GM65-S Bar Code Reader Module
User Manual

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Catalog

1. Introduction of Module

1.1 Introduction

MG65-S Bar code reader module is a high performance scanner, can read 1D bar code easily and read 2D bar code with high speed. It also wins high scan speed for linear code, even for bar code on paper or screen.

MG65-S bar code reader module is an advanced bar code decoding algorithm which developed on image recognition algorithm, can easily and accurately read bar code, simplify secondary development.

MG65-S works stable in dark and large temperature range.

1.2 Technical Specification

Default scan mode		Continuous scan	
Read code time for once		3s	Parameter：0.1-25.5s; step-size: 0.1s; 0 means no time limited
Reading interval		1S	Parameter：0.1-25.5s; step-size: 0.1s; 0 means no time limited
Output		GBK	GBK、UNICODE、 BIG5
Interface		USB	USB 、UART、USB VCom
Interface (TTL-232)	Serial Baud Rate	9600	adjustable，details at 2.1
	Verification	N	
	Data bit	8	
	Stop bit	1	
	CTSRTS	No	
serial mode	Read code time for once	5s	Parameter：0.1-25.5s; step-size: 0.1s; 0 means no time limited

Electrical specification:

1	Operating Voltage	DC 4.2 - 6.0V
2	Standby Current	30mA
3	Operating Current	160mA
4	Sleep Current	3mA

Running characteristic

1	Light	White light
2	Capture light	Red
3	Scan Angle	Roll:0-360°, Pitch:±65°, Yaw:±60°
4	Resolution	648x 488
5	Scanning angle	35°（Inclination）, 28°（Elevation）

Physics specification:

1	Weight	7g
2	Size	21.4*13.5*11.8mm

1.3 Dimension(mm)
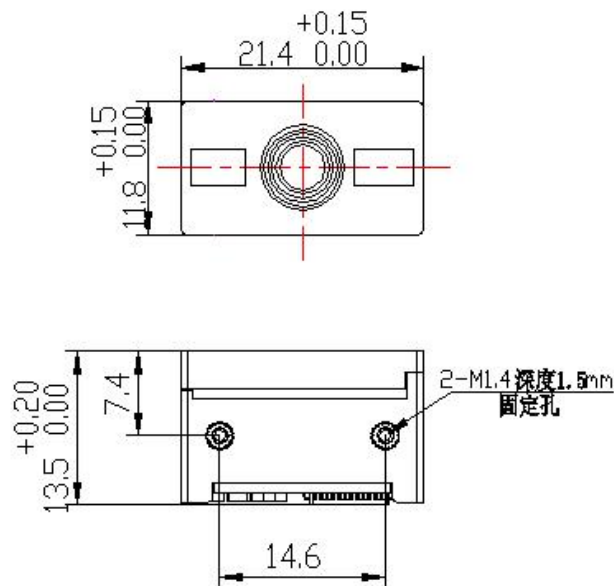
Scan Area (testing in office (250 lux)
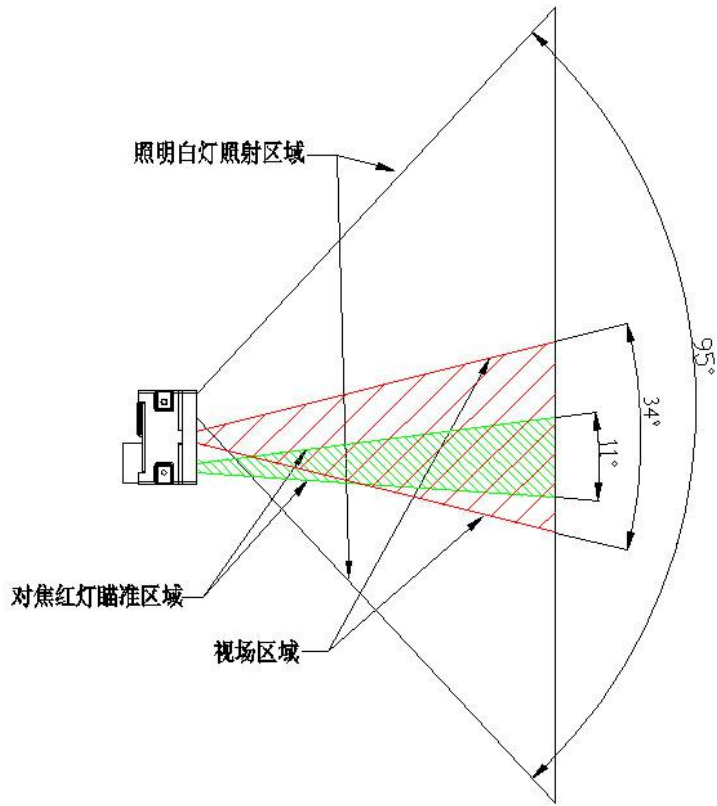
Type of Bar Code	Density	Min. distance	Max. distance
Code 39	0.125 mm (5 mils)	4.0 cm	9.0 cm
	0.375 mm (15 mils)	4.0 cm	25.0cm
UPC/EAN	0.375 mm (15 mils)	4.0 cm	25.0cm
Code93	0.254 mm (10 mils)	4.0 cm	21.0cm

1.4 Data Interface
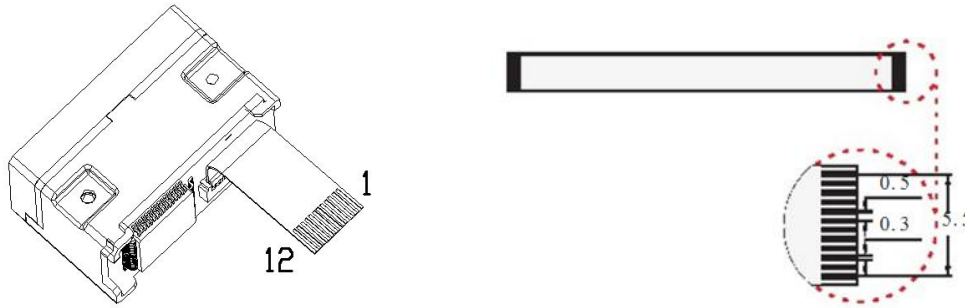
PIN	Input/Output	Definition	Remark
PIN 1	—	NC	/
PIN 2	Power	VCC	DC3.3V
PIN 3	GND	GND	
PIN 4	IN	RX	
PIN 5	OUT	TX	
PIN 6	IN	D-	
PIN 7	OUT	D+	
PIN 8	—	NC	
PIN 9	OUT	BEEPER	Connected to passive buzzer
PIN10	OUT	DLED	Indicator for decoding successfully
PIN11	—	NC	
PIN12	IN	TRIG	Low level triggers decoding

Ref. circuit diagrams:

Circuit diagram for triggering PIN 12:
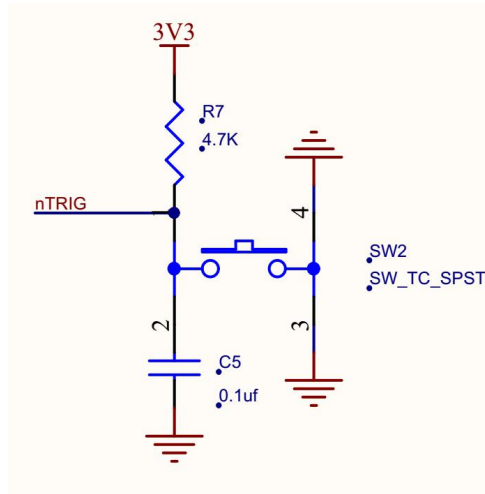
Circuit diagram for pin 9(passive buzzer):
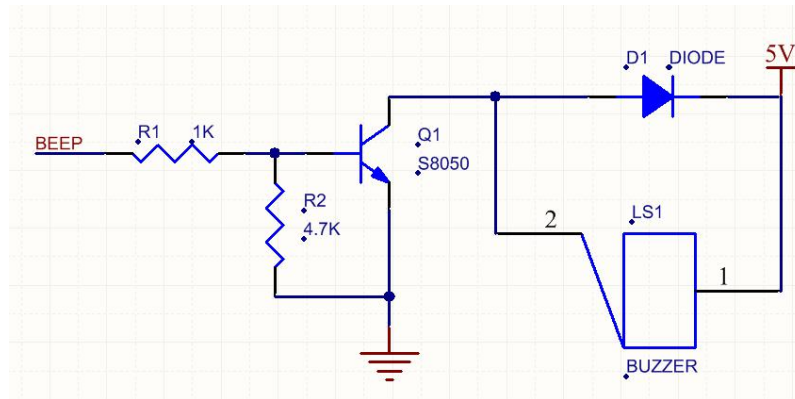
Circuit diagram for PIN 10(DLED):
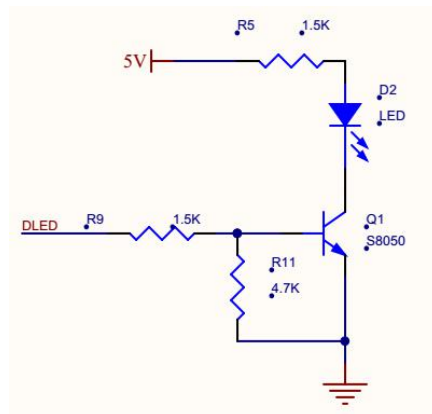
1.5 Setup Code

Customer can set module by scan setup code.

Default: setup code on

Off

Output details in setup code

Default: Not output

Output

1.6 Save and Cancel

Scan cancel code to cancel wrong read date.

Save

Cancel last byte

Cancel all read bytes

Cancel changes

1.7 Reset

Back to Factory Setting by scan follow code.

Reset

2 Communication interface

GM65-S can receive database, control module and set functional parameter by TTL - 232.

2.1 Series Communication Interface

It's default and common to connect module and mainframe(such as PC, POS) by series communication interface. Make sure communication parameter for module and mainframe are same, then it will communicate smooth and correctly.

Series Output

TTL-232 is used for series interface which suitable for most system. Required change-over circuit for RS-232.

Default Parameter as formForm 2- 1. Only Baud Rate can be changed.

Form 2- 1　Default Parameters

Parameters	Default
Series communication interface	Standard TTL-232
Baud rate	9600
Verification	N
Data bit	8
Stop bit	1
CTSRTS	N

Baud Rate Settlement

1200bps

4800bps

9600bps(Default)

14400bps

19200bps

38400bps

57600bps

115200bps

2.2 USB Interface

Scan the following code to become standard keyboard input pattern when module connects PC by USB.

USB PC Keyboard

Scan the following code to modify the PC access cycle for HID devices.

*1ms

3ms

5ms

10ms

Modify the interval between the device from a valid message to a released message by scanning the following setup code.

*0ms

1ms

5ms

10ms

15ms

Modify the interval between the device from releasing message to the next valid message by scanning the following setup code.

*0ms

1ms

5ms

10ms

15ms

Modify the state of the CapsLock when it prints by scanning the following setup code.

*Off

On

2.3 USB Virtual Serial Port

Scan the following code to become virtual serial port output pattern when module connects PC by USB.

USB Virtual serial port

3 Read Mode

3.1 Continuous Mode

On this mode, reading module read code continuous and automatic.

Break after reading one code, break time is changeable.

Click the toggle key to pause. Then click to continuous cyclic read code.

Default Continuous Mode

Time settlement for single read

The longest time before first successful reading. After this time, module will be into no read time.

Single Read time: 0.1~25.5 s, step-size: 0.1s;

0 means infinite time interval.

Default time: 5s

1000ms

default 3000ms

5000ms

infinite time interval

Break time settlement

Time between two read. Can be settled from 1 to 25.5 s, step-size: 0.1s; default 1.0s

No break

500ms

default 1000ms

1500ms

2000ms

Same barcode reading delay

The same barcode reading delay refers to that after the module reads the same bar code, it will be compared with the last reading time,when the interval is longer than the reading delay, the same barcode is allowed to be read, otherwise the output is not allowed.

Same barcode reading delay

*Same bar code reading without delay

Same barcode reading delay time

When the same barcode reading delay is enabled,scan the following code to set same barcode reading delay time.

Infinite delay

500ms

1000ms

3000ms

5000m

3.2 Induction Mode

After setting, module begins to monitor brightness immediately. When scene changed, module will begin to read until time of image stabilization over.

After first successful reading or single reading time out, module will monitor brightness again after some time (changeable)

Module will cycle working as above when follow happen: module can't find code between single read time, then it will stop reading and jump to monitor brightness.

On induction mode, module can begin reading code by click, and it will begin to monitor brightness when release toggle key or successfully output information.

Induction Mode

Time settlement for single read

The longest time read before first successful reading. After this time, module will be into no read time.

Single Read time: 0.1~25.5 s, step-size: 0.1s;

0 means infinite time interval.

Default time: 5s

1000ms

3000ms

Default 5000ms

infinite time interval

Break time settlement

After one successful output or time out for single read. Module will be into monitor after some time.

Time from 0 to 25.5 s, step-size: 0.1s; default 1.0s

No Break

500ms

Default 1000ms

1500ms

2000ms

Image stabilization time

Image stabilization time: the time cost after module find scene change then waiting for the scene stable.   Time from 0s to 25.5s, step size 0.1s.   Default 0.4s.

100ms

Default 400ms

1000ms

2000ms

Sensitivity

Detect the degree of change in the scene in inductive reading mode.When the reading module judges that the scene change degree meets the requirements, it will switch from the monitoring state to the reading state.

*Ordinary sensitivity

Low sensitivity

High sensitivity

Extra high sensitivity

Same barcode reading delay

The setup code is the same as in **Continuous Mode**.

3.3 Manual Mode

Manual mode is default mode. Click toggle key begin to read, stop when output or release toggle key

Manual Mode

Into sleep mode after not work for a while, can be settled by following code.

Sleep mode on

Sleep mode off

Default: come into sleep mode. Wake up by key. Module will restart after dropping out sleep mode.

When deep sleep is not enabled, you can set the idle time for light sleep by scanning the following Settings.

0ms

*500ms

3000ms

5000ms

3.4 Command Triggered Mode

Module begins to read when receive scan command from mainframe(bit0 of zone bit 0x0002 writes"1") , and stop at output or read timeout.

Command triggered mode

Under command triggered mode, command for serial port trigger is 7E 00 08 01 00 02 01 AB CD;

After receiving command, model will output " 02 00 00 01 00 33 31"   and start scan.

Time settlement for single read

Read and Scan time before output. From 0.1s to 25.5s, step size 0.1s. 0 : infinite time interval; Default: 5s

1000ms

3000ms

Default 5000ms

infinite time interval

4 Read Area

4.1 Full Width Area

When the read area is a full-width area, the module will scan the barcode around with the center as the priority, and the barcode can be located at any position of the screen.

*Full Width Area

4.2 Central Area only

When the reading area is the central area, the central position of the barcode must be in the central area set. Bar codes are not within the scope of the region are not identified and output.

Central Area only

Set the size of the central area:

The central area is an area with the center of the whole image as the central point. The size of this area is set in proportion to the width or height of the whole image, and the value range is 1-100.If set to 20, it is located in an area 20% of the width * 20% of the height of the center.
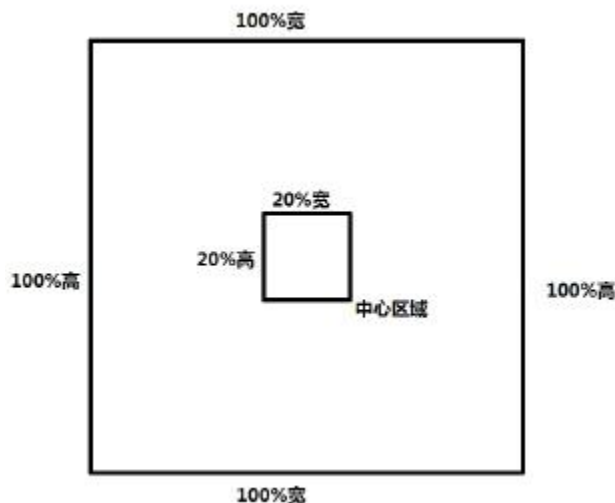
Modify the central area size

The common central area size can be set by scanning the following code:

central area size-20%

central area size-40%

central area size-60%

When the common central area size does not meet the needs, users can also scan the "modify the central area size" setting code to customize the configuration.

modify the central area size

Example: change the center area size to 50%

1. Check the character table to get the hexadecimal value of "50" characters: "32"

2. Confirm whether the setting code is on or not. If it is off, please scan the "open setting code" setting code (see section 1.4).

3. Scan the setting code of "modify the size of central area"

4. Scan data setting codes "3" and "2" successively (see appendix D)

5. Scan "save" setting code (see appendix E)

5 Lighting and Collimate

5.1 Lighting

Head lamp is used to additional lighting when read.

Normal(default): Head lamp will be on when read, others off.

Normally on: always on after boot.

OFF: head lamp is always off

*Normal   **Normally on**   **Off**

5.2 Collimation

There will be a pointing light beam which can help user to find best distance.

Normal(default): pointing light beam shows when read

Normally on: pointing light beam shows after power on until power off

No Collimation: no pointing light beam

Normal(default)   **Normally on**   **No Collimation**

6 Prompts

6.1 Prompts Tone

Read "buzzer drive frequency", the buzzer can be set to active/passive buzzer, the drive frequency of the passive buzzer can also be set.

Buzzer drive frequency-passive low frequency

*Buzzer drive frequency-passive medium frequency

Buzzer drive frequency-passive high frequency

Buzzer drive frequency - active drive

In the active buzzer mode, scan "Buzzer working level - high" can be set to low level when free, high level when busy; scan "Buzzer working level - low" can be set to high level when free, low level when busy.

*Buzzer working level - high

Buzzer working level - low

Silence：Close all prompt tones

Silence on

Silence off

GROW

6.2 Read code successfully tone

Default on

Close read code successfully tone

Duration time setting. Default: 60ms

30ms

60ms

90ms

120ms

6.3 Decoding Prompt

Output Decoding Prompt: F- read unsuccessfully; S- successful

Default no decoding prompt output

Output

6.4 Data Code Format

Read following to enable the reading module to read the Chinese barcode of various encoding format.

Input Data code format GBK

Input Data code format UTF8

Input Data code format AUTO

Read following to print Chinese data according to specified code format.

GBK format: notepad, UNICODE format: WORD and input box for chat tools,

BIG5 format: Chinese Traditional

Output-GBK

Output-UTF8

Output-UNICODE

BIG5

6.5 Keyboard Settlement

Scan following code to change keyboard.

Default Keyboard- US

Czech

France

Germany

Hungary

Italy

Japan   **Spain**   **Turkey-F**

Turkey-Q

6.6 Image Flip

When meet flipped or mirror image, like:
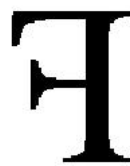
原始图像   镜像翻转

Scan code into or exit image flip mode

image flip mode   **Exit**

PS: in the image flip mode can only scan flipped image. For normal, should exit.

6.7 Image Flip

* One-dimensional barcode forbidden anti-color decoding   **Allow**

* Two-dimensional barcode forbidden anti-color decoding   **Allow**

7 Data Edition

Sometimes we need to edit the data before output to make data separation and processing more easily.

Data edition include:

- Add Prefix
- Add Suffix
- Cut data
- Output CodeID
- Output "RF" when fail to decode
- Add End words"Tail"

Output sequence after data edition:

【Prefix】【CodeID】【Data】【Suffix】【Tail】

7.1 Prefix

Add prefix

Prefix is on the head of encoding Information , and can be self-defined.

Scan the code to add prefix.

Allow to add prefix   **Default no prefix**

Change prefix

Scan "change prefix" and "setup code" code to change prefix.

Use 2 base 16 to express each character.

Max 15 characters.

ASCII on appendix C.

change prefix

E.G. Change prefix to "DATA"

1.   "DTAT" in base 16: "44", "41", "54", "41"

2.   Confirm open the " setup code", if not, find on 1.4

3.   Scan "change prefix" code

4.   Successively scan "Code ID": "4", "4", "4", "1", "5", "4", "4", "1"

7.2 Suffix

Add Suffix

Suffix on the end of encoding Information, and can be self-defined.

Allow add suffix

Default no suffix

Change suffix

Scan " change suffix" and "setup code" code to change prefix.

Use base 16 to express each character.

Max 15 characters. ASCII on appendix C.

Change Suffix

E.G.: Change suffix to "DATA"

1. "DTAT" in base 16: "44", "41", "54", "41"

2.Confirm opening the "setup code", if not, find on 1.4

3.Scan "change suffix" code

4.Successively scan "Code ID": "4", "4", "4", "1", "5", "4", "4", "1"

5.Scan "save" code

7.3 CODE ID

Add CODE ID

Users can identify different types of bar code by CODE ID.   CODE ID use one character to identify and can be self- defined.

Allow add CODE ID

Default close CODE ID

Default of CODE ID

Scan " Default of CODE ID" to back default ID, default ID on appendix B

all bar code back to default ID

Change CODE ID

Users can change CODE ID of any bar code by scan the setup code (as follow) and data edition code.

Base 16 is used to express each CODE ID.

ASCII on appendix C.

E.G.: change CODE ID of CODE 128 to "A"

1. Find "A"="41" in base 16

2. Confirm opening the "setup code", if not, find on 1.4

3. Scan " change CODE 128"

4. Successively scan "Code ID": "4", "1"

5. Scan "save" code

Change CODE ID LIST

Change CODE ID of EAN13

Change CODE ID of EAN8

Change CODE ID of UPCA

Change CODE ID of UPCE0

Change CODE ID of UPCE1

Change CODE ID of CODE 128

Change CODE ID of CODE 39

Change CODE ID of CODE 93

Change CODE ID of CODE BAR

Change CODE ID of Interleaved 2 of 5

Change CODE ID of Industrial 25

Change CODE ID of Matrix 2 of 5

Change CODE ID of CODE 11

Change CODE ID of MSI

Change CODE ID of RSS

Change CODE ID of limited RSS

Change CODE ID of expended RSS

Change CODE ID of QR CODE

Change CODE ID of Data Matrix

Change CODE ID of limited PDF417

7.4 Tail

Open this function to help system quickly distinguish current decoding results.

Scan "Add tail" to open this function, if read success, there will be tail on the end of decode data.

Close tail

Add tail "CR"

Add tail "TAB"

Add tail "CRLF"

7.5 Cut out Data

Open to output part of data.

[Data] is composed of [Start] + [Center] + [End]

Character length of "start" and "end" can be changed

Output whole data

Output Start **part**

Output End **Part**

Output Center **part**

Change length of [Start]-M

Scan " Change M" code and "data edition" code to change length of [Start], max 255 characters

Base 16 is used to express length. ASCII on appendix C.

Change M

Change length of [End]-N

Scan " Change N" code and "data edition" code to change length of [Start], max 255 characters

Base 16 is used to express length. ASCII on appendix C.

Change N

Output Start part

E.G. Output "1234567890123" of whole decode information " 1234567890123ABC"

1. "13" ="0D" in base 16

2. Confirm opening the "setup code", if not, find on 1.4

3. Scan" change length M"

4. Successively scan "Code ID": "0", "D"

5. Scan "save" code

6. Scan" Output Start part"

Output End Part

E.G. Output "ABC" of whole decode information " 1234567890123ABC"

1. "3" = "03" in base 16

2. Confirm opening the "setup code", if not, find on 1.4

3. Scan "change length N"

4. Successively scan "Code ID":"0", "3"

5. Scan "save" code

6. Scan" Output Start part"

Output Center part

E.G.: Output "0123" of whole decode information " 1234567890123ABC"

1. " 10" ="0A"; "3"="03" in base16

2. Confirm opening the "setup code", if not, find on 1.4

3. Scan "change length N"

4. Successively scan "Code ID":"0", "3"

5. Scan "save" code

6. Scan " change length M"

7. Successively scan :Code ID": "0", "A"

8. Scan "save" code

9. Scan "Output Center part"

7.6 RF Information

RF(Read Fail): Users can self- define output information when read fail.

Output RF information   **Default not output**

Change RF information

Scan"change RF information" and "data edition code" to change RF information.

Base 16 is used to express, max at 15 character. ASCII on appendix C.

Change RF information

E.G.: change RF to "FAIL"

1. Find "FAIL" in base-16: "46", "41", "49", "4C"

2. Confirm opening the "setup code", if not, find on 1.4

3. Scan " change RF information"

4. Successively scan "4"、"6"、"4"、"1"、"4"、"9"、"4"、"C"

5. Scan "save" code

7.7 Output Protocol

The output format of the decoded result can be modified in serial/virtual serial mode by scanning the following Settings code.

The format output with protocol is as follows: <03>< length >< decoded data >.

In addition, when in serial/virtual serial mode the output mode of the band protocol is enabled, the module will not add an terminator to the decoded data.

* Pure data
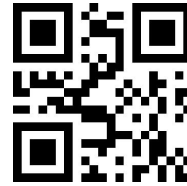
With the agreement

8 Bar code type enables/disable configuration

8.1 All types of bar code can be decoded

After scan " Forbid read all bar code" , module will only support to scan setup code.

Support all

Forbid read all bar code

Open default support types

8.2 Bar code rotate

Default allow 360° rotate read

Forbid 360° rotate read

8.3 EAN13

Allow reading EAN13

Forbid reading EAN13

* 2 bits extra-code Forbidden

2 bits extra-code Allow

*5 bits extra-code Forbidden

5 bits extra-code Allow

8.4 EAN8

Allow reading EAN8

Forbid reading EAN8

* 2 bits extra-code Forbidden

2 bits extra-code Allow

*5 bits extra-code Forbidden

5 bits extra-code Allow

8.5 UPCA

Allow reading UPCA

Forbid reading UPCA

* 2 bits extra-code Forbidden

2 bits extra-code Allow

*5 bits extra-code Forbidden

5 bits extra-code Allow

8.6 UPCE0

Allow reading UPCE0

Forbid reading UPCE0

8.7 UPCE1

Allow reading UPCE1

Forbid reading UPCE1

* 2 bits extra-code Forbidden

2 bits extra-code Allow

*5 bits extra-code Forbidden

5 bits extra-code Allow

8.8 Code128

Allow reading Code128

Forbid reading Code128

Scan following code to change min length of code 128

Code128 min length at 0

Code128min length at 4

Scan following code to change max length of code 128

Code128 max length at 32

Code128 max length at 255

8.9 Code39

Allow reading Code39

Forbid reading Code39

Scan following code to change min length of code39

Code39 min length at 0

*Code39 min length at 4

Scan following code to change max length of code39

Code39 max length at 32

Code39 max length at 255

Scan following code to configure whether Code39 supports Code32 mode and FullAsc mode

*Forbid Code32

Allow Code32

*Forbid FullAsc Mode
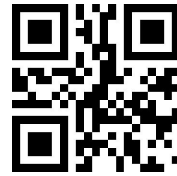
Allow FullAsc Mode

8.10 Code93

Allow reading Code93

Forbid reading Code93

Scan following code to change min length of code93

Code93 min length at 0

Code93 min length at 4

Scan following code to change max length of code93

Code93max length at 32

Code93max length at 255

GROW

8.11 CodeBar

Allow reading CodeBar

Forbid reading CodeBar

Scan following code to allow/forbid to send Start-stop operator

Send CodeBar Start-stop operator

Not send CodeBar Start-stop operator

Scan following code to change min length of CodeBar

CodeBar min length at 0

CodeBarmin length at 4

Scan following code to change min length of CodeBar

CodeBar max length at 32

CodeBar max length at 255

8.12 QR

Allow reading QR

Forbid reading QR

8.13 Interleaved 2 of 5

Allow reading Interleaved 2 of 5   **Default Forbid reading Interleaved 2 of 5**

Scan following code to set min length of Interleaved 2 of 5

Interleaved 2 of 5 min length at 0   **Default   Interleaved 2 of 5 min length at 4**

Scan following code to set max length of Interleaved 2 of 5

Interleaved 2 of 5 max length at 32   **Interleaved 2 of 5max length at 255**

8.14 Industrial 25

Allow reading Industrial 25   **Forbid reading Industrial 25**

Scan following code to set min length of Interleaved 25

Industrial 25 min length at 0   **Industrial 25 min length at 4**

Scan following code to set max length of Interleaved 25

Industrial 25 max length at 32   **Industrial 25 max length at 255**

8.15 Matrix 2 of 5

Allow reading Matrix 2 of 5

Forbid reading Matrix 2 of 5

Scan following code to set min length of Matrix 2 of 5

Matrix 2 of 5 min length at 0

Matrix 2 of 5 min length at 4

Scan following code to set max length of Matrix 2 of 5

Matrix 2 of 5 max length at 32

Matrix 2 of 5max length at 255

Scan following code to set the validation format of Matrix 2 of 5

Matrix 2 of 5 validation format Mod10

*Matrix 2 of 5 validation format None

8.16 Code11

Allow reading Code11

Forbid reading Code11

Scan following code to set min length of Code11

Code11 min length at 0

Code11 min length at 4

Scan following code to set max length of Code11

Code11 max length at 32

Code11 max length at 255

Scan following code to set the validation format of Code11

Code11 use 1bit check

*Code11 use 2bit check

8.17 MSI

Allow reading MSI

Forbid reading MSI

Scan following code to set min length of MSI

MSI min length at 0

*MSI min length at 4

Scan following code to set max length of MSI

MSI max length at 32

MSI max length at 255

8.18 RSS

Allow reading RSS-14

Forbid reading RSS-14

Allow reading limited RSS

Forbid reading limited RSS

Allow reading expended RSS

Forbid reading expended RSS

Scan following code to set min length of RSS

RSS min length at 0

RSS min length at 4

Scan following code to set max length of RSS

*RSS max length at 32

RSS max length at 255

8.19 DM

Allow reading DM

Forbid reading DM

Scan following code to set whether the module supports decoding multiple DM barcodes simultaneously

*Forbid Read multiple DM barcodes simultaneously

Allow Read multiple DM barcodes

Simultaneously

8.20 PDF417

Allow reading PDF417

Forbid reading PDF417

9 Serial Port Instruction

Users can settle the module by sending instruction from mainframe.

Please make sure communicate parameter complete matching between module and mainframe.

Module default serial communicate parameter: Baud rate 9600bps; No check; 8 bit data; 1 bit stop bit; No flow control.

9.1 CRC Algorithm

CRC: CRC_CCITT check value (2 bytes).

Suitable for Types、Lens、Address、Datas;

Characteristic polynomial : X16+X12+X5+1, multinomial coefficient: 0x1021, original value:0 ;

For single byte, the highest bit will be calculated at first, output will be without negation.

Reference code of C:

```
unsigned int crc_cal_by_bit(unsigned char* ptr, unsigned int len)
{
unsigned int crc = 0;
while(len-- != 0)
{
for(unsigned char i = 0x80; i != 0; i /= 2)
{
crc *= 2;
if((crc&0x10000) !=0)
crc ^= 0x11021;
if((*ptr&i) != 0)
crc ^= 0x1021;
}
ptr++;
}
return crc;
}
```

PS: when no need for checking CRC, CRC bite can be filled in 0xAB 0xCD

9.2 Read Zone Bit

Max 256 bytes/time for zone bit reading.

Command Format:

Input: {Head1} {Types} {Lens} {Address} {Datas} {CRC}

PS: Head1: 0x7E 0x00 （2 bytes）

    Types: 0x07 （1 byte）

    Lens: 0x01 （1 byte）

    Address : 0x0000~0x00FF（2 bytes）, address to start reading zone bit

    Datas: 0x00~0xFF（1 byte）, Numbers of zone bit for Sequential read, 0x00= 256byets

    CRC: CRC_CCITT check value (2 bytes). Suitable for Types、Lens、Address、Datas;

Characteristic polynomial : X16+X12+X5+1, multinomial coefficient: 0x1021, original value:0 ;

For single byte, the highest bit will be calculated at first, output will be without negation.

The reference code of C is as follows:

```
unsigned int crc_cal_by_bit(unsigned char* ptr, unsigned int len)
{
unsigned int crc = 0;
while(len-- != 0)
{
for(unsigned char i = 0x80; i != 0; i /= 2)
{
crc *= 2;
if((crc&0x10000) !=0) //Last CRC *  2 ，if the first one is 1，so divide  0x11021
crc ^= 0x11021;
if((*ptr&i) != 0) //If the standard is 1，so CRC =   last CRC + standard CRC_CCITT
crc ^= 0x1021;
}
ptr++;
}
return crc;
}
```

Note: users can fill 0xAB 0xCD at CRC byte when CRC validation is not required.

Output: {Head2} {Types} {Lens} {Datas} {CRC}

1) Read successfully and return data

PS: Head2: 0x02 0x00

    Types: 0x00 （read succeed）

Lens: numbers of upload bytes,0x00= 256byets

Datas: 0x00~0xFF means read data.

CRC: CRC_CCITT check value. Suitable for Types、Lens、Datas;

Characteristic polynomial : X16+X12+X5+1, multinomial coefficient: 0x1021, original value:0 ;

For single byte, the highest bit will be calculated at first, output will be without negation.

(The reference code is the same as above)

2) CRC failed

No response command

3) Unknown command response

No response command

E.G.:

Read address 0x000A of Zone bit

1) Read successfully and return data is 0x3E.

Input: 0x7E 0x00 0x07 0x01 0x00 0x0A 0x01 0xEE 0x8A

Output: 0x02 0x00 0x00 0x01 0x3E 0xE4 0xAC

2) CRC wrong

Input: 0x7E 0x00 0x07 0x01 0x00 0x0A 0x01 0x11 0x22

Output : None

3) When length of command to short or more than 400ms after 0x7e 0x00, treat as unknown command.

Input: 0x7E 0x00 0x07 0x01 0x00 0x0A 0x01

Output: None

9.3 Write Zone Bit

Max 256 bytes for one time write

Command Format:

Input: {Head1} {Types} {Lens} {Address} {Datas} {CRC}

PS: Head1: 0x7E 0x00（2 bytes）

Types: 0x08（1 byte）

Lens: 0x00~0xFF（1 byte）, means numbers of bytes of this datas, times of continuous writing.

Address: 0x0000~0xFFFF（2 bytes）, start location of write

Datas: 0x00~0xFF （1~256 bytes）, dates wrote in zone bit. When configuring multiple zone bit,must follow the order of address from low to high to fill the data domains.

CRC: CRC_CCITT check value (2 bytes). Suitable for Types、Lens、Address、Datas;

Characteristic polynomial : X16+X12+X5+1, multinomial coefficient: 0x1021, original value:0 ;

For single byte, the highest bit will be calculated at first, output will be without negation.

The reference code of C is as follows:

```c
unsigned int crc  cal  by  bit(unsigned char* ptr, unsigned int len)
{
unsigned int crc = 0;
while(len-- != 0)
{
for(unsigned char i = 0x80; i != 0; i /= 2)
{
crc *= 2;
if((crc&0x10000) !=0) //Last CRC *  2 ，if the first one is 1，so divide  0x11021
crc ^= 0x11021;
if((*ptr&i) != 0) //If the standard is 1，so CRC =   last CRC + standard CRC_CCITT
crc ^= 0x1021;
}
ptr++;
}
return crc;
}
```

Note: users can fill 0xAB 0xCD at CRC byte when CRC validation is not required.

Output: {Head2} {Types} {Lens} {Datas} {CRC}

1) Read successfully

PS: Head2：0x02 0x00

Types：0x00（read succeed）

Lens：0x01

Datas：0x00

CRC：CRC_CCITT check value（0x33 0x31）

2) CRC failed

No response command

3) Unknown command response

No response command

E.G.:

Write 0x3E in 0x000A of zone bit

1) Successfully set

Input ：0x7E 0x00 0x08 0x01 0x00 0x0A 0x3E 0x4C 0xCF

Output：0x02 0x00 0x00 0x01 0x00 0x33 0x31

2) CRC wrong

Input：0x7E 0x00 0x08 0x01 0x00 0x0A 0x3E 0x11 0x22

Output：None

3) When length of command to short or more than 400ms after 0x7e 0x00, treat as unknown command.

Input: 0x7E 0x00 0x08 0x01 0x00 0x0A 0x3E

Output: None

9.4 Save zone bit to EEPROM Command

Command Format:

Input: {Head1} {Types} {Lens} {Address} {Datas} {CRC}

PS: Head1: 0x7E 0x00

Types: 0x09

Lens: 0x01

Address: 0x0000

Datas: 0x00

CRC: CRC_CCITT check value（0xDE 0xC8）

Output: {Head2} {Types} {Lens} {Datas} {CRC}

1) Saved successful

PS: Head2：0x02 0x00

Types：0x00（read succeed）

Lens：0x01

Datas：0x00

CRC：CRC_CCITT check value（0x33 0x31）

2) CRC failed

No response command

3) Unknown command response

No response command

9.5 Zone Bit Reset To Defaults

Command Format:

Input: {Head1} {Types} {Lens} {Address} {Datas} {CRC}

PS: Head1: 0x7E 0x00

Types: 0x09

Lens: 0x01

Address: 0x0000

Datas: 0xFF

CRC: CRC_CCITT check value

Output: {Head2} {Types} {Lens} {Datas} {CRC}

1) Saved successful

PS: Head2：0x02 0x00

Types：0x00（read succeed）

Lens：0x01

Datas：0x00

CRC：CRC_CCITT check value（0x33 0x31）

2) CRC failed

No response command

3) Unknown command response

No response command

9.6 Program Erasure Operation

Command Format:

Input: {Head1} {Types} {Lens} { NotUse } {Datas} {CRC}

PS: Head1: 0x7E 0x00（2 bytes）

Types: 0x05（1 byte）

Lens: 0x01（1 byte）Numbers of Datas for Sequential read

NotUse: 0x0000（2 bytes），2 bytes 0x00

Datas: 0x11/0x22/0x33（1 bytes），represents the data to be written;0x11:Erase the bootstrap;

0x22:erase the user program;0x33:Erase the bootstrap and user program.

CRC: CRC_CCITT check value (2 bytes). Suitable for Types、Lens、NotUse、Datas;

Characteristic polynomial : X16+X12+X5+1, multinomial coefficient: 0x1021, original value:0 ;

For single byte, the highest bit will be calculated at first, output will be without negation.

The reference code of C is as follows:

```
unsigned int crc_cal_by_bit(unsigned char* ptr, unsigned int len)
{
unsigned int crc = 0;
while(len-- != 0)
{
for(unsigned char i = 0x80; i != 0; i /= 2)
{
crc *= 2;
if((crc&0x10000) !=0) //Last CRC * 2，if the first one is 1，so divide 0x11021
crc ^= 0x11021;
if((*ptr&i) != 0) //If the standard is 1，so CRC = last CRC + standard CRC_CCITT
crc ^= 0x1021;
}
ptr++;
}
return crc;
}
```

Note: users can fill 0xAB 0xCD at CRC byte when CRC validation is not required.

Output: {Head2} {Types} {Lens} {Datas} {CRC}

1) Erased successful

PS: Head2：0x02 0x00

Types：0x00（read succeed）

Lens：0x01

Datas：0x00

CRC：CRC_CCITT check value（0x33 0x31）

2) CRC failed

No response command

3) Unknown command response

No response command

E.G.:

After erasure the user program, the device will automatically enter the boot program and wait for the download of the new user program

4) Erased successful

Input ：0x7E 0x00 0x05 0x01 0x00 0x00 0x22 xx xx

Output：0x02 0x00 0x00 0x01 0x00 0x33 0x31

5) CRC wrong

Input：0x7E 0x00 0x05 0x01 0x00 0x00 0x22 xx xx

Output：None

6) When length of command to short or more than 400ms after 0x7e 0x00, treat as unknown command.

Input: 0x7E 0x00 0x05 0x01 0x00 0x00 0x22

Output: None

9.7List of zone bit

Zone bit	0x0000
Data bit	Function
Bit 7	1：Open LED when successfully read 0：Close
Bit 6	1：Mute off 0：Mute on
Bit 5-4	00：No aim 01：Standard 10/11：always on
Bit 3-2	00：No light 01：Standard 10/11：Always on
Bit 1-0	00：Manual mode 01：Command mode 10：Continuous mode 11：Sensor mode
Zone bit	0x0002
Data bit	Function
Bit 7	Keep
Bit 6	1：Output successfully decode prompt 0：Not output

Bit5-1	Keep
Bit0	Keep
Zone bit	*0x0003*
Data bit	Function
Bit 7-2	HID query cycle. Cycle = （Reg0x0003[7:2]+1）ms
Bit 1	1：Close Settlement Code 0：Open
Bit0	1：Output content of settlement code 0：Not output
Zone bit	*0x0004*
Data bit	Function
Bit 7-0	Time for image stabilization 0x00-0xFF：0.0-25.5s
Zone bit	*0x0005*
Data bit	Function
Bit 7-0	Read interval 0x00-0xFF：0.0-25.5s
Zone bit	*0x0006*
Data bit	Function
Bit 7-0	Time for single read 0x00-0xFF：0.0-25.5s
Zone bit	*0x0007*
Data bit	Function
Bit 7	Auto sleep 1：On 0：Off
Bit6-0	Free time（high order Bit14-8） Unit：100ms
Zone bit	*0x0008*
Data bit	Function
Bit 7-0	Free time（low order Bit7-0） Unit: 100ms

Zone bit	*0x0009*
Data bit	Function
Bit7-2	HID the interval before release　　Interval =（Reg0x0009[7:2]）ms
Bit 1-0	Image rollovers 00：Forbid　01：Allow　　10/11：Keep
Zone bit	*0x000A*
Data bit	Function
Bit 7-0	Successfully read suond 0x00：Piezo Buzzer　0x01-0xFF：sfn, Value*20；
Zone bit	*0x000B*
Data bit	Function
Bit 7-0	Time duration for successfully read sound 0x00-0xFF；0-255ms
Zone bit	*0x000C*
Data bit	Function
Bit 7-2	HID the interval after release　　Interval =（Reg0x000C[7:2]）ms
Bit 1	CapsLock Switch　　0：On 1：Off
Bit0	Piezo Buzzer 0：high level when free, low level when busy　　1：low level when free, high level when busy
Zone bit	*0x000D*
Data bit	Function
Bit 7-6	Keep
Bit 5-4	Input data encoding format 00：GBK　　　01：Keep　　　10：AUTO　　11：UTF8
Bit 3-2	Output data encoding format 00：GBK　　01：UNICODE　　10：Keep　　11：UTF8
Bit1-0	00：serial port output　　01：USB PC Keyboard　　10：Keep 11：USB virtual serial port
Zone bit	*0x000E*

Data bit	Function
Bit 7-4	Light sleep free time Free time= （Reg0x000E[7:4]*500）ms
Bit3	Keep
Bit2	1：Decode successfully sound on 0：Decode successfully sound off
Bit1-0	Keep
Zone bit	*0x000F*
Data bit	Function
Bit7-0	Sensitivity adjustment parameter 1 0x00-0xFF：higher value, lower sensitivity, default value 0x32
Zone bit	*0x0010*
Data bit	Function
Bit7-0	Sensitivity adjustment parameter 2 0x00-0xFF：higher value, lower sensitivity, default value 0x0A
Zone bit	*0x0011*
Data bit	Function
Bit7-0	Exposure Settings - high bytes 0x00-0xFF
Zone bit	*0x0012*
Data bit	Function
Bit7-0	Exposure Settings - low bytes 0x00-0xFF
Zone bit	*0x0013*
Data bit	Function
Bit7	Same barcode reading delay setting 0：Turn off 1：Turn on
Bit6-0	Same barcode reading delay time（Unit：100ms） 0x00：Infinite length 0x01-0x7F：0.1-12.7s；
Zone bit	*0x0014*

Data bit	Function
Bit7-0	Reserved time for information output（Unit：10ms） 0x00-0xFF：0-2.55 s
Zone bit	*0x002B，0x2A*
Data bit	Function
Bit 15-13	Keep
Bit 12-0	0x09C4：Series rate: 1200 bps 0x0271：Series rate: 4800 bps 0x0139：Series rate: 9600 bps 0x00D0：Series rate: 14400 bps 0x009C：Series rate: 19200 bps 0x004E：Series rate: 38400 bps 0x0034：Series rate: 57600 bps 0x001A：Series rate: 115200bps
Zone bit	*0x002C*
Data bit	Function
Bit 7-4	Keep
Bit 3	Decoding range setting 0：Full Width 1：the central area only
Bit 2-1	Bar code switch 00：forbid reading all bar code 01：all bar code can be read; 10/11：Default
Bit 0	360°rotate read 0：Close； 1：Open
Zone bit	*0x002D*
Data bit	Function
Bit 7-0	Center area range setting 0x01-0x64：1%-100% Other values：50%
Zone bit	*0x002E*
Data bit	Function
Bit 7-1	Keep

Bit0	Read EAN13 0：Forbid　　　1：Allow	
Zone bit	*0x002F*	
Data bit	Function	
Bit 7-1	Keep	
Bit0	Read EAN8 0：Forbid　　　1: Allow	
Zone bit	*0x0030*	
Data bit	Function	
Bit 7-1	Keep	
Bit0	Read UPCA 0：Forbid　　　1：Allow	
Zone bit	*0x0031*	
Data bit	Function	
Bit 7-1	Keep	
Bit0	Read UPCE0 0：Forbid　　　1：Allow	
Zone bit	*0x0032*	
Data bit	Function	
Bit 7-1	Keep	
Bit0	Read UPCE1 0：Forbid　　　1：Allow	
Zone bit	*0x0033*	
Data bit	Function	
Bit 7-1	Keep	
Bit0	Read Code128 0：Forbid　　　1：Allow	
Zone bit	*0x0034*	

Data bit	Function
Bit 7-0	Min length of Code128 0x00-0xFF：0-255Byte
Zone bit	*0x0035*
Data bit	Function
Bit 7-0	Max length of Code128 0x00-0xFF：0-255Byte
Zone bit	*0x0036*
Data bit	Function
Bit 7-1	Keep
Bit0	Read Code39 0：Forbid 1：Allow
Zone bit	*0x0037*
Data bit	Function
Bit 7-0	Min length of Code39 0x00-0xFF：0-255Byte
Zone bit	*0x0038*
Data bit	Function
Bit 7-0	Max length of Code39 0x00-0xFF：0-255Byte
Zone bit	*0x0039*
Data bit	Function
Bit 7-1	Keep
Bit0	Read Code93 0：Forbid 1：Allow
Zone bit	*0x003A*
Data bit	Function
Bit 7-0	Min length of Code93 0x00-0xFF：0-255Byte
Zone bit	*0x003B*

Data bit	Function
Bit 7-0	Max length of Code93 0x00-0xFF：0-255Byte
Zone bit	*0x003C*
Data bit	Function
Bit 7-2	Keep
Bit1	Send CodeBar Start-stop operator 0：Forbid 1：Allow
Bit0	Read CodeBar 0：Forbid 1：Allow
Zone bit	*0x003D*
Data bit	Function
Bit 7-0	Min length of CodeBar 0x00-0xFF：0-255Byte
Zone bit	*0x003E*
Data bit	Function
Bit 7-0	Max length of CodeBar 0x00-0xFF：0-255Byte
Zone bit	*0x003F*
Data bit	Function
Bit 7-1	Keep
Bit0	Read QR 0：forbid 1：allow
Zone bit	*0x0040*
Data bit	Function
Bit 7-1	Keep
Bit0	Read Interleaved 2 of 5 0：Forbid 1：Allow
Zone bit	*0x0041*

Data bit	Function
Bit 7-0	Min length of Interleaved 2 of 5 0x00-0xFF：0-255Byte
Zone bit	*0x0042*
Data bit	Function
Bit 7-0	Max length of Interleaved 2 of 5 0x00-0xFF：0-255Byte
Zone bit	*0x0043*
Data bit	Function
Bit 7-1	Keep
Bit0	Read Industrial 25 0：forbid 1：Allow
Zone bit	*0x0044*
Data bit	Function
Bit 7-0	Min length of Industrial 25 0x00-0xFF：0-255Byte
Zone bit	*0x0045*
Data bit	Function
Bit 7-0	Max length of Industrial 25 0x00-0xFF：0-255Byte
Zone bit	*0x0046*
Data bit	Function
Bit 7-1	Keep
Bit0	Read Matrix 2 of 5 0：forbid 1：Allow
Zone bit	*0x0047*
Data bit	Function
Bit 7-0	Min length of Matrix 2 of 5 0x00-0xFF：0-255Byte
Zone bit	*0x0048*

Data bit	Function
Bit 7-0	Max length of Matrix 2 of 5 0x00-0xFF：0-255Byte
Zone bit	*0x0049*
Data bit	Function
Bit 7-1	Keep
Bit0	Read Code11 0：Forbid 1：Allow
Zone bit	*0x004A*
Data bit	Function
Bit 7-0	Min length of Code11 0x00-0xFF：0-255Byte
Zone bit	*0x004B*
Data bit	Function
Bit 7-0	Max length of Code11 0x00-0xFF：0-255Byte
Zone bit	*0x004C*
Data bit	Function
Bit 7-1	Keep
Bit0	Read MSI 0：Forbid 1：Allow
Zone bit	*0x004D*
Data bit	Function
Bit 7-0	Min length of MSI 0x00-0xFF：0-255Byte
Zone bit	*0x004E*
Data bit	Function
Bit 7-0	Max length of MSI 0x00-0xFF：0-255Byte
Zone bit	*0x004F*

Data bit	Function
Bit 7-1	Keep
Bit0	Read RSS-14 0：Forbid　　　1：Allow
Zone bit	*0x0050*
Data bit	Function
Bit 7-1	Keep
Bit0	Read limited RSS 0：Forbid　　1：Allow
Zone bit	*0x0051*
Data bit	Function
Bit 7-1	Keep
Bit0	Read Expended RSS 0：Forbid　　　1：Allow
Zone bit	*0x0052*
Data bit	Function
Bit 7-0	Min length of RSS 0x00-0xFF：0-255Byte
Zone bit	*0x0053*
Data bit	Function
Bit 7-0	Max length of RSS 0x00-0xFF：0-255Byte
Zone bit	*0x0054*
Data bit	Function
Bit 7-1	Keep
Bit0	Read DM 0：Forbid　　1：Allow
Zone bit	*0x0055*

Data bit	Function
Bit 7-1	Keep
Bit0	Read PDF417 0：Forbid 1：Allow
Zone bit	*0x0060*
Data bit	Function
Bit 7	Keep
Bit6-5	Type of Tailed 00：CR(0x0D) 01：CRLF(0x0D,0x0A) 10：TAB(0x09) 11：None
Bit4	1.Allow add RF 0：Foebid
Bit3	1：Allow add prefix 0：Forbid
Bit2	1：Allow add Code ID 0：Forbid
Bit1	1：Allow add suffix 0：Forbid
Bit0	1：Allow add tail 0：Forbid
Zone bit	*0x0061*
Data bit	Function
Bit 7-0	Keyboard Settlement 00：US 01：Czech 02：France 03：Germany 04：Hungary 05：Italy 06：Japan 07：Spain 08：Turkey Q 09: Turkey F
Zone bit	*0x0062*
Data bit	Function
Bit 7-4	Length of prefix 0x00-0x0F
Bit3-0	Length of suffix 0x00-0x0F
Zone bit	*0x0063 – 0x0071*
Data bit	Function

Bit 7-0	Prefix 0x00-0xFF：Content，max 15Byte
Zone bit	*0x0072 - 0x0080*
Data bit	Function
Bit 7-0	Suffix 0x00-0xFF：Content，max 15Byte
Zone bit	*0x0081*
Data bit	Function
Bit 7-4	Keep
Bit3-0	RF length 0x00-0x0F
Zone bit	*0x0082– 0x0081*
Data bit	Function
Bit 7-0	RF content 0x00-0xFF：max 15Byte
Zone bit	*0x0091 – 0x00A4*
Data bit	Function
Bit 7-0	Code ID settlement 0x41-0x5a & 0x61-0x7a （A-Z,a-z）Code ID as appendix B
Zone bit	*0x00B0*
Data bit	Function
Bit 7-2	Keep
Bit 1-0	Data Cut out settlement 00：Output whole data 01：Output Start part 10：Output End part 11：Output center part
Zone bit	*0x00B1*
Data bit	Function
Bit 7-0	Cut out M bytes from start 0x00-0xFF：0-255 bytes
Zone bit	*0x00B2*

Data bit	Function
Bit 7-0	Cut out N bytes from end 0x00-0xFF：0-255个字符
Zone bit	*0x00D9（只写Zone bit）*
Data bit	Function
Bit 7-0	Function Zone bit 0x55：reset to defaults 0xA0：Mild sleep, wake up by UART interrupt; Power consumption:28mA 0xA5： Deep sleep,wake up by UART interrupt; module reboot; Power consumption:3mA 0x00：write 0 to wake up module
Zone bit	*0x00E0 （Only read Zone bit）*
Data bit	Function
Bit 7-0	Product model 0x05：GM65-S Module
Zone bit	*0x00E1（Only read Zone bit）*
Data bit	Function
Bit 7-0	Hardware Version 0x64：V1.00 0x6E：V1.10 0x78：V1.20 0x82：V1.30 0x8C：V1.40 ......
Zone bit	*0x00E2 （Only read Zone bit）*
Data bit	Function
Bit 7-0	Software Version 0x64：V1.00 0x6E：V1.10 0x78：V1.20 0x82：V1.30 0x8C：V1.40 ......
Zone bit	*0x00E3 （Only read Zone bit）*
Data bit	Function

Bit 7-0	Year of software (Add 2000) 0x0F：2015 0x10：2016 0x11：2017 ......
Zone bit	*0x00E4*（Only read Zone bit）
Data bit	Function
Bit 7-0	Software month 0x09：September 0x0A：Oct. 0x0B：Nov. ......
Zone bit	*0x00E5*（Only read Zone bit）
Data bit	Function
Bit 7-0	Software date 0x09：9 0x0A：10 0x0B：11 ......

10 Appendix A：Common serial port instruction

Function	Instruction
Baud rate to 9600	7E 00 08 01 00 D9 D3 20 38
Save settlements to EEPROM	7E 00 09 01 00 00 DE C8
Find baud rate	7E 00 07 01 00 2A 02 D8 0F

Module will return following info after mainframe send serial port instruction - find baud rate

Return information	Baud rate
02 00 00 02 C4 09 SS SS	1200
02 00 00 02 71 02 SS SS	4800
02 00 00 02 39 01 SS SS	9600
02 00 00 02 D0 00 SS SS	14400
02 00 00 02 9C 00 SS SS	19200
02 00 00 02 4E 00 SS SS	38400
02 00 00 02 34 00 SS SS	57600

PS：SS SS= check value。

11 Appendix B：Code ID List

Type of Bar Code	Corresponding character	Zone bit address
EAN-13	d	0x91
EAN-8	d	0x92
UPC-A	c	0x93
UPC-E0	c	0x94
UPC-E1	c	0x95
Code 128	j	0x96
Code 39	b	0x97
Code 93	i	0x98
Codabar	a	0x99
Interleaved 2 of 5	e	0x9A
Industrial 2 of 5	D	0x9B
Matrix 2 of 5	v	0x9C
Code 11	H	0x9D
MSI-Plessey	m	0x9E
GS1 Databar(RSS-14)	R	0x9F
GS1 Databar Limited(RSS)	R	0xA0
GS1 Databar Expanded(RSS)	R	0xA1
QR Code	Q	0xA2
Data Matrix	u	0xA3
PDF 417	r	0xA4

12 Appendix C：ASCII

Base 16 Hexadecimal	Decimalism	Character
00	0	NUL
01	1	SOH
02	2	STX
03	3	ETX
04	4	EOT
05	5	ENQ
06	6	ACK
07	7	BEL
08	8	BS
09	9	HT
0a	10	LF
0b	11	VT
0c	12	FF
0d	13	CR
0e	14	SO
0f	15	SI
10	16	DLE
11	17	DC1
12	18	DC2
13	19	DC3
14	20	DC4
15	21	NAK
16	22	SYN
17	23	ETB
18	24	CAN
19	25	EM
1a	26	SUB
1b	27	ESC

Base 16	Decimalism	Character
1c	28	FS
1d	29	GS
1e	30	RS
1f	31	US
20	32	SP
21	33	!
22	34	"
23	35	#
24	36	$
25	37	%
26	38	&
27	39	`
28	40	(
29	41	)
2a	42	*
2b	43	+
2c	44	,
2d	45	-
2e	46	.
2f	47	/
30	48	0
31	49	1
32	50	2
33	51	3
34	52	4
35	53	5
36	54	6
37	55	7
38	56	8
39	57	9
3a	58	:

Base 16	Decimalism	Character
3b	59	;
3c	60	<
3d	61	=
3e	62	>
3f	63	?
40	64	@
41	65	A
42	66	B
43	67	C
44	68	D
45	69	E
46	70	F
47	71	G
48	72	H
49	73	I
4a	74	J
4b	75	K
4c	76	L
4d	77	M
4e	78	N
4f	79	O
50	80	P
51	81	Q
52	82	R
53	83	S
54	84	T
55	85	U
56	86	V
57	87	W
58	88	X
59	89	Y

Base 16	Decimalism	Character
5a	90	Z
5b	91	[
5c	92	\
5d	93	]
5e	94	^
5f	95	_
60	96	'
61	97	a
62	98	b
63	99	c
64	100	d
65	101	e
66	102	f
67	103	g
68	104	h
69	105	i
6a	106	j
6b	107	k
6c	108	l
6d	109	m
6e	110	n
6f	111	o
70	112	p
71	113	q
72	114	r
73	115	s
74	116	t
75	117	u
76	118	v
77	119	w
78	120	x

Base 16	Decimalism	Character
79	121	y
7a	122	z
7b	123	{
7c	124		
7d	125	}
7e	126	~
7f	127	DEL

13 Appendix D：Data code
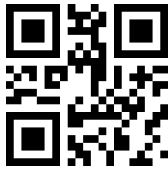
0 ~ 9

0

1

2

3

4

5

6

7

8

9

A – F

A

B

C

D

E

F

14 Appendix E：Save or Cancel

After reading the data code, you need to scan the "save" setting code to save the data which you read.If there is an error when reading the data code, you can cancel the error reading.

For example, read a set code,and read data "A", "B", "C" and "D" in turn.

If you read "cancel the last read bit", the last read digit "D" will be cancelled.

If you read "cancel the previous read a string of data" will cancel the read data "ABCD",

If you read "cancel modification Settings", you will cancel the data "ABCD" and exit the modification Settings.

Save

Cancel the last read bit

Cancel the previous read a string of data

Cancel modification settings