MINDEO

# MP718 Image Platform

## User Manual

Version: MP718_UM_EN_V1.1.6

# NOTICE

Ensure that the optional DC adapter works at +5V, especially for the RS-232 interface cable.

1. All software, including firmware, furnished to the user is on a licensed basis.
2. The right is reserved to make changes to any software or product to improve reliability, function, or design.
3. The material in this manual is subject to change without notice.
4. A standard packing includes an image platform, a USB cable, a quick guide.
5. Optional accessories include a RS-232 cable.

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# 1 Specifications

## 1-1 Technical specifications

| | |
|---|---|
| **Dimensions** | 90.5 mm × 35.4 mm × 80.2 mm (H × W × D) |
| **Weight** | 95.3 g (without cable) |
| **Cable** | Straight 2.0 m |
| **Connector Type** | RJ-45 phone jack connector |
| **Case Material** | ABS |
| **Indicator** | Beeper, LED |
| **Interface** | RS-232, USB Keyboard, USB virtual COM |
| **Programming Method** | Manual (reading special barcode) |
| **Program Upgrade** | Online |
| **Input Voltage** | DC 5 ± 0.25 V |
| **Current** | Working: 350 mA (Max: 550 mA)； Standby: 135 mA |
| **Image Size** | 1280 × 800 pixels |
| **LED** | White LED,5000 K |
| **Motion tolerance** | 2.1 m/s |
| **Field of View** | Horizontal: 64 °, vertical: 44 ° |
| **Scanning Angle** | ±66 °, ±61 °, 360 °(Skew, Pitch, Roll) |
| **Decode Capability** | 1D:<br>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 (Discrete 2 of 5), Matrix 2 of 5, Codabar (NW7), Code 128, UCC/EAN 128 (GS1-128), ISBT 128, Code 93, Code 11 (USD-8), MSI/Plessey, UK/Plessey, China Post, GS1 DataBar (formerly RSS) variants |
| | 2D:<br>PDF417, MicroPDF417, QR Code, MicroQR Code, DataMatrix, Han Xin Code, Aztec Code, GS1 Composite |
| **Minimum Resolution** | 4 mil, 1 mil = 0.0254 mm |
| **Decoding Depth** | 4 mil Code39 (9 chars): 15 mm - 45 mm |
| | 5 mil Code39 (3 chars): 15 mm - 55 mm |
| | 10 mil Code39 (3 chars): 5 mm - 120 mm |
| | 13 mil UPC (6 chars): 5 mm - 130 mm |
| | 15 mil Code39 (1 char): 5 mm - 145 mm |
| | 20 mil Code39 (1 char): 0 mm - 210 mm |
| | 6.7 mil PDF417 (20 chars): 15 mm - 50 mm |
| | 10 mil QR (20 chars): 10 mm - 55 mm |
| | 10 mil DM (20 chars): 10 mm - 50 mm |
| | 20 mil QR (20 chars): 5 mm - 125 mm |
| **Temperature** | -10 °to 50 ℃, Operating; -30 °to 70 ℃, Storage |
| **Humidity** | 5% to 95% (non-condensing) |

| | |
|---|---|
| **Safety** | EMC: EN55032, EN55035<br>Electrical Safety: EN62368-1<br>Photobiological Safety: EN62471:2008<br>Illumination: 0~100,000 LUX |

## 1-2 Default setting for each barcode

| Code type | Read enable | Check digit verification | Check digit transmission | Min. code length | Proprietary code ID | AIM code ID |
|---|---|---|---|---|---|---|
| UPC-A | √ | √ | √ | (12)[2] | A | ]Em |
| UPC-E | √ | √ | √ | (8)[2] | D | ]Em |
| UPC-E1 | √ | √ | √ | (8)[2] | D | ] Em |
| EAN-13 | √ | √ | √ | (13)[2] | A | ]Em |
| EAN-8 | √ | √ | √ | (8)[2] | C | ] Em |
| ISBN (Bookland EAN)/ISSN[1] | √ | √ | √ | (13)[2] | B | ]Em |
| Code 39 | √ | - | - | 1 | M | ]Am |
| Interleaved 2 of 5 | √ | - | - | 6 | I | ]Im |
| Industrial 2 of 5 | - | - | - | 4 | H | ]Im |
| Matrix 2 of 5 | √ | - | - | 6 | X | ]Im |
| Codabar | √ | - | - | 4 | N | ]Fm |
| Code 128 | √ | √ | - | 1 | K | ]Cm |
| UCC/EAN 128 (GS1-128) | √ | √ | - | 1 | K | ]Cm |
| ISBT 128 | √ | √ | - | 1 | K | ]Cm |
| Code 93 | √ | √ | - | 1 | L | ]Gm |
| Code 11 | - | √ | - | 4 | V | ]Hm |
| MSI/Plessey | - | - | - | 4 | O | ]Mm |
| UK/Plessey | - | √ | - | 1 | U | ]Mm |
| China Post | √ | - | - | (11)[2] | T | ]Im |
| GS1 DataBar | √ | - | - | (16)[2] | R | ]em |
| GS1 DataBar Truncated[3] | √ | - | - | (16)[2] | R | ]em |
| GS1 DataBar Limited | √ | - | - | (16)[2] | R | ]em |
| GS1 DataBar Expanded | √ | - | - | 1 | R | ]em |
| GS1 Composite | - | - | - | - | y | ]em |
| PDF417 | √ | - | - | - | p | ]Lm |
| MicroPDF417 | - | - | - | - | p | ]Lm |
| DataMatrix | √ | - | - | - | d | ]dm |
| QR code | √ | - | - | - | q | ]Qm |
| MicroQR code | √ | - | - | - | q | ]Qm |
| Han Xin Code | - | - | - | - | h | ]Xm |
| Aztec Code | - | - | - | - | a | ]zm |

Note: [1] The settings for ISBN/ISSN and EAN-13 must be the same except the code ID.

[2] Fixed-length barcodes.

[3] The settings for GS1 DataBar Truncated and GS1 DataBar must be the same.

# 2 Getting started

## 2-1 Cable connector pin-outs descriptions

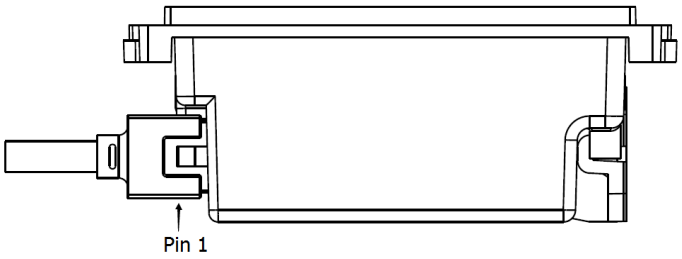



**Figure 2-1 Cable connector interface pin-outs**

| Pin | RS232 | USB |
|---|---|---|
| 1 | Power (+5V) | Power (+5V) |
| 2 | +3.3V ( for interface auto selection purpose) | +3.3V (for interface auto selection purpose) |
| 3 | Ground | Ground |
| 4 | +3.3V ( for interface auto selection purpose) | Ground (for interface auto selection purpose) |
| 5 | TxD | Reserved |
| 6 | RxD | Reserved |
| 7 | Reserved | Reserved |
| 8 | Reserved | Reserved |
| 9 | CTS | D- |
| 10 | RTS | D+ |

Note: Voltage level of all RS232 Pin-outs (RxD, TxD, CTS and RTS) is 0V for logic low and 3.3V for logic high.

## 2-2 Dimensions

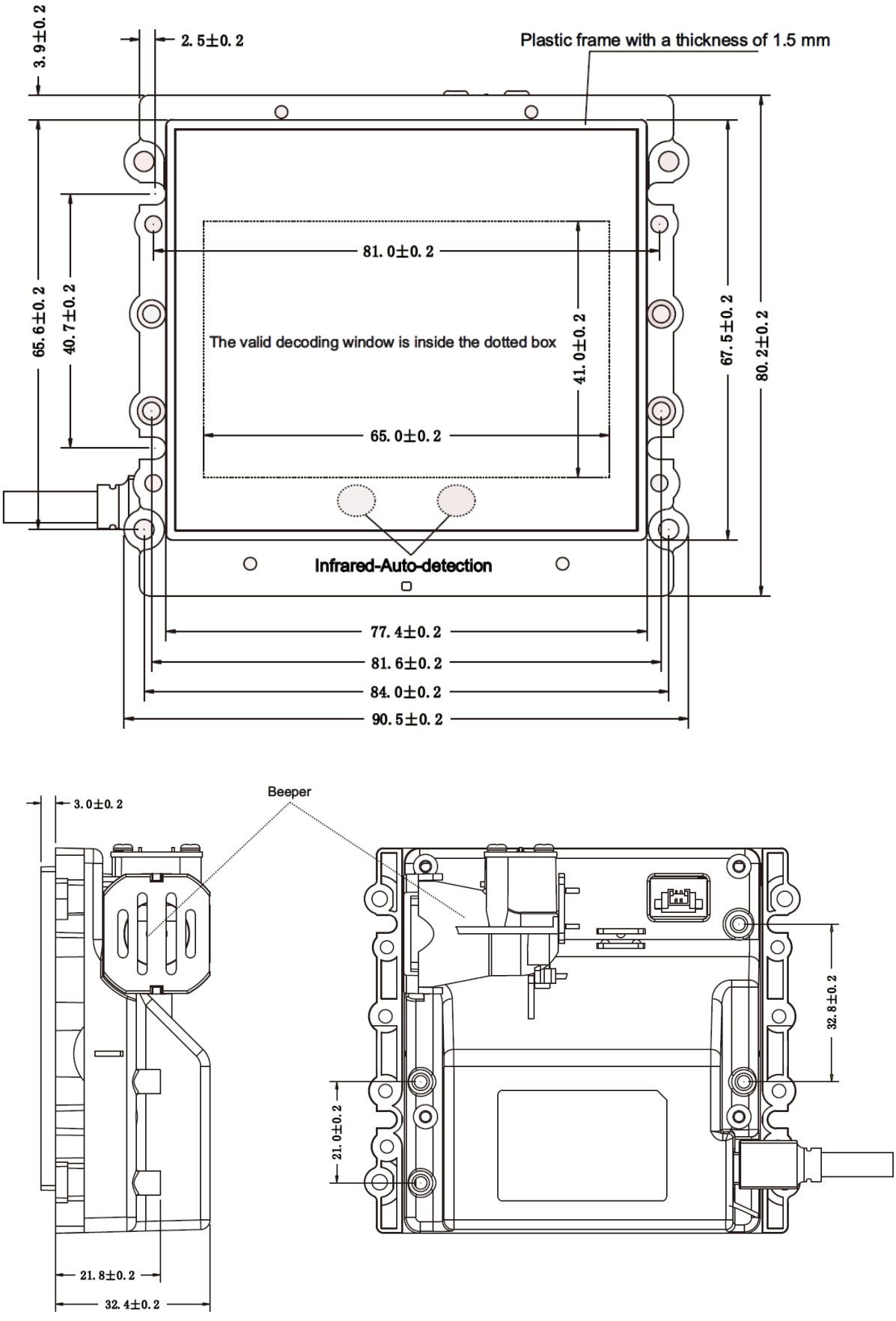



**Figure 2-2 Dimensions**

## 2-3 Field of view

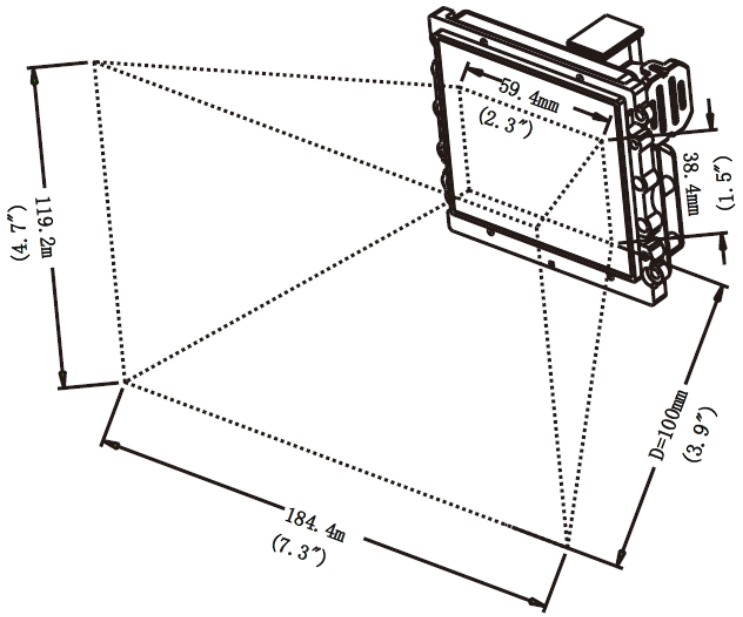



**Figure 2-3 Field of view**

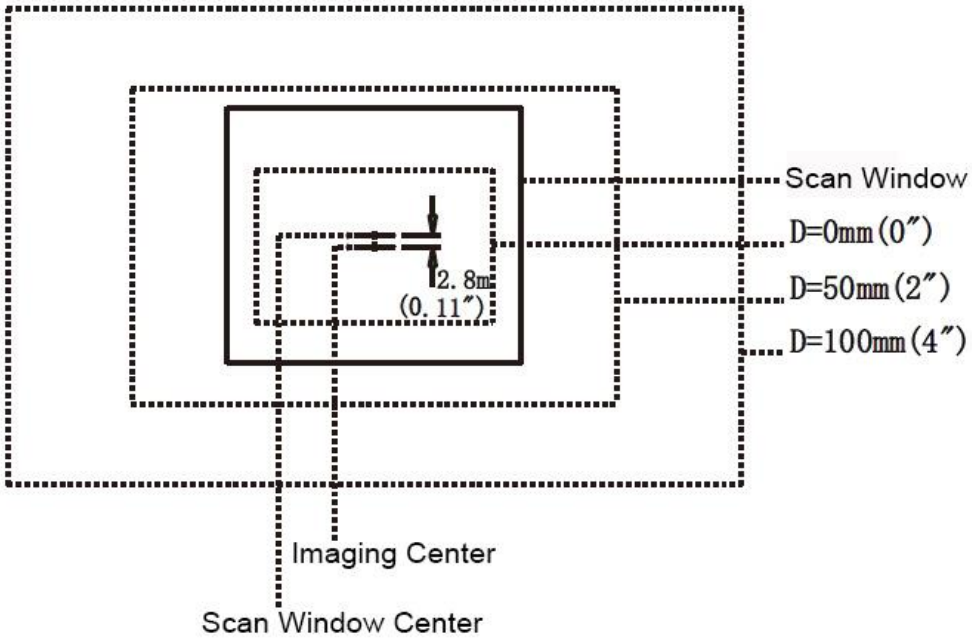



**Figure 2-4 Field of view – Front view**

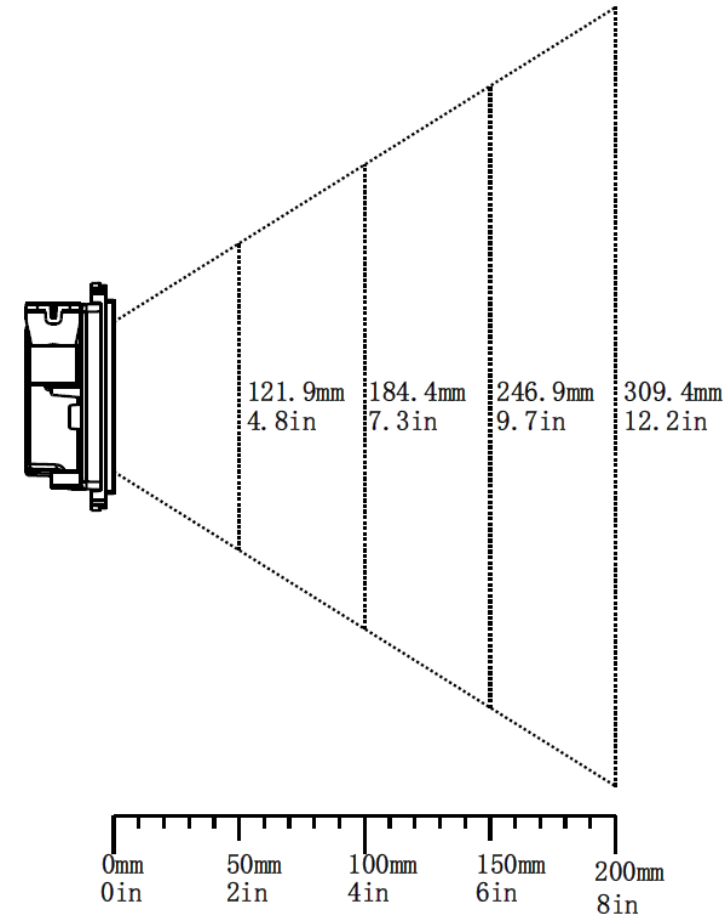



**Figure 2-5 Field of view – Horizontal**

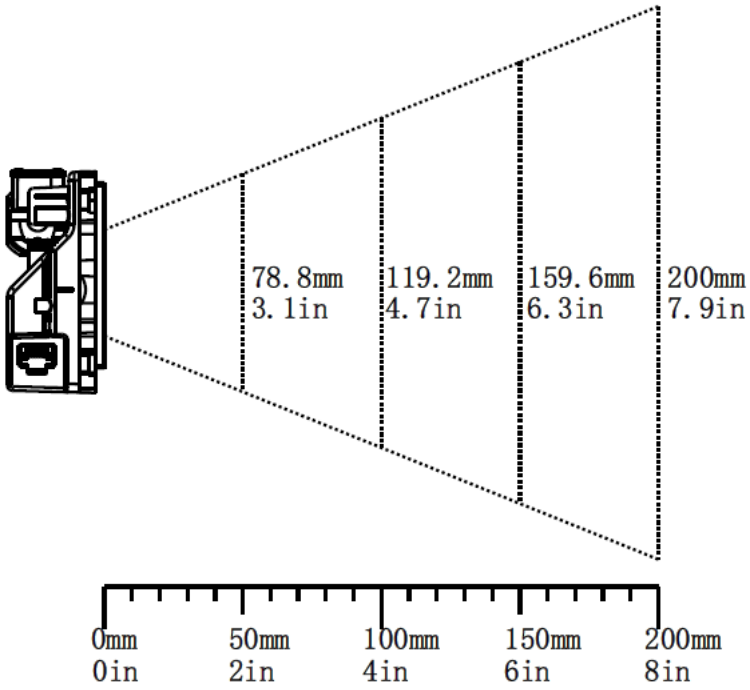



**Figure 2-6 Field of view - vertical**

## 2-4 Introduction to installation

*Note: If any of the below operation is incorrect, turn off the power immediately and check the image platform for any improper connections. Go through all steps again.*

### 2-4-1 Installation - RS-232

1. Switch off the host.
2. Attach the phone jack connector of the RS-232 cable to Host interface on the image platform.
3. Connect another end of the RS-232 cable to the serial port (PIN 9) on the device.
4. If the host does not have power supply (on PIN 9), connect the external power supply (5 V DC adapter) to the RS-232 cable.
5. Switch on the host. If connect properly, the beeper and the LED of the image platform will indicate.

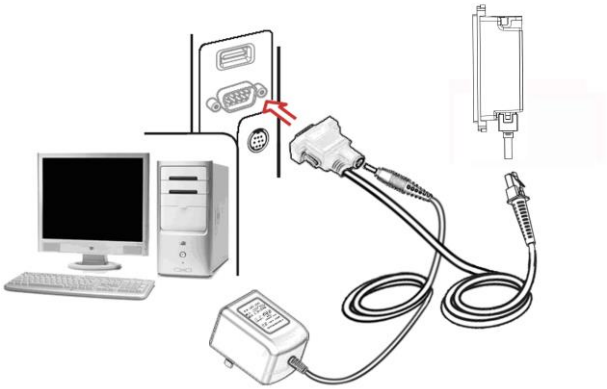


**Figure 2-11 Installation of RS232 cable**

### 2-4-2 Installation - USB

The image platform attaches directly to a USB host.

1. Attach the phone jack connector of the USB cable to the Host interface on the image platform.
2. Connect another end of the USB cable to an available USB port of the Host.
3. If connect properly, the beeper and the LED of the image platform will indicate.
4. Windows OS will automatically detect the USB device.

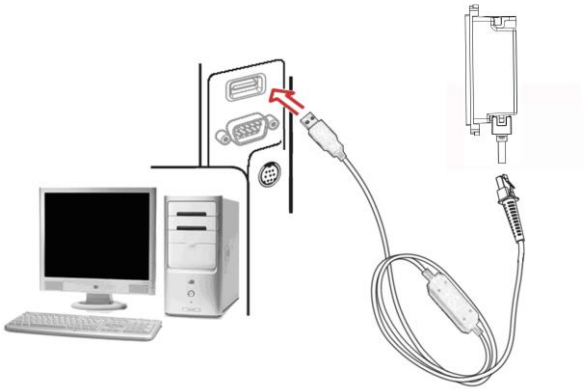


**Figure 2-12 Installation of USB cable**

# 3 Parameter menus

## 3-1 Single-parameter setting by scanning 1D barcodes

Two programming modes have been provided as bellows:

❶ When the Alpha entries length is 2, use the one-dimensional setting code

- Scan the appropriate **Single-scan setting** according to the user's demand.

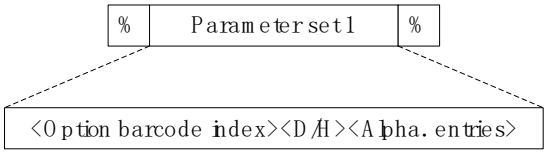
**Example:** To set Flow control to be XON/XOFF.

**Steps:** Scan the following barcode.

**%0301D03%**

❷ When the Alpha entries length is greater than 2, scan the QR setting code

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.

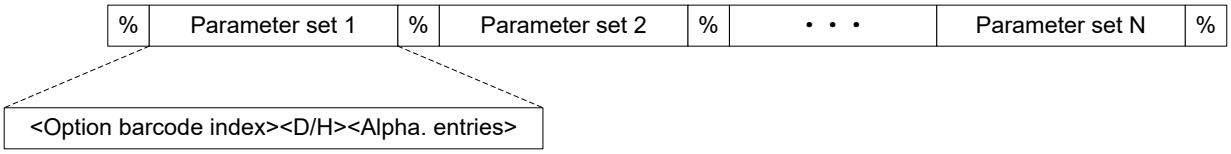
**Example:** Set 8002->0D0A (hexadecimal). The customized QR code barcode contents and symbol are as following.

%8002H0D0A%

## 3-2 Single or Multiple-parameter setting by scanning a QR code barcode

User can customize a QR code barcode to set single or multiple parameters. The image platform can set 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.

## 3-3 Interface selection

*This image platform supports interfaces such as RS-232 serial wedge, and USB interface. In most of the cases, simply selecting an appropriate cable provided by the manufacturer will work for a specific interface.*

**Interface selection:**

**Auto detection-** By setting this function, the image platform will automatically detect the RS-232 or USB interface for user.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Interface selection %0101M% | Auto detection (RS-232/USB) | 00* | %0101D00% * |
| | RS232 | 01 | %0101D01% |
| | USB | 02 | %0101D02% |

## 3-4 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 platform wants to send the barcode data to host computer, it will issue the RTS signal first, wait for the CTS signal from the host computer, and then perform the normal data communication. If there is no replied CTS signal from the host computer after the timeout duration, the image platform will issue an error indication. By setting (Host idle: Low RTS) or (Host idle: High RTS), the image platform can be set to match the Serial Host RTS line.

**XON/XOFF-** An XOFF character turns the image platform transmission off until the image platform receives an XON character.

**ACK/NAK-** After transmitting data, the image platform expects either an ACK (acknowledge) or NAK (not acknowledge) response from the host. When a NAK is received, the image platform transmits the same data again and waits for either an ACK or NAK. After three unsuccessful attempts to send data when NAKs are received, the image platform issues an error indication and discards the data.

**Inter-character delay:** Refer to Inter-character delay of 3-5 USB interface.

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

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Flow control %0301M% | None | 00* | %0301D00% * |
| | RTS/CTS (Host idle: Low RTS) | 01 | %0301D01% |
| | RTS/CTS (Host idle: High RTS) | 02 | %0301D02% |
| | XON/XOFF | 03 | %0301D03% |
| | ACK/NAK | 04 | %0301D04% |
| Inter-character delay %0302M% | 0 ms | 00* | %0302D00% * |
| | 5 ms | 01 | %0302D01% |
| | 10 ms | 02 | %0302D02% |
| | 20 ms | 03 | %0302D03% |
| | 40 ms | 04 | %0302D04% |
| | 80 ms | 05 | %0302D05% |
| Response delay %0304M% | 00-99 (100 ms) | 00-99 | |
| | | 00* | %0304D00% * |
| Baud rate | 300 | 00 | %0305D00% |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| **%0305M%** | 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%** * |
| | Odd | 01 | **%0306D01%** |
| | Even | 02 | **%0306D02%** |
| Data bit **%0307M%** | 8 bits | 00* | **%0307D00%** * |
| | 7 bits | 01 | **%0307D01%** |
| Stop bit **%0308M%** | One bit | 00* | **%0308D00%** * |
| | Two bits | 01 | **%0308D01%** |

## 3-5 USB interface

### USB device type:

**HID keyboard**– By setting, the image platform is used as a USB HID keyboard emulation device. The keyboard layout setting follows the setting of keyboard layout in 3-5 USB interface.

**USB virtual COM**– By setting, the image platform emulates a regular RS232-based COM port. If a Microsoft Windows PC is connected to the image platform, a driver is required to install on the connected PC. The driver will use the next available COM Port number. The driver and the installation guide can be found in the associated CD and on the manufacturer's website. A Windows-based software COM_Text is recommended to display the barcode data in text format. COM_Text emulates some kind of serial-key typing.

Note: When changing USB Device Type, the image platform automatically restarts.

**Simple COM Port Emulation-** Please contact the manufacturer for the instruction.

**Keyboard layout:** The image platform supports different national keyboard layouts. Commonly an appropriate encoding system must be selected. Please refer to Character encoding system of 3-6 Scan mode & some global settings for details.

**Inter-character delay:** This delay is inserted after each data character transmitted. By selecting, the user can change the output speed of the image platform to match the speed of the host USB communication port.

**Numeric key:**

**Alphabetic key-** the image platform will output code result as alphabetic key.

**Numeric key-** the image platform will output code result as pressing numeric keypad ( '0', '1', '2', '3', '4', '5', '6', '7', '8', '9', '.', '+', '-', '/', '*' only).

**Alt+ keypad-** the image platform will output code result as pressing Alt+ numeric key (on keypad). Note that the Num Lock control key must be ON. This setting can be specially adapted for use with different national keyboard layout.

**USB function code:** It can support the output and prohibition of non-printable-characters, as well as the output and prohibition of function codes corresponding to non-printable-characters.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| USB device type %0901M% | HID keyboard | 00* | %0901D00% * |
| | HID keyboard for Apple Mac | 01 | %0901D01% |
| | USB virtual COM | 02 | %0901D02% |
| | Simple COM Port Emulation | 03 | %0901D03% |
| Keyboard layout %0902M% | USA | 00* | %0902D00% * |
| | Turkish F | 01 | %0902D01% |
| | Turkish Q | 02 | %0902D02% |
| | French | 03 | %0902D03% |
| | Italian | 04 | %0902D04% |
| | Spanish | 05 | %0902D05% |
| | Slovak | 06 | %0902D06% |
| | Denmark | 07 | %0902D07% |
| | Japanese | 08 | %0902D08% |
| | German | 09 | %0902D09% |
| | Belgian | 10 | %0902D10% |
| | Russian | 11 | %0902D11% |
| | Czech | 12 | %0902D12% |
| | Thai | 13 | %0902D13% |
| | Hungary | 14 | %0902D14% |
| | Swiss German | 15 | %0902D15% |
| | Portugal | 16 | %0902D16% |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Character encoding system %0413M% | Refer to 3-6 Scan mode & some global settings. | | |
| Inter-character delay %0903M% | 0 ms | 00 | %0903D00% |
| | 5 ms | 01* | %0903D01% * |
| | 10 ms | 02 | %0903D02% |
| | 20 ms | 03 | %0903D03% |
| | 40 ms | 04 | %0903D04% |
| | 60 ms | 05 | %0903D05% |
| Numeric key %0904M% | Alphabetic key | 00* | %0904D00% * |
| | Numeric keypad | 01 | %0904D01% |
| | Alt+ keypad | 02 | %0904D02% |
| | GBK | 03 | %0904D03% |
| | BIGS | 04 | %0904D04% |
| | THAI | 05 | %0904D05% |
| USB function code %0905M% | Output non-printing characters | 00 | %0905D00% |
| | Output function codes corresponding to non-printable-characters. | 01* | %0905D01% * |
| | Prohibition output of non-printable-character | 03 | %0905D03% |

## 3-6 Scan mode & some global settings

**Scan mode:**

**Continue-**The image platform always keeps scanning, and it does not matter when Stand-by duration is elapsed.

**Auto-detection- Good-read on** – By setting Enable, the imager will start operating if any nearby object has been detected. The imager stops scanning when no code is successful decoded after the Stand-by duration elapsed. Once the imager stops scanning, the present object must be removed to enable Auto-detection.

**Auto-detection- Good-read off** – By setting Enable, the imager will start operating if any nearby object has been detected. The imager will stop scanning when there is a successful reading or no code is decoded after the Stand-by duration elapsed. Once the imager stops scanning, the present object must be removed to enable Auto-detection.

**Barcode detection:** In image auto-induction mode, barcode detection means that the scanner detects an object similar to a barcode to trigger decoding, such as text, graphics, barcodes, and so on.

**Barcode detection delay:** The barcode detection delay means that the detection function is enabled when no object is detected within the set delay.

**Same barcode delay time for 1D symbol:** If a 1D barcode has been scanned and output once successfully, the image platform must output the same barcode data beyond delay time. When this feature is set to be “0xFF”, then the delay time is indefinite.

**Same barcode delay time for 2D symbol:** If a 2D barcode has been scanned and output once successfully, the image platform must output the same barcode data beyond delay time. When this feature is set to be “0xFF”, then the delay time is indefinite.

**Double confirm:** If it is enabled, the image platform will require a several times of same-decoded-data to confirm a valid reading.

**Global Max./Min. code length for 1D symbol:** These two lengths are defined as the valid range of decoded 1D barcode data length. Make sure that the minimum length setting is no greater than the maximum length setting, or otherwise the labels of the symbol will not be readable. In particular, the same value can be set for both minimum and maximum reading length to force the fixed length barcode decoded.

Notes:

1. Please set the max./min. length for individual barcode in later sections, if special demand is requested.
2. The number of check digits is included in max./min. code length.
3. These two settings have no effect on the symbols with fixed-length, e.g. UPC-A, UPC-E, EAN-13, EAN-8 and China Post.

**Global G1-G6 string selection:** The image platform offer one or two string group for all symbols. By setting one or two digits to indicate which string group you want to apply. You may refer to 3-41 G1-G6 & C1-C3 & FN1 substitution string setting and 3-42 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 platform can read the barcode comprised with bars and spaces in different scale.

**Decoder optimization:** If it is enabled, the image platform will optimize the decoder with error correction. This function is not effective for all types of barcode.

**Data output delay in continue-scan mode:** If it is enabled, in the continue-scan mode, the image platform can store the data while continue-scanning. The image platform will output the data after the predefined delay elapsed. The maximum storage of data is 1000 characters. If this parameter is set to be “00”, the image platform will not store data. And if the parameter is set to be “FF”, the image platform will output data after stopping scanning.

**Character encoding system:** A character encoding system consists of a code that pairs each character from a given repertoire. Common examples include Morse code, the Baudot code, the ASCII and Unicode. If the data received does not display with the proper characters (domestic language, e.g. Chinese), it maybe because the barcode being scanned was created using a character encoding system that is different from the one the host program is expecting. Try alternate options to find the proper one.

**Complete data output before next decode attempt:** This setting is active only when USB device type is set as “HID keyboard” or “HID keyboard for Apple Mac”, refer to 3-5 USB interface. If it is enabled, the image platform will not start next decode attempt until previous data output is completed.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Scan mode %0401M% | Continue | 03 | %0401D03% |
| | Auto-detection- Good-read on | 06 | %0401D06% * |
| | Auto-detection- Good-read off | 07 | %0401D07% |
| | Infrared-Auto-detection-Good-read on 1 | 08 | %0401D08% |
| | Infrared-Auto-detection-Good-read off | 09* | %0401D09% |
| | Infrared-Auto-detection-Good-read on 2 | 10 | %0401D10% * |
| Barcode detection %0604M% | Disable* | 00* | %0604D00% * |
| | Enable | 01 | %0604D01% |
| Barcode detection delay %0606M% | Always detection | 00 | %0606D00% |
| | 5 seconds | 01 | %0606D01% |
| | 10 seconds | 02 | %0606D02% |
| | 30 seconds | 03 | %0606D03% |
| | 60 seconds | 04 | %0606D04% |
| | Never detection | 05* | %0606D05% * |
| Standby duration %0402M% | 4 seconds | 00* | %0402D00% * |
| | 8 seconds | 01 | %0402D01% |
| | 16 seconds | 02 | %0402D02% |
| | 24 seconds | 03 | %0402D03% |
| | 30 seconds | 04 | %0402D04% |
| | 1 minute | 05 | %0402D05% |
| | 1.5 minutes | 06 | %0402D06% |
| | 2 minutes | 07 | %0402D07% |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| | 5 minutes | 08 | %0402D08% |
| | 7 minutes | 09 | %0402D09% |
| | 10 minutes | 10 | %0402D10% |
| | 15 minutes | 11 | %0402D11% |
| | 20 minutes | 12 | %0402D12% |
| | 30 minutes | 13 | %0402D13% |
| | 45 minutes | 14 | %0402D14% |
| | 1 hour | 15 | %0402D15% |
| Same barcode delay time for 1D symbol %0403M% | 00-$FF_{16}$ (50 ms) | 00-$FF_{16}$ | |
| | | 00 | %0403H00% |
| | | 04* | %0403H04% * |
| Same barcode delay time for 2D symbol %0415M% | 00-$FF_{16}$ (50 ms) | 00-$FF_{16}$ | |
| | | 00 | %0415H00% |
| | | 08* | %0415H08% * |
| Double confirm %0404M% | 00-09 (00: no ) | 00-09 | |
| | | 00* | %0404D00% * |
| Global max. code length for 1D symbol %0405M% | 04-99 | 04-99 | |
| | | 99* | %0405D99% * |
| Global min. code length for 1D symbol %0406M% | 01-99 | 01-99 | |
| | | 04* | %0406D04% * |
| Global G1-G6 string selection %0407M% | 00-66 | 00-66 | |
| | | 00* | %0407D00% * |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Element amendment %0408M% | Disable | 00 | %0408D00% |
| | Enable | 01* | %0408D01% * |
| Decoder optimization %0410M% | Disable | 00 | %0410D00% |
| | Enable | 01* | %0410D01% * |
| Data output delay in continue-scan mode %0411M% | 00-99 (100 ms)<br>FF (Never) | 00-$FF_{16}$ | |
| | | 00* | %0411H00% * |
| Character encoding system %0413M% | ASCII | 00* | %0413D00% * |
| | UTF-8 | 01 | %0413D01% |
| | Windows-1251 | 02 | %0413D02% |
| | Simplified Chinese | 03 | %0413D03% |
| | Traditional Chinese | 04 | %0413D04% |
| | Windows-1250 | 05 | %0413D05% |
| | KOI8R | 06 | %0413D06% |
| | Japanese | 07 | %0413D07% |
| Complete data output before next decode attempt %0414M% | Disable | 00* | %0414D00% |
| | Enable | 01 | %0414D01% |

## 3-7 LED and Beeper Indication

**Power on alert:** After power-on the image platform will generate an alert signal to indicate a successful self-test.
**LED indication:** After each successful reading, the LED above the image platform will light up to indicate a good barcode reading.
**Beeper indication:** After each successful reading, the image platform will beep to indicate a good barcode reading, and its beep tone duration is adjustable.
**Decoding success indication duration:** This parameter can be adjusted for a good reading upon favorite usage.
**Volume of beeper:** This parameter can be adjusted for different level of the volume of the beeper. This parameter can also be adjusted by pushing Beeper push button.
**Beep tone:** This parameter can be adjusted for a favorite ring tone. This parameter can also be adjusted by pushing Beeper push button.
**Power light indication:** After successful power-on, the blue LED will stay on.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Power on alert %0501M% | Disable | 00 | %0501D00% |
| | Enable | 01* | %0501D01% * |
| LED indication %0502M% | Disable | 00 | %0502D00% |
| | Enable | 01* | %0502D01% * |
| Beeper indication %0503M% | Disable | 00 | %0503D00% |
| | Enable | 01* | %0503D01% * |
| Decoding success indication duration %0504M% | 01-99 (10 ms ) | 01-99 | |
| | | 05* | %0504D05% * |
| Volume of beeper %0505M% | Low | 00 | %0505D00% |
| | Middle | 01 | %0505D01% |
| | High | 02* | %0505D02% * |
| Beeper Tone %0506M% | Type 1 | 00* | %0506D00% * |
| | Type 2 | 01 | %0506D01% |
| | Type 3 | 02 | %0506D02% |
| **Power light indication** %0508M% | Disable | 00 | %0508D00% |
| | Enable | 01* | %0508D01% |

## 3-8 LED illumination level

**Decode illumination mode:** Enable illumination causes the embedded scanner to turn on the illumination to aid decoding. Disable illumination to turn off illumination for the embedded scanner during decoding. Better quality images could be obtained with illumination support. The effectiveness of the illumination decreases as the distance to the target increases.
**Level of decode illumination:** This parameter can be adjusted for different level of decode illumination.
**Illumination mode of Auto-detection:**

**Always off**- Illumination LED will be always turned off.

**Enable illumination in low light conditions-** In low light conditions, the scanner will turn on illumination LED automatically to ensure normal work. While in other light conditions, the illumination LED will be turned off automatically.

**Always on-** Illumination LED will be always turned on (Default).

Note: This function is only valid in Auto-detection mode.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Decode illumination mode %9001M% | Always Off | 00 | %9001D00% |
| | Always On | 01 | %9001D01% |
| | On when reading | 03* | %9001D03% |
| Level of decode illumination %9003M% | Disable decode illumination | 00 | %9003D00% |
| | Low | 01 | %9003D01% |
| | Middle | 02* | %9003D02% * |
| | High | 03 | %9003D03% |
| Illumination mode of Auto-detection %0605M% | Always off | 00 | %0605D00% |
| | Enable illumination in low light conditions | 01 | %0605D01% |
| | Always on | 02* | %0605D02% * |

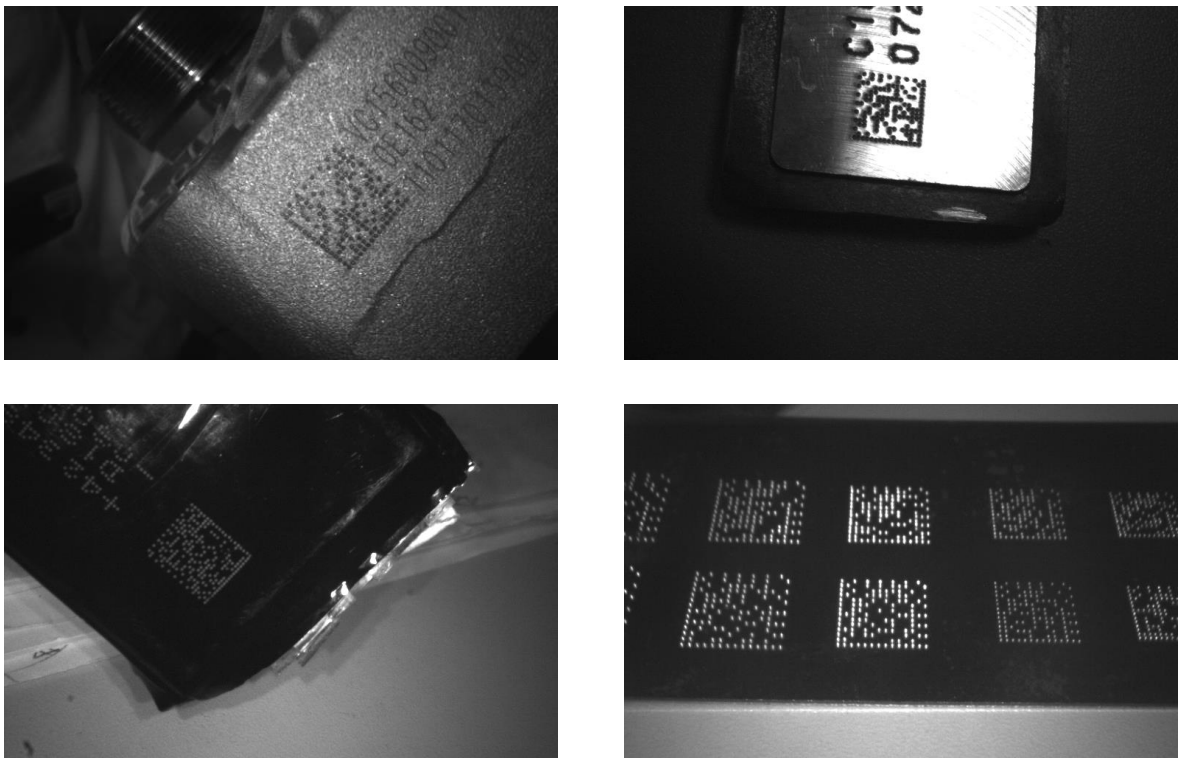
## 3-9 Single type of barcode, Multi-symbols read

**1D symbols read:** A global setting of 1D symbols readability.
**2D symbols read:** A global setting of 2D symbols readability. Note: When QR Code is disabled, the image platform will not read setting/programming QR Code symbols.
**Multi-symbols read:** By setting Enable, the image platform allows to read multiple symbols in one image. By setting Disable, the image platform will only read the symbol closest to the center area in the image.

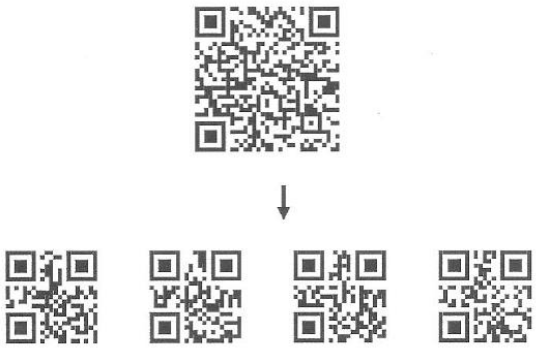
| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| 1D symbols read %1005M% | Follow respective 1D symbol setting | 00* | %1005D00% * |
| | All 1D Disable | 01 | %1005D01% |
| 2D symbols read %1001M% | Follow respective 2D symbol setting | 00* | %1001D00% * |
| | All 2D Disable | 01 | %1001D01% |
| | All 2D Enable | 02 | %1001D02% |
| | Only PDF417 Enable | 03 | %1001D03% |
| | Only QR code Enable | 04 | %1001D04% |
| | Only Data Matrix Enable | 05 | %1001D05% |
| | Only MaxiCode Enable | 06 | %1001D06% |
| | Only Aztec Code Enable | 07 | %1001D07% |
| | Only Han Xin Code Enable | 08 | %1001D08% |
| Multi-symbols read %1003M% | Disable | 00* | %1003D00% * |
| | Enable | 01 | %1003D01% |

## 3-10 DPM, Structured append, and Mobile screen read

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



**Structured append symbols read:** By setting Enable, the image platform will output data only when all Structured Append symbols have been decoded. The symbol types which support Structured Append include QR code, Aztec code, PDF417 and DataMatrix. The lower part of below figure shows an example of four Structured Append symbols, with the same data as that in the upper QR code symbol.



Single symbol (above) and Structured Append series of symbols (below) encoding
“ABCDEFGHIJKMNOPQRSTUVWXYZ0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ”

**Mobile screen read:** By setting enable, the image platform can read barcodes on a mobile screen better. However, this will slow the reading speed of normal barcodes a little bit.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| DPM format read %1002M% | Disable | 00* | %1002D00% * |
| | Enable | 01 | %1002D01% |
| Structured append symbols read %1006M% | Disable | 00* | %1006D00% * |
| | Enable | 01 | %1006D01% |
| Mobile screen read %1007M% | Disable | 00 | %1007D00% |
| | Enable | 01* | %1007D01% * |

Note 1 : Scan barcode or send command to enter upgrade mode

| | |
|---|---|
| Scan barcode to enter upgrade mode | |
| Send command to enter upgrade mode | Send command 0x16 0x4D 0x0D 0x25 0x4E 0x4D 0x55 0x47 0x44 0x2E by USB virtual COM or RS232 COM. |

## 3-11 UPC-A

**Read:**
Format

| System character | Data digits (10 digits) | Check digit (1 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-or-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 3-42 String transmission.
**Insertion group selection:** Refer to Global insertion group selection of 3-6 Scan mode & some global settings.
**Supplement digits:** The Supplement digits barcode is the supplemental 2 or 5 characters.
Format

| System character | Data digits (10 digits) | Check digit (1 digit) | Supplement digits 2 or 5 |
|---|---|---|---|

**Truncation/Expansion:**

**Truncate leading zeros** - The leading “0” digits of UPC-A data characters can be truncated when the feature is enabled.
Example: Barcode “001234567895”,
Output: “1234567895”.

**Expand to EAN-13** - It extends to 13-digits with a “0” leading digit when the feature is enabled.
Example: Barcode “001234567895”,
Output: “0001234567895”.

**Truncate system character** - The system character of UPC-A data can be truncated when the feature is enabled.
Example: Barcode “001234567895”,
Output: “01234567895”.

**Add country code** - The country code (“0” for USA) can be added when the feature is enabled.
Example: Barcode “001234567895”,
Output: “0001234567895”.

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

## 3-12 UPC-E

**Read:**
Format

| System character “0” | Data digits (6 digits) | Check digit (1 digit) |
|---|---|---|

**Check digit verification:** The check digit is optional and made as the sum of the numerical value of the data digits.
**Check digit trans.:** By setting Enable, check digit will be transmitted.
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.
**Supplement digits:**
Format

| System character “0” | Data digits (6 digits) | Check digit (1 digit) | Supplement digits 2 or 5 |
|---|---|---|---|

**Truncation/Expansion:**

**Truncate leading zeros** - The leading “0” digits of UPC-E data characters can be truncated when the feature is enabled.
Example: Barcode “00123457”,
Output: “123457”.
**Expand to EAN-13** - It extends to 13-digits with a “0” leading digit when the feature is enabled.
Example: Barcode “00123457”,
Output: “0001234000057”.
**Expand to UPC-A** - It extends to 12-digits when the feature is set to be enabled.
Example: Barcode “00123457”,
Output: “001234000057”.
**Truncate system character** - The system character “0” of UPC-E data can be truncated when the feature is enabled.
Example: Barcode “00123457”,
Output: “0123457”.
**Add country code** - The country code (“0” for USA) can be added when the feature is enabled.
Example: Barcode “00123457”,
Output: “000123457”.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %1201M% | Disable | 00 | %1201D00% |
| | Enable | 01* | %1201D01% * |
| Check digit verification %1202M% | Disable | 00 | %1202D00% |
| | Enable | 01* | %1202D01% * |
| Check digit trans. %1203M% | Disable | 00 | %1203D00% |
| | Enable | 01* | %1203D01% * |
| Code ID setting %1204M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <D>* | %1204H44% * |
| Insert group selection %1205M% | 00-66 | 00-66 | |
| | | 00* | %1205D00% * |
| Supplement digits %1206M% | None | 00* | %1206D00% * |
| | 2 digits | 01 | %1206D01% |
| | 5 digits | 02 | %1206D02% |
| | 2 or 5 digits | 03 | %1206D03% |
| Truncation/Expansion %1207M% | None | 00* | %1207D00% * |
| | Truncate leading zeros | 01 | %1207D01% |
| | Expand to EAN-13 | 02 | %1207D02% |
| | Expand to UPC-A | 03 | %1207D03% |
| | Truncate system character | 04 | %1207D04% |
| | Add country code | 05 | %1207D05% |

## 3-13 UPC-E1

**Read:**
Format

| System character “1” | Data digits (6 digits) | Check digit (1 digit) |
|---|---|---|

**Check digit verification:** The check digit is optional and made as the sum of the numerical value of the data digits.
**Check digit trans.:** By setting Enable, check digit will be transmitted.
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.
**Supplement digits:**
Format

| System character “1” | Data digits (6 digits) | Check digit (1 digit) | Supplement digits 2 or 5 |
|---|---|---|---|

**Truncation/Expansion:**

**Expand to EAN -13**- It extends to 13-digits with “0” digits when the feature is enabled.
Example: Barcode “10012341”,
Output: “0100120000031”.

**Expand to UPC-A** - It extends to 12-digits when the feature is set to be enabled.
Example: Barcode “10012341”,
Output: “100120000031”.

**Truncate system character** - The system character “1” of UPC-E1 data can be truncated when the feature is enabled.
Example: Barcode “10012341”,
Output: “0012341”.

**Add country code** - The country code (“0” for USA) can be added when the feature is enabled.
Example: Barcode “10012341”,
Output: “010012341”.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %3401M% | Disable | 00 | %3401D00% |
| | Enable | 01* | %3401D01% * |
| Check digit verification %3402M% | Disable | 00 | %3402D00% |
| | Enable | 01* | %3402D01% * |
| Check digit trans. %3403M% | Disable | 00 | %3403D00% |
| | Enable | 01* | %3403D01% * |
| Code ID setting %3404M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <D>* | %3404H44% * |
| Insert group selection %3405M% | 00-66 | 00-66 | |
| | | 00* | %3405D00% * |
| Supplement digits %3406M% | None | 00* | %3406D00% * |
| | 2 digits | 01 | %3406D01% |
| | 5 digits | 02 | %3406D02% |
| | 2 or 5 digits | 03 | %3406D03% |
| Truncation/Expansion %3407M% | None | 00* | %3407D00% * |
| | Expand to EAN-13 | 02 | %3407D02% |
| | Expand to UPC-A | 03 | %3407D03% |
| | Truncate system character | 04 | %3407D04% |
| | Add country code | 05 | %3407D05% |

## 3-14 EAN-13 (ISBN/ISSN)

**Read:**
Format

| Data digits (12 digits) | Check digit (1 digit) |
|---|---|

**Check digit verification:** The check digit is optional and made as the sum of the numerical value of the data digits.
**Check digit transmission:** By setting Enable, check digit will be transmitted.
**EAN-13 code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.
**Supplement digits:**
Format

| Data digits (12 digits) | Check digit (1 digit) | Supplement digits 2 or 5 |
|---|---|---|

**ISBN/ISSN conversion:** 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 symbol.
Example:
Barcode “9780194315104”, Output: “019431510X”.
Barcode “9771005180004”, Output: “10051805”.
**ISBN/ISSN code ID setting:** Refer to Code ID setting of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %1301M% | Disable | 00 | %1301D00% |
| | Enable | 01* | %1301D01% * |
| Check digit verification %1302M% | Disable | 00 | %1302D00% |
| | Enable | 01* | %1302D01% * |
| Check digit transmission %1303M% | Disable | 00 | %1303D00% |
| | Enable | 01* | %1303D01% * |
| EAN-13 code ID setting %1304M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <A>* | %1304H41% * |
| Insert group selection %1305M% | 00-66 | 00-66 | |
| | | 00* | %1305D00% * |
| Supplement digits %1306M% | None | 00* | %1306D00% * |
| | 2 digits | 01 | %1306D01% |
| | 5 digits | 02 | %1306D02% |
| | 2 or 5 digits | 03 | %1306D03% |
| ISBN/ISSN conversion %1307M% | Disable | 00* | %1307D00% * |
| | Enable | 01 | %1307D01% |
| ISBN/ISSN code ID setting %1309M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <B>* | %1309H42% * |

## 3-15 EAN-8

**Read:**
Format

| Data digits (7 digits) | Check digit (1 digit) |
|---|---|

**Check digit verification:** The check digit is optional and made as the sum of the numerical value of the data digits.
**Check digit trans.:** By setting Enable, check digit will be transmitted.
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.
**Supplement digits:**
Format

| Data digits (7 digits) | Check digit (1 digit) | Supplement Digits 2 or 5 |
|---|---|---|

**Truncation/Expansion:** Refer to Truncation/Expansion of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %1401M% | Disable | 00 | %1401D00% |
| | Enable | 01* | %1401D01% * |
| Check digit verification %1402M% | Disable | 00 | %1402D00% |
| | Enable | 01* | %1402D01% * |
| Check digit trans. %1403M% | Disable | 00 | %1403D00% |
| | Enable | 01* | %1403D01% * |
| Code ID setting %1404M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <C>* | %1404H42% * |
| Insert group selection %1405M% | 00-66 | 00-66 | |
| | | 00* | %1405D00% * |
| Supplement digits %1406M% | None | 00* | %1406D00% * |
| | 2 digits | 01 | %1406D01% |
| | 5 digits | 02 | %1406D02% |
| | 2 or 5 digits | 03 | %1406D03% |
| Truncation/Expansion %1407M% | None | 00* | %1407D00% * |
| | Truncate leading zero | 01 | %1407D01% |
| | Expand to EAN-13 | 02 | %1407D02% |

## 3-16 Code 39 (Code 32, Trioptic Code 39)

**Read:**
Format

| Start character(*) | Data digits (variable) | Check digit (1 digit, optional) | End character(*) |
|---|---|---|---|

**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 transmission:** 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”s, 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 the labels of the symbol will not 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 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.
**Start/End transmission:** The start and end characters of Code 39 are “*”s. You can transmit all data digits including two “*”s.
**“*” 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 (1 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

| Start character($) | Data digits (6 digits) | End character($) |
|---|---|---|

**Trioptic Code 39 Start/End transmission:** The start and end characters of Trioptic Code 39 are “$”s. You can transmit all data digits including two “$”s.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %1501M% | Disable | 00 | %1501D00% |
| | Enable | 01* | %1501D01% * |
| Check digit verification %1502M% | Disable | 00* | %1502D00% * |
| | Enable | 01 | %1502D01% |
| Check digit transmission %1503M% | Disable | 00* | %1503D00% * |
| | Enable | 01 | %1503D01% |
| Max. code length %1504M% | 00-99 | 00-99 | |
| | | 00* | %1504D00% * |
| Min. code length %1505M% | 00-99 | 00-99 | |
| | | 01* | %1505D01% * |
| Code ID setting %1506M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <M>* | %1506H4D% * |
| Insert group selection %1507M% | 00-66 | 00-66 | |
| | | 00* | %1507D00% * |
| Format %1508M% | Standard | 00* | %1508D00% * |
| | Full ASCII | 01 | %1508D01% |
| Start/End transmission %1509M% | Disable | 00* | %1509D00% * |
| | Enable | 01 | %1509D01% |
| “*” as data character %1510M% | Disable | 00* | %1510D00% * |
| | Enable | 01 | %1510D01% |
| Convert Code 39 to Code 32 %1511M% | Disable | 00* | %1511D00% * |
| | Enable | 01 | %1511D01% |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Code 32 Prefix “A” transmission %1512M% | Disable | 00* | %1512D00% * |
| | Enable | 01 | %1512D01% |
| Trioptic Code 39 read %1513M% | Disable | 00* | %1513D00% * |
| | Enable | 01 | %1513D01% |
| Trioptic Code 39 Start/End transmission %1514M% | Disable | 00* | %1514D00% * |
| | Enable | 01 | %1514D01% |

## 3-17 Interleaved 2 of 5

**Read:**
Format

| Data digits (Variable) | Check digit (1 digit, optional) |
|---|---|

**Check digit verification:** The check digit is made as the sum module 10 of the numerical values of all data digits. There are two optional check digit algorithms: the specified Uniform Symbol Specification (USS) and the Optical Product Code Council (OPCC).
**Check digit transmission:** By setting Enable, check digit will be transmitted.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %1601M% | Disable | 00 | %1601D00% |
| | Enable | 01* | %1601D01% * |
| Check digit verification %1602M% | Disable | 00* | %1602D00% * |
| | USS | 01 | %1602D01% |
| | OPCC | 02 | %1602D02% |
| Check digit transmission %1603M% | Disable | 00* | %1603D00% * |
| | Enable | 01 | %1603D01% |
| Max. code length %1604M% | 00-99 | 00-99 | |
| | | 00* | %1604D00% * |
| Min. code length %1605M% | 00-99 | 00-99 | |
| | | 06* | %1605D06% * |
| Code ID setting %1606M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <I>* | %1606H49% * |
| Insert group selection %1607M% | 00-66 | 00-66 | |
| | | 00* | %1607D00% * |

## 3-18 Industrial 2 of 5 (Discrete 2 of 5)

**Read:**
Format

| Data digits (variable) |
|---|

**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %1701M% | Disable | 00* | %1701D00% * |
| | Enable | 01 | %1701D01% |
| Max. code length %1702M% | 00-99 | 00-99 | |
| | | 00* | %1702D00% * |
| Min. code length %1703M% | 00-99 | 00-99 | |
| | | 00* | %1703D00% * |
| Code ID setting %1704M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <H>* | %1704H48% * |
| Insert group selection %1705M% | 00-66 | 00-66 | |
| | | 00* | %1705D00% * |

## 3-19 Matrix 2 of 5

**Read:**
Format

| Data digits (variable) | Check digit (1 digit, optional) |
|---|---|

**Check digit verification:** The check digit is made as the sum module 10 of the numerical values of all data digits.
**Check digit transmission:** By setting Enable, check digit will be transmitted.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read<br>**%1801M%** | Disable | 00 | **%1801D00%** |
| | Enable | 01* | **%1801D01%** * |
| Check digit verification<br>**%1802M%** | Disable | 00* | **%1802D00%** * |
| | Enable | 01 | **%1802D01%** |
| Check digit transmission<br>**%1803M%** | Disable | 00* | **%1803D00%** * |
| | Enable | 01 | **%1803D01%** |
| Max. code length<br>**%1804M%** | 00-99 | 00-99 | |
| | | 00* | **%1804D00%** * |
| Min. code length<br>**%1805M%** | 00-99 | 00-99 | |
| | | 06* | **%1805D06%** * |
| Code ID setting<br>**%1806M%** | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <X>* | **%1806H58%** * |
| Insert group selection<br>**%1807M%** | 00-66 | 00-66 | |
| | | 00* | **%1807D00%** * |

## 3-20 Codabar

**Read:**
Format

| Start | Data digits (variable) | Check digit (1 digit, optional) | End |
|---|---|---|---|

**Check digit verification:** The check digit is made as the sum module 16 of the numerical values of all data digits.
**Check digit transmission:** By setting Enable, check digit will be transmitted.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 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 3-16 Code 39 (Code 32, Trioptic Code 39).
**Start/End character equality:** By setting Enable, the start and end character of a Codabar barcode must be the same.

| **Multiple-scan setting** | | | **Single-scan setting** |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %1901M% | Disable | 00 | %1901D00% |
| | Enable | 01* | %1901D01% * |
| Check digit verification %1902M% | Disable | 00* | %1902D00% * |
| | Enable | 01 | %1902D01% |
| Check digit transmission %1903M% | Disable | 00* | %1903D00% * |
| | Enable | 01 | %1903D01% |
| Max. code length %1904M% | 00-99 | 00-99 | |
| | | 00* | %1904D00% * |
| Min. code length %1905M% | 00-99 | 00-99 | |
| | | 00* | %1905D00% * |
| Code ID setting %1906M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <N>* | %1906H4E% * |
| Insert group selection %1907M% | 00-66 | 00-66 | |
| | | 00* | %1907D00% * |
| | ABCD/ABCD | 00* | %1908D00% * |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Start/End type %1908M% | abcd/abcd | 01 | %1908D01% |
| | ABCD/TN*E | 02 | %1908D02% |
| | abcd/tn*e | 03 | %1908D03% |
| Start/End transmission %1909M% | Disable | 00* | %1909D00% * |
| | Enable | 01 | %1909D01% |
| Start/End character equality %1910M% | Disable | 00* | %1910D00% * |
| | Enable | 01 | %1910D01% |

## 3-21 Code 128

**Read:**
Format

| Data digits (variable) | Check digit (1 digit, optional) |
|---|---|

**Check digit verification:** The check digit is made as the sum module 103 of all data digits.
**Check digit transmission:** By setting Enable, check digit will be transmitted.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.
**Truncate leading zeros:** The leading “0” digits of Code 128 barcode characters can be truncated when the feature is enabled.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2001M% | Disable | 00 | %2001D00% |
| | Enable | 01* | %2001D01% * |
| Check digit verification %2002M% | Disable | 00 | %2002D00% |
| | Enable | 01* | %2002D01% * |
| Check digit transmission %2003M% | Disable | 00* | %2003D00% * |
| | Reserved | 01 | %2003D01% |
| Max. code length %2004M% | 00-99 | 00-99 | |
| | | 00* | %2004D00% * |
| Min. code length %2005M% | 00-99 | 00-99 | |
| | | 01* | %2005D01% * |
| Code ID setting %2006M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <K>* | %2006H4B% * |
| Insert group selection %2007M% | 00-66 | 00-66 | |
| | | 00* | %2007D00% * |
| Truncate leading zeros %2008M% | Disable | 00* | %2008D00% * |
| | All leading “0”s | 01 | %2008D01% |
| | Only the first “0” | 02 | %2008D02% |

## 3-22 UCC/EAN 128 (GS1-128)

*UCC/EAN 128 and GS1-128 are the same kind of barcode symbols with same standard.*

**Read:**
Format

| Data digits (variable) | Check digit (1 digit, optional) |
|---|---|

**Check digit verification:** The check digit is made as the sum module 103 of all data digits.
**Check digit transmission:** By setting Enable, check digit will be transmitted.
**Max. /Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.
**Truncate leading zeros:** Refer to Truncate leading zeros of 3-21 Code 128.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2501M% | Disable | 00 | %2501D00% |
| | Enable | 01* | %2501D01% * |
| Check digit verification %2502M% | Disable | 00 | %2502D00% |
| | Enable | 01* | %2502D01% * |
| Check digit transmission %2503M% | Disable | 00* | %2503D00% * |
| | Reserved | 01 | %2503D01% |
| Max. code length %2504M% | 00-99 | 00-99 | |
| | | 00* | %2504D00% * |
| Min. code length %2505M% | 00-99 | 00-99 | |
| | | 01* | %2505D01% * |
| Code ID setting %2506M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <K>* | %2506H4B% * |
| Insert group selection %2507M% | 00-66 | 00-66 | |
| | | 00* | %2507D00% * |
| Truncate leading zeros %2508M% | Disable | 00* | %2508D00% * |
| | All leading “0”s | 01 | %2508D01% |
| | Only the first “0” | 02 | %2508D02% |

## 3-23 ISBT 128

**Read:**
Format

| | | |
|---|---|---|
| "=" or "&" | Data digits (variable) | Check digit (1 digit, optional) |

**Check digit verification:** The check digit is made as the sum module 103 of all data digits.
**Check digit transmission:** By setting Enable, check digit will be transmitted.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %3301M% | Disable | 00 | %3301D00% |
| | Enable | 01* | %3301D01% * |
| Check digit verification %3302M% | Disable | 00 | %3302D00% |
| | Enable | 01* | %3302D01% * |
| Check digit transmission %3303M% | Disable | 00* | %3303D00% * |
| | Reserved | 01 | %3303D01% |
| Max. code length %3304M% | 00-99 | 00-99 | |
| | | 00* | %3304D00% * |
| Min. code length %3305M% | 00-99 | 00-99 | |
| | | 01* | %3305D01% * |
| Code ID setting %3306M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <K>* | %3306H4B% * |
| Insert group selection %3307M% | 00-66 | 00-66 | |
| | | 00* | %3307D00% * |

## 3-24 Code 93

**Read:**
Format

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

**Check digit verification:** The check digit is made as the sum module 47 of the numerical values of all data digits.
**Check digit transmission:** By setting Enable, check digit will be transmitted.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2101M% | Disable | 00 | %2101D00% |
| | Enable | 01* | %2101D01% * |
| Check digit verification %2102M% | Disable | 00 | %2102D00% |
| | Enable | 01* | %2102D01% * |
| Check digit transmission %2103M% | Disable | 00* | %2103D00% * |
| | Enable | 01 | %2103D01% |
| Max. code length %2104M% | 00-99 | 00-99 | |
| | | 00* | %2104D00% * |
| Min. code length %2105M% | 00-99 | 00-99 | |
| | | 01* | %2105D01% * |
| Code ID setting %2106M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <L>* | %2106H4C% * |
| Insert group selection %2107M% | 00-66 | 00-66 | |
| | | 00* | %2107D00% * |

## 3-25 Code 11

**Read:**
Format

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

**Check digit verification:** The check digit is presented as the sum module 11 of all data digits.
**Check digit transmission:** By setting Enable, check digit 1 and check digit 2 will be transmitted upon your selected check digit verification method.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2201M% | Disable | 00* | %2201D00% * |
| | Enable | 01 | %2201D01% |
| Check digit verification %2202M% | Disable | 00 | %2202D00% |
| | One digit | 01* | %2202D01% * |
| | Reserved | 02 | %2202D02% |
| | Reserved | 03 | %2202D03% |
| Check digit transmission %2203M% | Disable | 00* | %2203D00% * |
| | Enable | 01 | %2203D01% |
| Max. code length %2204M% | 00-99 | 00-99 | |
| | | 00* | %2204D00% * |
| Min. code length %2205M% | 00-99 | 00-99 | |
| | | 00* | %2205D00% * |
| Code ID setting %2206M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <V>* | %2206H56% * |
| Insert group selection %2207M% | 00-66 | 00-66 | |
| | | 00* | %2207D00% * |

## 3-26 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 and Mod 11/10. The check digit 1 and check digit 2 will be calculated as the sum module 10 or 11 of the data digits.
**Check digit transmission:** By setting Enable, check digit 1 and check digit 2 will be transmitted upon your selected check digit verification method.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2301M% | Disable | 00* | %2301D00% * |
| | Enable | 01 | %2301D01% |
| Check digit verification %2302M% | Disable | 00* | %2302D00% * |
| | 1 digit (mod 10) | 01 | %2302D01% |
| | Reserved | 02 | %2302D02% |
| | Reserved | 03 | %2302D03% |
| Check digit transmission %2303M% | Disable | 00* | %2303D00% * |
| | Enable | 01 | %2303D01% |
| Max. code length %2304M% | 00-99 | 00-99 | |
| | | 00* | %2304D00% * |
| Min. code length %2305M% | 00-99 | 00-99 | |
| | | 00* | %2305D00% * |
| Code ID setting %2306M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <O>* | %2306H4F% * |
| Insert group selection %2307M% | 00-66 | 00-66 | |
| | | 00* | %2307D00% * |

## 3-27 UK/Plessey

**Read:**
Format

| Data digits (variable) | Check digits (2 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 transmission:** By setting Enable, check digit will be transmitted.
**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2401M% | Disable | 00* | %2401D00% * |
| | Enable | 01 | %2401D01% |
| Check digit verification %2402M% | Disable | 00 | %2402D00% |
| | Enable | 01* | %2402D01% * |
| Check digit transmission %2403M% | Disable | 00* | %2403D00% * |
| | Enable | 01 | %2403D01% |
| Max. code length %2404M% | 00-99 | 00-99 | |
| | | 00* | %2404D00% * |
| Min. code length %2405M% | 00-99 | 00-99 | |
| | | 01* | %2405D01% * |
| Code ID setting %2406M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <U>* | %2406H55% * |
| Insert group selection %2407M% | 00-66 | 00-66 | |
| | | 00* | %2407D00% * |

## 3-28 China Post

**Read:**
Format

| Data digits (11 digits) |
|---|

**Max. /Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
The code length of China Post is 11.

**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.

**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2601M% | Disable | 00 | %2601D00% |
| | Enable | 01* | %2601D01% * |
| Max. code length %2604M% | 00-99 | 00-99 | |
| | | 11* | %2604D11% * |
| Min. code length %2605M% | 00-99 | 00-99 | |
| | | 11* | %2605D11% * |
| Code ID setting %2606M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <T>* | %2606H54% * |
| Insert group selection %2607M% | 00-66 | 00-66 | |
| | | 00* | %2607D00% * |

## 3-29 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 and 2, 4 and 9, 5 and 8, 6 and 7, have the symmetrical pattern; the pattern of 1 and 3 is symmetrical.*

**Read:**
Format

| Data digits (10 digits) |
|---|

**Max./Min. code length:** Refer to Max./Min. code length of 3-16 Code 39 (Code 32, Trioptic Code 39).
**Check digit verification:** The check digit is made as the sum module 10 of the numerical values of all 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 the barcode with the assigned leading character can be output.
**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %3201M% | Disable | 00 | %3201D00% |
| | Enable | 01* | %3201D01% * |
| Max. code length %3202M% | 00-99 | 00-99 | |
| | | 10* | %3202D10% * |
| Min. code length %3203M% | 00-99 | 00-99 | |
| | | 10* | %3203D10% * |
| Check digit verification %3204M% | Disable | 00* | %3204D00% * |
| | Reserved | 01 | %3204D01% |
| Leading character 5/6/7/8/9 converted to A/B/C/D/E %3205M% | Disable | 00 | %3205D00% |
| | 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% |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| | Only 9 converted to E | 06 | %3205D06% |
| Leading character assignment %3206M% | Disable | 00 | %3206D00% |
| | 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-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <Y>* | %3207H59% * |
| Insert group selection %3208M% | 00-66 | 00-66 | |
| | | 00* | %3208D00% * |

## 3-30 GS1 DataBar (GS1 DataBar Truncated)

*GS1 DataBar Truncated is structured and encoded the same as the standard GS1 DataBar format, except 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

| Data digits (16 digits) |
|---|

**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.
**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.
**Conversion:**

**UCC/EAN 128-** Refer to Code ID transmission of 3-42 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.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2701M% | Disable | 00 | %2701D00% |
| | Enable | 01* | %2701D01% * |
| Code ID setting %2702M% | 00-FF$_{16}$ (ASCII) | 00-FF$_{16}$ | |
| | | <R>* | %2702H52% * |
| Insert group selection %2703M% | 00-66 | 00-66 | |
| | | 00* | %2703D00% * |
| Conversion %2704M% | None | 00* | %2704D00% * |
| | UCC/EAN 128 | 01 | %2704D01% |
| | UPC-A or EAN-13 | 02 | %2704D02% |

## 3-31 GS1 DataBar Limited

**Read:**
Format

| Data digits (16 digits) |
|---|

**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.

**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

**Conversion:** Refer to Conversion of 3-30 GS1 DataBar (GS1 DataBar Truncated).

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2801M% | Disable | 00 | %2801D00% |
| | Enable | 01* | %2801D01% * |
| Code ID setting %2802M% | 00-$FF_{16}$ (ASCII) | 00-$FF_{16}$ | |
| | | <R>* | %2802H52% * |
| Insert group selection %2803M% | 00-66 | 00-66 | |
| | | 00* | %2803D00% * |
| Conversion %2804M% | None | 00* | %2804D00% * |
| | UCC/EAN 128 | 01 | %2804D01% |
| | UPC-A or EAN-13 | 02 | %2804D02% |

## 3-32 GS1 DataBar Expanded

**Read:**
Format

| Data characters (variable) |
|---|

**Code ID setting:** Refer to Code ID setting of 3-11 UPC-A.

**Insertion group selection:** Refer to Insertion group selection of 3-11 UPC-A.

**Conversion:**

**UCC/EAN 128-** Refer to Code ID transmission of 3-42 String transmission, ]Cm will be identified as AIM ID.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %2901M% | Disable | 00 | %2901D00% |
| | Enable | 01* | %2901D01% * |
| Max. code length %2902M% | 00-99 | 00-99 | |
| | | 00* | %2902D00% * |
| Min. code length %2903M% | 00-99 | 00-99 | |
| | | 01* | %2903D01% * |
| Code ID setting %2904M% | 00-FF$_{16}$ (ASCII) | 00-FF$_{16}$ | |
| | | <R>* | %2904H52% * |
| Insert group selection %2905M% | 00-66 | 00-66 | |
| | | 00* | %2905D00% * |
| Conversion %2906M% | None | 00* | %2906D00% * |
| | UCC/EAN 128 | 01 | %2906D01% |

## 3-33 GS1 Composite

*GS1 Composite symbol group consists of two components: a linear component, which encodes the item's primary data; and an adjacent 2D composite component, which contains supplementary data.*
*The linear component will be a traditional symbol of types: GS-128, EAN-8, EAN-13, UPC-A, UPC-E or DataBar.*
*The composite component will be either a CC-A (encoding up to 56 digits), a CC-B (up to 338 digits) or a CC-C (up to 2361 digits).*

GS1-128 Composite

GS1 DataBar Stacked Composite

GS1 DataBar Expanded Stacked Composite

GS1 DataBar Composite

UPC-E Composite

EAN-13 Composite

**GS1 composite version enabled:**

- ✓ **Note 1-** While this feature is enabled, the decode speed will be dropped. The more versions are enabled, the more obvious influence.
- ✓ **Note 2-** If the corresponding linear 1D barcode symbol is set disable, only 2D composite data will be output after a success decode.
- ✓ **Note 3-** While this feature is set disable, if the corresponding linear 1D barcode symbol is set enable, only 1D data will be output after a success decode.
- ✓ **Note 4-** For UPC/EAN Composite, if 2D composite component is failed to decode and 1D linear component is successful to decode, then only 1D data will be output.
- ✓ **Note 5-** If both GS-128 and DataBar Composite are set Enable, both 1D and 2D components must be successfully decoded to output both 1D and 2D data.

**GS1-128 Composite, DataBar Composite-** Two versions of GS1 Composite symbol are enabled.
**GS1-128 Composite, DataBar Composite, UPC/EAN Composite-** Three versions of GS1 Composite symbol are enabled.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| GS1 composite version enabled %3501M% | None (Disable) | 00* | %3501D00% * |
| | GS1-128 Composite, DataBar Composite | 01 | %3501D01% |
| | GS1-128 Composite, DataBar Composite, UPC/EAN Composite | 02 | %3501D02% |

## 3-34 PDF417

**Read:**
Format

| Data characters (variable) |
|---|

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %3001M% | Disable | 00 | %3001D00% |
| | Enable | 01* | %3001D01% * |

## 3-35 MicroPDF417

**Read:**
Format

| Data characters (variable) |
|---|

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read **%3101M%** | Disable | 00* | **%3101D00%** * |
| | Enable | 01 | **%3101D01%** |

## 3-36 QR Code

**Read:**
Format

| Data characters (variable) |
|---|

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %4001M% | Disable | 00 | %4001D00% |
| | Enable | 01* | %4001D01% * |
| Website link QR code %4003M% | Enable | 00 | %4003D00% |
| | Disable | 01* | %4003D01% * |

## 3-37 MicroQR Code

Note: The support for this feature is available with customized firmware version.

**Read:**

Format

| Data digits (variable) |
|---|

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %4501M% | Disable | 00* | %4501D00% * |
| | Enable | 01 | %4501D01% |

## 3-38 Data Matrix

**Read:**
Format

| Data characters (variable) |
|---|

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %4101M% | Disable | 00 | %4101D00% |
| | Enable | 01* | %4101D01% * |

## 3-39 Han Xin Code

**Read:**
Format

| Data characters (variable) |
|---|

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %4201M% | Disable | 00* | %4201D00% * |
| | Enable | 01 | %4201D01% |

## 3-40 Aztec Code

**Read:**
Format

| Data characters (variable) |
|---|

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Read %4301M% | Disable | 00* | %4301D00% * |
| | Enable | 01 | %4301D01% |

## 3-41 G1-G6 & C1-C3 & 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 in different 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/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) Use the ASCII table to find the value of $→24.

Scanning steps: Scan the following barcodes in order.

%8001H24%8201D01%

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

2) Use the ASCII table to find the value of A→41, B→42.

5) Refer to 3-42 G1-G4 string position & Code ID position.

6) Refer to 3-6 Scan mode & some global settings.

%8005H4142
%8101D02
%0407D01%

Testing barcode:

123456

**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/un-defined character, G5 can also be set to be repeated. This setting is ignored when the truncate 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.

%8010H30
%8011HFF
%0407D05%

Testing barcode:

000123456

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

**Repeat of a G6 character setting:** While G5 is set as a single defined/un-defined character, G6 can also be set to be repeated. This setting is ignored when the truncate number is more than the barcode data characters. The option of "FF" for this setting is not active while the option of Truncate 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 can be applied simultaneously.

Example: Replace all the "A" character in a data string with "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.

%8014H4142%

Testing barcode:

123A5A

**Multiple characters C3 replacement:** By setting, a number of defined characters in the data string can be replaced by other defined characters. The maximum number of characters to replace is 11.

Example: Replace all the "A" character in a data string with "B" character; replace "C" with "D"; replace "E" with "F".

| | |
|---|---|
| Original code data | “1 2 3 A 4 C 5 6 E 7 8” |
| Output code data | “1 2 3 B 4 D 5 6 F 7 8” |

Steps: scan the following barcodes in order. The ASCII value for “A” is 41, for “B” is 42, for “C” is 43, for “D” is “44”, for “E” is 45, and for “F” is 46.

%8016H4142434445 46%

Testing barcode:

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. Entry** | |
| Prefix string setting %8001M% | 0-22 characters | 00-FF$_{16}$ | |
| | None | 00* | %8001H00% * |
| Suffix string setting %8002M% | 0-22 characters | 00-FF$_{16}$ | |
| | <ENTER> | 0D0A* | |
| Preamble string setting %8003M% | 0-22 characters | 00-FF$_{16}$ | |
| | None | 00* | %8003H00% * |
| Postamble string setting %8004M% | 0-22 characters | 00-FF$_{16}$ | |
| | None | 00* | %8004H00% * |
| Insert G1 string setting %8005M% | 0-22 characters | 00-FF$_{16}$ | |
| | None | 00* | %8005H00% * |
| Insert G2 string setting %8006M% | 0-22 characters | 00-FF$_{16}$ | |
| | None | 00* | %8006H00% * |
| Insert G3 string setting %8007M% | 0-22 characters | 00-FF$_{16}$ | |
| | None | 00* | %8007H00% * |
| Insert G4 string setting %8008M% | 0-22 characters | 00-FF$_{16}$ | |
| | None | 00* | %8008H00% * |
| FN1 substitution string setting %8009M% | 0-4 characters | 00-FF$_{16}$ | |
| | <SP> | 20* | %8009H20% * |
| Truncate leading G5 string setting %8010M% | A un-defined character | 00 | %8010H00% |
| | 1-22 defined characters | 01-7F$_{16}$ | |
| | <0> | 30* | %8010H30% * |
| Repeat of a G5 character setting | Once | 01* | %8011H01% * |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. Entry** | |
| %8011M% | 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 | $01\text{-}7F_{16}$ | |
| | <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> | $0000_{16}$* | |
| | | $0000\text{-}FFFF_{16}$ | |
| Single character C2 replacement %8015M% | <0000> | $0000_{16}$* | |
| | | $0000\text{-}FFFF_{16}$ | |
| Multiple characters C3 replacement %8016M% | - | $0000_{16}$* | |
| | | - | |

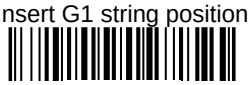
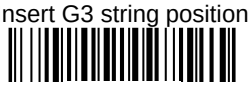
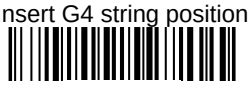
## 3-42 G1-G4 string position & Code ID position

**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 platform 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 effective.

**Code ID position:** It is allowed to select different positions of code ID placement.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Insert G1 string position  %8101M% | 00-99 | 00-99 | |
| | | 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% |

## 3-43 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 after the data is 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 transmitted.
**Postamble transmission:** By setting Enable, postamble will be appended after the data is transmitted.
**Code ID transmission:** Code ID can be transmitted in the format of either Proprietary ID or AIM ID. Refer to 1-2 Default setting for each barcode.
**Code length transmission:** The length of code data string can be transmitted before the code data 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 platform supports a FN1 substitution feature for keyboard wedge, USB and RS-232 interface. The replacement string of FN1 can be chosen by user (see 3-41 G1-G6 & C1-C3 & 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 platform 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 platform 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.

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| Prefix transmission %8201M% | Disable | 00* | %8201D00% * |
| | 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% * |
| | Proprietary ID | 01 | %8206D01% |
| | AIM ID | 02 | %8206D02% |
| Code length transmission %8207M% | Disable | 00* | %8207D00% * |
| | Enable | 01 | %8207D01% |
| Case conversion %8208M% | Disable | 00* | %8208D00% * |
| | Upper (data only) | 01 | %8208D01% |
| | Lower (data only) | 02 | %8208D02% |
| | Upper (whole string) | 03 | %8208D03% |
| | Lower (whole string) | 04 | %8208D04% |
| FN1 substitution transmission | Disable | 00* | %8209D00% * |

| Multiple-scan setting | | | Single-scan setting |
|---|---|---|---|
| **Option barcode** | **Option** | **Alpha. entry** | |
| %8209M% | Keyboard wedge/USB | 01 | %8209D01% |
| | RS-232 | 02 | %8209D02% |
| | Keyboard wedge / USB / RS-232 | 03 | %8209D03% |
| 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 | | |

# 4 Serial Communication Interface (SCI)

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

All communication between the embedded scanner and host occurs over the hardware interface lines using the Serial Communication Interface (SCI). The function of the SCI show as below:

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

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

# 4-1 Programming command syntax

## 4-1-1 Single-parameter setting

**Format**

| Prefix | Parameter index | D/H | 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 6 Parameter Menus, except that there is no leading '%' and ending "M%" in the Parameter index.
**D/H:** This is used by the embedded scanner 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 (Parameter value will be lost when power remoned or the scanner enters Standby mode).

**Example1:** Set 0401->03 (decimal). The command is as following.

| Prefix | Parameter index | D | Value | . |
|---|---|---|---|---|
| 0x16 0x4D 0x0D | 0x30 0x34 0x30 0x31 | 0x44 | 0x30 0x33 | 0x2E |

**Example2:** Set 8002->0D0A (hexadecimal). The command is as following.

| Prefix | Parameter index | H | Value | . |
|---|---|---|---|---|
| 0x16 0x4D 0x0D | 0x38 0x30 0x30 0x32 | 0x48 | 0x30 0x44 0x30 0x41 | 0x2E |

## 4-1-2 Multiple-parameter setting

**Format**

| Prefix | Parameter index 1 | D/H | Value 1 | ; | • • • | Parameter index N | D/H | Value N | Storage |
|---|---|---|---|---|---|---|---|---|---|

**Prefix:** Refer to Prefix of 4-1-1Single-parameter setting.
**Parameter index 1 to Parameter index N:** Refer to Parameter index of 4-1-1Single-parameter setting.
**D/H:** Refer to D/H of 4-1-1Single-parameter setting.
**Value 1 to Value N:** Refer to Value of 4-1-1Single-parameter setting.
**Storage:** Refer to Storage of 4-1-1Single-parameter setting.

**Example:** Set 0401->03 (decimal), 8002->0D0A (hexadecimal). The command is as following.

| Prefix | Parameter index | D | Value | ; | Parameter index | H | Value | . |
|---|---|---|---|---|---|---|---|---|
| 0x16 0x4D 0x0D | 0x30 0x34<br>0x30 0x31 | 0x44 | 0x30<br>0x33 | 0x3B | 0x38 0x30<br>0x30 0x32 | 0x48 | 0x30 0x44<br>0x30 0x41 | 0x2E |

## 4-1-3 Query command syntax

**Format**

| Prefix | Parameter index | ^/?/* | . |
|---|---|---|---|

**Prefix:** Refer to Prefix of 4-1-1Single-parameter setting.
**Parameter index:** Refer to Parameter index of 4-1-1Single-parameter setting.
**^/?/*:** Several special characters can be used to query the embedded scanner about its settings.

| | |
|---|---|
| ^ (0x5E) | Read the default value for the parameter |
| ? (0x3F) | Read the current value for the setting. |
| * (0x2A) | Read the range of possible values for the parameter. |

## 4-1-4 Start Decode & Stop Decode

### Start Decode

**Format**

| <SYN> | T | <CR> |
|---|---|---|
| 0x16 | 0x54 | 0x0D |

Activate the embedded scanner to scan barcodes when Scan Mode is Host.

### Stop Decode

**Format**

| <SYN> | U | <CR> |
|---|---|---|
| 0x16 | 0x55 | 0x0D |

Deactivate the embedded scanner to scan barcodes when Scan Mode is Host.

## 4-1-5 Return default parameters & firmware revision

### Load Defaults

**Format**

| <SYN>M<CR> | %%%DEF | . |
|---|---|---|
| 0x16 0x4D 0x0D | 0x25 0x25 0x25 0x44 0x45 0x46 | 0x2E |

Set the parameters to the default values.

### Write to Custom Defaults

**Format**

| <SYN>M<CR> | %%WCDF | . |
|---|---|---|
| 0x16 0x4D 0x0D | 0x25 0x25 0x57 0x43 0x44 0x46 | 0x2E |

Write the current parameter setting to the custom default settings.

### Restore Custom Defaults

**Format**

| <SYN>M<CR> | %%RSDF | . |
|---|---|---|
| 0x16 0x4D 0x0D | 0x25 0x25 0x52 0x53 0x44 0x46 | 0x2E |

Restore custom default settings to current settings. If failed, restore default settings.

### Firmware Version List

**Format**

| <SYN>M<CR> | %%%VER | . |
|---|---|---|
| 0x16 0x4D 0x0D | 0x25 0x25 0x25 0x56 0x45 0x52 | 0x2E |

Request the software revision string from the embedded scanner.

## 4-1-6 Get Image

### Original Image Ship

### Format

| <SYN>M<CR> | %OISHP | . |
|---|---|---|
| 0x16 0x4D 0x0D | 0x25 0x4F 0x49 0x53 0x48 0x50 | 0x2E |

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 | . |
|---|---|---|
| 0x16 0x4D 0x0D | 0x25 0x44 0x49 0x53 0x48 0x50 | 0x2E |

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.

## 4-1-7 Responses

The embedded scanner responds to a serial command with one of three responses:

| | |
|---|---|
| <ACK> (0x06) | A valid command which has been processed. |
| <ENQ> (0x05) | An invalid index command. |
| <NAK> (0x15) | A command with a valid parameter index and an invalid value. |

## 4-2 Examples of setting and query commands

The following examples illustrate how a command should be constructed and transmitted to the embedded scanner.

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

**Step 1:**

1) Set Prefix string setting to be “1N”.
2) Look up the parameter table in 6 Parameter Menus and the ASCII table in 11 ASCII table. The target parameter index is “8001”.
3) Its numeral system is hexadecimal, indicated by ‘H’.
4) Using the ASCII table, “1N” is translated into “314E”.
5) Put all above parts and then append a prefix and a storage indicator ‘.’, thus, “<SYN>M<CR>8001H314E.” is the command.
6) Upon receiving command, embedded scanner response with “8001H314E<ACK>”.

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

| <SYN>M<CR> | 8001 | H | 314E | . |
|---|---|---|---|---|
| 0x16 0x4D 0x0D | 0x38 0x30 0x30 0x31 | 0x48 | 0x33 0x31 0x34 0x45 | 0x2E |

**Embedded Scanner: 8001H314E**

| 8001 | H | 314E | <ACK> |
|---|---|---|---|
| 0x38 0x30 0x30 0x31 | 0x48 | 0x33 0x31 0x34 0x45 | 0x06 |

**Step 2:**

1) Enable Prefix transmission.
2) Look up the parameter table in 6 Parameter Menus and the ASCII table in 11 ASCII table. The target parameter index is represented by: “8201”.
3) The numeral system is decimal: ‘D’.
4) The value is translated as: ‘0’ and ‘1’.
5) Put all above parts and then append a storage indicator ‘.’ to construct the command: “<SYN>M<CR>8201D01.”
6) Upon receiving command, embedded scanner response with “8201D01<ACK>”.

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

| <SYN>M<CR> | 8201 | D | 01 | . |
|---|---|---|---|---|
| 0x16 0x4D 0x0D | 0x38 0x32 0x30 0x31 | 0x44 | 0x30 0x31 | 0x2E |

**Embedded Scanner: 8201D01<ACK>**

| 8201 | D | 01 | <ACK> |
|---|---|---|---|
| 0x38 0x32 0x30 0x31 | 0x44 | 0x30 0x31 | 0x06 |

## Example 2: Query current scan mode

1) Look up the parameter table in 6 Parameter Menus and the ASCII table in 11 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>0401?.”.
5) Upon receiving command, embedded scanner response with “0401D01<ACK>”.

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

| <SYN>M<CR> | 0401 | ? | . |
|---|---|---|---|
| 0x16 0x4D 0x0D | 0x30 0x34 0x30 0x31 | 0x3F | 0x2E |

**Embedded Scanner: 0401D01<ACK>**

| 0401 | D | 01 | <ACK> |
|---|---|---|---|
| 0x30 0x34 0x30 0x31 | 0x44 | 0x30 0x31 | 0x06 |

# 5 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 “CODE 128”, then select “CODE A” type, and input “{DC1}” 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**

# 6 ASCII Table

| | for keyboard wedge | | for RS-232 | |
|---|---|---|---|---|
| H / L | 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”.

# 7 Test barcode

**UPC-A**

**UPC-E**

**UPC-E1**
**(Default setting: Read disable)**

**EAN-8**

**EAN-13**

**ISBN/ISSN**

**Code 39**

**Code 32**

**Code 128**

**Interleaved 2 of 5**

**Industrial 2 of 5**
**(Default setting: Read disable)**

**Matrix 2 of 5**

**Code 93**

**UCC/EAN 128**

**Code 11**
**(Default setting: Read disable)**

**MSI/Plessey**
**(Default setting: Read disable)**

**UK/Plessey**
**(Default setting: Read disable)**

**China Post**

**GS1 DataBar (GS1 DataBar Truncated)**

**GS1 DataBar Limited**

**GS1 DataBar Expanded**

**PDF417**

**12=890ab-+%xyz**

**MicroPDF417**
**(Default setting: Read disable)**

**0239+-mdo**

**QR code**

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

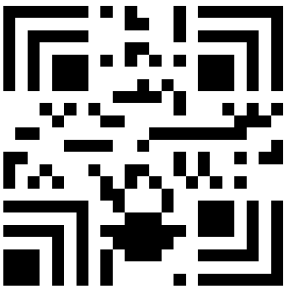
**Data Matrix**

**123890abc-+=&*%^!mdo**

**Aztec Code**
**(Default setting: Read disable)**

**12345678901234567890**

**Han Xin Code**
**(Default setting: Read disable)**



**12345678901234567890**

# 9 Return default parameters & firmware version

**WARNING: Default value initialization**
If you wish to return the image platform to all the factory default settings, scan the barcode above.

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

## 10 Configuration alphanumeric entry barcode

To finish parameter setting, please scan the bar code below.