Barcode Scanner

User Manual

Rev.1.3

Disclaimer

Please read all the contents of the manual carefully before using the products described in this manual to ensure the safe and effective use of the products. After reading, please keep this manual properly for the next time you use it.

Not disassemble or tear the sealed bidding of the scanner on your own, otherwise our company shall not assume the responsibility of warranty or replacement of the scanner.

The images in this manual are for reference only. If there are some pictures that Not match the actual product, please refer to the actual product. For the improvement and renewal of this product, our company reserves the right to modify the document at any time without notice.

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Change Record

Rev.	Date	Description
1.0	2021.06.16	--
1.1	2021.08.27	1. Add Vietnamese. 2. Add HID-P0S interface setting. 3. Add Bluetooth base self sensing setting. 4. Add screen scanning mode. 5. Add Brazil special barcode encryption rule setting.
1.2	2021.12.9	The barcode length setting parameter is updated.
1.3	2022.6.7	1. Chapter 5 parts of barcode settings are updated. 2. Appendix II prefix and suffix settings barcodes are updated.
1.4	2023.1.11	

CONTENT

Chapter 1 Introduction

The scanner uses the class leading chip with intelligent image reading technology, and it mainly uses for image-based 2D scanner.

The scanner can read all kinds of 1D barcodes and standard 2D barcodes (various versions of PDF417, QR code, and Data matrix) can easily scan paper, plastic cards, LCD and other barcode printed media. Its fully integrated design makes it easy to embed in a wide range of product applications.

About Manual

This guide mainly provides various functional setup instructions for the scanner. By scanning the setup barcodes in this guide, you can change the functional parameters of the scanner, such as communication interface parameters, scanning mode, prompt mode, data processing and output, etc.

The scanner provides parameter configurations that are suitable for most used functions at the factory. And in most cases users can put them into use without making adjustment.

Barcode Read

In manual read mode, the procedure for scanning barcodes is as follows:

(1) Make sure that the scanner, data cable, data receiving host, and power supply are properly connected and turned on.

(2) Press the trigger to activate the light.

(3) Align the aiming line to the center of the barcode, move the scanner and adjust the distance between it and the barcode to find the optimal scanning distance.

(4) When hear the prompt sound, the infrared light goes out and the barcode reading successfully, then the scanner will decode the data to the host.

(5) All set barcodes are saved by power outage.

▲Note: For the same batch of barcodes, the scanner keeps a very high success ratio in certain distance which is regarded as the optimal scanning distance.

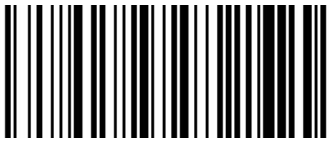
Use the Setting Barcode

Set the parameter to a special barcode whose barcode type is barcode128. When it scans to a barcode software that matches the setting type of setting, it will automatically enter the setting and does not send the results on the host. All set barcodes are saved by power outage. (except to restore factory settings)

▲Note: All bar codes with "*" in this manual indicate the default values of factory settings.

Restore Factory Defaults

▲ Note: Please use the "Restore Factory Defaults" function carefully, and when you scan this setup barcode, the current parameter settings will be lost and replaced with the factory default values.



Restore Factory defaults

Read the Firmware Version

Chapter 2 Communication Interface

The Handheld Barcode Scanner provides USB and RS-232 interface (optional) to connect to the host. Through communication interfaces, it can receive and read the data, control the scanner by sending the commands, and modify the parameter of scanner, etc.

Serial Interface

Serial interface is a common way to connect the scanner to the host (e.g. PC, POS devices). The handheld scanner provides RS-232 electrical level interface, which can directly connect to PC's serial interface. When using serial interface, the scanner and the host should be completely match with each other on communication parameter configuration, to ensure fluent communication and correct content.

Interface Setting

The default serial interface parameter is as below shown, when it is inconsistent with the host, it can be modified by Read Setting Barcode.

Parameter	Default
Type	RS-232 interface
Baud Rate	115200
Parity Type	None
Data Bits	8
Stop Bits	1
Hardware Flow Control	None

RS232 General Serial Interface

None*

Odd parity

Even parity

Baud Rate

The unit of Baud Rate is bps is bits/s (bps: bits per second), the optional configuration parameter is as below shown:

115200 *

38400

19200

9600

4800

2400

1200

USB Interface

HID Virtual Keyboard

When using USB interface, the scanner can be simulated as a HID-KBW device. In this mode, the scanner would be a virtual keyboard that output the data to the host.

HID Virtual Keyboard Setting

USB International Keyboard Setting

USA*

Belgian

Finnish (Swedish)

French

German

Italian

Swiss (German)

British

Danish

Norwegian

Spanish

Dutch

Hebrew

Portuguese

Latin(America)

Czech_DEC

Brazilian

Greek_DEC

Canadian (French)

Hungarian

Polish

SCS

Slovakian_DEC

Swedish

Turkish_Q

Romanian

Russian

Turkis_F

Japanese(ASCII)

Swiss(French)

USA(International)

Slovenian

Croatian

Bosnian

Macedonian

Albanian

Serbian(Latin)

Serbian(Cyrillic)

Czech_QWERTZ

Czech_QWERTY

Czech(Programmers)

Estonian

Latvian

Latvian_QWERT

Lithuania

Lithuanian (IBM)

Slovakian_QWERTZ

Slovakian_QWERTY

Hungarian_101_Key

Spanish(Variation)

Bulgarian(Cyrillic)

Bulgarian(Latin)

Canadian(French_Legacy)

Canadian(Multilingual)

Italian_142

Polish_214

Polish_Programmers

Brazilian_MS

Greek_Polytonic

Greek_220

Greek_319

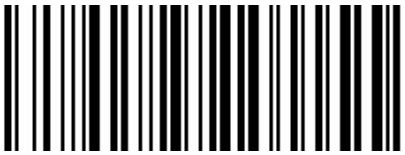
Greek_Latin

Greek_220_Latin

Greek_319_Latin

Greek_MS

Russia_MS



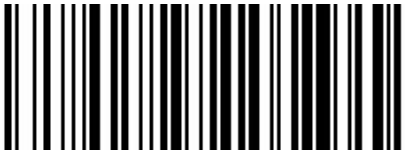
Russian(Typewriter)

Thai(Pattachote)

Thai(Kedmanee)

Irish

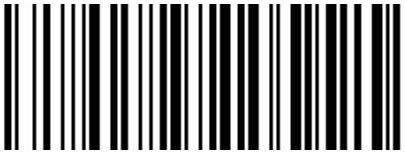
Maltese



Icelandic

Ukrainian

Uzbek(Cyrillic)

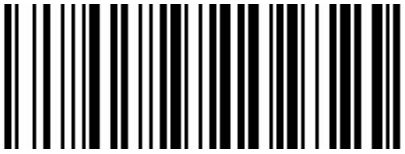


Kazakh

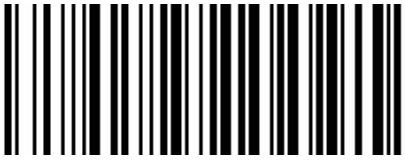
Kyrgyz(Cyrillic)

Azeri(Latin)

Azeri(Cyrillic)



Belarusian



Faeroese

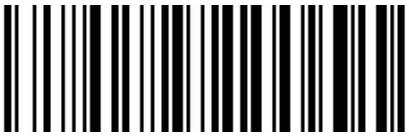
Gaelic

Tatar

Mongolian(Cyrillic)

Vietnam

Character Output Setting (China, Japan, Korea and Thailand)



Chinese Simplified (Word)

Chinese Simplified (Notepad)

Chinese Traditional (Word)

Chinese Traditional (Notepad)

Japan (Word)

Japan (Notepad)

Korea (Word)

Korea (Notepad)

Thailand (Word)

Thailand (Notepad)

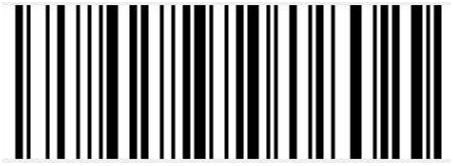
USB Virtual Serial Port

When the scanner uses a USB communication interface, but the host application uses serial communication to receive data, you can set the scanner to the USB virtual serial port. This function requires that be installed the appropriate driver on the host.

USB Virtual Serial Port Setting

HID-POS Interface

As an auxiliary interface, HID POS can send commands to the scanner through the USB HID POS interface. It can also connect the same Barcode Scanner as a USB serial device, and then receive data and send commands through the virtual port.



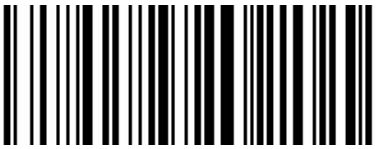
HID-POS settings

Bluetooth Interface

In this mode, the scanner outputs data to the host in Bluetooth transmission mode.

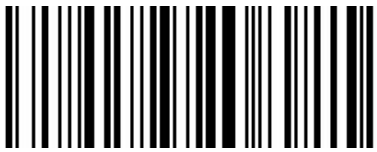
Bluetooth transmission mode settings

Set scanner switch time (Bluetooth mode only)



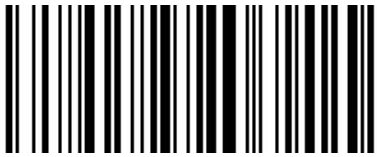
No Shutdown

5 min

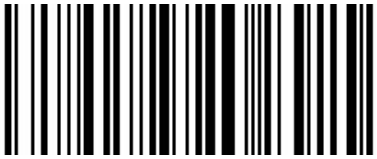


10 min

15 min



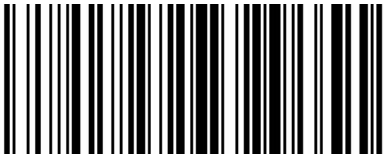
30 min



60 min

Bluetooth pop-up iPhone keyboard settings (Bluetooth mode only)

Pop-up after Bluetooth connection:

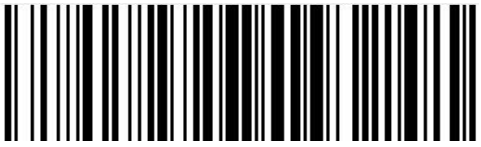


ON

OFF

Bluetooth base self sensing setting (Bluetooth model only)

ON*



OFF

VID & PID Table

USB uses 2 numbers to identify the device and find the correct device. The first number is VID (Supplier ID), designated by USB Implementers Forum. The second number is PID (Device ID), and each interface type assigns a PID number.

Device Name	Interface Type	PID（Hex）	PID（Decimal）
Scanner	USB virtual serial interface	18d1	1009
	USB virtual keyboard	18d1	100b

Chapter 3 Scanning Mode

Manual Mode

In manual mode, when the trigger control interface of the scanner changes into trigger electrical level, the scanner will start to shoot and read. In the limited time of “single reading time”, the scanner will continuously shoot and read until it is successful. When trigger electrical level is canceled, or read is over the single read time limit, shooting and reading will be stopped. When read is successful, the scanner will output the editing content through communication interface. When start a new trigger read, the host needs to cancel the trigger electrical level at first, and then send the trigger electrical level after 20ms.

Manual Mode

Sense Mode

In automatic sensing mode, the scanner will monitor the images being taken. When the scene is changed, it will read within the limited time of “single read time”. After reading the output information successfully or time out, it will re-enter the state of monitoring scene change.

When the scanner works in this mode, it can also according to the trigger electrical level to enter the reading state. After the trigger electrical level is canceled or reading times out, it will re-enter the state of monitoring scene change. Before re-entering the monitoring state, the trigger electrical level needs to be canceled, then it will be switched to the sensing mode.

Sensing Automatically

Moving Performance：

PS：Ultra fast mode in the automatic sensing mode, the sensing distance of scanning paper barcode will decrease significantly.

Normal *

Fast

Ultra-fast

✧ Single Reading Time

In sensing reading mode, the parameter indicates the maximum time of allowing reading engine to continuously collect and identify barcode before reading successfully. After reading successfully or single read timeout, the reading engine will enter the interval of not collecting the read. The range of single read time is 0.1~9.9s, step length is 0.1s. When set to 0, the read does not wait. Default time is 1s. Please refer to the Chapter 7 for the setting method.

Continuous Mode

Continuous mode means that the scanner continuously shoots, reads and output the information. In this mode, the same barcode cannot be output.

Continuous

✧ Single Reading Time Limit

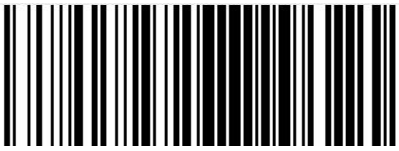
In continuous mode, it indicates the maximum time of scanner continuously collect and identify barcode before reading successfully. If it times out, it will enter the interval of not collecting and reading according to the setting. The code reading time is 100ms in units, which can be set to 0.1~9.9s. When it be set to 0 that indicates no waiting. Please refer to chapter 7 of the setting method.

Command Programming

In this mode, scanner needs the host to trigger and decode the barcode. The scanner can set the length of the reading time. The reading code time can be set to 0.1~9.9s. When it be set to 0 that indicates no wait. Please refer to chapter 7 of the setting method.

Scan Screen Mode（Optimize settings for screen barcodes only）

OFF*



ON

Offline Storage Mode (Only Available for Bluetooth Mode)

- **Offline storage**

Enable

Disable

- **Send the offline storage data**

- **Clear the offline data**

- **Display the offline storage data**

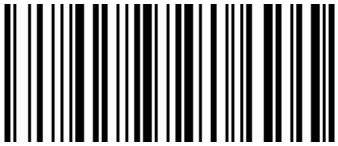
Chapter 4 Illumination and Aiming

Aiming

There is a projecting device on the scanner that is used to project a special image when reading, which characterizes the center of the scene image taken by the scanner. When the scanner is used for shooting, the image is projected on the reading target, and the scanner aims at the reading target, which makes it easier to read the target.

Normal: The aiming device will light up and project the image during the reading process, and the other times goes out.
No aiming: the aiming device is off and not projected.

Aiming OFF

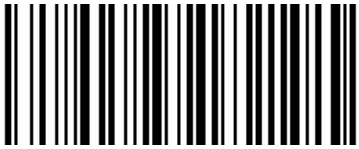


Aiming ON*

Illumination

There is a fill illuminating device on the scanner that is used to illuminate the reading area when reading. It can be set to turn off and fill illuminating level. (Please refer to Chapter 7 for the lighting level setting)

Illumination ON*



Illumination OFF

Power on and Read Successfully Prompt Tone

The scanner can output PWM signal to drive the external buzzer circuit to make sound. The sound signal can be turned off or allowed to be output by setting. The corresponding settings can be made through the following setting codes.

Power on Prompt Sound Settings

Power on OFF
Good read ON

Power on ON
Good read OFF

Power on and Good read OFF

Power on and Good read ON*

Buzzer Volume and Tone Settings

- **Buzzer volume**

High volume *

Medium volume

Low volume

- **Buzzer Tone**

High tone

Medium tone *

Low tone

Chapter 5 Symbologies

Every symbology (barcode type) has its own unique attributes. This chapter provides programming barcodes for configuring the scanner so that it can identify various symbologies. It is recommended to disable those that are rarely used to increase the efficiency of the scanner.

Barcode General Settings

1D Barcode Switch

Enable All 1D Barcode

Disable All 1D Barcode

2D Barcode Switch

Enable All 2D Barcode

Disable All 2D Barcode

All Barcode Switch

Enable All Barcode

Disable All Barcode

1D Barcode Setting

EAN-8

Enable/Disable EAN-8

Enable*

Disable

Enable/Disable 2/5-bit Add-On code

The 2/5-digit Add-On code refers to the 2/5-digit digital barcode added after the ordinary barcode.

Disable*

Enable

Convert EAN-8 to EAN-13

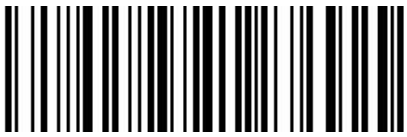
The result is converted to EAN-13, i.e. the barcode data of EAN-8 is filled with 5 bits of 0 before transmission.

Disable*

Enable

EAN-13

Enable/Disable EAN-13



Enable*

Disable

Enable/Disable 2/5-bit Add-On code

The 2/5-digit Add-On code refers to the 2/5-digit digital barcode added after the ordinary barcode.

Disable*

Enable

UPC-E

Enable/Disable UPC-E

Enable*

Disable

Transmit check character

UPC-E barcode data is fixed to 8 characters, and the eighth character is the check bit, which is used to check the correctness of all 8 characters.

Enable*

Disable

Enable/Disable 2/5-bit Add-On code

The 2/5-digit Add-On code refers to the 2/5-digit digital barcode added after the ordinary barcode.

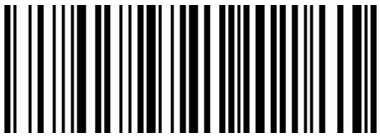
Disable*

Enable

Convert UPC-E to UPC-A

The chip can convert the decoding results of UPC-E type barcodes to UPC-A type barcodes according to standard algorithms.

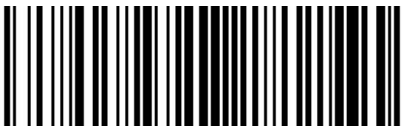
Enable



Disable*

System character transmit

Enable*



Disable

Transmit system character and country code ("0" only for USA)

UPC-E1

Enable*

Not transmit preamble

Transmit system character and country code (“0” only for USA)

Enable/Disable 2/5 Add-On code

The 2/5-digit Add-On code refers to the 2/5-digit digital barcode added after the ordinary barcode.

Disable*

Enable

UPC-A

Enable/Disable UPC-A

Enable*	Disable

Transmit check character

UPC-A bar code data is fixed to 13 characters, and the 13th character is check bit, which is used to check the correctness of all 13 characters.

Enable *

Disable

Enable/Disable 2/5-bit Add-On code

The 2/5-digit Add-On code refers to the 2/5-digit digital barcode added after the ordinary barcode.

Disable*

Enable

Transfer system character

Enable*

Disable

Transmit system character and country code (“0” only for USA)

Code 39

Enable/Disable Code 39

Enable*

Disable

Check character verification and transmit

Code 39 barcode data does not contain a check character. If there is a check character, it is the last character of the data. A check character is a value calculated from all data to verify that the data is correct.

Not check*

Check

Transmit check character

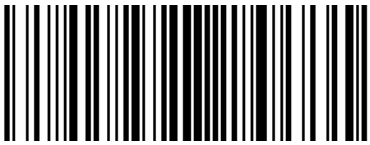
Enable

Disable*

Enable/Disable code 39 Full ASCII

Code 39 data can include all ASCII characters, but the reader can only read part of ASCII characters by default. Through setting, the function of reading full ASCII characters can be turned on.

Enable*



Disable

Convert Code 39 to Code32

Enable

Disable*

Code 32 prefix

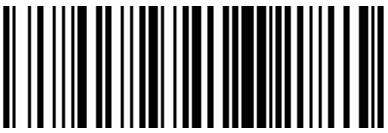
Enable add prefix character "a"

Disable*

Code 93

Enable/Disable code 93

Enable*



Disable

Code 11

Enable/Disable code 11

Enable

Disable*

Check Setting

Code 11 barcode data does not contain the check digit. If there is a check digit, it can be the last one or two characters of the data. The check bit is the value calculated from all data to check whether the data is correct. Therefore, if it is set to "Not check", the reader will normally transmit all barcode data.

Not check*

1-bit check

2-bit check

Transmit check character

Enable

Disable*

Code 128

Enable/Disable code 128

Enable*

Disable

Note: if this barcode is set to disable, the scanner will not be able to scan and switch the corresponding function settings.

Code 128 <FNC4>

Disable*

Enable

Codabar

Enable/Disable Codabar

Enable*

Disable

Start and stop characters

Enable CLSI

Disable CLSI*

Enable this setting to remove the start and stop characters, and insert spaces after the first, fifth and tenth characters of the 14-character Codabar barcode.

Enable NOTIS

Disable NOTIS*

Enable this parameter to remove the start and stop characters.

MSI

Enable/Disable MSI

Enable

Disable*

Check Setting

MSI barcode data does not contain the check digit. If there is a check digit, it can be the last one or two characters of the data. The check bit is the value calculated from all data to check whether the data is correct. Therefore, if it is set to "Not check", the reader will normally transmit all barcode data.

1-bit check

2-bit check

Check bit algorithm

1 MSI MOD10/MOD10*

2 MSI MOD10/MOD11

Transmit check character

Transmit check character

Disable*

Interleaved 2 of 5

Enable/Disable Interleaved 2 of 5

Enable*

Disable

Check and transmit character

Interleaved 2 of 5 barcode data does not contain the check digit. If there is a check digit, it can be the last one or two characters of the data. The check bit is the value calculated from all data to check whether the data is correct. Therefore, if it is set to "Not check", the reader will normally transmit all barcode data.

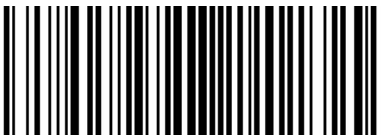
Not check*

USS check

OPCC check

Transmit check character:

Transmit check character



Disable*

Convert I 2 of 5 to EAN-13

Convert I 2 of 5 to EAN-13

Disable*

Matrix 2 of 5

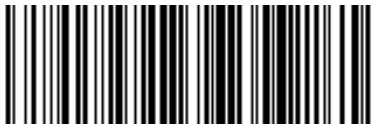
Enable/Disable Matrix 2 of 5

Enable

Disable*

Check and transmit character

Matrix 2 of 5 barcode data does not contain the check digit. If there is a check digit, it can be the last one or two characters of the data. The check bit is the value calculated from all data to check whether the data is correct. Therefore, if it is set to "Not check", the reader will normally transmit all barcode data.



Not check*

Check

Transmit check character

Transmit check character

Disable*

Industrial 2 of 5

Enable/Disable Industrial 2 of 5

Enable

Disable*

Standard 25

Enable/Disable Standard 25

Enable

Disable*****

ISSN

Enable*

Disable

ISBN

Enable*

Disable

Data bit setting

Use 13 bits*

Use 10 bits

ISBT 128

Enable/Disable ISBT 128

Enable*

Disable

GS1 128

Enable/Disable GS1 128

Enable*

Disable

Gs1-128 emulation mode for UCC/EAN composite code

Disable*

Enable

GS1 DataBar

Enable/Disable GS1 DataBar

Enable*

Disable

Convert GS1 DataBar to UPC/EAN

Convert DataBar to UPC/EAN

Disable*

GS1 DataBar Limited

Enable/Disable GS1 DataBar Limited

Enable

Disable*

GS1 DataBar Expanded

Enable/Disable GS1 DataBar Expanded

Enable

Disable*

1D Barcode Anti-color

Enable*

Disable

2D Barcode Setting

PDF417

Enable/Disable PDF417

Enable*

Disable

Data Matrix

Enable/Disable Data Matrix

Enable*

Disable

Anti-color

Enable*

Disable

Read Data Matrix

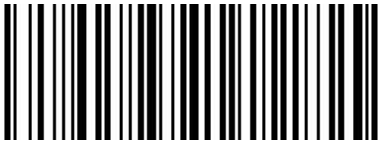
Enable*

Disable

QR

Enable/Disable QR

Enable*



Disable

Enable/Disable Micro QR code

(this setting is only valid when enable QR)

Enable*

Disable

Anti-color

Enable*

Disable

Aztec

Enable*

Disable

Anti-color

Enable

Disable*

Han Xin

Enable*

Disable

Anti-color

Enable

Disable*

Chapter 6 Barcode Input / Output Settings

Common suffix

Add suffix LF

Add suffix CR

Add suffix LF+CR

Add suffix TAB

Barcode data case conversion

*Disable case conversion

Convert barcode data into upper case

Convert barcode data into lower case

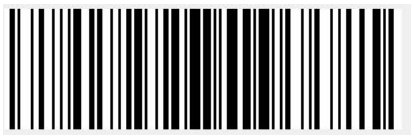
Convert grouping character to space

Disable*

Enable

Replace the (-) to TAB in DM barcode

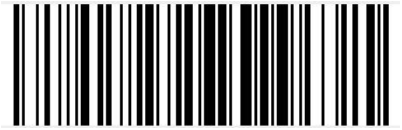
Disable*



Enable

Read UDI barcode

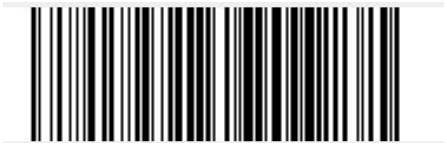
Disable*



Enable

Read digital barcode only

Enable



Disable*

Remove zero data at the beginning of barcode

Disable*

Enable

Remove or reduce space

Disable *

Remove the spaces in barcode

Reduce multiple consecutive spaces to one space

Set the barcode length

Operand: 0x50

Data: 3 BYTE data

param: Data0 Data1—These two data is the parameter of data.

		params	min	max	default
Code 128	Min	0x0151	0	55	0
	Max	0x0152	0	55	0
Code 39	Min	0x0012	0	55	2
	Max	0x0013	0	55	55
Code 93	Min	0x001A	0	55	4
	Max	0x001B	0	55	55
Code 11	Min	0x001C	0	55	4
	Max	0x001D	0	55	55
ITF	Min	0x0016	0	55	4
	Max	0x0017	0	55	55
DTF	Min	0x0014	0	55	4
	Max	0x0015	0	55	55
codebar	Min	0x0018	0	55	5
	Max	0x0019	0	55	55
MSI	Min	0x001E	0	55	4
	Max	0x001F	0	55	55
GS1 DataBar	Min	0x0a76	0	255	0
	Max	0x0a77	0	255	0
QR code	Min	0x0a78	0	255	0
	Max	0x0a79	0	255	0
PDF417	Min	0x0a7a	0	255	0
	Max	0x0a7b	0	255	0
Data Matrix	Min	0x0a7c	0	255	0
	Max	0x0a7d	0	255	0
Aztec	Min	0x0a7e	0	255	0
	Max	0x0a7f	0	255	0
Maxicode	Min	0x0b01	0	255	0
	Max	0x0b02	0	255	0

Note: The setting range must be that the minimum length is less than or equal to the maximum length, and the two parameters need to be sent at the same time.

Skip the number of characters before barcode data

operand：0x59

data: *0: Do not skip barcode data / 1~31: skip the number of characters before barcode data

*Not skip barcode data

Skip 1 character before barcode data

Skip 5 character before barcode data

Skip the number of characters after barcode data

Operand: 0x5A

data: *0: Do not skip barcode data / 1~31: skip the number of characters after barcode data

*Not skip barcode data

Skip 1 character after barcode data

Skip 5 character after barcode data

ITF data cut

Operand：0x55

	Enable	Disable
Data	0x01 *	0x02~0x32

Note: 0x02 indicates cutting the first data;

0x32 indicates cutting 49 data from the front.

Disable

Cut the first data

Cut the top 5 data

Brazil special barcode encryption rule settings

ON

OFF*

Touch key switch settings（Only for models with touch keys）

OFF*

ON

Chapter 7 Scanner Settings

Barcode Command Format

Length	Operand	Host/Slave	Permanent Command	Data	Checksum
Length	Operand	H/D	Status	Data	CRC
1 BYTE	1 BYTE	1 BYTE	1 BYTE	1 BYTE~250BYTE	1 BYTE

Length	operands + H/D + permanent command + data
Operand	The operand is the following command data
Host/Slave	Indicates whether this command is sent from the host or from the slave Host: 0x04 / Slave: 0x00
Permanent command	Indicates whether this command requires power-down save 0x08 requires power-down save 0x00 does not require power-down save
Data	Indicates parameter data carried by this command
Checksum	Check and algorithm: After all the previous data are added and reversed, take a low byte of 8 bits

Barcode Setting Format

Prefix	Operand	Data
5 BYTES	1 BYTE	1BYTE~250BYTE

Set barcode	Code 128 type Barcode
Prefix	Fixed prefix: +N+S-
Operand	The operand is the following command data
Data	Indicates parameter data carried by this command

General settings (default HID single scan mode)

Host mode (CDC, HID, BT, COM,HID-POS）

Operand: 0x41

	USB Virtual Serial Port	USB Virtual Keyboard	BT	General Serial Port	HID-POS
Data	0x02	0x01	0x03	0x04	0x05

Set scanner interface mode

Trigger mode (Single scanning, scanning continuously, auto sensing)

Operand: 0x42

	Button Trigger	Light continuously	Auto sensing
Data	0x00*	0x01	0x02

Set the scanning mode of the scanner

Default parameters (Restore factory settings)

Operand: 0x43

Data: 0x00

Restore to default parameters of factory settings.

Decoding timeout（0.1s~9s）

Operand: 0x44

	0.1s	0.2s	.....	9.7s	9.8s	9.9s
Data	0x01	0x02	.....	0x61	0x62	0x63*

When setting barcode reading, if the barcode is not read, it will stop reading the code time.

Data prefix

Operand: 0x52

	Disable	Custom Define
Data0	0x00*	0x01~0xfd
Data1	0x00	0x01~0xfd

Note:

1. If the character set to be *0x20*, you need to set the *data = 0xFE*.
2. If only one character is set, you need to set another to *0x00 Disable.*

Data suffix

Operand: 0x45

	Disable	Custom Define
Data0	0x00*	0x01~0xfd
Data1	0x00	0x01~0xfd

Note:

1. If the character set to be *0x20*, you need to set the *data = 0xFE*.
2. If only one character is set, you need to set another to *0x00 Disable.*
3. The default of *Data1* is *0x0a.*

Aiming device (ON/OFF)

Operand: 0x46

	ON	OFF
Data	0x01*	0x00

Illumination light (ON/OFF)

Operand: 0x47

	OFF	Level 1	Level 2	.....	Level 9	Level 10
Data	0x00	0x01	0x02	.....	0x09	0x0A

Data: When the level is 0, it is closed.

Multi code quantity

Operand: 0x4B

	OFF	2	3	.....	6	7
Data	0x00	0x02	0x03	.....	0x06	0x07

Set whether to start scanning multiple barcode modes at the same time and set the number of scanning barcodes simultaneously.

Baud rate of virtual serial port

Operand: 0x48

	115200	38400	19200	9600	4800	2400	1200
Data	0x00	0x01	0x02	0x03(Default)	0x04	0x05	0x06

Set serial port baud rate, this setting applies to USB virtual serial port and normal serial port only.

Check bit of virtual serial port

Operand: 0x49

	Non-Check	Odd Check	Even Check
Data	0x00(Default)	0x01	0x02

Set the check method of serial port.

Multi code quantity

Operand: 0x4B

	OFF	2	3	.....	6	7
Data	0x00	0x02	0x03	.....	0x06	0x07

Set whether to start scanning multiple barcode modes at the same time and set the number of scanning barcodes simultaneously.

Multi code sensitivity

Operand: 0x4C

	Level 1	2	3	.....	9	10
Data	0x00	0x01	0x03	.....	0x09	0x0A

Note: the higher the level, the stronger the ability to decode the double code, but the corresponding time to decode the single code will be longer.

Buzzer enables

Operand: 0x4D

Data	Power on Beep	Good read Beep
0x00	OFF	OFF
0x01(default)	ON	ON
0x02	OFF	ON
0x03	ON	OFF

The convert rate in HID mode

Operand: 0x4E

	Fast	Normal	Slow
Data	0x01	0x02*	0x0a

Timeout setting of the same barcode in non-single scan mode

Operand: 0x4F

	Variable
Data	0x00~0x63

Data:

0x00 indicates that there is no Timeout Invalid. If there is a barcode, it can still output.

0x01 indicates the timeout of 100ms.

0x63 indicates the timeout 9.9s.

Sensitivity

Operand: 0x51

	Normal	Fast	Ultra-Fast
Data	0x00*	0x01	0x02

Note: Ultra-fast mode in auto-sensing mode, the sensing distance of the scanning paper barcode will be reduced significantly.

Center aiming decode setting

Operand: 0x53

	Enable	Disable
Data	0x01*	0x00

Insert characters into barcode data

(up to 8 characters)

Operand: 0x5C

Data:

Data0 ~ data1: the position of the inserted data in the barcode data

Data2: data inserted in corresponding position (range: 0x01 ~ 0x7F)

Note: Data0 ~ data1

Calculation method: data0 = (x/64) +0x20 data1 = (x%64) +0x20, where x is the position of the character to be inserted (range: 1 ~ 6143).

When Data0 = 0x00, data1 = 0x00, clear all inserted data.

When Data0 = 0x00, data1 = 0x01~0x08, the insertion data of corresponding coordinates shall be cleared, and the coordinates shall be arranged in ascending order.

Compound command parameters

Operand: 0x5D

Data: Data0~dataN (range: 0 ~ N, N is any number)

Note: QR code is used for barcode type setting. Specific restart commands are not supported for composite commands, such as setting interface mode and restoring factory settings.

Specific command format:

Data0: specific command length, including command and command data

Data1: specific command

Data2 or data2 ~ data3: there are multiple command data setting commands in the specific command. Each specific command needs to be written according to the specific command format.

■ Commands that support only barcodes

Set F1~F12 (only analog key output is supported)

Set the barcode content as follows:

Name	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Value	0x16	0x17	0x18	0x19	0x1A	0x1B	0x1C	0x1D	0x1E	0x1	0x10	0x15

Users can directly write the appropriate data to generate the appropriate barcode, then scan the barcode can achieve the function of virtual key output.

Take the F12 function barcode as an example, write the following data to generate barcode.

Set control character output mode

Operand： 0x6c

data： 0： control character 0x01~0x1F send in characters（default）

2： control character 0x01~0x1F send with function key

mode 0：

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	HT	LF	VT	FF	CR	SO	SI
1x	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US

mode 2：

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL	Num lock	Caps lock	Scroll lock	del	PgUp	PgDn	end	BS	tab	→	s+tab	keypd enter	enter	Ins	ESC
1x	F11	home	←	↓	↑	F12	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10

Screen scanning settings

operand：0x6d

data: 0: normal mode（default）

1：screen scanning mode

Multiple key switch settings(some models)

operand：0x6e

data：0：shield multiple key functions(default)

1：enable multiple key functions

UDI Barcode rules

operand：0x6f

data：0：disable(default)

1：enable

Other parameter settings

operand：0x70 data：

data0： user specific parameters

data1：user specific parameter variables

For example：

1. Set the crossbar(-) in DM code to be replaced with carriage return

Data0	0x01	
Data1	0x00(disable)	0x01(enable)

2. Set the enable automatic sensing switch after Bluetooth is inserted into the base

Data0	0x02	
Data1	0x00(disable)	0x01(enable-default)

3. Set Brazil barcode rule filling enable switch

Data0	0x03	
Data1	0x00(disable-default)	0x01(enable)

4. In the Bluetooth word document mode, the computer numLock lock is enabled

Data0	0x04	
Data1	0x00(disable-default)	0x01(enable)

5. Fill-light color switching setting

Data0	0x05			
Data1	0x00(white-default)	0x01(red)	0x02(blue)	0x03(automatic)

6.Set the automatic storage after Bluetooth is disconnected, and set the automatic upload enable switch after connecting.

Data0	0X06	
Data1	0X00(disable-default)	0X01（enable）

Set Bluetooth barcode data transmission mode

operand：0x71

data：0：HID mode(default)

1：GATT mode

Set vibrator enable

operand：0x72

data：0：disable

1：enable

Set up sensing hardware

operand：0x73
data：0：image 1：infra-red

Set HID leading/trailing control character form

operand：0x74 data：2 BYTE data
data0：01 leading control； 02 trailing control
data1：0:close 1:ctrl+ 2:shift+ 4:alt+ 3:ctrl+shift+ 5:ctrl+alt+ 6:shift+alt+ 7:ctrl+shift+alt+
Control format barcode is as follows：
Prefix fixed=0x02， Suffix fixed=0x03，Intermediate fixed 2BYTE data，
2BYTE data format is as follows：
For example, the set control data is XX， high byte：quotient of XX divide 0x80； low byte：remainder of XX divide 0x80
When the control data is "^b"(0x05)， character format data(hexadecimal)for example： 02000503

Control data values are as follows

0x04	Keyboard a and A
0x05	Keyboard b and B
0x06	Keyboard c and C
0x07	Keyboard d and D
0x08	Keyboard e and E
0x09	Keyboard f and F
0x0A	Keyboard g and G
0x0B	Keyboard h and H
0x0C	Keyboard i and I
0x0D	Keyboard j and J
0x0E	Keyboard k and K
0x0F	Keyboard l and L
0x10	Keyboard m and M
0x11	Keyboard n and N
0x12	Keyboard o and O
0x13	Keyboard p and P
0x14	Keyboard q and Q
0x15	Keyboard r and R
0x16	Keyboard s and S
0x17	Keyboard t and T
0x18	Keyboard u and U
0x19	Keyboard v and V
0x1A	Keyboard w and W
0x1B	Keyboard x and X
0x1C	Keyboard y and Y
0x1D	Keyboard z and Z

0x1E	Keyboard 1 and !
0x1F	Keyboard 2 and @
0x20	Keyboard 3 and #
0x21	Keyboard 4 and $
0x22	Keyboard 5 and %
0x23	Keyboard 6 and ^
0x24	Keyboard 7 and &
0x25	Keyboard 8 and *
0x26	Keyboard 9 and (
0x27	Keyboard 0 and)
0x28	Keyboard Return (ENTER)
0x29	Keyboard ESCAPE
0x2A	Keyboard DELETE (Backspace)
0x2B	Keyboard Tab
0x2C	Keyboard Spacebar
0x2D	Keyboard - and (underscore)
0x2E	Keyboard = and +
0x2F	Keyboard [and {
0x30	Keyboard] and }
0x31	Keyboard \ and |
0x32	Keyboard Non-US # and ~
0x33	Keyboard ; and :
0x34	Keyboard ' and "
0x35	Keyboard Grave Accent and Tilde
0x36	Keyboard, and <
0x37	Keyboard . and >
0x38	Keyboard / and ?
0x39	Keyboard Caps Lock
0x3A	Keyboard F1
0x3B	Keyboard F2
0x3C	Keyboard F3
0x3D	Keyboard F4
0x3E	Keyboard F5
0x3F	Keyboard F6
0x40	Keyboard F7
0x41	Keyboard F8
0x42	Keyboard F9
0x43	Keyboard F10
0x44	Keyboard F11
0x45	Keyboard F12
0x46	Keyboard PrintScreen
0x47	Keyboard Scroll Lock
0x48	Keyboard Pause
0x49	Keyboard Insert
0x4A	Keyboard Home

0x4B	Keyboard PageUp
0x4C	Keyboard Delete Forward
0x4D	Keyboard End
0x4E	Keyboard PageDown
0x4F	Keyboard RightArrow
0x50	Keyboard LeftArrow
0x51	Keyboard DownArrow
0x52	Keyboard UpArrow
0x53	Keypad Num Lock and Clear
0x54	Keypad /
0x55	Keypad *
0x56	Keypad -
0x57	Keypad +
0x58	Keypad ENTER
0x59	Keypad 1 and End
0x5A	Keypad 2 and Down Arrow
0x5B	Keypad 3 and PageDn
0x5C	Keypad 4 and Left Arrow
0x5D	Keypad 5
0x5E	Keypad 6 and Right Arrow
0x5F	Keypad 7 and Home
0x60	Keypad 8 and Up Arrow
0x61	Keypad 9 and PageUp
0x62	Keypad 0 and Insert
0x63	Keypad . and Delete
0x64	Keyboard Non-US \ and |
0x65	Keyboard Application
0x66	Keyboard Power
0x67	Keypad =
0x68	Keyboard F13
0x69	Keyboard F14
0x6A	Keyboard F15
0x6B	Keyboard F16
0x6C	Keyboard F17
0x6D	Keyboard F18
0x6E	Keyboard F19
0x6F	Keyboard F20
0x70	Keyboard F21
0x71	Keyboard F22
0x72	Keyboard F23
0x73	Keyboard F24
0x74	Keyboard Execute
0x75	Keyboard Help
0x76	Keyboard Menu
0x77	Keyboard Select

0x78 Keyboard Stop
0x79 Keyboard Again
0x7A Keyboard Undo
0x7B Keyboard Cut
0x7C Keyboard Copy
0x7D Keyboard Paste
0x7E Keyboard Find
0x7F Keyboard Mute
0x80 Keyboard Volume Up
0x81 Keyboard Volume Down
0x82 Keyboard Locking Caps Lock
0x83 Keyboard Locking Num Lock
0x84 Keyboard Locking Scroll Lock
0x85 Keypad Comma
0x86 Keypad Equal Sign
0x87 Keyboard International1
0x88 Keyboard International2
0x89 Keyboard International3
0x8A Keyboard International4
0x8B Keyboard International5
0x8C Keyboard International6
0x8D Keyboard International7
0x8E Keyboard International8
0x8F Keyboard International9
0x90 Keyboard LANG1
0x91 Keyboard LANG2
0x92 Keyboard LANG3
0x93 Keyboard LANG4
0x94 Keyboard LANG5
0x95 Keyboard LANG6
0x96 Keyboard LANG7
0x97 Keyboard LANG8
0x98 Keyboard LANG9
0x99 Keyboard Alternate Erase
0x9A Keyboard SysReq/Attention
0x9B Keyboard Cancel
0x9C Keyboard Clear
0x9D Keyboard Prior
0x9E Keyboard Return
0x9F Keyboard Separator
0xA0 Keyboard Out
0xA1 Keyboard Oper
0xA2 Keyboard Clear/Again
0xA3 Keyboard CrSel/Props
0xA4 Keyboard ExSel

0xE0 Keyboard LeftControl
0xE1 Keyboard LeftShift
0xE2 Keyboard LeftAlt
0xE3 Keyboard Left GUI
0xE4 Keyboard RightControl
0xE5 Keyboard RightShift
0xE6 Keyboard RightAlt
0xE7 Keyboard Right GUI

Obtain barcode data in the specified range

operand：0x75 data：2 BYTE data
data0：range start position
data1：range end position

Appendix Ⅰ Barcode Enabling Settings

Operand: 0x40

Data: 2BYTE data

Set the barcode enabling parameter, DATA 0 is the barcode parameter, DATA 1 is the barcode parameter variable.

The following is the parameter default value. 0 is OFF, 1 is ON

Barcode Type	Barcode Parameter		Parameter Variable	Default Status
	Decimal	HEX		
UPC-A	1	0x01	1	Enable
UPC-E	2	0x02	1	Enable
UPC-E1	3	0x03	0	Disable
EAN-8/JAN	4	0x04	1	Enable
EAN-13/JAN	5	0x05	1	Enable
Bookland EAN	6	0x06	0	Disable
ISSN EAN	7	0x07	0	Disable
code 128	8	0x08	1	Enable
GS1-128	9	0x09	1	Enable
ISBT 128	10	0x0A	1	Enable
Code 39	11	0x0B	1	Enable
Trioptic Code 39	12	0x0C	0	Disable
Code 93	13	0x0D	1	Enable
Code 11	14	0x0E	0	Disable
Interleaved 2 of 5	15	0x0F	1	Enable
Discrete 2 of 5	16	0x10	0	Disable
Chinese 2 of 5	17	0x11	0	Disable
Korean 3 of 5	18	0x12	0	Disable
Matrix 2 of 5	19	0x13	0	Disable
Codabar	20	0x14	1	Enable
MSI	21	0x15	0	Disable
US Postnet	22	0x16	1	Enable
US Planet	23	0x17	1	Enable
UK Postal	24	0x18	1	Enable

Japan Postal	25	0x19	1	Enable
Australia Post	26	0x1A	1	Enable
Netherlands KIX Code	27	0x1B	1	Enable
USPS 4CB	28	0x1C	0	Disable
UPU FICS Postal	29	0x1D	0	Disable
GS1 DataBar-14	30	0x1E	1	Enable
GS1 DataBar Limited	31	0x1F	0	Disable
GS1 DataBar Expanded	32	0x20	0	Disable
Composlte CC-C	33	0x21	0	Disable
Composlte CC-A/B	34	0x22	0	Disable
Composlte TLC-39	35	0x23	0	Disable
PDF417	36	0x24	1	Enable
MicroPDF417	37	0x25	1	Enable
Data Matrix	38	0x26	1	Enable
Maxicode	39	0x27	1	Enable
QR Code	40	0x28	1	Enable
MicroQR	41	0x29	1	Enable
Aztec	42	0x2A	1	Enable
Han Xin	43	0x2B	1	Enable
Convert UPC-E to A	44	0x2C	0	Disable
Convert UPC-E1 to A	45	0x2D	1	Enable
EAN-8/JAN-8 Extend	46	0x2E	1	Enable
UCC Coupon Extended Code	47	0x2F	0	Disable
ISBT Concatenation	48	0x30	1	Enable
Convert Code 39 to Code 32	49	0x31	1	Enable
Convert I 2 of 5 to EAN 13	50	0x32	0	Disable
Convert GS1 DataBar to UPC/EAN	51	0x33	0	Disable
Code 128 Emulation	52	0x34	0	Disable

Appendix Ⅱ Data code prefix and suffix

E.g. Adding prefixes “@!”, steps:

Scan the setting barcode【open prefix 1】--> Scan the setting barcode【@】 Scan the setting barcode 【open prefix 2】 --> Scan the setting barcode【!】

The detailed barcode is set as follows:

Open prefix 1

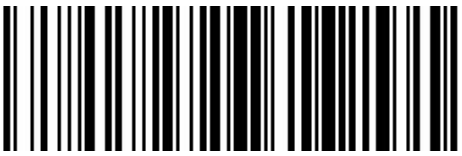
Clear prefix 1

Open prefix 2

Clear prefix 2

Clear all prefix data

Open suffix 1



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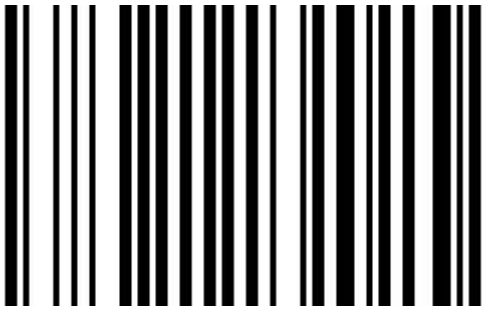

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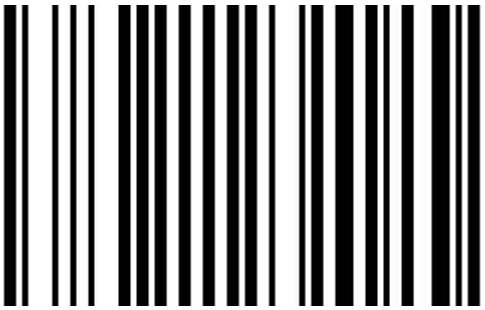

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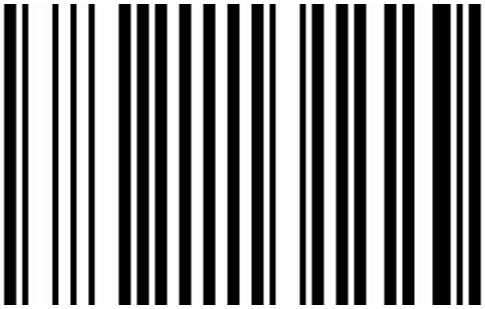

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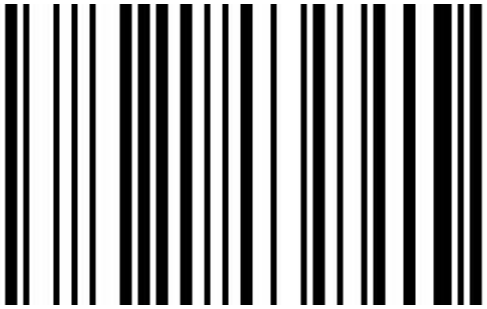

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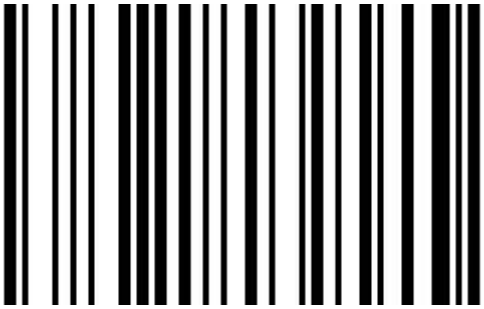

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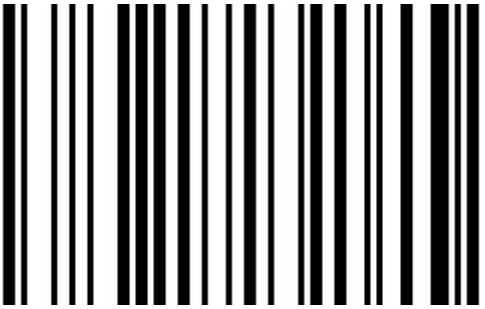

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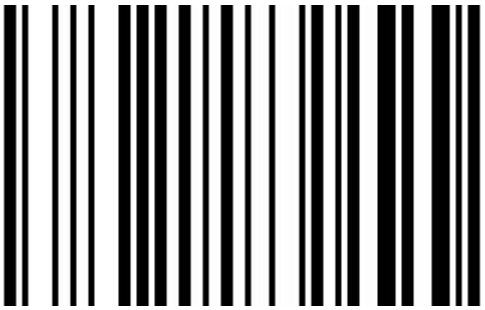

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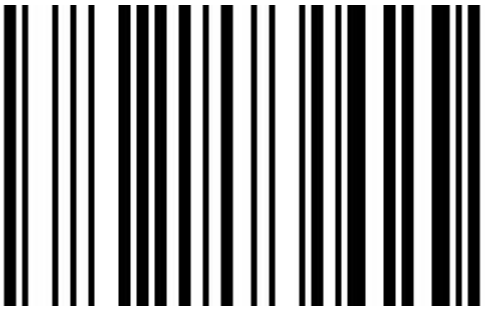

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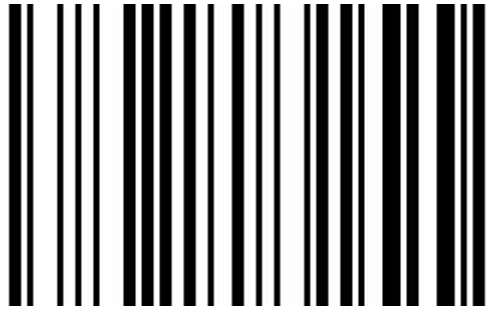

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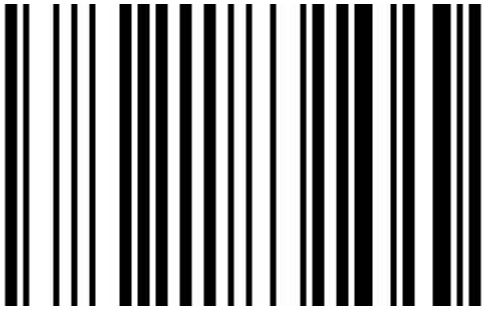

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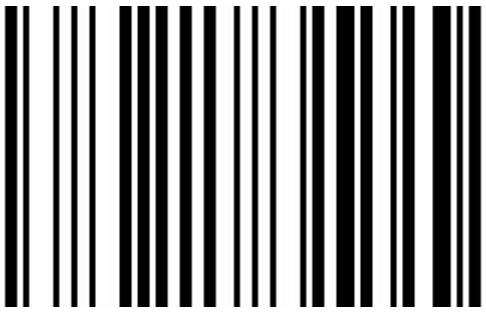

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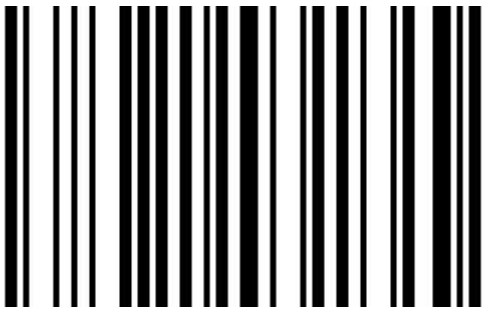

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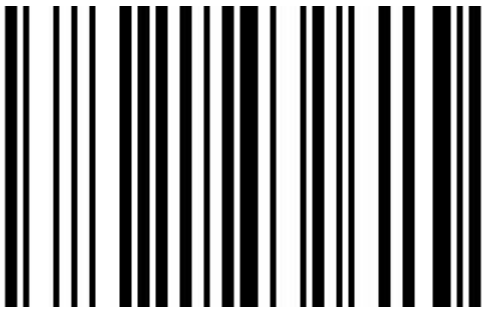

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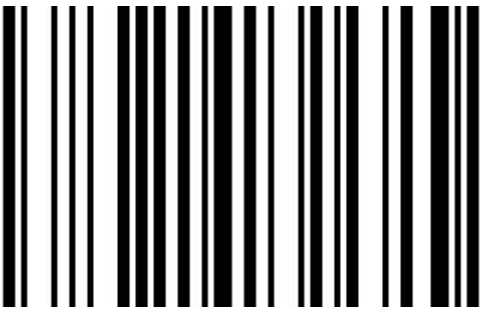

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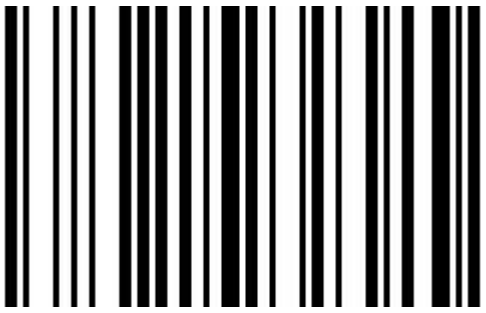

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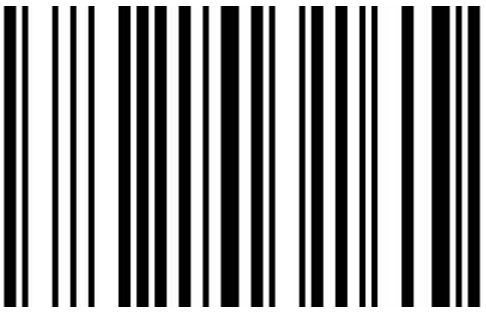

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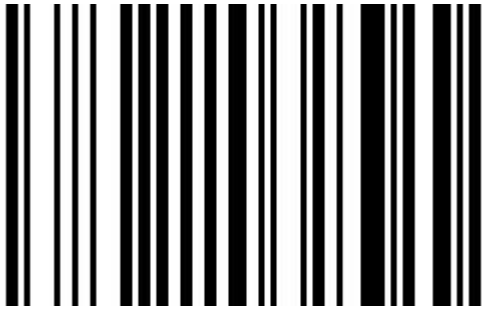

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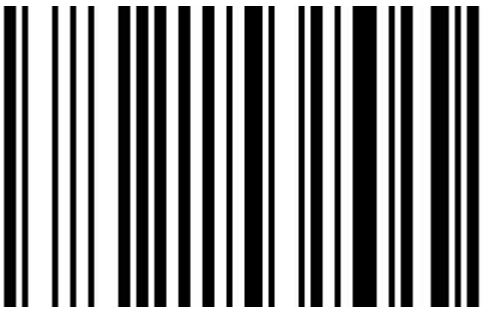

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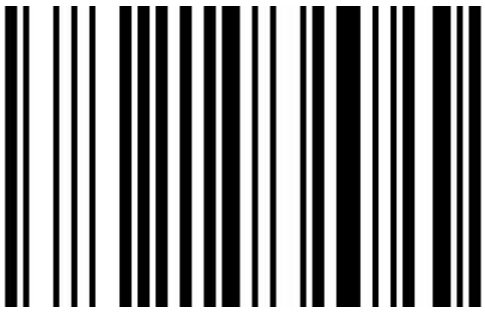

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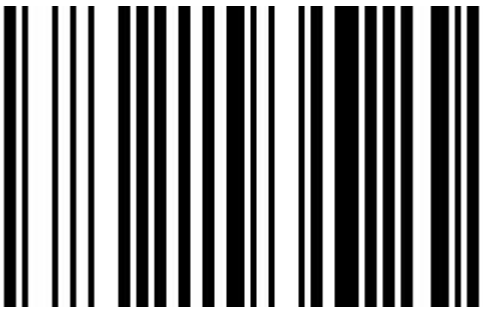

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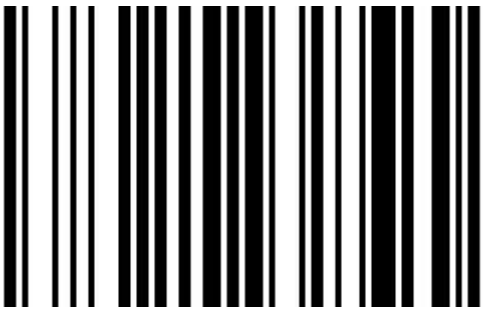

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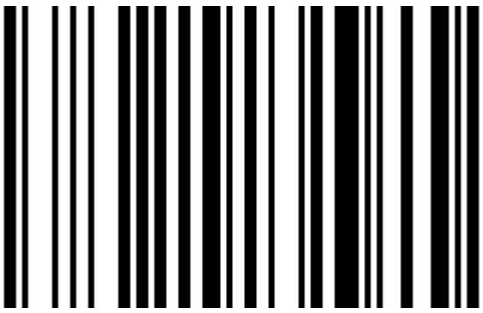

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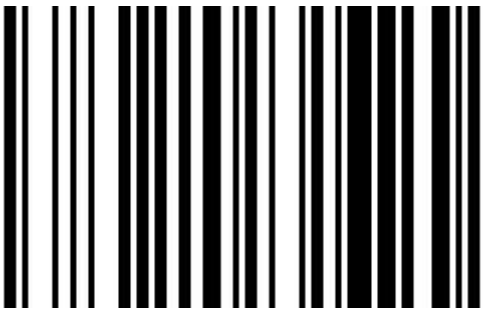

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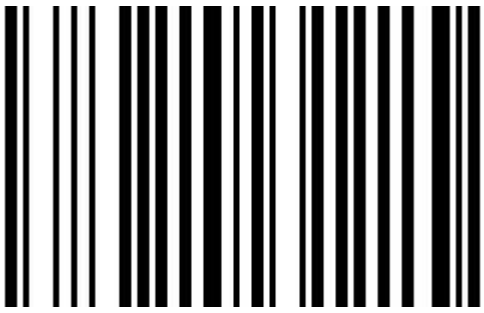

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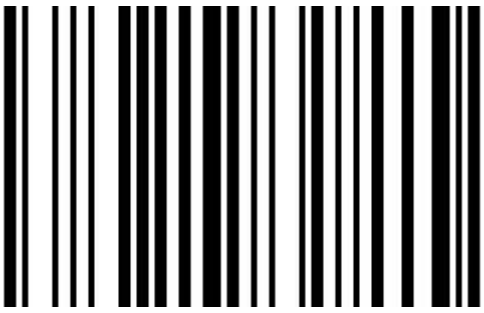

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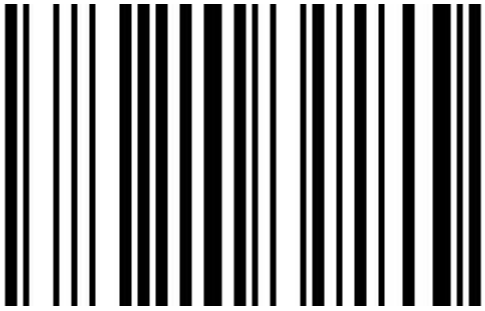

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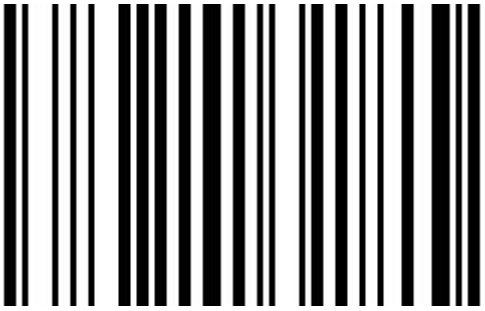

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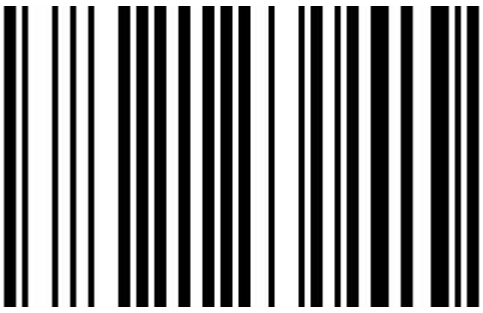

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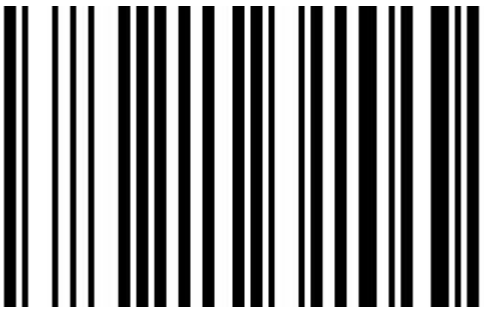

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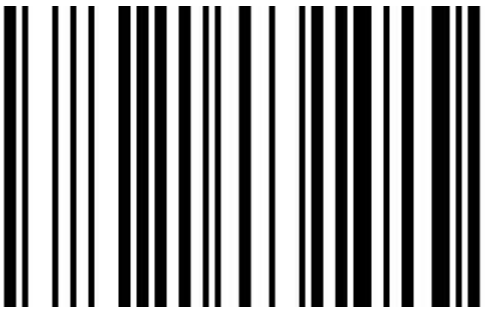

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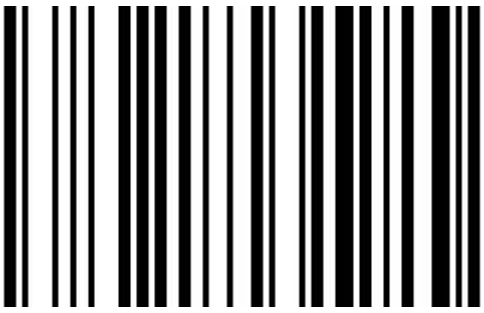

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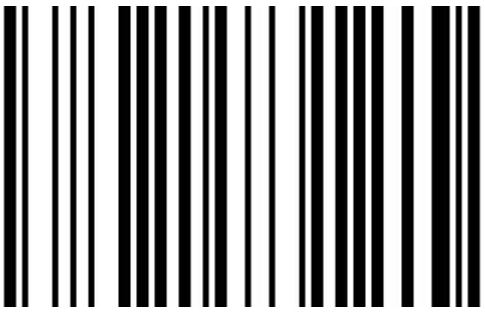

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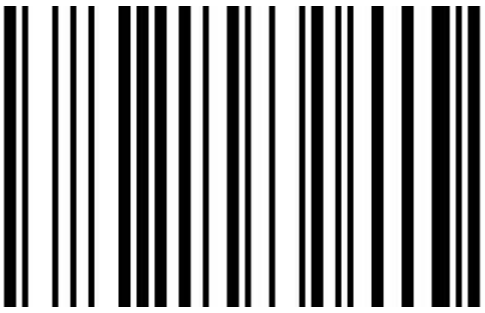

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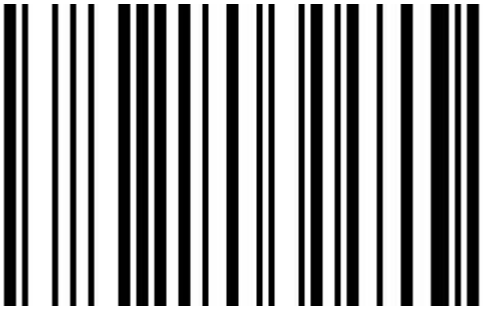

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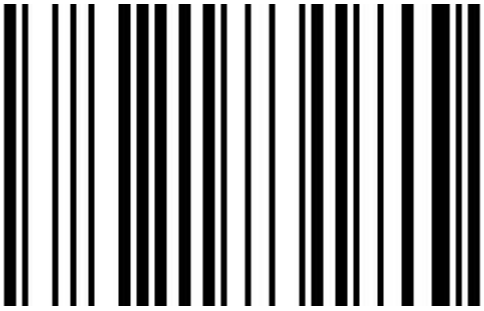

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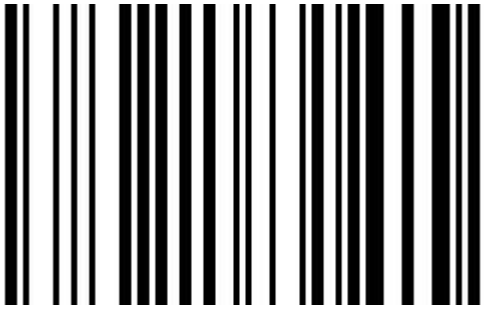

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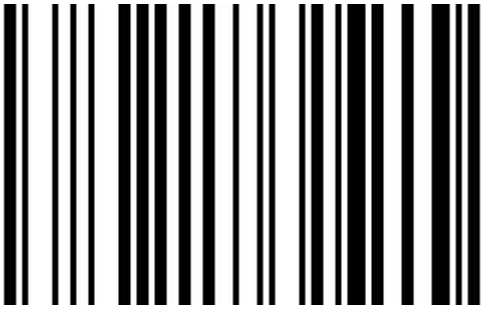

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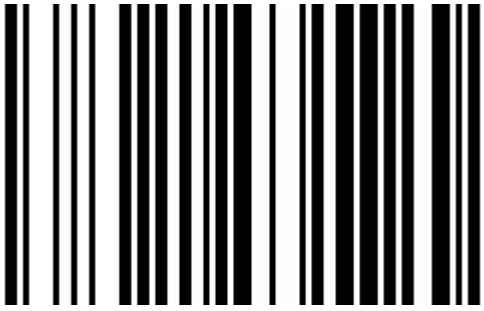

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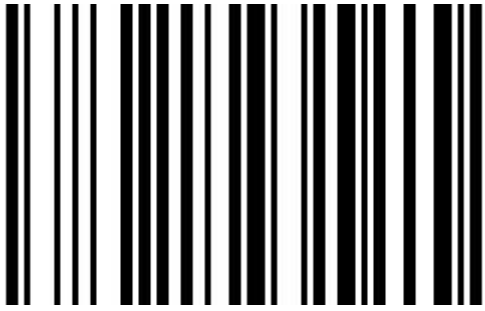

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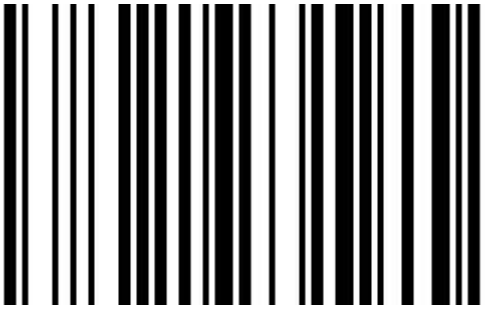

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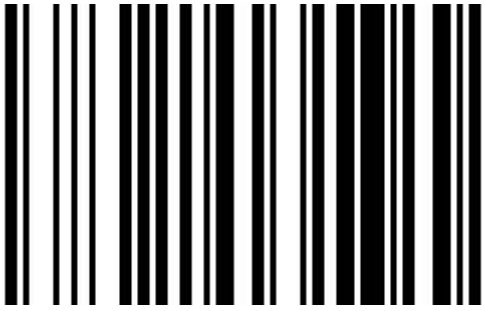

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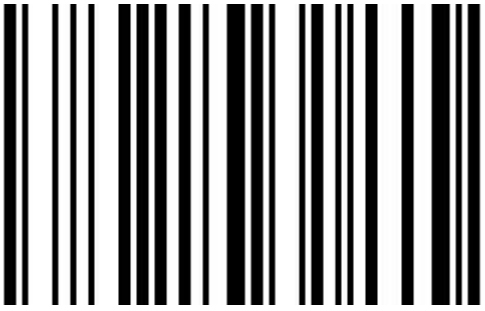

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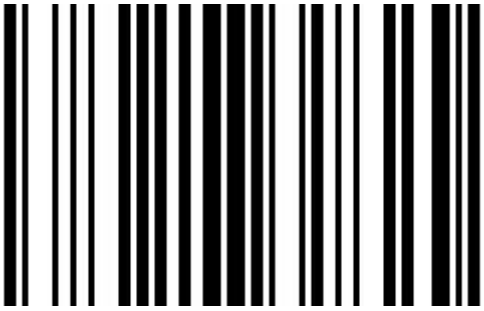

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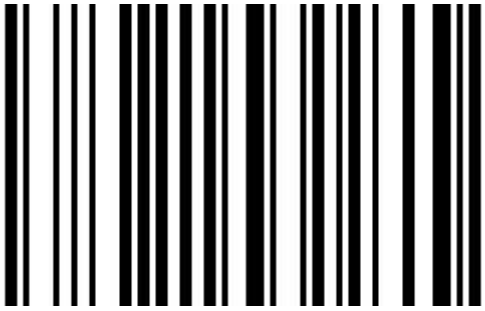

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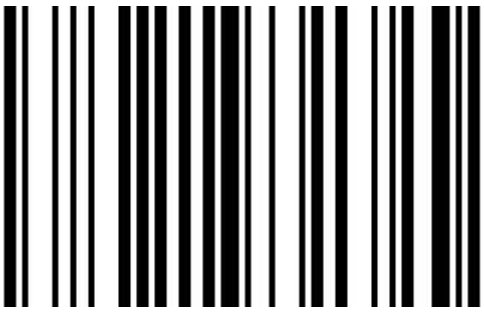

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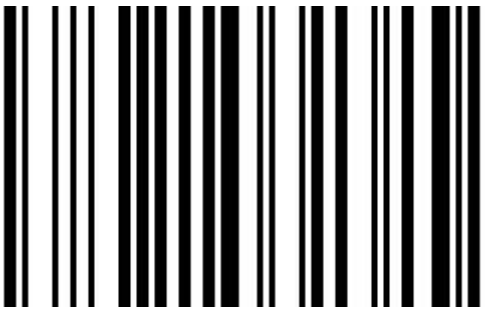

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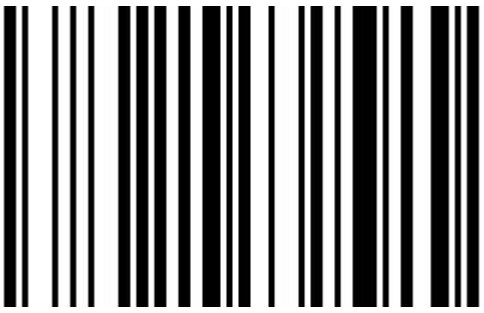

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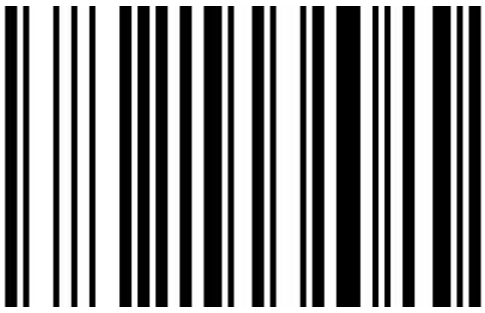

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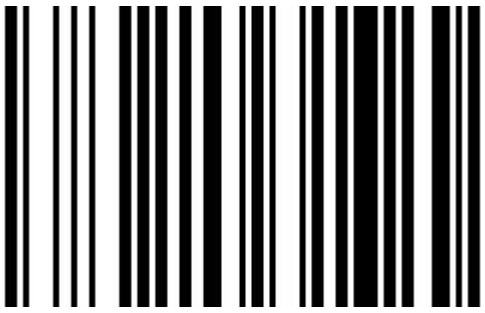

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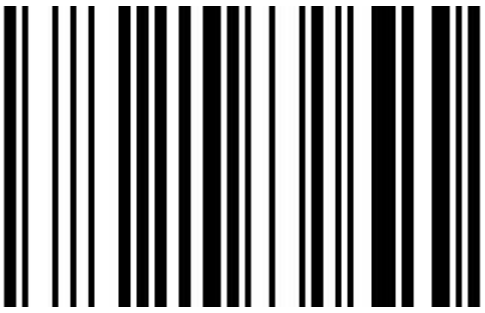

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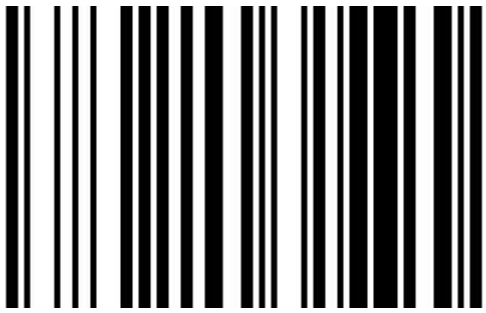

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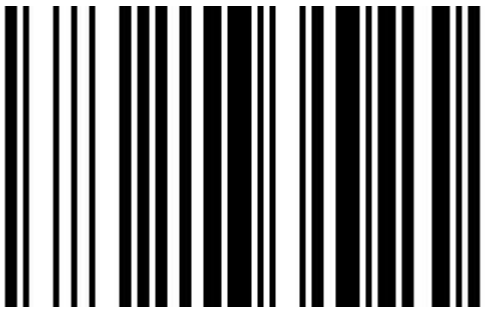

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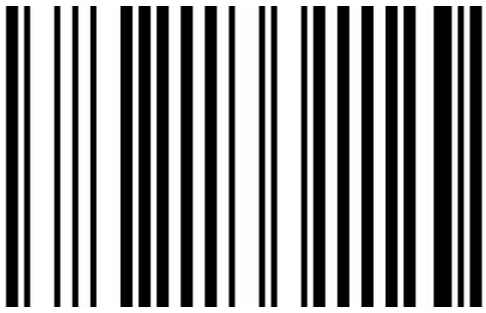

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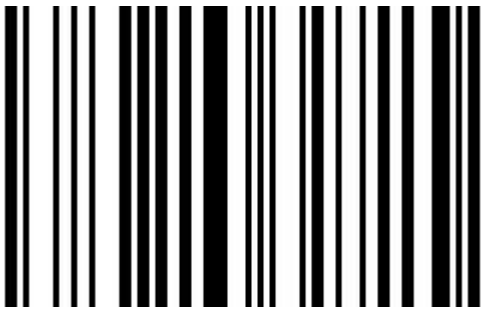

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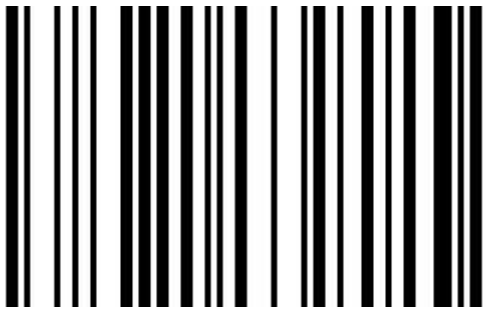

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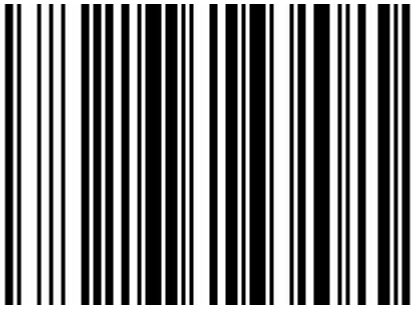

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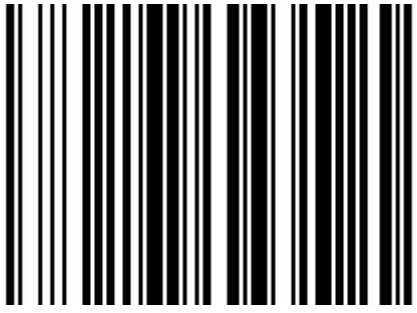

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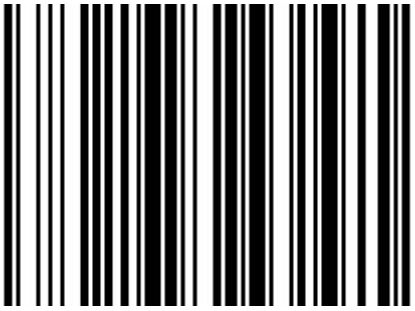

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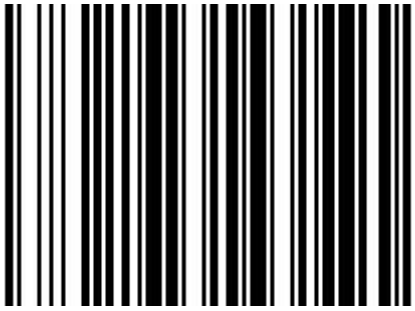

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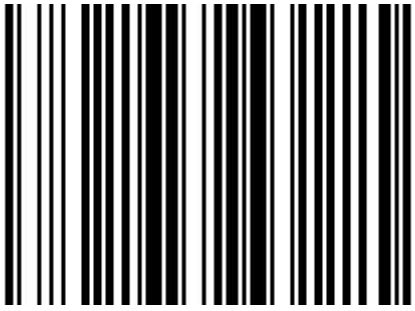

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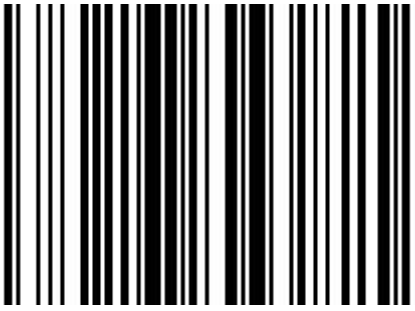

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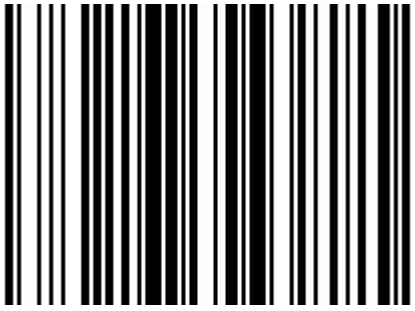

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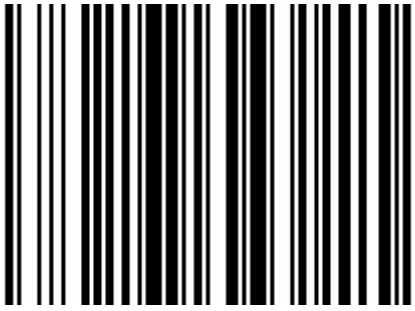

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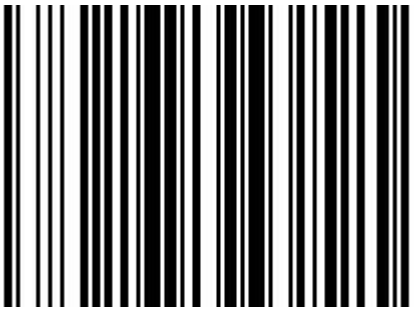

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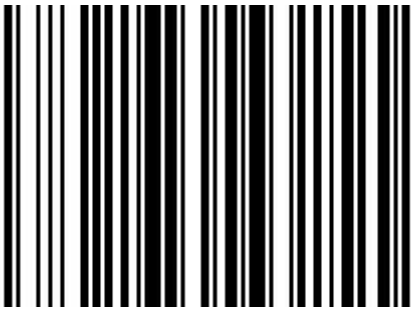

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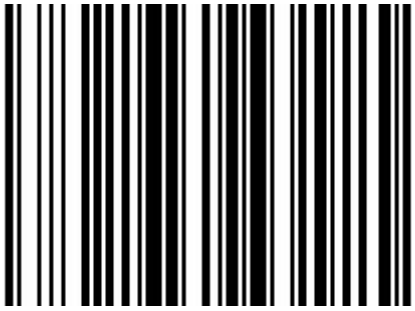

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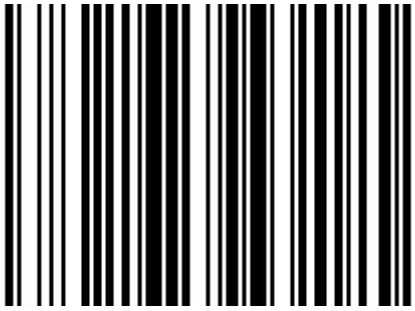

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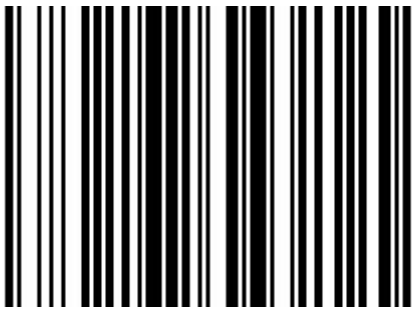

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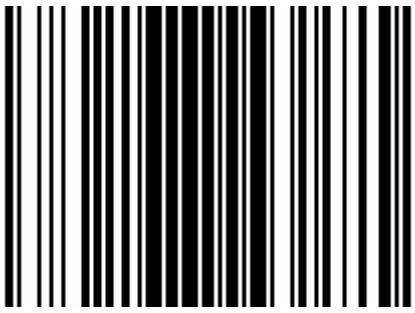

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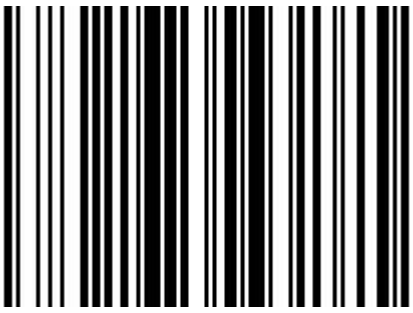

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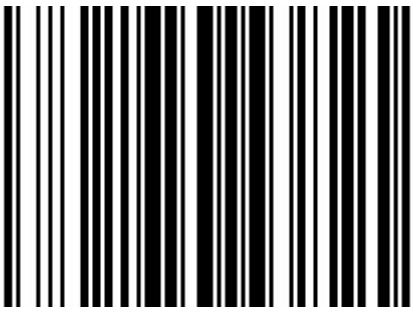
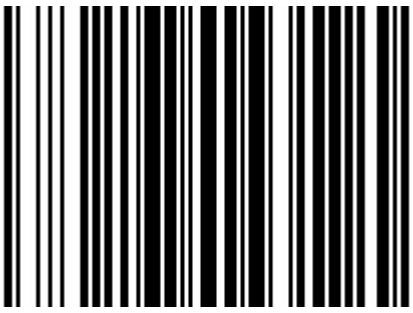


o



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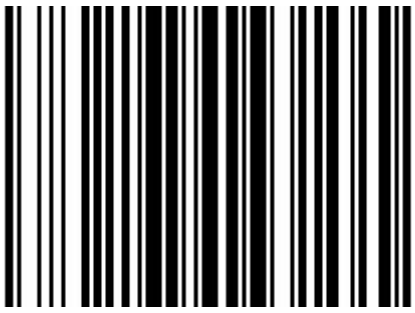

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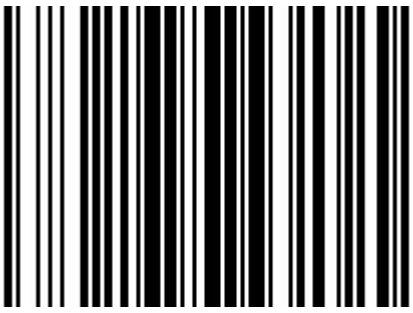

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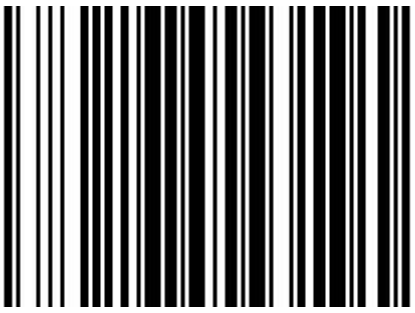

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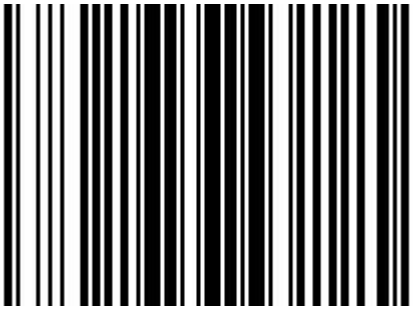

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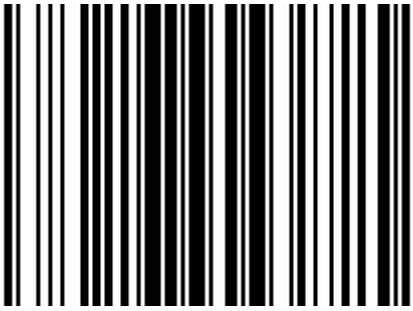

DEL

Appendix Ⅲ ASCII Code Table

Hexadecimal	Decimal	Character
00	0	NUL （Null char.）
01	1	SOH （Start of Header）
02	2	STX （Start of Text）
03	3	ETX （End of Text）
04	4	EOT （End of Transmission)
05	5	ENQ （Enquiry）
06	6	ACK （Acknowledgment）
07	7	BEL （Bell）
08	8	BS （Backspace）
09	9	HT （Horizontal Tab）
0a	10	LF （Line Feed）
0b	11	VT （Vertical Tab）
0c	12	FF （Form Feed）
0d	13	CR （Carriage Return）
0e	14	SO （Shift Out）
0f	15	SI （Shift In）
10	16	DLE （Data Link Escape）
11	17	DC1 （XON） （Device Control 1）
12	18	DC2 （Device Control 2）
13	19	DC3 （XOFF） （Device Control 3）
14	20	DC4 （Device Control 4）
15	21	NAK （Negative Acknowledgment）
16	22	SYN （Synchronous Idle）
17	23	ETB （End of Trans. Block）
18	24	CAN （Cancel）
19	25	EM （End of Medium）
1a	26	SUB （Substitute）
1b	27	ESC （Escape）
1c	28	FS （File Separator）
1d	29	GS （Group Separator）
1e	30	RS （Request to Send）
1f	31	US （Unit Separator）
20	32	SP （Space）

21	33	! （Exclamation Mark）
22	34	" （Double Quote）
23	35	# （Number Sign）
24	36	$ （Dollar Sign）
25	37	% （Percent）
26	38	& （Ampersand）
27	39	` （Single Quote）
28	40	(（Right / Closing Parenthesis）
29	41	) （Right / Closing Parenthesis）
2a	42	* （Asterisk）
2b	43	+ （Plus）
2c	44	, （Comma）
2d	45	- （Minus / Dash）
2e	46	. （Dot）
2f	47	/ （Forward Slash）
30	48	0
31	49	1
32	50	2
33	51	3
34	52	4
35	53	5
36	54	6
37	55	7
38	56	8
39	57	9
3a	58	: （Colon）
3b	59	; （Semi-colon）
3c	60	< （Less Than）
3d	61	= （Equal Sign）
3e	62	> （Greater Than）
3f	63	? （Question Mark）
40	64	@ （AT Symbol）
41	65	A
42	66	B
43	67	C
44	68	D

45	69	E
46	70	F
47	71	G
48	72	H
49	73	I
4a	74	J
4b	75	K
4c	76	L
4d	77	M
4e	78	N
4f	79	O
50	80	P
51	81	Q
52	82	R
53	83	S
54	84	T
55	85	U
56	86	V
57	87	W
58	88	X
59	89	Y
5a	90	Z
5b	91	[（Left / Opening Bracket）
5c	92	\ （Back Slash）
5d	93	] （Right / Closing Bracket）
5e	94	^ （Caret / Circumflex）
5f	95	_ （Underscore）
60	96	' （Grave Accent）
61	97	a
62	98	b
63	99	c
64	100	d
65	101	e
66	102	f
67	103	g
68	104	h

69	105	i
6a	106	j
6b	107	k
6c	108	l
6d	109	m
6e	110	n
6f	111	o
70	112	p
71	113	q
72	114	r
73	115	s
74	116	t
75	117	u
76	118	v
77	119	w
78	120	x
79	121	y
7a	122	z
7b	123	{ （Left/ Opening Brace）
7c	124	| （Vertical Bar）
7d	125	} （Right/Closing Brace）
7e	126	~ （Tilde）
7f	127	DEL （Delete）