Phychips Version
Reader Control Protocol
User Manual

Version Control

Date	Version	Content
2015-01-23	V1.0	Initial version
2017-03-27	V1.1	Increase agreement
2018-11-01	V1.2	Update Pair mode, compatible standard version reader

Table of Contents

1. Introduction

Communications protocol definition

Support RS232/ RS485;

The mode of information transmission is asynchronous ， date bits: 8 ， stop bits: 1 ， no checksum。
Rate of data transmission: 9.6kb/s;

The monitoring unit (SU) and device control module (SM) communication mainly from the way, the monitoring unit for the host computer, slave computer monitoring module. SU call SM and issue the command, SM receives the command returns response information. SU 500ms is not receiving a SM response or receiving response information error, think of the communication process to fail.

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

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) Response: RTD1（Return code Table 2-3）	
4	CID2	Command: control identification code (action type description) Response: RTD2（Return code Table 2-4）	
5	LENGTH	INFO Data Length	
6	INFO	Command: Command information Response: Response data information	
7	CHKSUM	The checksum code	

Table 2-3 Return code (RTD1)

No.	RTD Value(HEX)	significance	Remarks
1	CID1	Succeed	Senior command
2	FFH	Fail	Effective

Table 2-4 Return code (RTD2)

No.	RTD Value(HEX)	significance	Remarks
1	00H	Succeed	Custom command
2	01H	Fail	Effective
3	05H	Auto send to SU	

Note: when setting the input feedback, return the command RTN2 value to a high position of 1; (valid for all commands)

Please enter the communication protocol 4.31, 4.32 to change the settings;

Example: when RTN2 has not input feedback, its value is 01H, and when it has input feedback, its value will be 81H;

2.3. Data Format

CHKSUM data format:

- **CHKSUM Introduction**

The calculation of CHKSUM is in addition to CHKSUM, other characters in 16 hex code value 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 Senior command code Classification（SENIOR CID1）

No.	Content	CID1	Remark
1	Get Region	06H	
2	Set Region	07H	
3	Set System Reset	08H	
4	Get current RF Channel	11H	
5	Set current RF Channel	12H	
6	Get FH and LBT Parameters	13H	
7	Set FH and LBT Parameters	14H	
8	Get Tx Power Level	15H	
9	Set Tx Power Level	16H	
10	Read Type C UII	22H	
11	Read Type C Tag Data	29H	
12	Get Frequency Hopping Table *	30H	
13	Set Frequency Hopping Table *	31H	
14	Get Modulation *	32H	
15	Set Modulation *	33H	
16	Get Anti-Collision Mode *	34H	
17	Set Anti-Collision Mode *	35H	
18	Start Auto Read	36H	
19	Stop Auto Read	37H	
20	Write Type C Tag Data	46H	
21	Block Write Type C Tag Data	47H	
22	Block Erase Type C Tag Data	48H	
23	Kill/Recom Type C Tag	65H	
24	Lock Type C Tag	82H	
25	Get RSSI	C5H	
26	Get Temperature	B7H	
27	Update Registry	D2H	
28	Erase Registry	D3H	
29	Get Registry Item	D4H	
30	Command Failure	FFH	

Table 3-2 Custom command code Classification（Custom CID1）

No.	Content	CID1	Remark
1	Custom Parameters	E1H	
2	Custom Address	E2H	

3	Custom Output	E3H	
4	Custom IOOUT	E4H	
5	Remote Custom IO	BBH	
6	Define Limit Data	E5H	
7	Serial Port Baud Rate	E6H	

Table 3-3 Command action Classification（CID2）

No.	Content	CID2	Remarks
1	Senior command	00H	
2	Set Custom command	31H	
3	Get Custom command	32H	

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	Get Region	06H	00H	
2	Set Region	07H	00H	
3	Set System Reset	08H	00H	
4	Get current RF Channel	11H	00H	
5	Set current RF Channel	12H	00H	
6	Get FH and LBT Parameters	13H	00H	
7	Set FH and LBT Parameters	14H	00H	
8	Get Tx Power Level	15H	00H	
9	Set Tx Power Level	16H	00H	
10	Read Type C UII	22H	00H	
11	Read Type C Tag Data	29H	00H	
12	Get Frequency Hopping Table *	30H	00H	
13	Set Frequency Hopping Table *	31H	00H	
14	Get Modulation *	32H	00H	
15	Set Modulation *	33H	00H	
16	Get Anti-Collision Mode *	34H	00H	
17	Set Anti-Collision Mode *	35H	00H	
18	Start Auto Read	36H	00H	
19	Stop Auto Read	37H	00H	
20	Write Type C Tag Data	46H	00H	
21	Block Write Type C Tag Data	47H	00H	
22	Block Erase Type C Tag Data	48H	00H	
23	Kill/Recom Type C Tag	65H	00H	
24	Lock Type C Tag	82H	00H	
25	Get RSSI	C5H	00H	
26	Get Temperature	B7H	00H	
27	Update Registry	D2H	00H	
28	Erase Registry	D3H	00H	
29	Get Registry Item	D4H	00H	
30	Command failure	FFH	01H	
31	Get Custom Parameters	E1H	32H	
32	Set Custom Parameters	E1H	31H	
33	Get Custom Address	E2H	32H	
34	Set Custom Address	E2H	31H	
35	Get Custom Output *	E3H	32H	

36	Set Custom Output *	E3H	31H	
37	Get Custom IOOUT	E4H	32H	
38	Set Custom IOOUT	E4H	31H	
39	Remote Custom IO	BBH	31H	
40	Get Define Limit Data	E5H	32H	
41	Set Define Limit Data	E5H	31H	
42	Get Serial Port Baud Rate	E6H	32H	
43	Set Serial Port Baud Rate	E6H	31H	

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. Get Region

Get the current region. PR9200 uses individual channel table that depends on region. List of region code follows below.

4.1.1. **Command**

CID1: 06H

CID2: 00H

INFO:

- None

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	06	00	00	0xNN

4.1.2. **Response**

RTD1: 06H

RTD2: 01H

INFO:

- Korea (0x11) (917.100 – 923.300MHz)
- US (0x21) (902.750 – 927.250MHz)
- US2 (0x22) (917.100 – 926.900MHz)
- Europe (0x31) (*Need Customized) (865.100 – 867.900MHz)
- Japan (0x41) (916.000 – 923.400MHz)
- China2 (0x52) (920.125 – 924.875MHz)

Example:

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	06	01	01	31	0xNN

4.2. Set Region

Set the current region. PR9200 uses individual channel table that depends on region. List of region code follows below.

4.2.1. **Command**

CID1: 07H

CID2: 00H

INFO:

- Korea (0x11) (917.100 – 923.300MHz)
- US (0x21) (902.750 – 927.250MHz)
- US2 (0x22) (917.100 – 926.900MHz)
- Europe (0x31) (*Need Customized) (865.100 – 867.900MHz)
- Japan (0x41) (916.000 – 923.400MHz)
- China2 (0x52) (920.125 – 924.875MHz)

Example:Europe

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	INFO	CHKSUM
7C	FF	FF	07	00	01	31	0xNN

4.2.2. **Response**

RTD1: 07H

RTD2: 01H

INFO:

- Success (0x00)

Example:

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	07	01	01	00	0xNN

4.3. Set System Reset

Set the system level reset.

4.3.1. **Command**

CID1: 08H

CID2: 00H

INFO:

- None

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	08	00	00	0xNN

4.3.2. **Response**

RTD1: 08H

RTD2: 01H

INFO:

- Success (0x00)

Example:

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	08	01	01	00	0xNN

4.4. Get current RF Channel

Get RF channel. This command is valid only for non-FH mode.

4.4.1. **Command**

CID1: 11H

CID2: 00H

INFO:

- None

Example:

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

4.4.2. **Response**

RTD1: 11H

RTD2: 01H

INFO:

- CN (8-bit): Channel Number. The range of channel number depends on regional settings
- CNO (8-bit): Channel number offset for miller subcarrier.

Example:(Channel Number = 10)

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	CN	CNO
CC	FF	FF	11	01	02	0A	00

CHKSUM
0xNN

4.5. Set current RF Channel

Set RF channel. This command is valid only for non-FHSS mode.

4.5.1. **Command**

CID1: 12H

CID2: 00H

INFO:

- CN (8-bit): Channel number. The range of channel number depends on regional settings
- CNO (8-bit): Channel number offset for miller subcarrier.

Example: (Channel Number = 10, Channel Number Offset = 0)

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CN	CNO
7C	FF	FF	12	00	02	0A	00

CHKSUM
0xNN

4.5.2. **Response**

RTD1: 12H

RTD2: 01H

INFO:

- Success (0x00)

Example:

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	12	01	01	00	0xNN

4.6. Get FH and LBT Parameters

Get FH and LBT control.

4.6.1. **Command**

CID1: 13H

CID2: 00H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	13	00	00	0xNN

4.6.2. **Response**

RTD1: 13H

RTD2: 01H

INFO:

- RT (16-bit): Read Time (1 = 1ms)
- IT (16-bit): Idle Time (1 = 1ms)
- CST (16-bit): Carrier Sense Time (1 = 1ms)
- RFL (16-bit): Target RF power level (-dBm x 10)
- FH (8-bit): enable (0x01 or over) / disable (0x00)
- LBT (8-bit): enable (0x01 or over) / disable (0x00)
- CW (8-bit): enable (0x01) / disable (0x00)

Example: FH disable, LBT enable, RT 400ms, IT 100ms, CST 10ms, RFL -630 (-63.0 dBm)

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	RT(MSB)	RT(LSB)
CC	FF	FF	13	01	0B	01	09
IT(MSB)	IT(LSB)	CST (MSB)	CST (LSB)	RFL (MSB)	RFL (LSB)	FH	LBT
00	64	00	0A	FD	8A	00	01
CW	CHKSUM						
00	0xNN						

4.7. Set FH and LBT Parameters

Set FH and LBT control.

4.7.1. **Command**

CID1: 14H

CID2: 00H

INFO:

- RT (16-bit): Read Time (1 = 1ms)
- IT (16-bit): Idle Time (1 = 1ms)
- CST (16-bit): Carrier Sense Time (1 = 1ms)
- RFL (16-bit): Target RF power level (-dBm x 10)
- FH (8-bit): enable (0x01 or over) / disable (0x00)
- LBT (8-bit): enable (0x01 or over) / disable (0x00)
- CW (8-bit): enable (0x01) / disable (0x00)

Example1: FH enable (with LBT feature), RT 400ms, IT 100ms, CST 10ms, RFL -740 (-74.0 dBm)

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	RT(MSB)	RT(LSB)
7C	FF	FF	14	00	0B	01	09
IT(MSB)	IT(LSB)	CST (MSB)	CST (LSB)	RFL (MSB)	RFL (LSB)	FH	LBT
00	64	00	0A	FD	8A	01	01
CW	CHKSUM						
00	0xNN						

Example2: LBT enable (with FH feature), RT 400ms, IT 100ms, CST 10ms, RFL -740 (-74.0 dBm)

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	RT(MSB)	RT(LSB)
7C	FF	FF	14	00	0B	01	09
IT(MSB)	IT(LSB)	CST (MSB)	CST (LSB)	RFL (MSB)	RFL (LSB)	FH	LBT
00	64	00	0A	FD	8A	01	02
CW	CHKSUM						
00	0xNN						

4.7.2. **Response**

RTD1: 14H

RTD2: 01H

INFO:

- None

Example: Success

HEAD	Addr(LSB	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	14	01	01	00	0xNN

4.8. Get Tx Power Level

Get current Tx power level.

4.8.1. **Command**

CID1: 15H

CID2: 00H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	15	00	00	0xNN

4.8.2. **Response**

RTD1: 15H

RTD2: 01H

INFO:

- PWR (16-bit): Tx Power

Example: **PWR = 200(20.0dBm)**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	PWR (MSB)	PWR (LSB)
CC	FF	FF	15	01	02	00	C8

CHKSUM
0xNN

4.9. Set Tx Power Level

Set current Tx power level.

4.9.1. **Command**

CID1: 16H

CID2: 00H

INFO:

- PWR (16-bit): Tx Power

Example: PWR = 200(20.0dBm)

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	PWR (MSB)	PWR (LSB)
7C	FF	FF	16	00	02	00	C8

CHKSUM
0xNN

4.9.2. **Response**

RTD1: 16H

RTD2: 01H

INFO:

- Success (0x00)

Example: Success

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	16	01	01	00	0xNN

4.10. Read Type C UII

When the working mode is set to active, the reader reads the tag automatically and sends RTN2 back with 05H.

4.10.1. **Command**

CID1: 22H

CID2: 00H

INFO:

- None.

Example:

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

4.10.2. **Response**

RTD1: 22H

RTD2: 01H

INFO:

- EPC Block (PC + EPC)

-RSSI

Example: **PC = 0x3000, EPC = 0xE2003411B802011383258566, RSSI = 0x88862D2D**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	PC (MSB)	PC (LSB)
CC	FF	FF	22	01	12	30	00
EPC(MSB)							
E2	00	34	11	B8	02	01	13
			EPC(LSB)	Rssi(MSB)			Rssi(LSB)
83	25	85	66	0x88	86	2D	2D
CHKSUM							
0xNN							

4.11. Read Type C Tag Data

Get current temperature.

4.11.1. **Command**

CID1: 29H

CID2: 00H

INFO:

- AP (32-bit): Access Password if target memory bank was password protected. Otherwise, set AP filed to 0x00000000.
- UL (16-bit): Target tag's EPC length
- EPC (variable): Target tag's EPC
- MB (8-bit): Target memory bank; RFU (0x00), EPC (0x01), TID (0x02), User (0x03)
- SA (16-bit): Starting Address word pointer
- DL (16-bit): Data Length (Word Count).

Example: **Access Password = 0x00000000,**

UL = 12 (0x0C) byte,

EPC = 0xE2003411B802011526370494,

Target memory bank = RFU,

Start Address = 0x0000,

Length = 4 word

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	AP(MSB)	
7C	FF	FF	29	00	017	00	00
	AP(LSB)	UL(MSB)	UL(LSB)	EPC(MSB)			
00	00	00	0C	E2	00	34	11
							EPC(LSB)
B8	02	01	15	26	37	04	94
MB	SA(MSB)	SA(LSB)	DL(MSB)	DL(LSB)	CHKSUM		
00	00	00	00	04	0xNN		

4.11.2. **Response**

RTD1: 29H

RTD2: 01H

INFO:

- Tag memory contents (variable)

Example: **RFU memory bank = 0x0000000000000000**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	INFO
CC	FF	FF	29	01	08	00	00
INFO	INFO	INFO	INFO	INFO	INFO	CHKSUM	
00	00	00	00	00	00	0xNN	

4.12. Get Frequency Hopping Table *

Get current frequency hopping table.

4.12.1. **Command**

CID1: 30H

CID2: 00H

INFO:

- None.

Example:

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

4.12.2. **Response**

RTD1: 30H

RTD2: 01H

INFO:

- Table Size (8-bit)

- Channel Number (variable)

Example: Table Size = 6, channel numbers = 47, 19, 20, 23, 46, 16

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	Table Size	Numbers1
CC	FF	FF	30	01	07	06	2F
Numbers2	Numbers3	Numbers4	Numbers5	Numbers6	CHKSUM		
13	14	17	2E	10	0xNN		

4.13. Set Frequency Hopping Table *

Set current frequency hopping table.

4.13.1. **Command**

CID1: 31H

CID2: 00H

INFO:

- Table Size (8-bit)
- Channel Number (variable)

Example: Table Size = 6, channel numbers = 47, 19, 20, 23, 46, 16

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	Table Size	Numbers1
7C	FF	FF	31	00	07	06	2F
Numbers2	Numbers3	Numbers4	Numbers5	Numbers6	CHKSUM		
13	14	17	2E	10	0xNN		

4.13.2. **Response**

RTD1: 31H

RTD2: 01H

INFO:

- Success (0x00)

Example: Success

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	31	01	01	00	0xNN

4.14. Get Modulation *

Get current modulation mode. The modulation mode is combination Rx modulation type and BLF.

4.14.1. **Command**

CID1: 32H

CID2: 00H

INFO:

- None.

Example:

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

4.14.2. **Response**

RTD1: xxH

RTD2: 01H

INFO:

- BLF (16-bit): backscatter link frequency
- RxMod (8-bit): data rate and modulation format
- DR (8-bit): divide ratio

	BLF	RxMod	DR		BLF	RxMod	DR
40KH, FM0, DR=8	0x0028	0x00	0x00	40KH, M4, DR=8	0x0028	0x02	0x00
80KH, FM0, DR=8	0x0050	0x00	0x00	80KH, M4, DR=8	0x0050	0x02	0x00
160KH, FM0, DR=64/3	0x00A0	0x00	0x01	160KH, M4, DR=64/3	0x00A0	0x02	0x01
320KH, FM0, DR=64/3	0x0140	0x00	0x01	320KH, M4, DR=64/3	0x0140	0x02	0x01
640KH, FM0, DR=64/3	0x0280	0x00	0x01	640KH, M4, DR=64/3	0x0280	0x02	0x01
40KH, M2, DR=8	0x0028	0x01	0x00	40KH, M8, DR=8	0x0028	0x03	0x00
80KH, M2, DR=8	0x0050	0x01	0x00	80KH, M8, DR=8	0x0050	0x03	0x00
160KH, M2, DR=64/3	0x00A0	0x01	0x01	160KH, M8, DR=64/3	0x00A0	0x03	0x01
320KH, M2, DR=64/3	0x0140	0x01	0x01	320KH, M8, DR=64/3	0x0140	0x03	0x01
640KH, M2, DR=64/3	0x0280	0x01	0x01	640KH, M8, DR=64/3	0x0280	0x03	0x01

Example: **BLF = 160KHz, RxMod = M8, DR = 64/3**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	BLF (MSB)	BLF (LSB)
CC	FF	FF	32	01	04	00	A0

RxMod	DR	CHKSUM
03	01	0xNN

4.15. Set Modulation *

Set current modulation mode. The modulation mode is combination Rx modulation type and BLF.

4.15.1. **Command**

CID1: 33H

CID2: 00H

INFO:

- Modulation Mode (8-bit): High Sensitivity (0x00), High Speed (0x01), Manual (0xFF)
- BLF (16-bit), RxMod (8-bit), DR (8-bit): only available when modulation mode is manual.

	BLF	RxMod	DR		BLF	RxMod	DR
40KH, FM0, DR=8	0x0028	0x00	0x00	40KH, M4, DR=8	0x0028	0x02	0x00
80KH, FM0, DR=8	0x0050	0x00	0x00	80KH, M4, DR=8	0x0050	0x02	0x00
160KH, FM0, DR=64/3	0x00A0	0x00	0x01	160KH, M4, DR=64/3	0x00A0	0x02	0x01
320KH, FM0, DR=64/3	0x0140	0x00	0x01	320KH, M4, DR=64/3	0x0140	0x02	0x01
640KH, FM0, DR=64/3	0x0280	0x00	0x01	640KH, M4, DR=64/3	0x0280	0x02	0x01
40KH, M2, DR=8	0x0028	0x01	0x00	40KH, M8, DR=8	0x0028	0x03	0x00

80KH, M2, DR=8	0x0050	0x01	0x00	80KH, M8, DR=8	0x0050	0x03	0x00
160KH, M2, DR=64/3	0x00A0	0x01	0x01	160KH, M8, DR=64/3	0x00A0	0x03	0x01
320KH, M2, DR=64/3	0x0140	0x01	0x01	320KH, M8, DR=64/3	0x0140	0x03	0x01
640KH, M2, DR=64/3	0x0280	0x01	0x01	640KH, M8, DR=64/3	0x0280	0x03	0x01

Example 1: **Normal mode**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	Info	CHKSUM
7C	FF	FF	33	00	01	00	0xNN

Example 2: **Manual, BLF = 160KHz, RxMod = M8, DR = 64/3**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	Mod Mode	BLF (MSB)
7C	FF	FF	33	00	05	FF	00
BLF (LSB)	RxMod	DR	CHKSUM				
A0	03	01	0xNN				

4.15.2. **Response**

RTD1: 33H

RTD2: 01H

INFO:

- Success (0x00)

Example: Success

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	33	01	01	00	0xNN

4.16. Get Anti-Collision Mode *

Get Anti-collision algorithm. (TBD)

4.16.1. **Command**

CID1: 34H

CID2: 00H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	34	00	00	0xNN

4.16.2. **Response**

RTD1: 34H

RTD2: 01H

INFO:

- Anti-collision Mode (8-bit)

Example:

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	34	01	01	00	0xNN

4.17. Set Anti-Collision Mode *

Set Anti-collision algorithm. (TBD)

4.17.1. **Command**

CID1: 35H

CID2: 00H

INFO:

- Anti-collision Mode (8-bit)

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	INFO	CHKSUM
7C	FF	FF	35	00	01	00	0xNN

4.17.2. **Response**

RTD1: 35H

RTD2: 01H

INFO:

- Success (0x00)

Example: Success

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	16	01	01	00	0xNN

4.18. Start Auto Read

Start an automatic tag read operation, tag IDs are sent back to user though notification packet.

4.18.1. **Command**

CID1: 36H

CID2: 00H

INFO:

- Reserve: type B tag (0x01), type C Tag (0x02)
- MTNU: maximum number of tag to read
- MTIME: maximum elapsed time to tagging (sec)
- RC (16-bit): Repeat cycle (how many times reader perform inventory round).

Example: **MTNU = 0, MTIME = 0, Repeat Cycle = 100**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	Reserve	MTNU
7C	FF	FF	36	00	05	00	00
MTIME	RC(MSB)	RC(LSB)	CHKSUM				
00	00	64	0xNN				

4.18.2. **Response**

RTD1: 36H

RTD2: 01H

INFO:

- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	36	01	01	00	0xNN

4.18.3. **Notification**

RTD1: 22H

RTD2: 02H

INFO:

- EPC Block (PC + EPC)

-RSSI

Example: **PC = 0x3000, EPC = 0xE2003411B802011383258566, RSSI = 0x88862D2D**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	PC (MSB)	PC (LSB)
CC	FF	FF	22	02	12	30	00
EPC(MSB)							
E2	00	34	11	B8	02	01	13
			EPC(LSB)	Rssi(MSB)			Rssi(LSB)
83	25	85	66	0x88	0x86	0x2D	0x2D
CHKSUM							
0xNN							

4.18.4. **Notification Complete**

RTD1: 36H

RTD2: 02H

INFO:

- Read complete (0x1F)

Example:

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	36	02	01	1F	0xNN

4.19. Stop Auto Read

Stop an automatic read operation.

4.19.1. **Command**

CID1: 37H

CID2: 00H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	37	00	00	0xNN

4.19.2. **Response**

RTD1: 37H

RTD2: 01H

INFO:

- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	37	01	01	00	0xNN

4.20. Write Type C Tag Data

Write type C tag data.

4.20.1. **Command**

CID1: 46H

CID2: 00H

INFO:

- AP (32-bit): Access Password if target memory bank was password protected. Otherwise, set AP filed to 0x00000000.
- UL (16-bit): Target tag's EPC length
- EPC (variable): Target tag's EPC
- MB (8-bit): Target memory bank; 0x00 Reserved, 0x01 EPC, 0x02 TID, 0x03 User
- SA (16-bit): Starting Address word pointer
- DL (16-bit): Data Length to write (Word Count)
- DT (variable): Data to write.

Example: **Access Password = 0x00000000,**

UL = 12 (0x0C),

EPC = 0xE2003411B802011526370494,

Target memory bank = RFU,

Start Address = 0x0000,

Data Length = 4 word,

Data to write = 0x1234567800000000

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	AP(MSB)	
7C	FF	FF	46	00	017	00	00
	AP(LSB)	UL(MSB)	UL(LSB)	EPC(MSB)			
00	00	00	0C	E2	00	34	11
							EPC(LSB)
B8	02	01	15	26	37	04	94
MB	SA(MSB)	SA(LSB)	DL(MSB)	DL(LSB)	DT(MSB)		
00	00	00	00	04	12	34	56
				DT(LSB)	CHKSUM		
78	00	00	00	00	0xNN		

4.20.2. **Response**

RTD1: 46H

RTD2: 01H

INFO:

- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	46	01	01	00	0xNN

4.21. BlockWrite Type C Tag Data

Blockwrite type C tag data.

4.21.1. **Command**

CID1: 47H

CID2: 00H

INFO:

- AP (32-bit): Access Password if target memory bank was password protected. Otherwise, set AP filed to 0x00000000.
- UL (16-bit): Target tag's EPC length
- EPC (variable): Target tag's EPC
- MB (8-bit): Target memory bank; 0x00 Reserved, 0x01 EPC, 0x02 TID, 0x03 User
- SA (16-bit): Starting Address word pointer
- DL (16-bit): Data Length to write (Word Count)
- DT (variable): Data to write.

Example:

Access Password = 0x00000000,

UL = 12 (0x0C),

EPC = 0xE2003411B802011526370494,

Target memory bank = RFU,

Start Address = 0x0000,

Data Length = 4 word,

Data to write = 0x1234567800000000

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	AP(MSB)	
7C	FF	FF	47	00	017	00	00
	AP(LSB)	UL(MSB)	UL(LSB)	EPC(MSB)			
00	00	00	0C	E2	00	34	11
							EPC(LSB)
B8	02	01	15	26	37	04	94
MB	SA(MSB)	SA(LSB)	DL(MSB)	DL(LSB)	DT(MSB)		
00	00	00	00	04	12	34	56
				DT(LSB)	CHKSUM		
78	00	00	00	00	0xNN		

4.21.2. **Response**

RTD1: 47H

RTD2: 01H

INFO:

- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	47	01	01	00	0xNN

4.22. BlockErase Type C Tag Data

Block erases type C tag data.

4.22.1. **Command**

CID1: 48H

CID2: 00H

INFO:

- AP (32-bit): Access Password if target memory bank was password protected. Otherwise, set AP filed to 0x00000000.
- UL (16-bit): Target tag's EPC length
- EPC (variable): Target tag's EPC
- MB (8-bit): Target memory bank; 0x00 RFU, 0x01 EPC, 0x02 TID, 0x03 User
- SA (16-bit): Starting Address word pointer
- DL (16-bit): Data Length (Word Count).

Example: **Access Password = 0x00000000,**

UL = 12 (0x0C) byte,

EPC = 0xE2003411B802011526370494,

Target memory bank = RFU,

Start Address = 0x0000,

Length = 4 word

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	AP(MSB)	
7C	FF	FF	48	00	017	00	00
	AP(LSB)	UL(MSB)	UL(LSB)	EPC(MSB)			
00	00	00	0C	E2	00	34	11
							EPC(LSB)
B8	02	01	15	26	37	04	94
MB	SA(MSB)	SA(LSB)	DL(MSB)	DL(LSB)	CHKSUM		
00	00	00	00	04	0xNN		

4.22.2. **Response**

RTD1: 48H

RTD2: 01H

INFO:

- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	48	01	01	00	0xNN

4.23. Kill Type C Tag /(Recom)

Kill a Tag.

4.23.1. **Command**

CID1: 65H

CID2: 00H

INFO:

- KP (32-bit): Kill Password. If KP filed set to 0x00000000, ‘Kill Type C Tag’ command do not work. The target tag ignores it.
- UL (16-bit): Target tag’s EPC length
- EPC (variable): Target tag’s EPC
- Recom (8-bit): Recommissioning bits.

Example: **Kill Password =0x87654321, UL = 12 (0x0C) byte, EPC = 0xE2003411B802011526370494, Recom = 0x00**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	KP(MSB)	
7C	FF	FF	65	00	13	87	65
	KP(LSB)	UL(MSB)	UL(LSB)	EPC(MSB)			
43	21	00	0C	E2	00	34	11
							EPC(LSB)
B8	02	01	15	26	37	04	94
Recom	CHKSUM						
00	0xNN						

4.23.2. **Response**

RTD1: 65H

RTD2: 01H

INFO:

- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	65	01	01	00	0xNN

4.24. Lock Type C Tag

Lock an indicated memory bank in the tag.

4.24.1. **Command**

CID1: 82H

CID2: 00H

INFO:

- AP (32-bit): Access Password if memory bank was password protected. Otherwise, set AP filed to 0x00000000.

- UL (16-bit): Target tag's EPC length
- EPC (variable): Target tag's EPC
- LD (24-bit): Lock mask and action flags. Pad 4-bit zeros (dummy) to the left of 20-bit lock mask and associated action flags.

Example: **Access Password = 0x00000000,**
UL = 12(0x0C) byte,
EPC = 0xE2003411B802011526370494,
Lock mask and action flags = 0x080200 {Binary: 0000 (dummy) + 1000000000 (mask) + 1000000000 (lock data)}

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	AP(MSB)	
7C	FF	FF	65	00	13	00	00
	AP(LSB)	UL(MSB)	UL(LSB)	EPC(MSB)			
00	00	00	0C	E2	00	34	11
							EPC(LSB)
B8	02	01	15	26	37	04	94
LD(MSB)		LD(LSB)	CHKSUM				
08	02	00	0xNN				

4.24.2. **Response**

RTD1: 82H
RTD2: 01H
INFO:
- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	82	01	01	00	0xNN

4.25. Get RSSI

Get RSSI level.

4.25.1. **Command**

CID1: C5H
CID2: 00H
INFO:
- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	C5	00	00	0xNN

4.25.2. **Response**

RTD1: C5H
RTD2: 01H
INFO:

- RSSI (16-bit): RSSI level (-dBm x 10, decimal value)

Example: **RSSI = 900 (-90.0 dBm)**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	RSSI(MSB)	RSSI(LSB)
CC	FF	FF	C5	01	02	03	84
CHKSUM							
0xNN							

4.26. Get Temperature

Get current temperature.

4.26.1. **Command**

CID1: B7H

CID2: 00H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	B7	00	00	0xNN

4.26.2. **Response**

RTD1: B7H

RTD2: 01H

INFO:

- Temp (8-bit): Current temperature

Example: **24 ℃**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	B7	01	01	18	0xNN

4.27. Update Registry

Sets Registry Update function.

4.27.1. **Command**

CID1: D2H

CID2: 00H

INFO:

- Arg (8-bit): Store (0x01)

Example: **Store data info Registry**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	INFO	CHKSUM
7C	FF	FF	D2	00	01	01	0xNN

4.27.2. **Response**

RTD1: D2H

RTD2: 01H

INFO:

- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	D2	01	01	00	0xNN

4.28. Erase Registry

Sets Registry Erase function.

4.28.1. **Command**

CID1: D3H

CID2: 00H

INFO:

- Arg (8-bit): Erase (0xFF).

Example: **Erase Registry**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	INFO	CHKSUM
7C	FF	FF	D3	00	01	FF	0xNN

4.28.2. **Response**

RTD1: B7H

RTD2: 01H

INFO:

- Success (0x00)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	D3	01	01	00	0xNN

4.29. Get Registry Item

Gets Registry items.

4.29.1. **Command**

CID1: D4H

CID2: 00H

INFO:

- Registry Version (0x0000)
- Firmware Date (0x0001)
- Band (0x0002)
- Tx power (0x0003)
- FH/LBT (0x0004)
- Anti-collision Mode (0x0005)
- Modulation Mode (0x0006)

- Query(Q) (0x0007)
- Frequency Hopping Table (0x0008)
- Tx Power Table (0x0009).

Example: **Get Registry version**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	ADD(MSB)	ADD(LSB)
7C	FF	FF	D4	00	02	00	00
CHKSUM							
0xNN							

4.29.2. **Response**

RTD1: D4H

RTD2: 01H

INFO:

- Active (8-bit): Registry items status; Inactive (0x00), Read-Only (0xBC), Active (0xA5)
- Data (Variable)

Example: **Registry Version = 1**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	Active	Data
CC	FF	FF	D4	01	02	00	01
CHKSUM							
0xNN							

4.30. Command failure

Response to invalid command.

4.30.1. **Command**

RTD1: FFH

RTD2: 01H

INFO:

- Failure to read the tag memory (0x09)
- Failure to write data (0x10)
- ‘Read Type C Tag ID Multiple’ in Operation (0x0B)
- Not in mode ‘Read Type C Tag ID Multiple’ (0x0D)
- Invalid parameter (0x0E)
- Failure to kill a tag (0x12)
- Failure to lock a tag (0x13)
- Failure to read a tag (0x15)
- Not supported command (0x18)
- CRC Error (0xFF)

Example: **Invalid parameter**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	Error Code	CHKSUM
CC	FF	FF	FF	01	01	0E	0xNN

4.31. Get Custom Parameters

Get custom parameters.

4.31.1. **Command**

CID1: E1H

CID2: 32H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	E1	32	00	0xNN

4.31.2. **Response**

RTD1: E1H

RTD2: 00H

INFO:

- WM (8-bit): COMMAND (0x00), AUTO READ (0x01)
- OM (8-bit): COM_RS232 (0x00),COM_RS485 (0x01),COM_TCPIP (0x02),COM_SYRIS (0x03),COM_WG26 (0x04),COM_WG34 (0x05)
- 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)
- RC (8-bit): count of Read in every read interval time;
- RI (8-bit): read interval time;
- SI (8-bit): (AUTO READ MODE Effective) The same card ID send to Host in define time;
- BZ (8-bit): enable the buzzer;
- TGR (8-bit): enable the trigger;
- DAC (8-bit): not used;
- UD (32-bit): (AUTO READ MODE Effective) send the card other data to host; Include (EN, MB, SA, DL)
  - EN (8-bit): Disenabled (0x00) Enabled (0x01);
  - 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): enable pair; Disenabled (0x00) Enabled (0x01).
- FB (8-bit): enable the input feedback; Disenabled (0x00) Enabled (0x01) ;(Reference RTN2 in the basic format of protocols)
- PW (16-bit): Pair code, Default(0x0000);

Example: **Work Mode = AUTO READ (0x01),**

Out Mode = COM_WG26 (0x04),

Wiegand = Offset (0x02), Interval (0x1E), Width (0x0A), Period (0x0F),

Read Count = 0x01,

Read Interval = 10ms (0x0A),

Same id to Interval = 1s (0x01),

Buzzer = Enabled (0x01),

Trigger = Disenabled (0x00),

DAC = 32(0x20)

User Data Enabled = Disenabled (0x00),

User Data Target memory bank = TID(0X02),

User Data Start Address = 0x00,

User Data Length = 6 byte

Pair Enabled = Disenabled (0x00)

Feedback = Disenabled (0x00)

Pair Code = 0x0000

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	WM	OM
CC	FF	FF	E1	00	14	01	04
Offset	Interval	Width	Period	RC	RI	SI	BZ
02	1E	0A	0F	01	0A	01	01
TGR	DAC	EN	MB	SA	DL	PE	FB
00	20	00	02	00	06	00	00
PW(MSB)	PW(LSB)	CHKSUM					
00	00	0xNN					

4.32. Set Custom Parameters

Set custom parameters.

4.32.1. **Command**

CID1: E1H

CID2: 31H

INFO:

- WM (8-bit): COMMAND (0x00), AUTO READ (0x01)
- OM (8-bit): COM_RS232 (0x00),COM_RS485 (0x01),COM_TCPIP (0x02),COM_SYRIS (0x03),COM_WG26 (0x04),COM_WG34 (0x05)
- 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)
- RC (8-bit): count of Read in every read interval time;
- RI (8-bit): read interval time;
- SI (8-bit): (AUTO READ MODE Effective) The same card ID send to Host in define time;
- BZ (8-bit): enable the buzzer;
- TGR (8-bit): enable the trigger;

- DAC (8-bit): not used;
- UD (32-bit): (AUTO READ MODE Effective) send the card other data to host; Include (EN, MB, SA, DL)
  EN (8-bit): Disenabled (0x00) Enabled (0x01);
  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): enable pair; Disenabled (0x00) Enabled (0x01).
- FB (8-bit): enable the input feedback; Disenabled (0x00) Enabled (0x01) ;(Reference RTN2 in the basic format of protocols)
- PW (16-bit): Pair code, Default(0x0000);

Example: **Work Mode = AUTO READ (0x01),**
Out Mode = COM_WG26 (0x04),
Wiegand = Offset (0x02), Interval (0x1E), Width (0x0A), Period (0x0F),
Read Count = 0x01,
Read Interval = 10ms (0x0A),
Same id to Interval = 1s (0x01),
Buzzer = Enabled (0x01),
Trigger = Disenabled (0x00),
DAC = 32(0x20)
User Data Enabled = Disenabled (0x00),
User Data Target memory bank = TID (0X02),
User Data Start Address = 0x00,
User Data Length = 6 byte
Pair Enable = Disenabled (0x00)
Feedback = Disenabled (0x00)
Pair Code = 0x0000

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	WM	OM
7C	FF	FF	E1	31	14	01	04
Offset	Interval	Width	Period	RC	RI	SI	BZ
02	1E	0A	0F	01	0A	01	01
TGR	DAC	EN	MB	SA	DL	PE	FB
00	20	00	02	00	06	00	00
PW(MSB)	PW(LSB)	CHKSUM					
00	00	0xNN					

4.32.2. **Response**

RTD1: E1H
RTD2: 00H
INFO:
- Success (none)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	CHKSUM
CC	FF	FF	E1	00	00	0xNN

4.33. Get Custom Address

Get reader Address.

4.33.1. **Command**

CID1: E2H

CID2: 32H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	E2	32	00	0xNN

4.33.2. **Response**

RTD1: E2H

RTD2: 00H

INFO:

- ADDRESS (16-bit): Current Address

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

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	Addr(MSB)	Addr(LSB)
CC	FF	FF	E2	00	02	FE	FF
CHKSUM							
0xNN							

4.34. Set Custom Address

Set Reader Address.

4.34.1. **Command**

CID1: E2H

CID2: 31H

INFO:

- ADDRESS (16-bit): Current address

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

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	Addr(MSB)	Addr(MSB)
7C	FF	FF	E2	31	02	FF	FE
CHKSUM							
0xNN							

4.34.2. **Response**

RTD1: E2H

RTD2: 00H

INFO:

- Success (none)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	CHKSUM
CC	FF	FF	E2	00	00	0xNN

4.35. Get Custom Output (Auto read mode Effective) *

Get Custom Output. (Auto read mode and COM_RS232 Effective)

4.35.1. **Command**

CID1: E3H

CID2: 32H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	E3	32	00	0xNN

4.35.2. **Response**

RTD1: E3H

RTD2: 00H

INFO:

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	INFO	CHKSUM
CC	FF	FF	E3	00	01	18	0xNN

4.36. Set Custom Output (Auto read mode Effective) *

Set Custom Output. (Auto read mode and COM_RS232 Effective)

4.36.1. **Command**

CID1: E3H

CID2: 31H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	E3	31	00	0xNN

4.36.2. **Response**

RTD1: E3H

RTD2: 00H

INFO:

- Success (none)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	CHKSUM
CC	FF	FF	E3	00	00	0xNN

4.37. Get Custom IOOUT

Get custom IOOUT.

4.37.1. **Command**

CID1: E4H

CID2: 32H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHKSUM
7C	FF	FF	E4	32	00	0xNN

4.37.2. **Response**

RTD1: E4H

RTD2: 00H

INFO:

- IOT (8-bit): IO Out type.
  - **NON (0x00)** —Auto output, can be used to run signal.
  - **NO (0x01)**—Default NO, Command can set NC, delay overtime then recover NO;
  - **NC (0x02)** —Default NC, Command can set NO, delay overtime then recover NC;
  - **NO_READ (0x03)** —Default NO, Read tag succeed can set NC, delay overtime then recover NO;
  - **NC_READ (0x04)** —Default NC, Read tag succeed can set NO, delay overtime then recover NC;
- ID (8-bit): IO Out return to set value delay seconds;

Example: **IO Out type = NC(0x02),IO Out delay = 3s**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	IOT	ID
CC	FF	FF	E4	00	02	02	03

CHKSUM
0xNN

4.38. Set Custom IOOUT

Set custom IOOUT.

4.38.1. **Command**

CID1: E4H

CID2: 31H

INFO:

- IOT (8-bit): IO Out type.

  NON (0x00),

  NO (0x01),

  NC (0x02),

  NO_READ (0x03),

  NC_READ (0x04)

- ID (8-bit): IO Out return to set value delay seconds;

Example: **IO Out type = NC(0x02),IO Out delay = 3s;**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	IOT	ID
7C	FF	FF	E4	31	02	02	03
CHKSUM							
0xNN							

4.38.2. **Response**

RTD1: E4H

RTD2: 00H

INFO:

- Success (none)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	CHKSUM
CC	FF	FF	E4	00	00	0xNN

4.39. Remote Custom IO

Remote Custom IO.

4.39.1. **Command**

CID1: BBH

CID2: 31H

INFO:

- IN (8-bit): IO Number (0x01)
- IA (8-bit): IO Active, Open(0x01), Close(0x00),

Example: **IO Number = 1; IO Active = Open (0x01)**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	IN	IA
7C	FF	FF	BB	31	00	01	01
CHKSUM							
0xNN							

4.39.2. **Response**

RTD1: BBH

RTD2: 00H

INFO:

- Success (none)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTD1	RTD2	LENGTH	CHKSUM

CC	FF	FF	BB	00	00	0xNN

4.40. Get Define Limit Data

4.40.1. **Command**

CID1: E5H

CID2: 32H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHECKSUM
7C	FF	FF	E5	32	00	0xNN

4.40.2. **Response**

RTN1: E5H

RTN2: 00H

INFO:

- DATA(1)(24 -bit): Based on storage limit data.
- DATA(2)(24 -bit): Based on storage limit data.
- …
- DATA(N)(24 -bit): Based on storage limit data.

Example: 2 storage limit data**(0x01E240,0x01E241)**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	DATA(1)MSB	
CC	FF	FF	E5	00	06	01	E2
DATA(1)LSB	**DATA(2)MSB**		**DATA(2)LSB**	**CHECKSUM**			
40	01	E2	41	0xNN			

4.41. Set Define Limit Data

This command is append command, can't delete original data. The data count max 80;

4.41.1. **Command**

CID1: E5H

CID2: 31H

INFO:

- CT (8-bit): Limit data count ,max 80.
- DT(1)(24 -bit):Based on CT to confirm.
- DT(2)(24 -bit): Based on CT to confirm.
- …
- DT(N)(24 -bit): Based on CT to confirm.

Example: 2 storage limit data, the value(0x01E240,0x01E241);

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CT	DT(1)MSB
7C	FF	FF	E5	31	07	02	01
	DT(1)LSB	DT(2)MSB		DT(2)LSB	CHECKSUM		
E2	40	01	E2	41	0xNN		

4.41.2. **Response**

RTN1: E5H

RTN2: 00H

INFO:

- Success (none)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTN1	RTN2	LENGTH	CHECKSUM
CC	FF	FF	E5	00	00	0xNN

4.42. Get Serial Port Baud Rate

4.42.1. **Command**

CID1: E6H

CID2: 32H

INFO:

- None.

Example:

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	CHECKSUM
7C	FF	FF	E6	32	00	0xNN

4.42.2. **Response**

RTN1: E6H

RTN2: 00H

INFO:

- BT1 (8-bit): RS232 Serial Port Baud rate. (0~4). Default(0);
  - 0--115200 bit/s,
  - 1--57600 bit/s,
  - 2--38400 bit/s,
  - 3--9600 bit/s,
  - 4--1200 bit/s.
- BT2 (8-bit): RS485 Serial Port Baud Rate. (0~4). Default(2);
  - 0--115200 bit/s,
  - 1--57600 bit/s,
  - 2--38400 bit/s,
  - 3--9600 bit/s,
  - 4--1200 bit/s.
-

Example: **RS232 Baud Rate 115200bit/s, RS485 Baud Rate 38400bit/s**

HEAD	Addr(LSB)	Addr(MSB)	RTN1	RTN2	LENGTH	PORT1	PORT2
CC	FF	FF	E6	00	02	00	02

CHECKSUM
0xNN

4.43. Set Serial Port Baud Rate

This function is valid after reboot.

USB version of reader is not allowed to use the function;

4.43.1. **Command**

CID1: E6H

CID2: 31H

INFO:

- NUM (8-bit): Serial Port ,
  - 1-- RS232 Serial Port;
  - 2—RS485 Serial Port;
- BT (8-bit): Baud Rate, (0~4).
  - 0--115200 bit/s;
  - 1--57600 bit/s;
  - 2--38400 bit/s;
  - 3--9600 bit/s;
  - 4--1200 bit/s;

Example: **set RS232 baud rate to 115200 bit/s;**

HEAD	Addr(LSB)	Addr(MSB)	CID1	CID2	LENGTH	NUM	ID
7C	FF	FF	E6	31	02	01	00

CHECKSUM
0xNN

4.43.2. **Response**

RTN1: E6H

RTN2: 00H

INFO:

- Success (none)

Example: **Success**

HEAD	Addr(LSB)	Addr(MSB)	RTN1	RTN2	LENGTH	CHECKSUM
CC	FF	FF	E6	00	00	0xNN