

915MHz RFID Reader

New Communication Protocol Manual

version control

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1 Introduction

Communication protocol design description

The serial communication port adopts RS232/RS485; (support CANBUS/TCP/IP connection)

The information transmission mode is asynchronous, with 1 start bit, 8 data bits, 1 stop bit, and no checksum.

The data transfer rate is 9.6kb/s;

The communication method adopts the master-slave mode. The upper computer calls the lower computer and sends commands, and the lower computer returns a response message after receiving the command.

If the upper computer fails to receive the response from the lower computer within 1S or receives an error in the response information, it is considered that the communication process has failed.

Host computer: such as PC, or control equipment;

Lower computer: card reader;

Note: Communication data are all hexadecimal data transmission;

2. Information type and basic format of the protocol

2.1. Types of information

There are two types of information:

• Command information sent from the upper computer to the lower computer (referred to as command information);

• Response information returned from the lower computer to the upper computer (referred to as response information);

2.2. The basic format of the protocol

Table 2.2-1 Basic format of protocol

Serial number	1	byte count	2	3	4	5	6	7
1 format SOI		2	1	1	1	LENGTH		1
		ADR	CID1	CID2 LENGTH		INFO		CHKSUM

Note: The high bit of the address is followed by the low bit; such as 65534 (FFFEH), when the data is transmitted, it is (FEFFH);

Table 2.2-2 Basic Format Notes Serial Number

Symbol	Meaning	SOI Start Bit Flag (START OF INFORMATION)	Remark
1			Command (7CH) Response (CCH)
2		ADR device address description (1~65534, 0, 65535 reserved)	FFFFH
3		CID1 Control Identification Code (Data Type Description)	See 3 for details

4	CID2 command	information: control identification code (action type description) Response information: return code RTN (return code see Table 2-3)	
5	LENGTH INFO	byte length	
6	INFO command	information: control data information COMMAND INFO response information: response data information DATA INFO CHKSUM	
7	checksum code	see 2.3 for data format	

Table 2-3 The return code

Serial number	RTN value (HEX)	RTN means	Remark
1	00H	normal	
2	01H	error	

The data link layer specifies the types and data formats of command and response frames. The frame types are divided into command frames, response frames, and read and write commands to complete response frames.

2.3. Data format

2.3.1. CHKSUM data format

CHKSUM Description

The calculation of CHKSUM is to accumulate and sum the characters except CHKSUM according to the hexadecimal code value, and add 1 to the modulo 256 remainder of the obtained result. Example: The character sequence received or sent is: "CC 02 01 B1 22 04 BB 12 02 03 88". Then the last byte "88" is CHKSUM, and the calculation method is:

$$\begin{aligned}
 & \text{'CC' + '02' + '01' + ... + '22' + '04' + 'BB' + '12' + '02' + '03'} \\
 &= \text{CCH} + \text{02H} + \text{01H} + \dots + \text{22H} + \text{04H} + \text{BBH} + \text{12H} + \text{02H} + \text{03H} \\
 &= \text{0278H}
 \end{aligned}$$

The remainder of 0278H modulo 256 is 78H, and the inverse of 78H plus 1 is 88H.

CHKSUM calculation formula reference

```

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

See Table 3-1 and Table 3-2 for CID1, CID2 code allocation and classification table.

Table 3-1 Command Type Code Classification Table (CID1) Contents

serial number		CID1	Remark
1	ISO18000-6B identification	01H	
2	ISO18000-6B partition operation	02H	
3	ISO18000-6B lock	04H	
4	ISO18000-6B unlocked	05H	
5	ISO18000-6B destruction	06H	
6	EPC(GEN 2) single card identification	10H	
7	EPC(GEN 2) multi-card identification	11H	
8	EPC(GEN 2) partition operation	12H	
9	EPC(GEN 2) locked	14H	
10	EPC(GEN 2) Unlocked	15H	
11	EPC(GEN 2) Destruction	16H	
12	EPC(GEN 2) specifies the data partition operation in the EPC area 13	22h	
card reader basic parameters 14 card reader information 15 card reader soft restart		81H	
16 tag encryption 17 card reader CANBUS parameters 18 card reader TCPIP		82H	
parameters 19 card reader SYRIS parameters 20 card reader remote control		8FH	
		30H	
		B8H	
		B9H	
		BAH	
		BBH	

Table 3-2 Command Action Code Classification Table (CID2)

serial number	Content	CID2	Remark
1	Set Command Get	31H	
2	Command	32H	

4. Communication protocol

For the protocol codes used in this protocol, see Table 4-1.

Table 4-1 Contents of the protocol

serial number	code table	CID1	CID2 Remarks	
1	ISO18000-6B identification	01H	32H	
2	ISO18000-6B partition write operation	02H	31H	
3	ISO18000-6B partition read operation	02H	32H	

4	ISO18000-6B lockoutȳ	04H	31H	
5	ISO18000-6B unlockedȳ	05H	31H	
6	ISO18000-6B Destructionȳ	06H	31H	
7	EPC(GEN 2) single card identification	10H	32H	
8	EPC(GEN 2) multi-card identification	11H	32H	
9	EPC(GEN 2) partition write operation	12H	31H	
10	EPC(GEN 2) partition read operation	12H	32H	
11	EPC(GEN 2) Lockoutȳ	14H	31H	
12	EPC(GEN 2) Unlockȳ	15H	31H	
13	EPC(GEN 2) Destructionȳ	16H	31H	
14	EPC(GEN 2) Specify EPC area data partition write operation	22h	31H	
15	EPC(GEN 2) Specify EPC area data partition read operation	22h	32H	
16	Set card reader			
17	Get card reader basic parameters	81H	31H	
18	Set card reader			
19	Get card reader information	81H	32H	
20	Card reader soft reset			
21	communication address			
22	Set card reader CANBUS parameter	82H	31H	
23	Get card reader CANBUS			
24	Set card reader TCP/IP parameter	82H	32H	
25	Get card reader TCP/IP parameter			
26	Set card reader SYRIS parameter	8FH	31H	
27	Get card reader SYRIS parameter			
28	Remotely control card reader opening status	30H	31H	
		B8H	21H	
		B8H	22h	
		B9H	21H	
		B9H	22h	
		BAH	21H	
		BAH	22h	
		BBH	21H	
29				
30				
31				
32				

Note: The commands marked with ȳ are optional commands, and the card reader does not have this function at the moment. If it has this function, it should be executed according to this agreement. (Where ȳ appears in the following, the meaning is as above, and will not be described in detail below.)

4.1. ISO18000-6B identification

Table 4.1-1 Command information

Sequence number	1	2	3	4	5	6	7
Byte number	1	2	1	1	1	LENGTH	1
Format	7CH	ADR	01H	32H	LENGTH		CHKSUM

LENGTH = 00H

Table 4.1-2 Response information

serial number	1	2	3	4	5	6	7
---------------	---	---	---	---	---	---	---

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Bytes 1 Format CCH	2	1	1	1	LENGTH	1
	ADR	01H	RTN LENGTH	DATAINFO		CHKSUM

Note: The contents of DATAINFO are shown in Table 4.1-3, 4.1-4, LENGTH = 0DH;

Table 4.1-3 Card number information

serial number	Content	DATAINFO bytes
1	Antenna	1
2	Card Number	LENGTH-1

For example:

Antenna number: Antenna 1

card number: 01 02 03 04 05 06 07 08 09 0A 0B 0C DATAINFO as shown in Table 4.1-4:

Table 4.1-4 DATAINFO definition remark Antenna:

Serial number	content	1 byte
1	01H	Card number: LENGTH-1 bytes
2	01H	
3	02H	
4	03H	
5	04H	
6	05H	
7	06H	
8	07h	
9	08H	
10	09H	
11	0AH	
12	0BH	
13	0CH	

4.2. ISO18000-6B partition write operation

Table 4.2-1 Command information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format 7CH	ADR	02H	31H LENGTH	COMMAND INFO		CHKSUM

Note: LENGTH = LEN+2, COMMAND INFO consists of ADDRESS, DATALEN and DATAI.

Table 4.2-2 Partition operation parameter

serial number	content to be written data address to be written	Bytes
1	data length to be written data	1
2		1
3		DATES

Table 4.2-3 Parameter Description

Name	Byte Number	Reference Value and Definition
to be written data address to	to be written	start address bit 1 Data to be written length
be written data length		
Data to be written DATA LEN Data to be written		

Table 4.2-4 Response information

Sequence number	1	2	3	4	5	6	7
Byte number 1		2	1	1	1	LENGTH	1
Format CCH		ADR	02H	RTN LENGTH			CHKSUM

Note: LENGTH=00H

4.3. ISO18000-6B partition read operation

Table 4.3-1 Command information

Sequence number	1	2	3	4	5	6	7
Byte number 1		2	1	1	1	LENGTH	1
Format 7CH Note:		ADR	02H	32H LENGTH COMMAND INFO			CHKSUM

LENGTH = 02H, COMMAND INFO consists of ADDRESS and DATALEN.

Table 4.3-2 Response information

Sequence number	1	2	3	4	5	6	7
byte count 1 format CCH		2	1	1	1	LENGTH	1
		ADR	02H	RTN LENGTH DATAINFO			CHKSUM

LENGTH= DATA+1

Table 4.3-3 Data information

serial number	Content	DATAINFO bytes
1	Antenna	1
2	Data	DATES

For example: get address 18H, data length 4; receive antenna number 1; return data is 01 02 03 04 Command: 7C FF FF 02 32 02 18 04 34 Response: CC FF

FF 02 00 05 01 01 02 03 04 24

4.4. ISO18000-6B lockout

No such function

4.5. ISO18000-6B Unlock

No such function

4.6. ISO18000-6B destruction

No such function

4.7. EPC(GEN 2) single card recognition

Table 4.7-1 Command information

Sequence number	1	2	3	4	5	6	7
Bytes 1 Format 7CH Note:		2	1	1	1	LENGTH	1
LENGTH = 00H		ADR	10H	32H LENGTH			CHKSUM

Table 4.7-2 Response information

Sequence number	1	2	3	4	5	6	7
Byte number 1		2	1	1	1	LENGTH	1
Format CCH		ADR	10H	RTN LENGTH DATAINFO			CHKSUM

Note: The content of DATAINFO is shown in Table 4.7-3, 4.7-4, LENGTH = 0DH;

Table 4.7-3 Card number information

serial number	content Antenna card number	DATAINFO bytes
1		1
2		LENGTH-1

For example:

Antenna number: Antenna 1

card number: 01 02 03 04 05 06 07 08 09 0A 0B 0C DATAINFO as shown in Table 4.7-4:

Table 4.7-4 DATAINFO definition

Serial number	content	Remark
1	01H	antenna: 1 byte Card number: LENGTH-1 bytes
2	01H	
3	02H	
4	03H	
5	04H	
6	05H	
7	06H	
8	07H	
9	08H	
10	09H	
11	0AH	
12	0BH	
13	0CH	

4.8. EPC(GEN 2) multi-card recognition

Table 4.8-1 Command information

Sequence number	1	2	3	4	5	6	7
Byte number 1		2	1	1	1	LENGTH	1
Format 7CH Note:	LENGTH	ADR	11H	32H LENGTH			CHKSUM

= 00H

Table 4.8-2 Response information

Sequence number	1	2	3	4	5	6	7
byte count 1 format	CCH	2	1	1	2	LENGTH	1
		ADR	11H	RTN LENGTH DATAINFO			CHKSUM

Note: See Table 4.8-3 and 4.8-4 for the contents of DATAINFO, LENGTH is composed of DATALENGTH and CARDLENGTH; DATALENGTH=variable length; CARDLENGTH=0EH;

Table 4.8-3 Card number information

serial number	content Antenna card number verification	Bytes
1	code	1
2		CARDLENGTH - 2
2		1

For example: Reply to the first record of 2 card

number records: Antenna number: Antenna 1 card number:

01 02 03 04 05 06 07 08 09 0A 0B 0C Check code: B2H

The second record: Antenna number: Antenna 1 card number:

01 02 03 04 05 06 07 08 09 0A 0B 0D Check code: B1H

DATAINFO as shown in Table 4.1-4:

Table 4.8-4 DATAINFO definition

Serial number	content	Remark
1	01H	1st record antenna: 1 byte 1st record card number:
2	01H	CARDLENGTH - 2 bytes
3	02H	
4	03H	
5	04H	
6	05H	
7	06H	
8	07h	

9	08H	
10	09H	
11	0AH	
12	0BH	
13	0CH	
14	B2H	The first record check code: 1 byte The second record
15	01H	antenna: 1 byte
16	01H	Article 2 Record card number: CARDLENGTH - 2 bytes
17	02H	
18	03H	
19	04H	
20	05H	
21	06H	
22	07h	
23	08H	
24	09H	
25	0AH	
26	0BH	
27	0DH	
28	B1H	Check code of the second record: 1 byte

4.9. EPC(GEN 2) Partition Write Operation

Table 4.9-1 Command information

Sequence number	1	2	3	4	5	6	7
Byte number	1	2	1	1	1	LENGTH	1
Format	7CH	ADR	12H	31H	LENGTH COMMAND	INFO	CHKSUM

Note: LENGTH = DATALEN+3, COMMAND INFO consists of GROUP, ADDRESS, DATALEN and DATAI.

Table 4.9-2 Parameter content

serial number	Content to	DATAINFO bytes
1	be written Data partition address to be	1
2	written Data address to be written	1
3	Data length to be written Data	1
4		DATES

Table 4.9-3 Parameter Description

name	Byte Number Reference	Value and Definition Data
Data partition address to be written 1		Partition Reference Value to be Written: 0- Reserved area (read-only)

		1- EPC area (readable and writable) 2- TID area (read only) 3- USER area (readable and writable) 1 The
Address of data to be written	start address	bit of the data to be written 1 The length of
Data length to be written Data	the data to be written	(1 byte length means 2 bytes of data)
to be written DATA LEN Data to be written		

Table 4.9-4 Response information

Sequence number 1	2	3	4	5	6	7
byte count 1 format CCH	2	1	1	1	LENGTH	1
	ADR	12H	RTN LENGTH			CHKSUM

Note: LENGTH=00H

4.10.EPC(GEN 2) partition read operation

Table 4.10-1 Command information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format 7CH	ADR	12H	32H LENGTH COMMAND INFO			CHKSUM

Note: LENGTH = 03H, COMMAND INFO consists of GROUP, ADDRESS and DATALEN. Table 4.10-2 Response information

Sequence number 1	2	3	4	5	6	7
byte count 1 format CCH	2	1	1	1	LENGTH	1
	ADR	12H	RTN LENGTH DATAINFO			CHKSUM

Note: LENGTH=DATA+1

Table 4.10-3 Data information

serial number	Content	DATAINFO bytes
1	Antenna	1
2	Data	DATES

For example: Get the data of USER area, address 18H, data length 4; return antenna number 1; return data is 01 02 03

04

Command: 7C FF FF 12 32 03 03 18 02 22 Response: CC FF FF 12 00 05

01 01 02 03 04 14

4.11. EPC(GEN 2) Lock

No such function

4.12.EPC(GEN 2) Unlock

No such function

4.13. EPC(GEN 2) Destruction

No such function

4.14.EPC(GEN 2) Specifies the EPC area data partition write operation

Table 4.14-1 Command information

Sequence number	1	2	3	4	5	6	7
Byte number	1	2	1	1	1	LENGTH	1
Format	7CH	ADR	22h	31H LENGTH COMMAND INFO			CHKSUM

LENGTH = LEN+3COMMAND INFO APPOINT LENAPPOINT DATAIGROUPADDRESS

DATALEN and DATAI composition.

Table 4.14-2 Parameter content

serial number	Content	Bytes
1	specifies EPC area data length	1
2	specifies EPC area data to be	APPOINT LEN
3	written data partition address to be	1
4	written data address to be written	1
5	data length to be written data	1
6		DATES

Table 4.14-3 Parameter Description

Name	Byte Number Reference	Value and Definition Specified
specifies EPC area data length	1	EPC Area Data Length
specifies EPC area data	APPOINT LEN	Specifies the data in the EPC area to be written
Data partition address to be written	1	Data partition reference value: 0- Reserved area (read-only) 1- EPC area (readable and writable) 2- TID area (read only) 3- USER area (readable and writable) The
Data address to be written	1	start address of the data to be written is the
Length of data to be written	1	length of the data to be written (1 byte length means 2 bytes of data)
Data to be written	DATA LEN	Data to be written

Table 4.14-4 Response information

Sequence number 1	2	3	4	5	6	7
byte count 1 format CCH	2	1	1	1	LENGTH	1
	ADR	22h	RTN LENGTH			CHKSUM

Note: LENGTH=00H

4.15.EPC(GEN 2) Specifies the EPC area data partition read operation

Table 4.15-1 Command information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format 7CH	ADR	22h	32H LENGTH COMMAND	INFO		CHKSUM

Note: LENGTH = 03H, COMMAND INFO consists of APPOINT LEN, APPOINT DATAI, GROUP, ADDRESS and DATALEN.

Table 4.15-2 Response information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format CCH Note:	ADR	22h	RTN LENGTH DATAINFO			CHKSUM

LENGTH=DATALEN+1;

Table 4.3-3 Data information

serial number	content Antenna data	DATAINFO bytes
1		1
2		DATES

For example: specify the EPC data as 2 bytes and the card number is AA AA label, get its USER area, address 18H, data length 4; return data antenna number 1; return data

is 01 02 03 04 command: 7C FF FF 22 32 06 02 AA AA 03 18 02 B9 Response: CC FF FF 22 00 05 01 01 02 03 04 04

4.16. Set the basic parameters of the card reader

Table 4.16-1 Command information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format 7CH Note:	ADR	81H	31H LENGTH COMMAND	INFO		CHKSUM

LENGTH = 1CH

Table 4.16-2 Card reader parameters

serial number	content	DATAINFO bytes
1	parameter	28

Table 4.16-3 Parameter content Power

serial number	size
1	Frequency
2	hopping enable
3	Fixed frequency
4	value data offset
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	Wigand output cycle
16	Wigand pulse width
17	Wigand Pulse Cycle Antenna Set
18	Card Reader Category
19	Same ID Output Interval
20	Buzzer Partition Selection Start
21	Address Data Length
22	Whether to Encrypt
23	Password Maximum
24	Number of Card Readers
25	
26	
27	

Table 4.16-4 Parameter Description

name	Number of bytes	Reference value and definition Adjustable
power size	1	reader distance to read tags Default value: 30 Reference value: (decimal format) 0-30 Fixed frequency or frequency hopping mode can be set Default value: 1 Reference
frequency hopping enable	1	Value: (decimal format) 1- fixed frequency 2- hopping frequency default value: 110 (915MHz) reference value: (decimal format) 0-200 (860MHz~960MHz) default value: 84 (902MHz) reference
Fixed frequency value	1	value: (decimal format) 0-200(860MHz~960MHz) Default: 93(906.5MHz)
Hop value 1	1	
Hopping value 2	1	

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		Reference value: (decimal format) 0-200 (860MHz~960MHz) Default value: 102 (911MHz)
Hopping value 3	1	Reference value: (decimal format) 0-200 (860MHz~960MHz) Default value: 110 (915MHz) Reference value: (decimal format) 0-200 (860MHz~960MHz) Default value: 119 (919.5MHz)
Hop value 4	1	Reference value: (decimal format) 0-200 (860MHz~960MHz) Default value: 130 (925MHz) Reference value: (decimal format) 0-200(860MHz~960MHz) Response mode: the card reader
Hopping value 5	1	does not read the card, does not send data, the upper computer sends a command, the card reader reads the card and returns the data; active mode: the card reader reads the card, and
Hopping value 6	1	actively sends data; passive mode : The card reader reads the card, does not send data, the host computer issues a command, and the card reader returns data; Default value: 2 Reference
Operating mode	1	value: (decimal format) 1- Response mode 2- Active mode 3- Passive mode Default value: 10 (x1ms) Reference value: (decimal format) 5-255(x1ms) Default value: 0 Reference value: (decimal format) 0- off 2- active low Default value: 1 Reference value: (decimal format) 1- RS232 (General Agreement)
Card reading cycle	1	
trigger method	1	
communication method	1	2- RS485 (common protocol) 3- TCP/IP (common protocol) 4- CANBUS (common protocol) 5- Syris (dedicated protocol for access control parking lot) 6- Wiegand26 (special protocol for access control parking lot) 7- Wiegand34 (special protocol for access control parking lot) For details,
Wiegand parameter data offset	1	refer to the Wiegand protocol. Default value: 0 Reference value: (decimal format) 0-20 Refer to the Wiegand protocol for details. Default value: 30 (x10ms) Reference value: (decimal format) 0-255 (x10ms) Refer to the
Wiegand parameter output period	1	Wiegand protocol for details. Default value: 10 (x10us) Reference value: (decimal format) 0-255 (x10us)
Wiegand parameter pulse width	1	
Wiegand parameter pulse cycle 1	1	Refer to Wiegand protocol for details.

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Expect		Default value: 15 (x100us) Reference value: (decimal format) 0-255 (x100us) 1 byte data, the lower 4 bits represent 4 antennas, for example: Antenna
antenna settings	1	1: 01H (binary 0000 0001) Antenna 3: 04H (binary 0000 0100) Antenna 1+antenna 3: 05H (binary 0000 0101)
Card reader type	1	Default value: 16 Reference value: (decimal format) 1- ISO18000-6B single card 16- EPC(GEN 2) single card 17- EPC(GEN 2) + ISO18000-6B 32- EPC (GEN 2) Multicard 64- EPC(GEN 2) + other partitions Default value: 1 (x1s)
Same ID output interval	1	Reference value: (decimal format) 0-255 (x1s) Default value: 1 Reference value: (decimal format) 0 The buzzer does not sound when reading the
buzzer switch	1	card 1 The buzzer sounds when reading the card. When the card reading category is [EPC(GEN 2) + other partitions], this parameter is selected for other partitions; Default value: 1 Reference value: (decimal format)
partition selection	1	1- TID area (worldwide unique number area) 3- User area (user-defined data area) When the card reading type is
initial address	1	[EPC(GEN 2) + other partitions], this parameter is used to select the starting address for data acquisition of other partitions; default value: 0 reference value: (decimal format) 0-32 When the card reading type is [EPC(GEN 2) + other partitions], this parameter is used to select the data acquisition length of other partitions; Default value: 2 Reference value: (decimal format) 1-12 Enable encrypted reading of the card reader card; default value: 0 reference value: (decimal format) 0- general version,
Data length	1	no encryption; 1- card reader encryption; default value: 0000 reference value: (decimal format) 0000-9999 example: password 0123 (decimal) = 00H 7BH (hexadecimal) Default value: 32 Reference value: (decimal format) 10-64
Whether to encrypt	1	
password	2	
Maximum number of cards read	1	

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Table 4.3-5 Response information

Sequence number	Bytes	1	2	3	4	5	6	7
Format CCH Note: LENGTH			2	1	1	1	LENGTH	1
00H			ADR	81H	RTN LENGTH			CHKSUM

4.17. Obtain the basic parameters of the card reader

Table 4.17-1 Command information

Serial number 1 byte number	2	3	4	5	6	7
1 format 7CH	2	1	1	1	LENGTH	1
	ADR	81H	32H LENGTH			CHKSUM

Note: LENGTH = 00H

Table 4.17-2 Response information

Sequence number	byte	2	3	4	5	6	7
count 1 format CCH		2	1	1	1	LENGTH	1
		ADR	81H	RTN LENGTH	DATAINFO		CHKSUM

Note: See Table 4.16-3 and 4.16-4 for the contents of DATAINFO. LENGTH = 1CH; power: 30dbi; frequency hopping enable: enable fixed

For example:

frequency value: 110 (915MHz) frequency hopping value 1: 84 (902MHz) frequency hopping

value 2: 93 (906.5MHz) frequency hopping value 3: 102 (911MHz) Frequency hopping

value 4: 110 (915MHz) Frequency hopping value 5: 119 (919.5MHz) Frequency hopping

value 6: 130 (925MHz) Working mode: active sending card reading cycle: 10ms Trigger

mode: low level active Communication mode: RS232 Wiegand Data Offset: 0byte Wiegand

Output Period: 300ms Wiegand Pulse Width: 100us Wiegand Pulse Period: 1500us Antenna

Setting: Antenna 1+Antenna 2 Card Type: EPC (GEN 2) Multiple Cards with the same ID

Output Interval: 1s Buzzer Switch: ON Partition selection: TID area start address: 0

Data length: 8 Whether
to encrypt: No Password:
1234 Maximum number of
cards read: 32

DATAINFO as shown in Table 4.17-3:

Table 4.17-3 DATAINFO definition remark Power

Serial number	content	size: 1
1	1EH	byte Frequency hopping enable: 1
2	01H	byte Fixed frequency value: 1 byte
3	6EH	Frequency value 3: 1 byte
4	54h	Frequency hopping value 4: 1 byte
5	5DH	Frequency hopping value 5: 1 byte
6	66H	Frequency hopping value 6: 1 byte
7	6EH	Working mode: 1 byte Card reading
8	77h	cycle: 1 byte Trigger mode: 1 byte
9	82H	Communication mode: 1 byte
10	02H	
11	0AH	
12	02H	
13	01H	
14	00H	Wigand data offset: 1 byte
15	1EH	Wigand output cycle: 1 byte
16	0AH	Wigand pulse width: 1 byte
17	0FH	Wigand Pulse Period: 1 byte Antenna Setting: 1 byte
18	03H	Card Reader Type: 1 byte Same ID Output
19	10H	Interval: 1 byte Buzzer: 1 byte Partition
20	01H	Selection: 1 byte Start Address : 1 byte Data length:
21	01H	1 byte Whether to encrypt: 1 byte
22	01H	
23	00H	
24	08H	
25	00H	
26	04H	Password: 2 bytes
27	D2H	
28	20H	The maximum number of cards read: 1 byte

4.18. Set the communication address of the card reader

Table 4.24-1 Command information

Sequence number	1	2	3	4	5	6	7
Byte number	1	2	1	1	1	LENGTH	1

915MHz communication protocol

Format 7CH FFFFH	Note: LENGTH = 2H	82H	21H LENGTH	COMMAND INFO		CHKSUM
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Table 4.24-2 Contents of setting parameter type table

serial number		Bytes
1	Address to be set	2

Note: The high bit of the address comes after the low bit; such as 65534 (FFFEH), when the data is transmitted, it is (FEFFH);

Table 4.24-2 Response information

Sequence number	Bytes 1	2	3	4	5	6	7
Format CCH FFFFH		2	1	1	1	LENGTH	1
			82H	RTN LENGTH			CHKSUM

Note: LENGTH=00H

4.19. Get card reader information

Table 4.25-1 Command information

Sequence number	Byte	2	3	4	5	6	7
number 1		2	1	1	1	LENGTH	1
Format 7CH		ADR	82H	32H LENGTH			CHKSUM

Note: LENGTH = 00H

Table 4.25-2 Response information

Sequence number	Byte	2	3	4	5	6	7
number 1		2	1	1	1	LENGTH	1
Format CCH Note:	See Table	ADR	82H	RTN LENGTH	DATAINFO		CHKSUM

4.25-3 for the contents of DATAINFO. LENGTH=22H.

Table 4.25-3 Card Reader Information Content

serial number	Reserved Fields Card Reader Type Card Reader	DATAINFO bytes
1	Software Version Card Reader Address	16
2		3
3		5
4		10

Note: The card reader information is ASCII code characters;

4.20. Card reader soft restart

Table 4.26-1 Command information

Sequence number	Byte	2	3	4	5	6	7
number 1		2	1	1	1	LENGTH	1

Format 7CH Note:	ADR	8FH	31H LENGTH		CHKSUM
------------------	-----	-----	------------	--	--------

LENGTH = 00H

Table 4.26-2 Response information

Sequence number 1	2	3	4	5	6	7
Byte number 1 Format	2	1	1	1	LENGTH	1
CCH Note: LENGTH =	ADR	8FH	RTN LENGTH		CHKSUM	

00H.

4.21. Tag encryption

Table 4.27-1 Command information

Serial number 1 byte	2	3	4	5	6	7
number 1 format 7CH	2	1	1	1	LENGTH	1
	ADR	30H	31H LENGTH		CHKSUM	

Note: LENGTH = 00H

Table 4.27-2 Response information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format CCH	ADR	30H	RTN LENGTH		CHKSUM	

Note: LENGTH = 00H.

4.22. Set card reader CANBUS parameters

Table 4.18-1 Command information

Serial number 1 byte	2	3	4	5	6	7
number 1 format 7CH	2	1	1	1	LENGTH	1
	ADR	B8H	21H LENGTH COMMAND	INFO	CHKSUM	

LENGTH = 0AH

Table 4.18-2 Card reader CANBUS parameter content

serial number	parameters	DATAINFO bytes
1		12

Table 4.8-3 Parameter content

serial number	Contents
1	Remote ID
2	Local ID

3	Mask
---	------

Table 4.18-4 Parameter description

name	byte number	reference value and definition
Remote ID	4	The high bit comes after the low bit; if ID = 1, it means 00 00 00 01H Default value: 1 Reference value: (decimal format) 1-31 The high bit comes after, the low bit comes first; if ID = 33, it means 00 00 00 21H Time default value: 33 Reference value: (decimal format) 0-255 can not be set
Local ID	4	temporarily, keep the default value: FFFFFFFFH
Mask*	4	

Table 4.8-5 Response information

Sequence number 1	2	3	4	5	6	7
Bytes 1 Format CCH	2	1	1	1	LENGTH	1
Note: LENGTH=00H	ADR	B8H	RTN LENGTH			CHKSUM

4.23. Get card reader CANBUS parameters

Table 4.19-1 Command information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format 7CH Note:	ADR	B8H	22H LENGTH			CHKSUM

LENGTH = 00H

Table 4.19-2 Response information

Sequence number 1	2	3	4	5	6	7
byte count 1 format CCH	2	1	1	1	LENGTH	1
	ADR	B8H	RTN LENGTH DATAINFO			CHKSUM

Note: See Table 4.18-3 and 4.18-4 for the contents of DATAINFO. LENGTH = 0CH;

For example: Remote ID:1;

Local ID: 33; Mask:

None; DATAINFO as

shown in Table 4.19-3:

Table 4.19-3 DATAINFO definition

Serial number	content	Note
1	01H	Remote ID: 4 bytes
2	00H	
3	00H	

4	00H	Local ID: 4 bytes
5	21H	
6	00H	
7	00H	
8	00H	
9	FFH	mask: 4 bytes (default)
10	FFH	
11	FFH	
12	FFH	

4.24. Set card reader TCPIP parameters

Table 4.20-1 Command information

No. 1	Bytes 1	Format	2	3	4	5	6	7
7CH	ADR	B9H	21H				LENGTH	1
						LENGTH	COMMAND INFO	CHKSUM

Note: LENGTH = 14H

Table 4.20-2 Card reader TCPIP parameter content

serial number	parameters	DATAINFO bytes
1		20

Table 4.20-3 Parameter content content

serial number	
1	IP Address
2	Subnet Mask
3	Default Gateway
4	IP Port
5	MAC Address

Table 4.20-4 Parameter Description

name	Byte Number	Reference Value and Definition IP =
IP Address	4	192.168.10.100 Expressed as C0 A8 0A 64H Reference value: (decimal format) 192.168.10.100 Subnet mask is used to shield part of IP address to distinguish
SubNet Mask	4	network identification and host ID, and indicate whether the IP address is on a local area network or a remote network. SubNet Mask = 255.255.255.0 is expressed as FF FF FF 00H Reference value: (decimal format) 255.255.255.0 Gateway = 192.168.10.1 is expressed as C0 A8 0A 01H Reference value: (decimal
Default Gateway	4	format) 192.168.10.1 IP Port = 49152; 00 C0H (high and low set)
IP Port	2	

		Reference value: (decimal format) 49152
MAC Address	6	MAC = 5E-45-A2-6C-30-1E expressed as 5E 45 A2 6C 30 1EH Reference value: 5E-45-A2-6C-30-1E

Table 4.20-5 Response information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format CCH Note:	ADR	B9H	RTN LENGTH			CHKSUM

LENGTH:00H

4.25. Get card reader TCPIP parameters

Table 4.21-1 Command information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format 7CH	ADR	B9H	22H LENGTH			CHKSUM

Note: LENGTH = 00H

Table 4.11-2 Response information

Sequence number 1	2	3	4	5	6	7
byte count 1 format CCH	2	1	1	1	LENGTH	1
	ADR	B9H	RTN LENGTH DATAINFO			CHKSUM

Note: See Table 4.20-3 and 4.20-4 for the contents of DATAINFO. LENGTH = 14H;

For example:

IP:192.168.10.100;

MASK:255.255.255.0;

GATEWAY:192.168.10.1;

PORT:49152;

MAC: 5E-45-A2-6C-30-1E;

DATAINFO as shown in Table 4.21-3:

Table 4.21-3 DATAINFO definition

Serial number	content	Remark
1	C0H	IP: 4 bytes
2	A8H	
3	0AH	
4	64H	
5	FFH	MASK: 4 bytes
6	FFH	
7	FFH	
8	00H	
9	C0H	GATEWAY: 4 bytes
10	A8H	
11	0AH	
12	01H	

13	00H	PORT: 2 bytes
14	C0H	
15	5EH	MAC: 5 bytes
16	45H	
17	A2H	
18	6CH	
19	30H	
20	1EH	

4.26. Set card reader SYRIS parameters

Table 4.22-1 Command information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format 7CH Note:	ADR	BAH	21H LENGTH COMMAND	INFO		CHKSUM

LENGTH = 0AH

Table 4.22-2 Card reader SYRIS parameters

serial number	content	DATAINFO bytes
1	parameter	19

Table 4.22-3 Parameter content

serial number	content
1	SYRIS SN
2	SYRIAN ID
3	Reserved

Table 4.22-4 Parameter description

name	byte number reference	value and definition ASCII code
SYRIS SN	8	character to hexadecimal;; such as SN = 11010389 expressed as 31 31 30 31 30 33 38 39H Default value: 31 31 30 30 30 30 30 31H Reference value: (decimal format) 11000001
SYRIAN ID	1	Convert ASCII code characters to hexadecimal; if ID = 1, it means 31H Default value: 31H Reference value: (decimal format) 1-8
Reserved	10 Cannot be	set temporarily, reserved

Table 4.22-5 Response information

Sequence number 1	2	3	4	5	6	7
Byte number 1	2	1	1	1	LENGTH	1
Format CCH	ADR	BAH	RTN LENGTH			CHKSUM

Note: LENGTH=00H

4.27. Get SYRIS parameters of the card reader

Table 4.23-1 Command information

Sequence number	1	2	3	4	5	6	7
Byte number	1	2	1	1	1	LENGTH	1
Format 7CH Note:		ADR	BAH	22H LENGTH			CHKSUM

LENGTH = 00H

Table 4.23-2 Response information

Sequence number	1	2	3	4	5	6	7
byte count 1 format CCH		2	1	1	1	LENGTH	1
		ADR	B8H	RTN LENGTH DATAINFO			CHKSUM

Note: See Table 4.23-3 and 4.23-4 for the contents of DATAINFO. LENGTH = 13H;

For example:

SYRIA SN:11010389;

SYRIS ID: 1; Reserved

fields: None;

DATAINFO is shown in Table 4.23-3:

Table 4.23-3 DATAINFO definition

Serial number	content	Remark
1	31H	SYRIS SN: 8 bytes
2	31H	
3	30H	
4	31H	
5	30H	
6	33h	
7	38h	
8	39h	
9	31H	SYRIS ID: 1 byte
10	00H	Reserved words: 10 bytes (default)
11	00H	
12	00H	
13	00H	
14	00H	
15	00H	
16	00H	
17	00H	
18	00H	
19	00H	

4.28. Remotely control card reader opening state

Table 4.28-1 Command information

Serial number	byte	2	3	4	5	6	7
number 1 format	CH	2	1	1	1	LENGTH	1
		ADR	BBH	21H LENGTH COMMAND	INFO		CHKSUM

Note: LENGTH = 2H

Table 4.28-2 Contents of setting parameter type table

serial number		Bytes
1	Exit position Exit	1
2	status	1

Table 4.28-3 Parameter Description

name	Byte Number	Reference Value and Definition
open position	1	Value: 1 – Relay 1 2 – Relay 2 Reference Value: 0 – Off 1 – On
out status	1	

Table 4.28-4 Response information

Sequence number	1	2	3	4	5	6	7
Byte number 1		2	1	1	1	LENGTH	1
Format CCH Note:		ADR	BBH	RTN LENGTH			CHKSUM

LENGTH=00H