 2) Read Memory Bank

Read memory bank data of EPC tag.

4.7.1. Command

CID1: 12H

CID2: 32H

INFO:

- MB (8-bit): Target memory bank; 0x00 Reserved, 0x01 EPC, 0x02 TID, 0x03 User
- SA (8-bit): Starting Address word pointer
- DL (8-bit): Data Length of read (Word Count)

Example: **Target memory bank = User,**

Start Address = 0x06,

Data Length = 4 word,

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	MB	SA
7C	FF	FF	12	32	03	03	06
DL	**CHKSUM**						
04	0xNN						

4.7.2. Response

CID1: 12H

RTN: 00H

INFO:

- AN (8-bit): Antenna Number (Default 0x01)
- DT (variable): Data of read.

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	AN	DT(MSB)
CC	FF	FF	12	00	09	01	12
						DT(LSB)	**CHKSUM**
34	56	78	00	00	00	00	0xNN

4.8. Set Basic Parameter of Reader

4.8.1. **Command**

CID1: 81H

CID2: 31H

INFO:

- PW (8-bit): Power Size (0~30)
- FHE (8-bit): Frequency hopping enabled (Disenabled 0x00, Enabled 0x01)
- FFV (8-bit): Fixed frequency value
- FHV (48-bit): Frequency hopping value

  Range 0~200(0x00~0xC8), corresponding 860MHz ~960MHz, Step 0.5MHz

  FHV1 (8-bit): Frequency hopping value1

  FHV2 (8-bit): Frequency hopping value2

  FHV3 (8-bit): Frequency hopping value3

  FHV4 (8-bit): Frequency hopping value4

  FHV5 (8-bit): Frequency hopping value5

  FHV6 (8-bit): Frequency hopping value6
- WM (8-bit): Work Mode

  Command (0x01), Active (0x02), Passive (0x03)
- RI (8-bit): read interval time
- TGR (8-bit): enable the trigger (Disenabled 0x00, Enabled 0x01)
- OM (8-bit): Output Mode

  RS232 (0x01), RS485 (0x02), TCPIP (0x03), CAMBUS (0x04),

  SYRIS (0x05), WG26 (0x06), WG34 (0x07)
- WG (32-bit): (AUTO READ MODE Effective) Include (offset, interval, width, period)

  Offset (8-bit): (0~14) Byte, Default (0x02)

  Interval (8-bit): (0~255) *10us, Default (0x1E)

  Width (8-bit): (0~255) *10ms, Default (0x0A)

  Period (8-bit): (0~255) *100us, Default (0x0F)
- AN (8-bit): Choice Antenna Low 4 BIT,
- RT (8-bit): Read Type

  ISO18000-6B single tag (0x01)

  EPC (GEN 2) single tag (0x10)

  EPC (GEN 2) + ISO18000-6B (0x11)

  EPC (GEN 2) mult tag (0x20)

  EPC (GEN 2) + memory bank data (0x40)
- SI (8-bit): The same card ID send to Host in define time
- BZ (8-bit): enable the buzzer (Disenabled 0x00, Enabled 0x01)
- UD (24-bit): (AUTO READ MODE Effective) send the card other data to host; Include (MB, SA, DL)

  MB (8-bit): Target memory bank; 0x00 RFU, 0x01 EPC, 0x02 TID, 0x03 User

  SA (8-bit): Starting Address byte pointer

  DL (8-bit): Data Length (byte Count).
- PE (8-bit): Encryption enabled
- PW (16-bit): Encryption password

- MR (8-bit): Max tag count of read (0x0A~0x40)

name	byte	Reference and define
Power size	1	Adjustable distance of reader Default ： 30 Reference ： (Decimal)0-30
Frequency hopping enabled	1	Default ： 1 Reference ： (Decimal)0- Fixed 1- Hopping
Fixed Frequency	1	Default ： 110(915MHz) Reference ： (Decimal)0-200(860MHz~960MHz)
Frequency hopping 1	1	Default ： 84(902MHz) Reference ： (Decimal)0-200(860MHz~960MHz)
Frequency hopping 2	1	Default ： 93(906.5MHz) Reference ： (Decimal)0-200(860MHz~960MHz)
Frequency hopping 3	1	Default ： 102(911MHz) Reference ： (Decimal)0-200(860MHz~960MHz)
Frequency hopping 4	1	Default ： 110(915MHz) Reference ： (Decimal)0-200(860MHz~960MHz)
Frequency hopping 5	1	Default ： 119(919.5MHz) Reference ： (Decimal)0-200(860MHz~960MHz)
Frequency hopping 6	1	Default ： 130(925MHz) Reference ： (Decimal)0-200(860MHz~960MHz)
Work Mode	1	Command: Reader do not work, when SU send command to Reader then it work once, and response SU; Active: Reader work, and if read the tag then auto send data to SU; Passive: Reader work, do not auto send data to SU, when SU send command to reader then it send last data to SU; Default ： 2 Reference ： (Decimal) 1- Command 2- Active 3- Passive
Read Interval	1	Default ： 10(x1ms) Reference ： (Decimal)5-255(x1ms)
Trigger	1	Default ： 0 Reference ： (Decimal) 0- Close 2- Low level Effective
Output Mode	1	Default ： 1 Reference ： (Decimal) 1- RS232(PC) 2- RS485(PC) 3- TCPIP (PC) 4- CANBUS(SU) 5- Syris(SU)

		6- Wiegand26(SU) 7- Wiegand34(SU)
Wiegand Offset	1	Default ： 0 Reference ： (Decimal)0-20
Wiegand Interval	1	Default ： 30 (x10ms) Reference ： (Decimal)0-255 (x10ms)
Wiegand Width	1	Default ： 10 (x10us) Reference ： (Decimal)0-255 (x10us)
Wiegand Period	1	Default ： 15 (x100us) Reference ： (Decimal)0-255 (x100us)
Choice Antenna	1	Low 4 BIT， Example：Antenna 1：01H(binary 0000 0001) Antenna 3：04H(binary 0000 0100) Antenna 1 + Antenna 3：05H(binary 0000 0101)
Read Type	1	Default ： 16 Reference ： (Decimal) 1- ISO18000-6B single tag 16- EPC(GEN 2) single tag 17- EPC(GEN 2) + ISO18000-6B 32- EPC(GEN 2) multiple tag 64- EPC(GEN 2) + memory bank data
Same id Interval	1	Default ： 1 (x1s) Reference ： (Decimal)0-255 (x1s)
Buzzer	1	Default ： 1 Reference ： (Decimal) 0- Disenabled； 1- Enabled；
Memory bank	1	Read Type = 64 Default ： 1 Reference ： (Decimal) 1- TID (Unique Tag ID Unalterable) 3- User (User)
Starting Address byte pointer	1	Read Type = 64 Default ： 0 Reference ： (Decimal)0~32
Data Length	1	Read Type = 64 Default ： 2 Reference ： (Decimal)1~8
Encryption enabled	1	Default ： 0 Reference ： (Decimal) 0- Disenabled； 1- Enabled；
Encryption password	2	Default ： 0000 Reference ： (Decimal)0000~9999 Example: password =0123 (Decimal)=007BH(Hex)

Max tag count of read	1	Default ： 32 Reference ： (Decimal)10~64

Example:

PW = 30dBi (0x1E)

FHE = Enabled (0x01)

FFV = 915MHz (0x6E)

FHV = 0x545D666F7882 [FHV1 = 902MHz (0x54), FHV2 = 906.5MHz (0x5D), FHV3 = 911MHz (0x66), FHV4 = 915.5MHz (0x6F), FHV5 = 920MHz (0x78), FHV6=925MHz (0x82)]

WM = Command (0x01)

RI = 10ms (0x0A)

TGR = Disenabled (0x00)

OM = RS232 (0x01)

WG = 0x001E0A0F [Offset 0x00, Interval 0x1E, Width 0x0A, Period 0x0F]

AN = 1 (0x01)

RT = EPC (GEN 2) single tag (0x10)

SI = 1s (0x01)

BZ = Enabled (0x01)

UD = 0x030006 [MB=User, SA=0, DL=6 word]

PE = Disenabled (0x00)

PW = 0x0000

MR = 32 (0x20)

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	PW	FHE
7C	FF	FF	81	31	1C	1E	01
FFV	**FHV(MSB)**					**FHV(LSB)**	**WM**
6E	54	5D	66	6F	78	82	01
RI	**TGR**	**OM**	**WG(MSB)**			**WG(LSB)**	**AN**
0A	00	01	00	1E	0A	0F	01
RT	**SI**	**BZ**	**UD(MSB)**		**UD(LSB)**	**PE**	**PW(MSB)**
10	01	01	03	00	06	00	00
PW(LSB)	**MR**	**CHKSUM**					
00	20	0xNN					

4.8.2. Response

CID1: 81H

RTN: 00H

INFO:

- None

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	CHKSUM
CC	FF	FF	81	00	00	0xNN

4.9. Get Basic Parameters of Reader

4.9.1. **Command**

CID1: 81H

CID2: 32H

INFO:

- None

Example:

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	81	32	00	0xNN

4.9.2. **Response**

CID1: 81H

RTN: 00H

INFO:

- PW (8-bit): Power Size (0~30)
- FHE (8-bit): Frequency hopping enabled (Disenabled 0x00, Enabled 0x01)
- FFV (8-bit): Fixed frequency value
- FHV (48-bit): Frequency hopping value

  Range 0~200(0x00~0xC8), corresponding 860MHz ~960MHz, Step 0.5MHz

  FHV1 (8-bit): Frequency hopping value1

  FHV2 (8-bit): Frequency hopping value2

  FHV3 (8-bit): Frequency hopping value3

  FHV4 (8-bit): Frequency hopping value4

  FHV5 (8-bit): Frequency hopping value5

  FHV6 (8-bit): Frequency hopping value6
- WM (8-bit): Work Mode

  Command (0x01), Active (0x02), Passive (0x03)
- RI (8-bit): read interval time
- TGR (8-bit): enable the trigger (Disenabled 0x00, Enabled 0x01)
- OM (8-bit): Output Mode

  RS232 (0x01), RS485 (0x02), TCPIP (0x03), CAMBUS (0x04),

  SYRIS (0x05), WG26 (0x06), WG34 (0x07)
- WG (32-bit): (AUTO READ MODE Effective) Include (offset, interval, width, period)

  Offset (8-bit): (0~14) Byte, Default (0x02)

  Interval (8-bit): (0~255) *10us, Default (0x1E)

  Width (8-bit): (0~255) *10ms, Default (0x0A)

  Period (8-bit): (0~255) *100us, Default (0x0F)
- AN (8-bit): Choice Antenna Low 4 BIT,
- RT (8-bit): Read Type

  ISO18000-6B single tag (0x01)

  EPC (GEN 2) single tag (0x10)

  EPC (GEN 2) + ISO18000-6B (0x11)

  EPC (GEN 2) multiple tag (0x20)

EPC (GEN 2) + memory bank data (0x40)

- SI (8-bit): The same card ID send to Host in define time
- BZ (8-bit): enable the buzzer (Disenabled 0x00, Enabled 0x01)
- UD (24-bit): (AUTO READ MODE Effective) send the card other data to host; Include (MB, SA, DL)
  MB (8-bit): Target memory bank; 0x00 RFU, 0x01 EPC, 0x02 TID, 0x03 User
  SA (8-bit): Starting Address byte pointer
  DL (8-bit): Data Length (byte Count).
- PE (8-bit): Encryption enabled
- PW (16-bit): Encryption password
- MR (8-bit): Max tag count of read (0x0A~0x40)

Example:

PW = 30dBi (0x1E)
FHE = Enabled (0x01)
FFV = 915MHz (0x6E)
FHV = 0x545D666F7882
[FHV1 = 902MHz (0x54),
FHV2 = 906.5MHz (0x5D),
FHV3 = 911MHz (0x66),
FHV4 = 915.5MHz (0x6F),
FHV5 = 920MHz (0x78),
FHV6=925MHz (0x82)]
WM = Command (0x01)
RI = 10ms (0x0A)
TGR = Disenabled (0x00)
OM = RS232 (0x01)
WG = 0x001E0A0F [Offset 0x00, Interval 0x1E, Width 0x0A, Period 0x0F]
AN =1 (0x01)
RT = EPC (GEN 2) Single tag (0x10)
SI = 1s (0x01)
BZ = Enabled (0x01)
UD = 0x030006 [MB=User, SA=0, DL=6 word]
PE = Disenabled (0x00)
PW = 0x0000
MR = 32 (0x20)

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	PW	FHE
CC	FF	FF	81	00	1C	1E	01
FFV	FHV(MSB)					FHV(LSB)	WM
6E	54	5D	66	6F	78	82	01
RI	TGR	OM	WG(MSB)			WG(LSB)	AN
0A	00	01	00	1E	0A	0F	01
RT	SI	BZ	UD(MSB)		UD(LSB)	PE	PW(MSB)
10	01	01	03	00	06	00	00
PW(LSB)	MR	CHKSUM					
00	20	0xNN					

4.10. Set Address of Reader

4.10.1. **Command**

CID1: 82H

CID2: 31H

INFO:

- ADDRESS (16-bit): Current address

Example: **ADDRESS = 65534(0xFFFE)**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	ADDR (LSB)	ADDR (MSB)
7C	FF	FF	82	31	02	FE	FH
CHKSUM							
0xNN							

4.10.2. Response

CID1: 82H

RTN: 00H

INFO:

- None

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	CHKSUM
CC	FF	FF	82	00	00	0xNN

4.11. Get Basic Information of Reader

4.11.1. **Command**

CID1: 82H

CID2: 32H

INFO:

- None

Example:

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	82	32	00	0xNN

4.11.2. Response

CID1: 82H

RTN: 00H

INFO: (ASCII code)

- Rev (128-bit): Reserved field (16 Byte)

- TP (24-bit): Type of reader (3 Byte) (P)
- VER (40-bit): Version of reader (5 Byte) (V3.63)
- ADDR (80-bit): Address of reader (ADDR: 65534)

Example: **TP = P**

VER = V3.63

ADDR = ADDR: 65534

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	REV(MSB)	
CC	FF	FF	82	00	22	0A	20
77	77	77	2E	41	6F	73	69
					REV(LSB)	TP(MSB)	
64	2E	63	6F	6D	20	0A	20
TP(LSB)	VER(MSB)				VER(LSB)	ADDR(MSB)	
50	56	33	2E	36	33	4E	6F
							ADDR(LSB)
2E	3A	00	36	35	35	33	34
CHKSUM							
0xNN							

4.12. Software Reset

4.12.1. **Command**

CID1: 8FH

CID2: 31H

INFO:

- None

Example:

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	8F	31	00	0xNN

4.12.2. Response

CID1: 8FH

RTN: 00H

INFO:

- None

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	CHKSUM
CC	FF	FF	8F	00	00	0xNN

4.13. Encrypted Tag

When the reader is encrypted then you can use this command to encrypted tag.

4.13.1. **Command**

CID1: 30H

CID2: 31H

INFO:

- None

Example:

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	30	31	00	0xNN

4.13.2. Response

CID1: 30H

RTN: 00H

INFO:

- None

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	CHKSUM
CC	FF	FF	30	00	00	0xNN

4.14. Set TCPIP Parameters of Reader

4.14.1. **Command**

CID1: B9H

CID2: 21H

INFO:

- IP (32-bit) :Local IP
- MSK (32-bit) : Subnet Mask
- GW (32-bit) : Gateway
- PT (16-bit): Local Port
- MAC (48-bit): Mac Address
- RIP (32-bit) : Remote IP
- RPT (16-bit): Remote Port
- ST (8-bit): Net mode (Server 0x00 ,Client 0x01)
- PCL (8-bit): Protocol (TCP 0x00,UDP 0x01,HTTP 0x02) Just TCP Effective;

Example:

IP = 192.168.1.115

MSK = 255.255.255.0

GW = 192.168.1.1

PT = 49152

MAC = 5E-45-A2-6C-30-1E

RIP = 192.168.1.100

RPT = 49153

ST = Server (0x00)

PCL = TCP

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	IP(MSB)	
7C	FF	FF	B9	21	1C	C0	A8
	IP(LSB)	MSK(MSB)			MSK(LSB)	GW(MSB)	
01	73	FF	FF	FF	00	C0	A8
	GW(LSB)	PT(LSB)	PT(MSB)	MAC(MSB)			
01	01	00	C0	5E	45	A2	6C
	MAC(LSB)	RIP(MSB)			RIP(LSB)	RPT(LSB)	RPT(MSB)
30	1E	C0	A8	01	64	01	C0
ST	PCL	CHKSUM					
00	00	0xNN					

4.14.2. Response

CID1: B9H

RTN: 00H

INFO:

- None

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	CHKSUM
CC	FF	FF	B9	00	00	0xNN

4.15. Get TCPIP Parameters of Reader

4.15.1. **Command**

CID1: B9H

CID2: 22H

INFO:

- None

Example:

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	B9	22	00	0xNN

4.15.2. Response

CID1: B9H

RTN: 00H

INFO:

- IP (32-bit) :Local IP
- MSK (32-bit) : Subnet Mask
- GW (32-bit) : Gateway
- PT (16-bit): Local Port
- MAC (48-bit): Mac Address
- RIP (32-bit) : Remote IP
- RPT (16-bit): Remote Port

- ST (8-bit): Net mode (Server 0x00 ,Client 0x01)
- PCL (8-bit): Protocol (TCP 0x00,UDP 0x01,HTTP 0x02) Just TCP Effective;

Example:

IP = 192.168.1.115
MSK = 255.255.255.0
GW = 192.168.1.1
PT = 49152
MAC = 5E-45-A2-6C-30-1E
RIP = 192.168.1.100
RPT = 49153
ST = Server (0x00)
PCL = TCP

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	IP(MSB)	
CC	FF	FF	B9	00	1C	C0	A8
	IP(LSB)	MSK(MSB)			MSK(LSB)	GW(MSB)	
01	73	FF	FF	FF	00	C0	A8
	GW(LSB)	PT(LSB)	PT(MSB)	MAC(MSB)			
01	01	00	C0	5E	45	A2	6C
	MAC(LSB)	RIP(MSB)			RIP(LSB)	RPT(LSB)	RPT(MSB)
30	1E	C0	A8	01	64	01	C0
ST	PCL	CHKSUM					
00	00	0xNN					

4.16. Remote IO Output

4.16.1. **Command**

CID1: BBH
CID2: 21H
INFO:

- POINT (8-bit) : IO point (Relay 1 0x01, Relay 2 0x02)
- ACTION (8-bit) : IO action (Open 0x01, Close 0x00)

Example:

POINT = Relay 1
ACTION = Open

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	CID2	LENGTH	POINT	ACTION
7C	FF	FF	BB	21	02	01	01
CHKSUM							
0xNN							

4.16.2. Response

CID1: BBH
RTN: 00H
INFO:

- None

Example: **Success;**

HEAD	ADDR(LSB)	ADDR(MSB)	CID1	RTN	LENGTH	CHKSUM
CC	FF	FF	BB	00	00	0xNN