



# ME5 Series Barcode Image Engine

## User Manual



Version: ME5\_UM\_EN\_V1.1.3



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## Notes about structure and electric circuit design

1. Please look at the decomposition diagram of the image engine before reading the following notes.
2. The optics module must be electrically isolated. In a radio system if antennas are located closely to the optics module, a radio performance reduction can exist.
3. Pin WAKE must be connected to the host if the operation of awaking the image engine from Sleep mode is in need.
4. For an electromagnetic compatibility system, the positioning of the 25-pin FPC cable (cable of optics module) is important.
5. Leave sufficient space to accommodate the maximum size of the image engine.



# 1 Specifications

## 1-1 Technical specifications

**Table 1-1 Technical specifications @25°C**

Item	Description	
Input voltage	3.3 VDC±5%	
Scanning current	Typical: 360 mA	
	Maximum: 386 mA	
Standby current	2 mA	
Image size	752 × 480 pixels	
Scanning angles	±60°, ±40°, ±42° (Skew, Pitch, Roll)	
Decode capability	1D: UPC-A, UPC-E, UPC-E1, EAN-13, EAN-8, ISBN (Bookland EAN), ISSN, Code 39, Code 39 full ASCII, Code 32, Trioptic Code 39, Interleaved 2 of 5, Industrial 2 of 5, Matrix 2 of 5, Codabar (NW7), Code 128, ISBT 128, Code 93, Code 11 (USD-8), MSI/Plessey, UK/Plessey, UCC/EAN 128, China Post, China Finance, GS1 DataBar (formerly RSS) variants	
	2D: PDF417, MicroPDF417, QR Code, DataMatrix, Han Xin Code, Aztec Code	
Indicator Interface	To control external Beeper and LED	
Interface supported	RS-232 (3.3V TTL-level)	
Trigger mode	Good-Read off, Momentary, Alternate, Continuous, Time-Out Off, Host	
Dimensions	Optics module: 10.0 mm × 20.0 mm × 16.2 mm (Height × Width × Depth)	
	Decoder board: (Height × Width × Depth)	23.3 mm × 38.4 mm × 6 mm, Type B Connector, refer to section 2-2.
		23.3 mm × 38.4 mm × 8.7 mm, Type A Connector, refer to section 2-2.
Weight	Optics module: 8 g	
	Decoder board: 7 g	
Cable	Tapered 12-pin flex strip (12 × 0.5 mm)	
Min. element width	3.5 mil, 1 mil = 0.0254 mm	
Decoding depth	3.5mil Code128 ( 9 chars): 4.2cm – 7.2cm 5mil Code39 (12 chars): 3.8cm – 8.8cm 13mil UPC (6 chars): 1.5cm – 17.5cm 20mil Code39 ( 5 chars): 4cm – 18.5cm 6.7mil PDF417 (20 chars): 3cm – 10.5cm	

	10 mil DM (20 chars): 1.5cm – 12cm 20 mil QR (20 chars): 1.8cm – 19.3cm
Temperature	Operating: -10 °C to 50 °C (-4 °F to 122 °F)
	Storage: -40 °C to 70 °C (-40 °F to 158 °F)
Humidity	5% to 90% (non-condensing)
Programming method	Manual (scanning special barcodes in sequence), or sending commands via RS-232 interface
Firmware upgrade	Online
Mechanical vibration	IEC 60068-2-6 Un-powered engine withstands a random vibration along each of the X, Y and Z axes for a period of one hour per axis, define as follows: 20 to 80 Hz                      Ramp up to 0.04G <sup>2</sup> /Hz at the rate of 3dB/oct 80 to 350 Hz                      0.04G <sup>2</sup> /Hz 350Hz to 2000Hz                Ramp down at the rate of 3dB/oct
Mechanical shock	IEC 60068-2-27 Shock pulse: 0.5ms, Maximal acceleration: 1500G, Shock direction & time: ±X-axis, ±Y-axis, ±Z-axis, 3 times for each direction, total of 18 times.
Safety	Laser Safety: EN60825-1, Class 1 EMC: EN 55022 ESD protection: EN 55024 (IEC 61000-4-2, contact discharge: ±2kV, air discharge: ±8kV), IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-11 RF immunity: IEC 61000-4-3, 10V/m Artificial light immunity: 100,000 lux



## 1-2 Default setting for each barcode

Table 1-2 Default setting for each symbol

Code type	Read Enable	Check digit verification	Check digit transmission	Min. code length	Proprietary code ID	AIM code ID
UPC-A	√	√	√	(12) <sup>2</sup>	A	JEm
UPC-E	√	√	√	(8) <sup>2</sup>	D	JEm
UPC-E1	√	√	√	(8) <sup>2</sup>	D	JEm
EAN-13	√	√	√	(13) <sup>2</sup>	A	JEm
EAN-8	√	√	√	(8) <sup>2</sup>	C	JEm
ISBN (Bookland EAN)/ISSN <sup>1</sup>	√	√	√	(13) <sup>2</sup>	B	JEm
Code 39	√	-	-	1	M	JAm
Interleaved 2 of 5	√	-	-	6	I	JIm
Industrial 2 of 5	-	-	-	4	H	JIm
Matrix 2 of 5	√	-	-	6	X	JIm
Codabar	√	-	-	4	N	JFm
Code 128	√	√	-	1	K	JCm
UCC/EAN 128	√	√	-	1	K	JCm
ISBT 128	√	√	-	1	K	JCm
Code 93	√	√	-	1	L	JGm
Code 11	-	√	-	4	V	-
MSI/Plessey	-	-	-	4	O	JMm
UK/Plessey	-	√	-	1	U	JMm
China Post	√	-	-	(11) <sup>2</sup>	T	JIm
China Finance	√	-	-	(10) <sup>2</sup>	Y	-
GS1 DataBar	√	-	-	(16) <sup>2</sup>	R	Jem
GS1 DataBar Truncated <sup>3</sup>	√	-	-	(16) <sup>2</sup>	R	Jem
GS1 DataBar Limited	√	-	-	(16) <sup>2</sup>	R	Jem
GS1 DataBar Expanded	√	-	-	1	R	Jem
PDF417	√	-	-	-	-	-
MicroPDF417	-	-	-	-	-	-
DataMatrix	√	-	-	-	-	-
QR code	√	-	-	-	-	-
Han Xin Code	-	-	-	-	-	-

Aztec Code	√	-	-	-	-	-
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Note: <sup>1</sup>The settings for ISBN/ISSN and EAN-13 must be the same except the code ID.

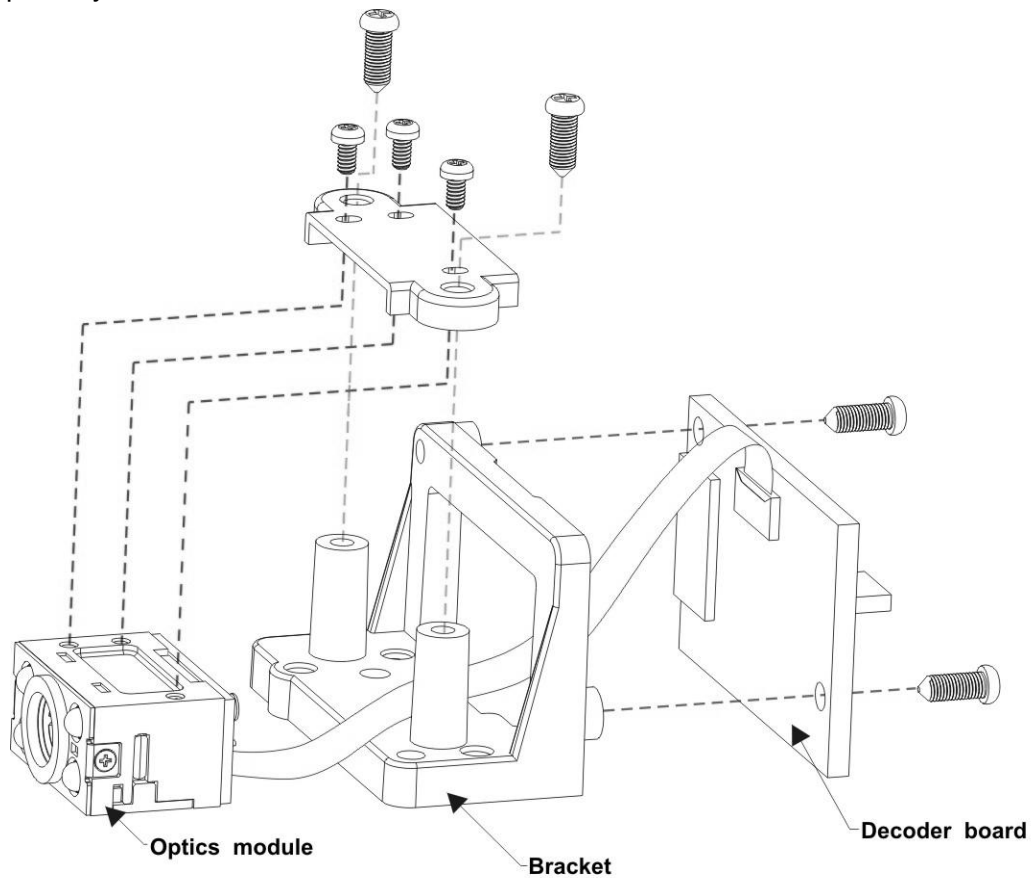
<sup>2</sup>Fixed –length symbols

<sup>3</sup>The settings for GS1 DataBar Truncated and GS1 DataBar must be the same.

## 2 Get started

### 2-1 Overview

The image engine is a CMOS imager-based (black/white) module device for image capture and barcode decode. It supports reading 1D and 2D barcodes. Flexibility of integrating this engine into an OEM application is provided. It is configured as a bracketed module or as an optics module and a decoder board separately.



**Figure 2-1 Decomposition diagram of bracketed Image Engine**

## 2-2 Electrical interface/Pin assignment of host connector

The decoder board has a 12-pin connector to the host. Table 2-1 lists the pin assignments of the engine. Table 2-2 illustrates typical input, output, LDO external and DC/DC circuitries. Two connector options are provided, one for bracketed applications and a lower one for non-bracketed applications.

	Dimensions		Recommended in
	Width	height	
Type A connector	11.5 mm	5 mm	bracketed applications
Type B connector	11.5 mm	2.3 mm	non-bracketed applications

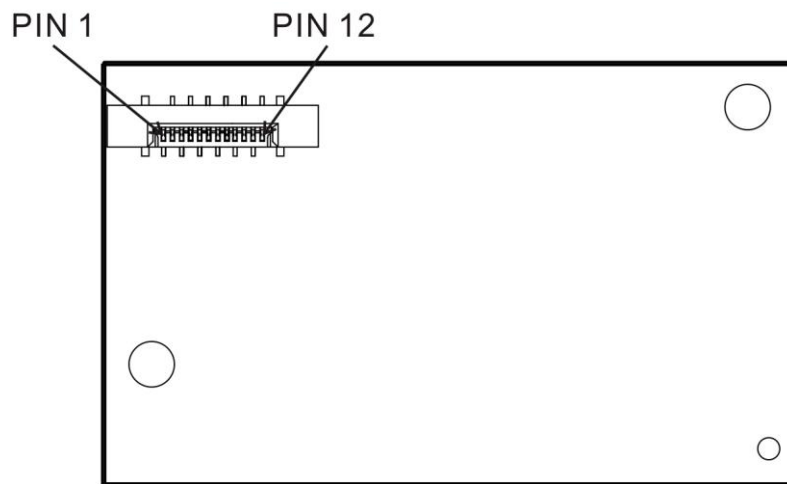


Figure 2-2 type A connector on Decoder board

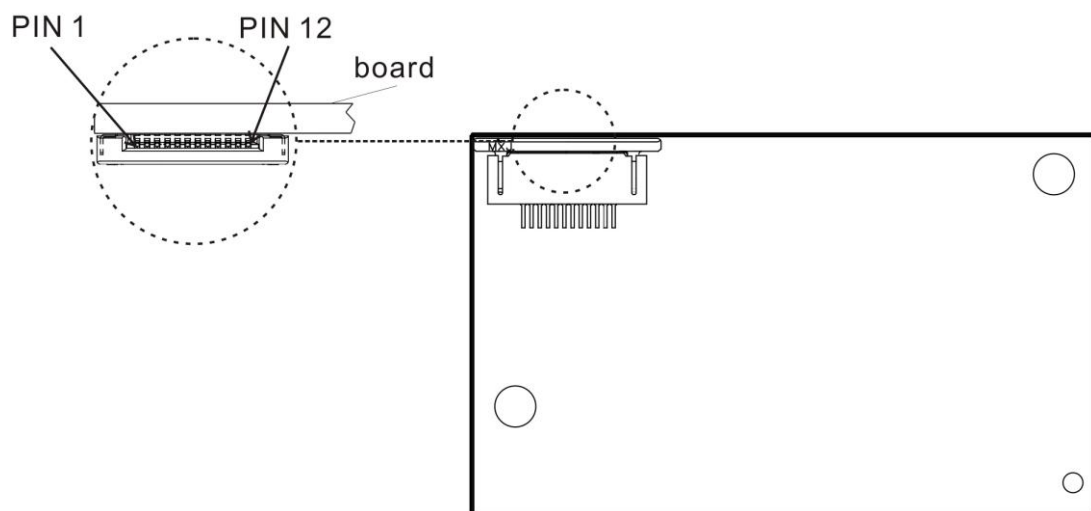
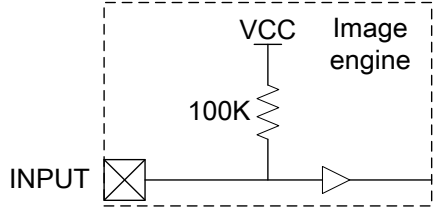
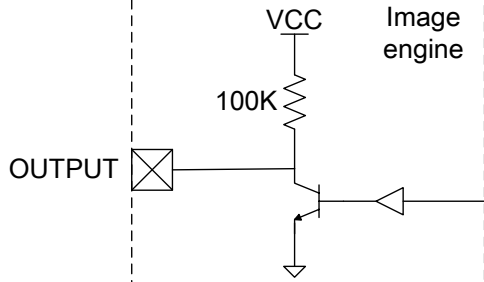
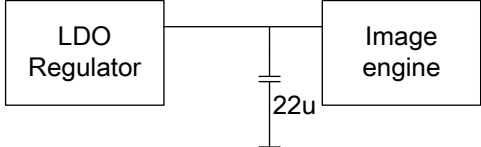
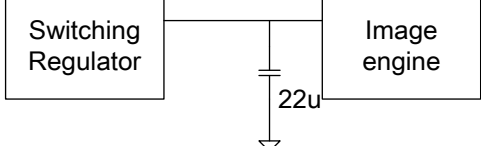


Figure 2-3 type B connector on Decoder board

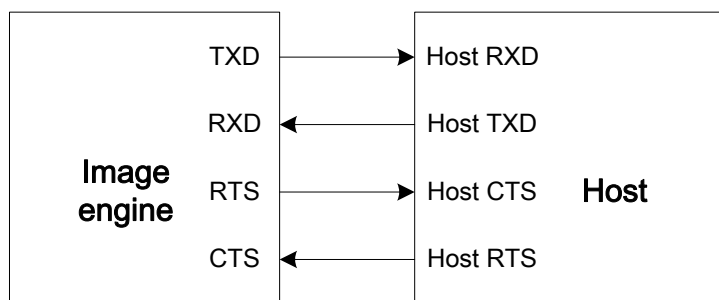
**Table 2-1 Electrical interface/Pin assignment**

Pin No.	Signal Name	Type	Description
1	Flash_DWLD*	Input	Flash download. Pull low ( $\geq 1s$ ) to trigger the image engine to enter upgrade-ready mode.
2	VCC	Input	Power supply: 3.15 to 3.45 VDC.
3	GND	Input	Power/Signal Ground: 0V reference.
4	RXD	Input	Received data: Serial data receive input port.
5	TXD	Output	Transmitted data: Serial data transmit port.
6	CTS*	Input	Clear-to-send: serial port handshaking line (input).
7	RTS*	Output	Request-to-send: serial port handshaking line (output).
8	PWRDWN	Output	Power down ready: When high, the image engine is in Sleep mode.
9	BPR*	Output	Beeper: Low current beeper output.
10	DLED*	Output	Decode LED: Low current decode LED output.
11	WAKE*	Input	Wake up: When the engine is in Sleep mode, the falling edge of this pin awakens the engine.
12	TRIG*	Input	Trigger: Hardware triggering line, driving this pin low causes the engine to start an image capture and decode session.
<p>Note: *=logic low. Signal names with the "*" modifier are asserted when at the ground level. Signals names without the "*" modifier are asserted when at the positive supply voltage level.</p>			

**Table 2-2 Typical input, output, LDO external, DC/DC circuitries**

<p>Input: each input IO pin is internally pulled up by a 100K Ohm resistor.</p> <p><math>V_{CC}=3.3V</math>.</p> <table><tr><td></td><td>Min.</td><td>Max.</td></tr><tr><td>VinL</td><td>-0.3V</td><td>0.7V</td></tr><tr><td>VinH</td><td>2.4V</td><td>3.6V</td></tr></table>		Min.	Max.	VinL	-0.3V	0.7V	VinH	2.4V	3.6V	
	Min.	Max.								
VinL	-0.3V	0.7V								
VinH	2.4V	3.6V								
<p>Output: Each output port is an open-drain pad with a 100K Ohm pull-up resistor and the maximum sink current is 100 mA.</p>										
<p>External LDO circuitry: it is recommended to apply low noise LDO (Low Dropout Voltage) regulators.</p>										
<p>External switching regulator circuitry:</p> <table><tr><td></td><td>Min.</td><td>Max.</td></tr><tr><td>Switching Frequency</td><td>1 MHz</td><td>-</td></tr><tr><td>Ripple <math>V_{P-P}</math></td><td>-</td><td>50 mV</td></tr></table>		Min.	Max.	Switching Frequency	1 MHz	-	Ripple $V_{P-P}$	-	50 mV	
	Min.	Max.								
Switching Frequency	1 MHz	-								
Ripple $V_{P-P}$	-	50 mV								

The image engine has a TTL-level RS-232 interface to communicate with a host. The following diagram demonstrates the interconnection.



**Figure 2-4 Engine and Host interconnection via RS232**

RTS and CTS are only used for hardware flow control and should be leaved unconnected or tied to  $V_{CC}$  by 100K Ohm resistors when they are not used.

## 2-3 Cable of optics module

The optics module uses a 25-pin FPC cable to connect to the decoder board. Two FPC cable options are provided, one for bracketed and non-bracketed applications and a longer one for non-bracketed applications only.

Cable model	Dimensions		Limitation in applications
	Width	Length	
A	7.8 mm	35 mm	-
B	7.8 mm	45 mm	-
-	-	>50 mm	Cables must be shielded and the shields must be grounded.

## 2-4 Power management

The image engine has four power modes: **Operate**, **Idle**, **Standby** and **Sleep**. The last three modes have relative lower power consumption.

The following figure illustrates the state machines of the power management.

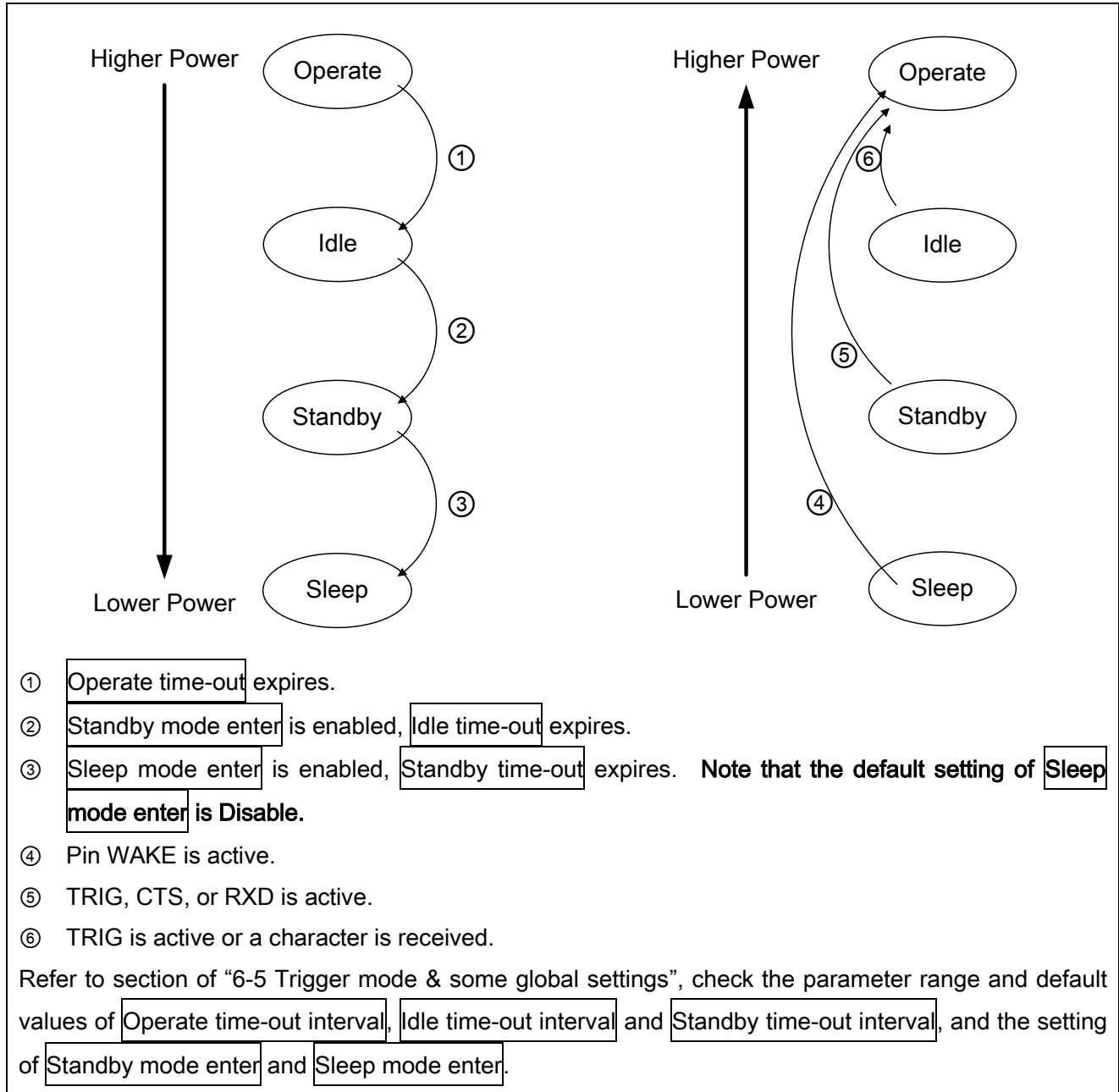


Figure 2-5 State machine of power management



The associated current draws of different power modes are listed in the following table.

**Table 2-3 Current draws of different power modes @3.3v, 25°C**

Power mode		Description	Current
<b>Power-on</b>	$I_{Inrush}$	Maximum current spike seen when power is applied to the image engine or when the image engine turns on for the first time.	383 mA
<b>Operate</b>	$I_{OperatePeak}$	Peak current draw when the image engine is scanning.	376 mA
	$I_{OperateAverage}$	Average current draw when the image engine is scanning.	360 mA
<b>Idle</b>	$I_{Idle, image on}$	Maximum current draw while not scanning or decoding, but power is applied to the optics module. <sup>1</sup>	98 mA
	$I_{Idle, image off}$	Maximum current draw while power is NOT applied to the optics module.	54 mA
<b>Standby</b>	$I_{Standby}$	Maximum current draw while in Standby power mode.	15 mA
<b>Sleep</b>	$I_{Sleep}$	Maximum current draw while in Sleep power mode.	8 mA

Note 1: While in Idle power mode, power can be removed from the optics module when **Idle optics module** is enable, refer to “6-5 Trigger mode & some global settings”.

### 3 Installation guide

#### 3-1 Mounting

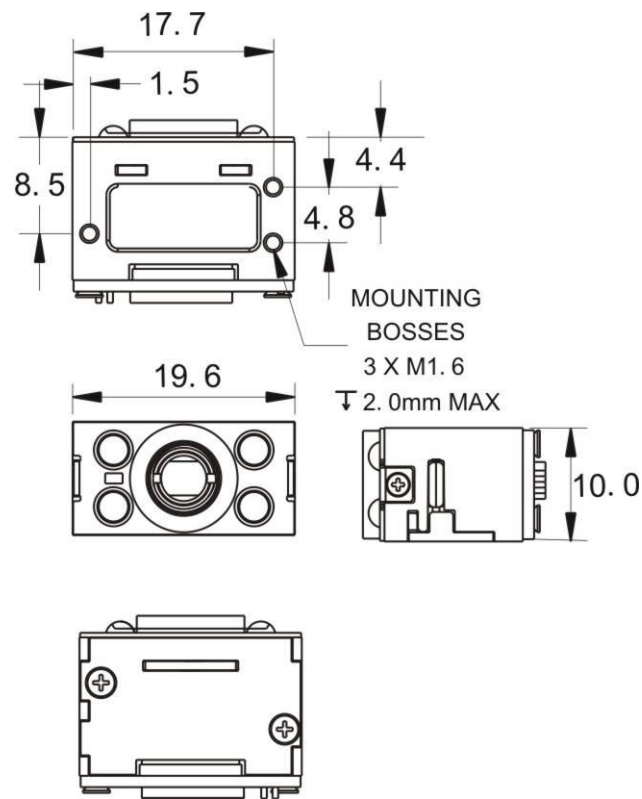


Figure 3-1 Dimensions of Optics Module without ears (Units = mm)

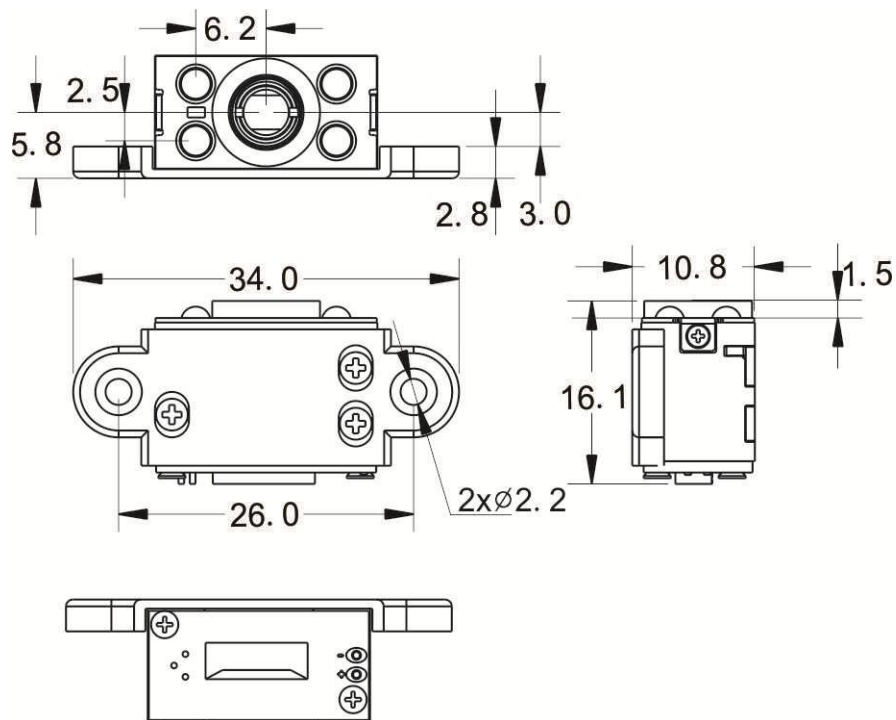
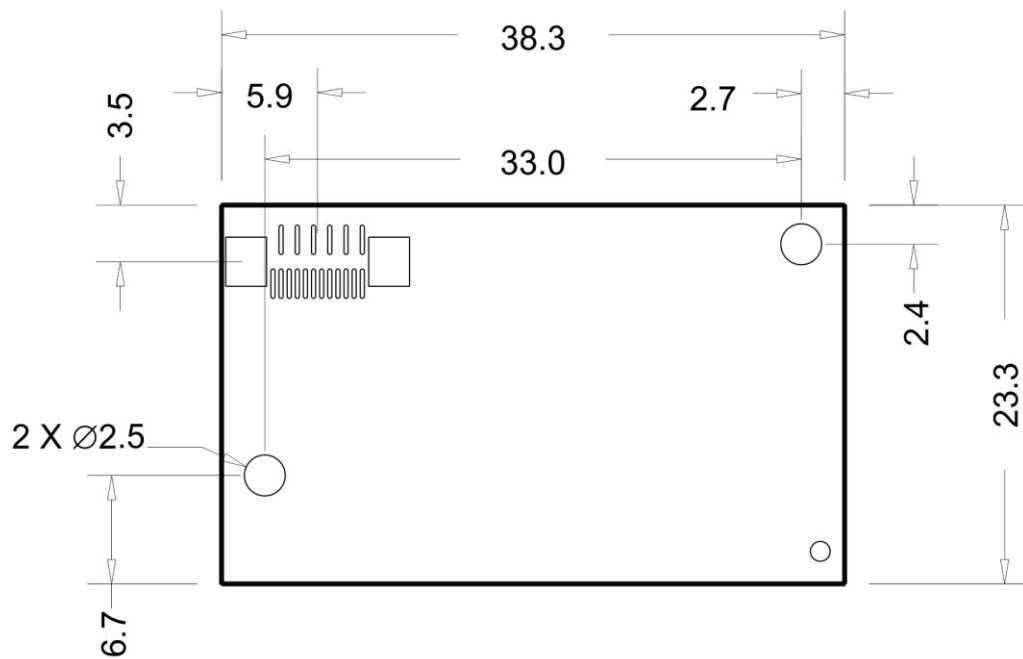
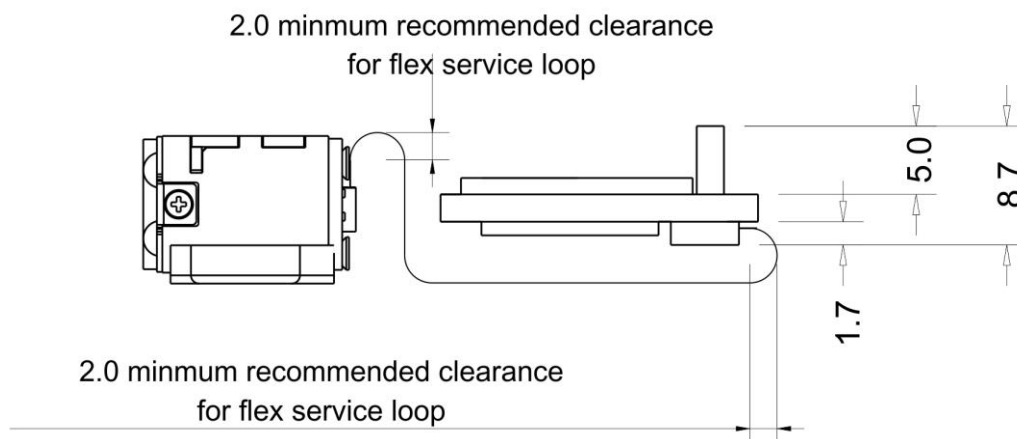


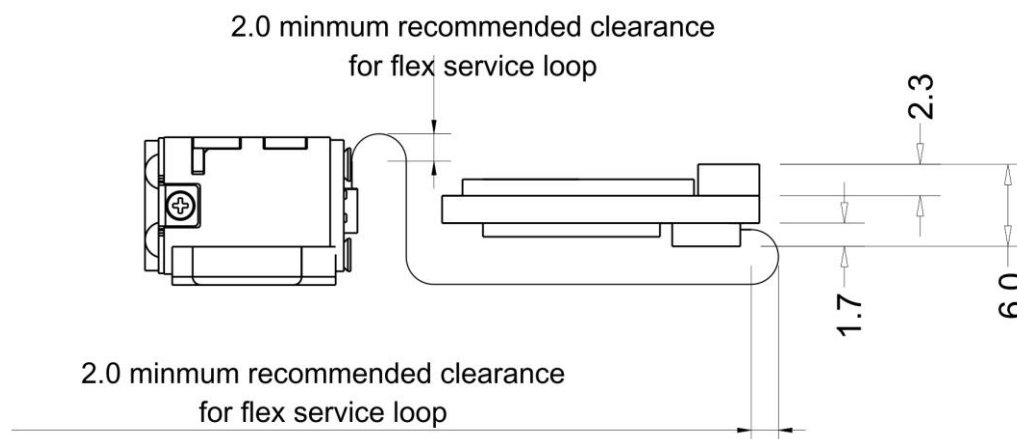
Figure 3-2 Dimensions of Optics Module with ears (Units = mm)



**Figure 3-3 Dimensions of Decoder Board (Units = mm)**



**Figure 3-4 Mounting diagram of un-bracketed Image Engine (Units = mm), Type A Connector**



**Figure 3-5 Mounting diagram of un-bracketed Image Engine (Units = mm), Type B Connector**

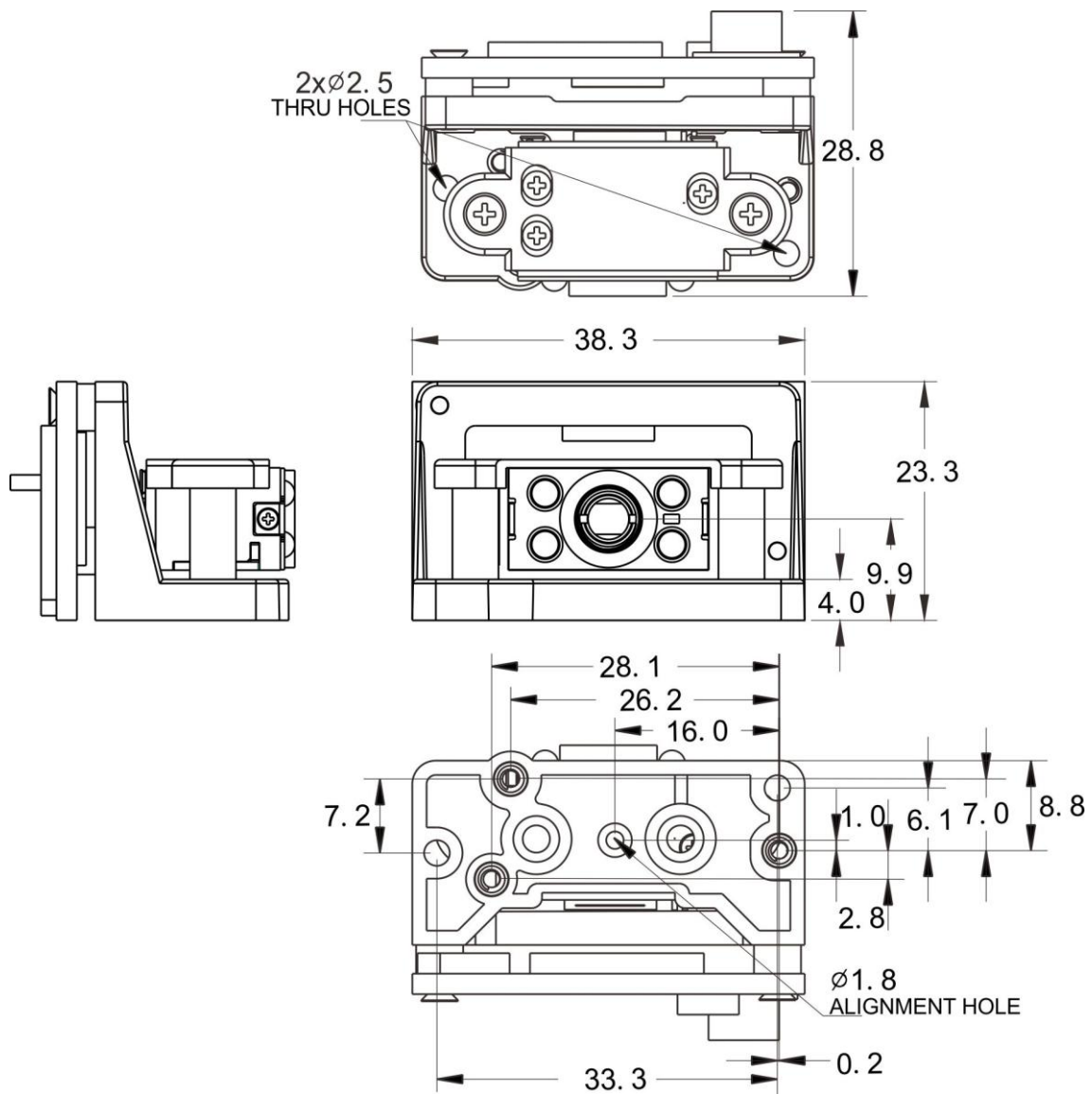


Figure 3-6 Dimensions of type-I bracketed Image Engine (Units = mm)

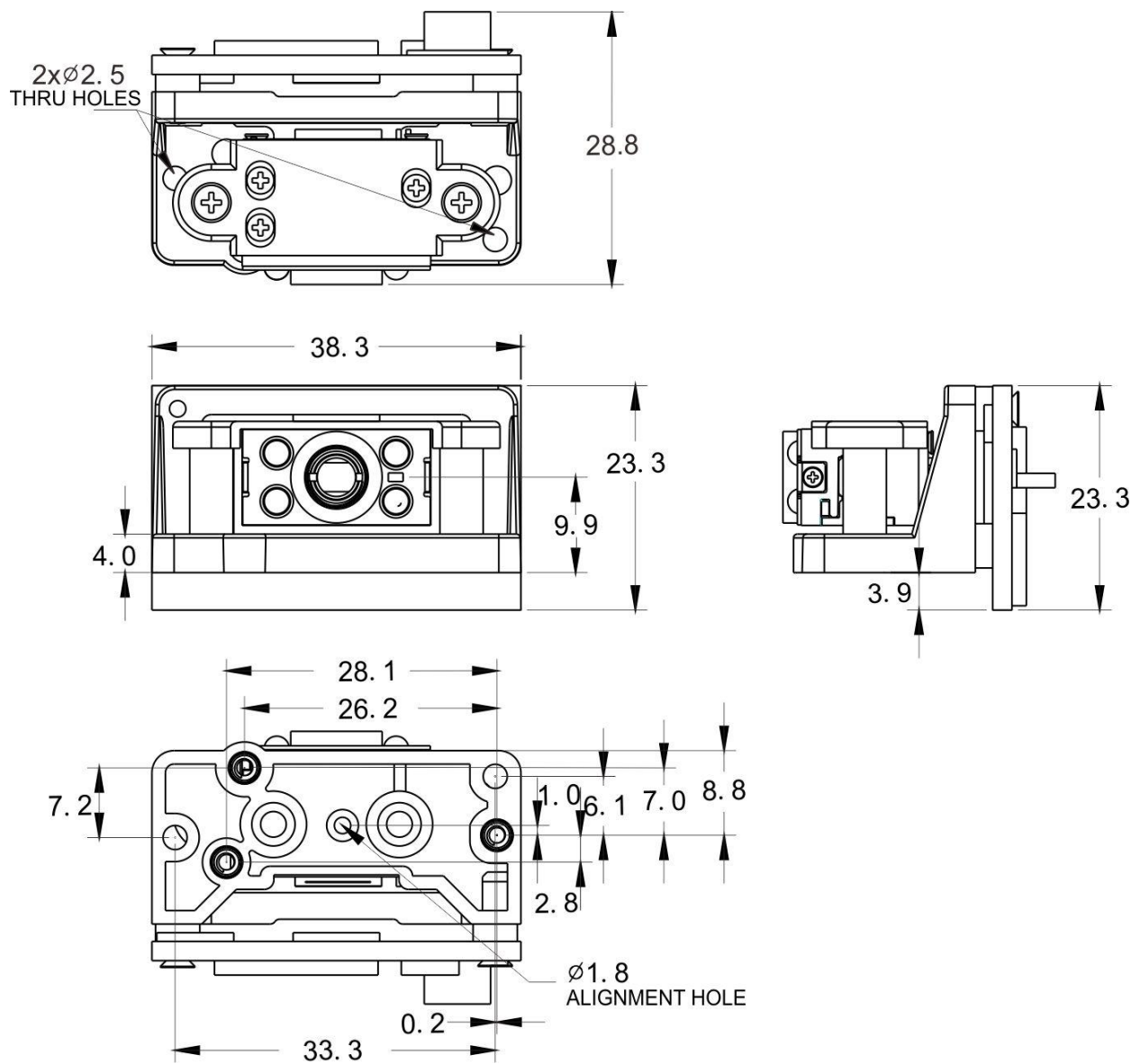


Figure 3-7 Dimensions of type-II bracketed Image Engine (Units = mm)

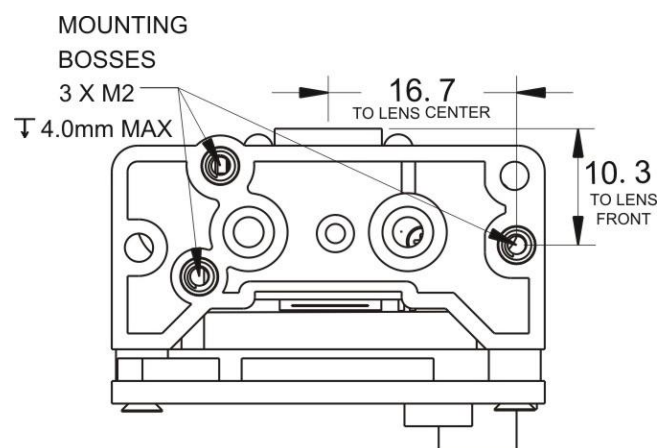


Figure 3-8 Lens center dimensions of the bracketed image engine (Units = mm)

## 3-2 Exit window materials

Many window materials that look perfectly clear to eyes can contain stresses and distortions which affect the optics module and reduce image engine performance. Following are the description of three popular exit window materials:

- ✚ Poly-methyl Methacrylic (PMMA): Also known as Cell Cast Acrylic, and is relatively soft.
- ✚ Allyl Diglycol Carbonate (ADC): Also known as CR-39.
- ✚ Chemically tempered float glass.

Among these three materials, the chemically tempered float glass is a hard material which provides the most excellent scratch and abrasion resistance. **Note that the structure design must be well considered to pass drop test.**

### 3-3 Exit window positioning

The following rules must be followed to avoid unwanted reflections occurred at either surface of the windows. A diagram is shown below for reference.

1. The distance from the optics module to the exit window should be as short as possible and cannot exceed 1.0 mm.
2. The distance from the front of the optics module to the far side of the glass should not exceed 2.5 mm.
3. The exit window should be fully parallel to the front of the optics module.

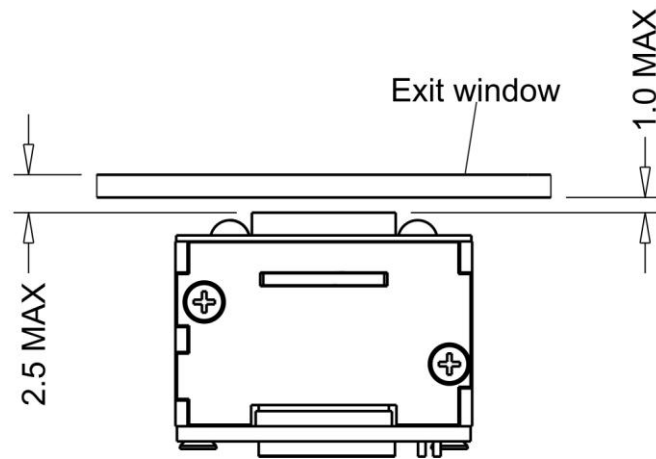


Figure 3-9 Exit window positioning (Units = mm)

3-4 View angles of optics module

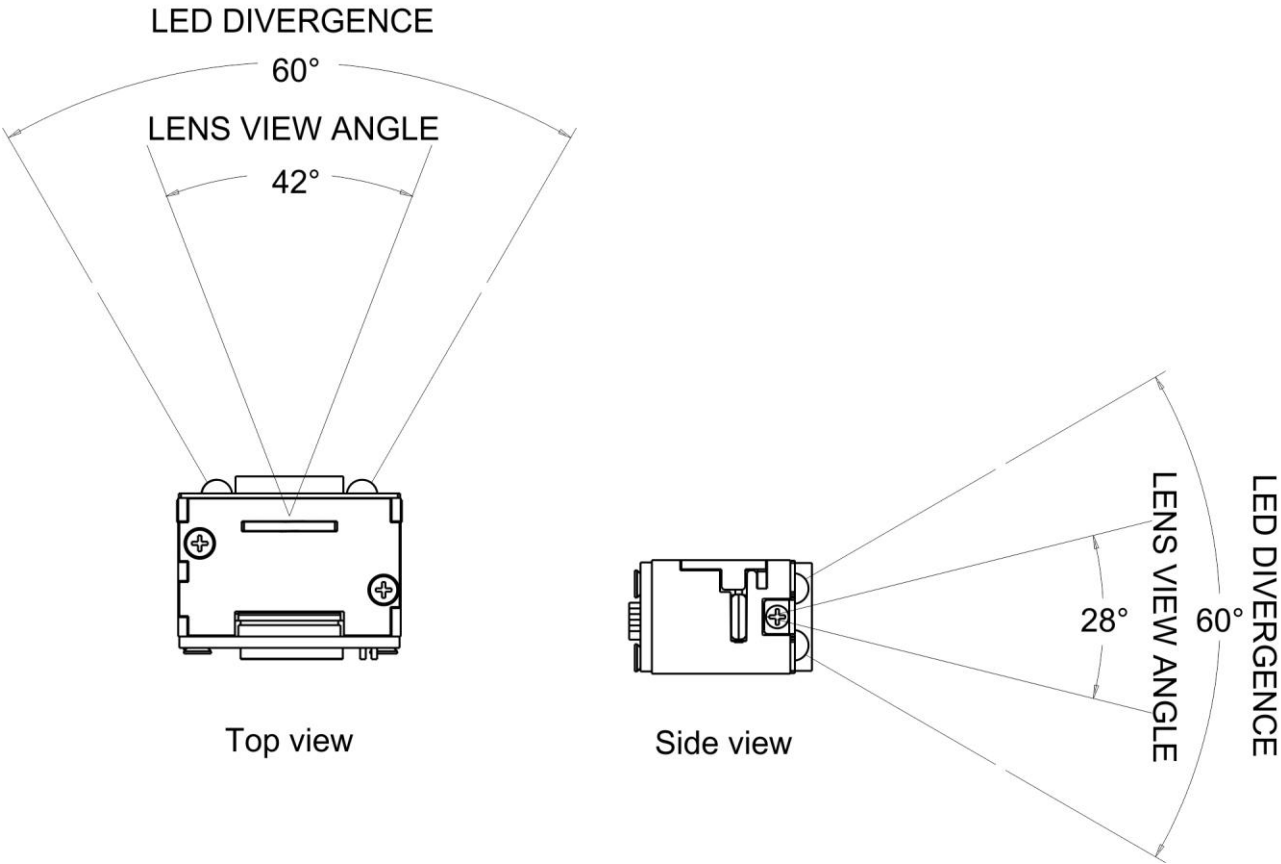


Figure 3-10 View angles



## 4 Notes of timing

### 4-1 Timing characteristics

Table 4-1 Timing characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
<b>General characteristics</b>						
$t_f$	High to low fall time	$C_L=50\text{pf}$			1.0	us
$t_r$	Low to high rise time	$C_L=50\text{pf}$			1.0	us
<b>Trigger timing</b>						
$t_{\text{trig\_l}}$	Trigger low level hold time		20			ms
$t_{\text{trig\_h}}$	Trigger high level hold time		20			ms
$t_{\text{dbt}}$	Trigger de-bounce time				1.1	ms
<b>Wake up timing</b>						
$t_{\text{idle2fo}}$	Idle to full operation				1	ms
$t_{\text{stb2fo}}$	Standby to full operation				7	ms
$t_{\text{slp2fo}}$	Sleep to full operation				10	ms

### 4-2 Timing waveforms

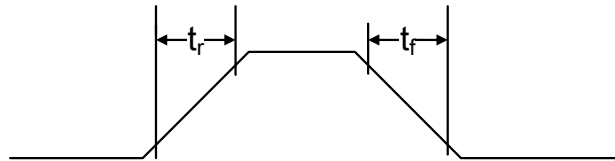


Figure 4-1 General characteristics

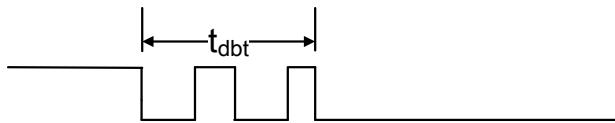


Figure 4-2 Trigger de-bounce timing

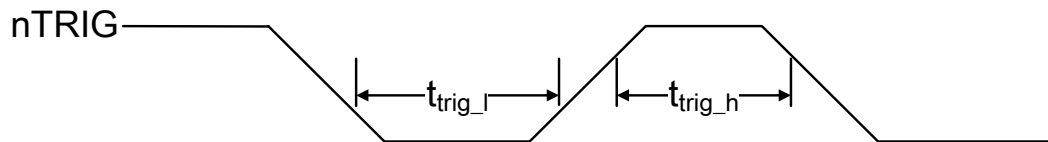


Figure 4-3 Hardware trigger timing

## 5 Operation of image engine

The following cases demonstrate how a host operates an image engine quickly and easily in such cases.

### 5-1 Beep

#### 5-1-1 Beep after awakening Image Engine in Sleep mode

Assuming that Image Engine is in Sleep mode (pin PWRDWN is high), host pulls down pin WAKE to awaken Image Engine and then sends a <BEL> (ASCII 0x07) character.

- ① Host pulls down pin WAKE.
- ② After more than 10 ms and before both Operate time-out interval and Idle time-out interval (see section “6-5 Trigger mode & some global settings”) expire, Host sends a <BEL> character.
- ③ After receiving the <BEL> character, Image Engine returns a <BEL> character and an <ACK> character, and the pin BPR will output signals to drive external beeper.

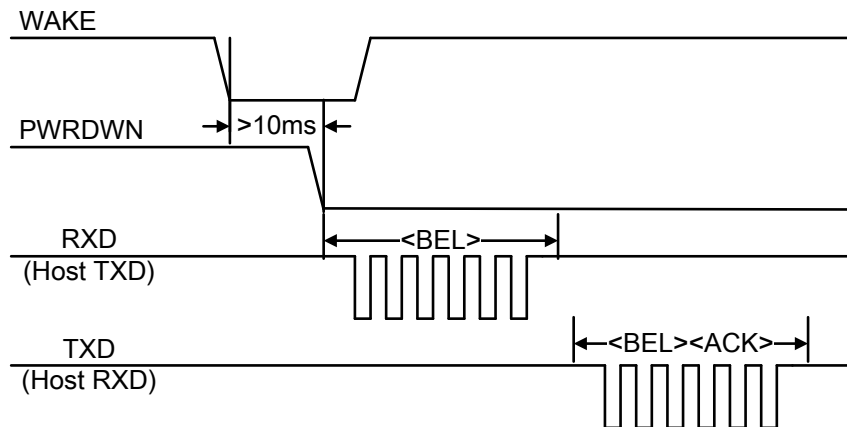


Figure 5-1 Wake and beep timing from Sleep mode

#### 5-1-2 Beep after activating Image Engine from Idle/Standby mode

Assuming Image Engine is in Idle or Standby mode (pin PWRDWN is low), Host sends a <NUL> character to activate image engine and then sends a <BEL> character.

- ① Host sends a <NUL> character.
- ② After more than 7 ms and before both Operate time-out interval and Idle time-out interval expire, Host sends a <BEL> character.
- ③ After receiving <BEL> character, Image Engine returns a <BEL> character and an <ACK> character, and then BPR will output signals to drive external beeper.

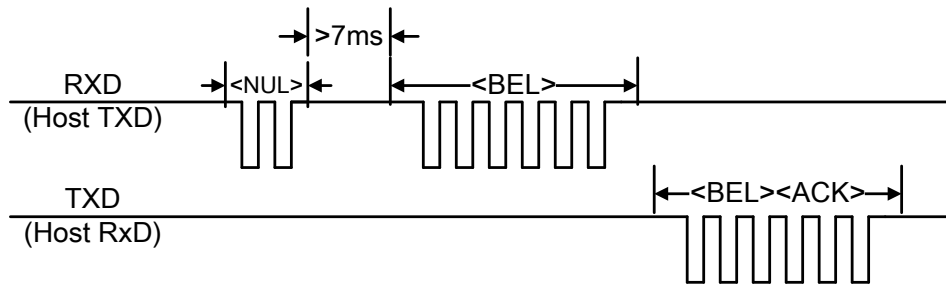


Figure 5-2 Activate and beep timing from Idle/Standby mode

## 5-2 Request revision

### 5-2-1 Request revision after awakening Image Engine from Sleep mode

Assuming that Image Engine is in Sleep mode (pin PWRDWN is high), Host pulls down pin WAKE to awaken Image Engine and then sends a **REQUEST\_REVISION** (ASCII 0x16, 0x4D, 0x0D 0x25 0x25 0x25 0x56 0x45 0x52 0x2E) command.

- ① Host pulls down pin WAKE.
- ② After more than 10 ms and before both Operate time-out interval and Idle time-out interval expire, Host sends a **REQUEST\_REVISION** command.
- ③ After receiving the command, Image Engine responds with firmware version.

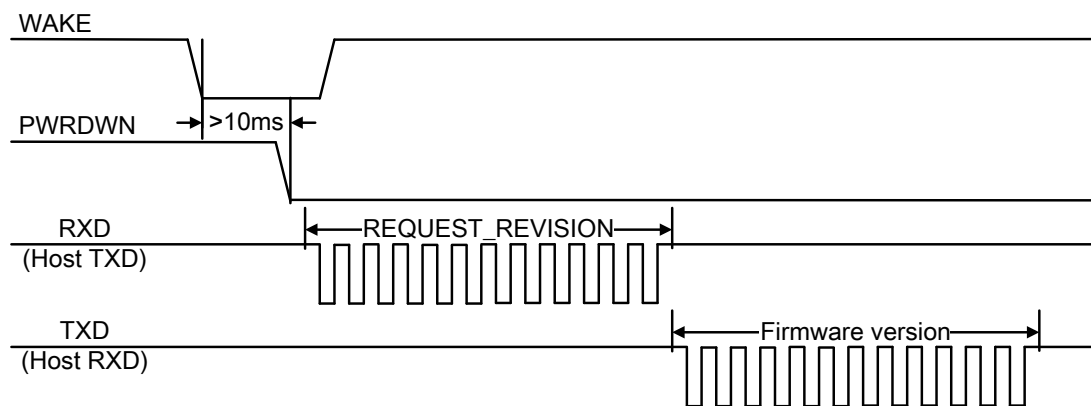
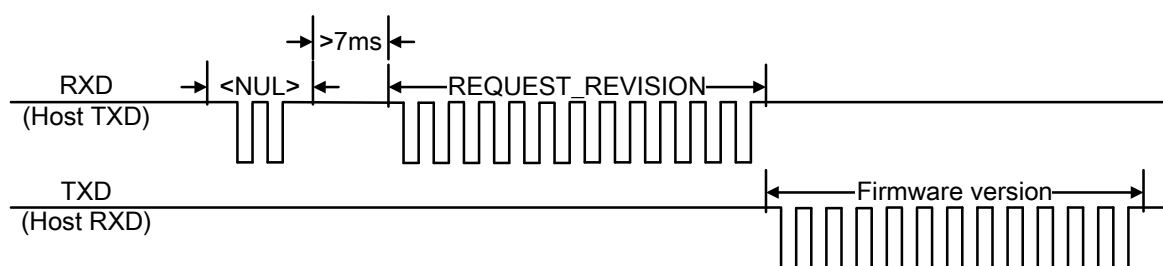


Figure 5-3 Wake and request revision timing from Sleep mode

### 5-2-2 Request revision after activating Image Engine from Idle/Standby mode

Assuming Image Engine is in Idle or Standby mode (pin PWRDWN is low), Host sends a <NUL> character to activate Image Engine and then sends a **Firmware Version list** command.

- ① Host sends a <NUL> character.
- ② After more than 7 ms and before both Operate time-out interval and Idle time-out interval expire, Host sends a **Firmware Version list** command.
- ③ After receiving the command, Image Engine responds with firmware version.



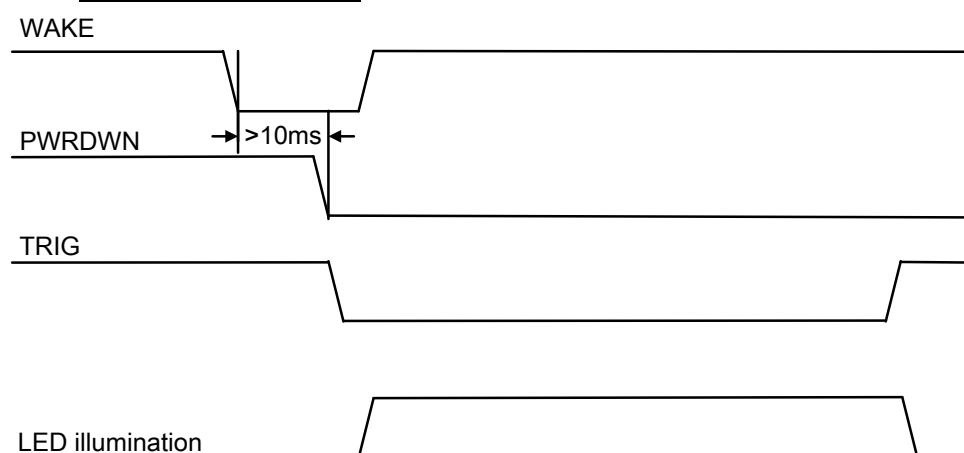
**Figure 5-4 Activate and request revision timing from Idle/Standby mode**

## 5-3 Decode by pulling down pin TRIG

### 5-3-1 Decode by pulling down pin TRIG after awakening Image Engine from Sleep mode

Assuming that Image Engine is in Sleep mode (pin PWRDWN is high), Host pulls down pin WAKE to awaken Image Engine and then pulls down pin TRIG.

- ① Host pulls down pin WAKE.
- ② After more than 10 ms and before PWRDWN turning high, Host pulls down pin TRIG.
- ③ Then Image Engine turns on LED illumination and starts to decode. The LED illumination will be turned off if either Scan standby duration expires or Image Engine succeeds in decoding.



**Figure 5-5 Pull down pin TRIG and start decode timing from Sleep mode**

### 5-3-2 Decode by pulling down pin TRIG after awakening Image Engine from Idle/Standby mode

Assuming Image Engine is in Idle or Standby mode (pin PWRDWN is low), Host pulls down pin TRIG.

- ① Host pulls down pin TRIG.
- ② Then Image Engine turns on LED illumination and starts decode. The LED illumination will be turned off if either Scan standby duration expires or Image Engine succeeds in decoding.

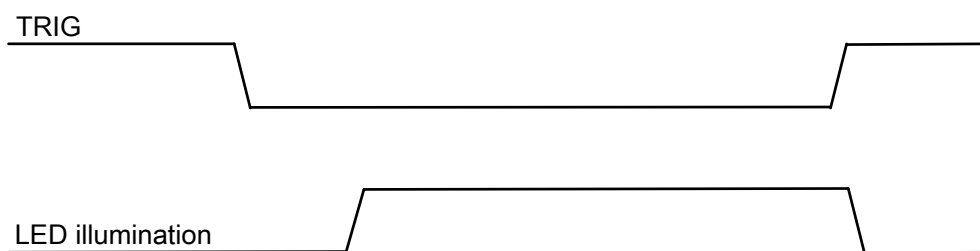


Figure 5-6 Pull down pin TRIG and start decode timing from Idle/Standby mode

## 5-4 Decode by commands

### 5-4-1 Change Trigger mode and decode after awakening Image Engine from Sleep mode

Assuming that Image Engine is in Sleep mode (pin PWRDWN is high), Host pulls down pin WAKE to awaken Image Engine; then set Trigger mode to Host with command (ASCII 0x16, 0x4D, 0x0D 0x30 0x34 0x30 0x31 0x44 0x30 0x35 0x2E); and then sends a **START\_DECODE** command (ASCII 0x16, 0x54, 0x0D).

- ① Host pulls down pin WAKE.
- ② After more than 10 ms and before both Operate time-out interval and Idle time-out interval expire, Host sends a command to set Trigger mode to Host.
- ③ Then Image Engine responds with received command and a <ACK> character, and then change Trigger mode to Host.
- ④ After receiving the <ACK> character, Host sends a **START\_DECODE** command.
- ⑤ Image Engine turns on LED illumination and decode. The LED illumination will be turned off if either Scan standby duration expires or Image Engine succeeds in decoding. A **STOP\_DECODE** (ASCII 0x16, 0x55, 0x0D) command can end decode process.

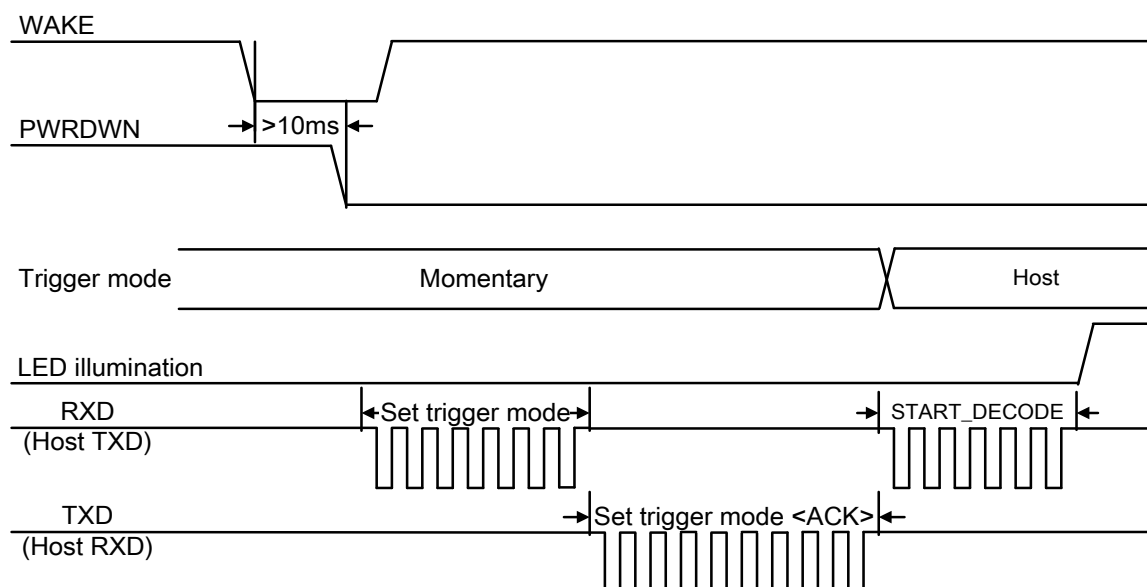


Figure 5-7 Change Trigger mode and send command to decode timing from Sleep mode

#### 5-4-2 Change Trigger mode and decode after awakening Image Engine from Idle/Standby mode

Assuming Image Engine is in Idle or Standby mode (pin PWRDWN is low), Host sends a <NUL> character; then changes Trigger mode; and then sends a **START\_DECODE** command.

- ① Host sends a <NUL> character.
- ② After more than 7 ms and before both Operate time-out interval and Idle time-out interval expire, Host sends a command to set Trigger mode to Host.
- ③ Then Image Engine responds with received command and a <ACK> character, and then change Trigger mode to Host.
- ④ After receiving the <ACK> character, Host sends a **START\_DECODE** command.
- ⑤ Image engine turns on LED illumination to decode. The LED illumination will be turned off if either Scan standby duration expires or Image Engine succeeds in decoding. A **STOP\_DECODE** (ASCII 0x16, 0x55, 0x0D) command can end decode process.

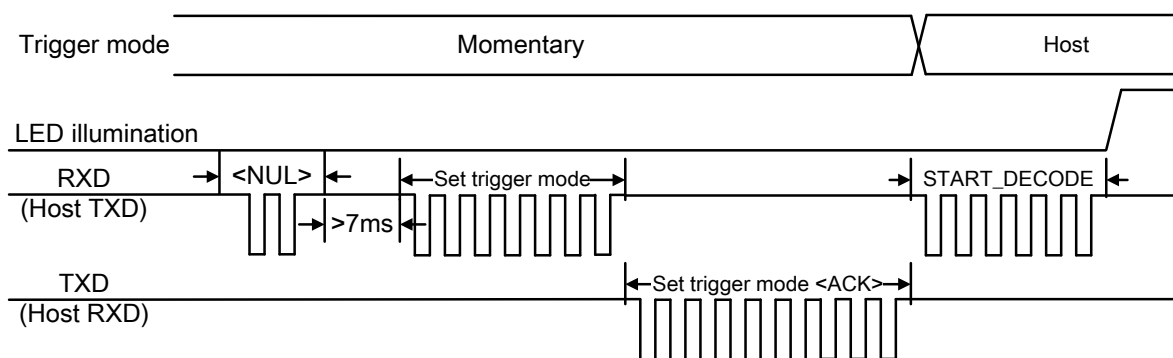




Figure 5-8 Change Trigger mode and send command to decode timing from Idle/Standby mode

## 6 Parameter Menus

### 6-1 Introduction

This section describes the programmable parameters, to change the parameter values:

-  Scan the appropriate barcodes included in this section. The new values replace the existing values. To set the new values as custom default settings, scan the **Write to Custom Defaults** barcode. The factory default settings or custom default settings can be recalled by scanning appropriate barcodes, refer to “6-40 Return default parameters & firmware version”.
-  Send parameters through the TTL-level RS-232 interface. Instructions of programming and querying the image engine are described in the next section.

## 6-2 Single-parameter setting by scanning 1D barcodes

### Important notes:

1. During the process of programming, LED is lighting to indicate the programming correctness. LED will go off if any incorrect programming operation performed.
2. After each successful programming, LED will go off and the scanner will beep twice.
3. Throughout the programming barcode menus, the factory default settings are indicated with asterisks (\*).

Two programming modes have been provided as bellows:

### ❶ Single-scan setting

- Scan the appropriate **Single-scan setting** (e.g. **%0101D00%**) according to the user's demand.

**Example:** to set **Flow control** to be XON/XOFF.

**Steps:** Scan the following barcode.



### ❷ Multiple-scan setting

- Step 1. Scan the **Option barcode** (e.g. **%0101M%**) according to the user's demand.
- Step 2. To the right of the option barcode, the necessary alphanumeric inputs are listed. Scan two alphanumeric entries from **0** to **9** or **A** to **F**, refer to the chapter of "Configuration alphanumeric entry barcode".
- Step 3. Repeat Step 2, if more user parameters input are required.
- Step 4. Scan the **%END%** barcode, listed on the lower left hand corner of each parameter setting part.

**Example:** to set **Flow control** to be XON/XOFF.

**Steps:** Referring to the chapter of "RS-232 interface", scan the following barcodes in order.

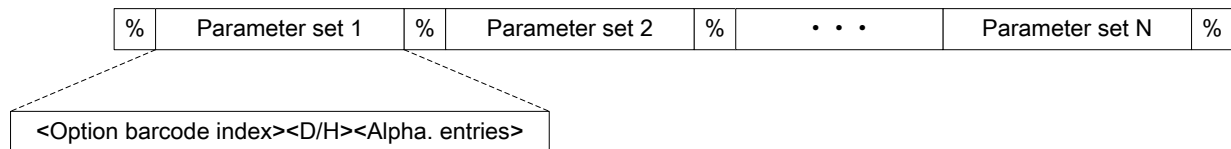




## 6-3 Multiple-parameter setting by scanning a QR code barcode

User can customize a QR code barcode to set multiple parameters. The scanner can set multiple parameters by scanning this single QR code barcode.

1. The data format of the QR code barcode is as following.



Note that:

- <Option barcode index> means the corresponding 4 digits of Option barcode.
- <D/H> means “D” or “H” character. D means that the type of alphanumeric entry is decimal; and H means that the type of alphanumeric entry is hexadecimal.
- <Alpha. entries> is a character string with various length of 2, 4, or other values.

**Example:** Set 0401->03 (decimal); 8002->0D0A (hexadecimal); 8202->01 (decimal). The customized QR code barcode contents and symbol are as following.

%0401D03%8002H0D0A%8202D01%
-----------------------------



2. Notes of making QR code barcode

The model is chosen as M2. Other requirements, e.g. ECC level, Start mode, etc, are not specified.

Other notes

- The contents of a QR code barcode can include several same <Option barcode index> associated with same or different <Alpha. entries>. In the case of with different <Alpha. entries>, the latest <Alpha. entries> is the valid one.
- If any one of the parameter settings is invalid, the total setting is failed. The invalid setting can be caused by one of the following problems: invalid <Option barcode index>, invalid type of <D/H>, invalid type, length or value range of <Alpha. entries>, etc.

## 6-4 RS-232 interface

### Flow control:

**None** - The communication only uses TXD and RXD signals without any hardware or software handshaking protocol.

**RTS/CTS** – If the image engine wants to send the barcode data to the host, it will assert the RTS signal first, and then waits for the CTS signal from the host to perform normal data communication. If CTS is not asserted in **Response delay**, the image engine will issue an error indication.












**Two-direction flow control:** The image engine asserts the RTS signal when it is OK for the host to transmit. The host asserts CTS when it is OK for the device to transmit.



























**XON/XOFF** – An <XOFF> character turns the image engine's transmission off until the image engine receives an <XON> character.

**ACK/NAK** – After transmitting data, the image engine expects either an <ACK> character (acknowledge) or <NAK> character response from the host. When a <NAK> character is received, the image engine transmits the same data again and waits for either an <ACK> character or <NAK> character. After three unsuccessful attempts to send data when <NAK> characters are received the image engine issues an error indication and discards the data.

**Inter-character delay:** This delay is inserted after each data character transmitted.

**Response delay:** This delay is used for serial communication of the image engine when it waits for a handshaking acknowledgment from the host.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Flow control  %0301M%	none	00*	 %0301D00%	RS-232 Handshaking
	RTS/CTS	01	 %0301D01%	
	Two-direction flow control	02	 %0301D02%	
	XON/XOFF	03	 %0301D03%	
	ACK/NAK	04	 %0301D04%	
Inter-character delay  %0302M%	0ms	00*	 %0302D00%	Intercharacter Delay
	5ms	01	 %0302D01%	
	10ms	02	 %0302D02%	
	20ms	03	 %0302D03%	

	40ms	04	 %0302D04%	
	80ms	05	 %0302D05%	
Response delay  %0304M%	00-99 (100ms)	00-99		RS232 Timeout
		00*	 %0304D00%	
Baudrate  %0305M%	300	00	 %0305D00%	RS-232 Baud Rate
	600	01	 %0305D01%	
	1200	02	 %0305D02%	
	2400	03	 %0305D03%	
	4800	04	 %0305D04%	
	9600	05*	 %0305D05%	
	19200	06	 %0305D06%	
	38400	07	 %0305D07%	
	57600	08	 %0305D08%	
	115200	09	 %0305D09%	
Parity bit  %0306M%	None	00*	 %0306D00%	RS-232 Word Length: Data Bits, Stop Bits, and Parity
	Odd	01	 %0306D01%	
	Even	02	 %0306D02%	
Data bit  %0307M%	8 bits	00*	 %0307D00%	
	7 bits	01	 %0307D01%	
Stop bit  %0308M%	1 bit	00*	 %0308D00%	
	2 bits	01	 %0308D01%	
 %END%				

## 6-5 Trigger mode & some global settings

### Trigger mode:

**Good-read off** – the trigger (Pin - 12 TRIG) must be pulled down once to activate scanning. The light source of the image engine stops scanning when there is a successful reading or no code is decoded after the **Scan standby duration** elapsed.

**Momentary** – pin TRIG acts as a switch. Pull down pin TRIG to activate scanning and pull up the trigger to stop scanning. The light source of the image engine stops scanning when there is a successful reading or no code is decoded after the **Scan standby duration** elapsed.

**Alternate** – pin TRIG acts as a toggle switch. Pull pin TRIG to activate or stop scanning.

**Continuous** – the image engine always keeps scanning, and it does not matter when pin TRIG is pulled down or duration is elapsed.

**Host** – a **START\_DECODE** command issues the triggering signal. In this mode, the image engine interprets an actual trigger pull as a Good-read off triggering option. There is a practical application in the chapter of “5 Operation of image engine”.

**Scan standby duration:** pin TRIG pulled or command sent by Host activates scanning. The image engine stops scanning when no code is successful decoded after this duration elapsed.

**Same barcode delay time:** this feature is activated only when the **Trigger mode** is in alternate or continuous mode. Once a barcode has been scanned and output successfully, the optics module's lights must be off or moved away from the barcode beyond delay time to active a next scanning on the same barcode.

**Multiple confirm:** if it is enabled, the image engine will require a several times of same-decoded-data to confirm a valid reading.

**Global Max./Min. code length:** these two lengths are defined as the valid range of decoded barcode data length. Make sure that the minimum length setting is no greater than the maximum length setting. When setting of minimum and maximum reading length is equal, the image engine works as a fixed-length barcode decoder.

### Notes:

1. Please set the max./min. length for individual barcode in later chapters, if a special demand is requested.
2. Both data and check digits contribute to code length.
3. These two settings have no effect on the types of barcode with fixed-length, e.g. UPC-A, UPC-E, EAN-13 and China Post.

**Global G1-G6 string selection:** the image engine offer one or two string group for ALL types of barcode. By setting one or two digits to indicate which string group you want to apply. You may refer to the chapters of “String setting” and “6-38 G1-G4 string position & Code ID position”.

Example: Group 1 → set 01 or 10. Group 2 and 4 → set 24 or 42.

All valid settings include 00, 01, 02, 03, 04, 05, 06, 10, 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33, 34, 35, 36, 40, 41, 42, 43, 44, 45, 46, 50, 51, 52, 53, 54, 55, 56, 60, 61, 62, 63, 64, 65 and

66.

**Element amendment:** If it is enabled, the image engine can read the barcode comprised with bars and spaces in different scales.

**Character output restraint:**

**Printable character only-** If this option is selected, the scanner will output the printable characters only, i.e. in ASCII from 20H to 7EH.

**Alphanumeric character only-** If this option is selected, the scanner will output the alphanumeric characters only, i.e. "A"- "Z", "a"- "z", "0"- "9".

**Decoder optimization:** if it is enabled, the image engine will optimize the image engine with error correction. This function is not effective for all types of barcodes.

**Idle optics module:** if it is enabled, the power supply is removed from the optics module when the image engine is in Idle/Standby/Sleep mode.


























**Operate time-out interval:** while pin TRIG is pulled down or a decode command activates scanning, the image engine enters Operate mode. The image engine will enter Idle mode from Operate mode if this interval expires. In Operate mode, the image engine is capable of receiving commands via its serial port.

**Standby mode enter:** if this feature is enabled, the image engine can enter Standby mode.

**Idle time-out interval:** if the image engine is in Idle mode and **Standby mode enter** is enabled, the image engine will enter Standby mode from Idle mode when this interval expires. If pin TRIG is asserted or a valid command is received, the Idle mode will terminate.

**Sleep mode enter:** if this feature is enabled, the image engine can enter Sleep mode.

**Standby time-out interval:** if the image engine is in Standby mode and **Sleep mode enter** is enabled, the image engine will enter Sleep mode when this interval expires. Otherwise, the image engine will stay in Standby mode until TRIG, or CTS, or RXD is asserted.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Trigger mode  %0401M%	Good-read off	00	 %0401D00%	Manual Trigger Mode, Streaming Presentation
	Momentary	01*	 %0401D01%	
	Alternate continue	02	 %0401D02%	
	Continue	03	 %0401D03%	
	Timeout off	04	 %0401D04%	
	Host	05	 %0401D05%	
Scan standby duration  %0402M%	01-99 (100ms)	01-99		Read Timeout
		40*	 %0402D40%	
Same barcode delay time  %0403M%	00-99 (100ms)	00-99		Reread Delay
		10*	 %0403D10%	
Double confirm  %0404M%	00-09 (00: no)	00-99		N/A
		00*	 %0404D00%	
Global max. code length for 1D symbols  %0405M%	04-99	04-99		N/A
		99*	 %0405D99%	
Global min. code length for 1D symbols  %0406M%	01-99	01-99		N/A
		04*	 %0406D04%	
Global G1-G6 string selection  %0407M%	00-66	00-66		N/A
		00*	 %0407D00%	
Element amendment  %0408M%	Disable	00	 %0408D00%	N/A
	Enable	01*	 %0408D01%	N/A
Character output restraint  %0409M%	None	00*	 %0409D00%	N/A
	Printable characters only	01	 %0409D01%	

	Alphanumeric characters only	02	 %0409D02%	
Decoder optimization  %0410M%	Disable	00	 %0410D00%	N/A
	Enable	01*	 %0410D01%	
Idle optics module  %0411M%	Disable	00	 %0411D00%	N/A
	Enable	01*	 %0411D01%	
Operate time-out interval  %0412M%	00-99 (100ms)	01-99		Scanner Timeout
		01*	 %0412D01%	
Standby mode enter  %0413M%	Disable	00	 %0413D00%	N/A
	Enable	01*	 %0413D01%	
Idle time-out interval  %0414M%	00-99 (2s)	01-99		N/A
		01*	 %0414D01%	
Sleep mode enter  %0415M%	Disable	00*	 %0415D00%	RS232 Receiver Timeout
	Enable	01	 %0415D01%	
Standby time-out interval  %0416M%	00-99 (2s)	00-99		
		01*	 %0416D01%	
 %END%				

## 6-6 Indication
















**Power on alert:** after power-on the image engine will generate an alert signal to indicate a successful self-test

**LED indication:** After each successful reading, the DLED signal will assert to indicate a good barcode reading.

**Beeper indication:** After each successful reading, the image engine will beep to indicate a good barcode reading, and its beep tone duration is adjustable.

**Beep tone duration:** This parameter can be adjusted for a good reading upon favorite usage.

**Beep on BEL Character:** The image engine will beep upon a <BEL> character from the host if it is enabled.












ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Power on alert  %0501M%	Disable	00	 %0501D00%	Power up Beeper
	Enable	01*	 %0501D01%	
LED indication  %0502M%	Disable	00	 %0502D00%	LED - Good Read
	Enable	01*	 %0502D01%	
Beeper indication  %0503M%	Disable	00	 %0503D00%	Beeper - Good Read
	Enable	01*	 %0503D01%	
Beep tone duration  %0504M%	01-09(25ms)	01-09		Beeper Duration- Good Read
		03*	 %0504D03%	
Beep on BEL Character  %0506M%	Disable	00	 %0506D00%	Beep on BEL Character
	Enable	01*	 %0506D01%	
 %END%				



## 6-7 Decode illumination and decode aiming pattern

**Decode illumination mode:** enable illumination causes the image engine to turn on the illumination to aid decoding. Disable illumination to turn off illumination for the image engine during decoding. Better quality images could be obtained with illumination support. The effectiveness of the illumination decreases as the distance to the target increases.

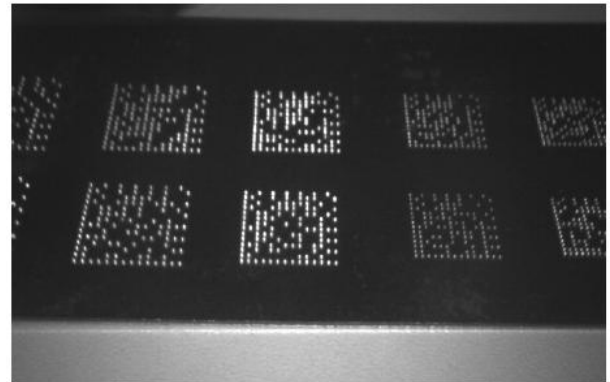
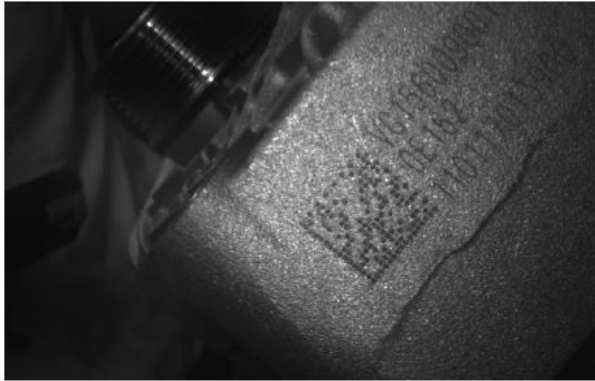
**Decode aiming pattern:** when this option is enabled, the image engine will project the aiming pattern during the code capture.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Decode illumination  %9001M%	Always Off	00	 %9001D00%	Aimer Mode
	Always On	01	 %9001D01%	
	Flashing	02*	 %9001D02%	
	On when reading	03	 %9001D03%	
Decode aiming pattern  %9002M%	Always off	00	 %9002D00%	Illumination Lights
	Always on	01	 %9002D01%	
	On before reading	02	 %9002D02%	
	On when reading	03*	 %9002D03%	
 %END%				

## 6-8 DPM, Multiple symbols, Structured append, etc. read setting

**2D symbols read:** A global setting of 2D symbols readability

**DPM format read:** By setting enable, the image engine can read 2D symbols in DPM (Direct Park Marking) format. Some barcodes in DPM format are shown below.



**Multiple symbols & structured append symbols read:**

- i. By setting enable, the image engine allows to read multiple symbols with a single pull of the trigger. If the host pulls and holds the trigger, aiming the image engine at a series of symbols, it reads unique symbols once, beeping for each success read. The image engine attempts to find and decode new symbols as long as the trigger is pulled.
- ii. By setting enable, the image engine will output data only when all Structured Append symbol have been decoded. The lower part of below figure shows an example of four Structure Append symbols, with the same data as that in the upper symbol.
- iii. By setting disable, the image engine will only read the symbol closest to the aiming beam.

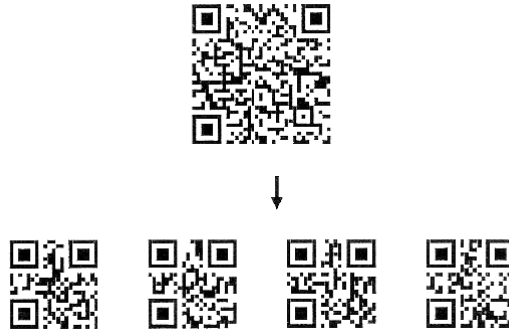


Figure 6-1 single symbol (above) and Structured Append series of symbols (below) encoding  
 “ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789 ABCDEFGHIJKLMNOPQRSTUVWXYZ”

**Vertical centering reading:** by setting enable, the image engine reads only the barcode centered by the aimer in vertical direction. However, the image engine will read either one of two barcodes which are positioned horizontally. See example below.

Barcode 1



Barcode 2



Barcode 1      Barcode 2























As this function maybe ineffective if the aimer is not ideally projected to the vertical center, please follow the below instruction to calibrate the aimer in vertical centering direction:

1. Scan the below barcode, and then the image engine will give three musical short beeps to indicate entering calibration mode.



2. Press the trigger of the image engine while maintaining the distance of about 15cm between the exit window of the image engine and this paper. After a few seconds, the image engine will give three short beeps to indicate completing calibration.
3. If the calibration is failed in step 2, please repeat the steps 1-2. If it is not succeed after a multiple times of calibration, please contact your local dealer of the manufacturer for further instruction.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
2D symbols read  %1001M%	Follow respective 2D symbol setting	00*	 %1001D00%	N/A
	All 2D OFF	01	 %1001D01%	
	All 2D ON	02	 %1001D02%	
	Only PDF417 ON	03	 %1001D03%	
	Only QR code ON	04	 %1001D04%	
	Only Data Matrix ON	05	 %1001D05%	
	Only Maxicode ON	06	 %1001D06%	
	Only Aztec Code ON	07	 %1001D07%	
	Only Han Xin Code ON	08	 %1001D08%	
DPM format read  %1002M%	Disable	00*	 %1002D00%	N/A
	Enable	01	 %1002D01%	
Decode Multi-symbols  %1003M%	Multi-symbols	00	 %1003D00%	Multiple Symbols
	One symbol only	01*	 %1003D01%	
Vertical centering read  %1004M%	Disable	00*	 %1004D00%	N/A
	Enable	01	 %1004D01%	
 %END%				

## 6-9 UPC-A

### Read:

Format

System character	Data digits (10 digits)	Check digit
------------------	-------------------------	-------------

**Check digit verification:** The check digit is optional.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Code id setting:** Code ID is a one-two-character string used to represent the symbol upon a succeeding reading. If you want application to transmit Code ID, you must set **Code ID transmission** to be enabled. Refer to the chapter of "String transmission".

**Insertion group selection:** Refer to Global insertion group selection of the chapter of "Hand-held scan & some global settings".

**Supplement digits:** The Supplement digits barcode is the supplemental 2 of 5 characters.

Format

System character	Data digits (10 digits)	Check digit	Supplement digits 2 of 5
------------------	-------------------------	-------------	--------------------------




### Truncation/Expansion:

**Truncate leading zeros-** The leading "0" digits of UPC-A data characters can be truncated when the feature is enabled.

**Expand to EAN-13-** It extends to 13-digits with a "0" leading digit when the feature is enabled.

**Truncate system character-** The system character of UPC-A data can be truncated when the feature is enabled.

**Add country code-** The country code ("0" for USA) can be added when the feature is enabled.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %1101M%	Disable	00	 %1101D00%	UPC-A
	Enable	01*	 %1101D01%	
Check digit verification  %1102M%	Disable	00	 %1102D00%	N/A
	Enable	01*	 %1102D01%	
Check digit trans.  %1103M%	Disable	00	 %1103D00%	UPC-A Check Digit
	Enable	01*	 %1103D01%	
Code ID setting  %1104M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<A>*	 %1104H41%	
Insert group selection  %1105M%	00-66	00-66		N/A
		00*	 %1105D00%	
Supplement digits  %1106M%	None	00*	 %1106D00%	N/A
	2 digits	01	 %1106D01%	
	5 digits	02	 %1106D02%	
	2 or 5 digits	03	 %1106D03%	
Truncation/Expansion  %1107M%	None	00*	 %1107D00%	N/A
	Truncate leading zeros	01	 %1107D01%	
	Expand to EAN-13	02	 %1107D02%	
	Truncate system character	03	 %1107D03%	
	Add country code	04	 %1107D04%	
 %END%				

## 6-10 UPC-E

**Read:**

Format

System character "0"	Data digits (6 digits)	Check digit
----------------------	------------------------	-------------

**Check digit verification:** The check digit is optional.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Code id setting:** Refer to 

Code ID setting
-----------------

 of UPC-A.

**Insertion group selection:** Refer to 

Insertion group selection
---------------------------

 of UPC-A.

**Supplement digits:**

Format

System character "0"	Data digits (6 digits)	Check digit	Supplement digits 2 of 5
----------------------	------------------------	-------------	--------------------------

**Truncation/Expansion:**

**Truncate leading zeros-** Refer to 

Truncate leading zeros
------------------------

 of UPC-A.


























**Expand to EAN-13-** It extends to 13-digits with a "0" leading digit when the feature is enabled.

Example: Barcode "0123654",

Output: "0012360000057"

**Expand to UPC-A-** it extends to 12-digits when the feature is set to be enabled.

**Truncate system character-** The system character "0" of UPC-E data can be truncated when the feature is enabled.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %1201M%	Disable	00	 %1201D00%	UPC-E0
	Enable	01*	 %1201D01%	
Check digit verification  %1202M%	Disable	00	 %1202D00%	N/A
	Enable	01*	 %1202D01%	
Check digit trans.  %1203M%	Disable	00	 %1203D00%	UPC-E0 Check Digit
	Enable	01*	 %1203D01%	
Code ID setting  %1204M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<D>*	 %1204H44%	
Insert group selection  %1205M%	00-66	00-66		N/A
		00*	 %1205D00%	
Supplement digits  %1206M%	None	00*	 %1206D00%	N/A
	2 digits	01	 %1206D01%	
	5 digits	02	 %1206D02%	
	2 or 5 digits	03	 %1206D03%	
Truncation/Expansion  %1207M%	None	00*	 %1207D00%	N/A
	Truncate leading zeros	01	 %1207D01%	
	Expand to EAN-13	02	 %1207D02%	
	Expand to UPC-A	03	 %1207D03%	
	Truncate system character	04	 %1207D04%	
 %END%				



## 6-11 UPC-E1

### Read:

Format

Leading zero	1	Data digits (6 digits)	Check digit
--------------	---	------------------------	-------------

**Check digit verification:** The check digit is optional.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Code id setting:** Refer to 

Code ID setting
-----------------

 of UPC-A.

**Insertion group selection:** Refer to 

Insertion group selection
---------------------------

 of UPC-A.

### Supplement digits:

Format

Leading zero	Data digits (6 digits)	Check digit	Supplement digits 2 of 5
--------------	------------------------	-------------	--------------------------

### Truncation/Expansion:

**Truncate leading zeros-** Refer to 


























Truncate leading zeros
------------------------

 of UPC-A.

**Expand to EAN-13-** It extends to 13-digits with “0” digits when the feature is enabled.

**Expand to UPC-A-** it extends to 12-digits when the feature is set to be enabled.

**Truncate system character-** The system character “1” of UPC-E1 data can be truncated when the feature is enabled.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %3401M%	Disable	00	 %3401D00%	UPC-E1
	Enable	01*	 %3401D01%	
Check digit verification  %3402M%	Disable	00	 %3402D00%	N/A
	Enable	01*	 %3402D01%	
Check digit trans.  %3403M%	Disable	00	 %3403D00%	N/A
	Enable	01*	 %3403D01%	
Code ID setting  %3404M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<D>*	 %3404H44%	
Insert group selection  %3405M%	00-66	00-66		N/A
		00*	 %3405D00%	
Supplement digits  %3406M%	None	00*	 %3406D00%	N/A
	2 digits	01	 %3406D01%	
	5 digits	02	 %3406D02%	
	2 or 5 digits	03	 %3406D03%	
Truncation/Expansion  %3407M%	None	00*	 %3407D00%	N/A
	Truncate leading zeros	01	 %3407D01%	
	Expand to EAN-13	02	 %3407D02%	
	Expand to UPC-A	03	 %3407D03%	
	Truncate system character	04	 %3407D04%	
 %END%				

## 6-12 EAN-13

**Read:**

Format

Data digits (12 digits)	Check digit
-------------------------	-------------

**Check digit verification:** The check digit is optional.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Code id setting:** Refer to 

Code ID setting
-----------------

 of UPC-A.

**Insertion group selection:** Refer to 

Insertion group selection
---------------------------

 of UPC-A.

**Supplement digits:**

Format

Data digits (12 digits)	Check digit	Supplement digits 2 of 5
-------------------------	-------------	--------------------------

**ISBN/ISSN:** The ISBN (international Standard Book Number, or Bookland EAN) and ISSN (International Standard Serial Number) are two kinds of barcode for books and magazines. The ISBN is 10 digits with leading “978” and the ISSN is 8 digits with leading “977” of the EAN-13.

Example:


















Barcode “9780194315104”, Output: “019431510X”.

Barcode “9771005180004”, Output: “10051805”.

**ISBN/ISSN code ID setting:** Refer to 

Code ID setting
-----------------

 of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related Option barcode
Option barcode	Option	Alpha. entry		
Read  %1301M%	Disable	00	 %3401D00%	EAN/JAN-13
	Enable	01*	 %1301D01%	
Check digit verification  %1302M%	Disable	00	 %1302D00%	N/A
	Enable	01*	 %1302D01%	
Check digit trans.  %1303M%	Disable	00	 %1303D00%	EAN/JAN-13 Check digit
	Enable	01*	 %1303D01%	
Code ID setting  %1304M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<D>*	 %1304H41%	
Insert group selection  %1305M%	00-66	00-66		N/A
		00*	 %1305D00%	
Supplement digits  %1306M%	None	00*	 %1306D00%	N/A
	2 digits	01	 %1306D01%	
	5 digits	02	 %1306D02%	
	2 or 5 digits	03	 %1306D03%	
ISBN/ISSN conversion  %1307M%	Disable	00*	 %1307D00%	ISBN Translate
	Enable	01	 %1307D01%	
ISBN/ISSN code ID setting  %1309M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<B>*	 %1309H42%	
 %END%				

## 6-13 EAN-8

### Read:

Format

Data digits (7 digits)	Check digit
------------------------	-------------

**Check digit verification:** The check digit is optional.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Code id setting:** Refer to 

Code ID setting
-----------------

 of UPC-A.

**Insertion group selection:** Refer to 

Insertion group selection
---------------------------

 of UPC-A.

### Supplement digits:
























Format

Data digits (8 digits)	Check digit	Supplement digits 2 of 5
------------------------	-------------	--------------------------

**Truncation/Expansion:** Refer to 

Truncation/Expansion
----------------------

 of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %1401M%	Disable	00	 %1401D00%	EAN/JAN-8
	Enable	01*	 %1401D01%	
Check digit verification  %1402M%	Disable	00	 %1402D00%	N/A
	Enable	01*	 %1402D01%	
Check digit trans.  %1403M%	Disable	00	 %1403D00%	EAN/JAN-8 Check Digit
	Enable	01*	 %1403D01%	
Code ID setting  %1404M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<C>*	 %1404H43%	
Insert group selection  %1405M%	00-66	00-66		N/A
		00*	 %1405D00%	
Supplement digits  %1406M%	None	00*	 %1406D00%	N/A
	2 digits	01	 %1406D01%	
	5 digits	02	 %1406D02%	
	2 or 5 digits	03	 %1406D03%	
Truncation/Expansion  %1407M%	None	00*	 %1407D00%	N/A
	Truncate leading zero	01	 %1407D01%	
	Expand to EAN-13	02	 %1407D02%	
 %END%				

## 6-14 Code 39 (Code 32, Trioptic Code 39)

**Read:**

Format

*	Data digits (variable)	Check digit (optional)	*
---	------------------------	------------------------	---

**Check digit verification:** The check digit is optional and made as the sum module 43 of the numerical value of the data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Each symbol has own max./min. code length. If both setting of max./min. code length are "00", the setting of global max./min. code length is effective. The length is defined as to the actual barcode data length to be sent. Label with length exceeds these limits will be rejected. Make sure that the minimum length setting is no greater than the maximum length setting or otherwise all labels of the symbol will be readable. In particular, you can see the same value for both minimum and maximum reading length to force the fixed length barcode decoded.

**Code id setting:** Refer to 

Code ID setting
-----------------

 of UPC-A.

**Insertion group selection:** Refer to 

Insertion group selection
---------------------------

 of UPC-A.

**Start/End transmission:** the start and end characters of Code 39 are "\*". You can transmit all data digits including two "\*".

**"\*" as data character:** by setting Enable, "\*" can be recognized as data character.

**Convert Code 39 to Code 32:** Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Note that code 39 must be enabled in order for this parameter to function.

Format of Code 32

"A"(optional)	Data digits (8 digits)	Check digit
---------------	------------------------	-------------
































**Code 32 Prefix "A" transmission:** By setting Enable, the prefix character "A" can be added to all Code 32 barcodes.

**Trioptic Code 39 read:** Trioptic Code 39 is a variant of Code 39 used in the marking of magnetic tapes and computer cartridges. Trioptic Code 39 symbols always contain six characters.









Format

\$	Data digits (8 digits)	\$
----	------------------------	----

**Trioptic Code 39 Start/End transmission:** The start and end characters of Trioptic Code 39 are "\$". All data digits including two "\$" can be transmitted.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %1501M%	Disable	00	 %1501D00%	Code 39
	Enable	01*	 %1501D01%	
Check digit verification  %1502M%	Disable	00	 %1502D00%	Code 39 Check Digit
	Enable	01*	 %1502D01%	
Check digit trans.  %1503M%	Disable	00	 %1503D00%	
	Enable	01*	 %1503D01%	
Max. code length  %1504M%	00-99	00-99		Code 39 Message Length
		00*	 %1504D00%	
Min. code length  %1505M%	00-99	00-99		
		01	 %1505D01%	
Code ID setting  %1506M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<M>*	 %1506H4D%	
Insert group selection  %1507M%	00-66	00-66		N/A
		00*	 %1507D00%	
Format  %1508M%	Standard	00*	 %1508D00%	Code 39 Full ASCII
	Full ASCII	01	 %1508D01%	
Start/End transmission  %1509M%	Disable	00*	 %1509D00%	Code 39 Start/Stop Char.
	Enable	01	 %1509D01%	
“*” as data character  %1510M%	Disable	00*	 %1510D00%	N/A
	Enable	01	 %1510D01%	
Convert Code 39 to Code 32  %1511M%	Disable	00*	 %1511D00%	Code 39 Pharmaceutical
	Enable	01	 %1511D01%	
Code 32 prefix “A” transmission	Disable	00*	 %1512D00%	N/A
	Enable	01	 %1512D01%	



 %1512M%				
Trioptic Code 39 read  %1513M%	Disable	00*	 %1513D00%	N/A
	Enable	01	 %1513D01%	
Trioptic Code 39 Start/End transmission  %1514M%	Disable	00*	 %1514D00%	N/A
	Enable	01	 %1514D01%	
 %END%				

## 6-15 Interleaved 2 of 5

**Read:**

Format

Data digits (variable)	Check digit (optional)
------------------------	------------------------




















**Check digit verification:** The check digit is made as the sum module 10 of the numerical value of the data digits. There are two optional check digit algorithms: the specified Uniform Symbol Specification (USS) and the Optical Product Code Council (OPCC).

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %1601M%	Disable	00	 %1601D00%	Interleaved 2 of 5
	Enable	01*	 %1601D01%	
Check digit verification  %1602M%	Disable	00*	 %1602D00%	Interleaved 2 of 5 Check Digit
	USS	01	 %1602D01%	
	OPCC	02	 %1602D02%	
Check digit trans.  %1603M%	Disable	00*	 %1603D00%	
	Enable	01	 %1603D01%	
Max. code length  %1604M%	00-99	00-99		Interleaved 2 of 5 Message Length
		00*	 %1604D00%	
Min. code length  %1605M%	00-99	00-99		
		06*	 %1605D06%	
Code ID setting  %1606M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<I>*	 %1606H49%	
Insert group selection  %1607M%	00-66	00-66		N/A
		00*	 %1607D00%	
 %END%				

## 6-16 Industrial 2 of 5

Read:

Format

Data digits (variable)

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code id setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %1701M%	Disable	00*	 %1701D00%	N/A
	Enable	01	 %1701D01%	
Max. code length  %1702M%	00-99	00-99		N/A
		00*	 %1702D00%	
Min. code length  %1703M%	00-99	00-99		N/A
		01	 %1703D00%	
Code ID setting  %1704M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<H>*	 %1704H48%	
Insert group selection  %1705M%	00-66	00-66		N/A
		00*	 %1705D00%	
 %END%				

## 6-17 Matrix 2 of 5

Read:

Format

Data digits (variable)	Check digit (optional)
------------------------	------------------------



















**Check digit verification:** The check digit is made as the sum module 10 of the numerical value of the data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %1801M%	Disable	00	 %1801D00%	Matrix 2 of 5
	Enable	01*	 %1801D01%	
Check digit verification  %1802M%	Disable	00*	 %1802D00%	N/A
	Enable	01	 %1802D01%	
Check digit trans.  %1803M%	Disable	00*	 %1803D00%	
	Enable	01	 %1803D01%	
Max. code length  %1804M%	00-99	00-99		Matrix 2 of 5 Message Length
		00*	 %1804D00%	
Min. code length  %1805M%	00-99	00-99		
		06	 %1805D06%	
Code ID setting  %1806M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<X>*	 %1806H58%	
Insert group selection  %1807M%	00-66	00-66		N/A
		00*	 %1807D00%	
 %END%				

## 6-18 Codabar

**Read:**

Format

Start	Data digits (variable)	Check digit (optional)	End
-------	------------------------	------------------------	-----

**Check digit verification:** The check digit is made as the sum module 16 of the numerical value of the data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to 

Max./Min. code length
-----------------------

 of Code 39.

**Code id setting:** Refer to 

Code ID setting
-----------------

 of UPC-A.

**Insertion group selection:** Refer to 

Insertion group selection
---------------------------

 of UPC-A.

**Start/End Type:** Codabar has four pairs of Start/End Pattern; you may select one pair to match your application.

**Start/End transmission:** Refer to 

Start/End transmission
------------------------

 of Code 39.

**Start/End character equality:** By setting Enable, the start and end character of a Codabar barcode must be the same.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %1901M%	Disable	00	 %1901D00%	Codabar
	Enable	01*	 %1901D01%	
Check digit verification  %1902M%	Disable	00*	 %1902D00%	Codabar Check Digit
	Enable	01	 %1902D01%	
Check digit trans.  %1903M%	Disable	00*	 %1903D00%	
	Enable	01	 %1903D01%	
Max. code length  %1904M%	00-99	00-99		Codabar Message Length
		00*	 %1904D00%	
Min. code length  %1905M%	00-99	00-99		
		01*	 %1905D01%	
Code ID setting  %1906M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<N>*	 %1906H4E%	
Insert group selection  %1907M%	00-66	00-66		N/A
		00*	 %1907D00%	
Start/End type  %1908M%	ABCD/ABCD	00*	 %1908D00%	N/A
	abcd/abcd	01	 %1908D01%	
	ABCD/TN*E	02	 %1908D02%	
	abcd/tn*E	03	 %1908D03%	
Start/End transmission  %1909M%	Disable	00*	 %1909D00%	Codabar Start/Stop Char.
	Enable	01	 %1909D01%	
Start/End character equality  %1910M%	Disable	00*	 %1910D00%	N/A
	Enable	01	 %1910D01%	
 %END%				

## 6-19 Code 128

Read:

Format

Data digits (variable)	Check digit (optional)
------------------------	------------------------

**Check digit verification:** The check digit is made as the sum module 103 of all data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.























**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

**Truncate leading zeros:** The leading “0” digits of Code 128 barcode characters can be truncated when the feature is enabled.



ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2001M%	Disable	00	 %2001D00%	Code 128
	Enable	01*	 %2001D01%	
Check digit verification  %2002M%	Disable	00	 %2002D00%	N/A
	Enable	01*	 %2002D01%	
Check digit trans.  %2003M%	Disable	00*	 %2003D00%	
	Enable	01	 %2003D01%	
Max. code length  %2004M%	00-99	00-99		Code 128 Message Length
		00*	 %2004D00%	
Min. code length  %2005M%	00-99	00-99		
		01*	 %2005D01%	
Code ID setting  %2006M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<K>*	 %2006H4B%	
Insert group selection  %2007M%	00-66	00-66		N/A
		00*	 %2007D00%	
Truncate leading zeros  %2008M%	Disable	00*	 %2008D00%	N/A
	All leading "0"s	01	 %2008D01%	
	Only the first "0"	02	 %2008D02%	
 %END%				

## 6-20 UCC/EAN 128

Read:

Format

Data digits (variable)	Check digit (optional)
------------------------	------------------------

**Check digit verification:** The check digit is made as the sum module 103 of all data digits.



**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

**Truncate leading zeros:** Refer to Truncate leading zeros of Code 128.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2501M%	Disable	00	 %2501D00%	N/A
	Enable	01*	 %2501D01%	
Check digit verification  %2502M%	Disable	00	 %2502D00%	N/A
	Enable	01*	 %2502D01%	
Check digit trans.  %2503M%	Disable	00*	 %2503D00%	
	Enable	01	 %2503D01%	
Max. code length  %2504M%	00-99	00-99		N/A
		00*	 %2504D00%	
Min. code length  %2005M%	00-99	00-99		
		01*	 %2505D01%	
Code ID setting  %2506M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<K>*	 %2506H4B%	
Insert group selection  %2507M%	00-66	00-66		N/A
		00*	 %2507D00%	
Truncate leading zeros  %2508M%	Disable	00*	 %2508D00%	N/A
	All leading "0"s	01	 %2508D01%	
	Only the first "0"	02	 %2508D02%	
 %END%				

## 6-21 ISBT 128

Read:

Format

Data digits (variable)	Check digit (optional)
------------------------	------------------------



















**Check digit verification:** The check digit is made as the sum module 103 of all data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %3301M%	Disable	00	 %3301D00%	ISBT Concatenation
	Enable	01*	 %3301D01%	
Check digit verification  %3302M%	Disable	00	 %3302D00%	N/A
	Enable	01*	 %3302D01%	
Check digit trans.  %3303M%	Disable	00*	 %3303D00%	
	Enable	01	 %3303D01%	
Max. code length  %3304M%	00-99	00-99		N/A
		00*	 %3304D00%	
Min. code length  %3305M%	00-99	00-99		N/A
		01*	 %3305D01%	
Code ID setting  %3306M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<K>*	 %3306H4B%	
Insert group selection  %3307M%	00-66	00-66		N/A
		00*	 %3307D00%	
 %END%				

## 6-22 Code 93

Read:

Format

Data digits (variable)	2 Check digit (optional)
------------------------	--------------------------



















**Check digit verification:** The check digit is made as the sum module 47 of all data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2101M%	Disable	00	 %2101D00%	Code 93
	Enable	01*	 %2101D01%	
Check digit verification  %2102M%	Disable	00	 %2102D00%	N/A
	Enable	01*	 %2102D01%	
Check digit trans.  %2103M%	Disable	00*	 %2103D00%	
	Enable	01	 %2103D01%	
Max. code length  %2104M%	00-99	00-99		Code 93 Message Length
		00*	 %2104D00%	
Min. code length  %2105M%	00-99	00-99		
		01*	 %2105D01%	
Code ID setting  %2106M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<L>*	 %2106H4C%	
Insert group selection  %2107M%	00-66	00-66		N/A
		00*	 %2107D00%	
 %END%				

## 6-23 Code 11

Read:

Format

Data digits (variable)	Check digit 1 (optional)	Check digit 2 (optional)
------------------------	--------------------------	--------------------------















**Check digit verification:** The check digit is made as the sum module 11 of all data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2201M%	Disable	00*	 %2201D00%	Code 11
	Enable	01	 %2201D01%	
Check digit verification  %2202M%	Disable	00	 %2202D00%	Code 11 Check Digit
	1 digit	01*	 %2202D01%	
Check digit trans.  %2203M%	Disable	00*	 %2203D00%	
	Enable	01	 %2203D01%	
Max. code length  %2204M%	00-99	00-99		Code 11 Message Length
		00*	 %2204D00%	
Min. code length  %2205M%	00-99	00-99		
		01*	 %2205D00%	
Code ID setting  %2206M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<V>*	 %2206H56%	
Insert group selection  %2207M%	00-66	00-66		N/A
		00*	 %2207D00%	
 %END%				

## 6-24 MSI/Plessey

Read:

Format

Data digits (variable)	Check digit 1 (optional)	Check digit 2 (optional)
------------------------	--------------------------	--------------------------



















**Check digit verification:** The MSI/Plessey has one or two optional check digits. There are three methods of verifying check digits, i.e. Mod10, Mod10/10 Mod11/10. The check digit1 and check digit 2 will be calculated as the sum module 10 or 11 of the data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2301M%	Disable	00*	 %2301D00%	MSI
	Enable	01	 %2301D01%	
Check digit verification  %2302M%	Disable	00*	 %2302D00%	MSI Check Character
	1 digit (mod 10)	01	 %2302D01%	
Check digit trans.  %2303M%	Disable	00*	 %2303D00%	
	Enable	01	 %2303D01%	
Max. code length  %2304M%	00-99	00-99		MSI Message Length
		00*	 %2304D00%	
Min. code length  %2305M%	00-99	00-99		
		01*	 %2305D00%	
Code ID setting  %2306M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<O>*	 %2306H4F%	
Insert group selection  %2307M%	00-66	00-66		N/A
		00*	 %2307D00%	
 %END%				

## 6-25 UK/Plessey

Read:

Format

Data digits (variable)	2 Check digits (optional)
------------------------	---------------------------



















**Check digit verification:** The UK/Plessey has one or two optional check digits. The check digit 1 and check digit 2 will be calculated as the sum module 10 or 11 of the data digits.

**Check digit trans.:** By setting Enable, check digit will be transmitted.

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2401M%	Disable	00*	 %2401D00%	N/A
	Enable	01	 %2401D01%	
Check digit verification  %2402M%	Disable	00	 %2402D00%	N/A
	Enable	01*	 %2402D01%	
Check digit trans.  %2403M%	Disable	00*	 %2403D00%	
	Enable	01	 %2403D01%	
Max. code length  %2404M%	00-99	00-99		N/A
		00*	 %2404D00%	
Min. code length  %2405M%	00-99	00-99		N/A
		01*	 %2405D01%	
Code ID setting  %2406M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<U>*	 %2406H55%	
Insert group selection  %2407M%	00-66	00-66		N/A
		00*	 %2407D00%	
 %END%				



## 6-26 China Post

Read:













Format

11 Data digits

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code id setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2601M%	Disable	00	 %2601D00%	China Post
	Enable	01*	 %2601D01%	
Max. code length  %2604M%	00-99	00-99		N/A
		11*	 %2604D11%	
Min. code length  %2605M%	00-99	00-99		
		11*	 %2605D11%	
Code ID setting  %2606M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<T>*	 %2606H54%	
Insert group selection  %2607M%	00-66	00-66		N/A
		00*	 %2607D00%	
 %END%				

## 6-27 GS1 DataBar (GS1 DataBar Truncated)

GS1 DataBar Truncated is structured and encoded the same as the GS1 DataBar except that its height is reduced to a 13 modules minimum; while GS1 DataBar should have a height greater than or equal to 33 modules.

**Read:**

Format

16 Data digits












**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

**Conversion**

**UCC/EAN 128-** Refer to Code ID transmission of String transmission, ]Cm will be identified as AIM ID.

**UPC-A or EAN-13-** Barcode beginning with a single zero as the first digit has the leading “010” stripped and the barcode reported as EAN-13. Barcode beginning with two or more zeros but not six zeros has the leading “0100” stripped and the barcode reported as UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2701M%	Disable	00	 %2701D00%	GS1 DataBar Omnidirectional
	Enable	01*	 %2701D01%	
Code ID setting  %2702M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<R>*	 %2702H52%	
Insert group selection  %2703M%	00-66	00-66		N/A
		00*	 %2703D00%	
Conversion  %2704M%	None	00*	 %2704D00%	N/A
	UCC/EAN 128	01	 %2704D01%	
	UPC-A or EAN-13	02	 %2704D02%	

  
 %END%

## 6-28 GS1 DataBar Limited

Read:













Format

16 Data digits

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

**Conversion-** Refer to Conversion of GS1 DataBar.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2801M%	Disable	00	 %2801D00%	GS1 DataBar Limited
	Enable	01*	 %2801D01%	
Code ID setting  %2802M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<R>*	 %2802H52%	
Insert group selection  %2803M%	00-66	00-66		N/A
		00*	 %2803D00%	
Conversion  %2804M%	None	00*	 %2804D00%	N/A
	UCC/EAN 128	01	 %2804D01%	
	UPC-A or EAN-13	02	 %2804D02%	
 %END%				

## 6-29 GS1 DataBar Expanded

Read:
















Format

Data digits (variable)

Code id setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Conversion- Refer to Conversion of GS1 DataBar.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %2901M%	Disable	00	 %2901D00%	GS1 DataBar Expanded
	Enable	01*	 %2901D01%	
Max. code length  %2902M%	00-99	00-99		GS1 DataBar Expanded Message Length
		00*	 %2902D00%	
Min. code length  %2903M%	00-99	00-99		
		01*	 %2903D01%	
Code ID setting  %2904M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<R>*	 %2904H52%	
Insert group selection  %2905M%	00-66	00-66		N/A
		00*	 %2905D00%	
Conversion  %2906M%	None	00*	 %2906D00%	N/A
	UCC/EAN 128	01	 %2906D01%	
 %END%				

## 6-30 China Finance

*Note: this type of barcode is not Omni-Directionally decodable. The encodable character set includes numeric 0 to 9. Among the symbol of 0 to 9, 0 to 2, 4 and 9, 5 and 8, 6 and 7, have the symmetrical pattern; the pattern of 1 and 3 is symmetrical.*

**Read:**

Format

10 Data digits

**Max./Min. code length:** Refer to Max./Min. code length of Code 39.















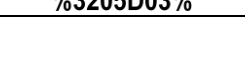
**Check digit verification:** The check digit is calculated as the sum module 10 of the data digits.





















**Leading character 5/6/7/8/9 converted to A/B/C/D/E:** By setting, leading character 5/6/7/8/9 can be converted to A/B/C/D/E.

**Leading character assignment:** By setting, only barcode with the assigned leading character can be output.

**Code id setting:** Refer to Code ID setting of UPC-A.

**Insertion group selection:** Refer to Insertion group selection of UPC-A.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %3201M%	Disable	00	 %3201D00%	N/A
	Enable	01*	 %3201D01%	
Max. code length  %3202M%	00-99	00-99		N/A
		10*	 %3202D10%	
Min. code length  %3203M%	00-99	00-99		N/A
		10*	 %3203D10%	
Check digit verification  %3204M%	Disable	00*	 %3204D00%	N/A
	Reserved	01	 %3204D01%	
Leading character 5/6/7/8/9 converted to A/B/C/D/E  %3205M%	Disable	00	 %3205D00%	N/A
	Enable	01*	 %3205D01%	
	Only 5 converted to A	02	 %3205D02%	
	Only 6 converted to B	03	 %3205D03%	





	Only 7 converted to C	04	 %3205D04%	
	Only 8 converted to D	05	 %3205D05%	
	Only 9 converted to E	06	 %3205D06%	
Leading character assignment  %3206M%	Disable	00	 %3206D00%	N/A
	Assigned to 0	01	 %3206D01%	
	Assigned to 5(A)	02	 %3206D02%	
	Assigned to 6(B)	03	 %3206D03%	
	Assigned to 7(C)	04	 %3206D04%	
	Assigned to 8(D)	05	 %3206D05%	
	Assigned to 9(E)	06	 %3206D06%	
	Assigned to 1	07	 %3206D07%	
	Assigned to 2	08	 %3206D08%	
	Assigned to 3	09	 %3206D09%	
	Assigned to 4	10	 %3206D10%	
Code ID setting  %3207M%	00-FF <sub>16</sub> (ASCII)	00-FF <sub>16</sub>		N/A
		<Y>*	 %3207H59%	
Insert group selection  %3208M%	00-66	00-66		N/A
		00*	 %3208D00%	
 %END%				

# 6-31 PDF417

Read:

Format

Data digits (variable)





ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %3001M%	Disable	00	 %3001D00%	PDF417
	Enable	01*	 %3001D01%	
 %END%				

# 6-32 MicroPDF417

Read:

Format

Data digits (variable)

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %3101M%	Disable	00*	 %3101D00%	MicroPDF417
	Enable	01	 %3101D01%	
 %END%				







# 6-33 QR Code

Read:

Format

Data digits (variable)





ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %4001M%	Disable	00	 %4001D00%	QR Code
	Enable	01*	 %4001D01%	
 %END%				

# 6-34 Data Matrix

Read:

Format

Data digits (variable)





ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %4101M%	Disable	00	 %4101D00%	Data Matrix
	Enable	01*	 %4101D01%	
 %END%				

# 6-35 Han Xin Code

Read:

Format

Data digits (variable)


ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Read  %4201M%	Disable	00	 %4201D00%	Chinese Sensible (Han Xin) Code
	Enable	01*	 %4201D01%	
 %END%				


# 6-36 Aztec Code

Read:


Format

Data digits (variable)


ME series			56 series
Multiple-scan setting			Related para. name
Option barcode	Option	Alpha. entry	
<div>Read</div> <div></div> <div>%4301M%</div>	Disable	00*	Aztec Code
	Enable	01	



%END%



%4301D00%



%4301D01%

## 6-37 G1-G6 & C1-C2 & FN1 substitution string setting

Format of barcode data transmission:

Prefix	Code name	Preamble	Code ID	Code length	Code data	Code ID	Postamble	Suffix
--------	-----------	----------	---------	-------------	-----------	---------	-----------	--------

**Suffix string setting:**

The <enter> key is represented indifferent ASCII when it is applied by different OS. For a Windows/DOS OS, <enter> is represented as <CR><LF> (0x0D 0x0A); for an Apple MAC OS, <enter> is represented as <CR> (0x0D); for a Linux/Unix OS, <enter> is represented as <LF> (0x0A).

**Prefix/Suffix string setting: &Preamble/Postamble string setting:**

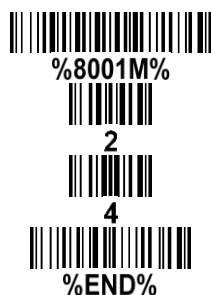
They are appended to the data automatically when a barcode is decoded.

Example: Add a symbol of “\$” as a prefix for all symbols.

Steps:

- 1) Scan the option barcode of **Prefix string setting**: %8001M%.
- 2) Use the ASCII table to find the value of \$ → 24.
- 3) Scan 2 and 4.
- 4) Scan %END% barcode.

Scanning steps: Scan the following barcodes in order.



**Insert G1/G2/G3/G4 string setting:** The image engine offers 4 positions and 4 character strings to insert among a symbol.

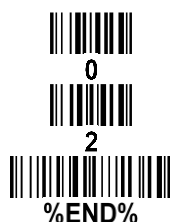
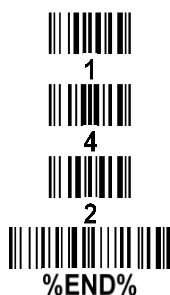
Example: Set **G1 string** to be “AB”.

Original code data	“1 2 3 4 5 6”
Output code data	“1 2 A B 3 4 5 6”

Steps:

- 1) Scan the option barcode of **Insert G1 string setting**: %8005M%.
- 2) Use the ASCII table to find the value of A →41, B→42
- 3) Scan 4, 1 and 4, 2.
- 4) Scan %END% barcode.
- 5) Refer to the chapter of “G1-G4 string position & Code ID position”.
- 6) Refer to the chapter of “Hand-held scan & some global settings”.





Testing barcode:



**FN1 substitution string setting:** The FN1 character (0x1D) in an UCC/EAN128 barcode, or a Code 128 barcode, or a GS1 DataBar barcode can be substituted with a defined string.

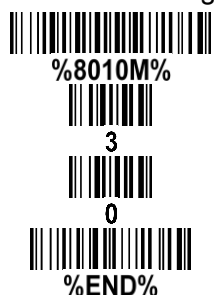
**Truncate leading G5 string setting:** by setting, a defined leading character or string can be truncated. Also a single character can be un-defined.

**Repeat of a G5 character setting:** While G5 is set as a single defined or un-defined character, G5 can also be set to be repeated. This setting is ignored when the truncated number is more than the barcode data characters. The option of “FF” for this setting is not active while the option of **Truncate leading G5 string setting** is “00”.

Example: Truncate all leading zeros for all symbols.

Original code data	“0 0 0 1 2 3 4 5 6”
Output code data	“1 2 3 4 5 6”

Steps: scan the following data in order.



Testing barcode:



**Truncate ending G6 string setting:** By setting, a defined ending character or sting can be truncated. Also a single character can be undefined.

**Repeat of a G6 character setting:** while G6 is set as a single defined or undefined character, G7 can also be set to be repeated. This setting is ignored when the truncated number is more than the barcode data characters. The option of “FF” for this setting is not active while the option of **Truncated ending G6 string setting** is “00”.

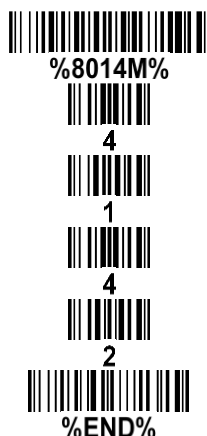
**Single character C1/C2 replacement:** By setting, a defined character in the data string can be replaced by another defined character. The C1 and C2 replacement are applied simultaneously.

Example: Replace all the “A” character in a data string to be “B” character.

Original code data	“1 2 3 A 5 A”
--------------------	---------------
















Output code data	"1 2 3 B 5 B"
------------------	---------------


















Steps: scan the following barcodes in order. The ASCII value for "A" is 41, and the ASCII value for "B" is 42.



Testing barcode:



ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Prefix string setting  %8001M%	0-22 characters	00-FF <sub>16</sub>		N/A
	None	00*	 %8001H00%	
Suffix string setting  %8002M%	0-22 characters	00-FF <sub>16</sub>		
	<ENTER>	0D0A*		
Preamble string setting  %8003M%	0-22 characters	00-FF <sub>16</sub>		
	none	00*	 %8003H00%	
Postamble string setting  %8004M%	0-22 characters	00-FF <sub>16</sub>		
	none	00*	 %8004H00%	
Insert G1 string setting  %8005M%	0-22 characters	00-FF <sub>16</sub>		
	none	00*	 %8005H00%	
Insert G2 string setting  %8006M%	0-22 characters	00-FF <sub>16</sub>		
	none	00*	 %8006H00%	
Insert G3 string setting  %8007M%	0-22 characters	00-FF <sub>16</sub>		
	none	00*	 %8007H00%	
Insert G4 string setting  %8008M%	0-22 characters	00-FF <sub>16</sub>		
	none	00*	 %8008H00%	
FN1 substitution string	0-4 characters	00-FF <sub>16</sub>		

setting  %8009M%	<SP>	20*	 %8009H20%	
Truncate leading G5 string setting  %8010M%	A un-defined character	00	 %8010H00%	
	1-22 defined characters	01-7F <sub>16</sub>		
	<0>	30*	 %8010H30%	
Repeat of a G5 character setting  %8011M%	Once	01*	 %8011H01%	
	Defined times	01-22		
	Un-defined times (All)	FF	 %8011HFF%	
Truncate ending G6 string setting  %8012M%	A un-defined character	00	 %8012H00%	
	1-22 defined characters	01-7F <sub>16</sub>		
	<0>	30*	 %8012H30%	
Repeat of a G6 character setting  %8013M%	Once	01*	 %8013H01%	
	Defined times	01-22		
	Un-defined times (All)	FF	 %8013HFF%	
Single character C1 replacement  %8014M%	<0000>	0000*		
		0000-FFFF <sub>16</sub>		
Single character C2 replacement  %8015M%	<0000>	0000*		
		0000-FFFF <sub>16</sub>		
 %END%				



## 6-38 G1-G4 string position & Code ID position













### Format of barcode data transmission

Prefix	Code name	Preamble	Code ID	Code length	Code data	Code ID	Postamble	Suffix
--------	-----------	----------	---------	-------------	-----------	---------	-----------	--------

**Insert G1/G2/G3/G4 string position:** The image engine offers 4 positions to insert strings among the symbol. In case of the insertion position is greater than the length of the symbol, the insertion of string is not affected.

### Code ID position:

It is allowed to select different positions of code ID placement.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Insert G1 string position  %8101M%	00-99	00-99		N/A
		00*	 %8101D00%	
Insert G2 string position  %8102M%	00-99	00-99		
		00*	 %8102D00%	
Insert G3 string position  %8103M%	00-99	00-99		
		00*	 %8103D00%	
Insert G4 string position  %8104M%	00-99	00-99		
		00*	 %8104D00%	
Code ID position  %8105M%	Before code data	00*	 %8105D00%	
	After code data	01	 %8105D01%	
 %END%				

## 6-39 String transmission

*Note: The information in this chapter is closely related to the chapter of “String Setting”.*

### Format of barcode data transmission

Prefix	Code name	Preamble	Code ID	Code length	Code data	Code ID	Postamble	Suffix
--------	-----------	----------	---------	-------------	-----------	---------	-----------	--------

#### Prefix transmission:

By setting Enable, prefix will be appended before the data transmitted.

#### Suffix transmission:

By setting Enable, suffix will be appended before the data transmitted.

#### Code name transmission:

By setting Enable, code name will be transmitted before code data.

#### Preamble transmission:

By setting Enable, preamble will be appended before the data transmission

#### Postamble transmission:

By setting Enable, Postamble will be appended after the data transmission.

#### Code ID transmission:

By setting Enable, Code ID can be transmitted in the format of either Proprietary ID or AIM ID. Refer to the section of “Default setting for each barcode”.

#### Code length transmission:

The length of code data string can be transmitted before the code data transmitted when Enable is selected. The length is represented by a number with two digits.

#### Case conversion:

The characters within code data or the whole output string can be set in either upper case or lower case.

#### FN1 substitution transmission:

The image engine supports a FN1 substitution feature. The replacement string of FN1 can be chosen by user (see chapter of “G1-G6 & FN1 substitution string setting”).

#### All-non-printable-character string transmission with string setting:








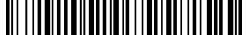



















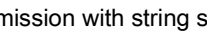


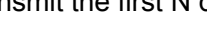
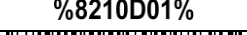
By setting Enable, all string settings, e.g. **Preamble transmission** or **Insert G1 string setting**, are active for an all-non-printable-character string. Here a non-printable character means a character with ASCII value between 0x00 to 0x1F.



#### Transmit the first N data characters only:


The image engine supports to only transmit the first N data characters of a barcode. The number of N can be set as a digit between 1 and 99.

#### Transmit the last N data characters only:

The image engine supports to only transmit the last N data characters of a barcode. The number of N can be set as a digit between 1 and 99.

ME series				56 series
Multiple-scan setting			Single-scan setting	Related para. name
Option barcode	Option	Alpha. entry		
Prefix transmission  %8201M%	Disable	00*	 %8201D00%	N/A
	Enable	01	 %8201D01%	
Suffix transmission  %8202M%	Disable	00*	 %8202D00%	
	Enable	01	 %8202D01%	
Code name transmission  %8203M%	Disable	00*	 %8203D00%	
	Enable	01	 %8203D01%	
Preamble transmission  %8204M%	Disable	00*	 %8204D00%	
	Enable	01	 %8204D01%	
Postamble transmission  %8205M%	Disable	00*	 %8205D00%	
	Enable	01	 %8205D01%	
Code ID transmission  %8206M%	Disable	00*	 %8206D00%	
	Enable	01	 %8206D01%	
Code length transmission  %8207M%	Disable	00*	 %8207D00%	
	Enable	01	 %8207D01%	
Case conversion  %8208M%	Disable	00*	 %8208D00%	
	Enable	01	 %8208D01%	
FN1 substitution transmission  %8209M%	Disable	00*	 %8209D00%	
	Enable	01	 %8209D01%	
All-non-printable-character string transmission with string setting  %8210M%	Disable	00*	 %8210D00%	
	Enable	01	 %8210D01%	
Transmit the first N data characters only  %8211M%	All	99*	 %8211D99%	
	01-99			

Transmit the last N data characters only  %8212M%	All	99*	 %8212D99%	
	01-99			

  
 %END%

## 6-40 Return default parameters & firmware version



%%%DEF

### WARNING: Load ME series Defaults

If you wish to return the image engine to all the factory default settings as ME series, scan the barcode above.



%56DEF

### WARNING: Load 56 Series Defaults

If you wish to return the image engine to all the factory default settings as 56 series, scan the barcode above.



%%WCDE

### Write to Customer Defaults

Write current parameter settings to the customer default settings.



%%RSDE

### Restore ME Series Customer Defaults

Restore the customer default settings to current settings. If failed, restore the ME series default settings.



%%%VER

### Firmware Version list

If you wish to display the firmware version, scan the barcode above.

## 6-41 Enable & Disable Barcode-configuration

Note: the setting of the below two barcodes does affect the operation of scanning the barcodes in the chapter of “6-40 Return default parameters & firmware version”.



### Enable Barcode-configuration

The default status of the image engine is enabled to scan configuration barcode.



### Disable Barcode-configuration

Scan the above barcode to disable scanning configuration barcode except **Enable Barcode-configuration** and **Disable Barcode-configuration**. Then the image engine will not operate configuration by scanning configuration barcodes, but the data string of configuration barcode will be displayed.

## 7 Serial Communication Interface

Note: The SCI programming commands can be used in place of the programming barcodes.

All communication between the image engine and host occurs over the hardware interface lines using the Serial Communication Interface (SCI). The SCI can

- ✚ Maintain a bi-directional communication interface between the image engine and the host.
- ✚ Allow the host to send commands to access the settings of the image engine.
- ✚ Passes decoded data from the image engine to the host.

In this section, the programming and query command syntax is described and examples of using commands to access the image engine are presented.

## 7-1 Programming command syntax

### Format

Prefix	Parameter index	Numeral system	Value	Storage
--------	-----------------	----------------	-------	---------

#### Prefix:

<SYN> 'M' <CR> (ASCII 0x16, 0x4D, 0x0D)

#### Parameter index:

Each parameter has a unique 4-digit index which is similar to the option barcode listed in the section of "Parameter Menus", except that there is no leading '%' and ending "M%" in the **Parameter index**.

#### Numeral system:

This is used by the image engine to identify the numeral system of **Value**. 'D' indicates a decimal number while 'H' indicates a hexadecimal number.

#### Value:

This is generally a 2-digit number except for string-setting parameters, e.g. **Prefix string setting**.

#### Storage:

A single character that specifies the storage area to which the command is applied to. An exclamation point '!' performs the command's operation on the volatile memory. A period '.' performs the command's operation on the device's non-volatile memory. Using '!' only when the setting needs to function through a single power cycle.



## 7-2 Query command syntax

### Format

Prefix	Parameter index	^/?/*	Storage
--------	-----------------	-------	---------

#### Prefix:

Refer to **Prefix** in “Programming command syntax”.

#### Parameter index:

Refer to **Parameter index** in “Programming command syntax”.

#### ^/?/\*:

Several special characters can be used to query the image engine about its settings.

^	Read the default value for the parameter
?	Read the current value for the setting.
*	What is the range of possible values for the parameter?

#### Storage:

Refer to **Storage** in “Programming command syntax”.

## 7-3 Responses

The image engine responds to a serial command with one of three responses:

<ACK>	A valid command which has been processed.
<ENQ>	An invalid index command.
<NAK>	A command with a valid parameter index and an invalid value.

## 7-4 Examples of setting and query commands

The following examples illustrate how a command should be constructed and transmitted to the image engine.

### Example 1. Append prefix “1N” to all symbols

1. Set Prefix string setting to be “1N”.

1) Look up the parameter table in the section of “Parameter Menus” and the ASCII table in the section of “ASCII table”. The target parameter index is “8001”.

2) Its numeral system is hexadecimal, indicated by ‘H’.

3) Using the ASCII table, “1N” is translated into “314E”.

4) Put all above parts and then append a prefix and a storage indicator ‘.’, thus, “<SYN>M<CR>8001H314E.” is the command.

5) Upon receiving command, image engine response with “8001H314E<ACK>”.

**Host** <SYN>M<CR>8001H314E.

**Image Engine** 8001H314E<ACK>

2. Enable Prefix transmission.

1) Look up the parameter table in the section of “Parameter Menus” and the ASCII table in the section of “ASCII table”. The target parameter index is represented by: “8201”.

2) The numeral system is decimal: ‘D’.

3) The value is translated as: ‘0’ and ‘1’.

4) Put all above parts and then append a storage indicator ‘.’ to construct the command: “<SYN>M<CR>8201D01.”

5) Upon receiving command, image engine response with “8201D01<ACK>”.

**Host:** <SYN>M<CR>8201D01.

**Image Engine:** 8201D01<ACK>

### Example 2. Query current trigger mode

1) Look up the parameter table in the section of “Parameter Menus” and the ASCII table in the section of “ASCII table”. The target parameter index is “0401”.

2) The numeral system is decimal, thus, ‘D’ is used.

3) The value field is filled with ‘?’.

4) Put all above parts and then append a storage indicator ‘.’ to construct the command: “<SYN>M<CR>0401D?.”. Run the ISEM, enter the command and sent it to the image engine.

**Host:** <SYN>M<CR>0401D?.

**Image Engine:** 0401D01<ACK>

## 7-5 Start Decode & Stop Decode

### Start Decode

#### Format

<SYN>	T	<CR>
-------	---	------

Activate the image engine to scan barcodes.

### Stop Decode

#### Format

<SYN>	U	<CR>
-------	---	------

Deactivate the image engine to scan barcodes.

## 7-6 Return default parameters & firmware revision

### Load ME Series Defaults

#### Format

<SYN>M<CR>	%%%DEF	.
------------	--------	---

Set the parameters to the ME series default values.

### Load 56 Series Defaults

#### Format

<SYN>M<CR>	%56DEF	.
------------	--------	---

Set the parameters to the 56 series default values.

### Restore ME Series Customer Defaults

#### Format

<SYN>M<CR>	%%RSDF	.
------------	--------	---

Restore customer default settings to current settings. If failed, restore ME default settings.

### Write to Customer Defaults

#### Format

<SYN>M<CR>	%%WCDF	.
------------	--------	---

Write the current parameter setting to the customer default settings.

### Firmware Version List

#### Format

<SYN>M<CR>	%%%VER	.
------------	--------	---

Request the software revision string from the image engine.

## 7-7 Get Image

### Original Image Ship

#### Format

<SYN>M<CR>	%OISHP	.
------------	--------	---

An image is taken whenever the scan operation is done. The last image is always stored in memory. The original image can be “shipped” by using the `%OISHP` command.

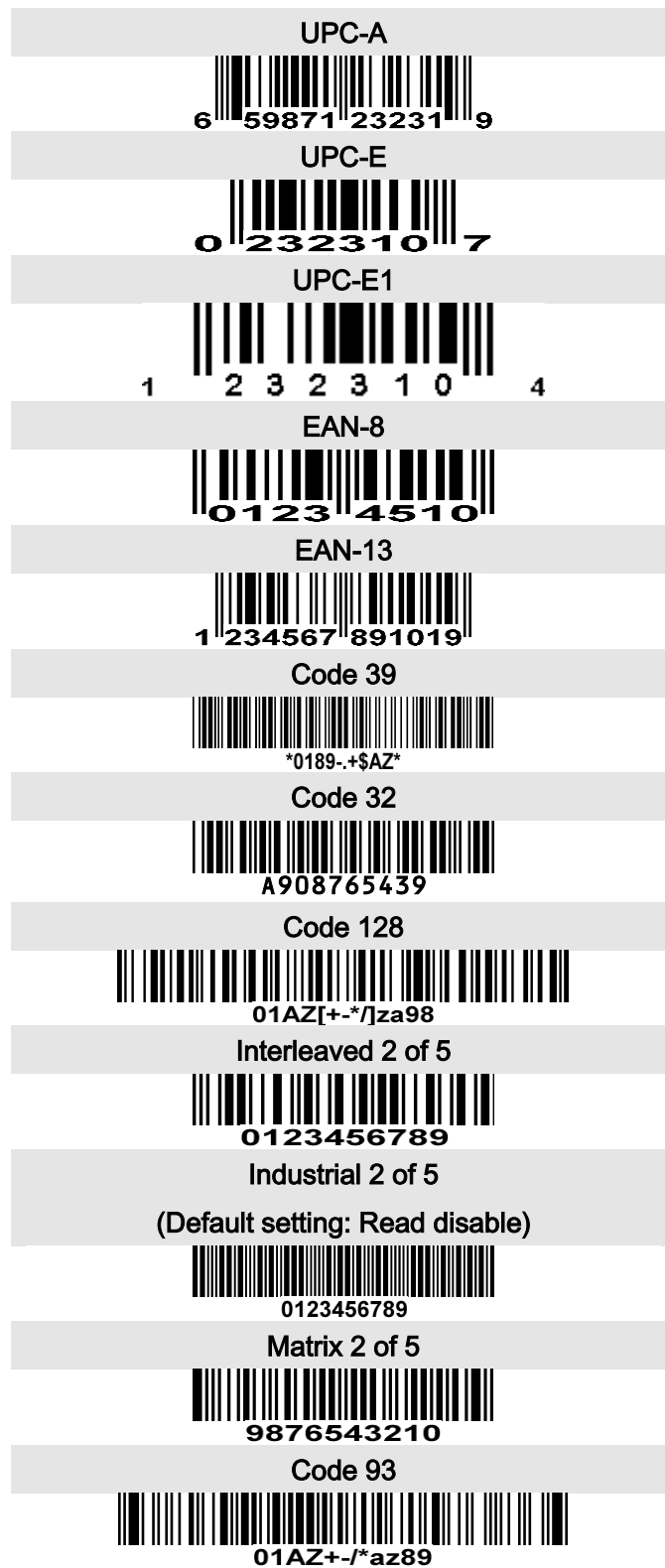
### Down-sampled Image Ship

#### Format

<SYN>M<CR>	%DISHP	.
------------	--------	---

An image is taken whenever the scan operation is done. The last image is always stored in memory. The down-sampled image can be “shipped” by using the `%DISHP` command.

## 8 Test charts



UCC/EAN 128



01AZ[]+-az54

Code 11

(Default setting: Read disable)



123456789-0

MSI/Plessey

(Default setting: Read disable)



0123456789

UK/Plessey



01ABEF89

ISBN/ISSN



9 780194 315104

China Post



54789632145

GS1 DataBar (GS1 DataBar Truncated)



(01) 12345678901231

GS1 DataBar Limited



(01) 09876543210128

GS1 DataBar Expanded



Ab\_09+yZ



PDF417



12=890ab-+%xyz

MicroPDF417



23+-mdo

QR code



1234567890ABCD-+()&\*%^@# \$!XYZ

Data Matrix



123890abc-+&\*%^!mdo

## 9 ASCII table

H L	for keyboard wedge		for RS-232	
	0	1	0	1
0	Null		NUL	DLE
1	Up	F1	SOH	DC1
2	Down	F2	STX	DC2
3	Left	F3	ETX	DC3
4	Right	F4	EOT	DC4
5	PgUp	F5	ENQ	NAK
6	PgDn	F6	ACK	SYN
7		F7	BEL	ETB
8	Bs	F8	BS	CAN
9	Tab	F9	HT	EM
A		F10	LF	SUB
B	Home	Esc	VT	ESC
C	End	F11	FF	FS
D	Enter	F12	CR	GS
E	Insert	Ctrl+	SO	RS
F	Delete	Alt+	SI	US

Notes: The 2nd and the 3rd columns above are used for keyboard wedge only.

H L	2	3	4	5	6	7
0	SP	0	@	P	`	p
1	!	1	A	Q	a	q
2	"	2	B	R	b	r
3	#	3	C	S	c	s
4	\$	4	D	T	d	t
5	%	5	E	U	e	u
6	&	6	F	V	f	v
7	'	7	G	W	g	w
8	(	8	H	X	h	x
9	)	9	I	Y	i	y
A	*	:	J	Z	j	z
B	+	;	K	[	k	{
C	,	<	L	\	l	
D	-	=	M	]	m	}
E	.	>	N	^	n	~
F	/	?	O	_	o	DEL

Example: ASCII "A" = "41".

## 10 Barcode representing non-printable character

Notes to make the following barcode:

- 1 According to different barcode printing software, the method of printing following barcode is different.
- 2 If using CODESOFT software, firstly read the information through “Help→Index→Code128→Special input syntax”. Also refer to ASCII table. For example, if we wish to make “F1” barcode, select “code128”, then select “CODE A” type, and input “{DOC1}” as data.



Up ↑



Down ↓



Left ←



Right →



Page Up



Page Down



Backspace



Tab



Home



End



Enter



Insert



Delete



F1



F2



F3



F4



F5



F6



F7



F8



F9



F10



Esc



F11



F12

## 11 Configuration alphanumeric entry barcode

