# **Programming Guide**

# **Omnidirectional Laser Scanner**

#### **Revision History**

Changes to the original manual are listed below:

Version	Date	Description of Version
1.0	2015/06/01	Initial release
1.1	2015/7/13	Corrected sleep mode defaults
1.2	2015/7/30	Added stand section

# **Important Notice**

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Specification or version may be subject to change without notice. The actual specification and version are based on the product delivered.

#### **General Handling Precautions**

- Do not dispose of the scanner in fire.
- Do not put the scanner directly in the sun or by any heat source.
- Do not use or store the scanner in a very humid place.
- Do not drop the scanner or allow it to collide violently with other objects.
- Do not take the scanner apart without authorization.

#### Printing Guidance

- This programming guide is in A5 size. Please double check your printer setting before printing it out.
- When printing barcodes for programming, the use of a high-resolution laser printer is strongly suggested for the best scan result.

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# **Radio Notice**

Some equipment generates uses and can radiate radio frequency energy. If not installed and used in accordance with the instructions in this manual, it may cause interference to radio communications. The equipment has been tested and found to comply with the limits for a Class A computing device pursuant to EN55022 and 47 CFR, Part 2 and Part 15 of the FCC rules. These specifications are designed to provide reasonable protection against interference when operated in a commercial environment.

#### **Radio and Television Interference**

Operation of this equipment in a residential area can cause interference to radio or television reception. This can be determined by turning the equipment off and on.

The user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.

Relocate the device with respect to the receiver.

Move the device away from the receiver.

Plug the device into a different outlet so that the device and the receiver are on different branch circuits.

If necessary, the user may consult the manufacturer, authorized dealer, or experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402 U.S.A., Stock No. 004000003454.

#### For CE-countries

This scanner is in conformity with CE standards. Please note that an approved, CE-marked power supply unit should be used in order to maintain CE conformance.

# Laser Safety

The laser scanner complies with safety standard IEC 60825-1 for a Class I laser produce. It also complies with CDRH as applicable to a Class IIa laser product. Avoid long term staring into direct laser light.

#### **Radiant Energy**

The laser scanner uses one low-power visible laser diodes operating at 650nm in an opto-mechanical scanner resulting in less than  $3.9\mu$ W radiated power as observed through a 7mm aperture and averaged over 10 seconds.

Do not attempt to remove the protective housing of the scanner, as un-scanned laser light with a peak output up to 0.8mW would be accessible inside.

#### Laser Light Viewing

The scan window is the only aperture through which laser light may be observed from this product. A failure of the scanner motor, while the laser diode continues to emit a laser beam, may cause emission levels to exceed those for safe operation. The scanner has safeguards to prevent this occurrence. If, however, a stationary laser beam is emitted, the failing scanner should be disconnected from its power source immediately.

#### Adjustments

Do not attempt any adjustments or alteration of this product. Do not remove the protective housing of the scanner. There are no user-serviceable parts inside.

#### Caution

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

#### Optical

The use of optical instruments with this product will increase the eye hazard. Optical instruments include binoculars, magnifying glasses, and microscopes but do not include normal eye glasses worn by the user.

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(This barcode can also be found at back cover page.)

#### Framed values are default values

# INTRODUCTION

This is an advanced programming guide for varies omnidirectional laser scanners. This guide contains a series of programming barcode labels, and by scanning these codes, it can make configurations to the scanners. This allows decoding options and interface protocols to be tailored to a specific application. The configuration is stored in non-volatile memory and will not be lost by removing power from the scanner. Other than specified in this guide, for any special functions or specifications, please contact your dealer for details.

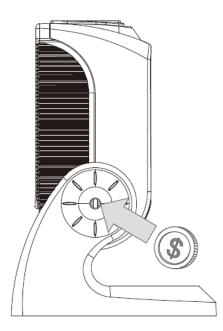
The scanner must be properly powered before programming. For RS-232C type scanners, an external power adapter must be used to supply DC power to the scanner. If a keyboard emulation type scanner is used with an IBM PC/XT/AT, PS/2 or any fully compatible computers, power will be drawn from the keyboard port; therefore no external power adapter is required. If keyboard emulation type scanner is used with any other non IBM PC compatible computers, an external power adapter may be required.

Under the programming mode, the laser scanner will acknowledge a good and valid reading with a short beep. It will give long beeps for either an invalid or bad reading.

# **Adjusting Stand**

#### To change the stand angle, please follow the steps below:

- 1. Adjust the tilt of the scanner to the desired position.
- 2. Use a coin to tighten the screws on both sides of the stand.



# **CHANGE THE SCANNER SETTING**

#### In order to change the scanner setting, please follow the steps below:

- 1. Scan the Enter/Exit Programming Mode barcode. There will be 2 beeps (low-high) indicating ready to make settings
- 2. Scan barcodes for the desired feature (1 beep).
- 3. Scan the Enter/Exit Programming Mode barcode again to save the configuration. There will be 2 beeps (long---short) indicating a successful setting.

After reading a valid barcode in programming mode, the scanner will give a high beep.

# **DEFAULT PARAMETERS**

This table gives the default settings of all the programmable parameters. The default settings will be restored whenever the **Reset** programming label is scanned.



## **Default Values of Operating Parameters**

Function	Default		
Sleep mode			
Motor sleep mode	Off		
Laser sleep mode	Off		
Scanner timing			
Same code delay	300msec		
Beeper Tone			
Frequency	medium		
Duration	100msec		
Default Values of Keyboard Emulation Parameters			
Keyboard type selection	IBM PC/AT USA		
USB type selection	US Keyboard		
Message terminator	Enter/ carriage return		
Default Values of Serial Communication Parameters			
Handshaking protocol	None		
ACK/NAK response time setting	300 msec		
Baud rate	9600		
Data bit	8		
Stop bit	1		
Parity	None		
Message terminator selection	CR/LF		

## **Default Values of Decoding Parameters**

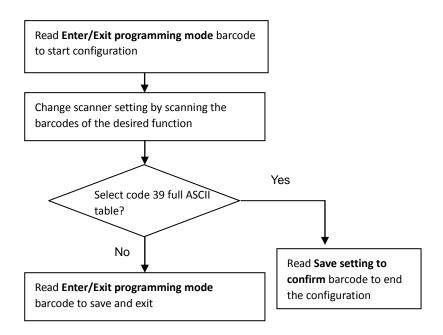
Function	Code	Default Value
	Code 39	Enable
	ITF 2 of 5	Disable
	Chinese Post Code	Disable
	UPC/EAN/JAN	Enable
	Codabar	Disable
Pooding codes selection	MSI/PLESSY	Disable
Reading codes selection	Code 128	Enable
	Code 93	Disable
	EAN-128	Disable
	Italian Pharmacy	Disable
	ISSN/ ISBN	Disable
	RSS (GS1)	Disable

	Codes	Standard
	Start/stop characters	Not transmitting
Code 39	Check digit	Disabled
	Concatenation	Off
	Length	3~32
Interleaved 2 of 5	Length	6-32
	Check digit	Disable
Chinese Post Code	Length	10~32
Chinese Post Code	Check digit	Disable
	Format	All
	Addendum	Disable
	UPC-E=UPC-A	Disabled
UPC/EAN/JAN	UPC-A leading digit	Transmit
	UPC-A check digit	Transmit
	UPC-E leading digit	Transmit
	UPC-E check digit	Transmit
	Туре	Standard
Codabar	Start/stop characters	A, B, C, D
	Length	6~32 digits
Code 128	FNC 2 append	Disable
	Check digit	Disable
Code 93	Length	3~32
	Check digit	Not transmit
NACI	Length	6~32
MSI	Check digit	Transmit
Italian Pharmacy	Transmit "A" Character	Not transmitting
	RSS-14 standard	Disable
RSS-14	RSS limited	Disable
NJJ-14	RSS expanded	Disable
	Transmit RSS-14 check digit	Enable

#### NOTE:

Contact your distributor to make sure if your model and firmware version support GS1 DataBar.

# **PROGRAM PROCEDURE**



# **System Setting**

The series scanner is a multi-interface communication scanner. If you had ordered only one type of interface, the device is configured in the interface requested, i.e. RS-232C, keyboard wedge, wand emulation or USB. If not requested, the default interface is set in keyboard wedge interface (PC/AT). Use this section to change interfaces.

## **Reset (Return to Factory Default)**

Reading of "Reset" barcode label turns all parameters back to default values, and the scanner remains in the last interface set when it is reset.





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

## **Display Firmware Version**

Reading of the "Display Firmware Version" will show the current firmware version on host.



## Abort (Exit Programming Mode)

Reading of the "Abort" barcode label discards all the parameters read prior to scan the "Enter/Exit of Programming Mode".





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

### **Return to RS-232 Default**

The RS-232C interface scanner is often used when connecting to the serial port of a PC or terminal. Read the barcode to set the scanner into RS-232 interface.



### **Return to USB Default**

Reading of "Return to USB default" sets the device into USB interface support.





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

### **Return to USB Default**

Reading of "Return to USB-Virtual COM default" sets the device into USB-Virtual COM interface support.

Return to USB-Virtual COM default (Special Cable is required)

## Save as Customer Default

Reading of this label to save the desired parameters set into customer's own default setting.





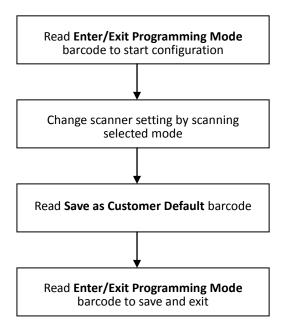
To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

## **Return as Customer Default**

Reading of the label sets the device back to customer saved parameter settings.



## How to Save as Customer Default



# **Sleep Timeouts Selection**

In this section, user can set both laser and/or motor to enter into sleep mode. The timeout programming labels will allow users to set the different time frame before entering into laser and/or motor sleep mode. The feature reduces power consumption and prolongs scanner life time.

NOTE:

- 1. Laser always enters sleep mode before motor.
- 2. If the motor timeout is set shorter than the laser timeout, then laser would enter sleep mode as motor enters sleep mode.





Motor sleep time 10 min.











Laser sleep time 30 min.

# Same Code Delay Time

This parameter sets the minimum time allowed between decodes of the same label.

# Same code delay time 50 msec.



To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Same code delay time 200 msec.





Same code delay time 500 msec.



# Same code delay time infinite

# **Beeper Sound Selection**

This section includes all setting labels for beeper sound settings, including tone frequency, volume, duration time, power on beep enable/disable, and enable/disable sound when the scanner enters sleep mode.

























# Beeper sound duration 200msec











### **Barcode Identifier Code Setting**

The scanner can transmit maximum 2 digits barcode identifier code for different types of barcodes. Use Enable or Disable identifier setting barcode to determine the transmission of barcode ID.

#### The procedure is as follows:

- 1.) Scan Enter/Exit Programming Mode label
- 2.) Scan Barcode Identifier Setting Code label
- 3.) Scan the new code mark from ASCII table (maximum 2 digits). For example, if **AB** is the code mark, then scan **A** and **B**.
- 4.) Scan Save Setting to Confirm label
- 5.) Scan Enter/Exit Programming Mode label

### **Barcode Identifier Code Selection**



Scan "Enable identifier code" label to transmit the label ID as shown in the table below.

Code 39	М
ITF 2 of 5	ļ
Chinese post code	Н
UPC-A	А
UPC-E	E
EAN-13	F
EAN-8	FF
Codabar	N
Code 128	К
Code 93	L
MSI/Plessy	Р
GS1 DataBar Omnidirectional	RS
(RSS-14 Standard)	1/2
GS1 DataBar Limited	RL
(RSS Limited)	NL
GS1 DataBar Expanded	RX
(RSS Expanded)	



### **Message Terminator**

This section contains different message terminator for data transmission.

### Message terminator for RS-232C







RS-232 message terminator – CR

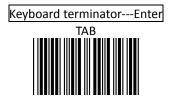




### USB HID & Keyboard Wedge Interface Configuration

Keyboard terminator---none





## Keyboard terminator---H-TAB



To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

### **Capital Lock**







### **Function Key Emulation**



Function key	y emulation disable

### **PREFIX AND SUFFIX**

The Prefix and Suffix section allows you to append a prefix and/or a suffix to every message transmitted via the serial ports, USB or the keyboard port. There is no restriction in selecting prefix or suffix characters as far as the sum of the lengths of prefix and suffix is not greater than 10 digits.

- 1. Select either prefix or suffix you are going to program by scanning the corresponding label
- 2. Scan the character(s) you want from the ASCII table to set as header or trailer. (Be sure to enable full ASCII code 39 option before you start.)
- 3. Read the save setting to confirm label to confirm your choice into memory.







This setting allows you to truncate a number of header or trailer for symbology. As a result, the specific character you select is deleted from the symbology you want.

- 1. Scan the Enter/Exit programming mode label.
- 2. Select the Truncate header or truncate trailer label.
- Scan two barcode value from the full ASCII code table(0~9). For example, scan
  0 and 2 if you want to clear the number 2 from header.
- 4. Scan save setting to confirm label
- 5. Scan Enter/Exit programming mode label to end of configuration.

Truncate header character







Save se	tting	to co	onfirm

## Add code length as header enable (all barcode)





### Symbology Configuration

In this section, device can be programmed to recognize one or more barcode symbologies automatically. If the scanner is configured to support multiple barcode symbologies, the scanner will discriminate different symbologies automatically. However, to improve scanning performance, you should enable only the symbologies that will be in active use.

















UPC/EAN/JAN disable (only can't transmitted but can decode)







# Chinese postcode enable























# EAN convert to ISSN/ISBN

















### **UPC/EAN Parameters Setting**







# UPC-A and EAN-13 Enable

















### Force UPC-E to UPC-A format

Force UPC-E to UPC-A format enable





#### Force UPC-A to EAN-13 format

Force UPC-A to EAN-13 format enable





#### Force EAN-8 to EAN-13 format





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Force EAN-8 to EAN-13 format enable



### EAN-13 country code first "0" can transmitted





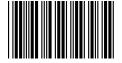
### **Transmit UPC-A check digit**





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Transmit UPC-A check digit disable



### **Transmit UPC-E leading character**





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Transmit UPC-E leading character disable



### **Transmit UPC-E check digit**





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Transmit UPC-E check digit disable

#### **Transmit EAN-8 check digit**





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Transmit EAN-8 check digit disable

#### **Transmit EAN-13 check digit**





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Transmit EAN-13 check digit disable



#### **Transmit UPC-A leading character**





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Transmit UPC-a leading character disable



#### Addendum













#### **Code 39 Parameters Setting**







#### Start/Stop Character Transmission

Code 39 start/stop character transmission







#### **Check Digit**

Code 39 check digit calculate and transmit





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Code 39 check digit calculate but without transmit





#### Code 39 reading length setting

The default code 39 length is 3  $\sim$  32 character. It can be set at minimum 1 digit and maximum 62 digits.

- 1. Programming Minimum or Maximum label
- 2. Scan two number labels from Code39 FULL ASCII table. Example: For 4 character length, scan 0 and 4
- 3. Scan Save setting to confirm label to confirm your choice into memory

#### Code 39 maximum length setting





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

#### Code 39 minimum length setting





#### **CODABAR** Parameters Setting

Codabar start/stop character transmission ----none







#### Codabar start/stop character transmission ---- DC1~DC4





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Codabar start/stop character transmission ---- a/t,b/n,c/\*,d/e



### Codabar maximum length setting



To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

#### Codabar minimum length setting



Sav	e s	etti	ng	to	con	firm

Check digits calculate but not transmit





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Check digit calculate and transmit



#### **Code 128 Parameters Setting**











Code 128 maximum length setting



Code 128 minimum length setting





#### **ITF 2 of 5 Parameters Setting**





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

#### ITF 2 of 5 check digit calculate and transmit



## Save setting to confirm

ITF 2 of 5 check digit calculate but without transmit





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

#### ITF 2 of 5 code maximum length setting



Save	e set	ting	g to	confi	irm

ITF 2 of 5 code minimum length setting



To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

### ITF 2 of 5 one fixed length setting



# ITF 2 of 5 two fixed length setting





Save	e sett	ing	to c	onfiri	n

#### **Chinese Post Code Parameters Setting**

Chinese post code maximum length setting





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Chinese post code minimum length setting



Save se	tting	to co	onfirm

#### **MSI/PLESSY Code Parameters Setting**

MSI/PLESSY double check digit calculate but not transmit





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

MSI/PLESSY double check digit without calculate and transmit



MSI/PLESSY double check digit calculate but only first digit transmit





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

MSI/PLESSY double check digit calculate and both transmit



MSI/PLESSY single check digit calculate but without transmission





To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

MSI/Plessy single check digit calculate and transmit



# MSI/PLESSY maximum length setting



To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

#### MSI/PLESSY minimum length setting





#### **Code 93 Parameters Setting**

Code 93 check digit calculate but without transmit



To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

Code 93 check digit not calculate and without transmit



Code 93 check digit calculate and transmit

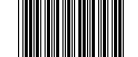


## Code 93 maximum length setting



To prevent confusion in code scanning, cover the unwanted label and present the desired barcodes one by one to the scanner.

#### Code 93 minimum length setting





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#### **Full ASCII Code Table**

Full ASCII ---- SP























Full ASCII ---- -











Full ASCII ---- 1





Full ASCII ---- 3





Full ASCII ---- 5





Full ASCII ---- 7





Full ASCII ----9











Full ASCII ---- B











Full ASCII ---- F











Full ASCII ---- J











Full ASCII ---- N





Full ASCII ---- P





Full ASCII ---- R











Full ASCII ---- V





Full ASCII ---- X





Full ASCII ---- Z









