Programming User's Manual
2D Barcode Scanner
HT-851A

Restore Default

Version information

Content

I. Product Introduction

This user guide is only suitable for 2D barcode scanner. The purpose is to know all knowledge with barcode identification equipment for customers. This manual is mainly for the software engineers and some customers who want to know the device in further.

This manual lists the main function of the scanner, including: barcode reading, supported barcode type, data edition, command setting and advance setting.

The product has been configured with parameters suitable for most common application functions before packing. In most cases, users can use it directly without making any adjustments. The default functions and parameters are listed in the appendix of this manual for reference. The options marked with '*' in the setting code also represent the default functions or parameters.

II Quick to use

2.1 Install method

For USB device, it is plug and play, no need extra power supply to identify HID device. That's convenient appropriate for Windows, Linux, Android and other system. Also, support Virtual COM port, just need an extra drive supply, which can be supported by this company or dealers to offer. The physical serial port conforms to standard RS-232 interfaces, which can directly communicate with standard RS232 device. Note ,in case of serial port, additional Power DC 5V is generally required. For details, please refer to the serial port function section. Some of models support for KB interface. Need to power off the device and plug in the device with common keyboard, then power on again and start to communicate.

2.2 Quick to use

The scanner will start up in a short time after connecting to a power supply, scanner will automatically load the preset settings during startup, including interface, power on indication, volume indication, configuration, parameters setting. Normally, pressing the button can activate decoding. If the decoding is completed, the device will turn off reading, output data, sound or LED prompt (depending on the settings). In additional, the scanner also supports automation induction trigger, serial command trigger.

2.3 Settings method

There are two methods for set up.

One method is scanning a barcode to finish setting.

Example: "Decoding sound tone 1", or "Enable code 39".

The other method needs to set up parameters.

Example: set "98" as suffix.

Setting steps: "Custom suffix", "3", "9", "3", "8"," Save"..

III Function settings

Factory Default Setting

All the scanners have a factory default setting. Reading the "Restore default" barcode will restore all the settings of the scanner to the factory default.

You are most likely to use this barcode in the following situations:

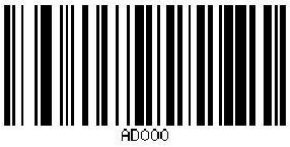
1. The scanner settings are wrong, such as scanner cannot read barcodes.
2. You have forgotten what settings you made for the scanner before, and you do not want to be affected by the previous settings.
3. The scanner is set to use a function that is not often used, and it has been used. Note: * indicates the default value

Restore default

Version Information

The version number information is the current firmware version, and the device information includes the current version built time, firmware version, hardware information, device name, and SN number.

Version information



Device information

Interface Selection

USB Interface

When setting the USB interface, the scanner can be simulated as a HID-KBW device. In this mode, the scanner will become a virtual keyboard to send data to the host.

USB-KBW*

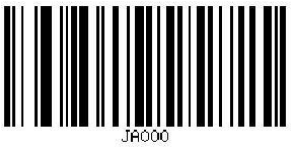
USB Virtual Serial Port

If the application of the host using the serial communication method to receive data, the scanner can be set to the USB-VCOM mode. This function requires the installation of the corresponding driver on the host.

USB-VCOM

RS232 Interface

The scanner with RS232 cable communicates with the host through the serial communication interface. It supports receiving reading data, issuing commands to control the scanner, and changing the function parameters of the scanner.



RS232

RS232 Baud Rate

The RS232 baud rate setting is only used in RS232 interface, It means sending data from the scanner to the host at a specified rate. The host must be set to the same baud rate as the scanner.

9600*

1200

2400

4800

19200

38400

57600

115200

25600

Parity Check

Parity check provides an efficient method of checking character bit patterns.

None*

Even parity

Odd parity

Stop Bit

1 bit*

2 bits

Data Bit

8 bits*

7 bits

Scan Mode

Manual*

Auto sense

Same Barcode Scan Delay Setting

The scanner will delay read when it reading the same barcode, the delay time is calculated from scan window leaving the barcode.

200ms*

500ms

1s

5s

10s

30s

Keyboard Function

Keyboard Language Setting

USA*

Japan

Brazil

Czech

Denmark

Sweden

France

Italy

Norway

Spain

Slovakia

Turkey Q

UK

Germany

Greece

Hungary

Turkey (F)

Finland

Russia

Netherlands

Number Lock Function

Enabling this function can move the numeric keypad in the letter area to the keypad area and input the number with keypad.

Number lock on

Number lock off *

Note: Before enabling this function, please make sure that the Number Lock of the host is turned on. If the "Alt Emulate Keyboard Mode" is turned on, this function will be invalid.

Case Conversion

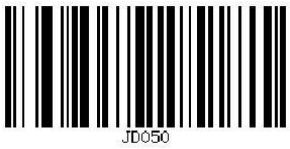
No Conversion*

All convert to upper case

All convert to lower case

Character Input Delay

The time interval between key pressing during character input, from the last key release to the next key press. Note: The default interval 5ms is to be compatible with hosts with different performance and operating systems and ensure data output stability. You need to set longer delay time if the data still lost due to slow running of system.



No delay

Delay 5ms*

Delay 10ms

Delay 20ms

Delay 40ms

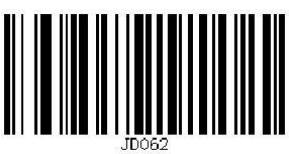
Alt Emulate Keyboard

In order to enable the scanner to input any ASCII characters (hexadecimal 0x00 to 0xFF) in any keyboard languages, the keyboard can be set to Alt Emulate Keyboard mode. When using this mode to send characters, the speed will be slow because more data to be sent.

Alt mode off *

Alt mode 1

<0x20 Alt mode 2



>0x20 Alt mode 3

Control Character Escape

The control characters escape output rules by this product cannot be recognized in some systems or software.

You can achieve this function by setting the control character escape.

The following escape will be operated after successful decoding:

1. Press and hold the "CTRL" key
2. Press the letter keys on the keyboard in sequence according to the character escape (check the appendix for details)
3. Release the "CTRL" key

Control character escape off*

Control character escape on

Invisible Character Output

Example: The following QR code has ‘CR’ invisible character:

123«CR»456

The default output data: 123

456

Ignore invisible characters: 123456

Note: If the barcode contains 0x0A characters, LF cannot be displayed in WINDOWS. Please set 0x0A to replace 0x0D (Enter).

Don’t ignore invisible characters*

Ignore invisible characters

Input Encoding Format

Select the encoding format for creating the code (if it is PDF417, QR Code, Data Matrix, etc.). After setting, the code can be correctly recognized. UTF-8 and Shift-JIS encoding format barcodes are automatically recognized as default.

UTF-8

GBK

Automatic*

KOI-8

BIG5

JIS

Output Encoding Format

If the data the host receiving does not display the correct characters, the barcode could be created by a different encoding format.

USA*

GBK

Unicode

Shift-JIS

UTF-8

BIG5

GS Control Character Replacement

No replacement*

Replace GS to Ç

Replace GS to |

Replace GS to ^]

Replace GS to]

Replace GS to <GS>

Enable custom GS replacement

Custom GS replacement setting

Custom GS Replacement Instruction (replace to 10 characters at most)

Example: Replace GS character to '#GS#'

1. Scan 'Enable custom GS replacement'
2. Scan 'Custom GS replacement setting'
3. Scan ASCII hex value codes of #GS#, ASCII hex value of #GS# are 0x23 0x47 0x53 0x23 in 'Appendix

ASCII table', then scan '2' '3' '4' '7' '5' '3' '2' '3' barcodes in the 'Data Edit and Setting Parameter Barcodes' 4. Scan 'Save' in the 'Data Edit and Setting Parameter Barcodes'

Data Edit

Prefix Setting

Example: set “a” as prefix (hexadecimal value of a is 61).

Step:

“Enable custom prefix setting”,

“Custom prefix setting”,

“6”, (data edit parameter table)

“1”, (data edit parameter table)

“Save”. (data edit parameter table)

Disable custom prefix setting*

Enable custom prefix setting

Custom prefix setting

Suffix Setting

Example: set “a” as suffix (hexadecimal value of a is 61).

Step:

“Enable custom suffix setting”,

“Custom suffix setting”,

“6”, (data edit parameter table)

“1”, (data edit parameter table)

“Save”. (data edit parameter table)

Disable custom suffix setting*

Enable custom suffix setting

Custom suffix setting

Terminator And Start Character Setting

The terminator is at the end of the data, and the start character is at the front of the data. The key value of the terminator ETX is End, and the key value of the start character STX is Home.

No terminator

Terminator Enter*
(0x0D)

Terminator (CR/LF)
(0x0D 0x0A)

Terminator TAB

Terminator ETX

Terminator LF (0x0A)

No start character*

Start character STX

Data Cutting

Send full data*

Send start field of data

Send middle field of data

Send end field of data

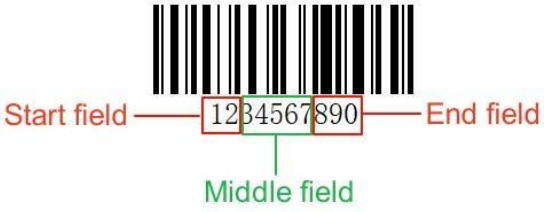
Send start+middle field of data

Send start+end field of data

Send middle+end field of data

Data Bit Setting

The data edit function can cut the barcode data into three fields: start/middle/end fields by configuring the data length of the start/end fields. Please set the length and sending of the start/end fields according to actual needs. Note: Customized prefix and suffix, start character, terminator, CODE ID, AIM ID and other non-original data are not affected by the data edit function.



Example: Set the start field as 2 characters, set the end field as 3 characters, send middle field data.
Steps:

“Set start field length”

“2”, (data edit parameter table)
“Save”.(data edit parameter table)
“Set end field length’’

“3”, (data edit parameter table)
“Save”.(data edit parameter table)
“Send middle field of data”

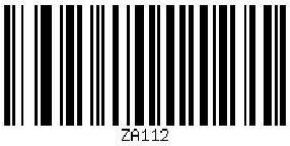
Set start field length

Set end field length

Barcode Data 0D 0A Line Feed Setting

Only 0A line feed

Only 0D line feed*



0A 0D both line feed

Code ID Prefix

After turning on Code ID, the corresponding Code ID prefix will appear in the output data. For details, please refer to the appendix.

Disable*

Enable

Sound Settings

Decoding Prompt Sound

Off

On*

Decoding Prompt Sound Volume

High volume*

Low volume

Decoding Prompt Sound Tone

Tone 1

Tone 2

Tone 3

Advanced Setting

White LED Fill Light Setting

Note: Turning off fill light may affect reading performance

On*

Off

Red LED Aiming Light Setting

On*

Off

Scan Prompt Light Setting

On*

Off

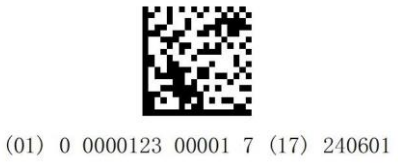
Inverse Color Barcode Reading

Only read normal codes*

Read both normal & inverse codes

GS1 AI Character

Read barcodes containing GS1 AI characters, such as GS1-128, GS1-DM, GS1-Databar, and medical UDI barcodes, and output AI characters containing brackets. For example:



GS1-DM

No processing

GS1-128

Output including bracket

Output including bracket+LF

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virtuos@virtuos.cz

Barcode Function Setting

Overall Setting

Each type of barcode has its own unique features. The settings in this chapter can be used to adjust the scanner to adapt to these feature changes.
The fewer barcode types turned on "Enable Reading", the faster the scanner will read. Disabling some barcode types can improve reading performance.

Enable/Disable Reading 1D/2D Barcodes

Enable all 1D barcodes

Disable all 1D barcodes

Enable all 2D barcodes

Disable all 2D barcodes

UPC/EAN/JAN Additional Code

Disable reading UPC/EAN/JAN with additional codes*

Adaptive reading UPC/EAN/JAN with additional codes

Only read UPC/EAN/JAN with additional codes

Codabar

Disable

Enable*

Codabar Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

Codabar Start/End Character Sending

Enable

Disable*

Set Reading Length Range For Codabar

Minimum length(0~50bits)

Maximum length(0~50bits)

Code 11

Disable*

Enable

Code 11 Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

1 check bit, MOD11

2 check bits, MOD10/MOD11

Set Reading Length Range For Code 11

Disable

Enable*

Code 128

Disable

Enable*

Set Reading Length Range For Code 128

Minimum length(0~50bits)

Maximum length(0~50bits)

GS1 128

Disable*

Enable

Code 39

Disable

Enable*

Code 39 Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

Code 39 Start/End Character Sending

Disable*

Enable

Code 39 Full ASCII

Enable

Disable*

Set Reading Length Range For Code 39

Minimum length(0~50bits)

Maximum length(0~50bits)

Code 93

Disable*

Enable

Code 93 Check Bit Setting

Disable*

Enable but not send check bit

Set Reading Length Range For Code 93

Minimum length(0~50bits)

Maximum length(0~50bits)

Enable & send check bit

EAN 8

Disable

Enable*

EAN 8 Check Bit Sending

Disable

Enable*

EAN 8 Expand To EAN 13

Enable

Disable*

EAN 13

Disable

Enable*

EAN 13 Check Bit Sending

Disable

Enable*

UPC-A

Disable

Enable*

UPC-A Check Bit Sending

Disable

Enable*

UPC-A Prefix Character Output Setting

No prefix

System character*

System character and country code

UPC-E

Disable

Enable*

UPC-E Check Bit Sending

Disable

Enable*

System character and country code

UPC-E Prefix Character Output Setting

No prefix

System character*

UPC-E Expand To UPC-A

Disable*

Enable

Matrix 25

Disable

Enable*

Matrix Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

Set Reading Length Range For Matrix 25

Minimum length(0~50bits)

Maximum length(0~50bits)

RSS14

Disable

Enable*

RSS-Stack

Disable

Enable*

RSS-Expanded

Disable

Enable*

RSS-Expanded Stack

Disable

Enable*

RSS-Limited

Disable

Enable*

Code 32

Disable

Enable*

Code 32 Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

Code 32 Start Character Setting

Enable

Disable*

Interleaved 2 of 5

Disable

Enable*

Interleaved 2 of 5 Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

Set Reading Length Range For Interleaved 2 of 5

Minimum length(0~50bits)

Maximum length(0~50bits)

Industrial 25

Disable

Enable*

Industrial 25 Check Bit Setting

Disable

Enable but not send check bit

Enable & send check bit

Set Reading Length Range For Industrial 25

Minimum length(0~50bits)

Maximum length(0~50bits)

Standard 25

Disable

Enable*

Standard 25 Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

Set Reading Length Range For Standard 25

Minimum length(0~50bits)

Maximum length(0~50bits)

MSI

Disable*

Enable

MSI Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

1 Check Bit MOD10

2 Check Bits MOD10

MOD10/MOD11 Both

Set Reading Length Range For MSI

Minimum length(0~50bits)

Maximum length(0~50bits)

Plessey

Disable*

Enable

Plessey Check Bit Setting

Disable*

Enable but not send check bit

Enable & send check bit

Set Reading Length Range For Plessey

Minimum length(0~50bits)

Maximum length(0~50bits)

DataMatrix

Disable

Enable*

Set Reading Length Range For DataMatrix

Minimum length(0~50bits)

Maximum length(0~50bits)

QR

Disable

Enable*

URL Link QR Code Reading

Enable*

Disable

Set Reading Length Range For QR

Minimum length(0~50bits)

Maximum length(0~50bits)

Micro QR

Disable*

Enable

PDF 417

Disable

Enable*

Set Reading Length Range For PDF 417

Minimum length(0~50bits)

Maximum length(0~50bits)

Micro PDF

Disable*

Enable

Maxicode

Disable*

Enable

Set Reading Length Range For Maxicode

Minimum length(0~50bits)

Maximum length(0~50bits)

Aztec

Disable*

Enable

Set Reading Length Range For Aztec

Minimum length(0~50bits)

Maximum length(0~50bits)

Han Xin Code

Disable*

Enable

Set Reading Length Range For Han Xin Code

Minimum length(0~50bits)

Maximum length(0~50bits)

Appendix

Data Edit And Setting Parameter Barcodes

0

1

2

3

4

5

6

7

8

9

A

B

C

D

E

F

Save

Cancel 1 data of current setting

Cancel all data of current setting

Code ID Table

Code Type	CODE ID	Code Type	CODE ID
UPC-A	c	INDU-25	D
UPC-E	c	STANDARD-25	d
EAN-8	d	CODABAR	a
EAN-13	d	MSI	m
ISSN	n	PLESSEY	n
ISBN	B	RSS LIM	y
CODE-128	j	RSS EXP	y
GS1-128	j	RSS EXP	y
ISBT-128	j	RSS ST	y
CODE-39	j	QR	Q
CODE-93	i	Micro QR	Q
CODE-32	j	Micro PDF417	S
ITF-25	e	PDF417	r
ITF-6	e	DM	u
ITF-14	e	MAXICODE	x
INT-25	e	AZTEC	z
MATRIX-25	v	Han Xin CODE	h
CODE-11	H		

Appendix ASCII table

DEC	HEX	Character	DEC	HEX	Character	DEC	HEX	Character
32	20	<SPACE>	64	40	@	96	60	`
33	21	!	65	41	A	97	61	a
34	22	“	66	42	B	98	62	b
35	23	#	67	43	C	99	63	c
36	24	$	68	44	D	100	64	d
37	25	%	69	45	E	101	65	e
38	26	&	70	46	F	102	66	f
39	27	‘	71	47	G	103	67	g
40	28	(	72	48	H	104	68	h
41	29	)	73	49	I	105	69	i
42	2A	*	74	4A	J	106	6A	j
43	2B	+	75	4B	K	107	6B	k
44	2C	,	76	4C	L	108	6C	l
45	2D	-	77	4D	M	109	6D	m
46	2E	.	78	4E	N	110	6E	n
47	2F	/	79	4F	O	111	6F	o
48	30	0	80	50	P	112	70	p
49	31	1	81	51	Q	113	71	q
50	32	2	82	52	R	114	72	r
51	33	3	83	53	S	115	73	s
52	34	4	84	54	T	116	74	s
53	35	5	85	55	U	117	75	u
54	36	6	86	56	V	118	76	v
55	37	7	87	57	W	119	77	w
56	38	8	88	58	X	120	78	x
57	39	9	89	59	Y	121	79	y
58	3A	:	90	5A	Z	122	7A	z
59	3B	;	91	5B	[	123	7B	{
60	3C	<	92	5C	\	124	7C	|
61	3D	=	93	5D	]	125	7D	}
62	3E	>	94	5E	^	126	7E	~
63	3F	?	95	5F	_			

Control Character Table(USB-KBW Mode)

DEC	HEX	Key Value (Disable Control Character Escape)	Key Value (Enable Control Character Escape)
0	00	Reserve	Ctrl+@
1	01	Insert	Ctrl+A
2	02	Home	Ctrl+B
3	03	End	Ctrl+C
4	04	Delete	Ctrl+D
5	05	PageUp	Ctrl+E
6	06	PageDown	Ctrl+F
7	07	ESC	Ctrl+G
8	08	Backspace	Ctrl+H
9	09	Tab	Ctrl+I
10	0A	Enter(Output will be influenced by CR/LF settings)	Ctrl+J
11	0B	Caps Lock	Ctrl+K
12	0C	Print Screen	Ctrl+L
13	0D	Enter(Output will be influenced by CR/LF settings)	Ctrl+M
14	0E	Scroll Lock	Ctrl+N
15	0F	Pause/Break	Ctrl+O
16	10	F11	Ctrl+P
17	11	Direction Key↑	Ctrl+Q
18	12	Direction Key↓	Ctrl+R
19	13	Direction Key←	Ctrl+S
20	14	Direction Key→	Ctrl+T
21	15	F12	Ctrl+U
22	16	F1	Ctrl+V
23	17	F2	Ctrl+W
24	18	F3	Ctrl+X
25	19	F4	Ctrl+Y
26	1A	F5	Ctrl+Z
27	1B	F6	Ctrl+[
28	1C	F7	Ctrl+\
29	1D	F8	Ctrl+]
30	1E	F9	Ctrl+^
31	1F	F10	Ctrl+_

Examples For Setting

Example of barcode reading length setting

When setting the minimum reading length of a barcode, you need to ensure that the minimum length you set is not longer than the current maximum length setting, otherwise an error will be prompted. Similarly, when setting the maximum reading length of a barcode, you need to ensure that the maximum length you set is not less than the current minimum length setting.

Ex1: Set the reading length of Code128 as 4-12 characters

“Minimum length(0~50bits)”----------Set Reading Length Range For Code 128

“4”----------Data Edit And Setting Parameter Barcodes

“Save”----------Data Edit And Setting Parameter Barcodes

“Maximum length(0~50bits)”----------Set Reading Length Range For Code 128

“1”----------Data Edit And Setting Parameter Barcodes

“2”----------Data Edit And Setting Parameter Barcodes

“Save”----------Data Edit And Setting Parameter Barcodes