E10 OEM Scan Engine

User Manual

Revision

Version	Description	Issue Date
V1. 0	Initial version	2022-3-22

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Chapter1 About E10

Introduction

E10 is a small 2D OEM scan engine, featuring fast scanning and accurate decoding on barcodes on virtually any medium - paper, magnetic card, mobile phones and LCD displays. The N1 can be easily integrated into OEM equipment or systems, such as handheld, portable, or stationary barcode scanners.

About this manual

This manual provides detailed instructions for setting up and using the E10 OEM scan engine

Connecting EVK to PC

The supplied EVK tool can assist users in performance evaluation and application development for the E10. You can connect the EVK to PC via a USB connection or a TTL-232 connection. In case of USB connection, a driver is required if EVK wants to communicate with N1 and receive decoded data through virtual serial port.

Chapter2 System Setting

Read Firmware Version

Read Firmware Version

Acquire Unique ID of the scanner

Read Device ID

Set up the scanner

There's two ways to configure the E10 scan engine: barcode programming and command programming.

Use of serial command

Users can design an application program to send those command strings to the engines to perform device configuration.。Default serial parameter of E10: Baud Rate 9600bps, No Parity Check, 8 Data Bit, 1 Stop Bit, No Hardware flow control.

Read Flag Operating Command

For device Flag read operations, up to 256 bytes of Flag can be read at a time Command Format:

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

Head1 : 0x7E 0x00 (2 bytes); Types : 0x07 (1 byte);

Lens : 0x01 (1 byte);

Address : 0x0000~0x00FF (2 bytes), Indicates the starting address of the Flag to be read

Data : 0x00~0xFF (1 byte), Indicates the number of bytes of Flag to be read continuously, 0x00 means 256 bytes;

CRC : CRC_CCITT (2 bytes). Calculations: Types. Lens. Address. Datas

The calculation method is CRC_CCITT, the characteristic polynomial: X16+X12+X5+1, that is, the polynomial coefficient is 0x1021, and the initial value is all 0. For a single byte, the highest bit is calculated first, and it does not need to be inverted and output directly. The reference code for 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) // After multiplying the previous CRC by 2, if the first digit is 1, divide by 0x11021
            crc ^= 0x11021;
```

```
                if((*ptr&i) != 0) // If local bit is 1, then CRC = CRC of the previous bit +
local bit /CRC_CCITT
                    crc ^= 0x1021;
                }// for(unsigned char i = 0x80; i != 0; i /= 2)
                ptr++;
            } // while(len-- != 0)
             return crc;
        }// unsigned int crc_cal_by_bit(unsigned char* ptr, unsigned int len)
```

Notice: When the user does not need the CRC check function, he can fill in 0xAB 0xCD in the CRC byte.

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

1) Good read and return decoded data.

Head2 : 0x02 0x00 (2 bytes); Types: 0x00 stand for Good Read (1 byte);

Lens: Indicates the number of bytes of uploaded data (1 byte), 0x00 stands for 256 characters;

Datas: 0x00~0xFF, stands for the decoded data.

CRC: CRC_CCITT (2 bytes). Calculation: Types. Lens. The datas calculation method is CRC_CCITT, the characteristic polynomial: X16+X12+X5+1, that is, the polynomial coefficient is 0x1021, and the initial value is all 0. For a single byte, the highest bit is calculated first, and it does not need to be inverted and output directly (reference code same as above).

2) failed at sending CRC

No reply/return data

3） Unknown Command

No reply/return data

Examples：

Read address 0x000A in Flag.

1) Read successfully and returned data，the Return data is 0x3E

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

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

2) CRC wrong

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

Return：None

4) When the length of the command sent is not enough or the waiting time exceeds 400ms after sending 0x7e 0x00, it will be treated as an unknown command

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

Return：None

Write Flag Operation Command

The write flag operation can write up to 256 characters at a time.

Write flag operation modified content will be lost after power off. If it needs to be retained after power off, it is necessary to carry out the operation of saving Flag with internal Flash (1. 5. 1. 3).

Command Format：

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

Head1：0x7E 0x00 (2 bytes)；

Types : 0x08 (1 byte);

Lens : 0x00~0xFF (1 byte), Indicates the number of bytes in the Datas field in the command, and also indicates the number of consecutive write operations to be performed, and 0x00 indicates that there are 256 bytes.

Address : 0x0000~0xFFFF (2 bytes), Indicates the starting address of the Flag to be written.

Datas : 0x00~0xFF (1~256 bytes), Indicates the data written to the Flag. When configuring multiple Flags, the data fields must be filled in the order of addresses from low to high;

CRC : CRC_CCITT (2 bytes). Calculation Range: Types. Lens. Address.

Datas calculation method is CRC_CCITT, Characteristic polynomial: X16+X12+X5+1, that is, the polynomial coefficient is 0x1021, and the initial value is all 0. For a single byte, the highest bit is calculated first, and it does not need to be inverted and output directly. The reference code for 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) // After multiplying the previous CRC by 2, if the first
```

```
                digit is 1, divide by 0x11021 crc ^= 0x11021;
                if((*ptr&i) != 0) // If the local bit is 1, then CRC = CRC of the previous bit
+ local bit /CRC_CCITT
                crc ^= 0x1021;
            } // for(unsigned char i = 0x80; i != 0; i /= 2)
            ptr++;
        } // while(len-- != 0)
        return crc;
    }// unsigned int crc_cal_by_bit(unsigned char* ptr, unsigned int len)
```

Notice: When the user does not need the CRC, they can fill in 0xAB 0xCD at the CRC byte.

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

1) Write Success

Head2: 0x02 0x00 (2 bytes);

Types: 0x00 indicates write success (1 byte);

Lens : 0x01 (1 byte);

Datas: 0x00 (1 byte);

CRC : CRC_CCITT (0x33 0x31) 2 bytes)。

2) Send CRC Faild

No return.

3) Unknown Command

No return.

Example:

Write 0x3E to the Flag with 0x000A address

1) Setup success

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

Return: 0x02 0x00 0x00 0x01 0x00 0x33 0x31

2) Wrong CRC sent

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

Return: None

3) When the length of the command sent is not enough or the waiting time exceeds 400ms after sending 0x7e 0x00, it will be treated as an unknown command

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

Return: None

Save Flag to internal Flash command

To save the device Flag list to the internal Flash, you need to send a save command. Note: Devices cannot save individual Flag configurations individually, the entire list must be kept at the same time.

Command Format:

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

Head1 : 0x7E 0x00 (2 bytes);

Types: 0x09 (1 byte);

Lens: 0x01 (1 byte);

Address : 0x0000 (2 bytes);

Datas：0x00（1 byte）;

CRC：CRC_CCITT （0xDE 0xC8）（2 bytes）。

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

1）Save success

Head2 ： 0x02 0x00（2 bytes）;

Types ： 0x00 stands for write success（1 byte）;

Lens ： 0x01（1 byte）;

Datas：0x00（1 byte）;

CRC ： CRC_CCITT （0x33 0x31）（2 bytes）。

2）Send CRC failed

No return.

4）Unknown Command

No return.

Restore Flag to factory default Command

If you want to restore the content of the device Flag to the factory settings and save it to the external EERPOM, you need to send a factory reset command.

Command Format：

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

Head1 ： 0x7E 0x00（2 bytes）;

Types ： 0x08（1 byte）;

Lens ： 0x01（1 byte）;

Address ： 0x00D9（2 bytes）;

Datas : 0x50 (1 byte);

CRC : CRC_CCITT (81 D3) (2 bytes)。

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

1) Save success

Head2 : 0x02 0x00 (2 bytes);

Types : 0x00 indicates write success (1 byte);

Lens : 0x01 (1 byte);

Datas : 0x00 (1 byte);

CRC : CRC_CCITT (0x33 0x31) (2 bytes)。

2) send CRC failed

No return

3) Unknown Command

No return

Return: None

Flag Command List

Table 1- 1 Flag List

Flag	0x0000
Data Bit	Function
Bit 7	1: Enable Good Read LED 0: Disable Good Read LED
Bit 6	1: Do not Mute 0: Mute
Bit 5-4	00: No aiming light 01: Regular 10/11: Always On
Bit 3-2	00: No Illumination LED 01: Regular 10/11: Always On

Bit 1-0	00：Manual Mode 01：Command Trigger Mode 10 ： Continuous Mode 11：Auto-sensing Mode
Flag	0x0002
Data Bit	Function
Bit 7-1	Save
Bit 0	The command mode trigger flag is automatically cleared after scanning. 1：triggered 0：didn't triggered
Flag	0x0003
Data Bit	Function
Bit 7-2	HID query cycle。cycle = (Reg0x0003[7:2]+1) ms
Bit 1	1：Disable Setting Barcode 0：Enable Setting Barcode
Bit0	1：Transmit Setting barcode content 0：Do not Transmit Setting barcode content
Flag	0x0004
Data Bit	Function
Bit 7-0	Image Stabilization Duration 0x00-0xFF：0. 0-25. 5s
Flag	0x0005
Data Bit	Function
Bit 7-0	Timeout between decodes, different symbols. 0x00-0xFF：0. 0-25. 5s
Flag	0x0006
Data Bit	Function

Bit 7-0	Single Decode Session Timeout 0x00-0xFF：0. 0-25. 5s
Flag	0x0009
Data Bit	Function
Bit7-2	Interval before HID release. interval = (Reg0x0009[7:2])ms
Bit 1-0	Inverse Barcode 00：Disable Inverse Barcode 01：Enable Inverse Barcode 10/11 : Save
Flag	0x000B
Data Bit	Function
Bit 7-0	Good Read Beeper Duration 0x00-0xFF；0-255ms
Flag	0x000C
Data Bit	Function
Bit 7-2	Interval after HID release. interval = (Reg0x000C[7:2]) ms
Bit1	CapsLock On/Off 0：Off 1：On
Bit0	Default level in active buzzer mode 0: buzzer idle high level, busy low level 1: buzzer idle low level, busy high level
Flag	0x000D
Data Bit	Function
Bit 6	Virtual Keypad

	Flag 0: Disable 1: Enable
Bit5-4	Input encoding format 00: GBK 01: Save 10: AUTO 11: UTF8
Bit 3-2	Output encoding format 00: GBK 01: UNICODE 10: Save 11: UTF8
Bit1-0	00: Serial 01: USB PC 10: Save 11: USB -CDC
Flag	0x000E
Data Bit	Function
Bit 7-4	Sleep idle time. Idle time = (Reg0x000E[7:4]*500)ms
Bit3	Save
Bit2	1: Enable Good Read Beep 0: Disable Good Read Beep
Bit1	1: Disable Startup Beep 0: Enable Startup Beep
Bit0	1: Enable serial port simulation HID protocol 0: Disable serial port mode HID protocol
Flag	0x000F
Data Bit	Function
Bit7-0	Auto-sending Sensitivity 1 0x00-0xFF: The higher the value, the lower the sensitivity, the default value is 0x32
Flag	0x0010
Data Bit	Function
Bit 7-0	Sensitivity 2 0x00-0xFF: The higher the value, the lower the sensitivity, the default

	value is 0x0A
Flag	0x0013
Data Bit	Function
Bit 7	Decode Timeout, Same Symbols 0：Disable 1：Enable
Bit 6-0	Set up the custom Timeout（increment：100ms） 0x00：Infinite 0x01-0x7F：0. 1-12. 7 seconds；
Flag	0x0014
Data Bit	Function
Bit 7-0	Information output reservation time (unit: 10ms) 0x00-0xFF：0-2. 55 seconds
Flag	0x0026
Data Bit	Function
Bit 7-1	Save
Bit0	RSS_STACK 0：Disable RSS_STACK 1：Enable RSS_STACK
Flag	0x0029
Data Bit	Function
Bit 7-1	Save
Bit0	MICROPDF417 0：Disable MICROPDF417 1：Enable MICROPDF417
Flag	0x002B，0x002A

Data Bit	Function
Bit 15	Save
Bit 14-13	Odd/Even Parity Check： 0：No Parity Check 1：Odd Parity Check 2：Even Parity CHeck
Bit 12-0	0x09C4：Baud Rate 1200 bps 0x0271：Baud Rate 4800 bps 0x0139：Baud Rate 9600 bps
	0x00D0：Baud Rate 14400 bps 0x009C：Baud Rate 19200 bps 0x004E：Baud Rate 38400 bps 0x0034：Baud Rate 57600 bps 0x001A：Baud Rate 115200bps Example：9600 Baud Rate：0x002A = 0x39 , 0x002B = 0x01
Flag	0x002C
Data Bit	Function
Bit 7-4	Save
Bit3	Decode Area 0：Whole Area Decoding 1：Central Area Decoding
Bit 2-1	All Symbologies 00：Disable All Symbologies； 01：Enable All Symbologies 11：Restore Default Symbologies ； 10：Save;
Bit 0	Save
Flag	0x002D

Data Bit	Function
Bit 7-0	Set Center Area 0x01-0x64：1%-100% Other value：50%
Flag	0x002E
Data Bit	Function
Bit 7-1	Save
Bit0	EAN-13 0：Disable EAN-13　1：Enable EAN-13
Flag	0x002F
Data Bit	Function
Bit 7-1	Save
Bit0	EAN-8 0：Disable EAN-8　1：Enable EAN-8
Flag	0x0030
Data Bit	Function
Bit 7-1	Save
Bit0	UPC-A 0：Disable UPC-A 1：Enable UPC-A
Flag	0x0031
Data Bit	Function
Bit 7-1	Save

Bit0	UPC-E0 0：Disable UPC-E0　1：Enable UPC-E0
Flag	0x0032
Data Bit	Function
Bit 7-1	Save
Bit0	UPC-E1 0：Disable UPC-E1　1：Enable UPC-E1
Flag	0x0033
Data Bit	Function
Bit 7-1	Save
Bit0	Code128 0：Disable Code128　1：Enable Code128
Flag	0x0034
Data Bit	Function
Bit 7-0	Code128 Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x0035
Data Bit	Function
Bit 7-0	Code128 Set the Maximum Length 0x00-0xFF：0-255Byte
Flag	0x0036
Data Bit	Function
Bit 7-1	Save

Bit0	Code39 0：Disable Code39 1：Enable Code39
Flag	0x0037
Data Bit	Function
Bit 7-0	Code39 Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x0038
Data Bit	Function
Bit 7-0	Code39 Set the Maximum Length 0x00-0xFF：0-255Byte
Flag	0x0039
Data Bit	Function
Bit 7-1	Save
Bit0	Code93 0：Disable Code93 1：Enable Code93
Flag	0x003A
Data Bit	Function
Bit 7-0	Code93 Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x003B
Data Bit	Function
Bit 7-0	Code93 Set the Maximum Length 0x00-0xFF：0-255Byte

Flag	0x003C
Data Bit	Function
Bit 7-2	Save
Bit1	CodaBar Start/Stop Character 0：Do not Transmit 1：Transmit
Bit0	CodaBar 0：Disable CodaBar 1：Enable CodaBar
Flag	0x003D
Data Bit	Function
Bit 7-0	CodaBar Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x003E
Data Bit	Function
Bit 7-0	CodaBar Set the Maximum Length 0x00-0xFF：0-255Byte
Flag	0x003F
Data Bit	Function
Bit 7-1	Save
Bit0	QR 0：Disable QR 1：Enable QR
Flag	0x0040
Data Bit	Function
Bit 7-1	Save

Bit0	Interleaved 2 of 5 0：Disable Interleaved 2 of 5　1：Enable Interleaved 2 of 5
Flag	0x0041
Data Bit	Function
Bit 7-0	Interleaved 2 of 5 Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x0042
Data Bit	Function
Bit 7-0	Interleaved 2 of 5 Set the Maximum Length 0x00-0xFF：0-255Byte
Flag	0x0043
Data Bit	Function
Bit 7-1	Save
Bit0	Industrial 25 0：Disable Industrial 25　1：Enable Industrial 25
Flag	0x0044
Data Bit	Function
Bit 7-0	Industrial 25 Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x0045
Data Bit	Function
Bit 7-0	Industrial 25 Set the Maximum Length 0x00-0xFF：0-255Byte

Flag	0x0046
Data Bit	Function
Bit 7-1	Save
Bit0	Matrix 2 of 5 0：Disable Matrix 2 of 5 1：Enable Matrix 2 of 5
Flag	0x0047
Data Bit	Function
Bit 7-0	Matrix 2 of 5 Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x0048
Data Bit	Function
Bit 7-0	Matrix 2 of 5 Set the Maximum Length 0x00-0xFF：0-255Byte
Flag	0x0049
Data Bit	Function
Bit 7-1	Save
Bit0	Code11 0：Disable Code11 1：Enable Code11
Flag	0x004A
Data Bit	Function
Bit 7-0	Code11 Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x004B

Data Bit	Function
Bit 7-0	Code11 Set the Maximum Length 0x00-0xFF：0-255Byte
Flag	0x004C
Data Bit	Function
Bit 7-1	Save
Bit0	MSI 0：Disable MSI 1：EnableMSI
Flag	0x004D
Data Bit	Function
Bit 7-0	MSI Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x004E
Data Bit	Function
Bit 7-0	MSI Set the Maximum Length
	0x00-0xFF：0-255Byte
Flag	0x004F
Data Bit	Function
Bit 7-1	Save
Bit0	RSS-14 0：Disable RSS-14 1：Enable RSS-14
Flag	0x0050
Data Bit	Function

Bit 7-1	Save
Bit0	RSS Limited 0：Disable RSS Limited 1：Enable RSS Limited
Flag	0x0051
Data Bit	Function
Bit 7-1	Save
Bit0	RSS Expanded 0：Disable RSS Expanded 1：Enable RSS Expanded
Flag	0x0052
Data Bit	Function
Bit 7-0	RSS Set the minimum length 0x00-0xFF：0-255Byte
Flag	0x0053
Data Bit	Function
Bit 7-0	RSS Set the Maximum Length 0x00-0xFF：0-255Byte
Flag	0x0054
Data Bit	Function
Bit 7-1	Save
Bit1	DM Twin Code 0：Disable DM Twin Code 1：Enable DM Twin Code
Bit0	DM 0：Disable DM 1：Enable DM

Flag	0x0055
Data Bit	Function
Bit 7-1	Save
Bit0	PDF417 0：Disable PDF417　1：Enable PDF417
Flag	0x0056
Data Bit	Function
Bit 7-1	Save
Bit0	ISSN 0：Disable ISSN 1：Enable ISSN
Flag	0x0057
Data Bit	Function
Bit 7-1	Save
Bit0	ISBN 0：Disable ISBN 1：Enable ISBN
Flag	0x005C
Data Bit	Function
Bit0	AZTEC 0：Disable AZTEC　1：Enable AZTEC
Flag	0x005F
Data Bit	Function
Bit 7-1	Save

Bit0	MICROQR 0：Disable MICROQR 1：Enable MICROQR
Flag	0x0060
Data Bit	Function
Bit 7	Whether the serial port/virtual serial port output has a protocol. 0: raw data 1: with protocol
Bit6-5	Terminator Suffix 00：CR(0x0D) 01：CRLF(0x0D,0x0A) 10：TAB(0x09) 11：No
Bit4	1. Enable RF message 0：Disable RF message
Bit3	1：Enable Custom Prefix 0：Disable Custom Prefix
Bit2	1：Enable Code ID 0：Disable Code ID
Bit1	1：Enable Custom Suffix 0：Disable Cusotm Suffix
Bit0	1：Enter Terminator Suffix 0：Disable Terminator Suffix
Flag	0x0061
Data Bit	Function
Bit 7-0	Country keyboard 00: United States 01: Czech Republic 02: France 03: Germany 04: Hungary 05: Italy 06: Japan 07: Spain 08: Turkey Q 09: Turkey F 0A: Portugal 0B: Brazil 0C: United Kingdom 0D: Netherlands 0E: Finland 0F: Denmark 10: Poland 11: Sweden 12: Belgium 13: Norway 14: Slovakia 15: Romania 16: Israel 17: Switzerland 18: Latin America

	19: Russian 1A: Canada 1B: Greece 1C: Thai
Flag	0x00B0
Data Bit	Function
Bit 7-2	Save
Bit 1-0	Data Packing 00：Transmit whole Data 01：Only Output Start Data M 10：Only Output End Data N 11：Do not output Start M and End data N
Flag	0x00B1
Data Bit	Function
Bit 7-0	Set Start Length M
	0x00-0xFF：0-255 characters
Flag	0x00B2
Data Bit	Function
Bit 7-0	Set End Length N 0x00-0xFF：0-255 characters
Flag	0x00D9（Only Write Flag）
Data Bit	Function

Bit 7-0	Function Flag 0x50: Factory reset 0x55: Restore user-defined factory settings 0x56: The current settings are saved as user-defined factory settings 0xA5: Deep sleep, can be woken up by serial port interrupt, this serial port command is invalid 0x00: The device can be woken up from sleep by writing 0
Flag	0x00E1 (Only Read Flag)
Data Bit	Function
Bit 7-0	Hardware Version 0x64: V1. 00 0x6E: V1. 10 0x78: V1. 20 0x82: V1. 30 0x8C: V1. 40 . . . . .
Flag	0x00E2 (Only Read Flag)
Data Bit	Function
Bit 7-0	Software Version 0x64: V1. 00 0x6E: V1. 10 0x78: V1. 20 0x82: V1. 30

	0x8C：V1. 40 . . . . .
Flag	0x00E3 （Only Read Flag）
Data Bit	Function
Bit 7-0	Software Year 0x0F：2015 0x10：2016 0x11：2017 . . . . .
Flag	0x00E4（Only Read Flag）
Data Bit	Function
Bit 7-0	Software month (the value indicates the month) 0x09：September
	0x0A：October 0x0B：November . . . . .
Flag	0x00E5（Only Read Flag）
Data Bit	Function
Bit 7-0	Software date (this value represents the date) 0x09：9 th 0x0A：10 th 0x0B：11 th . . . . .

Flag	0x0100
Data Bit	Function
Bit 7-4	Save
Bit 3-0	Prefix Length 0x00-0x0F：Prefix Length
Flag	0x0101 – 0x0115
Data Bit	Function
Bit 7-0	Prefix 0x00-0xFF：Prefix character value, up to 15Byte
Flag	0x0116
Data Bit	Function
Bit 7-4	Save
Bit3-0	Suffix Length 0x00-0x0F： Suffix Character Length
Flag	0x0117 – 0x0132
Data Bit	Function
Bit 7-0	Suffix 0x00-0xFF：Prefix character value, up to 15Byte
Flag	0x0700
Data Bit	Function
Bit 7-4	Save
Bit3-0	RF message length 0x00-0x0F：Suffix Character Length

Flag	0x0701 – 0x070F
Data Bit	Function
Bit 7-0	RF data 0x00-0xFF：Prefix character，15Byte

Setting Barcode

*Enable Setting Barcode

Disable Setting Barcode

* Do not Transmit Setting Barcode

Transmit Setting Barcode

Restore to factory default

Restore factory default

User Preference

Save current setting as user preference

Restore to user preference

Chapter3 Scan Mode

Manual Scanning Mode

Set up Manual Scanning Mode

*Manual Scan Mode

Trigger Method

*Level Trigger

边沿触发

Continuous Mode

Set the scanner to Continuous Scan Mode

Continuous Scan Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 1ms to 25,500ms. When it is set to 0, the timeout is infinite. The default setting is 5,000ms.

1000ms

3000ms

*5000ms

Infinite

Timeout Between Scanning

This parameter refers to the interval between two consecutive readings, that is, after the scanner finishes the last reading (regardless of whether the scanning is successful or not), it will not collect and read within the set interval until the interval ends. Then the next code reading will be performed. The setting range of the reading interval is 0~25. 5 seconds, and the step size is 0. 1 seconds. The default interval is 1. 0 seconds.

500ms

*1000ms

1500ms

2000ms

No Timeout

Reread Timeout

Reread Timeout can avoid undesired rereading of same barcode in a given period of time.

Enable Reread Timeout

*Disable Reread Timeout

Extend Reread Timeout

500ms

1000ms

3000ms

5000ms

*Do not Extend

Sense Mode

Set the scanner to sense mode.

Sense Mode

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms

increments from 1ms to 25,500ms. When it is set to 0, the timeout is infinite. The default setting is 5,000ms.

1000ms

3000ms

*5000ms

No timeout

Good Read Delay

Good Read Delay sets the minimum amount of time before the engine can read another barcode. This parameter is programmable in 1ms increments from 1ms to 25,500ms. The default setting is 1000ms.

500ms

*1000ms

1500ms

2000ms

Infinite

Image Stabilization Time

This parameter defines the amount of time the enginer will spend adapting to ambient environment after it decodes a barcode and “looks” for another. It is programmable in 1ms increments from 0ms to 2550ms. The default setting is 0ms

*0ms

100ms

400ms

1000ms

2000ms

Sensitivity

Sensitivity specifies the degree of acuteness of the engine's response to changes in images captured. You can select an appropriate degree of sensitivity that fits the application environment. This feature is only applicable to the Sense mode.

Normal

Low Sensitivity

*High Sensitivity

Enhanced Sensitivity

Decode Timeout, Same Symbols

Reread Timeout can avoid undesired rereading of same barcode in a given period of time.

Enable Reread Timeout

*Disable Reread Timeout

Extend Reread Timeout

500ms

1000ms

3000ms

5000ms

*Do not Extend

Trigger Command Mode

Set up Command Trigger Mode

Command Trigger Mode

Notice: In the command trigger mode, the serial port command to trigger the scan is: 7E 00 08 01 AB CD. After the scanner recognizes and receives the trigger command, it outputs seven bytes of information and starts the scan synchronously (information content): 02 00 00 01 00 33 31).

Decode Session Timeout

This parameter sets the maximum time decode session continues during a scan attempt. It is programmable in 1ms increments from 1ms to 25,500ms. When it is set to 0, the timeout is infinite. The default setting is 5,000ms.

1000ms

3000ms

*5000ms

Infinite

POS Mode

POS mode can be set up quickly by scanning below setting barcode, which with below features:

- Trigger Command Scan Mode.
- Serial Interface.
- Turn off Startup Beep.
- Disable Terminator suffix.

POS Mode

Decode Area

Whole Area Decoding

The engine attempts to decode barcode(s) within its field of view, from the center to the periphery, and transmits the barcode that has been first decoded.

*Whole Area Decoding

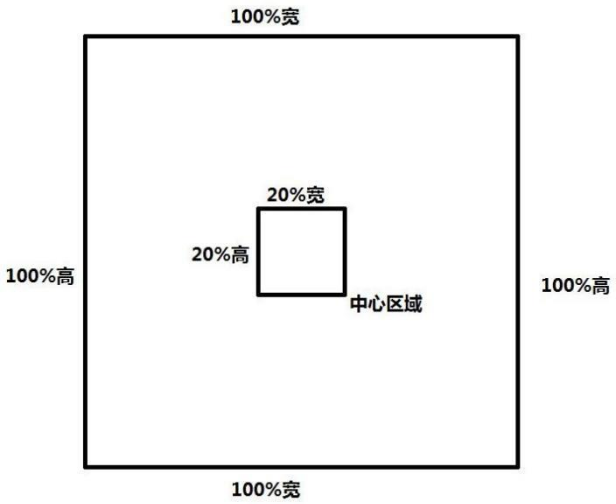
Central Area Decoding

The Engine attempts to decode barcodes within the center area of its field of view.

Central Area Decoding

Set up the view of field of central area:

The central area is an area with the center of the entire image as the center point. The size of the area is set in proportion to the width or height of the entire image. The value range is 1-100; if the set value is 20, that is an area located in the center with an area of 20% of the width * 20% of the height.



Set up the view of field of Central Area

Only central area-20%

Only central area -40%

Only central area -60%

When the size of the common center area does not meet the needs, the user can also customize the configuration by scanning the "Modify the center area size" setting code.

Modify center area size

Example: Modify the size of the center area to 50%

1. Check the character table to get the hexadecimal value of the four characters of "50": "32";
2. Confirm whether the setting code is enabled. If it is not enabled, please scan the “Enable Setting Code” setting code.
3. Scan the "Modify center area size" bar code.
4. Scan the digital barcodes "3" and "2" in sequence (see Appendix E: Digital BarCodes).
5. Scan the “Save” setting barcode (see Appendix F: Save or Cancel).

Illumination and LED

Internal Illumination

A couple of illumination options are provided to improve the lighting conditions during every image capture:

Normal (default): Illumination LEDs on the engine are turned on during image capture.

Always On：Illumination LEDs on the engine keep on after the engine is powered on.

Off: Illumination LEDs on the engine are off all the time.

*Normal

Always On

Off

External Illumination

外部照明

用户可以通过设置以下设置码来实现外接补光灯的控制（硬件连接方式详见硬件参考手册)。

*Off

On

* Trigger External Illumination at High level

Trigger External Illumination at Low level

Aiming

When scanning/capturing image, the engine projects an aiming pattern which allows positioning the target barcode within its field of view and thus makes decoding easier

Normal (default): The engine projects a aiming pattern only during barcode scanning.

Always On: Aiming pattern is constantly on after the engine is powered on.

Off: Aiming pattern is off all the time.

*Normal

Always On

Off

Chapter4 Communication Interface

Communication Interface

Serial Communication Interface

Serial communication interface is usually used when connecting the engine to a host device (like PC, POS). However, to ensure smooth communication and accuracy of data, you need to set communication parameters (including baud rate, parity check, data bit and stop bit) to match the host device

TTL

The serial communication interface of the engine uses TTL level signals (TTL-232), which can be adapted to most system architectures. If the system needs to use the structure of RS-232 form, it is necessary to increase the conversion circuit externally.

The default serial communication parameters of the reading module are shown in Table 2-1. Among them, the baud rate of the reading module can be modified through serial commands, but other parameters cannot be modified.

Table 2- 1 default serial value

Value data	default
Serial Communication Type	Standard TTL-232
Baud Rate	9600
Parity Check	None

Data Bit	8
Stop Bit	1
Hardware flow control	None

Baud Rate

1200bps

4800bps

*9600bps

14400bps

19200bps

38400bps

57600bps

115200bps

Parity Check

Set the parity type to match the host requirements.

Odd Parity: If the data contains an odd number of 1 bits, the parity bit value is set to 0.

Even Parity: If the data contains an even number of 1 bits, the parity bit value is set to 0.

None: Select this option when no parity bit is required.

*NONE

ODD

EVEN

Serial Parity Check

Customers can ensure the accuracy of data by sending heartbeat packets at regular intervals. The specific format is as follows.

Heartbeat packet sent by the master	Engine Return Command
7E 00 0A 01 00 00 00 30 1A	03 00 00 01 00 33 31

Note: It is recommended to send a heartbeat packet at an interval of 10S. If no correct reply is received three times in a row, the master controller should take corresponding measures.

USB HID

HID

*USB HID

HID Types

*HID-KBW

HID-POS

HID value

You can also modify the PC's access cycle to the HID device by scanning barcodes below.

*1ms

3ms

5ms

10ms

You can also modify the interval between valid messages and release messages by scanning the barcodes below.

*0ms

1ms

5ms

10ms

15ms

You can also modify the interval between the release message and the next valid message by scanning the barcodes below.

*0ms

1ms

5ms

10ms

15ms

CapsLock

*off

On

HID Leading Key

Users can scan the barcodes below to enable HID preamble message before outputting every scanned data, which is convenient for customer software development and positioning. The key value is: ctrl+shift+r。

*Disable

Enable

USB HID-KBW

HID-KBW

When the device is used as a HID type device (if it is not a HID type device, please read the HID type device configuration code first), you can read the following configuration code and select the HID-KBW device type mode.

*HID-KBW

HID-KBW Compatible with Serial Output

Users can scan the following configuration codes to Enable output data through the serial port at the same time as HID-KBW output.

* Serial output is disabled in HID-KBW mode

Serial output is enabled in HID-KBW mode

Output Encoding Standard

GBK

UTF8

* AUTO

*Output Encoding GBK

Output Encoding UTF8

Keyboard Countries

*United States

Czech

France

German/Austria

Hungary

Italy

Japan

Spain

Turkish Q

Turkish F

Portugal

Brazil(Portuguese)

United Kingdom

Netherlands

Finland

Denmark

Poland

Sweden

Belgium(French)

Norway(South Sami)

Slovakia

Romanian

Isreal (Hebrew)

Swiss(German)

Latin America(Spanish)

Russia

Canada(French)

Greek

Thailand

Emulate Keypad

*Standard Keyboard

Emulate Keypad

When Emulate Keypad is turned on, ASCII characters (0x20 - 0xFF) are sent over the numeric keypad no matter which keyboard type is selected. There're two modes for Emulate Keypad, Emulate Ctrl+Keypad and Emulate Alt+Keypad Mode.

Ctrl+Keypad

*Alt+Keypad

USB HID-POS

HID-POS

HID-POS

HID-POS and HID-KBW

Users can scan the following setting code to Enable output data through HID-KBW at the same time as HID-POS output.

* HID-KBW output disabled in HID-POS mode

HID-KBW output enabled in HID-POS mode

USB-CDC

USB -CDC

Beeper

Without Buzzer

Reading "Buzzer Drive Frequency" can set the buzzer as active/passive buzzer, or set the drive frequency of the passive buzzer to achieve volume control.

Without Buzzer- High Tone

* Without Buzzer - Medium Tone

Without Buzzer - Low Tone

With Buzzer

With Buzzer

In active buzzer mode, read "Buzzer working level-high" can be set as buzzer idle low level, working high level; buzzer working level-low" can be set as buzzer The device idles high, and works low.

* Buzzer working level - high

Buzzer working level - low

Mute

Scan “Mute” to turn off all beeps.

Mute

*Do not mute

Startup Beep

***Enable**

Disable

Good Read Beep

*Enable

Disable

Good Set Beep

*Enable

Disable

Good Read Beep

*Enable

Disable

Good Read Beep Duration

30ms

* 60ms

90ms

120ms

Startup LED

Enable Startup LED

*Disable Startup LED

Startup LED Duration

100ms

* 200ms

300ms

500ms

1000ms

2000ms

Good Read LED

*Enable

Disable

Good Read LED Duration

30ms

* 60ms

90ms

120ms

200ms

500ms

Vibration Notification

*Enable

Disable

Trigger Vibration at high level

* Trigger Vibration at low level

Vibration Duration

* 100ms

200ms

300ms

400ms

Read Fail Message

RF message

Scan the appropriate barcode below to select whether or not to send a Read Fail message (user-programmable) when a good read does not occur before trigger release, or the decode session timeout expires, or the engine receives the Stop Scanning command (For more information, see the "Serial Trigger Command" section in this Chapter)

Transmit RF message

*Do not Transmit RF message

Modify RF message

A RF message can contain up to 15 characters. To set a bad read message, scan the Set RF Message barcode, the numeric barcodes representing the hexadecimal values of desired character(s) and the Save barcode.

Set Custom RF Message

Example：Set RF message as “FAIL” (Hex: “46”. “41”. “49”. “4C”)

1. Scan the Enter Setup barcode

2. Scan the Set Custom RF Message barcode.

3. Scan numeric barcodes “4”,“6”,“4”,“1”,“4”,“9”,“4”,“C” from the digit barcodes section in appendix

4. Scan the Save barcode

Chapter5 Data Format

Data Format

In practical applications, we sometimes need to edit the decoded barcode data and output it to facilitate data differentiation and processing. Data editing includes:

- Add Prefix.
- Transmit AIM ID.
- Transmit Code ID.
- Add Suffix.
- Data Packing.
- Add Terminator.

The default sequence of data format:

【Prefix】【AIM ID】【Code ID】【Data】【Suffix】【Tail】

Prefix

Set Custom Prefix

Enable Custom Prefix

*Disable Custom Prefix

Set Custom Prefix

To set a custom prefix, scan the Set Custom Prefix barcode then the numeric barcodes corresponding to the hexadecimal value of a desired prefix then the Save barcode.

Set Custom Prefix

Example: Set custom Prefix to " DATA "(Hex: "44". "41". "54". "41")

1. Scan the Enter Setup barcode.
2. Scan the Set Custom Prefix barcode.
3. Scan the numeric barcodes "4", "4", "4", "1", "5", "4", "4" and "1" from the "Digit Barcodes" section in Appendix.
4. Scan the Save barcode from the "Save/Cancel Barcodes" section in Appendix.
5. Scan the Enable Custom Prefix barcode.
6. Scan the Exit Setup barcode

AIM ID

AIM (Automatic Identification Manufacturers) ID defines symbology identifier (For the details, see the "AIM ID Table" section in Appendix). If AIM ID prefix is enabled, the engine will add the symbology identifier before the scanned data after decoding.

Enable AIM ID

Enable AIM ID

*Disable AIM ID

Code ID

Code ID

Code ID can also be used to identify barcode type. Unlike AIM ID, Code ID is user programmable. Code ID can only consist of one letters.

Enable Code ID

*Disable Code ID

Code ID Default Value

*Restore all default Code ID 0

Restore all default Code ID 1

Restore all default Code ID 2

Set Custom Code ID

See the examples below to learn how to modify a Code ID

Example: Set CODE ID of CODE 128 to "A" (Hex: 41)

1. "41" is the hex value for "A".
2. Scan Enter Setup barcode.
3. Scan "Modify CODE 128 Code ID" barcode
4. Scan numeric barcodes "4" "1" from Appendix E Digit Barcodes.
5. Scan Save barcode from Appendix F Save/Cancel Barcodes.

Modify Code ID:

Modify EAN-13 Code ID

Modify EAN-8 Code ID

Modify UPC-A Code ID

Modify UPC-E0 Code ID

Modify UPC-E1 Code ID

Modify CODE 128 Code ID

Modify CODE 39 Code ID

Modify CODE 93 Code ID

Modify CODE BAR Code ID

Modify Interleaved 2 of 5 Code ID

Modify Industrial 25 Code ID

Modify Matrix 2 of 5 Code ID

Modify CODE 11 Code ID

Modify MSI Code ID

Modify RSS Code ID

Modify RSS Limited Code ID

Modify RSS Expanded Code ID

Modify QR CODE Code ID

Modify Data Matrix Code ID

Modify PDF417 Limited Code ID

Modify MICROQR 的 Code ID

Modify AZTEC 的 Code ID

Modify MICROPDF417 的 Code ID

Modify 限定式 ISBN 的 Code ID

Modify GS1STACK 的 Code ID

Modify ISSN 的 Code ID

Data Packing

This Function can be enabled when the user only needs to output part of the decoded information. We divide the decoding information [Data] into three parts: [Start] [Center] [End] The character length of the Start and End segments can be controlled by scanning the appropriate barcode below.

*Transmit Complete Data

Only Transmit Start Data

Only Transmit End Data

Only Transmit Center Data

Set Start Data Length Range M

Scan "Set Start Data Length Range M" barcode and corresponding numeric barcodes to modify the length of the Start segment. The Start segment cannot exceed 255 characters. The length M is represented by a hexadecimal character. Please refer to the Appendix D: ASCII Conversion Chart.

Set Start Data Length M

Set End Data Length N

Scan "Set End Data Length N" barcode and corresponding numeric barcodes to modify the length of the End segment. The End segment cannot exceed 255 characters. The length M is represented by a hexadecimal character. Please refer to the Appendix D: ASCII Conversion Chart.

Set End Data Length N

Only Output Start Data

Example: When the barcode data is "1234567890123ABC", set up the scanner to output the first 13 characters "1234567890123".

1. 0D is the hex value for 13(Refer to Appendix D : ASCII Conversion Chart).

2. Scan Enter Setup barcode.

3. Scan Set Start Data Length M barcode.

4. Scan numeric barcodes "0""D" from appendix E: Digit Barcode.

5. Scan Save barcode (Appendix F: Save and Cancel Barcode)

6. Scan Only Output Start Data barcode.

Only Output End Data

Example: Barcode Data is "1234567890123ABC", set up the scanner to output the last 3 characters "ABC"

1. 03 is the hex value for 3(Refer to Appendix D: ASCII Conversion Chart).
2. Scan Enter Setup barcode.
3. Scan Set End Data Length N barcode.
4. Scan numeric barcodes "0""3" from appendix E: Digit Barcode.
5. Scan Save barcode (Appendix F: Save or Cancel)
6. Scan Only Output End Data barcode.

Only Output Center Data

Example: Barcode data is "12345678900123ABC", set up the scanner to output the center 4 characters "0123"

i. 0A is the hex value for "10"; 03 is the hex value for "3"

ii. Scan Enter Setup barcode.

iii. Scan Set End Data Length N barcode.

iv. Scan numeric barcodes "0""3" from appendix E: Digit Barcode.

v. Scan Save barcode (Appendix F: Save or Cancel barcode)

vi. Scan Set Start Data Length M barcode.

vii. Scan numeric barcodes “0””A” from appendix E: Digit Barcode

viii. Scan Save barcode (Appendix F: Save or Cancel barcode)

ix. Scan Only Output Center Data barcode.

Suffix

Custom Prefix

Enable Custom Prefix

*Disable Custom Prefix

Set Custom Suffix

Scan Set Custom Suffix barcode and corresponding digit barcodes to set up a custom suffix character which will be represented by two hex value during setup progress. The custom suffix cannot exceed 15 characters. Refer to Appendix D: ASCII Conversion Chart.

Set Custom Suffix

Example：Set Custom Suffix to “DATA”

1. “44”. “41”. “54”. “41” is the hex value for “D” “A” “T” “A”.(Refer to Appendix D: ASCII Conversion Chart)

2. Scan Enter Setup barcode.

3. Scan Set Custom Suffix barcode.

4. Scan numeric barcodes “4”. “4”. “4”. “1”. “5”. “4”. “4”. “1” (Appendix E: Digit barcodes)

5. Scan Save barcode（Appendix F：Save and Cancel Barcode）

Terminator Suffix

Disable Terminator Suffix

* Set Terminator Suffix to CR

Set Terminator Suffix to TAB

Set Terminator Suffix to CRLF

Set Terminator Suffix to Double CRLF

Output Protocol

Scan setting barcode below to setup appropriate output format of decoded data in serial mode.

Output format with protocol：<03><character length><decoded data>。

Notice：The protocol mode must use the UTF-8 encoding output format. In other output encoding formats, no matter whether the output with protocol is selected, only original data will be output.

*Original Data

With Protocol Mode

Chapter6 Symbologies

Enable/Disable Symbologies

Enable All Symbologies

Enable

Disable

* Enable default Symbologies

Reading Enhancement

By configuring and enabling the enhancement of barcode reading ability, the reading angle of all barcodes will be improved, the device's support for angles above 45°, and the support for low contrast and gradient codes will be improved. Disabling angle enhancement will increase decoding speed.

*Do not enhance scanning

Enhance scanning capacity

EAN-13

EAN-13 On/Off

*Enable EAN-13

Disable EAN-13

EAN-13 Check Digit

This section allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = on.*

* Transmit EAN-13 Check Digit

Do not Transmit EAN-13 Check Digit

EAN-13 Addenda

This section adds 2 or 5 digits to the end of all scanned EAN-13 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*

*2 Digit Addenda Off

2 Digit Addenda On

*5 Digit Addenda Off

5 Digit Addenda On

EAN-13 Addenda Required

When Required is scanned, the scanner will only read EAN-13 barcodes that have Addenda. *Default= Not Required*

*Not Required

Required

ISSN

ISSN On/Off

Enable ISSN

*Disable ISSN

ISSN Addenda

This section adds 2 or 5 digits to the end of all scanned EAN-13 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*

*2 Digit Addenda Off

2 Digit Addenda On

ISSN Addenda Required

When Required is scanned, the scanner will only read ISSN barcodes that have Addenda. *Default= Not Required*

*Not Required

Required

ISBN

ISBN On/Off

Enable ISBN

*Disable ISBN

ISBN Addenda

This section adds 2 or 5 digits to the end of all scanned ISBN data. *Default = Off for both 2 Digit and 5 Digit Addenda.*

*5 Digit Addenda Off

5 Digit Addenda On

ISBN Addenda Required

When Required is scanned, the scanner will only read ISBN barcodes that have Addenda. *Default= Not Required*

*Not Required

Required

EAN-8

EAN-8 On/Off

*Enable EAN-8

Disable EAN-8

EAN-8 Check Digit

This section allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = on.*

* Transmit EAN-8 Check Digit

Do not Transmit EAN-8 Check Digit

EAN-8 Addenda

This section adds 2 or 5 digits to the end of all scanned EAN-8 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*

*2 Digit Addenda Off

2 Digit Addenda On

*5 Digit Addenda Off

5 Digit Addenda On

EAN-8 Addenda Required

When Required is scanned, the scanner will only read EAN-8 barcodes that have Addenda. *Default= Not Required*

*Not Required

Required

Convert EAN-8 to EAN-13

Convert EAN-8 to EAN-13

*Do not Convert EAN-8 to EAN-13

UPC-A

UPC-A On/Off

*Enable UPC-A

Disable UPC-A

UPC-A Check Digit

This section allows you to specify whether the check digit should be transmitted at the

end of the scanned data or not. *Default = on.*

*Transmit UPC-A Check Digit

Do not Transmit UPC-A Check Digit

UPC-A Addenda

This section adds 2 or 5 digits to the end of all scanned UPC-A data. *Default = Off for both 2 Digit and 5 Digit Addenda.*

*2 Digit Addenda Off

2 Digit Addenda On

5 Digit Addenda Off

UPC-A Addenda Required

When Required is scanned, the scanner will only read UPC-A barcodes that have Addenda. *Default= Not Required*

*Addenda Not Required

Addenda Required

Decode UPC-A with or without Addenda both

Convert UPC-A to EAN-13

On

*Off

UPC-E

UPC-E0 On/Off

*Enable UPC-E0

Disable UPC-E0

UPC-E1 On/Off

*Enable UPC-E1

Disable UPC-E1

UPC-E Check Digit (E0/E1)

This section allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = on.*

*Transmit UPC-E Check Digit

Do not Transmit UPC-E Check Digit

UPC-E Addenda (E0/E1)

This section adds 2 or 5 digits to the end of all scanned UPC-E data. *Default = Off for both 2 Digit and 5 Digit Addenda.*

*2 Digit Addenda Off

2 Digit Addenda On

*5 Digit Addenda Off

5 Digit Addenda On

UPC-E Addenda Require

When Required is scanned, the scanner will only read UPC-A barcodes that have Addenda. *Default= Not Required*

*Not Required

Required

Convert UPC-E to UPC-A

Convert UPC-E to EAN-A

*Do not Convert UPC-E to EAN-A

Code128

Code128 On/Off

*Enable Code128

Disable Code128

Set Lengths for Code128

Scan the barcodes below to change the minimum length for code128.

Set the Minimum length of Code128 to 0

* Set the Minimum length of Code128 to 4

Code39

Code39 On/Off

*Enable Code39

Disable Code39

Set Length for Code39

Scan barcodes below to set the minimum length for Code 39

Set the minimum length to 0

* Set the minimum length to 4

Code39 Check Digit (Modulo 43)

Code 39 barcode data is not including check digit originally, if there is check character, it must be the last character of the data. The check digit is the value calculated from all data except the check character, which is used to check whether the data is correct.

* Disable Code 39 Check Digit

Do not Transmit Code39 Check Digit (Enable)

Transmit Code39 Check Digit (Enable)

Code39 Start/Stop Character

Start/Stop Character identify the leading and trailing ends of the device. You may either transmit, or not transmit Start/Stop characters. *Default=Don't Transmit*

*Don't Transmit Start Character

Transmit Start Character

*Do not Transmit Stop Character

Code 39 Full ASCII

Code 39 Full ASCII is a variant of Code 39 which pairs characters to encode the full ASCII character set. Scan one of the following barcodes to enable or disable Code 39 Full ASCII.

*Disable FullAsc

Enable FullAsc

Code32 Pharmaceutical (PARAF)

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan one of the following barcodes to enable or disable Code 32

*Disable Code32

Enable Code32

Code93

Code93 On/Off

*Enable Code93

Disable Code93

Set Minimum Length for Code93

Scan barcodes below to set the minimum length for Code93

Set the minimum length to 0

*Set the minimum length to 4

Code93 Check Digit

Disable Code 93 Check Digit

*Do not Transmit Code93 Check Digit (Enable)

Transmit Code93 Check Digit (Enable)

CodaBar

CodaBar On/Off

*Enable CodaBar

Disable CodaBar

Set Length for CodaBar

Set the Minimum length of CodaBar to 0

Set the Minimum length of CodaBar to 0

CodaBar Check Digit(Mod-16)

* Disable Codabar

Do not Transmit Codabar Check Digit(Enable)

Transmit Codabar Check Digit

CodaBar Start/Stop Character

Transmit CodaBar Start/Stop Character

*Do not Transmit CodaBar Start/Stop Character

Interleaved 2 of 5

Interleaved 2 of 5 On/Off

Enable Interleaved 2 of 5

*Disable Interleaved 2 of 5

Interleaved 2 of 5 识读长度设置

Interleaved 2 of 5 Set the minimum length to 0

* Interleaved 2 of 5 Set the minimum length to 4

Interleaved 2 of 5 Check Digit (Mod-10)

*Disable Interleaved 2 of 5

Interleaved 2 of 5 Transmit Check Digit

Interleaved 2 of 5 Transmit Check Digit

ITF-14

ITF-14 On/Off

Enable ITF-14

*Disable ITF-14

ITF-6

ITF-6 On/off

Enable ITF-6

*Disable ITF-6

Industrial 2 of 5

Industrial 2 of 5 On/Off

Enable Industrial 2 of 5

*Disable Industrial 2 of 5

Set Length for Industrial 2 of 5

Scan barcode below to set the minimum length for Industrial 2 of 5.

Set the minimum length to 0

* Set the minimum length to 4

Industrial 2 of 5 Check Digit (Mod-10)

*Disable Industrial 25 Check Digit

Do not Transmit Industrial 25 Check Digit (Enable)

Transmit Industrial 25 Check Digit (Enable)

Matrix 2 of 5

Matrix 2 of 5 On/Off

Enable Matrix 2 of 5

*Disable Matrix 2 of 5

Set Length for Matrix 2 of 5

Scan barcodes below to set the minimum length for Matrix 2 of 5.

Set the Minimum Length Matrix 2 of 5 to 0

* Set the Minimum Length Matrix 2 of 5 to 4

Matrix 2 of 5 Check Digit (Mod-10)

* Disable Matrix 25 Check Digit

Do not Transmit Matrix 25 Check Digit (Enable)

Transmit Matrix 25 Check Digit (Enable)

Code11

Code11 On/Off

Enable Code11

*Disable Code11

Set Length for Code11

Scan barcodes below to set the minimum length for Code11

Set the minimum length to 0

* Set the minimum length to 4

Code11 Check Digit

*Disable Code11 Check Digit

Do not Transmit CODE11 Check Digit (Enable)

Transmit CODE11 Check Digit (Enable)

MSI-Plessey

MSI-Plessey On/Off

Enable MSI

*Disable MSI

Set Length for MSI-Plessey

Scan barcodes below to set the minimum length for MSI-Pleassey

*MSI Set the minimum length to 0

MSI Set the minimum length to 4

MSI-Plessey Check Digit

Disable MSI

One MSI Check Digit

Two MSI Check Digit

MSI-Plessey Transmit Check Digit

*Transmit MSI Check Digit

Do not Transmit MSI Check Digit

GS1-Databar (RSS)

RSS-14 On/Off

Enable RSS-14

*Disable RSS-14

*Transmit (01) Character

Do not Transmit (01) Character

RSS-Limited On/Off

Enable Limited RSS

*Disable Limited RSS

*Transmit (01) Character

Do not Transmit (01) Character

RSS-Expaned On/Off

Enable RSS-Expanded

*Disable RSS-Expanded

*Transmit (01) Character

Do not Transmit (01) Character

RSS-Stacked On/Off

Enable RSS-Stacked

*Disable RSS-Stacked

*Transmit (01) Character

Do not Transmit (01) Character

Set Length for RSS

Scan barcodes below to set the minimum length for RSS

RSS Set the minimum length to 0

*RSS Set the minimum length to 4

Micro QR Code

Micro QR On/Off

Enable Micro QR

*Disable Micro QR

QR Code

QR On/Off

*Enable QR

Disable QR

Data Matrix

DM On/Off

*Enable DM

Disable DM

DM Twin Codes

Data Matrix twin code is 2 Data Matrix barcodes paralleled vertically or horizontally. They must both be either regular or

inverse barcodes. They must have similar specifications and be placed closely together.

There are 2 options for reading Data Matrix twin codes:

Single Data Matrix Only: Read either Data Matrix code.

Both Single & Twin: Read both Data Matrix codes. If successful, transmit as twin Data Matrix only. Otherwise, try single Data Matrix only。

*Single Data Matrix Only

Both Single&Twin

PDF417

PDF417 On/Off

*Enable PDF417

Disable PDF417

Micro PDF417

Micro PDF417 On/Off

Enable Micro PDF417

*Disable Micro PDF417

Aztec Code

Aztec On/Off

Enable Aztec

*Disable Aztec

Inverse Barcode

* Disable Inverse 1D Codes

Enable Inverse 1D Codes

*Disable Inverse 2D Codes

Enable Inverse 2D Codes

Appendix

Appendix A: Default Configuration Chart

Table A- 1 Default Configuration Chart

Parameter		Default Configuration	Remark
Communication Interface			
TTL-232	Baud Rate	9600	
	Parity Check	No	
	Data Bit	8 Bit	
	Stop Bit	1 Bit	
	Hardware Flow Control	No	
Function Mode			
Scanning Mode		Manual Scan	
Serial Trigger Mode	Decode Session Timeout	5s	Parameter range: 0. 1-25. 5 sec stands for infinite single decode session
Manual Scan Mode	Level Trigger	Low Level	Default high level

Appendix B: AIM ID

Table B- 1 AIM ID

Barcode Type	AIM ID	Description
Code 128	]C0	Regular Code 128 data
EAN-8	]E4	Regular EAN-8 data
EAN-13	]E0	Regular EAN-13 data
ISSN	]X5	
ISBN	]X4	
UPC-E	]E0	Regular UPC-E data
UPC-A	]E0	Regular UPC-A data
Interleaved 2 of 5	]I0	Disable Check Digit
ITF-6	]I0	Transmit Check Digit
ITF-14	]I0	Transmit Check Digit
Matrix 2 of 5	]X1	No Check Digit
Industrial 25	]S0	No special designation
Code 39	]A1	MOD 43 Check Digit，and Transmit Check Digit
Codabar	]F0	Standard package, no specific designation
Code 93	]G0	No specific designation
Code11	]H1	MOD11/MOD11, Transmit Check Digit
MSI Plessey	]M1	MOD10，但不 Transmit Check Digit
GS1-Databar (RSS)	]e0	RSS-14，RSS-Limited，RSS-Expaned, RSS-Stacked
PDF417	]L0	1994 PDF417
Data Matrix	]d1	DM ECC 200
QR Code	]Q1	QR mode 2 (2005 symbol), no ECI
Micro PDF417	]L0	
Micro QR	]Q1	
Aztec Code	]zm	(0-9, A-C)，possible AIM ID parameter（m）

Appendix C: Code ID

Table C- 1 Code ID

Barcode Type	Code ID 0 (default)	Code ID 1	Code ID 2
Code 128	j (0x6A)	B (0x42)	j (0x6A)
EAN-8	d (0x64)	D(0x44)	D(0x44)
EAN-13	d (0x64)	E (0x45)	d (0x64)
ISSN	n (0x6E)	_ (0x5F)	d (0x64)
ISBN	B (0x42)	W (0x57)	d (0x64)
UPC-E	c (0x63)	F (0x46)	E (0x45)
UPC-A	c (0x63)	G(0x47)	c (0x63)
Interleaved 2 of 5	e (0x65)	H(0x48)	e (0x65)
ITF-6	e (0x65)	H(0x49)	e (0x65)
ITF-14	e (0x65)	H(0x4A)	e (0x65)
Matrix 2 of 5	v (0x76)	Y (0x59)	m (0x6D)
Industrial 2 of 5	D (0x44)	X (0x58)	f (0x66)
Code 39 (supports Full ASCII mode)	b (0x62)	M (0x4D)	b (0x62)
Codabar	a (0x61)	O (0x4F)	a (0x61)
Code 93	i (0x69)	Q (0x51)	i (0x69)
Code 11	H (0x48)	] (0x5D)	h (0x68)
MSI Plessey	m (0x6D)	V (0x56)	g (0x67)

GS1 DataBar(RSS14)	R (0x52)	Z (0x5A)	y (0x79)
GS1 DataBar Limited	R (0x52)	[(0x5B)	{ (0x7B)
GS1 DataBar Expanded	R (0x52)	\ (0x5C)	} (0x7D)
GS1 DataBar Stacked	R (0x52)	m (0x6D)	y (0x79)
PDF417	r (0x72)	` (0x60)	r (0x72)
Data Matrix	u (0x75)	c (0x63)	w(0x77)
QR Code	Q (0x51)	a (0x61)	s (0x73)
Aztec Code	z (0x7A)	z (0x7A)	z (0x7A)
Maxicode	x (0x78)	x (0x78)	x (0x78)
Micro PDF417	R (0x52)	R (0x52)	R (0x52)
Micro QR	X (0x58)	X (0x58)	s (0x73)

Appendix D：ASCII

Table D- 1 ASCII

Hex	Decimal	Char
00	0	NUL (Null char.)
01	1	SOH (Start of Header)
02	2	STX (Start of Text)
03	3	ETX (End of Text)
04	4	EOT (End of Transmission)
05	5	ENQ (Enquiry)
06	6	ACK (Acknowledgment)
07	7	BEL (Bell)
08	8	BS (Backspace)
09	9	HT (Horizontal Tab)
0a	10	LF (Line Feed)
0b	11	VT (Vertical Tab)
0c	12	FF (Form Feed)
0d	13	CR (Carriage Return)
0e	14	SO (Shift Out)
0f	15	SI (Shift In)
10	16	DLE (Data Link Escape)
11	17	DC1 (XON) (Device Control 1)

12	18	DC2 (Device Control 2)
13	19	DC3 (XOFF) (Device Control 3)
14	20	DC4 (Device Control 4)
15	21	NAK (Negative Acknowledgment)
16	22	SYN (Synchronous Idle)
17	23	ETB (End of Trans. Block)
18	24	CAN (Cancel)
19	25	EM (End of Medium)
1a	26	SUB (Substitute)
1b	27	ESC (Escape)
1c	28	FS (File Separator)
1d	29	GS (Group Separator)
1e	30	RS (Request to Send)
1f	31	US (Unit Separator)
20	32	SP (Space)
21	33	! (Exclamation Mark)
22	34	" (Double Quote)
23	35	# (Number Sign)
24	36	$ (Dollar Sign)
25	37	% (Percent)
26	38	& (Ampersand)
27	39	` (Single Quote)

28	40	((Right / Closing Parenthesis)
29	41	) (Right / Closing Parenthesis)
2a	42	* (Asterisk)
2b	43	+ (Plus)
2c	44	, (Comma)
2d	45	- (Minus / Dash)
2e	46	. (Dot)
2f	47	/ (Forward Slash)
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	: (Colon)
3b	59	; (Semi-colon)
3c	60	< (Less Than)
3d	61	= (Equal Sign)

3e	62	> (Greater Than)
3f	63	? (Question Mark)
40	64	@ (AT Symbol)
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
5a	90	Z
5b	91	[(Left / Opening Bracket)
5c	92	\ (Back Slash)
5d	93	] (Right / Closing Bracket)
5e	94	^ (Caret / Circumflex)
5f	95	_ (Underscore)
60	96	' (Grave Accent)
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
79	121	y
7a	122	z
7b	123	{ (Left/ Opening Brace)
7c	124	| (Vertical Bar)
7d	125	} (Right/Closing Brace)
7e	126	~(Tilde)
7f	127	DEL (Delete)

Appendix E: Digit Barcodes

0-9

0

1

2

3

4

5

6

7

8

9

A-F

A

B

C

D

E

F

Appendix F: Save or Cancel Barcode

After reading numeric barcode(s), you need to scan the Save barcode to save the data. If you scan the wrong digit(s), you can either scan the Cancel barcode and then start the configuration all over again, or scan the Delete the Last Digit barcode and then the correct digit, or scan the Delete All Digits barcode and then the digits you want.

For instance, after reading the Maximum Length barcode and numeric barcodes "1", "2" and "3", you scan:

Delete the Last Digit: The last digit "3" will be removed.

Delete All Digits: All digits "123" will be removed.

Cancel: The maximum length configuration will be cancelled. And the engine is still in the setup mode.

Save

Delete the Last Digit

Delete All Digits

Cancel

Appendix H：Command Serial Command List

Table H- 1　Common Serial Command

Function	Serial Comand
Set Baud Rate to 9600	7E 00 08 02 00 2A 39 01 A7 EA
Save the current setting to Flash	7E 00 09 01 00 00 00 DE C8
Query Baud Rate	7E 00 07 01 00 2A 02 D8 0F

After the host sends the serial port command to query the baud rate, the reading module will reply with the following information：

Return Message	Corresponding 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

Notice: SS SS are check digit.