

# SL144 Serial Communication Protocol

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# 1 Application development

## 1.1 The command format specification

Communication protocol refers to the communication protocol of the PC machine through the RS-232 communication interface.

RS-485 communication interface in the data link layer to support the RS-232 protocol, but there is a protocol extension.

The data format of the byte oriented asynchronous communication protocol is adopted in the communication protocol. PC to the reader to the data frame for the command, reader data frame for the response is returned to the PC. In response to instructions or data frames are variable length bytes, the packet and checkout method and backward error.

The command or response data frame is 199 bytes

### 1.1.1 Serial communication protocol structure

RS232 parameter settings

Data sending and receiving of the signal is received by the physical layer, and the physical layer should be in accordance with the requirement of RS-232.

Specific design requirements are as follows:

1 start bit, 8 bit data bit, 1 stop bit, no parity check;

The baud rate design for 9600bps and 19200bps, 38400bps, 57600bps, 115200bps optional.

### 1.1.2 TCP/IP communication protocol structure

In accordance with international standards。

### 1.1.3 Data packet format definition

#### 1.1.3.1 Instruction format definition

The command frame is a data frame for the host operating reader, as shown in the following table:

| Head | Len    | Addr   | Cmd    | Data[0] | ... | Data[n] | Check  |
|------|--------|--------|--------|---------|-----|---------|--------|
| 0xA0 | 1 Byte | 1 Byte | 1 Byte | Byte 1  |     | Byte n  | 1 Byte |

Head Is a frame header flag, defined as 0xA0.

Addr Is a reader address, the general address from 0 to 254255 (0xFF) for public address. The reader only receives the instruction of the address and the address of the address.

Len Packet length, the number of bytes in the Length domain.

Cmd Command code.

Data Is a parameter in the command frame.

Check It is the verification and the specified calibration range is the last byte of the frame header from the header to the parameter domain. The reader receives the instruction frame after the need to calculate the checksum to check.

### 1.1.3.2 Response frame format definition

The response frame is a data frame for the reader to return to the host, and the response frame contains the data that the reader needs to collect, and the format definition is shown in the following table:

| Head | Len   | Addr  | Cmd   | Status | Response | ... | Response | Check |
|------|-------|-------|-------|--------|----------|-----|----------|-------|
| 0x0A | 1Byte | 1Byte | 1Byte | 1Byte  | Byte1    |     | Byte n   | 1Byte |

Head Is the response frame head, fixed to 0x0A.

Addr Is the reader's address.

Len Is the packet length, the number of bytes in the Length domain.

Cmd is executed instruction code reader.

Status The result of an action performed by the instruction is executed, and the 0 represents the success of the implementation, and the other is said to be wrong

False information.

Response Is the return data in the response frame.

Check It is the verification and the domain, which provides the verification range from the packet type to the last byte of the parameter domain. The PC receives the instruction frame after the need to calculate the checksum to check.

### 1.1.4 Instruction set definition

Instruction set list

| NO.                           | Instruction code | Name                  | Explain                                |
|-------------------------------|------------------|-----------------------|--|
| General operation instruction |                  |                       |  |
| 1                             | 00H              | Get_Version           | Get hardware and software version      |
| 2                             | 01H              | Set_BaudRate          | Set the serial communication baud rate |
| 3                             | 02H              | Get_BaudRate          | Get the serial communication baud rate |
| 4                             | 03H              | Set_Address           | Set reader address                     |
| 5                             | 04H              | Get_Address           | Access reader address                  |
| 6                             | 05H              | Set_Net_Address       | Set the reader network address         |
| 7                             | 06H              | Get_Net_Address       | Access reader network address          |
| 8                             | 07H              | Set_Date_Time         | Set reader clock                       |
| 9                             | 08H              | Get_Date_Time         | Get reader clock                       |
| 10                            | 09H              | Reboot                | Reset reader                           |
| 11                            | 0AH              | Set_Relay             | Control relay                          |
| 12                            | 0BH              | Set_GPIO_Output       | Set GPIO output port state             |
| 13                            | 0CH              | Get_GPIO_Output       | GPIO output port level                 |
| 14                            | 0DH              | Get_GPIO_Input        | GPIO input port level                  |
| 15                            | 0EH              | Set_Buzzer            | Set buzzer                             |
| 16                            | 0FH              | Set_Antenna_Parameter | Set antenna parameters                 |
| 17                            | 10H              | Get_Antenna_Parameter | Gain antenna                           |

|                                      |     |                      |   |
|--------------------------------------|-----|----------------------|---|
|                                      |     |                      | parameters                                  |
| 18                                   | 11H | Set_Antenna_Status   | Set antenna state                           |
| 19                                   | 12H | Get_Antenna_Status   | Get antenna state                           |
| 20                                   | 13H | Set_Frequency_Band   | Set reader RF band                          |
| 21                                   | 14H | Get_Frequency_Band   | Get reader RF band                          |
| 22                                   | 15H | Set_Max_Tag          | Set up the maximum number of inventory tags |
| 23                                   | 16H | Get_Max_Tag          | Get the maximum number of inventory tags    |
| 24                                   | 17H | Set_Continuous_Mode  | Set up the reader continuous working mode   |
| 25                                   | 18H | Get_Continuous_Mode  | Continuous working mode for reader          |
| 26                                   | 19H | Get_Buzzer_Status    | Get buzzer state                            |
| EPC C1G2 read and write instructions |     |                      |   |
| 1                                    | 30H | EPC_Select_Criteria  | C1G2 EPC tag selection criteria             |
| 2                                    | 31H | EPC_Direct_Inventory | C1G2 EPC Tags                               |
| 3                                    | 32H | EPC_Read_Data        | Read C1G2 EPC tag data                      |
| 4                                    | 33H | EPC_Write_Data       | Write C1G2 EPC tag data                     |
| 5                                    | 34H | EPC_Lock_Memory      | Lock C1G2 EPC tag data area                 |
| 6                                    | 35H | EPC_Kill_Tag         | Destroy C1G2 EPC Tags                       |
| 7                                    | 36H | EPC_Set_Alarm        | Set EAS alarm                               |
| 8                                    | 37H | EPC_Detect_Alarm     | EAS alarm                                   |
| 9                                    | 38H | EPC_MemBlock_Lock    | Lock user area data block read              |

|    |     |                            |  |
|----|-----|----------------------------|--|
| 10 | 39H | Start_Continuous_Inventory | Start the reader for continuous working mode |
| 11 | 3AH | Stop_Continuous_Inventory  | Stop reader continuous working mode          |

## 1.2.1 Basic command

### 1.2.1.1 Get reader software and hardware version

#### Get\_Version

Function: Get the hardware and software version number of the reader.

Instruction code: 00H.

Instruction parameters: N/A

Instruction packet: "AOH 03H address 00H CheckSum"

Return data: if the instruction is executed correctly, the data portion of the packet is returned as a version number of 4 bytes:

Byte0 - hardware major version, Byte1 - hardware minor version (using the hardware version number Instead of reader model)

Byte2 - software major version, Byte3 - software minor version

For example: if the reader model is Reader2004/2104/2114, the software version number is V1.3, then the packet is returned.:

```
0AH 08H address 00H 00H 14H 04H 01H 03H
Checksum
```

```
0AH 08H address 00H 00H 15H 04H 01H 03H
Checksum
```

```
0AH 08H address 00H 00H 15H 0EH 01H 03H
Checksum
```

Execution error: "0AH 04H address 00H status CheckSum", statusNot equal to 0, Len byte info.

### 1.2.1.2 Set the serial communication baud rate

#### Set\_BaudRate

Function: set the baud rate of serial work.

The initial communication rate of the reader is 115200bps. When the reader receives the instructions, according to the instructions to set the parameters of reader serial baud rate. Regardless of whether or not to close the reader power supply, the working rate will be maintained until the next reset.

Instruction code: 01H.

Instruction parameters: 1 bytes of BPS, value: 00H~04H, respectively, representing:

|     |   |           |
|-----|---|-----------|
| 00H | - | 115200bps |
| 01H | - | 57600bps  |
| 02H | - | 38400bps  |
| 03H | - | 19200bps  |
| 04H | - | 9600bps   |

Instruction packet et: "04H address 01H BPS CheckSum A0H"

Return data: If instructions executed correctly, Return Data part of the package (Return Data) for the state

“0AH 04H address 01H 00 CheckSum”

Execution error: "04H address 01H status CheckSum 0AH", status is not equal to 0, Len byte info.

### 1.2.1.3 Get the serial communication baud rate

#### Get\_BaudRate

Function: get the reader serial baud.

Instruction code: 02H.

Instruction packet age: “A0H 03H address 02H CheckSum”

Return Data: if instructions executed correctly, Return Data part of the package (Return Data) are reader current baud rate BPS.

“0AH 05H address 02H 00 BPS CheckSum”

1 byte BPS, respectively:

|     |   |         |
|-----|---|---------|
| 04H | - | 9600bps |
|-----|---|---------|



03H - 19200bps

02H - 38400bps

01H - 57600bps

Other - 115200bps

Execution error: "0AH 04H address 02H status CheckSum", status is not equal to 0, Len byte info.

#### 1.2.1.4 Set the address of the reader Set\_Address

Function: set the address of the reader.

Instruction code: 03H.

Instruction parameters: 1 byte new address address\_New. Address\_Old is the old address.

Instruction packet et : " A0H 04H 255 (or address\_Old) address\_New CheckSum 03H"

Return data: If instructions executed correctly, return the package data section for the state .

"0AH 04H address\_New 03H 00 CheckSum "

Execution error: "0AH 04H 255 (or address\_Old) status CheckSum 0AH", status is not equal to 0, Len byte info.

#### 1.2.1.5 Get the address Get\_Address

Function: get the address of the reader.

Instruction code: 04H.

Instruction parameters:N/A

Instruction packet et: " A0H 03H 255 04H CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is returned to the reader's address address.

"0AH 05H 255 04H 00 address CheckSum "

Execution error: "0AH 04H 255 04H status CheckSum ", status is not equal to 0, Len byte info.

#### 1.2.1.6 Set the reader network address Set\_Net\_Address

Function: set the network address of the reader. You must reset the reader to

use the new network address.

Instruction code: 05H.

Instruction parameter 1:4 byte the reader IP address Reader\_IP\_addr. 2 byte reader port number Reader\_Port.

Instruction parameter 2:4 IP address Host\_IP\_addr. 2 byte host port number Host\_Port.

Instruction parameter 3:4 byte reader subnet mask Reader\_Mask. 4 byte reader gateway. 6 byte reader MAC address Reader\_MAC.

Instruction packet et: "A0H 1DH address 05H Reader\_IP\_addr Reader\_Port Host\_IP\_addr Host\_Port Reader\_Mask Reader\_Gateway Reader\_MAC CheckSum"

For example: the reader IP addr is 192.168.1.12, reader port 5000, host IP addr is 192.168.1.103, host port for 3500, reader mask 255.255.255.0, reader for gateway 192.168.1.1, reader MAC 0X00,0x14,0x97,0x0F, 0x1D, 0xE3. Then the Instruction packet et is:

```
A0H 1DH address 05H C0H A8H 01H 0CH 13H 88H C0H
A8H 01H 67H 0DH ACH FFH FFH FFH 00H C0H A8H 01H
01H 00H 14H 97H 0FH 1DH E3H CheckSum
```

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 05H 00 CheckSum"

Execution error: " AH 04H address 05H status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.7 Access reader network address Get\_Net\_Address

Function: get the network address of the reader.

Instruction code: 06H.

Instruction parameters:N/A

Instruction packet et: " A0H 03H address 06H CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is returned to the reader's network address.

"0AH 1EH address 06H 00 Reader\_IP\_addr Reader\_Port Host\_IP\_addr Host\_Port Reader\_Mask Reader\_Gateway Reader\_MAC CheckSum "

Reader\_IP\_addr represents the IP address of the 4 byte reader.

Reader\_Port indicates the port number of 2 byte reader ports.

Host\_IP\_addr represents the 4 byte host IP address.

Host\_Port represents the 2 byte host port number.

Reader\_Mask represents a 4 byte reader subnet mask.

Gateway Reader\_ represents a 4 byte reader gateway.

Reader\_MAC represents the MAC address of the 6 byte reader.

Execution error: "04H address 06H status CheckSum 0AH", status is not equal to 0, Len byte info.

### 1.2.1.8 Set the reader clock Set\_Date\_Time

Function: set the reader time.

Instruction code: 07H.

Instruction parameters: 6 bytes, yy/, hh/, mm/, ff/,, dd/, ss.

Instruction packet : " A0H 09H address 07H yy mm dd hh ff ss CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 07H 00 CheckSum "

Execution error: "0AH 04H address 07H status CheckSum ", status is not equal to 0, Len byte info.

### 1.2.1.9 Get reader clock Get\_Date\_Time

Function: get the reader time.

Instruction code: 08H.

Instruction parameters: N/A.

Instruction packet : "03H address 08H CheckSum A0H"

Return data: if the instruction is executed correctly, the data portion of the packet is time.

"0AH address 08H YY 00 MM DD HH FF SS CheckSum 0AH"

Yy/ hh/ mm/ in dd/, ff/ seconds SS seconds.

Execution error: "04H address 08H status CheckSum 0AH", status is not equal to 0, Len byte info.

### 1.2.1.10 Reset reader Reboot

Instruction code: 09H.

Instruction parameters:N/A

Instruction packet : " A0H 03H address 09H CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 09H 00 CheckSum "

Execution error: "0AH 04H address 09H status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.11 Control relay Set\_Relay

Function: control relay.

Instruction code: 0AH.

Instruction parameters: 1 byte JDQ, 1 - closed, 0 - breaking.

Instruction packet : " A0H 04H address 0AH JDQ CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 0AH 00 CheckSum "

Execution error: "0AH 04H address 0AH status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.12 Set GPIO output port level state Set\_GPIO\_Output

Function: set GPIO output port level state.

Instruction code: 0BH.

Instruction parameters: 1 byte data OUT. Bit0 to set the output port 1, Bit1 to set the output port 2, Bit2 to set the output port 3, Bit3 to set the output port 4. Bit4 set output port 5, Bit5 set output port 6 and Bit6 to set the output port 7. Bit7 set output port 8. Bit\* = 0, set the output port to be low. Bit\* = 1, set the output port to be high.

Instruction packet : " A0H 04H address 0BH OUT CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 0BH 00 CheckSum "

Execution error: "0AH 04H address 0BH status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.13 GPIO output port level Get\_GPIO\_Output

Function: GPIO output port level state.

Instruction code: 0CH.

Instruction parameters:N/A

Instruction packet : " A0H 03H address 0CH CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is set to the level of OUT, which is defined as the setting output level instruction.

"0AH 05H address 0CH 00 OUT CheckSum

Execution error: "0AH 04H address 0CH status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.14 GPIO input port level Get\_GPIO\_Input

Function: GPIO input port level state.

Instruction code: 0DH.

Instruction parameters:N/A

Instruction packet : " A0H 03H address 0DH CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in a level state IN.

"0AH 05H address 0DH 00 IN CheckSum "

1 byte data IN. Bit0 gets the input port 1 state, access to the input port 2 state Bit1, access to the input port 3 state Bit2, access to the input port 4 state Bit3, access to the input port state Bit4, Bit5 gets the input port 6 state, Bit6 gets the input port 7 state, Bit7 won 8 state of the input port. Bit\* = 0, the input port is low. Bit\* = 1, the input port is high.

Execution error: "04H address 0DH status CheckSum 0AH", status is not equal to 0, Len byte info。

### 1.2.1.15 Set buzzer Set\_Buzzer

Function: control buzzer sound and not ring.

Instruction code: 0EH.

Instruction parameters: 1 byte Buzzer, 1 --ring 0—no ring

Instruction packet : " A0H 04H address 0EH Buzzer CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 0EH 00 CheckSum "

Execution error: "0AH 04H address 0EH status CheckSum ", status is not equal to 0, Len byte info.

### 1.2.1.16 Set antenna parameters Set\_Antenna\_Parameter

Function: set the working parameters of the antenna.

Instruction code: 0FH.

MS) for parameter instruction: 1 byte antenna number ant (antenna of the antenna 1 - 4), 2 byte RF power power (unit: DBM), two bytes of the working time of the antenna WTime (unit, antenna 1 bytes count the number of WCount.

Instruction packet : " A0H 09H address 0FH Ant Power WTime WCount CheckSum ".

For example: antenna 1, the RF power is 150dBm, the antenna working time is 1500ms, the antenna count number 0. Then the Instruction packet is:

A0H 09H address 0FH 01H 00H 96H 05H DCH 00H  
CheckSum.

Return data:

Execute correctly: "0AH 04H address 0FH 00H CheckSum ".

Execution error: "0AH 04H+Len address 0FH status info CheckSum ", status is not equal to 0. Len byte info.

### 1.2.1.17 Get antenna parameters Get\_Antenna\_Parameter

Function: get the working parameters of the antenna.

Instruction code: 10H.

Instruction parameters: 1 byte antenna number Ant (antenna 1 - 4).

Instruction packet : " A0H 04H address 10H Ant CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is provided with an antenna operating parameter, defined as a set of

antenna operating parameters.

```
"0AH 0AH address 10H 00H Ant Power WTime WCount
Checksum "
```

1 byte antenna number Ant (antenna of the antenna 1 - 4), 2 byte RF power power (unit: DBM), two bytes of the working time of the antenna WTime (unit, antenna 1 bytes count the number of WCount).

For example: the return of the parameters is: 1, the RF power is 15dBm, the antenna working time is 1500ms, the count is 1. Then the Instruction packet et is:

```
0AH 0AH address 10H 00H 01H 00H 96H 05H DCH 01H
Checksum
```

Execution error: "0AH 04H address 10H status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.18 Set antenna state Set\_Antenna\_Status

Function: set the working status of the RF antenna.

Instruction code: 11H.

Instruction parameter: 1 byte antenna number Ant (antenna 1, antenna 4), 1 byte antenna state stat (0 not enable, 1 enable).

```
Instruction packet : "0 A0H 05H address 11H Ant stat CheckSum "
```

For example: antenna 1, so that can. Then the Instruction packet et is:

```
A0H 05H address 11H 01H 01H CheckSum
```

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

```
"0AH 04H address 11H 00 CheckSum "
```

Execution error: "0AH 04H address 11H status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.19 Get antenna status Get\_Antenna\_Status

Function: working status of RF antenna.

Instruction code: 12H.

Instruction parameters: 1 byte antenna number Ant (antenna 1 - 4).

```
Instruction packet : " A0H 04H address 12H Ant CheckSum "
```

Return data: if the instruction is executed correctly, the data portion of the

packet is provided with an antenna operating parameter, defined as the antenna state instruction set.

```
"0AH 06H address 12H 00 Ant stat CheckSum "
```

For example: the return parameter is: antenna 2, so that it can. Then return the package is:

```
0AH 06H address 12H 00H 02H 01H CheckSum
```

Execution error: "0AH 04H address 12H status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.20 Set the reader RF band Set\_Frequency\_Band

Function: set the RF frequency band of the reader.

Instruction code: 13H.

Instruction parameters: 1 byte minimum frequency Min\_Fre, 1 byte maximum frequency point Max\_Fre.

```
Instruction packet : " A0H 05H address 13H Min_Fre Max_Fre  
Checksum "
```

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

```
"0AH 04H address 13H 00 CheckSum "
```

Execution error: "0AH 04H address 13H status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.21 Access reader RF band Get\_Frequency\_Band

Function: to get the RF frequency band of the reader.

Instruction code: 14H.

Instruction parameters:N/A

```
Instruction packet : " A0H 03H address 14H CheckSum "
```

Return data: if the instruction is executed correctly, the data portion of the packet is set to the frequency band, which is defined as the set of frequency bands.

```
"0AH 06H address 14H 00 Min_Fre Max_Fre CheckSum "
```

Execution error: "0AH 04H address 14H status CheckSum ", status is not equal to 0, Len byte info。



### 1.2.1.22 Set up a maximum count of Set\_Max\_Tag

Function: set up the number of tags.

Instruction code: 15H.

Instruction parameter: 1 bytes of NTag, NTag is 0, which means that the maximum number of tags is not limited.

Instruction packet : " A0H 04H address 15H NTag CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 15H 00 CheckSum "

Execution error: "0AH 04H address 15H status CheckSum ", status is not equal to 0, Len byte info.

### 1.2.1.23 Get the maximum count of Get\_Max\_Tag

Function: get the maximum number of tags.

Instruction code: 16H.

Instruction parameters:N/A

Instruction packet : " A0H 03H address 16H CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is defined as the antenna operating parameter, and the maximum number of tags are defined.

"0AH 05H address 16H 00 Ntag CheckSum "

Execution error: "0AH 04H address 16H status CheckSum ", status is not equal to 0, Len byte info.

### 1.2.1.24 Setting the reader continuous mode

#### Set\_Continuous\_Mode

Function: Set the reader continuous mode, the effect after the next power.

Script: 17H.

Command Parameter 1: 1 byte reader mode Continuous (0- discontinuous mode, 1-continuous mode, 2-trigger mode).

Command Parameter 2: 2-byte continuous mode counting interval time.

Command Parameter 3: 1 byte antenna Ant, antenna control bit 0, bit 1

controls the antenna 2, bit 2 controls the antenna 4, bit 3 controls the antenna 4, and so on; bit = 0, the antenna is not enabled, bit = 1, the antenna is enabled.

Command Parameter 5: 1 byte Out\_port, tag data output interface, 0 = RS232, 1 = RS485, 2 = UDP, 3 = TCP.

Command Parameter 6: 1 byte Selected, = 1, select all the tags; = 2, select all tags except for specified tags; = 3, check the specified tag.

Command Parameter 7: 1 byte Session.

Command Parameter 8: 1 byte Target.

Command Parameter 9: 1 byte tag storage selection Men, for conditional inventory. 0 = password district, 1 = EPC area, 2 = TID district, 3 = user area.

Command Parameter 10: 2-byte starting address Str\_addr (Unit: bits).

Command Parameter 11: 1 byte data length Length (unit: bits).

12:32 byte instruction parameters characteristic word Mask.

13:16 byte instruction parameters Rev, retained.

Instruction packet: " A0H 3EH address 17H Continuous time Ant Out\_port Selected Session Target Men Str\_addr Length Mask Rev CheckSum "

Returns data: If the command correctly, the data portion of the packet is returned to the state.

"0AH 04H address 17H 00 CheckSum "

Execution Error: "0AH 04H address 17H status CheckSum ", status is not equal to 0, Len byte info.

### 1.2.1.25 Get the reader continuous mode

#### Get\_Continuous\_Mode

Function: Get the reader continuous mode.

Script: 18H.

Parameters: None.

Instruction packet: " A0H 03H address 18H CheckSum "

Returns data: If the command correctly, the data portion of the packet is returned to 60 bytes reader continuously operating parameters.

"0AH 3FH address 18H 00 Continuous time Ant Out\_port Selected Session Target Men Str\_addr Length Mask Rev CheckSum "

Execution Error: "0AH 04H address 18H status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.26 Get buzzer status Get\_Buzzer\_Status

Function: Get buzzer status (ring or not ring).

Script: 19H.

Instruction packet: " A0H 03H address 19H CheckSum "

Returns data: If the command correctly, the data portion of the packet is returned to the state of the beeper. 1 byte Buzzer, 1-- ring, zero - for no sound.

"0AH 05H address 19H 00 Buzzer CheckSum "

Execution Error: "0AH 04H address 19H status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.27 Set MAC address Set\_Mac\_Address

Function: set the MAC address of the reader.

Instruction code: 1AH.

Instruction parameter 1:6 byte reader MAC address Reader\_MAC.

Instruction packet : " A0H 09H address 1AH Reader\_MAC CheckSum "

For example: Reader\_MAC is 0X00,0x14,0x97,0x0F, 0x1D, 0xE3. Then the Instruction packet et is:

A0H 09H address 1AH 00H 14H 97H 0FH 1DH E3H  
Checksum

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 1AH 00 CheckSum "

Execution error: "0AH 04H address 1AH status CheckSum ", status is not equal to 0, Len byte info。

### 1.2.1.28 Get Reader MAC address Get\_Mac\_Address

Function: Get the reader MAC address.

Instruction code: 1BH.

Parameters: None.

Instruction packet et: " A0H 03H address 1BH CheckSum "

Returns data: If the command correctly, the data portion of the packet is returned to the reader MAC address.

"0AH 0AH address 1BH 00 Reader\_MAC CheckSum "

Reader\_MAC represents six byte MAC address of the reader.

Execution Error: "0AH 04H address 1BH status CheckSum ", status is not equal to 0, Len byte info.

## 1.2.2 EPC C1G2 Tag read and writes commands

### 1.2.2.1 Tag selection criteria EPC\_Select\_Criteria

Function: when the conditions set inventory tags. Only tags that meet these criteria can be identified.

Script: 30H.

Parameters: 1 byte storage area Bank. Two byte starting address Str\_addr (unit: bit). 1 byte data length Length (unit: bit). 32 bytes characteristic word Mask. A byte Selected, = 1, select all the tags; = 2, select all tags except for specified tags; = 3, check the specified tag. 1 byte Session. 1 byte Target.

Instruction packet: "A0H 2AH address 30H Bank Str\_addr Length Mask Selected Session Target CheckSum"

For example: Set EPC district, the starting address is 32, the data length is 24, characterized by word 11H 22H 33H, and select only the specified tag. The Instruction packet age for:

"A0H 2AH address 30H 01H 00H 20H 18H 11H 22H 33H 00H 03H 00H 00H CheckSum"

Returns data: If the command correctly, the data portion of the packet is returned to the state.

"0AH 04H address 30H 00 CheckSum"

Execution Error: "0AH 04H address 30H status CheckSum", status is not equal to 0, Len byte info.

### 1.2.2.2 Inventory EPC C1G2 tag EPC\_Direct\_Inventory

Features: inventory tags. Only meeting the selection criteria in order to be recognized tag.

Script: 31H.

Parameters: None.

Instruction packet: "A0H 03H address 31H CheckSum"

Returns data: If the command correctly, the data portion of the packet is returned by EPC identification tag. Inventory to identify the number of tags, there are many packets. Each packet contains only one tag EPC.

"0AH 1AH + L address 31H 00H ant invinfo L EPC CheckSum".

1 byte ant: inventory number to the tag antenna (antenna 1- antenna 4).

20 bytes invinfo: inventory information.

A byte L: EPC length, unit: bytes.

Performed correctly: "0AH 04H address 31H 00H CheckSum".

Execution Error: "0AH 04H + Len address 31H status info CheckSum", status is not equal to 0. Len bytes info.

Table Definition 1.20 of bytes invinfo

|                  |               |               |                         |                      |                             |
|------------------|---------------|---------------|-------------------------|----------------------|-----------------------------|
| First to 4 bytes | Fifth byte    | Sixth byte    | Seventh to eighth bytes | Ninth to tenth bytes | Eleventh to twentieth bytes |
| Retain           | BroadbandRSSI | wide bandRSSI | Retain                  | RSSI                 | Retain                      |

Among them  $RSSI(dBm)=(0x10000-0xRSSI)/10$

### 1.2.2.3 EPC C1G2 tag data read EPC\_Read\_Data

Function: Reads the specified area specified tag data.

Script: 32H.

Condition Parameter 1: 1 byte storage area Bank. Two byte starting address Str\_addr (unit: bit). 1 byte data length Length (unit: bit). 32 bytes characteristic word Mask. A byte Selected, = 1, select all the tags; = 2, select all tags except for specified tags; = 3, check the specified tag. 1 byte Session. 1 byte Target.

Password Parameter 2: 4 bytes Password.

3.1 bytes read parameter storage area Mem, 1 byte starting address Mem\_addr (unit: word), one byte of data length Mem\_len (unit: word, requires less than or equal to 90 and not 0).

Instruction packet et: "A0H 31H address 32H Bank Str\_addr Length Mask Selected Session Target Password Mem Mem\_addr Mem\_len CheckSum"

For example: Password is 11223344, EPC read area starting at address 2, the data length of the content data 6, the Instruction packet:

"A0H 31H address 32H Bank Str\_addr Length Mask Selected Session Target  
11H 22H 33H 44H 01H 02H 06H CheckSum"

1 on condition of parameters, see '2.2.1 tag selection criteria' instructions.

Returns data: If the command correctly, the data portion of the packet is returned to Mem\_len word tag data.

"0AH 04H + Mem\_len \* 2 address 32H 00 Data CheckSum"

Execution Error: "0AH 04H address 32H status CheckSum", status is not equal to 0, Len byte info.

### 1.2.2.4 Write EPC C1G2 tag data EPC\_Write\_Data

Function: write data to the specified area designation tag.

Script: 33H.

Condition Parameter 1: 1 byte storage area Bank. Two byte starting address Str\_addr (unit: bit). 1 byte data length Length (unit: bit). 32 bytes characteristic word Mask. A byte Selected, = 1, select all the tags; = 2, select all tags except for specified tags; = 3, check the specified tag. 1 byte Session. 1 byte Target.

Password Parameter 2: 4 bytes Password.

Write Parameters 3.1 byte storage area Mem, 1 byte starting address Mem\_addr (unit: word), one byte of data length Mem\_len (unit: word, requires less than 74 and not equal to 0). Data to be written Data.

Instruction packet: "A0H 31H + Mem\_len \* 2 address 33H Bank Str\_addr  
Length Mask Selected Session Target Password Mem Mem\_addr Mem\_len Data  
CheckSum"

Returns data: If the command correctly, the data portion of the packet is returned to the state.

"0AH 04H address 33H 00 CheckSum"

Execution Error: "0AH 04H address 33H status CheckSum", status is not equal to 0, Len byte info.

### 1.2.2.5 Lock EPC C1G2 tag data area EPC\_Lock\_Memory

Function: Locks the specified area designation tag.

Script: 34H.

Condition Parameter 1: 1 byte storage area Bank. Two byte starting address

Str\_addr (unit: bit). 1 byte data length Length (unit: bit). 32 bytes characteristic word Mask. A byte Selected, = 1, select all the tags; = 2, select all tags except for specified tags; = 3, check the specified tag. 1 byte Session. 1 byte Target.

Password Parameter 2: 4 bytes Password.

Lock Parameter 3: 1 byte AREA, 0 - kill card password field, 1 - Access passwords area, 2 - EPC area, 3 - TID District 4 - User Area. 1 byte Lock, 0- any read-write (write), 1 always writable (write), 2-password can read and write (write), 3 never be read (write).

Instruction packet: "A0H 30H address 34H Bank Str\_addr Length Mask Selected Session Target Password AREA Lock CheckSum"

Returns data: If the command correctly, the data portion of the packet is returned to the state.

"0AH 04H address 34H 00 CheckSum"

Execution Error: "0AH 04H address 34H status CheckSum", status is not equal to 0, Len byte info.

### 1.2.2.6 Destroy C1G2 EPC tags EPC\_Kill\_Tag

Function: destroy the specified tag.

Instruction code: 35H.

Conditional parameter 1:1 byte storage area Bank. 2 byte starting address Str\_addr (unit: bit). 1 byte data length Length (unit: bit). 32 byte character Mask. 1 bytes of Selected, =1, select all tags; =2, select all tags except the specified tag; =3, select the specified tag. 1 byte Session. 1 byte Target.

Password parameter 2:4 Password.

Password parameter 3:4 Kill Password.

Instruction package: A0H 32H address 35H Bank Str\_addr Length Mask Selected Session Target Password KillPassword CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 35H 00 CheckSum "

Execution error: "0AH 04H address 35H status CheckSum ", status is not equal to 0, Len byte info.

### 1.2.2.7 Set EAS alarm EPC\_Set\_Alarm

Function: set the EAS state for the specified tag.

Instruction code: 36H.

Conditional parameter 1: 1 byte storage area Bank. 2 byte starting address Str\_addr (unit: bit). 1 byte data length Length (unit: bit). 32 byte character Mask. 1 bytes of Selected, =1, select all tags; =2, select all tags except the specified tag; =3, select the specified tag. 1 byte Session. 1 byte Target.

Password parameter 2: 4 Password.

The state parameters of 3: 1 bytes (Eas 0 not alarm, alarm 1).

Instruction package: A0H 2FH address 36H Bank Str\_addr Length  
Mask Selected Session Target Password Eas CheckSum "

Return data: if the instruction is executed correctly, the data portion of the packet is in the state.

"0AH 04H address 36H 00 CheckSum "

Execution error: "0AH 04H address 36H status CheckSum ", status is not equal to 0, Len byte info.

### 1.2.2.8 EAS alarm EPC\_Detect\_Alarm

Function: detect the EAS state of the tag.

Instruction code: 37H.

Parameters: No.

Instruction packet : " A0H 03H address 37H CheckSum "

Return data: if the tag is detected, the packet is returned to the packet:

"0AH 04H address 37H 00 CheckSum "

No alarm or execution error: "0AH 04H address 37H status CheckSum ", status is not equal to 0, Len byte info.

### 1.2.2.9 Lock the user area block read EPC\_MemBlock\_Lock

Function: Locks the specified area designation tag user area.

Script: 38H.

Condition Parameter 1: 1 byte storage area Bank. Two byte starting address Str\_addr (unit: bit). 1 byte data length Length (unit: bit). 32 bytes characteristic word Mask. A byte Selected, = 1, select all the tags; = 2, select all tags except for specified tags; = 3, check the specified tag. 1 byte Session. 1 byte Target.

Password Parameter 2: 4 bytes Password.

Block lock Parameter 3: 1 byte Lock, below.



| Data Block | Lock | Read-protect | Unread-protection |
|------------|------|--------------|-------------------|
| 1          | Bit7 | =1           | =0                |
| 2          | Bit6 | =1           | =0                |
| 3          | Bit5 | =1           | =0                |
| 4          | Bit4 | =1           | =0                |
| 5          | Bit3 | =1           | =0                |
| 6          | Bit2 | =1           | =0                |
| 7          | Bit1 | =1           | =0                |
| 8          | Bit0 | =1           | =0                |

Instruction packet: "A0H 2FH address 38H Bank Str\_addr Length Mask Selected Session Target Password Lock CheckSum"

Returns data: If the command correctly, the data portion of the packet is returned to the state.

"0AH 04H address 38H 00 CheckSum"

Execution Error: "0AH 04H address 38H status CheckSum", status is not equal to 0, Len byte info.

### 1.2.2.10 Start the reader continuous mode

#### Start\_Continuous\_Inventory

Function: Start the reader continuous mode.

Script: 39H.

Instruction packet et: "A0H 03H address 39H CheckSum"

Returns data: If the command correctly, the first return packets:

"0AH 04H address 39H 00 CheckSum".

Then there will be a series of return package, part of the identification tag is EPC data. Identify how many tags, there are many a return package, each return package is only a tag EPC.

"0AH 06H + L address 39H 00 ant L EPC CheckSum"

Wherein, ant represents inventory tag number antenna (antenna 1- antenna 4). L represents the length of EPC, unit: bytes.

Execution Error: "0AH 04H address 39H status CheckSum", status is not equal

to 0, Len bytes of info.

### 1.2.2.11 Stop the reader continuous mode

#### Stop\_Continuous\_Inventory

Function: Stop the reader continuous mode.

Script: 3AH.

Fixed parameters: 14H 0CH 0BH 01H 04H 11H 0EH 2DH

Instruction packet et: "A0H 0BH address 3AH 14H 0CH 0BH 01H 04H 11H 0EH 2DH CheckSum"

Returns data:

Start continuous mode,

If the command is correctly executed, the return package to: "0AH 04H address 3AH 00 CheckSum"

If the instruction execution error, no data is returned.

Continuous mode is not activated,

If the command is correctly executed, the return package to: "0AH 04H address 3AH 00 CheckSum"

If the instruction execution error, it returns an error status:

"0AH 04H address 3AH status CheckSum", status is not equal to 0, Len byte info。