ZhongLi ZL2200

Bar Code Scanner

User’s Guide

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Table of Contents

Introduction 1

Components 1

Maintenance 1

Caution and Serial Number Labels 2

Scanner Operation

Audible Indicators 4

Visual Indicators 5

Failure Modes 6

Typical Depth of Field 6

Troubleshooting Guide 7

Design Specifications 9

Configuration Introduction

Bar Code Configuration Methods 11

Single-Code Method 11

Multi-Code Method 11

Returning to Factory Defaults 12

Code Types and Decode Rules

2 of 5 Codes 13

Additional Decode Features 13

Supplements 14

Scanner Operation

Redundant Scans 15

Data Transmission Delays 15

Scanner Operation 15

Prefixes/Suffixes

User Configurable Prefixes, All Data 16

Standard Suffix Characters 16

User Configurable Suffixes, All Data 17

Code Formatting

UPC/EAN Formatting 18

Code Bytes Usage

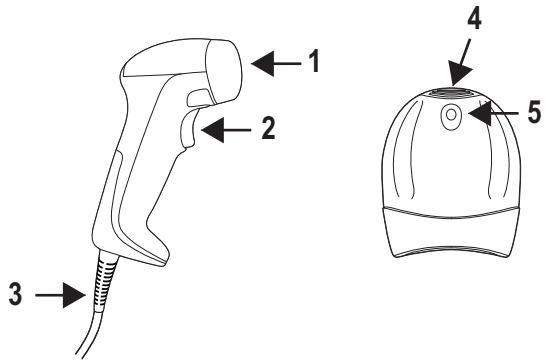
Code Bytes 0-9..... 20
Code Type Table..... 21
ASCII Reference Table..... 22

Technical Assistance.....27

Limited Warranty.....28

Introduction

Components



Item No.	Description
1	Red Output Window (Laser Aperture)
2	Trigger
3	Cable (undetachable)
4	Beeper Hole
5	LED Indicator *(see page 5)*

Figure 1. Scanner Components

Maintenance

Smudges and dirt on the unit's window can interfere with the unit's performance. If the window requires cleaning, use only a mild glass cleaner containing no ammonia. When cleaning the window, spray the cleaner onto a lint free, non-abrasive cleaning cloth then gently wipe the window clean.

If the unit's housing requires cleaning, use a mild cleaning agent that does not contain strong oxidizing chemicals. Strong cleaning agents may discolor or damage the unit's exterior.

Caution and Serial Number Labels

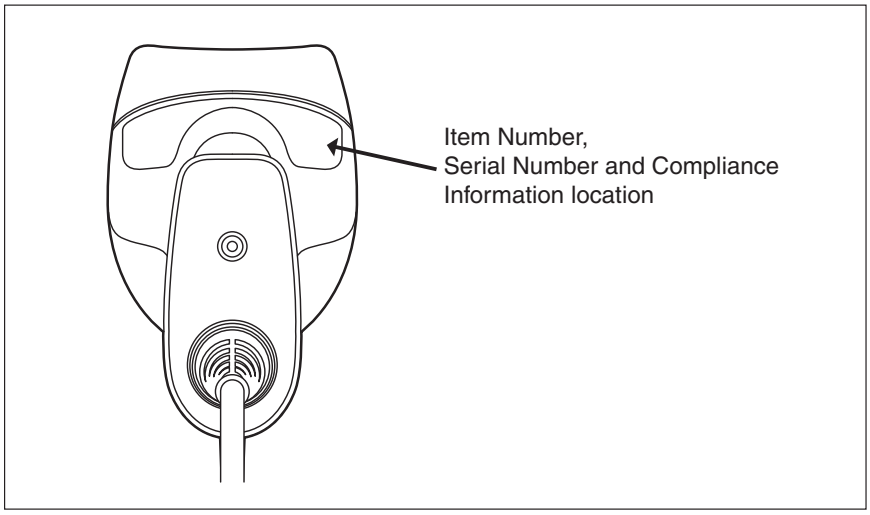


Figure 2. Label Location on the Bottom of the Scanner

Audible Indicators

When the scanner is operational, the scanner provides audible feedback to indicate the status of the scanner and the last scan. Eight settings are available for the tone of the beep (normal, six alternate tones and no tone).

One Beep – On Power Up

When the unit powers up, the green LED turns on, then the green LED flashes and the scanner beeps once. The green LED will remain on for the duration of the beep. The scanner is now ready to scan.

One Beep – During Operation

When the scanner successfully reads a bar code, the green LED will flash and the scanner beeps once (if programmed to do so). If the scanner does not beep once and the green light does not flash, then the bar code has not been successfully read.

Visual Indicators

The scanner is equipped with a red LED and green LED, which indicate the scanner's state and the status of the current scan respectively when the unit is in operation.

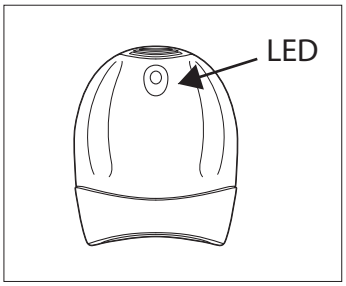


Figure 3. LED Location

Green and Red LEDs Are Off

The LEDs will not be illuminated if the scanner is not receiving power from the host or transformer.

Steady Red

Steady green indicates normal pulse or continuous laser operation. Accompanied by a razzberry tone, a steady green LED indicates that an invalid bar code has been scanned.

Flashing Red

After a period of inactivity, the ON time of the pulsing laser will be shortened. During this time the green LED will flash. This indicates that the scanner is in a power saver mode. When a bar code enters the laser field, the scanner will wake up and return to normal pulse mode.

Steady Red and Single Green Flash

When the scanner successfully reads a bar code, the green LED will flash and the scanner will beep. If the green LED does not flash and the scanner does not beep, the bar code has not been successfully read.

Steady Green and Steady Red

After a successful read, the scanner transmits the data to the host device. Some communication modes require that the host inform the scanner when data is ready to be received. If the host is not ready to accept the information, the scanner's green LED will remain on until the data can be transmitted.

Failure Modes

One Razzberry Tone – On Power Up

This indicates the scanner has experienced a laser or flipper subsystem failure. Return the unit for repair to an Authorized Service Center.

Continuous Razzberry Tone with no LEDs

If, upon power up, the scanner emits a continuous razzberry tone, then the scanner has an experienced an electronic failure. Return the unit for repair to an Authorized Service Center.

Three Beeps – On Power Up

If the scanner beeps three times on power up, then the non-volatile memory (NovRAM) that holds the scanner configuration has failed. You must return the unit for repair to an Authorized Service Center.

Typical Depth of Field by Bar Code Element Width

Bar Code Element Width		**Depth of Field**	
		Start (From Scanner Face)	**End** (From Scanner Face)
0.13 mm	5 mil	47 mm (1.9")	111 mm (4.4")
0.19mm	7.5 mil	20 mm (.8")	163 mm (6.4")
0.33 mm	13 mil UPC-A	17 mm (0.7")	232 mm (9.1")

Troubleshooting Guide

The following guide is for reference purposes only. Contact a customer service representative to preserve the limited warranty terms.

Symptoms	Possible Causes	Solution
All Interfaces		
The unit has no LEDs, beep or laser.	No power is being supplied to the unit.	Check the transformer, the outlet and power strip. Make sure the cable is plugged into the unit.
	No power is being supplied to the unit from host.	Some host systems cannot supply enough current to power the scanner. A power supply may be needed.
At power up the unit beeps two times and alternately flashes the LEDs.	There is a ROM failure.	A flash ROM upgrade is required.
At power up the unit beeps three times.	There is a non-volatile RAM failure.	Contact a customer service representative.
At power up there is a continuous razz tone.	There has been a diagnostic failure.	
At power up there is a razz tone and the green LED flashes.	There is a VLD failure.	
At power up there is a razz tone and both LEDs flash.	There is a scanning mechanism failure.	
The unit scans, communicates and beeps twice.	The same symbol timeout is set too short.	Adjust the same symbol timeout for a longer time.
The unit powers up, but does not beep.	The beeper may be disabled or no tone has been selected.	Enable beeper and select a tone.

Symptoms	Possible Causes	Solution
The unit powers up, but does not scan and/or beep.	The unit is trying to scan a particular symbology that is not enabled.	UPC/EAN, Code 39, interleaved 2 of 5, Code 93, Code 128 and Codabar are enabled by default. Verify the type of bar code being read has been selected.
The unit powers up, but does not scan and/or beep.	The bar code being scanned does not satisfy the configured criteria for character length lock or minimum length.	Verify the bar code being scanned falls into the configured criteria. *The scanner defaults to a minimum of three-character bar code.*

Design Specifications

Operational

Light Source:	**V**isible **L**aser **D**iode (VLD) @ 650 nm	
Laser Power:	Less than 1.0 mW average	
Depth of Scan Field:	17 mm – 232 mm (0.7" – 9.1")	0.33 mm (13 mil) UPC-A Bar Code
Scan Speed:	72 ± 2 scan lines per second	
Scan Pattern:	Single scan line	
Minimum Bar Width:	4.5 mil	
Decode Capability:	Reads standard 1D and GS1 DataBar symbologies.	
System Interfaces:	USB	
Print Contrast:	20% minimum reflectance difference	
No. Characters Read:	Up to 80 data characters. The maximum number will vary based on symbology and density.	
Scan Angle:	55° Horizontal	
Pitch, Yaw:	68°, 52°	
Beeper Operation:	7 tones or no beep	
Indicators (LED):	Green = good read	
	Red = laser on, ready to scan	

Mechanical

Length:	165 mm (6.5")
Width:	65 mm (2.6")
Height:	80 mm (3.2")
Weight:	182 g (6.42 oz)

Specifications subject to change without notice.

Electrical

Input Voltage:	5VDC +/- 0.2V (USB port)	
Operating Power:	Standby:	700 mW
	Decoding USB:	1000 mW
Operating Current:	Standby:	140 mA average @ 5VDC
	Decoding USB:	200 mA average @ 5VDC

Environmental

Temperature:	Operating:	0°C to 40°C (32°F to 104°F)
	Storage:	-40°C to 60°C (-40°F to 140°F)
Humidity:	5% to 95% relative humidity, non-condensing	
Light Levels:	Up to 100000 Lux (9290 footcandles)	
Shock:	Designed to withstand 1.0 m (3.3 ft.) drops	
Contaminants:	Sealed to resist airborne particulate contaminants	
Ventilation:	None required	

Specifications subject to change without notice.

Configuration Introduction

Your new scanner has been factory configured with a set of default parameters. Since many host systems have unique formats and protocol requirements, a wide range of configurable features that may be selected using this bar code based configuration tool are provided. Once the configuration is completed, the scanner stores the settings in nonvolatile memory (NOVRAM). NOVRAM saves the settings when the power is off.

*Note: Bar code descriptions marked with an asterisk (*) define a feature that is a factory default. Bar codes marked with a tilde (~) require the Multi-Code configuration method.*

Bar Code Configuration Methods

Scanners can be bar code configured in two ways:
the *Single-Code Method* and the *Multi-Code Method*.

Single-Code Method

Most features can be enabled or disabled using the Single-Code Method.

1. Power up the scanner.
2. Scan the bar code for the desired feature.
3. The scanner will emit a multi-toned beep to indicate the configuration has been saved to NOVRAM.

Multi-Code Method

All features can be enabled or disabled using the Multi-Code Method.
A feature marked with a tilde (~) requires the Multi-Code Method.

1. Power up the scanner.
2. Scan the E*nter/Exit Configuration Mode* bar code (3 beeps).
3. Scan the bar code for the desired feature (1 beep). Multiple features can be enabled/disabled before scanning the enter/exit configuration mode bar code.
4. Scan the E*nter/Exit Configuration Mode* bar code (3 beeps) and save the new configuration. To abort a configuration change, power off the scanner before scanning the *Enter/Exit* code.

Enter/Exit Configuration Mode

Returning to Factory Defaults

Scan the *Recall Defaults* bar code to erase all previous settings and return the scanner to its factory default communication protocol.

Recall Defaults

Code Types and Decode Rules

Bar code descriptions marked with an asterisk (*) define a feature that is a factory default. Bar codes marked with a tilde (~) require the Multi-Code configuration method.

2 of 5 Codes

Additional Decode Features

~ Minimum Symbol Length – Single-line default is 3. Combine this code with the proper code bytes (on page 20), to specify the minimum number of characters in all non-UPC/EAN bar codes.

Supplements

Enable Bookland (979) Supplement Required

* **Disable Bookland (979) Supplement Required**

Enable Bookland (978) Supplement Required

* **Disable Bookland (978) Supplement Required**

Enable 977 (2 Digit) Supplement Required – The scanner will require a 2 digit supplement to be scanned when an EAN-13 code begins with 977.

* **Disable 977 (2 Digit) Supplement Required**

Enable ISBN Check Digit Transmission

Disable ISBN Check Digit Transmission

Enable Bookland to ISBN Conversion

* **Disable Bookland to ISBN Conversion**

Redundant Scans

* **0 Redundant Scans** – Requires 1 good decode for a *good scan*.

1 Redundant Scan – Requires 2 consecutive decodes of the same bar code data for a *good scan*.

Data Transmission Delays

Use these codes to select the amount of delay between sending data characters from the scanner to the host. This helps prevent the scanner from overflowing host-input buffers.

* **1 msec Intercharacter Delay**

10 msec Intercharacter Delay

25 msec Intercharacter Delay

~ **Variable msec Intercharacter Delay** – Scan this bar code and a sequence of code bytes on page 20 to set the delay between characters sent to the host system (range from 1 to 255 msecs.).

Operation Modes

***Manual Trigger Mode** – The scanner is activated by pressing the trigger. The scanner scans until a bar code is read, or the trigger is released.

Continuously Scan Mode – The scanner is always in active state.

Prefixes/Suffixes

Scan the Enter Configuration Mode bar code before trying to set these features (see the Multi-Code Method on page 11.)

User Configurable Prefixes, All Data

~ **Configurable Prefix Character #1** – A prefix ID can be added and assigned for data transmission. Use this code with a code byte sequence, on page 20, which represents the desired character.

~ **Configurable Prefix Character #2** – Assigns a second configurable prefix character**.**

Standard Suffix Characters

* **Enable CR Suffix** – The scanner transmits a carriage return after each bar code.

Disable CR Suffix

* **Enable LF Suffix** – The scanner transmits a line feed after each bar code. *Disabled when keyboard wedge defaults are loaded*.

Disable LF Suffix

Enable UPC Suffix ID – The scanner will transmit a suffix after any UPC/EAN bar code. The suffixes are A (UPC-A), E (UPC-E), F (EAN-13) and F (EAN-8).

* **Disable UPC Suffix ID**

User Configurable Suffixes, All Data

Note: Scan the Enter/Exit Configuration mode code before trying to set this feature. Refer to Multi-Code Method on page 11.

~ **Configurable Suffix Character #1** – A suffix ID can be added and assigned for data transmission. Use this code with a 3 code byte sequence, on page 20, which represents the desired character.

~ **Configurable Suffix Character #2** – Assigns a second configurable suffix character.

Code Formatting

UPC/EAN Formatting

* **Transmit UPC-A Check Digit**

Do Not Transmit UPC-A Check Digit

Transmit UPC-E Check Digit

* **Do Not Transmit UPC-E Check Digit**

Expand UPC-E to 12 Digits – Expand UPC-E bar codes to the 12 digit equivalent, UPC-A bar codes.

* **Do Not Expand UPC-E to 12 Digits**

* **Send Number System on Expanded UPC E**

Do Not Send Number System on Expanded UPC E

Enable GTIN Formatting

* **Disable GTIN Formatting**

Convert UPC-A to EAN-13 – The scanner converts UPC-A to EAN-13 by transmitting a leading zero before the bar code.

* **Do Not Convert UPC-A to EAN-13**

Transmit Lead Zero on UPC-E – This option will transmit a zero before each UPC-E bar code.

Do Not Transmit Lead Zero on UPC-E

Convert EAN-8 to EAN-13 – The scanner will transmit five zeros before the bar code to convert EAN-8 to EAN-13.

*** Do Not Convert EAN-8 to EAN-13**

Code Bytes Usage

The scanner must be in Configuration Mode for the features requiring code bytes for configuration. The Enter/Exit Configuration Mode bar code must be scanned before starting the configuration cycle. User configurable prefix/suffix characters can then be saved by scanning the 3 digit decimal equivalent of the ASCII character into the appropriate character location with the code byte bar codes.

Example: To add an asterisk (*) as a Prefix, scan the bar codes.

1. *Enter/Exit Configuration Mode* (3 beeps)
2. Configurable Prefix #1 (1 beep)
3. Code Byte 0 (1 beep)
4. Code Byte 4 (2 beeps)
5. Code Byte 2 (3 beeps)
6. *Enter/Exit Configuration Mode* (3 beeps)

Code Bytes 0–9

Code Byte 0

Code Byte 1

Code Byte 2

Code Byte 3

Code Byte 4

Code Byte 5

Code Byte 6

Code Byte 7

Code Byte 8

Code Byte 9

Code Type Table

Code Byte	Code Types
004	UPC-A
002	UPC-E
003	EAN-8
005	EAN-13
080	Code 39
081	Codabar
082	Interleaved 2 of 5
083	Code 128
084	Code 93
091	MSI Plessey
092	Code 11
093	Airline 2 of 5 (15 digits)
094	Matrix 2 of 5
095	Telepen
096	UK Plessey
097	Airline (13 digits)
098	Standard 2 of 5
099	TRI-OPTIC

ASCII Reference Table

HEX Value	Decimal Value/ Code Byte Value	Character	Control Keyboard Eqv
00	000	NUL	@
01	001	SOH	A
02	002	STX	B
03	003	ETX	C
04	004	EOT	D
05	005	ENQ	E
06	006	ACK	F
07	007	BEL	G
08	008	BS	H
09	009	HT	I
0A	010	LF	J
0B	011	VT	K
0C	012	FF	L
0D	013	CR	M
0E	014	SO	N
0F	015	SI	0
10	016	DLE	P
11	017	DC1	Q
12	018	DC2	R
13	019	DC3	S
14	020	DC4	T
15	021	NAK	U
16	022	SYN	V
17	023	ETB	W
18	024	CAN	X
19	025	EM	Y
1A	026	SUB	Z
1B	027	ESC	[
1C	028	FS	\

HEX Value	Decimal Value/ Code Byte Value	Character	Control Keyboard Eqv
1D	029	GS	^
1E	030	RS	_
1F	031	US	space,blank
20	032	SP	
21	033	!	
22	034	“	
23	035	#	
24	036	$	
25	037	%	
26	038	&	
27	039	‘	apostrophe
28	040	(	
29	041	)	
2A	042	*	
2B	043	+	
2C	044	,	comma
2D	045	-	minus
2E	046	.	period
2F	047	/	
30	048	0	number zero
31	049	1	number one
32	050	2	
33	051	3	
34	052	4	
35	053	5	
36	054	6	
37	055	7	
38	056	8	
39	057	9	
3A	058	:	
3B	059	;	

HEX Value	Decimal Value/ Code Byte Value	Character	Control Keyboard Eqv
3C	060	<	less than
3D	061	=	
3E	062	>	greater than
3F	063	?	
40	064	@	shift P
41	065	A	
42	066	B	
43	067	C	
44	068	D	
45	069	E	
46	070	F	
47	071	G	
48	072	H	
49	073	I	letter I
4A	074	J	
4B	075	K	
4C	076	L	
4D	077	M	
4E	078	N	
4F	079	O	letter O
50	080	P	
51	081	Q	
52	082	R	
53	083	S	
54	084	T	
55	085	U	
56	086	V	
57	087	W	
58	088	X	
59	089	Y	

HEX Value	Decimal Value/ Code Byte Value	Character	Control Keyboard Eqv
5A	090	Z	
5B	091	[	shift K
5C	092	\	shift L
5D	093	]	shift M
5E	094	^	à,shift N
5F	095	_	♣, shift 0, underscore
60	096	‘	accent grave
61	097	a	
62	098	b	
63	099	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	

HEX Value	Decimal Value/ Code Byte Value	Character	Control Keyboard Eqv
79	121	y	
7A	122	z	
7B	123	{	
7C	124	|	vertical slash
7D	125	}	alt mode
7E	126	~	(alt mode)
7F	127	DEL	delete, rubout

Technical Assistance

Contact information for technical support, product service, and repair can be found at www.youjieaidc.com.

Limited Warranty

Youjie warrants its products to be free from defects in materials and workmanship and to conform to Youjie's published specifications applicable to the products purchased at the time of shipment. This warranty does not cover any Youjie product which is (i) improperly installed or used; (ii) damaged by accident or negligence, including failure to follow the proper maintenance, service, and cleaning schedule; or (iii) damaged as a result of (A) modification or alteration by the purchaser or other party, (B) excessive voltage or current supplied to or drawn from the interface connections, (C) static electricity or electro-static discharge, (D) operation under conditions beyond the specified operating parameters, or (E) repair or service of the product by anyone other than Youjie or its authorized representatives.

This warranty shall extend from the time of shipment for the duration published by Youjie for the product at the time of purchase ("Warranty Period"). Any defective product must be returned (at purchaser's expense) during the Warranty Period to Youjie factory or authorized service center for inspection. No product will be accepted by Youjie without a Return Materials Authorization, which may be obtained by contacting Youjie. In the event that the product is returned to Youjie or its authorized service center within the Warranty Period and Youjie determines to its satisfaction that the product is defective due to defects in materials or workmanship, Youjie, at its sole option, will either repair or replace the product without charge, except for return shipping to Youjie.

EXCEPT AS MAY BE OTHERWISE PROVIDED BY APPLICABLE LAW, THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER COVENANTS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, ORAL OR WRITTEN, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

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The duration of the limited warranty for the 90 days.