

EM3000 OEM Scan Engine Integration Guide



Revisions

Version	Description	Date
V 1.0	Support as from EM3000 firmware Version 3.02.001 and higher.	20100817
V 1.1	Add programming codes of Matrix 2 of 5.	20100907
V 1.1.1	Correct the setting code of "Enable Reading All 2D ", Change voltage of specification form "DC3.3V" to "DC 3.3±0.3V", Correct the interface of specification form "RS232、USB" to "TTL232"	20110701
V 1.1.2	Add an "ASCII Table" in the <i>Appendix</i>	20110822



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About this guide

Introduction

This NLS-EM3000 (“EM3000”) Scan Engine Integration Guide provides general instructions for OEM integration.

Chapter Description

About EM3000: The chapter of About EM3000 gives a brief description of the EM3000. It covers the general, overall specifications of the EM3000.

Mechanical Interface: The chapter of Mechanical Interface describes the mechanical interface of the EM3000. It includes the dimensions and locations of EM3000 mechanical components.

Electrical Interface: The chapter of Electrical Interface describes the electrical interface of the EM3000. It mainly explains the EM3000 interface socket and flexible cable. Samples of schematics are also included.

Software Interface: The chapter of Software Interface describes the software interface of EM3000. It has the serial communication protocols for queries and commands.

Development Tools: The chapter of EM3000 Development Tools lists the development tools and brief descriptions of the tools.

Programming The Engine:The chapter of Configuration lists all the configurations of EM3000. The configuration can be done through pre-printed configuration barcodes, serial port commands, and/or Quickset, a Newland software package.

Graphic Notations



Tool – Handy item for a task.



Attention – Important subject to be aware of or to avoid.



Tips – Helpful information about a topic or a feature.



Example – Illustration of how to use a feature.



About this guide

Newland Auto-ID Support Center

If you have any problem with your equipment, contact the Newland Support Center in your region. Before calling, have the model number, serial number, and several of your barcodes at hand.

Call the support Center from a phone near the scanning equipment so that the service person can try to talk you through your problem. If the equipment is found to be working properly and the problem is barcode readability, the Support Center will request samples of your bar codes for analysis at our plant.

If your problem cannot be solved over the phone, you may need to return your equipment for servicing. If that is necessary, you will be given specific directions.

Note: Newland Auto-ID Tech. is not responsible for any damages incurred during shipment.

For service information, warranty information or technical assistance contact or call the Support Center listed below. For the latest service information go to <http://www.nlscan.com/en>

If you purchased your Newland product from a Newland Business Partner, contact that Business Partner for Service.





About EM3000

Introduction

EM3000 is an embedded barcode reading engine. Its gray scale CMOS image capturer and the Newland patented **UIMG**, a Computerized Image Recognition System, ensure the fast scanning and decoding accuracy on different barcode media such as paper, plastic card, and metal surface. It can be easily integrated into OEM equipments or systems (hand-held, portable, and mounted) to provide solutions for image capture, barcode reading, and barcode message processing.

EM3000 opens its image acquisition interface and camera control to OEM developers to allow their special integration needs. EM3000 Software Development Kit is provided for easy and quick development of OEM applications.

Highlights of the EM3000

- » Slim size allowing easy embedding into OEM equipments and systems.
- » Outstanding decoding performance for major 1D and 2D barcodes.
- » High performance CPU and image capture module ensuring fast and accurate scans.
- » Easy OEM software development and firmware upgrade.





Unpacking

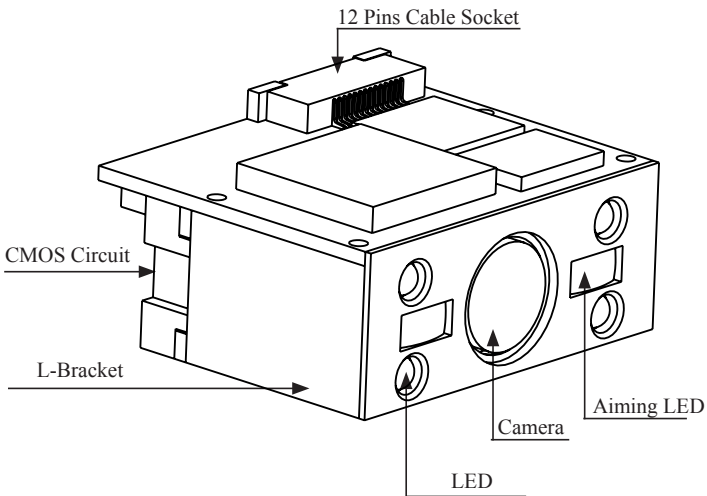
Remove EM3000 and accessories from the package. Check for missing parts and inspect for damage. EM3000 is packed in anti-static bag. Please handle accordingly.



If there is any damage or missing parts, please contact your supplier at once. Keep the original package for return services, if necessary.

Outline of EM3000

The outline of EM3000 is shown below.



EM3000



Mechanical Interface

Introduction

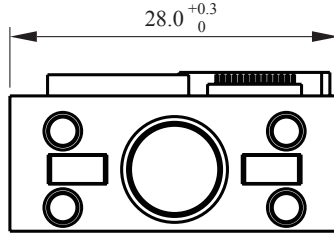
This section describes the Mechanical Interface.





EM3000 Front View

Following figure 1 shows the dimensions of EM3000. The figure EM3000 Front View has the width and height dimensions. The height of the EM3000 is from the bottom of EM3000 to the top of highest component on the topside.

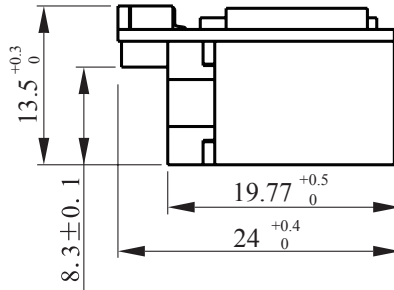


Unit: mm

Figure 1. EM3000 Front View

EM3000 Left Side View

The figure 2 EM3000 Left Side View has the length dimensions.

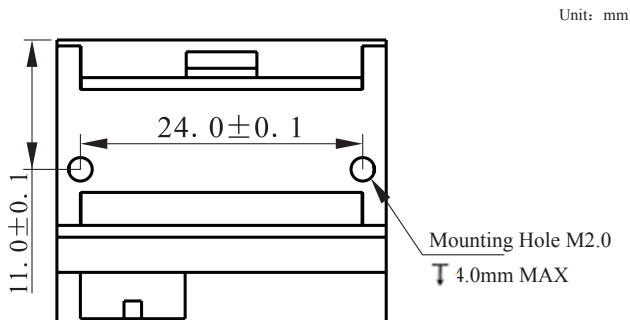


Unit: mm

Figure 2. EM3000 Left Side View

EM3000 Bottom View

The figure 3 EM3000 Bottom View has the mounting screw specifications. The mounting screw is M2, 2 mm screw. The length of the screw into EM3000 must be less than 4 mm.



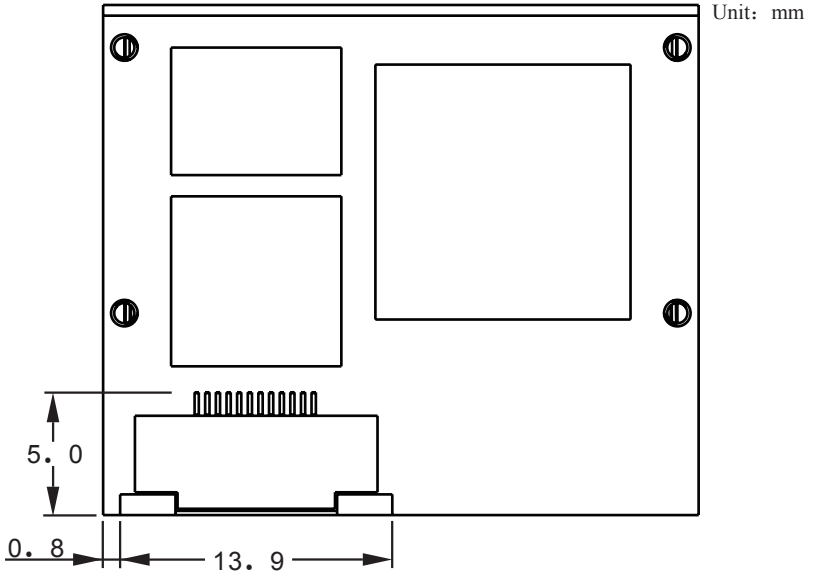
Unit: mm

Figure 3. EM3000 Bottom View



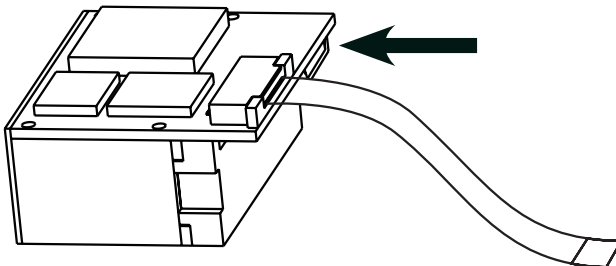
Interface Socket

EM3000 uses a ZIF 12PIN flexible cable socket to interface with external device (Host), such as EVK3000 V2, the EM3000 Evaluation Kit. Figure below shows the location and dimension of the socket.



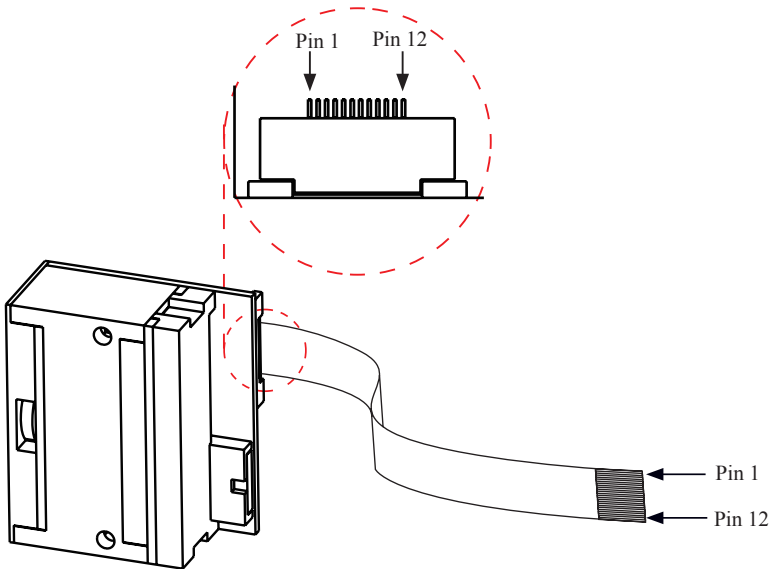
Interface Cable

A flexible cable is needed when using EM3000. Both of the two ends should be 12 PINS. One connects to the EM3000 interface socket, the other connects to external device. Figure below shows how the sample cable is connected to the interface socket.





Interface Socket Pin Assignment and Definition



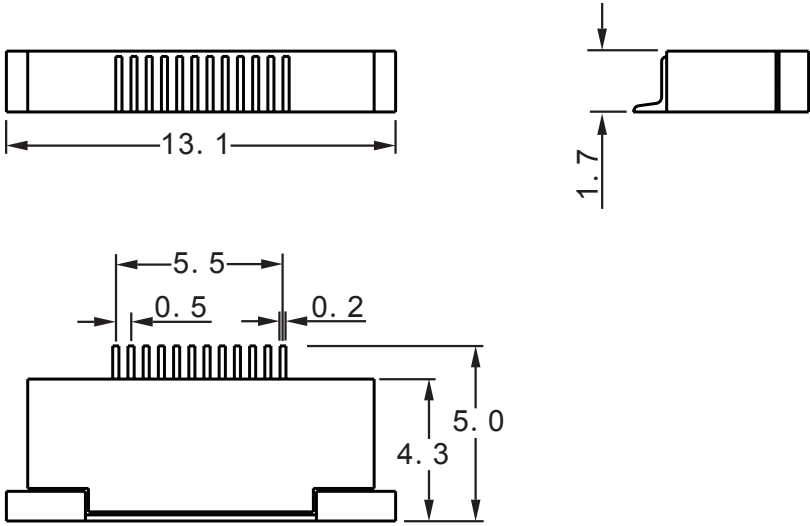
J1	Input/Output	Type	Definition
PIN 1	Power Supply	VCC	Power supply VCC +3.3V. If power falls to under 3.1V, EM3000 will reset automatically.
PIN 2	Power Supply	VCC	Power supply VCC +3.3V. If power falls to under 3.1V, EM3000 will reset automatically.
PIN 3	Ground	GND	—
PIN 4	Input	RX	TTL level, could not connect to PC serial signal
PIN 5	Output	TX	TTL level, could not connect to PC serial signal
PIN 6	—	NC	—
PIN 7	—	NC	—
PIN 8	Ground	GND	—
PIN 9	Output	BUZ	Beeper output. If not sufficient current for beeper, an external current amplifier is needed. If not use, it will be hung up.
PIN 10	Output	LED	LED output. If not sufficient current for beeper, an external current amplifier is needed. If not use, it will be hung up.
PIN 11	Input	RESET	EM3000 Restart signal, pull low longer than 100 μ s to restart
PIN 12	Input	TRIG	Trigger signal, pull low longer than 20ms to initiate reading





Schematic of Interface Socket

Unit: mm

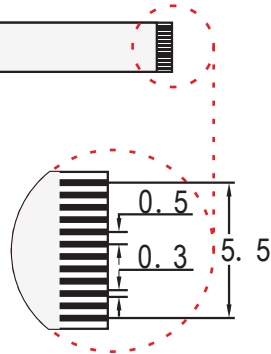




Sample Interface Flexible Cable Specifications

The interface flexible cable is designed by Newland Auto-ID. The twelve metal wires of the interface flexible cable are all straight and on the same surface.

Unit: mm





Housing Structure

The housing for the Engine should be wide enough not to put any pressure on the Engine. There should be sufficient space for the flexible cable and stress release of the cable should also be considered.

Temperature

Electrical and other components generate heat. Especially under continuous operation, the temperature of the Engine will be high. The methods below are for heat concerns:

A radiator on top of the engine is recommended

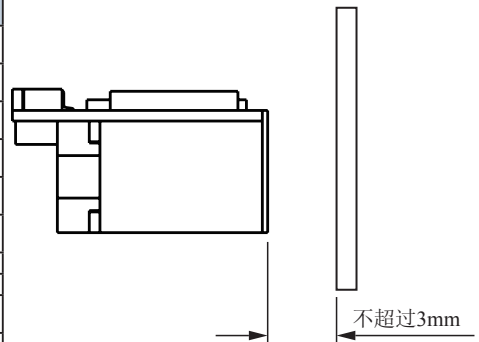
Do not surround or wrap the Engine by rubber or any material that obstruct the heat dissipation.

Scan Window

A scan window is needed to protect camera lens, aiming light, and illumination lights. This scan window design should follow:

- » Housing must not block or shade illumination LED's, aiming light, and camera lens.
- » Use high transparent and scratch resistant material, such as both side hard coated material. Please refer to following specifications:

Item		Specifications
Dimension	Size (mm)	SIZE 1 ± 1.0%
	Thickness (mm)	± 10%
Property	Total light transmittance (%)	≥90% (ASTM D 1008)
	Haze (%)	<1.0% (ASTM D 1008)
	Stylus	≥4H (JIS K 5400)
	Adhesion	Not release
Appearance	Pinhole particle bubble	0.3~0.5 ≤ 5EA
		<0.3 ≤ 5EA
	Scratch	≤0.1mm (not crowded)
		Under 0.05~3mm ≤3EA
Chemical	IPA (80%)	Evaluation after 1 minute dip/Ping



» See the picture above. It is suggested that housing window be perpendicular to the surface of the front plate of the EM3000 and be parallel to illumination LED, and the gap be less than 3mm.

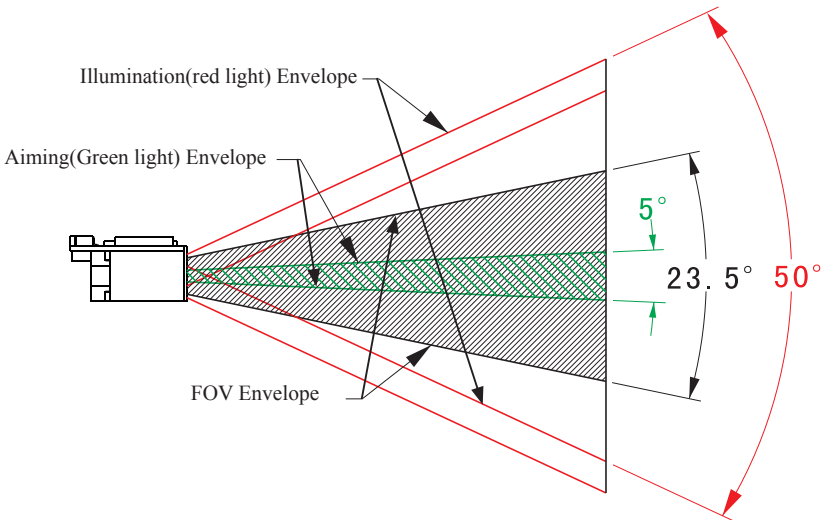
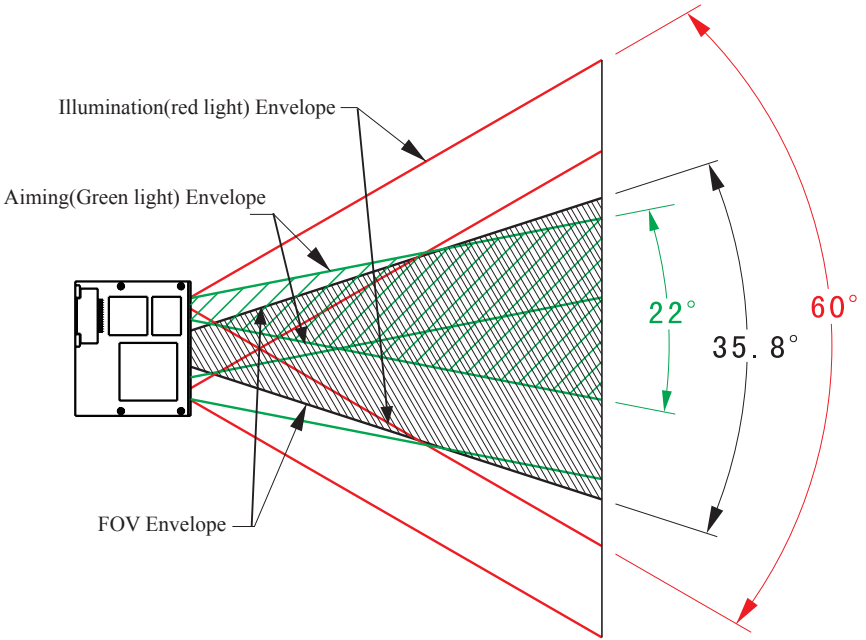
» If not, the gap should be more than 3mm. And the angle between housing window and illumination LED (highest point) must ensure that the illumination light should not be reflected into lens by window glass.

Note: EM2028 Windows Size Diagram in next page could be served as reference for designers.





EM3000 Widows Size Diagram





Electrical Interface

Introduction

This section describes the electrical specifications of the interface signals.

Interface Signal levels

The table below lists the interface input and output level voltage ranges

VDD=3.3V, Ta=25°C

Item	Symbol	Condition	Min.	Typ.	Max	Unit
Power Supply	VDD	-	3.2	3.3	3.6	V
Operating current	I _{op}	VDD=3.3V, Ta=25°C	-	300	400	mA
Idle current	I _{idle}		37	65	—	mA
Input voltage	V _{IH}		VDD-0.5	-	-	V
	V _{IL}		-	-	0.5	
Output voltage	V _{OH}		VDD-0.3	-	-	V
	V _{OL}		-	-	0.3	



Reset Input

The Engine restarts itself after the Reset line is pull low for 100 μ s and back to high. The LED Pin will go low. The LED Pin will stay low until the Reset Pin is released and power is applied to EM3000. After the initialization, if send-beep option is enabled, the Engine will send power on beeper signal.

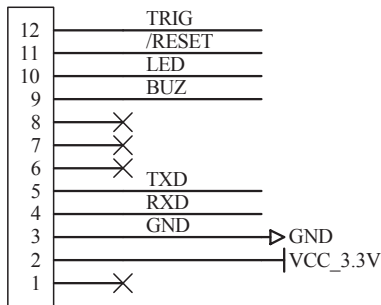
Trigger Input

When the Trigger line is pull low for 20 ms, the Engine starts a read. The Engine keeps reading until a successful reading or the line is high. After a successful reading, the line must go high in order to make another reading.

Sample Input schematics

Here is a schematic from the evaluation board, EVK3000 V2. Those two signals can connect to external device's output port.

J1 12 Pins 柔性电缆



Output Signals

Here are the descriptions of the output signals, beeper and LED. They can be used to detect the status of the scanning and the state of the Engine.

Beeper Output

Table below is the definitions of the beeper outputs:

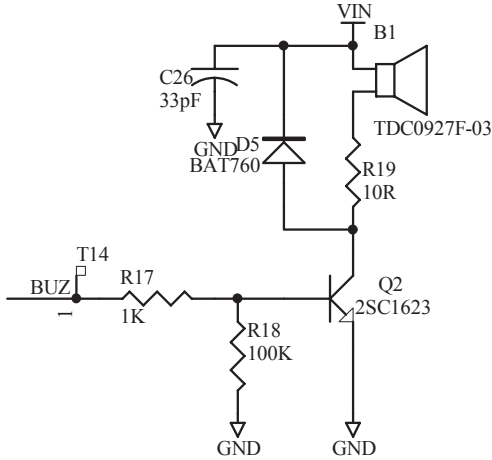
Beep Pattern	Definitions
Low-higher-higher-higher	Power ON completed
1 beep	Successful reading of an ordinary barcode
2 beeps	Successful reading of an programming barcode
3 short low-2 high	Reading failure
1 long low	Unknown Character, Virtual Keypad (USB connection)





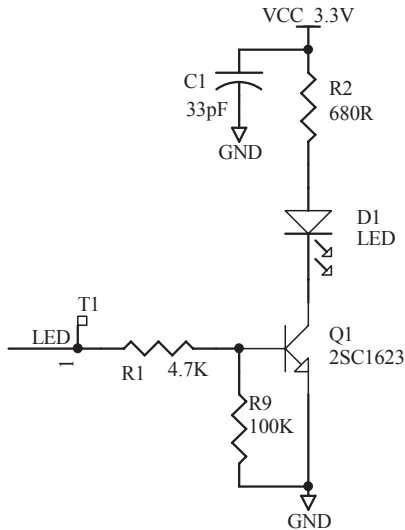
A Sample Schematic of Beeper Driving Circuit:

Here is a beeper driving circuit used in the evaluation board, EVK3000 V2.



A Sample Schematic of LED Driving Circuit:

Here is the LED driving circuit used in the evaluation board, EVK3000 V2.





Software Interface

Introduction

The simplest way to interface with EM3000 is to just listen to the serial output from the Engine. Leave the trigger, reset, beeper, and LED signals to the hardware. With proper configuration, the default firmware will send the decoded barcode messages through the serial output. However, if more controls of the Engine are required, the rest of this section describes the software interface with the Engine.

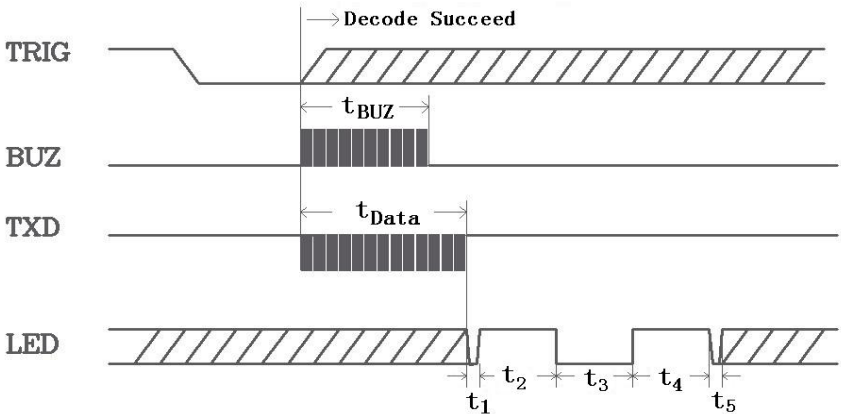




EM3000 will start a reading when the trigger Pin of the flexible cable is pulled low (hard trigger) or when EM3000 is in the sensor mode and it senses the trigger condition is met (sensor scan).

Hard Trigger

If the trigger line is connected to an output port of external device, the control software of the external device (Host) can pull the line low. The Engine will start to read barcode after 10 ms. The engine will keep reading until it read a barcode.



Read Timing Diagram

Mark	Definition	Time
t_{BUZ}	Beeper Pulse Time	80ms
t_{Data}	Data Uploading Time	Determined by data length and baud rate
t_1	Delay 1	1 ms
t_2	Delay 2	50 ms
t_3	Delay 3	50 ms
t_4	Delay 4	50 ms
t_5	Delay 5	1 ms

Auto Scan

The Engine can be in Auto mode. (See Configuration section for detail.) When the ambient light changes, the Engine will automatically make a read. If a valid read is found, the default function is to send the decoded barcode messages.

Continuous Scan Mode

Another scan mode is continuous scan mode. When the Engine is in this mode, it will keep acquiring images and trying to read a code. When it reads a code, it sends the code to the serial port.





This section introduces the serial communication. The default serial port configuration is baud rate of 9600, 8 data bits, no parity bit, and 1 stop bit. It is important to match the serial port configuration between EM3000 and the Host. Both EM3000 and Host can initiate communication.

Here are some conventions used in this section:

0xHH	A hexadecimal number. For example, 0xAB and 0x1234 are hexadecimal values of 171 and 4660, respectively.
<xxx>	ASCII control character. For example, <ACK> and <NAK> means ASCII control characters, 0x06 and 0x15, respectively.
“...” or ‘...’	ASCII String. For example, “AUTO-ID” and ‘AUTO-ID’ means same ASCII string, AUTO-ID.

EM3000 Initiated Data Upload

EM3000 initiates communication only to send system information on power on, when enabled, and barcode messages. No reply from Host is expected.





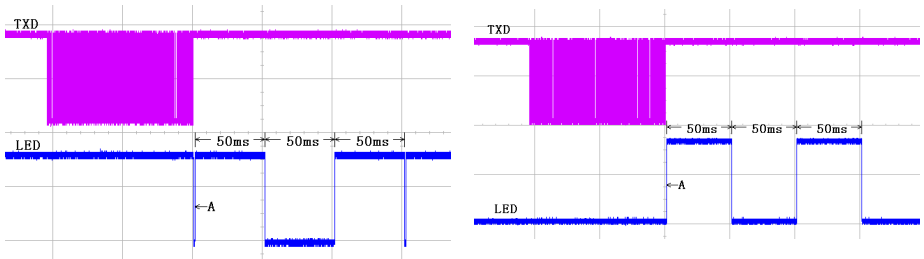
The message upload format is in binary. It is the binary value of the decoded barcode value including prefix, suffix, and so on.

There are three methods to determine the end of barcode message.

Method 1: LED Signal

If a valid reading is found, the default function is to send a PWM signal to BUZ line and the decoded barcode message will be sent through the serial out line.

After the barcode message is transmitted, the LED line will be pulled low for 1ms, then high for 50ms, low for 50ms, high for 50ms in turn. Finally it will be pulled low for 1ms as end. EM3000's application program controls LED signal level. If program enables LED, the signal level will go as shown in the left diagram below. If disables, it will go as shown in the right diagram below. To start next reading, the trigger line must be pulled high before next trigger to read.



Suggestion: If LED signal is used to decide if a reading is successful, please use LED positive edge interrupt. Positive edge A is as shown in diagrams above. And the programs in the Host should watch and store the data through by serial port in cache. When positive edge A appears in LED signal, data has been transmitted. Now the Host should decide if data is stored. If yes, it must be a complete barcode message. It should be transmitted to the Host as soon as possible. If no, please go on reading.

Method 2: Inter-Character Timeout

Host could use inter-character timeout to determine the end of data upload. An inter-character timeout means the longest delay time between 2 consecutive (binary) characters in a sequence of (binary) characters sent over serial line. It is usually enabled only after the first character is received to avoid unwanted timeout events during the waiting of a message.

The inter-character timeout value should be set to about 5 times of a character's transmission time. When the inter-character timeout occurs, it is the end of data upload. For example, 5 ms can be used as an inter-character timeout for the baud rate of 9600, 8 data bit, no parity bit, and one stop bit.

Method 3 : Message packing

Message pack uses framing protocol format. Factory default has message pack disabled. More detail about message Pack option is in next chapter.





Host can initiate following commands.

1. Are-You-There Command

This command is to query RS232 connection between the Host and EM3000.

Host Command	'?' (or 0x3F)	
EM3000 Reply		!' (or 0x21)

2. Pro CMD Commands

This set of commands are to configure the Engine. To confirm that a command is properly executed, use query command to retrieve the actual value in EM3000.

2.1. Pro CMD Format

Host can send Pro CMD command following prefix, "NLS" (all upper case) or "nls" (all lower case). A Pro CMD command consists of command code and optional equal sign, '=', and command parameter:

"nls" + Command Code [+ '=' + parameter]

The Pro CMD command is an ASCII string. The parameter can be decimal, such as 9876, hexadecimal, such as 0x0a0d, or ASCII string, such as " "AUTO-ID" " .

NOTE: The double quotes in the ASCII string are part of the parameter, not the convention for ASCII string. The Engine uses them to know the beginning and the end of string parameter.

Upon receiving Pro CMD command(s), the Engine will reply a <ACK>, 0x06, or <NAK>, 0x15 within 500 ms. The Engine replies <ACK> when command is correct; otherwise, it replies <NAK>.

2.2. Sample Pro CMD Commands

This Pro CMD command sets the Engine in auto (sensor) reading mode: "NLS0302010" .

This setting command sets sensitivity value of the auto reading mode to 10:

"NLS0312040=10" .

This setting command set the user defined prefix to AUTO-ID: nls0300000="AUTO-ID"

More Pro CMD commands are in Programming the Engine chapter.





3. Query Commands

Host uses query command to query data from the Engine. The maximum delay of the Engine's reply is 500 ms.

3.1 The Query Command Format:

The format of query Command Format:

Command Prefix		Lens		Data1			LRC
0x7E	0x00	Len Hi	Len Low	Data 1	...	Data N	LRC

Where:

Command Prefix – A two-byte prefix field. Always 0x7E, 0x00.

Lens – A two-byte length field. The total number of bytes in Data Type field and Data1 field.
 Len Hi is the high (most significant) byte of the Lens field. Len Low is the low byte of the field.

Data1 – Command dependent Data1 field. Maximum size is 32 bytes.

LRC – A one-byte LRC field.
 $LRC = 0xFF \text{ xor } Len \text{ Hi} \text{ xor } Len \text{ Low} \text{ xor } Type \text{ xor } Data1.$

3.2. The Query Reply Format:

Reply Prefix		Lens		Data Type	Data1			LRC
0x02	0x00	Len Hi	Len Low	0x34	Data 1	...	Data N	LRC

Where:

Reply Prefix – A two-byte prefix field. Always 0x02, 0x00.

Lens – A two-byte length field. The total number of bytes in Data Type field and Data1 field.
 Len Hi is the high (most significant) byte of the Lens field. Len Low is the low byte of the field.

Data Type – Always 0x34 for reply.

Data1 – Command dependable Data1 field. Maximum size 32 bytes.

LRC – A one-byte LRC field.
 $LRC = 0xFF \text{ xor } Len \text{ Hi} \text{ xor } Len \text{ Low} \text{ xor } Type \text{ xor } Data1.$





3.3. Sample Query Command

Here is a sample of query command for ESN:

Command Prefix		Lens		Data1					LRC
0x7E	0x00	0x00	0x05	0x33	0x48	0x30	0x32	0x30	0xB3

Where

Data1 = '3H020'

LRC = 0xFF xor 0x00 xor 0x05 xor 0x33 xor 0x48 xor 0x30 xor 0x32 xor 0x30 = 0xB3.

Engine Reply:

Reply Prefix		Lens		Data Type	Data1			
0x02	0x00	0x00	0x12	0x34	0x30	0x32	0x31	0x33

Data 1									
0x53	0x57	0x30	0x35	0x38	0x33	0x38	0x33	0x4B	0x48

Data1			LRC
0x2D	0x35	0x36	0xF5

Where

Data1 = '0213SW058383KH-56'

The meaning of the reply is that the ESN is SW058383KH-56.

See Appendix A for more detail.

4. Image Upload

The image captured in EM3000 can be uploaded to Host. The image is gray scale of the size of 752x480 pixels.

Image Upload Command:

Command Prefix		Lens		Data1		LRC
0x7E	0x00	0x00	0x03	Ratio	0x00	lrc

Where

Ratio = 0x00 for 1:1 upload, i.e. upload 752x480 pixels, lrc=0x80

0x01 for 1:4 upload, i.e., upload 376x240 pixels, lrc=0x81

0x02 for 1:16 upload, i.e. upload 188x120 pixels, lrc=0x82





Image Reply Format:

EM3000 uploads the image data as binary data. The data sequence are:

For 1:1 ration: pixel[0,0], ..., pixel[0,751],
pixel[1,0], ..., pixel[1,751],
...
pixel[479,0], ..., pixel[479,751]

For 1:4 ration: pixel[0,0], ..., pixel[0,375],
pixel[1,0], ..., pixel[1,375],
...
pixel[239,0], ..., pixel[239,375]

For 1:16 ration: pixel[0,0], ..., pixel[0,187],
pixel[1,0], ..., pixel[1,187],
...
pixel[119,0], ..., pixel[119,187].

5 Application Development and Download

Visual DSP++ is used for EM3000 application development. It should be installed first. The EM3000 SDK comes with all the necessary files and the default application project, app.dpj. The developer should study the default application, build the default application, download the newly built default application, and test the Engine. It is highly recommended that the developer modify from the default application instead of creating a new project from scratch.

A download program, Upgrade.exe, can be found in the SDK package. The program is for application download.

For more detail, see EM3000 SDK documents.





Development Tools

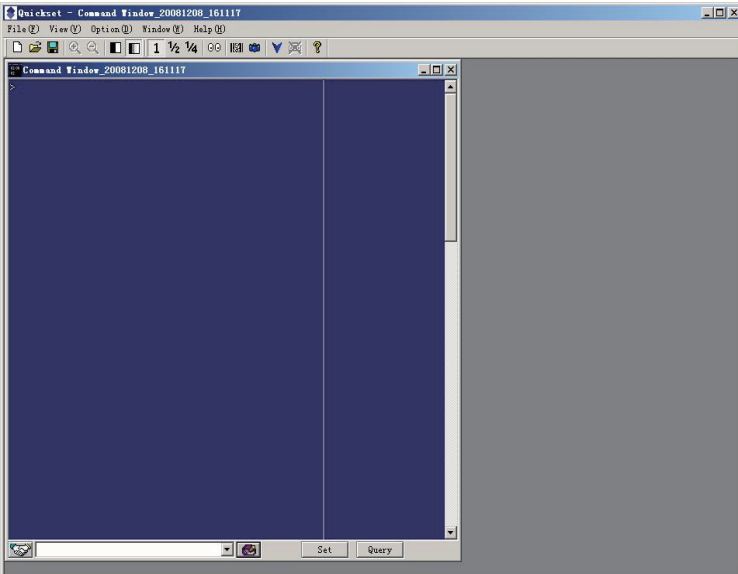
Introduction

This section lists some EM3000 development tools. A brief introduction to each tool is included.





QuickSet is a Windows based GUI program for Newland Auto-ID barcode readers. It can be used in development and for programming EM3000 and troubleshooting. The Host may implement some functions of QuickSet for the equipments or systems.





A software development kit is available for all EM series embedded engines. It allows Customers to develop their applications in EM series engines.





Programming the Engine

Introduction

There are 3 ways to program (configure) the Engine, Code Programming, Command Programming, and QuickSet Programming.

Code Programming

The Engine reads a set of specially encoded barcodes to program features. In the following sections, we will explain the options and features available and provide the barcodes to program them.

This method of programming the Engine is most straight forward. However, it requires manually readings of each barcode. As all manual operations, errors are more likely to occur.

Command Programming

The Host can send the Pro CMD strings (see the chapter of Software Interface) to program the Engine. In the following sections, the Pro CMD strings will be included with the barcodes for Code Programming.

A fixture, such as EVK3000 or other simpler circuit board, could be used to program the Engines before they are installed into your equipments or systems. Another alternative is to design the configuration capability in your equipments or systems.

This method of programming the Engine could be automated. A software program can be developed to download all the configuration data to the Engine.

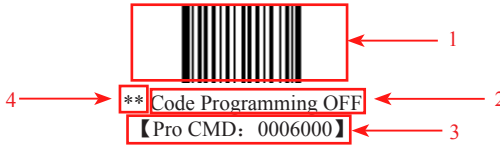
QuickSet Programming

QuickSet is a Windows based GUI program for Newland Auto-ID bar code readers. It displays decoded data and captured images. The engine with its circuit board can be easily configured through the interface of QuickSet.

This method of programming the Engine is similar as the Command Programming. QuickSet is a software program developed for Newland Auto-ID products .

Note: The programming results are restored in non-volatile memory. They will not be lost when the Engine is powered off.





This is the notation to disable the Code Programming.

There are 4 parts of a notation:

- 1、The first part of the notation is the barcode for Code Programming
- 2、The second part of the notation is the name of the options or features, such as Disable Code Programming.
- 3、The third part of the notation is the corresponding Pro CMD string of the Code Programming.
- 4、If there is “**” in front of the name, it means the notation is factory default.



Read the “Code Programming ON” barcode to activate “Code Programming” function. One or more Code Programming barcodes can be read to configure the Engine.

If an option or feature needs additional parameters, such as digits, they can be found at the end of this chapter.

To exit Code Programming, read “Code Programming OFF” or any normal barcode.

Code Programming ON



Code Programming OFF



**** Code Programming OFF**
【Pro CMD: 0006000】



Code Programming ON
【Pro CMD: 0006010】

The value of code programming can be sent to the Host. For factory default, “No Send Pro Code Value”, the value of programming codes will not be sent to the Host; by reading “Send Pro Code Value”, the reader will send the value of Programming Code to the Host.



****No Send Pro Code Value**
【Pro CMD: 0002000】



Send Pro Code Value
【Pro CMD: 0002010】





Illumination LED lighting up barcodes are used to capture better images.
There are 4 modes:

- » “Illumination Wink” : LED keeps flashing when reading
- » “Illumination Keep ON” : LED keeps on when Power ON
- » “Illumination Read ON” : LED keeps on when reading
- » “Illumination OFF” : LED is off all the time

Code Programming ON



Code Programming OFF



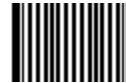
**** Illumination Wink
【Pro CMD: 0200000】**



**Illumination Read ON
【Pro CMD: 0200030】**



**Illumination Keep ON
【Pro CMD: 0200010】**



**Illumination OFF
【Pro CMD: 0200020】**





There are 3 modes:

- » “Aim Wink” : LED keeps flashing when reading
- » “Aim Keep ON” : LED keeps on when Power ON
- » “Aim OFF” : LED is off all the time

Code Programming ON



Code Programming OFF



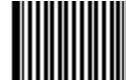
** Aim Wink

【Pro CMD: 0201000】



Aim Keep ON

【Pro CMD: 0201010】



Aim OFF

【Pro CMD: 0201020】





Decoding Beep

Read “Beep ON” to enable all decoding beep denotation and read “Beep OFF” to disable.

Code Programming ON



**Beep ON
【Pro CMD: 0203010】

Code Programming OFF



Beep OFF
【Pro CMD: 0203000】

Decoding Beep Type



**Type 1
【Pro CMD: 0203020】



Type 3
【Pro CMD: 0203022】



Type 2
【Pro CMD: 0203021】





Decoding Beep Volume



** Loud

【Pro CMD: 0203030】



Medium

【Pro CMD: 0203031】



Low

【Pro CMD: 0203032】

Code Programming ON



Code Programming OFF



Power On Beep



** Beep On

【Pro CMD: 0204001】



Beep OFF

【Pro CMD: 0204000】

Beep Denotation (Beeper Definitions)

Beep	Denotation
low-higher-higher-higher	Power ON completed
1 beep	successful reading of an ordinary barcode
2 beeps	successful reading of an programming barcode
3 short low-2 high	reading failure
1 long low	Unknown Character, Virtual Keypad (USB connection)





- » Hand-held Mode: Pull and keep holding the trigger line to read. Complete one reading or release the trigger to terminate reading status.
- » Auto Mode: The ambient luminance change in front of the engine automatically initiates reading. After completion of reading, the engine goes to idle. Both luminance change and the Trigger can initiate reading when idle.
- » Continuous Mode: Pull the Trigger line low to start reading. The engine will keep reading. To stop, pull trigger line low again.

Code Programming ON



Code Programming OFF



Hand-held Mode
【Pro CMD: 0302000】



Continuous Mode
【Pro CMD: 0302020】



**Auto Mode
【Pro CMD: 0302010】





One Reading Timeout: If the engine doesn't read any barcode during the timeout period, it will stop reading automatically. One Reading Timeout is valid in Auto mode. The default timeout is 3000ms.



Same Barcode Reading Delay: It is used to avoid misreading on the same barcode (the same format and message) in a Same Barcode Reading Delay Time. It is valid only in Auto mode. The default delay is 1500ms.



One Reading Timeout
【Pro CMD: 0313000】



Same Barcode Reading Delay
【Pro CMD: 0313010】

There are two options available in Same Barcode Reading Delay:

- » (Multi-reading) Prohibit: The same symbol can be read after delay.
- » (Multi-reading) Semi-prohibit: The same symbol can be read more than once in the delay period if ambient illumination is changed, for example the bar code is removed out of reading area and moved back.



** Multi-reading Semi-prohibit
【Pro CMD: 0313020】



Multi-reading Prohibit
【Pro CMD: 0313030】

E xample

To set One Reading Timeout to 1500ms, read these programming codes:

- 1、 “Code Programming ON”
- 2、 “One Reading Timeout”
- 3、 Digit Code “1” , “5” , “0” , “0” , see Digit Code
- 4、 “Save Programming”





- » Sensitivity is how sensitive the engine is to ambient illumination change.
- » Sensitivity value is [1 .. 20]
- » The lower the sensitivity value is the higher sensitivity will be. The lower the sensitivity value is the smaller illumination change will initiate reading.

Code Programming ON



Code Programming OFF



High Sensitivity (= 8)
【Pro CMD: 0312020】



Enhanced Sensitivity (= 5)
【Pro CMD: 0312030】



** Normal Sensitivity (= 11)
【Pro CMD: 0312010】



Program Sensitivity
(Min:1, Max:20)
【Pro CMD: 0312040】



Low Sensitivity (= 14)
【Pro CMD: 0312000】





Code Programming ON



Code Programming OFF



** Normal Exposure Mode
【Pro CMD: 0321000】



Reflections Eliminating Mode
【Pro CMD: 0321010】





Factory Default

Read “Load All Factory Default” to reset all parameters to factory default.

Applicable conditions:

- » User options programming wrong configuration leads to reading malfunction
- » Forget details of previous programming and start over.

Code Programming ON



Code Programming OFF



**Load All Factory Default
【Pro CMD: 0001000】

User Default

All user options can be saved as User Default. It will be restored in non-volatile memory.

Read “Save as User Default” to save all the current user options to be User Default, and erase the previous User Default. Read “Load User Default” to restore the engine to User Default.



Save as User Default
【Pro CMD: 0001150】



Load User Default
【Pro CMD: 0001160】



If read “Load All Factory Default”, User Default will still be restored in non-volatile memory.



Product information could be obtained by reading "Query Product Information" barcode. The engine will send it to the Host immediately.

"Power ON, Send Product Info", the engine sends product information through serial port(only) to the Host after Power ON.

Code Programming ON



Query Product Information
【Pro CMD: 0003000】

Code Programming OFF



**Power ON, Do not Send Product Info
【Pro CMD: 0007000】



Power ON, Send Product Info
【Pro CMD: 0007010】

The product information is provided as follows:

Title	Remarks
Firmware Ver	Device Firmware Version
Build Time	Device Firmware Version Establishing Time
Device ID	Device Type
App Ver	Device Application Version
uIMG Ver	Device uIMG Version
Date	Device Manufacture Date
S/N	Device serial number
ESN	User-defined device serial number
Manufacture ID	Device Name
Interface	1 types of communication interfaces: TTL232(EM3000) or RS232(EM2027), baud rate, parity check, data bits, stop bit
1D	Indicate that reading 1D is allowed. Symbols are divided by comma. Additional features format: 1. "+" connect features 2. Min Message Length -> Max Message Length 3. "No Check Digit" or "Check Digit" 4. "Fixed Length: 2~64 even value" It is in this format: Fixed Length: 2 4 6 8 10 12...
2D	Indicate that reading 2D is allowed. Symbols are divided by comma. Additional feature format: Min Message Length -> Max Message Length
Scan Mode	Scan Mode: 1. Manual Scan 2. Auto Scan 3. Continuous Scan





RS232 Interface

Introduction

When the engine is connected to the Host with RS232 cable, system will select RS232 connection by default.

Under RS232 connection, the engine and the Host use the same communication parameters: baud rate, parity check, data bits select and stop bits select.



Select RS232 Connection
【Pro CMD: 1100000】





The engine and the Host should use the same serial port parameters: baud rate, parity check, data bits and stop bits. The sequence is as follows: 9600 (baud rate), null (parity check), 8 (data bits), 1 (stop bits).

Code Programming ON



Baud Rate

Baud rate is the number of bits of data transmitted per second. Set your scan engine baud rate to match the baud rate setting of the Host device. Otherwise, they can not communicate.

Code Programming OFF



The engine supports the following baud rates (The default baud rate is 9600):



**9600

【Pro CMD: 0100030】



19200

【Pro CMD: 0100050】



1200

【Pro CMD: 0100000】



38400

【Pro CMD: 0100060】



2400

【Pro CMD: 0100010】



57600

【Pro CMD: 0100070】



4800

【Pro CMD: 0100020】



115200

【Pro CMD: 0100080】



14400

【Pro CMD: 0100040】





Parity Check

Parity check options should be the same on the engine and the Host.

- » Select Odd parity: If data has an odd number of 1 bits, the parity bit value is set to 0.
- » Select Even parity: If data has an even number of 1 bits, the parity bit value is set to 0.
- » Select No Parity Check and parity bit will not be sent.

Code Programming ON



Code Programming OFF



**No Parity Check
【Pro CMD: 0101000】



Odd Check
【Pro CMD: 0101020】



Even Check
【Pro CMD: 0101010】





Data Bits Transmitted

Code Programming ON



Select data bits transmitted to be 5, 6, 7 and 8. Ensure the selections on the engine and the Host are the same.

Code Programming OFF



** 8 Data Bits

【Pro CMD: 0103030】



6 Data Bits

【Pro CMD: 0103010】



7 Data Bits

【Pro CMD: 0103020】



5 Data Bits

【Pro CMD: 0103000】

Stop Bits

Stop bit follows every byte to indicate the end of transmission and the start of the next transmission.

Default 1 stop bit.



**1 Stop Bits

【Pro CMD: 0102000】



2 Stop Bits

【Pro CMD: 0102010】





Symbols

Introduction

This chapter lists all the available symbols and provides the programming barcodes to enable/disable them.

Disabling reading of the symbols which do not apply, will improve reading performance. The fewer symbols are enabled, the faster the engine will work.





Disable Reading All

Disable Reading All = Allow reading Programming Codes only.



Disable Reading All
【Pro CMD: 0001010】

Code Programming ON



Code Programming OFF



Enable Reading All

Enable Reading All = Enable to read all symbols and Programming Codes.



Enable Reading All
【Pro CMD: 0001020】

Enable Reading All 1D



Enable Reading All 1D
【Pro CMD: 0001040】

Disable Reading All 1D



Disable Reading All 1D
【Pro CMD: 0001030】





Enable Reading All 2D



Enable Reading All 2D
【Pro CMD: 0001060】

Code Programming ON



Code Programming OFF



Disable Reading All 2D



Disable Reading All 2D
【Pro CMD: 0001050】





Load Factory Default



** Load Code 128 Factory Default
【Pro CMD: 0400000】

Code Programming ON



Code Programming OFF



Enable/Disable Code 128



Disable Code 128
【Pro CMD: 0400010】



** Enable Code 128
【Pro CMD: 0400020】



When the engine can not read Code 128, please read “Enable Code 128” and try again.



Select Message Length

It is used to program the valid reading length of Code 128. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Code 128 Message Length is defined by “Min. Message Length” and “Max. Message Length” .

Code Programming ON



Code Programming OFF



Min Message Length (default: 1)
【Pro CMD: 0400030】



Max Message Length (default: 48)
【Pro CMD: 0400040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of Code 128 to 8 bytes and Max Message Length to 12 bytes, read these programming codes

- 1、“Code Programming ON”
- 2、“Select Min Message Length”
- 3、Digit Code “8” , see Digit Code
- 4、“Save Programming” ,see Digit Code
- 5、“Select Max Message Length”
- 6、Digit Code “1”
- 7、Digit Code “2”
- 8、“Save Programming”
- 9、“Code Programming OFF”





Load Factory Default



** Load UCC/EAN-8 Factory Default
【Pro CMD: 0401000】

Code Programming ON



Code Programming OFF



Enable/Disable UCC/EAN-8



** Enable UCC/EAN-8
【Pro CMD: 0401020】



Disable UCC/EAN-8
【Pro CMD: 0401010】

Check Digit

UCC/EAN-8 is fixed 8 digits barcode and the last digit is check digit.



** Transmit Check
【Pro CMD: 0401040】



Do Not Transmit Check
【Pro CMD: 0401030】





2 Digits Addenda Code

Addenda Code is the one to the right of an ordinary code. Picture below shows an ordinary code with a 2 digits Addenda Code. The left one in blue lines is an ordinary code. The right one in red lines is the 2 digits Addenda Code.



Code Programming ON



Code Programming OFF



** Disable 2 Digits Addenda Code
【Pro CMD: 0401050】



Enable 2 Digits Addenda Code
【Pro CMD: 0401060】

5 Digits Addenda Code

5 Digits Addenda Code is the one to the right of an ordinary code. Picture below shows an ordinary code with a 5 digits Addenda Code. The left one in blue lines is an ordinary code. The right one in red lines is the 5 digits Addenda Code.



** Disable 5 Digits Addenda Code
【Pro CMD: 0401070】



Enable5 Digits Addenda Code
【Pro CMD: 0401080】



- “ Enable 2 Digits Addenda Code “ — read an ordinary code and 2 digits Addenda Code.
- “ Enable 5 Digits Addenda Code “ — read an ordinary code and 5 digits Addenda Code.
- “ Disable 2 Digits Addenda Code “ — read an ordinary code only, and ignore 2 digits Addenda Code.



EAN-8 expand to EAN-13

Expand EAN-8 to EAN-13, by adding 5 bytes of “0” to the left, and then transmit.

Code Programming ON



Code Programming OFF



**** Do Not Expand to EAN-13
【Pro CMD: 0401090】**



**Expand to EAN-13
【Pro CMD: 0401100】**





Load Factory Default



** Load EAN-13 Factory Default
【Pro CMD: 0402000】

Code Programming ON



Code Programming OFF



Disable/EnableEAN-13



** Enable EAN-13
【Pro CMD: 0402020】



Disable EAN-13
【Pro CMD: 0402010】

Check Digit



** Transmit Check
【Pro CMD: 0402040】



Do Not Transmit Check
【Pro CMD: 0402030】





2 Digits Addenda Code

Addenda Code is the one to the right of an ordinary code. Picture below shows an ordinary code with a 2 digits Addenda Code. The left one in blue lines is an ordinary code. The right one in red lines is the 2 digits Addenda Code.

Code Programming ON



Code Programming OFF



** Disable 2 Digits Addenda Code
【Pro CMD: 0402050】



Enable 2 Digits Addenda Code
【Pro CMD: 0402060】

5 Digits Addenda Code

5 Digits Addenda Code is the one to the right of an ordinary code. Picture below shows an ordinary code with a 5 digits Addenda Code. The left one in blue lines is an ordinary code. The right one in red lines is the 5 digits Addenda Code.



** Disable 5 Digits Addenda Code
【Pro CMD: 0402070】



Enable 5 Digits Addenda Code
【Pro CMD: 0402080】



- “ Enable 2 Digits Addenda Code “ — read an ordinary code and 2 digits Addenda Code.
- “ Enable 5 Digits Addenda Code “ — read an ordinary code and 5 digits Addenda Code.
- “ Disable 2 Digits Addenda Code “ — read an ordinary code only, and ignore 2 digits Addenda Code.



Load Factory Default



** Load UPC-E Factory Default
【Pro CMD: 0403000】

Code Programming ON



Code Programming OFF



Disable/Enable UPC-E



** Enable UPC-E
【Pro CMD: 0403020】



Disable UPC-E
【Pro CMD: 0403010】



When the engine can not read UPC-E, please read “Enable UPC-E” and try again.

Check Digit

UPC-E is fixed 8 digits barcode and the last digit is check digit.



** Transmit Check
【Pro CMD: 0403040】



Do Not Transmit Check
【Pro CMD: 0403030】





2 Digits Addenda Code

Addenda Code is the one to the right of an ordinary code. Picture below shows an ordinary code with a 2 digits Addenda Code. The left one in blue lines is an ordinary code. The right one in red lines is the 2 digits Addenda Code.



Code Programming ON



Code Programming OFF



** Abort 2 Digits Addenda
【Pro CMD: 0403050】



Enable 2 Digits Addenda Code
【Pro CMD: 0403060】

5 Digits Addenda Code

5 Digits Addenda Code is the one to the right of an ordinary code. Picture below shows an ordinary code with a 5 digits Addenda Code. The left one in blue lines is an ordinary code. The right one in red lines is the 5 digits Addenda Code.



** Disable 5 Digits Addenda Code
【Pro CMD: 0403070】



Enable 5 Digits Addenda Code
【Pro CMD: 0403080】



- “ Enable 2 Digits Addenda Code “ — read an ordinary code and 2 digits Addenda Code.
- “ Enable 5 Digits Addenda Code “ — read an ordinary code and 5 digits Addenda Code.
- “ Disable 2 Digits Addenda Code “ — read an ordinary code only, and ignore 2 digits Addenda Code.



Transmit Default “0”

The first byte of UPC-E is default to “0” .

Code Programming ON



Code Programming OFF



**Do Not Transmit “0”
【Pro CMD: 0403090】



Transmit “0”
【Pro CMD: 0403100】

UPC-E Expand to UPC-A

Follow the standard algorithm to expand UPC-E to UPC-A.



**Do Not Expand to UPC-A
【Pro CMD: 0403110】



Expand to UPC-A
【Pro CMD: 0403120】





Load Factory Default



** Load UPC-A Factory Default
【Pro CMD: 0404000】

Code Programming ON



Code Programming OFF



Disable/Enable UPC-A



** Enable UPC-A
【Pro CMD: 0404020】



Disable UPC-A
【Pro CMD: 0404010】



When the engine can not read UPC-A, please read “Enable UPC-A” and try again.

Check Digit

UPC-A is fixed 13 digits barcode and the last digit is Check Digit.



**Transmit Check
【Pro CMD: 0404040】



(Do) Not Transmit Check
【Pro CMD: 0404030】





2 Digits Addenda Code

Addenda Code is the one to the right of an ordinary code. Picture below shows an ordinary code with a 2 digits Addenda Code. The left one in blue lines is an ordinary code. The right one in red lines is the 2 digits Addenda Code.



Code Programming ON



Code Programming OFF



** Disable 2 Digits Addenda Code
【Pro CMD: 0404050】



Enable 2 Digits Addenda Code
【Pro CMD: 0404060】

5 Digits Addenda Code

5 Digits Addenda Code is the one to the right of an ordinary code. Picture below shows an ordinary code with a 5 digits Addenda Code. The left one in blue lines is an ordinary code. The right one in red lines is the 5 digits Addenda Code.



** Disable 5 Digits Addenda Code
【Pro CMD: 0404070】



Enable 5 Digits Addenda Code
【Pro CMD: 0404080】



- “ Enable 2 Digits Addenda Code “ — read an ordinary code and 2 digits Addenda Code.
- “ Enable 5 Digits Addenda Code “ — read an ordinary code and 5 digits Addenda Code.
- “ Disable 2 Digits Addenda Code “ — read an ordinary code only, and ignore 2 digits Addenda Code.



Transmit Default “0”

The first byte of UPC-A is default to “0” .

Code Programming ON



Code Programming OFF



**Do Not Transmit “0”
【Pro CMD: 0404090】



Transmit “0”
【Pro CMD: 0404100】



UPC-A has the default “0” but it is not printed out, unlike UPC-E. Read “Transmit 0” will add a “0” to transmit.



Load Factory Default



** Load Interleaved 2 of 5 Factory Default
【Pro CMD: 0405000】

Code Programming ON



Code Programming OFF



Disable/Enable Interleaved 2 of 5



** Enable Interleaved 2 of 5
【Pro CMD: 0405020】



Disable Interleaved 2 of 5
【Pro CMD: 0405010】



When the engine can not read Interleaved 2 of 5, please read “Enable Interleaved 2 of 5”
and try again





Select Message Length

It is used to program the valid reading length of Interleaved 2 of 5. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Interleaved 2 of 5 Message Length is defined by “Min. Message Length” and “Max. Message Length”

Code Programming ON



Code Programming OFF



Min Message Length (default: 6)
【Pro CMD: 0405030】



Max Message Length (default: 80)
【Pro CMD: 0405040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of Interleaved 2 of 5 as 8 bytes, and Max Message length as 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8”, see Digit Code Appendix (Pxxx)
4. “Save Programming”, see Digit Code Appendix (Pxxx)
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”





Check Digit

Interleaved 2 of 5 may include Check Digit (not compulsory) following its barcode messages. It verifies the barcode message.

» “NO Check, Transmit All” means to read without check and transmit all bytes including barcode message and Check digit.

» “Check, Do Not Transmit Check Digit” means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.

» “Check, Transmit All” means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



The number of Interleaved 2 of 5 barcode bits(check digit contained) must be even. If it is odd, a 0 will be added as the first digit. The check digit generates automatically when a barcode is produced.



**** NO Check, Transmit All**
【Pro CMD: 0405050】



Check, Do Not Transmit Check Digit
【Pro CMD: 0405060】



Check, Transmit All
【Pro CMD: 0405070】



When “Check, Do Not Transmit Check digit” is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.

E.g.: Reading a 4-byte (include check Digit) Interleaved 2 of 5 with the Min Message Length being 4 bytes and “Check, Do Not Transmit Check digit” enabled leads to an error.



Specified Lengths

Program the engine to read specified lengths or ranges of specified lengths for Interleaved 2 of 5. The length value must be 3 decimal digits. And the length value **MUST** be an even number between 2 to 64.

Read “Enable Specified Length” to enable this feature or “Disable Specified Length” to disable.

Code Programming ON



Code Programming OFF



** Disable Specified Length
【Pro CMD: 0405140】



Add Code Length
【Pro CMD: 0405160】



Enable Specified Length
【Pro CMD: 0405150】



Remove Code Length
【Pro CMD: 0405170】

Example

The engine only read Interleaved 2 of 5 which are 12 and 24 bytes.

1. “Code Programming ON”
2. “Enable Specified Length”
3. “Add Code Length”
4. Digit Code “0”, “1”, “2”
5. “Save Programming”
6. “Add code length”
7. Digit Code “0”, “2”, “4”
8. “Save Programming”
9. “Code Programming OFF”

The engine only read Interleaved 2 of 5 between 12 bytes and 24 bytes.

1. “Code Programming ON”
2. “Enable Specified Length”
3. “Add Code Length”
4. Digit Code “0”, “1”, “2”
5. Digit Code “0”, “2”, “4”
6. “Save Programming”
7. “Code Programming OFF”





ITF-14 is a fixed length, 14 bytes Interleaved 2 of 5 barcode with Check digit. By factory default, it is disabled.

When enabled, ITF-14 precedes 14-byte Interleaved 2 of 5 barcode.

Code Programming ON



Code Programming OFF



**Disable ITF-14
【Pro CMD: 0405080】



Enable ITF-14, Do Not Transmit Check Digit
【Pro CMD: 0405090】



Enable ITF-14, Transmit Check Digit
【Pro CMD: 0405100】



For instance, when ITF-14 is enabled and Interleaved 2 of 5 is disabled, the ITF-14 and 14 bytes Interleaved 2 of 5 with check digit can be read, but other Interleaved 2 of 5 can not.



ITF-6 is a fixed length 6 bytes Interleaved 2 of 5 barcode with check digit.
When enabled, ITF-6 precedes 6-byte Interleaved 2 of 5 barcode.

Code Programming ON



Code Programming OFF



**Disable ITF-6 User Selection
【Pro CMD: 0405110】



ITF-6, Read, Do Not Transmit Check Digit
【Pro CMD: 0405120】



ITF-6, Read, Transmit Check Digit
【Pro CMD: 0405130】



For instance, when ITF-6 is enabled and Interleaved 2 of 5 is disabled, the ITF-6 and 6 bytes Interleaved 2 of 5 with check digit can be read, but other Interleaved 2 of 5 can not





Load Factory Default



** Load Matrix 2 of 5 Factory Default
【Pro CMD: 0406000】

Code Programming ON



Code Programming OFF



Disable/Enable Matrix 2 of 5



Enable Matrix 2 of 5
【Pro CMD: 0406020】



** Disable Matrix 2 of 5
【Pro CMD: 0406010】



When the engine can not read Interleaved 2 of 5, please read “Enable Interleaved 2 of 5”
and try again





Select Message Length

It is used to program the valid reading length of Matrix 2 of 5. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Matrix 2 of 5 Message Length is defined by “Min. Message Length” and “Max. Message Length”

Code Programming ON



Code Programming OFF



Min Message Length (default: 4)
【Pro CMD: 0406030】



MaxMessage Length (default: 80)
【Pro CMD: 0406040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of Matrix 2 of 5 as 8 bytes, and Max Message length as 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8”, see Digit Code Appendix (Pxxx)
4. “Save Programming”, see Digit Code Appendix (Pxxx)
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”





Check Digit

Matrix 2 of 5 may include Check Digit (not compulsory) following its barcode messages. It verifies the barcode message.

» “NO Check, Transmit All” means to read without check and transmit all bytes including barcode message and Check digit.

» “Check, Do Not Transmit Check Digit” means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.

» “Check, Transmit All” means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



The number of Matrix 2 of 5 barcode bits(check digit contained) must be even. If it is odd, a 0 will be added as the first digit. The check digit generates automatically when a barcode is produced.



** NO Check, Transmit All

【Pro CMD: 0406050】



Check, Do Not Transmit Check Digit

【Pro CMD: 0406060】



Check, Transmit All

【Pro CMD: 0406070】



When “Check, Do Not Transmit Check digit” is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.

E.g.: Reading a 4-byte (include check Digit) Matrix 2 of 5 with the Min Message Length being 4 bytes and “Check, Do Not Transmit Check digit” enabled leads to an error.



Load Factory Default



** Load Code 39 Factory Default
【Pro CMD: 0408000】

Code Programming ON



Code Programming OFF



Enable/Disable Code 39



** Enable Code 39
【Pro CMD: 0408020】



Disable Code 39
【Pro CMD: 0408010】



When the engine can not read Code 39, please read “Enable Code 39” and try again

Transmit Start & Stop Character

Transmission of “*” can be selected.



**Transmit Both “*”
【Pro CMD: 0408090】



Transmit Neither “*”
【Pro CMD: 0408080】





Select Message Length

It is used to program the valid reading length of Code 39. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Code 39 Message Length is defined by “Min. Message Length” and “Max. Message Length”.

Code Programming ON



Code Programming OFF



Min Message Length (default: 4)
【Pro CMD: 0408030】



Max Message Length (default: 48)
【Pro CMD: 0408040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of Code 39 to 8 bytes, and Max Message Length to 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8”, see Digit Code
4. “Save Programming”, see Digit Code
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”



Check Digit

Code 39 may include Check Digit (not compulsory) following its barcode message. It verifies the barcode message.

» "NO Check, Transmit All" means to read without check and transmit all bytes including barcode message and Check Digit.

» "Check, Do Not Transmit Check Digit" means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.

» "Check, Transmit All" means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



** NO Check, Transmit All
【Pro CMD: 0408050】



Check, Transmit All
【Pro CMD: 0408070】



Check, Do not transmit Check Digit
【Pro CMD: 0408060】



When "Check, Do not Transmit Check digit" is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.

E.g.: Reading a 4-byte (include check byte) Code 39 with the Min Message Length being 4 bytes and "Check, Do not transmit Check Digit" enabled leads to an error.

Decode ASCII

Code 39 can include full ASCII characters. For factory default, the engine only decodes part of them. Read "Full ASCII decode" to decode full ASCII characters.



**Partial ASCII Decode
【Pro CMD: 0408100】



Full ASCII Decode
【Pro CMD: 0408110】



Load Factory Default



** Load Codabar Factory Default
【Pro CMD: 0409000】

Code Programming ON



Code Programming OFF



Enable/Disable Codabar



** Enable Codabar
【Pro CMD: 0409020】



Disable Codabar
【Pro CMD: 0409010】



When the engine can not read Codabar, please read “Enable Codabar” and try again.



Select Message Length

It is used to program the valid reading length of Codabar. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Codabar Message Length is defined by “Min. Message Length” and “Max. Message Length”.

Code Programming ON



Code Programming OFF



Min Message Length (default: 2)
【Pro CMD: 0409030】



Max Message Length (default: 60)
【Pro CMD: 0409040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.



Check Digit

Codabar may include Check Digit (not compulsory) following its barcode message. It verifies the barcode message.

» "NO Check, Transmit All" means to read without check and transmit all bytes including barcode message and Check Digit.

» "Check, Do Not Transmit Check Digit" means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.

» "Check, Transmit All" means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



** NO Check, Transmit All
【Pro CMD: 0409050】



Check, Transmit All
【Pro CMD: 0409070】



Check, Do not transmit Check Digit
【Pro CMD: 0409060】



When "Check, Do not Transmit Check digit" is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.
E.g.: Reading a 4-byte (include check byte) Codabar with the Min Message Length being 4 bytes and "Check, Do not transmit Check Digit" enabled leads to an error.



Transmit Start & Stop Character

Codabar uses either one of “A”, “B”, “C” and “D” as the start character and the stop character. Transmission of them can be selected.

Code Programming ON



Code Programming OFF



****Transmit Both Start & Stop Character**
【Pro CMD: 0409090】



Transmit Neither Start & Stop Character
【Pro CMD: 0409080】



****Use ABCD/ABCD As Start & Stop Character**
【Pro CMD: 0409100】



****Use Upper Letter**
【Pro CMD: 0409120】



Use ABCD/TN*E As Start & Stop Character
【Pro CMD: 0409110】



Use Lower Letter
【Pro CMD: 0409130】





Load Factory Default



** Load Code 93 Factory Default
【Pro CMD: 0410000】

Code Programming ON



Code Programming OFF



Enable /Disable Code 93



** Disable Code 93
【Pro CMD: 0410010】



Enable Code 93
【Pro CMD: 0410020】



When the engine can not read Code 93, please read “Enable Code 93” and try again.



Select Message Length

It is used to program the valid reading length of Code 93. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Code 93 Message Length is defined by “Min. Message Length” and “Max. Message Length.”

Code Programming ON



Code Programming OFF



Min Message Length (default: 1)
【Pro CMD: 0410030】



Max Message Length (default: 48)
【Pro CMD: 0410040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of Code 93 to 8 bytes and Max Message Length to 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8” , see Digit Code
4. “Save Programming” , see Digit Code
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”





Check Digit

Code 93 may include Check Digits (not compulsory) following its barcode message. The two digits verify the barcode message.

» "NO Check, Transmit All" means to read without check and transmit all bytes including barcode message and Check Digits.

» "Check, Do Not Transmit Check Digit" means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.

» "Check, Transmit All" means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



NO Check, Transmit All
【Pro CMD: 0410050】



Check, Transmit All
【Pro CMD: 0410070】



** Check, Do not transmit Check Digit
【Pro CMD: 0410060】



When "Check, Do not Transmit Check digit" is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.

E.g.: Reading a 4-byte (include check byte) Code 93 with the Min Message Length being 4 bytes and "Check, Do not transmit Check Digit" enabled leads to an error.



Load Factory Default



** Load UCC/EAN-128 Factory Default
【Pro CMD: 0412000】

Code Programming ON



Code Programming OFF



Enable/Disable UCC/EAN-128



** Enable UCC/EAN-128
【Pro CMD: 0412020】



Disable UCC/EAN-128
【Pro CMD: 0412010】



When the engine can not read UCC/EAN-128, please read “Enable UCC/EAN-128” and try again.



Load Factory Default



** Load GS1 Databar Factory Default
【Pro CMD: 0413000】

Code Programming ON



Code Programming OFF



Enable/Disable GS1 Databar



** Enable GS1 Databar
【Pro CMD: 0413020】



Disable GS1 Databar
【Pro CMD: 0413010】



When the engine can not read GS1 Databar, please read “Enable GS1 Databar” and try again.

Transmit AI(01) Character



** Transmit AI(01) Character
【Pro CMD: 0413060】



Do not Transmit AI(01) Character
【Pro CMD: 0413050】





Load Factory Default



** Load EAN·UCC Composite Factory Default
【Pro CMD: 0414000】

Code Programming ON



Code Programming OFF



Enable/Disable EAN·UCC Composite



Enable EAN·UCC Composite
【Pro CMD: 0414020】



** Disable EAN·UCC Composite
【Pro CMD: 0414010】



Enable UPC/EAN Composite
【Pro CMD: 0414040】



** Disable UPC/EAN Composite
【Pro CMD: 0414030】



When the engine can not read EAN·UCC Composite, please read “Enable EAN·UCC Composite” and try again.



Load Factory Default



** Load Code 11 Factory Default
【Pro CMD: 0415000】

Code Programming ON



Code Programming OFF



Enable/Disable Code 11



Enable Code 11
【Pro CMD: 0415020】



** Disable Code 11
【Pro CMD: 0415010】



When the engine can not read Code 11, please read “Enable Code 11” and try again.



Select Message Length

It is used to program the valid reading length of Code 11. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Code 11 Message Length is defined by “Min. Message Length” and “Max. Message Length.”

Code Programming ON



Code Programming OFF



Min Message Length (default: 4)
【Pro CMD: 0415030】



Max Message Length (default: 48)
【Pro CMD: 0415040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of Code11 to 8 bytes and Max Message Length to 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8” , see Digit Code
4. “Save Programming” , see Digit Code
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”





Check Digit

Code 11 may include Check Digit (not compulsory) following its barcode message. It verifies the barcode message.

- » "NO Check, Transmit All" means to read without check and transmit all bytes including barcode message and Check Digit.
- » "Check, Do Not Transmit Check Digit" means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.
- » "Check, Transmit All" means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



NO Check, Transmit All
【Pro CMD: 0415050】



Single Check Digit MOD11 (Len <= 10)
Double Check Digits MOD11/MOD11 (Len > 10)
【Pro CMD: 0415090】



** Single Check Digit, MOD11
【Pro CMD: 0415060】



Single Check Digit MOD11 (Len <= 10)
Double Check Digits MOD11/MOD9 (Len > 10)
【Pro CMD: 0415100】



Double Check Digits, MOD11/MOD11
【Pro CMD: 0415070】



Do not transmit Check Digit
【Pro CMD: 0415110】



Double Check Digits, MOD11/MOD9
【Pro CMD: 0415080】



** Transmit Check Digit
【Pro CMD: 0415120】



When "Check, Do not Transmit Check digit" is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.
E.g.: Reading a 4-byte (include check byte) Code 11 with the Min Message Length being 4 bytes and "Check, Do not transmit Check Digit" enabled leads to an error.



Load Factory Default



** Load ISBN Factory Default
【Pro CMD: 0416000】

Code Programming ON



Code Programming OFF



Enable/Disable ISBN



Enable ISBN
【Pro CMD: 0416020】



** Disable ISBN
【Pro CMD: 0416010】



When the engine can not read ISBN, please read “Enable ISBN” and try again.

Transmit



** Transmit 13 digits
【Pro CMD: 0416030】



Transmit 10 digits
【Pro CMD: 0416040】



Load Factory Default



** Load Industrial 25 Factory Default
【Pro CMD: 0417000】

Code Programming ON



Code Programming OFF



Enable/Disable Industrial 25



Enable Industrial 25
【Pro CMD: 0417020】



** Disable Industrial 25
【Pro CMD: 0417010】



When the engine can not read Industrial 25, please read “Enable Industrial 25” and try again.





Select Message Length

It is used to program the valid reading length of Industrial 25. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Industrial 25 Message Length is defined by “Min. Message Length” and “Max. Message Length .”

Code Programming ON



Code Programming OFF



Min Message Length (default: 6)
【Pro CMD: 0417030】



Max Message Length (default:48)
【Pro CMD: 0417040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.



To set Min Message Length of Industrial 25 to 8 bytes and Max Message Length to 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8” , see Digit Code
4. “Save Programming” , see Digit Code
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”





Check Digit

Industrial 25 may include Check Digit (not compulsory) following its barcode message. It verifies the barcode message.

- » "NO Check, Transmit All" means to read without check and transmit all bytes including barcode message and Check Digit.
- » "Check, Do Not Transmit Check Digit" means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.
- » "Check, Transmit All" means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



** NO Check, Transmit All
【Pro CMD: 0417050】



Check, Transmit All
【Pro CMD: 0417070】



Check, Do Not Transmit Check Digit
【Pro CMD: 0417060】



When "Check, Do not Transmit Check digit" is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.
E.g.: Reading a 4-byte (include check byte) Industrial 25 with the Min Message Length being 4 bytes and "Check, Do not transmit Check Digit" enabled leads to an error.



Load Factory Default



** Load Standard 25 Factory Default
【Pro CMD: 0418000】

Code Programming ON



Code Programming OFF



Enable/Disable Standard 25



Enable Standard 25
【Pro CMD: 0418020】



** Disable Standard 25
【Pro CMD: 0418010】



When the engine can not read Standard 25, please read “Enable Standard 25” and try again.



Select Message Length

It is used to program the valid reading length of Standard 25. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Standard 25 Message Length is defined by “Min. Message Length” and “Max. Message Length .”

Code Programming ON



Code Programming OFF



Min Message Length (default: 6)
【Pro CMD: 0418030】



Max Message Length (default:48)
【Pro CMD: 0418040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of Standard 25 to 8 bytes and Max Message Length to 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8” , see Digit Code
4. “Save Programming” , see Digit Code
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”





Check Digit

Standard 25 may include Check Digit (not compulsory) following its barcode message. It verifies the barcode message.

- » "NO Check, Transmit All" means to read without check and transmit all bytes including barcode message and Check Digit.
- » "Check, Do Not Transmit Check Digit" means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.
- » "Check, Transmit All" means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



** NO Check, Transmit All
【Pro CMD: 0418050】



Check, Transmit All
【Pro CMD: 0418070】



Check, Do Not Transmit Check Digit
【Pro CMD: 0418060】



When "Check, Do not Transmit Check digit" is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.
E.g.: Reading a 4-byte (include check byte) Industrial 25 with the Min Message Length being 4 bytes and "Check, Do not transmit Check Digit" enabled leads to an error.



Load Factory Default



** Load Plessey Factory Default
【Pro CMD: 0419000】

Code Programming ON



Code Programming OFF



Enable/Disable Plessey



Enable Plessey
【Pro CMD: 0419020】



** Disable Plessey
【Pro CMD: 0419010】



When the engine can not read Plessey, please read “Enable Plessey” and try again.



Select Message Length

It is used to program the valid reading length of Plessey. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Plessey Message Length is defined by “Min. Message Length” and “Max. Message Length.”

Code Programming ON



Code Programming OFF



Min Message Length (default: 4)
【Pro CMD: 0419030】



Max Message Length (default:48)
【Pro CMD: 0419040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of Plessey to 8 bytes and Max Message Length to 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8” , see Digit Code
4. “Save Programming” , see Digit Code
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”





Check Digit

Plessey may include Check Digits (not compulsory) following its barcode message. The two digits verify the barcode message.

- » "NO Check, Transmit All" means to read without check and transmit all bytes including barcode message and Check Digits.
- » "Check, Do Not Transmit Check Digit" means to read and check. If verification is successful, transmits barcode message; if not, engine will not send barcode message to the Host.
- » "Check, Transmit All" means to read and check. If verification is successful, transmits all messages; if not, engine will not send barcode message to the Host.

Code Programming ON



Code Programming OFF



NO Check, Transmit All
【Pro CMD: 0419050】



** Check, Transmit All
【Pro CMD: 0419070】



Check, Do Not Transmit Check Digit
【Pro CMD: 0419060】



When "Check, Do not Transmit Check digit" is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.
E.g.: Reading a 4-byte (include check byte) Plessey with the Min Message Length being 4 bytes and "Check, Do not transmit Check Digit" enabled leads to an error.





Load Factory Default



** Load MSI-Plessey Factory Default
【Pro CMD: 0420000】

Code Programming ON



Code Programming OFF



Enable/Disable MSI-Plessey



Enable MSI-Plessey
【Pro CMD: 0420020】



** Disable MSI-Plessey
【Pro CMD: 0420010】



When the engine can not read MSI-Plessey, please read “Enable MSI-Plessey” and try again.



Select Message Length

It is used to program the valid reading length of MSI-Plessey. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

MSI-Plessey Message Length is defined by “Min. Message Length” and “Max. Message Length .”

Code Programming ON



Code Programming OFF



Min Message Length (default: 4)
【Pro CMD: 0420030】



Max Message Length (default:48)
【Pro CMD: 0420040】



1D bar code Message Length should not exceed 127 bytes. If Max Message Length is less than Min Message Length, it means the engine will only support barcodes of the two lengths. If Max Message Length is equal to Min Message Length, the engine will only support barcodes of the length.

Example

To set Min Message Length of MSI-Plessey to 8 bytes and Max Message Length to 12 bytes, read these programming codes:

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8” , see Digit Code
4. “Save Programming” , see Digit Code
5. “Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”





Check Digit

Plessey may include Check Digits(s) (not compulsory) following its barcode message. It may have one or two digits, which verify the barcode message.

» "NO Check, Transmit All" means to read without check and transmit all bytes including barcode message and Check Digits.

Code Programming ON



Code Programming OFF



NO Check, Transmit All
【Pro CMD: 0420050】



Double Check Digits, MOD10/MOD11
【Pro CMD: 0420080】



** Single Check Digit, MOD10
【Pro CMD: 0420060】



NO Transmit Check Digits
【Pro CMD: 0420090】



Double Check Digits, MOD10/MOD10
【Pro CMD: 0420070】



** Transmit Check Digits
【Pro CMD: 0420100】



When "Check, Do not Transmit Check digit" is enabled and barcode message length minus one is less than Min Message Length, it will lead to an error.
E.g.: Reading a 4-byte (include check byte) MSI-Plessey with the Min Message Length being 4 bytes and "Check, Do not transmit Check Digit" enabled leads to an error.



Load Factory Default



** Load PDF417 Factory
【Pro CMD: 0501000】

Code Programming ON



Code Programming OFF



Enable/Disable PDF417



** Enable PDF417
【Pro CMD: 0501020】



Disable PDF417
【Pro CMD: 0501010】



When the engine can not read PDF417, please read “Enable PDF417” and try again.



Select Message Length

It is used to program the valid reading length of PDF417. The engine will not send barcode message to the Host, if the decoded data length does not match the valid reading length.

PDF417 Message Length is defined by "Min. Message Length" and "Max. Message Length".

Code Programming ON



Code Programming OFF



Min Message Length (default: 1)
【Pro CMD: 0501030】



Max Message Length (default: 2710)
【Pro CMD: 0501040】



2D bar code Message Length should not exceed 65535 bytes.

Max Message Length should not be less than Min Message Length.

To read a fixed length PDF417, Please program Max & Min Message Length to the same value.

Example

To set Min Message Length of PDF417 to 8 bytes and Max Message Length to 12 bytes, read these programming codes:

1. "Code Programming ON"
2. "Select Min Message Length"
3. Digit Code "8", see Digit Code
4. "Save Programming", see Digit Code
5. "SelectMax Message Length"
6. Digit Code "1"
7. Digit Code "2"
8. "Save Programming"
9. "Code Programming OFF"



PDF417 Twin Code

PDF417 twin code is 2 PDF417 barcodes paralleled vertically or horizontally. They must have the same direction. Their specifications must be similar and the distance between them must be short.

Code Programming ON



Code Programming OFF



There are 3 options for reading PDF417 twin code:

- » Single PDF417 Only: Read either PDF417 code.
- » Twin PDF417 Only: Read both PDF417 codes. The transmission sequence is: left (upper) PDF417 code followed by right (lower) PDF417 code.
- » Both Single & Twin: Read both PDF417 codes. If successful, transmit as twin PDF417 only. Otherwise, try single PDF417 only.



** Single PDF417 Only
【Pro CMD: 0501070】



Both Single & Twin
【Pro CMD: 0501090】



Twin PDF417 Only
【Pro CMD: 0501080】

Forward/Backward Direction PDF 417

PDF 417 has forward or backward direction.

Forward Direction Barcode: Light colour ground, Deep colour bars.

Backward Direction Barcode: Deep colour ground, Light colour bars.



** Forward Direction Barcode Only
【Pro CMD: 0501320】



Both
【Pro CMD: 0501322】



Backward Direction Barcode Only
【Pro CMD: 0501321】





Load Factory Default



** Load QR Code Factory Default
【Pro CMD: 0502000】

Code Programming ON



Code Programming OFF



Enable/Disable QR Code



** Enable QR Code
【Pro CMD: 0502020】



Disable QR Code
【Pro CMD: 0502010】



When the engine can not read QR Code, please read “Enable QR Code” and try again.



Select Message Length

It is used to program the valid reading length of QR Code. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

QR Code Message Length is defined by "Min. Message Length" and "Max. Message Length".

Code Programming ON



Code Programming OFF



Min Message Length (default: 1)
【Pro CMD: 0502030】



Max Message Length (default: 7089)
【Pro CMD: 0502040】



2D bar code Message Length should not exceed 65535 bytes.

Max Message Length should not be less than Min Message Length.

To read a fixed length QR Code, Please program Max & Min Message Length to the same value



To set Min Message Length of QR Code to 8 bytes and Max Message Length to 12 bytes, read these programming codes:

1. "Code Programming ON"
2. "Select Min Message Length"
3. Digit Code "8", see Digit Code
4. Save Programming", see Digit Code
5. Select Max Message Length"
6. Digit Code "1"
7. Digit Code "2"
8. "Save Programming"
9. "Code Programming OFF"



QR Twin Code

QR twin code is 2 QR barcodes paralleled vertically or horizontally. They must have the same direction. Their specifications must be similar and the distance between them must be short.

There are 3 options for reading QR twin code:

- » Single QR Only: Read either QR code.
- » Twin QR Only: Read both QR codes. The transmission sequence is: left (upper) QR code followed by right (lower) QR code.
- » Both Single & Twin: Read both QR codes. If successful, transmit as twin QR only. Otherwise, try single QR only.

Code Programming ON



Code Programming OFF



**Single QR Only
【Pro CMD: 0502070】



Twin QR Only
【Pro CMD: 0502080】



Both Single & Twin
【Pro CMD: 0502090】



Load Factory Default



** Load Aztec Factory Default
【Pro CMD: 0503000】

Code Programming ON



Code Programming OFF



Enable/Disable Aztec



Enable Aztec
【Pro CMD: 0503020】



** Disable Aztec
【Pro CMD: 0503010】



When the engine can not read Aztec, please read “Enable Aztec” and try again.



Select Message Length

It is used to program the valid reading length of Aztec. The engine will not send barcode message to the Host, if the decoded data length does not match the valid length.

Aztec Message Length is defined by “Min. Message Length” and “Max. Message Length”.

Code Programming ON



Code Programming OFF



Min Message Length (default: 1)
【Pro CMD: 0503030】



Max Message Length (default: 3832)
【Pro CMD: 0503040】



2D bar code Message Length should not exceed 65535 bytes.

Max Message Length should not be less than Min Message Length.

To read a fixed length Aztec, Please program Max & Min Message Length to the same value.



To set Min Message Length of Aztec to 8 bytes and Max Message Length to 12 bytes, read these programming codes.

1. “Code Programming ON”
2. “Select Min Message Length”
3. Digit Code “8”, see Digit Code
4. Save Programming”, see Digit Code
5. Select Max Message Length”
6. Digit Code “1”
7. Digit Code “2”
8. “Save Programming”
9. “Code Programming OFF”



Reading Multi-barcodes of an Image

There are three modes:

- » Mode 1: Read one barcode only.
- » Mode 2: Read fixed number of barcodes only.
- » Mode 3: Composite Reading. Read fixed number of barcodes first, if failed, read one barcode only.

Code Programming ON



Code Programming OFF



** Mode 1

【Pro CMD: 0503070】



Mode 3

【Pro CMD: 0503090】



Mode 2

【Pro CMD: 0503080】



The number of Multi-barcodes

Code Programming ON



Code Programming OFF



** 1

【Pro CMD: 0503060】



5

【Pro CMD: 0503064】



2

【Pro CMD: 0503061】



6

【Pro CMD: 0503065】



3

【Pro CMD: 0503062】



7

【Pro CMD: 0503066】



4

【Pro CMD: 0503063】



8

【Pro CMD: 0503067】





Load Factory Default



** Load Data Matrix Factory Default
【Pro CMD: 0504000】

Code Programming ON



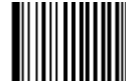
Code Programming OFF



Enable/Disable Data Matrix



** Enable Data Matrix
【Pro CMD: 0504020】



Disable Data Matrix
【Pro CMD: 0504010】



When the engine can not read Data Matrix, please read “Enable Data Matrix” and try again.



Select Message Length

It is used to program the valid reading length of Data Matrix. The engine will not send barcode message to the Host, if the decoded data length does not match the valid reading length.

Data Matrix Message Length is defined by "Min. Message Length" and "Max. Message Length".

Code Programming ON



Code Programming OFF



Min Message Length (default: 1)

【Pro CMD: 0504030】



Max Message Length (default: 3116)

【Pro CMD: 0504040】



2D bar code Message Length should not exceed 65535 bytes.

Max Message Length should not be less than Min Message Length.

To read a fixed length Data Matrix, Please program Max & Min Message Length to the same value.

Example

To set Min Message Length of Data Matrix to 8 bytes and Max Message Length to 12 bytes, read these programming codes.

1. "Code Programming ON"
2. "Select Min Message Length"
3. Digit Code "8", see Digit Code
4. Save Programming", see Digit Code
5. Select Max Message Length"
6. Digit Code "1"
7. Digit Code "2"
8. "Save Programming"
9. "Code Programming OFF"



Data Matrix Twin Code

Data Matrix twin code is 2 Data Matrix barcodes paralleled vertically or horizontally. They must have the same direction. Their specifications must be similar and the distance between them must be short.

Code Programming ON



There are 3 options for reading Data Matrix:

- » Single Data Matrix Only: Read either Data Matrix.
- » Twin Data Matrix Only: Read both Data Matrix. The transmission sequence is: left (upper) Data Matrix followed by right (lower) Data Matrix.
- » Both Single & Twin: Read both Data Matrix. If successful, transmit as twin Data Matrix. Otherwise, try single Data Matrix only.

Code Programming OFF



**Single Data Matrix Only
【Pro CMD: 0504070】



Twin Data Matrix Only
【Pro CMD: 0504080】



Both Single & Twin
【Pro CMD: 0504090】



Rectangular Symbols

Code Programming ON



Data Matrix has two formats:

» Square symbols, which has the same amount of models in length and width: 10*10, 12*12.... 144*144.

» Rectangular symbols, which has different amounts of models in length and width: 6*16;6*14...14*22.

Code Programming OFF



** Enable Rectangular Symbols
【Pro CMD: 0504110】



Disable Rectangular Symbols
【Pro CMD: 0504100】

Forward/Backward Direction Data Matrix

Data Matrix has forward or backward direction.

Forward Direction Barcode: Light colour ground, Deep colour bars.

Backward Direction Barcode: Deep colour ground, Light colour bars.



** Forward Direction Barcode Only
【Pro CMD: 0504320】



Both
【Pro CMD: 0504322】



Backward Direction Barcode
【Pro CMD: 0504321】



Load Factory Default



** Load Maxicode Factory Default
【Pro CMD: 0505000】

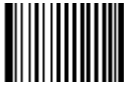
Code Programming ON



Code Programming OFF



Enable/Disable Maxicode



Enable Maxicode
【Pro CMD: 0505020】



** Disable Maxicode
【Pro CMD: 0505010】



When the engine can not read Maxicode, please read “Enable Maxicode” and try again.



Select Message Length

It is used to program the valid reading length of Maxicode. The engine will not send barcode message to the Host, if the decoded data length does not match the valid reading length.

Maxicode Message Length is defined by "Min. Message Length" and "Max. Message Length".

Code Programming ON



Code Programming OFF



Min Message Length (default: 1)
【Pro CMD: 0505030】



Max Message Length (default: 150)
【Pro CMD: 0505040】



2D bar code Message Length should not exceed 65535 bytes.

Max Message Length should not be less than Min Message Length.

To read a fixed length Maxicode, Please program Max & Min Message Length to the same value.

Example

To set Min Message Length of Maxicode to 8 bytes and Max Message Length to 12 bytes, read these programming codes.

1. "Code Programming ON"
2. "Select Min Message Length"
3. Digit Code "8", see Digit Code
4. Save Programming", see Digit Code
5. Select Max Message Length"
6. Digit Code "1"
7. Digit Code "2"
8. "Save Programming"
9. "Code Programming OFF"



Load Factory Default



** Load Chinese Sensible Code Factory Default
【Pro CMD: 0508000】

Code Programming ON



Code Programming OFF



Enable/Disable Chinese Sensible Code



Enable Chinese Sensible Code
【Pro CMD: 0508020】



** Disable Chinese Sensible Code
【Pro CMD: 0508010】



When the engine can not read Maxicode, please read “Enable Chinese Sensible Code” and try again.



Select Message Length

It is used to program the valid reading length of Chinese Sensible Code. The engine will not send barcode message to the Host, if the decoded data length does not match the valid reading length.

Maxicode Message Length is defined by "Min. Message Length" and "Max. Message Length".

Code Programming ON



Code Programming OFF



Min Message Length (default: 1)
【Pro CMD: 0508030】



Max Message Length (default:7827)
【Pro CMD: 0508040】



2D bar code Message Length should not exceed 65535 bytes.

Max Message Length should not be less than Min Message Length.

To read a fixed length Maxicode, Please program Max & Min Message Length to the same value.

Example

To set Min Message Length of Chinese Sensible Code to 8 bytes and Max Message Length to 12 bytes, read these programming codes.

1. "Code Programming ON"
2. "Select Min Message Length"
3. Digit Code "8", see Digit Code
4. Save Programming", see Digit Code
5. Select Max Message Length"
6. Digit Code "1"
7. Digit Code "2"
8. "Save Programming"
9. "Code Programming OFF"



OCR

Introduction

OCR (Optical Character Recognition) is the technology that captures image of printed information, and recognizes the image to editable characters.

The engine supports OCR B standard and specific typefaces, such as:

■ 0 1 2 3 4 5 6 7 8 ■

1. Nine numbers of OCR-B typeface must be included.
2. There must be a space between No.7 and No.8 number.
3. It must start and end with “■”. There must be a space between “■” and a number.



** Load SPEC_OCR_B Factory Default
【Pro CMD: 0600000】



** Disable OCR
【Pro CMD: 0600010】



Enable OCR
【Pro CMD: 0600020】



Prefix/Suffix

Introduction

1D barcodes could contain digits, letters and symbols, etc. 2D barcodes could contain more data, such as Chinese characters and other multi-byte characters. However, in reality, they do not and should not have all the information we need, such as barcode type, date and time of scan, delimiter, and so on, in order to keep the code short and flexible.

Prefix and Suffix are how to fulfill the needs mentioned above. They can be added, removed, and modified while the original barcode message is still in tact.



Barcode processing sequences:

1. Intercept barcode message
 2. Add Prefix/Suffix
 3. Pack
 4. Terminate with Terminal and transmit
-



Disable or Enable Prefix/Suffix

Disable All Prefix/Suffix: Transmit barcode message with no Prefix/Suffix.

Enable All Prefix/Suffix: Allow appending Code ID prefix, AIM prefix, User prefix, User suffix and Terminal to the barcode message.

Code Programming ON



Code Programming OFF



** Disable All Prefix/Suffix
【Pro CMD: 0311000】



Enable All Prefix/Suffix
【Pro CMD: 0311010】





Prefix Sequences

6 options of Prefix Sequences:

Code Programming ON



Code Programming OFF



** CodeID + AIM + User Prefix
【Pro CMD: 0317000】



AIM + User Prefix + CodeID
【Pro CMD: 0317030】



CodeID + User Prefix + AIM
【Pro CMD: 0317010】



User Prefix + CodeID + AIM
【Pro CMD: 0317040】



AIM + CodeID + User Prefix
【Pro CMD: 0317020】



User Prefix + AIM + CodeID
【Pro CMD: 0317050】





Disable or Enable User Prefix

User Prefix is added before barcode message. For example, if the user prefix is “AB” and the barcode message is “123” , the Host receives “AB123” .



** Disable User Prefix
【Pro CMD: 0305000】

Code Programming ON



Code Programming OFF



Enable User Prefix
【Pro CMD: 0305010】

Program User Prefix

Enable “Program User Prefix” . Then program user prefix byte(s). To end the prefix, read “Save programming” The user prefix byte is programmed in its hex values. See example below.

Note: The maximum length for user prefix is 10 bytes.



Program User Prefix
【Pro CMD: 0300000】

Example

Program “CODE” as user prefix (The hex of “CODE” are 0x43/0x4F/0x44/0x45):

1. Read “Code Programming ON”
2. Read “Program User Prefix”
3. Read “4,3,4,F,4,4,4,5” in order
4. Read “Save Programming”
5. Read “Code Programming OFF” .
6. Read “Allow User Prefix” to enable above programming. “CODE” will appear to the left of a barcode.





AIM (Automatic Identification Manufactures) defines AIM prefix for many standard barcode formats.

AIM Prefix Format: “]” + AIM prefix + “0”

Code Programming ON



Code Programming OFF



** Disable AIM Prefix for All Barcodes
【Pro CMD: 0308000】



Enable AIM Prefix for All Barcodes
【Pro CMD: 0308030】



AIM ID is not customizable.



Besides AIM prefix, Code ID prefix can be used to denote barcode format and can be customized.

The Code ID prefix **MUST** be one (1) or two (2) visible English letters.

Code Programming ON



Code Programming OFF



**** No Code ID Prefix**
【Pro CMD: 0307000】



Allow Code ID Prefix
【Pro CMD: 0307010】

Code ID Default



All Bar codes, Load Code ID Factory Default
【Pro CMD: 0307020】





Modify Code ID

See the examples below for how to modify a code ID and restore factory default code ID.

Code Programming ON



Example

Modify PDF417 Code ID to be “p” (hex value is 0x70)

1. Read “Code Programming ON”
2. Read “Modify PDF417”
3. Read Digit Code “7”, “0”
4. Read “Save Programming”
5. Read “Code Programming OFF” .

Code Programming OFF



Load Code ID factory default (including PDF417)

1. Read “Code Programming ON”
2. Read “2D, Load Code ID Factory Default”
3. Read “Code Programming OFF” .



Modify PDF417

【Pro CMD: 0005000】



Modify Data Matrix

【Pro CMD: 0005030】



Modify QR Code

【Pro CMD: 0005010】



Modify Maxicode

【Pro CMD: 0005040】



Modify Aztec

【Pro CMD: 0005020】



User Define Code

【Pro CMD: 0005090】



Modify EAN-8
【Pro CMD: 0004040】



Modify EAN-13
【Pro CMD: 0004050】



Modify UPC-E
【Pro CMD: 0004060】



Modify UPC-A
【Pro CMD: 0004070】



Modify Interleaved 2 of 5
【Pro CMD: 0004080】



Modify ITF-14
【Pro CMD: 0004090】

Code Programming ON



Code Programming OFF



Modify ITF-6
【Pro CMD: 0004100】



Modify Code 39
【Pro CMD: 0004130】



Modify Codabar
【Pro CMD: 0004150】



Modify Code 93
【Pro CMD: 0004170】





Modify Code 128
【Pro CMD: 0004020】



Modify UCC/EAN-128
【Pro CMD: 0004030】



Modify Code 11
【Pro CMD: 0004280】



Modify EAN•UCC Composite
【Pro CMD: 0004300】



Modify GS1 Databar
【Pro CMD: 0004310】



Modify ISBN
【Pro CMD: 0004240】



Modify Industrial 25
【Pro CMD: 0004250】



Modify Standard 25
【Pro CMD: 0004260】



Modify Plessey
【Pro CMD: 0004270】



Modify MSI-Plessey
【Pro CMD: 0004290】

Code Programming ON



Code Programming OFF





Prefix/Suffix

User Suffix



Disable or Enable User Suffix

User suffix is appended to the right of barcode message. For example, if user suffix is “AB” , and the barcode message is “123” , The Host receives “123AB” .

Code Programming ON



Code Programming OFF



**Disable User Suffix
【Pro CMD: 0306000】



Enable User Suffix
【Pro CMD: 0306010】

Program User Suffix

Read “Program User Suffix” . Then program user suffix byte(s). To end the suffix, read “Save programming” . The user suffix byte is programmed in its hex values. See example below.

Note: The maximum length for user suffix is 10 bytes.



Program User Suffix
【Pro CMD: 0301000】

Example

Program “CODE” as user suffix (The hex of “CODE” are 0x43, 0x4F, 0x44, and 0x45):

1. Read “Code Programming ON”
2. Read “Program User Suffix”
3. Read “4,3,4,F,4,4,4,5” in order
4. Read “Save Programming”
5. Read “Code Programming OFF”
6. Read “Allow User Suffix” to enable above programming. “CODE” will appear to the right of a barcode.





Disable or Enable Terminal

“Terminal” is the termination for a string of barcode messages. It can not be formatted like other suffix and prefix. It is fixed to the right and the very end of a barcode transmission.

Code Programming ON



Code Programming OFF



**Disable Terminal
【Pro CMD: 0309000】



Enable Terminal
【Pro CMD: 0309010】

Program Terminal

Read “Program Terminal” . Then program terminal byte(s). To end the suffix, read “Save programming” . The terminal byte is programmed in its hex values. See example below.

Note: The maximum length for terminal is 2 bytes.



Program Terminal
【Pro CMD: 0310000】



Program Ox0D as Terminal
【Pro CMD: 0310010】



Program Ox0D 0x0A as Terminal
【Pro CMD: 0310020】



Message Interception & Pack

Introduction

Barcode message could divide information into different sections, such as product ID, manufacture ID, and so on. They are important overall. However, at certain situations, some of them are not of interest. This is where message interception comes in. Message interception feature allows transmission of selected section(s). Message intercept only applies to “raw” barcode messages.

The sequence of a read to transmit without message intercept is: Read a “raw” barcode → Add prefix → Append suffix → Append terminal → Transmit to Host.

The sequence of a read to transmit with message intercept is: Read a “raw” barcode → Intercept Message → Add prefix → Append suffix → Append terminal → transmit to Host.

A special programming, pack, can insert barcode messages into a certain message format.

Then the processing sequence is: Read to obtain barcode message → Intercept → Add prefix → Append suffix → Pack → Append terminal → Transmit.





Interception Rule No.1: It only intercepts selected symbols' raw barcode messages and it effects all barcodes of the barcode format.

Code Programming ON



Interception Rule No.2: There are maximum 3 interception options restored in the non-volatile memory. If more than 3 are programmed, the last 3 are stored. For example, if there are 4 options are programmed in the order of Code 128 , Code 39, QR Code, and UPC-A and "Save" . The 3 options are restored in the order of: Code 39, QR Code, UPC-A.

Code Programming OFF



Interception Rule No.3: If there are more than one options programmed for a barcode format, the later one is used. For example, there are 3 options restored, Code 128 option A, QR Code option, Code 128 option B. The Code 128 option B is used when a Code 128 barcode is read.

"Enable Interception" barcode should be read before intercepting message.

Steps should be followed to erase certain barcode(EAN-13 e.g.) interception options:

- 1、 Read "Erase Certain Barcode Interception Options" barcode;
- 2、 Get Symbol ID, for example, EAN-13:005
- 3、 Read digit codes accordingly.
- 4、 Read "Save" barcode.



**Disable Interception
【Pro CMD: 0315000】



Erase Certain Barcode Interception Options
【Pro CMD: 0316010】



Enable Interception
【Pro CMD: 0315010】



Erase Latest Interception Options
【Pro CMD: 0316020】



Program Intercept Option
【Pro CMD: 0316000】



Erase All Interception Options
【Pro CMD: 0316030】





Programming 1D Intercept Option

Code Programming ON



When programming 1D intercept option, read digit codes as interception command. The rules is as below:

» The interception command format of 1D interception command regards a 3-digit decimal number as a unit.

» The interception command has two parts, which are barcode type part(Symbol ID) and data interception part. A command could have several data interception parts.

» A barcode type part(Symbol ID) uses a unit, such as “005” ; a datainterception part uses three units, including intercepting direction unit:000(Ascending) or 001(Descending), start unit and stop unit.

» There is only one type of barcode to be setted to intercept in a time.

Code Programming OFF



Example

Intercept EAN-13 from 1st digit to 3rd ascending and from reciprocal 4th to reciprocal 1st:

- 1、 Read “Code Programming ON”
- 2、 Read “Allow Interception”
- 3、 Read “Program Intercept Option”
- 4、 Check Symbols ID Number table for EAN-13
- 5、 Read below digit barcodes

digit	005	000	001	003	001	004	001
Denotes	symbol ID	ascending	the 1st digit	the 3rd digit	descending	the 4th digit	the 1st digit

Barcode Type

Data Interception 1

Data Interception 2

Note:

- 1、 Maximum sections of barcode message interception are 5.
- 2、 Maximum value is 127 for both start digital and end digital
- 3、 Overlaps of barcode message sections are allowed and work independently.
- 4、 Start unit and end unit determine its message section. In the above example, descending “004” and “001” means the section of “last 4th”, “last 3rd”, “last 2nd”, and “last one” digits.
- 5、 To intercept only one digit, program start unit and end unit to be the same value.





Programming 2D Intercept Option

Code Programming ON



When programming 2D intercept option, read digit codes as interception command. The rules is as below:

» The interception command has two parts, which are barcode type part(Symbol ID) and data interception part. A command could have several data interception parts.

Code Programming OFF



» A barcode type part(Symbol ID) uses a unit, such as “005” ; a data interception part uses three units, including intercepting direction unit:000(Ascending) or 001(Descending), start unit and stop unit.

» Barcode type part and intercepting direction regards a 3-digit decimal number as a unit; but start and stop digit regards a 6-digit decimal number as a unit. They uses 6 digits to present 4-digit value. The first two digits are for thousandth and next two digits for hundredth. For example, 001013 means 113.

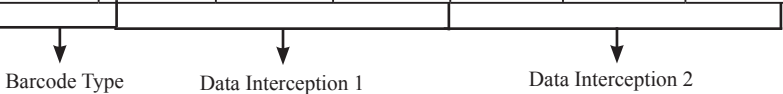
» There is only one type of barcode to be setted to intercept in a time.

Example

For example, intercept QR Code from 1st digit to 20th ascending and from 113th digit to 140th ascending.

1. Read “Code Programming ON”
2. Read “Enable Interception”
3. Read “Program Intercept Option”
4. Check Symbols ID Number table for QR Code
5. Read below digit barcodes

digit	033	000	000001	000020	000	001013	001040
Denote	symbol ID	ascending	The 1st digit	The 20th digit	ascending	The 113th digit	The 140th digit



Rules:

- 1、Maximum intercept 3 barcode message sections
- 2、Maximum value is 9999 for start digital and end digital
- 3、Overlaps of barcode message sections are allowed and work independently.
- 4、Start unit and end unit determine its message section. In the above example, ascending “000001” and “000020” means the first 20 digits.
- 5、To intercept only one digit, program start unit and end unit to be the same value.





Introduction

Data Pack is for the special requirements of barcode message. There are 3 types of data pack. Data pack effects all data formats, in that be sure to load the default “Disable Pack” if pack is not required.

Code Programming ON



Code Programming OFF



** Disable Pack

【Pro CMD: 0314000】

Normal Pack

Normal pack format:

[STX + ATTR + LEN] + [AL_TYPE + DATA] + [LRC]

- » STX: 0x02
- » ATTR: 0x00
- » LEN: Barcode message length is expressed by 2 bytes, range “0x0000~0xFFFF” which is between 0 and 65535.
- » AL_TYPE: 0x36
- » DATA: Barcode message
- » LRC: Parity byte

The algorithm:

- 1、 computation sequence is $LRC=0xFF+STX+ATTR+LEN+AL_TYPE+DATA$
- 2、 computation method is XOR, byte by byte.



Normal Pack

【Pro CMD: 0314010】



Batch Programming



Introduction

Batch Programming can integrate a programming sequence into one barcode.

Batch Programming Rules:

- » Sub-command is in this format: Programming Command + Parameters
- » Sub-commands are terminated by semicolons. Note that there is no blank between a sub-command and its terminator semicolon.
- » “Save Programming” (0000160) to terminate
- » Use Barcode Generator software to make the 2D batch barcode.

Code Programming ON



Code Programming OFF



For example, to generate a batch barcode for “Illumination Keep ON”(0200030), “Auto Mode”(0302010), “One Reading Timeout = 2000”(0313000), and “Disable Fixed Length Selection”(0405140)for Interleaved 2 of 5.

0200030; 0302010; 0313000 = 2000; 0405140; 0000160; Generate a batch code.



Allow Read Batch Code
【Pro CMD: 0001110】



Batch command can contain many commands. Each command is divided by semicolon. Batch command must be ended with save command.

Command structure: command (+ equal mark + setting information)

The setting command list is provided below

There are 4 setting command modes

1. Setting syntax 1: Command

The most command is the one can be set at one time without the command.

e.g.:

The command setting the baud rate as 38400 bps: 0100060

The command setting auto mode: 0302010

2. Setting syntax 2: Command + equal mark + number

This command is used for setting the value of parameter, including the longest and shortest length of the barcode, one reading timeout setting, same barcode reading delay setting, sensitive value setting, etc.

e.g.:

The command setting the one reading timeout as 3000ms: 0313000 = 3000

The command setting the sensitive value as 10: 0312040 = 10

3. Setting syntax 3: command + equal mark + hex (e.g., 0x101a, 0x2C03)

This command can be used as setting the user-defined prefix, user-defined suffix, ending suffix, CodeID, increase or cancel the barcode length value, information intercepting, etc. Note: every two hexes in the command stand for a setting character

e.g.:

Append the fixed length 4 of interleaved 2of 5 to 26: 0405160 = 0x041a

Setting the suffix information of the ending as CR/LF: 0310000 = 0x0d0a

4. Setting syntax 4: command + equal mark+ double quotation marks

If the setting information is viewable character, then this mode of setting is appropriate.

e.g.:

The command setting the user-defined prefix information as AUTO-ID : 0300000 = "AUTO-ID"





Make the command list (ended with save command) to a PDF417, QR code or DataMatrix.

For example, to produce a batch command means: light Always On, Auto Scan, change delay time to 2 seconds, Disable Fixed Length of I 2 of 5. Firstly find commands as follows

0200030; (light Always On)

0302010; (Auto Mode)

0313000 = 2000; (change One Reading Timeout to 2 seconds)

0405140; (Disable Fixed Length of Interleaved 2 of 5)

0000160; (Save)

The batch setting code (PDF417) is as follow,





Read “Code Programming ON”, then read “enable batch setting code”, and then read the batch setting code produced just now, finally Read “Code Programming Off”

Code Programming ON



Code Programming OFF



Code Programming ON
【Pro CMD: 0006010】



Allow Read Batch Code
【Pro CMD: 0001110】



Batch Setting Code



Code Programming OFF
【Pro CMD: 0006000】





Appendix

Digit Code

It is must to be read save after read digit code.



0

【Pro CMD: 0000000】



4

【Pro CMD: 0000040】



1

【Pro CMD: 0000010】



5

【Pro CMD: 0000050】



2

【Pro CMD: 0000020】



6

【Pro CMD: 0000060】



3

【Pro CMD: 0000030】



7

【Pro CMD: 0000070】



8

【Pro CMD: 0000080】



C

【Pro CMD: 0000120】



9

【Pro CMD: 0000090】



D

【Pro CMD: 0000130】



A

【Pro CMD: 0000100】



E

【Pro CMD: 0000140】



B

【Pro CMD: 0000110】



F

【Pro CMD: 0000150】





In order to save the received data “Save” has to be read after data transition completed. If error occurs when reading data, the wrong data can be deleted and the setting up can be done again..

Eg, after a program code is received then ‘1 2 3’ in order is received, if then read “Abort One Data of Current Setting” the “3” will be deleted; if read “Abort One String of Current Setting” the ‘123’ will be deleted; if read “Abort Current Setting” both the program code and ‘123’ will be deleted, the device will be on status of “initiating program code”

Code Programming ON



Code Programming OFF



Save

【Pro CMD: 0000160】



Abort One Data of Current Setting

【Pro CMD: 0000170】



Abort Current Setting

【Pro CMD: 0000190】



Abort One String of Current Setting

【Pro CMD: 0000180】



Parameters	Factory Default	Remark
General Programming		
Code Programming	Off	
Send Pro Code Value	Off	
Illumination	Illumination Wink	
Aiming	Aiming Wink	
Decoding Beep	On	
Decoding Beep Type	Type 1	
Decoding Beep Volume	Loud	
Power On Beep	On	
Working Mode	Hand-held Mode	
One Reading Delay	3000ms	
Same Barcode Reading Delay	Multi-reading Semi-prohibit, 1500ms	
Sensitivity	Normal Sensitivity	Sensitivity = 11
Exposure Imaging Mode	Normal Exposure Mode	
Power On, Send Product Info	Off	
OCR	Off	
Communication Programming		
Baud Rate	9600	
Serial Port Check	No Check	
Transmit Digits	8 Digits	
Stop Digit	1 Digit	Fixed
Data Format Programming		
Add Prefix/Suffix	Off	
Prefix Sequences	CodeID+User Prefix+AIMID	CodeID+AIMID+(Prefix+Data) +Suffix+Terminal
AIMID	Off	]Cm Mark
CodeID	Off	One or Two Digit, Capital or Small Letter
User Prefix	Off	No more than 10 digits
User Suffix	Off	No more than 10 digits
Terminal	Off	No more than 2 digits
Interception	Off	
Pack	Off	



Parameters	Factory Default	Remark
Symbol		
Code 128		
Enable	On	
Max Message Length	48	
Min Message Length	1	
EAN-8		
Enable	On	
Send Check Digit	On	
Enable 2 Digits Addenda Code	Off	
Enable 5 Digits Addenda Code	Off	
Expand to EAN-13	Off	
EAN-13		
Enable	On	
Send Check Digit	On	
Enable 2 Digits Addenda Code	Off	
Enable 5 Digits Addenda Code	Off	
UPC-E		
Enable	On	
Send Check Digit	On	
Enable 2 Digits Addenda Code	Off	
Enable 5 Digits Addenda Code	Off	
Expand to UPC-A	Off	
Send Default "0"	Off	
UPC-A		
Enable	On	
Send Check Digit	On	
Enable 2 Digits Addenda Code	Off	
Enable 5 Digits Addenda Code	Off	
Send Default "0"	Off	
Interleaved 2 of 5		
Enable	On	
Check	Off	
Send Check Digit	Off	
Max Message Length	80	





Min Message Length	6	No less than 4
Specified Lengths	Off	
ITF-6		
Enable	Off	
ITF-14		
Enable	Off	
Matrix 2 of 5		
Enable	Off	
Check	Off	
Max Message Length	80	
Min Message Length	4	No less than 4
Code 39		
Enable	On	
Check	Off	
Send Start & Stop Character	On	
Support Full ASCII	Off	
Max Message Length	48	
Min Message Length	4	No less than 4
Codabar		
Enable	On	
Check	Off	
Send Start & Stop Character	On	Capital ABCD/ABCD Format
Max Message Length	60	
Min Message Length	2	
Code 93		
Enable	Off	
Check	On	
Send Check Digit	Off	
Max Message Length	48	
Min Message Length	4	No less than 1
UCC/EAN-128		
Enable	On	
GSI Databar		
Enable	On	
Send AI(01) Character	On	





<i>EAN•UCC Composite</i>		
Enable	Off	
UPC/EAN Version Enable	Off	
<i>Code 11</i>		
Enable	Off	
Send Check Digit	On	
1 Digit, MOD11 Check	On	
Max Message Length	48	
Min Message Length	4	No less than 4
<i>ISBN</i>		
Enable	Off	
Transmit 13 Digits	On	
<i>Industrial 25</i>		
Enable	Off	
Check	Off	
Max Message Length	48	
Min Message Length	6	No less than 4
<i>Standard 25</i>		
Enable	Off	
Check	Off	
Max Message Length	48	
Min Message Length	6	No less than 4
<i>Plessey</i>		
Enable	Off	
Transmit Check Digits	On	
Max Message Length	48	
Min Message Length	4	No less than 4
<i>MSI-Plessey</i>		
Enable	Off	
Transmit Check Digits	On	
Single MOD10 Check	On	
Max Message Length	48	
Min Message Length	4	No less than 4





PDF417		
Enable	On	
Read Single PDF417 Only	On	
Max Message Length	2710	
Min Message Length	1	
Read Forward Direction Barcode Only	On	
QR Code		
Enable	On	
Read Single QR Only	On	
Max Message Length	7089	
Min Message Length	1	
Aztec		
Enable	Off	
Max Message Length	3832	
Min Message Length	1	
Reading Multi-barcodes of an Image	Off	
Data Matrix		
Enable	On	
Max Message Length	3116	
Min Message Length	1	
Read Single DM Only	On	
Rectangular Symbols	On	
Read Forward Direction Barcode Only	On	
Maxicode		
Enable	Off	
Max Message Length	150	
Min Message Length	1	
Chinese Sensible Code		
Enable	Off	
Max Message Length	7827	
Min Message Length	1	





Symbol	AIM ID	Possible AIM ID Modifiers(m)
Code 128	]C0	
UCC/EAN-128	]C1	
EAN-8	]E4	
EAN-13	]E0	
EAN-13 with Addon	]E3	
UPC-E	]E0	
UPC-E with Addon	]E3	
UPC-A	]E0	
UPC-A with Addon	]E3	
Interleaved 2 of 5	]Im	0,1,3
ITF-6	]Im	1,3
ITF-14	]Im	1,3
Matrix 2 of 5	]X0	
Code 39	]Am	0,1,3,4,5,7
Codabar	]Fm	0,2,4
Code 93	]G0	
Code 11	]Hm	0,1,3
ISBN	]X0	
Industrial 25	]S0	
Standard 25	]R0	
Plessey	]P0	
MSI-Plessey	]Mm	0,1
GSI Databar	]e0	
EAN•UCC Composite	]em	0-3
PDF417	]Lm	0-2
QR Code	]Qm	0-6
Aztec	]zm	0-9, A-C
Data Matrix	]dm	0-6
Maxicode	]Um	0-3
Chinese Sensible Code	]Xm	

Reference:

- » ISO/IEC 15424:2008
- » Information technology – Automatic identification and data capture techniques – Data Carrier Identifiers (including Symbology Identifiers)





Symbol	Code ID
Code 128	j
UCC/EAN-128	j
EAN-8	d
EAN-13	d
UPC-E	c
UPC-A	c
Interleaved 2 of 5	e
ITF-6	e
ITF-14	e
Matrix 2 of 5	v
Code 39	b
Codabar	a
Code 93	i
Code 11	H
GSI Databar	R
EAN•UCC Composite	y
ISBN	B
Industrial 25	I
Standard 25	f
Plessey	n
MSI-Plessey	m
PDF417	r
QR Code	s
Aztec	z
Data Matrix	u
Maxicode	x
Chinese Sensible Code	h





Symbol	ID Number
Code 128	002
UCC/EAN-128	003
EAN-8	004
EAN-13	005
UPC-E	006
UPC-A	007
Interleaved 2 OF 5	008
ITF-14	009
ITF-6	010
Matrix 2 of 5	011
Code 39	013
Codabar	015
Code 93	017
ISBN	024
Industrial25	025
Standard25	026
Plessey	027
Code11	028
MSI-Plessey	029
EAN•UCC Composite	030
GS1 Databar	031
PDF417	032
QR Code	033
Aztec	034
DataMatrix	035
Maxicode	036
Chinese Sensible Code	039
User-Define Code	041
SPEC_OCR_B	064





Hex	Dec	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)





Hex	Dec	Char
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





Hex	Dec	Char
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)



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