

User's Manual



Z-5422 2D Image Scan Module

Revision History

Changes to the original manual are listed below:

Version	Date	Description of Version
1.0	April 29,2025	Initial version

Important Notice

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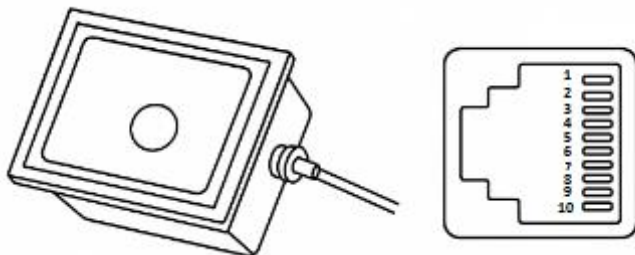
Guidance for Printing

- This manual is in A5 size. Please double check your printer setting before printing it out.

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Interface and Wiring



Interface	PIN Definition (Rotated 90° for viewing, top to bottom)
10	NC
9	NC
8	TXD (Customizable for RS232/RS485 as needed)
7	GND
6	DM (USB)
5	DP (USB)
4	VCC
3	RxD (Customizable for RS232/RS485 as needed)
2	CTS (Reserved for custom requests)
1	RTS (Reserved for custom requests)

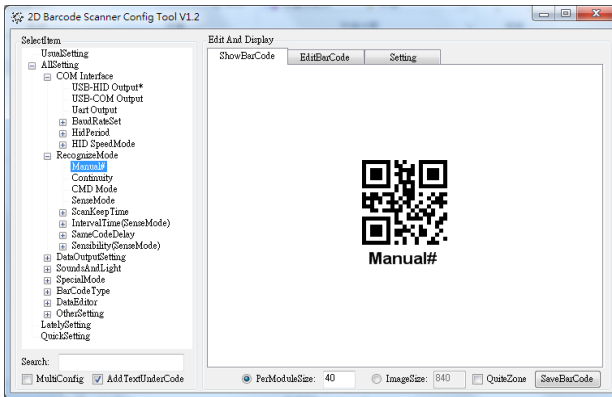
Important Notes:

- The voltage supply for USB and TTL should be 5V.
- USB voltage is 5V—do not connect it incorrectly to avoid device damage.
- RS232/RS485 can support a voltage range of 5V to 24V.
- When using RS232, make sure the Rx and Tx pins are connected properly. If the scanner reads but doesn't transmit data, try swapping Rx and Tx pins.
- RS485 connections need to be A+ and B- connected properly—swap if needed.
- The default connection is RS232, but you can switch between TTL, RS232, or RS485.

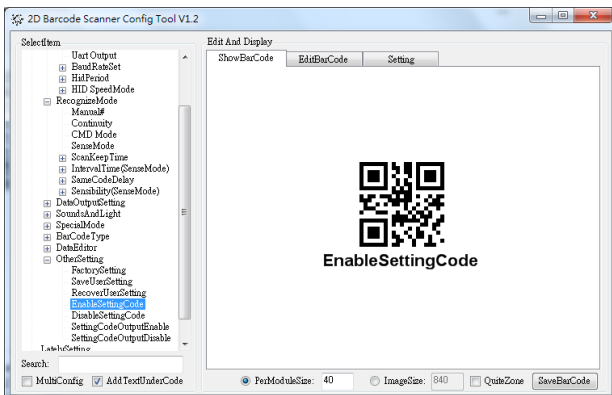
How to Set It Up

Scanning the Code to Configure Settings

- Use the "2D Barcode Scanner Config Tool" (available for PC) to scan the provided QR code, as shown below. This will configure the barcode scanner.
- Once the setup is complete, the scanner will beep, and you can close the configuration tool.



- To enable or disable a setting, search for the corresponding setting code. Scanning the code will apply the change, and the SettingCodeOutput content will update accordingly.



Trigger Modes

Motion Trigger

- **Delay Mode:** The light stays on for a short time after a successful scan, then turns off.
- **Flash Mode:** The light turns off immediately after a successful scan.

Continuous Trigger

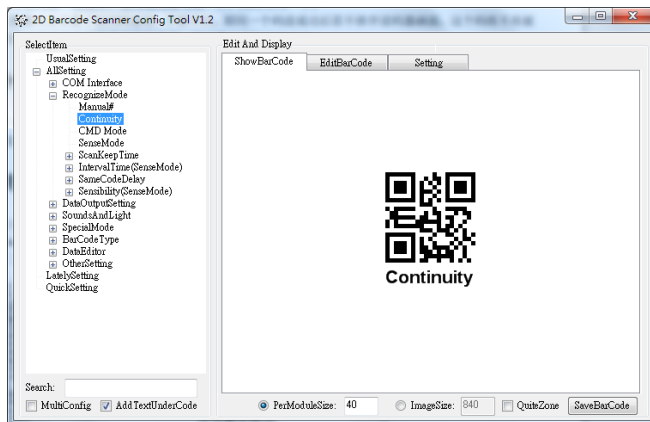
- The scanner's light remains on continuously. When a barcode is successfully scanned, the scanner beeps and the light flashes once.
- By default, the same barcode will not be scanned again unless you adjust the delay settings.

Command (CMD) Trigger

- You can control the scanner by sending commands through the serial port.

Switching Between Trigger Modes

You can switch between trigger modes using the "2D Barcode Scanner Config Tool," where the corresponding setting codes will be displayed for you to scan.

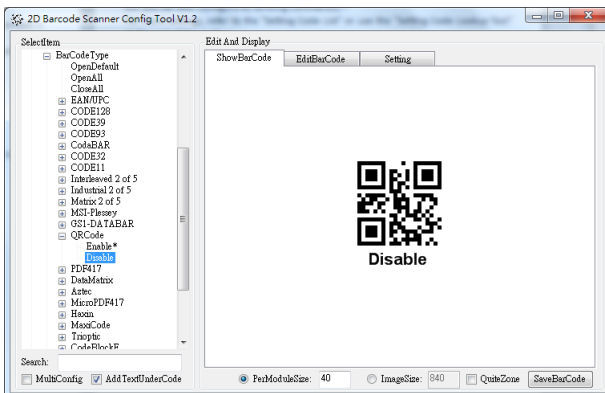
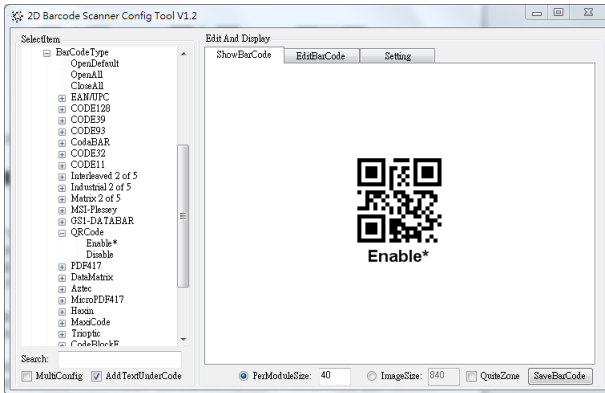


Symbology Settings

If a barcode cannot be scanned, it might be because the symbology is not enabled. You can enable or disable symbologies by scanning a setting code or by sending a command to the scanner.

Note: Different 2D models support different symbologies. Please refer to your specific model's documentation when configuring settings.

Common symbology setting codes (examples below use barcode scanning to configure, but you can also configure by sending commands):
 For more settings, refer to the "Setting up the scanner" at the end of this guide.



Troubleshooting

Q: The scanner isn't reading barcodes.

A:

- Listen for a beep when scanning. If you hear a beep, the scanner is reading the barcode but not outputting the data.
- Check if the scanner is operating in Serial (RS232) mode or USB-COM (virtual COM port) mode.
- If in USB-COM mode, use a serial port monitoring tool to view the data output.
- Another possible cause is that the required symbology is not enabled (for example, scanning a QR code with no response). Try enabling the QR code symbology and scanning again.
- If the barcode is very large and too close to the scanner, it may not be read properly. Try scanning a standard barcode, such as an Alipay or WeChat payment code, for testing.

Q: How do I switch USB mode to Virtual COM?

A:

- Scan the USB-COM setting code to switch the scanner to Virtual COM port mode.

Q: The virtual COM port is not recognized, or I can't use it.

A:

- Check Device Manager. If the device shows as an unknown device (with a "?" mark), install the virtual COM port driver.

- Note: Windows 10 and newer usually do not require driver installation. For Windows 7 or Windows 8, you will need to install the driver manually.








Q: When using serial commands, the scanner reads successfully but no data is output.

A:

- Check if the TX and RX lines are reversed. Swap the connections and try again.
- Make sure the scanner's baud rate matches the host computer's baud rate.
- Some serial monitoring tools may not work properly. Please use the serial tool provided with the scanner for accurate monitoring.

Setting up the Scanner

To configure your scanner, simply scan the setting codes provided in this section. Each code applies a specific function—just scan once to enable or disable the desired setting. Tip: To avoid scanning the wrong code by mistake, it may help to cover any nearby codes while scanning.

Functional Settings		
 <p>Restore factory settings</p>	 <p>Save user settings</p>	 <p>Restore user settings</p>
 <p>Read version information</p>	 <p>Enable setup code configuration</p>	 <p>Disable setup code configuration</p>
Communication Interface Settings		
 <p>USB-HID Output*</p>		

Baud Rate Settings



1200bps



4800bps



9600bps*



14400bps



19200bps













38400bps












57600bps



115200bps







<p>Check Bit Switch</p>	 <p>Enable check digit</p>	 <p>Disable check digit</p>
<p>Check Bit Settings</p>	 <p>Odd parity</p>	 <p>Even parity</p>
<p>Stop Bit Settings</p>	 <p>The stop bit is 1 bit</p>	 <p>The stop bit is 2 bit</p>
<p>Data bit setting</p>	 <p>The data bit is 5 bits</p>	 <p>The data bit is 5 bits</p>
	 <p>The data bit is 7 bits</p>	 <p>The data bit is 8 bits</p>

HID Access Cycle		
 3ms	 6ms	 10ms*
 16ms	 20ms	 30ms

Scanning Modes		
<p>(Note: Serial commands are effective in all modes. We recommend using <i>Command Trigger Mode</i> with the light off by default.)</p>		
 Manual trigger	 Continuous trigger	 Motion trigger







Single Read Timeout

(Note: This refers to the timeout duration for a read operation triggered by a command in manual trigger mode via the TTL interface.)

 <p>1000ms</p>	 <p>3000ms</p>	 <p>5000ms*</p>
 <p>10000</p>	 <p>500</p>	 <p>Infinite</p>

Same barcode delay

(The scanner will only re-read the same barcode after it has been removed from view and the configured delay time has elapsed.)

 <p>0</p>	 <p>500ms</p>	 <p>700ms</p>
 <p>1000ms</p>	 <p>3000ms</p>	 <p>Infinite</p>

Motion Trigger Duration

(Applies in motion trigger mode; sets the duration the scanner stays active after detecting motion or presence.)



Motion trigger read timeout: 1000 ms*



Motion trigger read timeout: 3000 ms*



Motion trigger read timeout: 5000 ms*

Beep on Successful Scan











Enable Beep on Successful Scan



Disable Beep on Successful Scan

Keyboard Settings

To ensure compatibility with host devices in different countries, you can scan the corresponding keyboard layout code for your region.

 <p>* Keyboard - US</p>	 <p>Keyboard - Czech</p>	 <p>Keyboard - French</p>
 <p>Keyboard - German</p>	 <p>Keyboard - Hungarian</p>	 <p>Keyboard - Italian</p>
 <p>Keyboard - Japanese</p>	 <p>Keyboard - Spanish</p>	

Data Formatting

In real-world applications, it's often useful to format the scanned data before it is output. This helps with data sorting and processing.

Data formatting includes the following options:

- Adding a **Prefix**
- Adding a **Suffix**
- Trimming the **Data** segment
- Outputting the **Barcode Symbology (CodeID)**
- Outputting a custom **RF String** on decode failure
- Adding a **Tail** character

The default output order for processed data is:

[Prefix] [CodeID] [Data] [Suffix] [Tail]

Prefix

Adding a Prefix

A prefix is a user-defined string that appears before the decoded data. To enable prefix output, scan the “**Enable Prefix**” setting code.



Enable Prefix



Disable Prefix

Modifying the Prefix

To change the prefix content, scan the **“Modify Prefix”** setting code followed by the corresponding data codes.

Each character in the prefix must be entered using two-digit hexadecimal values. A maximum of 15 characters is allowed.

Refer to **Appendix D** for the hexadecimal value chart.



Modify Prefix

Example: Setting the prefix to **“DATA”**

1. From the character table, find the hex values for "DATA":
 - D = 44, A = 41, T = 54, A = 41
2. Make sure the **configuration mode** is enabled. If not, scan the **“Enter Configuration Mode”** code (see section 1.5.2).
3. Scan the **“Modify Prefix”** setting code.
4. Then scan the data codes for: 4, 4, 4, 1, 5, 4, 4, 1

Suffix

Adding a Suffix

A suffix is a user-defined string added after the decoded data. To enable suffix output, scan the “**Enable Suffix**” setting code.



Enable Suffix



Disable Suffix

Modifying the Suffix

To change the suffix content, scan the “**Modify Suffix**” setting code followed by the appropriate data codes.

Each character must be entered as a two-digit hexadecimal value. A maximum of 15 characters is allowed.

Refer to **Appendix D** for the character-to-hex mapping.



Modify Suffix

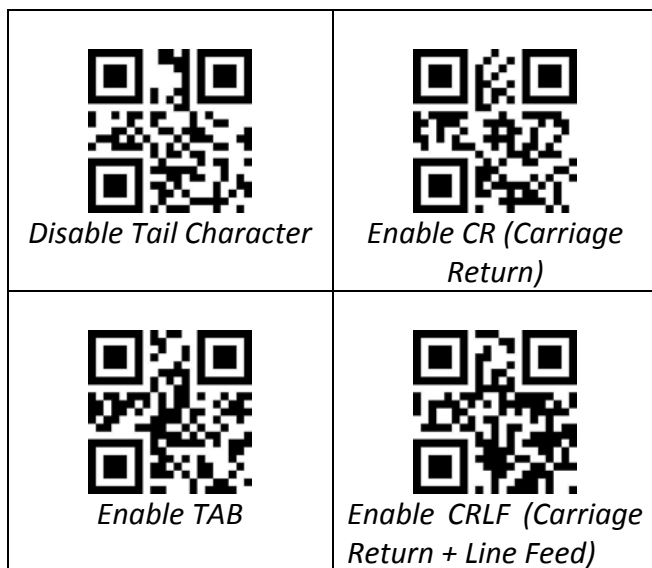
Example: Setting the suffix to “DATA”

1. Look up the hex values:
 - D = 44, A = 41, T = 54, A = 41
 2. Ensure configuration mode is enabled. If not, scan **“Enter Configuration Mode”** (see section 1.5.2).
 3. Scan the **“Modify Suffix”** setting code.
 4. Then scan the data codes: 4, 4, 4, 1, 5, 4, 4, 1
-

Tail Character

To help the host system distinguish the end of a decoded string, you can enable a tail character.

After scanning a barcode, the scanner will append the selected tail character to the output.



EAN/UPC Settings

You can enable or disable the reading of EAN/UPC barcodes by scanning the corresponding code:



Enable EAN/UPC



Disable EAN/UPC

To enable or disable reading of **EAN/UPC add-on codes**, scan:



Disable Add-on Codes



Enable Add-on Codes

Code128 Settings

To control whether Code128 barcodes are read:



Enable Code128



Disable Code128

To control whether the **first character** in Code128 (if it is a non-ASCII character) should be output:



Enable Non-ASCII Output



Disable Non-ASCII Output

Code39 Settings

To enable or disable Code39 barcode reading:



Enable Code39



Disable Code39

Code93 Settings

To enable or disable Code93 barcode reading:



Enable Code93



Disable Code93

QR Code Settings

Scan the following setting codes to enable or disable QR code scanning:



Enable QR Code



Disable QR Code

Appendix

Default settings table

Parameter name		Default Settings	Remark
Communication interface			
TTL-232	Baud rate	9600	
	Proofreading	No calibration	
	Data bits	8Bit	
	Stop bits	1Bit	
	Hardware flow control	No hardware flow control	
Mode Parameters			
Default reading mode		Continuous Mode	
Serial port trigger mode	Single reading time	5s	Parameter range: 0.1–25.5 seconds, in 0.1-second increments; 0 means no time limit for a single decoding attempt.
Manual Mode	Trigger level	Low level trigger	Default high level
Continuous trigger*	Factory settings	The default light is always on; the same code will be turned off after a delay	It is recommended to set the same code delay 500ms
Sensing Mode	Induction time	2s	It is recommended to set the same code delay 500ms

ASCII Code Table

Hexadecimal	Decimal	Character
0	0	NUL
1	1	SOH
2	2	STX
3	3	ETX
4	4	EOT
5	5	ENQ
6	6	ACK
7	7	BEL
8	8	BS
9	9	HT
10	10	LF
11	11	VT
12	12	FF
13	13	CR
14	14	SO
15	15	SI
16	16	DLE
17	17	DC1
18	18	DC2
19	19	DC3
20	20	DC4
21	21	NAK
22	22	SYN
23	23	ETB
24	24	CAN
25	25	EM
26	26	SUB
27	27	ESC






28	28	FS
29	29	GS
30	30	RS
31	31	US
32	32	SP
33	33	!
34	34	"
35	35	#
36	36	\$
37	37	%
38	38	&
39	39	'
40	40	(
41	41)
42	42	*
43	43	+
44	44	,
45	45	-
46	46	.
47	47	/
48	48	0
49	49	1
50	50	2
51	51	3
52	52	4
53	53	5
54	54	6
55	55	7
56	56	8
57	57	9
58	58	:

59	59	;
60	60	<
61	61	0
62	62	>
63	63	?
64	64	@
65	65	A
66	66	B
67	67	C
68	68	D
69	69	E
70	70	F
71	71	G
72	72	H
73	73	I
74	74	J
75	75	K
76	76	L
77	77	M
78	78	N
79	79	O
80	80	P
81	81	Q
82	82	R
83	83	S
84	84	T
85	85	U
86	86	V
87	87	W
88	88	X
89	89	Y

90	90	Z
91	91	[
92	92	\
93	93]
94	94	^
95	95	_
96	96	`
97	97	a
98	98	b
99	99	c
100	100	d
101	101	e
102	102	f
103	103	g
104	104	h
105	105	i
106	106	j
107	107	k
108	108	l
109	109	m
110	110	n
111	111	o
112	112	p
113	113	q
114	114	r
115	115	s
116	116	t
117	117	u
118	118	v
119	119	w
120	120	x

121	121	y
122	122	z
123	123	{
124	124	
125	125	}
126	126	~
127	127	DEL

Data Code

 <i>0</i>	 <i>1</i>
 <i>2</i>	 <i>3</i>
 <i>4</i>	 <i>5</i>
 <i>6</i>	 <i>7</i>
 <i>8</i>	 <i>9</i>

