Communication Protocol

Reader communication protocol

Suitable for all read passive tag readers

Data： 2019-03-01

Version： 4.2

1. Communication format introduction

1.1.Command format definition

Data flow direction: PC---- reader.。

The command frame is the data of the host operation reader, and the format is as shown in the following table.：

Packet Type	Length	Command Code	Device Number	Command Data	…	Command Data	Command Data	Checksum
0xA0	n+3	1 byte	1 byte	Byte 1		Byte n-1	Byte n	cc

- Packet Type is the packet type field, and the command frame packet type is fixed to 0xA0.
- Length is the packet length field, indicating the number of bytes in the frame after the Length field.
- Command Code is the command code field
- Device Number is the device number field. When the usercode of the device number is 00, it means group sending.
- Command Data is the parameter field in the command frame.
- Checksum is a checksum field that specifies the checksum of all bytes from the packet type field to the last byte of the parameter field. After the reader receives the command frame, it needs to calculate the checksum to check the error.

1.2. Reader command completion response frame format definition

Data flow direction: reader -PC。

The reader command completion response frame is a fixed-length data frame whose format is as shown in the following table.

:

Packet Type	Length	Command Code	Device Number	Status	Checksum
0xE4	0x04	1 byte	1 byte	1 Byte	cc

☆Packet Type is the packet type field, and the command frame packet type is fixed to 0xE4.

☆Length is the packet length field, indicating the number of bytes in the frame after the Length field, fixed to 0x04

☆Command Code is the command code field.

☆ Device Number is the device number field. When the usercode of the device number is 00, it indicates group sending.

☆ Status is the status field. The status field indicates the result of the reader after the completion of the PC command or the execution of the command. The rules are as follows:

☆Checksum is a checksum field that specifies the checksum of all bytes from the packet type field to the last byte of the parameter field. After the reader receives the command frame, it needs to calculate the checksum to check the error.

Serial No	ID	Name	Description
1	0x00	ERR_NONE	Command completed successfully

2	**0x02**	**CRC_ERROR**	**CRC check error**
3	**0x10**	**COMMAND_ERROR**	**Illegal order**
4	**0x01**	**OTHER_ERROR**	**Other errors**

1.3.Information frame format definition sent by the reader

Data flow direction: reader -----host。

An information frame is a data frame that is returned to the host. For example, it is used to send a label to the host. The frame format is defined as shown in the following table.：

Packet Type	**Length**	**Response Code**	**Device Number**	**Response Data**	**…**	**Response Data**	**Response Data**	**Checksum**
0xE0	**n+3**	**1 byte**	**1 byte**	**Byte 1**		**Byte n-1**	**Byte n**	**cc**

☆ Packet Type is the packet type field, and the response frame packet type is fixed to 0xE0.

☆Length is the packet length field, indicating the number of bytes in the frame after the Length field.

☆Response Code is the information code field, and the value indicates the type of information.

☆Device Number is the device number field. When the usercode of the device number is 00, it indicates group sending.

☆Response Data is the parameter field in the information frame.

☆ Checksum is a checksum field that specifies the checksum of all bytes from the packet type field to the last byte of the parameter field. After receiving the command frame, the PC needs to calculate the checksum to check the error.

2. Communication frame details

2.1.EPC Tag Identification

The host send ：

answer	**Data length**	**command**	**Device No**	**Checksum**
Data0	**Data1**	**Data2**	**Data3**	**Data5**
A0	**03**	**82**	**usercode**	**Checksum**

Host sends a command： A0 03 82 00 DB

Identification failure：（E4 04 82）头，（00 ）usercode （05）Status ，（ 91）Checksum

Recognition success：（E0 10 82）头，（00 ） usercode ，（01）Antenna number （12 34 00 00 00 00 00 00 00 00 10）ID，（37）Checksum

2.2. EPC Tag Reading

The Host send：

Answer	Data length	Comme nd	Device No.	Memory location	Address	Read length (word)	Checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7
A0	06	80	usercode	MemBank	addr	Length	Checksum

Host sends a command: A0 06 80 00 01 02 01 D6; Reads 1 word of data from the 0x02 address. Note: 1 word = two BYTEMemBank：

00_2 Reserved

01_2 EPC

10_2 TID

11_2 User

Read failed to return：E4 04 80 （00）usercode （05）Status ，（ 93）Checksum

Read successfully from the machine back：E0 08 80 （00）usercode 01 02 01 12 34 4E

E0 Read successful data frame header

08 Data length

80 Tag read command

usercode Device No

01 Membank Type

02 Address, 01 read length

12 34 Data read

4E Checksum

2.3. EPC Tag single byte write

The host send：

Answer	Data length	Comme nd	Device No	Write way	Byte position	address	Write length （Word）	Write data	Write Data	Checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7	Data8	Data9	Datan
A0	09	81	usercode	WriteMode	Mem -Bank	addr	01	D1	D2	Checksum

Host sends a command： A0 09 81 00 00 01 02 01 12 34 8C

Write failure back：（E0 04 81） （00） usercode （05） Status （96）Checksum

Write successfully back：（E0 04 81） （00） usercode （00） Status （9B）Checksum

Mark：1word=2BYTE

MemBank：

00_2 Reserved

01_2 EPC

10_2 TID

11_2 User

WriteMode:

00 Single word write

Status = 00：write succesfully；

Status = Other values: write failed；

Addr Description: The EPC area is valid from 0x02 – 0x07;；

2.4. EPC Tag multiple word writes

Answer	Data length	Command	Device No	Write way	Memeory Position	Address	Write length (word)	Wite data	Write data	checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7	Data8	Datan-1	Datan
A0	07+ (Length* 2)	81	usercode	Write Mode	MemBank	addr	Length	D1	D（Length）	Checksum

Host sends a command：A0 0B 81 00 01 01 02 02 55 55 AA AA D0

Write failure back：E0 04 81 （00）usercode （05）Status （96）Checksum

Write successfully back：E0 04 81 （00）usercode （00）Status （9B）Checksum

Status = 00：Successfully written

Status = Other values: write failed

Note: when reserved, addr >=0, addr+Length<=4, otherwise the parameter is wrong.

Note: when the EPC area is addr+Length <=8, and ADDR>=2, otherwise the parameter is wrong.

Note: The TID area is not writable and can only be read.

Note: The data area is written up to 8 words at a time according to the actual card situation;

note：1word=2BYTE；

MemBank：

00_2 Reserved

01_2 EPC

10_2 TID

11_2 User

WriteMode:

01 qickly write tag

Note: Most tags are not supported。

2.5. Tag locked

Answer	Data length	commemd	Device No	Password1	Password2	Password3	Password4	LOCK type	checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7	Data8	Data9
A0	08	A5	usercode	MM1	MM2	MM3	MM4	LOCK Type	Checksum

LOCK Type Description:

00：LOCK USER

01：LOCK TID

02：LOCK EPC

03：LOCK ACCESS

04：LOCK KILL

05：LOCK ALL

others： unlock

If the access password is 12345678, the EPC area is locked and the device address is 00.

Then send the command: A0 08 A5 00 12 34 56 78 02 9D

Slave back: E4 04 A5 (00)usercode (00)Status (73)Checksum

Status = 00: The write was successful;

Status = other value: write failed;

2.6. Tag unlock

Answer	Data length	command	Device No	Password 1	Password2	password3	Password 4	UNLOCK type	checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7	Data8	Data9
A0	08	A6	usercode	MM1	MM2	MM3	MM4	UNLOCK Type	Checksum

UNLOCK Type description：

00：UNLOCK USER

01：UNLOCK TID

02：UNLOCK EPC

03：UNLOCK ACCESS

04：UNLOCK KILL

05：UNLOCK ALL

Other values: Do not unlock

If the access password is 12345678, unlock the EPC area.

Send command: A0 08 A6 00 12 34 56 78 02 9C

Slave back: E4 04 A6 (00) usercode (00) Status (72)Checksum

Status = 00: The write was successful;

Status = other value: write failed;

(1) EPC Tag KILL

Answer	Data length	command	Device No	RFU	Password 1	Password 2	Password 3	Password 4	checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7	Data8	Data9
A0	08	86	usercode	00	MM1	MM2	MM3	MM4	Checksum

The host sends a command: A0 08 86 00 00 12 34 56 78 BE

Slave back: E4 04 86 (00) usercode (00) Status (92) Checksum

Status = 00: Write succeeded

Status = Other value: Write failed

(2)Initialize the EPC tag CODE

Answer	Data length	command	Device No	Checksum
Data0	Data1	Data2	Data3	Data4
A0	03	99	usercode	Checksum

The host sends the command: A0 03 99 00 C4
Slave back: E4 04 99 usercode Status Checksum
Status = 00: The write was successful;
Status = other value: write failed;

(3) Read the read head software version number CODE

Answer	Data length	command	Device No	checksum
Data0	Data1	Data2	Data3	Data4
A0	03	6A	usercode	Checksum

The host sends a command: A0 03 6A 00 F3
Slave back: (E0 05 6A) header, (00) usercode (05 56) version number, (56) Checksum\

(4) Reset reader command frame CODE

Packet Type	Length	Command Code	Device Number	Checksum
A0	03	65	00	Checksum

After receiving the command frame, the reader returns the command completion frame and then the reader resets.
The host sends a command: A0 03 65 00 F8

Back from host ： E4 04 65 usercode Status Checksum
Status =00 Success
Status = other value: failed;

(5) Stop reading tag CODE

answer	Data length	command	Device No	checksum
Data0	Data1	Data2	Data3	Data4
A0	03	A8	usercode	Checksum

The host sends the command: A0 03 A8 00 B5
Slave back: E0 04 A8 usercode Status Checksum
Status =00 Success
Status = other value: failed;
Note: The operation of the EPC tag is in "word"; the ISO18000-6B tag

is in "bytes".。

(6) Re-identify tag CODE (valid in multi-label mode)

answer	Data length	command	Device	Checksum
Data0	Data1	Data2	Data3	Data4
A0	03	FC	usercode	Checksum

The host sends the command: A0 03 FC 00 61
Slave back: E0 04 FC usercode Status Checksum
Status =00 Success
Status = other value: failed;

(7) Reacquire data CODE (valid in multi-label mode)

answer	Data length	command	Device	checksum
Data0	Data1	Data2	Data3	Data4
A0	03	FF	usercode	Checksum

The host sends the command: A0 03 FF 00 5E
Successful return: E0 04 FF 00 02 1B 00 00 12 34 AA AA 00 00 00 00 55 55 AA AA 01 67 FF 00 00 E2 00 05 11 11 18 02 73 00 00 02 9C 01 CB FF
Where: 12 34 AA AA 00 00 00 00 55 55 AA AA, E2 00 05 11 11 18 02 73 00 00 02 9C is the ID number

(8) Fast write label command

Answer	Data length	command	Device No	Write length （word）	Write data	Write data	Write data	Write data	checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7	Data(4+2* WordLength)	Data(5+2* WordLength)
A0	4+ 2*Word Length	9C	usercode	Word Length	D1	D2	D3	D(leng*2)	Checksum

For example: write 2 words (1234 5678) in the address EPC area address 4, 5:

A0 08 9C 00 02 12 34 56 78 A6

Return from the machine:

E0 04 9C usercode Status Checksum

Status =00 Success

Status = other value: write failed;;

(9) Get data (valid in multi-label mode)

answer	Data length	command	Device No	checksum
Data0	Data1	Data2	Data3	Data4

A0	03	A6	usercode	Checksum

The host sends the command master: A0 03 A6 00 B7

Slave back: E0 04 A6 (00) usercode (01)TagCount (71)checksum

TagCount: The total number of tag data, if not, the tag data is: 0;

The tag data is then uploaded.

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(10) Specify the EPC number to read the TID area

Answer	Data length	Command	Device No	EPC ID			checksum
Data0	Data1	Data2	Data3	Data4	...	Data15	Data16
A0	0F	AA	usercode	00	...	72	D7

D4...D15 are 00 02 25 56 52 65 85 74 12 36 65 72, which are the specified EPC ID numbers, a total of 12 bytes.

The host sends a command: A0 0F AA 00 00 02 25 56 52 65 85 74 12 36 65 72 5B

Read successful back: E0 0C AA 00 00 01 3B F4 00 01 26 74 92 0D

E2 00 34 12 01 36 F4 00 is the TID area of the specified EPC number, a total of 8 bytes

Read failed slave return: E4 04 AA usercode Status Checksum (eg E4 04 AA 00 05 69)

(11)Multiple word write tags

a0 XX AB ReaderAddr memtype startaddr wordlength d0 d1 d2 d3 d4 d5 d6 d7 checksum

Answer	Data length	command	Device No	Memory position	ADD	Write length （word）	Write data	Write data	checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7	Datan-1	Datan
A0	06+ (WordLength* 2)	AB	usercode	MemBank	addr	WordLength	D1	D（2*WordLength）	Checksum

The host sends a command: A0 0E AB 00 03 00 04 11 11 22 22 33 33 44 44 4C

Write failure back: E0 04 AB (00)usercode (05)Status (17)Checksum

Write successful back: E0 04 AB (00)usercode (00)Status (1C)Checksum

Status = 00: Write succeeded

Status = Other value: Write failed

Note: when reserved, addr >=0, addr+Length<=4, otherwise the parameter is wrong.

Note: when the EPC area is addr+Length <=8, and ADDR>=2, otherwise the parameter is wrong.

Note: The TID area is not writable and can only be read.

Note: The data area is written up to 8 words at a time according to the actual card situation;

Note: 1 word = two BYTE;

Mem Bank：

00_2 Reserved

01_2 EPC

10_2 TID

11_2 User

(12) BUZZER Control

answer	Data length	command	Device No	Buzzer control	checksum
Data0	Data1	Data2	Data3	Data4	Data5
A0	04	B0	usercode	BuzzerCtrl	Checksum

BuzzerCtrl=0: Turn off the BEEP sound when reading the card;

BuzzerCtrl=1: Open the BEEP sound when reading the card;

BuzzerCtrl>=2: Sound a single BEEP sound;

The host sends a command: A0 04 B0 00 00 AC;

Slave back: E0 04 B0 (00)usercode 00 68

E4 reader command completion response frame header

04 data length

B0 controls the BUZZER command

00usercode device number

00 status, 00 is control success

68 Checksum

(13) Relay control

Answer	Data Length	command	Device	Buzzer Control	checksum
Data0	Data1	Data2	Data3	Data4	Data5
A0	04	B1	usercode	RelayOnOff	Checksum

RelayOnOff =0: Turn off the relay;

RelayOnOff =1: Open the relay;

The host sends a command: A0 04 B1 00 00 AB;

Slave back: E0 04 B1 (00) usercode 00 67

E4 reader command completion response frame header

04 data length

B1 control relay command

00 sercode device number

00 status, 00 is control success

67 Checksum

Example:

Relay open command: A0 04 B1 00 01 AA

Relay off command: A0 04 B1 00 00 AB

(14) Query trigger status command:：

answer	Data length	Device No	checksum
Data0	Data1	Data3	Data4
A0	03	usercode	Checksum

The host sends a command: A0 03 B2 00 AB;

Slave back: E0 04 B2 (00) usercode 00 66

E4 reader command completion response frame header

04 data length

B2 query trigger command

00 Usercode device number

00 status, 00 is no trigger, 01 is triggered.

66 Checksum

(15) Set baud rate command

Answer	Data length	Device	Baud rate parameter	checksum
Data0	Data1	Data3	Data4	Data5
A0	04	usercode	SelectBaud	Checksum

Set the baud rate command to A9

The SelectBaud parameter is:

00 9600

01 19200

02 38400

03 57600

04 115200

Send command a0 04 a9 00 04 af set to 115200

Set the correct response to: E4 04 A9 00 00 6F

Send command a0 04 a9 00 00 b3 set to 9600 command

Set the correct response to: E4 04 A9 00 00 6F

Note: After the send baud rate setting command is correct, the current baud rate will be responded to this reception, but the next time it will communicate with the new baud rate;

(16) Specify antenna EPC multiple word write

Answer	Data length	command	Device No	Write way	Memory position	ADD	Write length （word）	Write data	Write data	Antenna No	checksum
Data0	Data1	Data2	Data3	Data4	Data5	Data6	Data7	Data8	Datan-2	Datan-1	Datan
A0	08+ (Length* 2)	8C	usercode	Write Mode	MemBank	addr	Length	D1	D（Length）	Ant	Checksum

The host sends a command: A0 0C 81 00 01 01 02 02 55 55 AA AA 01 CE

Write failure back: E0 04 8C (00)usercode (05)Status (8B)Checksum

Write successful back: E0 04 8C (00)usercode (00)Status (90)Checksum

Status = 00: Write succeeded

Status = Other value: Write failed

Note: when reserved, addr >=0, addr+Length<=4, otherwise the parameter is wrong.

Note: The addr+Length does not exceed 31 in the EPC area.

Note: The TID area is not writable and can only be read.

Note: The data area is written up to 8 words at a time according to the actual card situation;

Note: 1 word = two BYTE;

MemBank：

00_2 Reserved

01_2 EPC

10_2 TID

11_2 User

WriteMode:

01 quick write tag

Note: Most tags are not supported.

(17) Specified antenna EPC tag reading

Host sending：

Answer	**Data length**	**Command**	**Device NO**	**Memeory position**	**ADD**	**Reading length （word）**	**Antenn No**	**checksum**
Data0	**Data1**	**Data2**	**Data3**	**Data4**	**Data5**	**Data6**	**Data7**	**Data8**
A0	**07**	**8b**	**usercode**	**MemBank**	**addr**	**Length**	**Ant**	**Checksum**

The host sends a command: A0 07 8b 00 01 02 01 01 C9; Reads the data of 1 word from the 0x02 address. Note: 1 word = two BYTE

MemBank:

002 Reserved reserved area

012 EPC EPC

102 TID TID

112 User User Area

Read failed slave back: E4 04 8B (00) usercode (05) Status, (88) Checksum

Read successfully slave back: E0 08 8B (00)usercode 01 02 01 12 34 43

E0 read successful data frame header

08 data length

8b tag read command

Usercode device number

01 Membank type

02 address, 01 read length

12 34 data read

43 Checksum

3. Reader parameter setting communication protocol

3.1 Stop working settings

Answer	**Data**	**comm**	**Device No**	**checksum**

	Length	and		
Data0	**Data1**	**Data2**	**Data3**	**Data4**
0xA0	**0x03**	**0x50**	**usercode**	**Checksum(0x0E)**

The host sends a command: A0 03 50 00 D
Slave back: (E4 04 50) header, (00) usercode(00) Status, (C8) Checksum
Status 00: Success; Other values: Failure

3.2. Simultaneously query multiple setting parameters of the reade

Answer	**Data length**	**Command**	**Device No**	**Number of query parameters**	**Query parameter specified high address**	**Query parameter specified lower address**	**Checksum**
Data0	**Data1**	**Data2**	**Data3**	**Data4**	**Data5**	**Data6**	**Data7**
0xA0	**0x06**	**0x63**	**usercode**	**Length**	**Parameter address(MSB)**	**Parameter address(LSB)**	**Checksum**

Such as: host send command: A0 06 63 00 05 00 20 D2 (product identification query)
Slave back: (E0 0B 63) Head, (00) usercode, 05 00 20, (38 32 32 30 FF) Parameter value, (C2) Checksum

3.3 Set multiple reader parameters at the same time

Answer	**Data Length**	**Command**	**Device No**	**Query parameter specified high address**	**Query parameter specified lower address**	**Checksum**
Data0	**Data1**	**Data2**	**Data3**	**Data4**	**Data5**	**Data6**
0xA0	**0x05**	**0x61**	**usercode**	**Parameter address(MSB)**	**Parameter address(LSB)**	**Checksum**

Such as: host send: A0 05 61 00 00 65 95 (query power)
Slave back: (E0 06 61), (00) usercode, 00 65, (96) parameter value (BE) Checksum

3.4multiple reader parameters at the same time

Answer	**Data length**	**Command**	**Device**	**Set the number of parameters**	**Query parameter specified high address**	**Query parameter specified lower address**	**Command Data**			**checkum**
Data0	**Data1**	**Data2**	**Data3**	**Data 4**	**Data 5**	**Data 6**	**Data 7**	**…**	**Data E**	**Data F**
0xA0	**0x06 +Length**	**0x62**	**usercode**	**Length**	**Parameter address(MSB)**	**Parameter address(LSB)**	**01**	**…**	**01**	**Checksum**

Data 7...Data E is 01 04 10 40 00 01 02 01

For example, if the host sends a command: A0 0E 62 00 08 00 92 01 04 10 40 00 01 02 01 FD (frequency setting)
Slave back: E4 04 62 (00)usercode(00)Status,(B6)Checksum
Status 00: Success; Other values: Failure

3.5Set a single reader parameter

Answer	**Data length**	**command**	**Device No**	**Query parameter specification** **High address**	**Query parameter specified lower address**	**Parameter value to be set**	**Checksum**
0xA0	**6**	**0x60**	**00**	**Parameter address(MSB)**	**Parameter address(LSB)**	**Parameter value**	**Checksum**

The Parameter address (MSB) is the high byte of the address of the parameter in the EEPROM.
The Parameter address (LSB) is the low byte of the address of the parameter in the EEPROM.
Parameter value is the parameter value that needs to be set.
After receiving the command frame, the reader writes the parameters to be set to the EEPROM and returns the command completion frame.
Such as: host command: A0 06 60 00 00 65 96 FF (set power)
Slave back: (E4 04 60) header, (00) usercode (00) Status, (B8) Checksum
Status 00: Success; Other values: Failure

Schedule 1 ：

Parameter in EEPROM address (16 Decimal）	**Project meaning**	**Set the effective value of the operation (decimal)**	**Numerical meaning interpretation**	**other**
0x64	User logo code	0 - 255	User setting flag value	
0x65	Transmit power	0 - 150	Power analog	
0x70	Reader reader operation mode	1，2，3	1: master-slave mode 2: Timing mode 3: Trigger mode of operation	**Note: Master mode is still active when working in mode 2, 3.**
Parameter in EEPROM address (hex)	**Project meaning**	**Set the effective value of the operation (decimal)**	**Numerical meaning interpretation**	**Other**
0x71	Card reading interval	N	The unit of value is: (N*10) milliseconds Where N is 10 － 100;	The reader reader operation mode is valid when the mode is 2 or 3.
0x72	Link selection for actively sending data after the reader reads the data	1，2，3	1：RS485 link 2：wiegand link 3：RS232 link	

附表 **2** ：

附表 **3**：

附表 4：

Parameter in EEPROM address (hex)	Project meaning	Set the effective value of the operation (decimal)	Numerical meaning interpretation	Other
0x73	Wiegand Protocol selection	1，2，3	1：wiegand26 2：wiegand34 3：wiegand32	Effective for wiegand mode
0x74	Wiegand Output data pulse width	1 - 255	The card reader internally converts to time, time = this value * 10 (microseconds).	
0x75	Wiegand Output data pulse period	1 - 255	The card reader internally converts to time, time = this value * 100 (microseconds).	
0x76	Wiegand Output repetitions	1，2，3	Not supported yet	
0x77	Wiegand Repeated output interval	1，2，3，4，5，6，7，8，9，10	The card reader internally converts to time, time = this value * 10 (milliseconds). (not supported at this time)	

Parameter in EEPROM address (hex)	Project meaning	Set the effective value of the operation (decimal)	Numerical meaning interpretation	Other
0x80	Trigger pin enable trigger mode setting	The lower four bits of the value are set to 0 or 1, indicating that the job does not trigger or trigger.	Bit0：Corresponding trigger pin 0 Bit1：Corresponding to trigger pin 1 (not supported at this time) Bit2：Corresponding to trigger pin 2 (not supported at this time) Bit3：Corresponding to trigger pin 3 (not supported at this time)	The reader reader operation mode is valid when the mode is 3
0x81	Trigger pin trigger mode	The lower four bits of the value are set to 0 or 1, indicating low level trigger or high level trigger.	Bit0：Corresponding to trigger pin 0 (support high level trigger) Bit1：Corresponding to trigger pin 1 (not supported at this time) Bit2：Corresponding to trigger pin 2 (not supported at this time)	

			Bit3：Corresponding to trigger pin 3 (not supported at this time)	
0x84	Delayed shutdown time	0 - 240	The card reader internally converts to time, time = this value * 100 (milliseconds).	

附表 5：

附表 6：

附表 7：

附表 8：

Parameter in EEPROM address (hex)	Project meaning	Set the effective value of the operation (decimal)	Numerical meaning interpretation	Other
0x90	Frequency hopping setting	0 - 50	0: Frequency hopping mode of operation. 1--50: Fixed frequency operation mode, the frequency value is determined by this value	
0x92~0x98	Frequency hopping-frequency parameter	The bit is set to 0 or 1, indicating that the frequency is not selected or is selected.	BIT0 (1st frequency) from 0x92 – BIT7 (7th frequency), And so on, can set 50 frequency cycle work	

Parameter in EEPROM address (hex)	Project meaning	Set the effective value of the operation (decimal)	Numerical meaning interpretation	Other
0x87	Single label and multi-label label	0，1，2，3	0：EPC Single Tag 1：EPC Multiple Tag 2：18000_6B Single Tag 3：18000_6B Multiple Tag not support at this time	

Parameter in EEPROM address (hex)	Project meaning	Set the effective value of the operation (decimal)	Numerical meaning interpretation	Other
0x89	Antenna working mode	1 ， 4	1: Single antenna operation 4: Multi-antenna cycle work	
0x8A	Select working antenna	The lower four bits of the value are set to 0 or 1, indicating that the corresponding antenna is selected or not.	0: Do not select any antenna work 1: Antenna 1 works 2: Antenna 2 works 4: Antenna 3 works 8: Antenna 4 works 15: All antennas work	

Parameter in EEPROM address (hex)	Project meaning	Set the effective value of the operation (decimal)	Numerical meaning interpretation	Other
0x7B	ID Adjacent discrimination	1 ，2	1: ID adjacent discrimination starts 2: Do not start (real-time data is valid)	
0x7A	ID adjacent discrimination time	1 - 255	The internal reading of the reader is converted to time, time = this value * 1 (seconds)	Note: When ID adjacent discrimination is activated, time value can not ‘0 ‘, otherwise it will automatically switch to not start.
0XC6	Relay delay time setting	1-255	Relay closure delay time value in S	
0XC7	Relay enable setting	0，1	0: Relay enable is off, 1: Relay is enabled to open	
0XC8	Fast card reading enable setting	0，1	0: Fast card reading is turned off (setting the card reading time in units of 10MS), 1: Fast card reading is enabled (ms are set in units of card read time)	
0XCA	Temperature label calibration data settings	0，1	0: Close the setting (the label is not initialized), 1: Open the setting (the label has been initialized)	
0XCB	Temperature Tag RSSI Settings	0，1	0: Temperature tag gets RSSI off 1: Temperature tag gets RSSI open	Get RSSI card reading will get worse
0XCD	EPC TID select output settings	0，1	0 :Output EPC 1:Output TID	
0XCE	European standard, American standard selection	0，1	0：US Frequency 1：EU Frequency	

The above address uses two bytes in the command, since the above byte is only one byte range, So in actual use, the high byte in the command is filled with 0. For example, the reader reader card operation mode is the timed operation mode, and the actual filling is :

Parameter address(MSB)	Parameter address(LSB)
0x00	0x70

Description:

After the above command is completed, you need to make the reader work with the new parameters, using one of the following two methods:

(1) Manually reset the reader so that the operator needs to access the reader (re-power);

(2) The remote computer operates remotely, and the reader is controlled by using the Reset Reader command on the software of the host computer.

4. Inspection and calculation method (c language)

```
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;
}
```

5. Automatic identification of data output format routines

The EPC G2 tag output format is as follows:

Here's an example:

A tag data is a total of seventeen bytes: (The following values are all hexadecimal)

00 00 E3 00 60 19 D2 6D 1C E9 AA BB CC DD 01 51 FF

among them:

00: Head sign, this is fixed

00: device number

E3 00 60 19 D2 6D 1C E9 AA BB CC DD: ID number

01: Antenna number, which antenna is identified from this time. Note: (The integrated antenna is fixed)

51: Checksum, calculation: from the first byte to the third byte of the last, a total of 15 bytes.

FF: logo, this is fixed

Each time the reader returns a tag data.

The EPC G2 tag variable byte output format is as follows:

Here's an example:

An 8-byte length of tag data is a total of fourteen bytes: (The following values are all hexadecimal)

00 00 08 E2 00 10 71 00 00 52 6F 01 D3 FF Where:

00: Head sign, this is fixed

00: device number

08: Label ECP length

E2 00 10 71 00 00 52 6F: ID number

01: Antenna number, which antenna is identified from this time. Note: (The integrated antenna is fixed)

D3: checksum, calculation: From the first byte to the third last byte, a total of 15 bytes.

FF: logo, this is fixed

Each time the reader returns a tag data。

The temperature label output format is as follows:

Here's an example:

A tag data is a total of seventeen bytes: (The following values are all hexadecimal)

00 00 12 1F 15 05 8D 48 29 4E D9 00 D9 00 00 00 00 05 01 8A FF

among them:

00: Head sign, this is fixed

00: device number

12: Data length, including the sum of all bytes after 12.

1F: Temperature tag RSSI value

15: temperature tag integer temperature value, hexadecimal number, converted to decimal is 21

05: Temperature label decimal temperature value, according to the above 15 05 converted temperature is 21.5 degrees Celsius. At the same time, BIT4=0 means the temperature is positive, and BIT4=1 means the temperature is negative. If 05 is 15, then the temperature is -21.5 degrees Celsius.

8D 48 29 4E D9 00 D9 00 00 00 00 01: ID number

01: Antenna number, which antenna is identified from this time. Note: (The integrated antenna is fixed)

8E: Checksum, calculation: from the first byte to the third byte of the last, a total of 19 bytes.

FF: logo, this is fixed

Each time the reader returns a tag data plus temperature data.