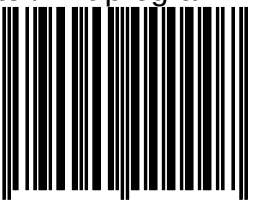
P/N: MUL-53247-02

Advanced Programming Guide

For Omni-Directional Laser Scanners

ZEBEX

Enter/Exit programming



(This barcode is also found at back cover page.)

Framed values are default values.

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This guide is designed for advanced settings of Hand Free laser scanner.

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Printed In May, 2004
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1. INTRODUCTION

The series of scanners can be configured by scanning a series of programming barcode labels. 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

The scanner is a multi-interface communication scanner. If you had ordered only the one type of interface, default will change the initial interface configuration to the interface requested, i.e. RS-232C, keyboard wedge, or USB. But if you had ordered as multi-interface, the initial interface configuration will be set as keyboard wedge (PC/AT); if needed to change to other interface, you need to set up from a programming guide.

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

2. CHANGE THE SCANNER SETTING

In order to change the scanner setting, please follow the sequence below

1. Scan Enter/Exit programming mode barcode (2 beeps Low—high)
2. Scan barcode for the desired feature (1beep)
3. Scan Enter/Exit programming mode barcode to save the configuration.(2 beeps ,long---short)

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

3. 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 and the laser scanner is in programming.

DEFAULT VALUES OF OPERATING PARAMETERS

Function	***Default***
Sleep mode	
Motor sleep mode	After 30 minutes
Laser sleep mode	After 10 minutes
Scanner timing	
Same code delay	200msec
Beeper Tone	
Frequency	medium
Duration	50msec
Code Identifiers	
Code ID	off
Code 39	M
ITF 2 of 5	I
Chinese post code	H
UPC-A	A
UPC-E	E
EAN-13	F
EAN-8	FF
Codabar	N
Code 128	K
Code 93	L
MSI/Plessy	P

DEFAULT VALUES OF KEYBOARD EMULATION PARAMETERS SETTING

Function	Default Values
Keyboard type selection	IBM PC/AT USA
Message terminator	Enter/ carriage return

DEFAULT VALUES OF RS-232C SERIAL COMMUNICATION PARAMETERS

Function	Default Values
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 USB EMULATION PARAMETERS

Function	Default Values
Keyboard Type	US Keyboard
Message Terminator	Enter

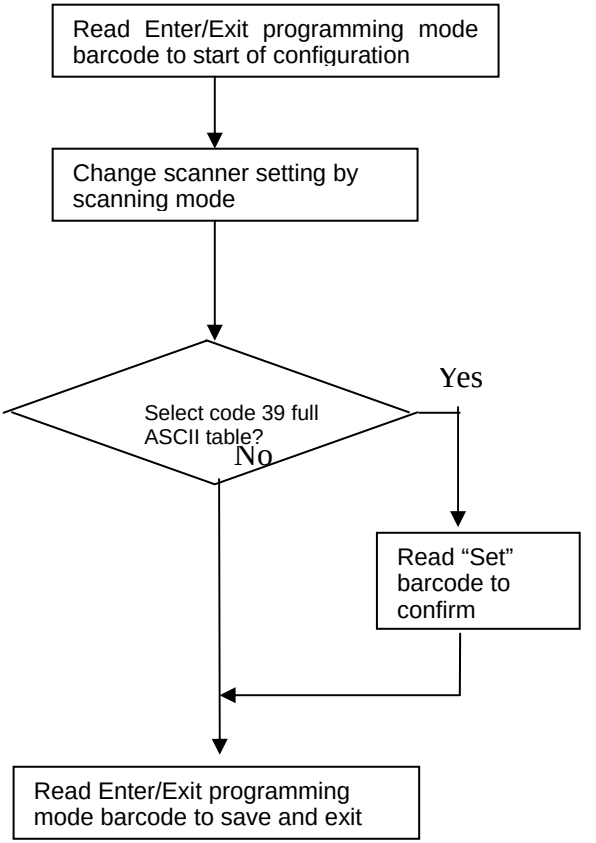
DEFAULT VALUES OF WAND EMULATION PARAMETERS

Function	Default Values
Wand emulation speed	Normal
Wand emulation output	Black = High
Data output format	Transmit as scan

DEFAULT VALUES OF DECODING PARAMETERS

Function	*Code*	Default Value
Reading codes selection	Code 39	Enable
	ITF 2 of 5	Disable
	Chinese Post Code	Disable
	UPC/EAN/JAN	Enable
	Codabar	Disable
	MSI/PLESSY	Disable
	Code 128	Disable
	Code 93	Disable
	EAN-128	Disable
	Italian Pharmacy	Disable
	ISSN/ ISBN	Disable
Code 39	Codes	Standard
	Start/stop characters	Not transmitting
	Check digit	Disabled
	Concatenation	Off
	Length	3~32
Interleaved 2 of 5	Length	6-32
	Check digit	Disable
Chinese Post Code	Length	10~32
	Check digit	Disable
UPC/EAN /JAN	Format	All
	Addendum	Disable
	UPC-E=UPC-A	Disabled
	UPC-A leading digit	Transmit
	UPC-A check digit	Transmit
	UPC-E leading digit	Transmit
	UPC-E check digit	Transmit
Codabar	Type	Standard
	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
MSI	Length	6~32
	Check digit	Transmit
Italian Pharmacy	Transmit "A" Character	Not transmitting

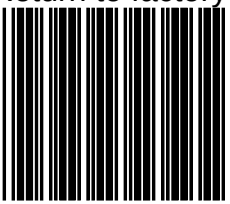
PROGRAM PROCEDURE USING BARCODE MENUS



System setting

The series scanner is a multi-interface communication scanner. If you had ordered only the one type of interface, ZEBEX will change the initial interface configuration to the interface requested, i.e. RS-232C, keyboard wedge, wand emulation or USB. But if you had ordered as multi-interface, the initial interface configuration will be set as keyboard wedge (PC/AT); if needed to change to other interface, you need to set up from this section.

Reset (Return to factory default)

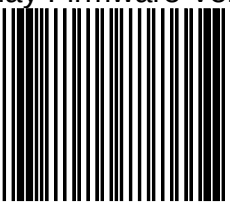


※ The reading of the “RESET” label turns all the parameters back to default values.

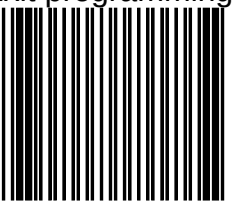
※ **The scanner remains in the last interface mode when the scanner is reset.**

The reading of the “Show Version” label will show firmware version.

Display Firmware Version

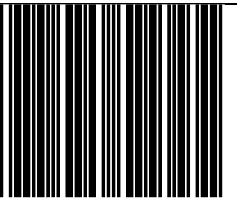


Abort(Exit programming mode)



The reading of the “ABORT” label discards all the parameters reading prior to the “Enter/Exit of Programming”.

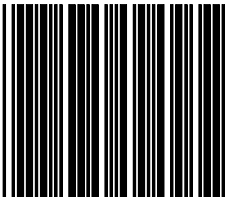
Return to PC/AT default



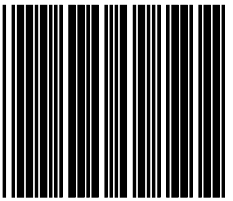
Keyboard wedge interface for IBM PC AT /PS2 and compatibles.

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

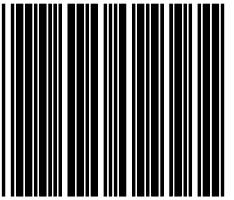
Return to RS-232 default



Return to USB default



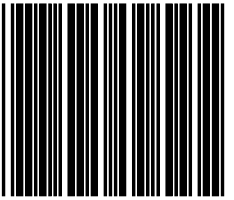
Return to wand emulation default



The Wand emulation is achieved by decoding a scanned barcode and then encoding it again, so that the output is readily decoded by an external decoder designed for processing of wand data.

The reading of the label will recover all parameter back to customer default.

Return as customer default



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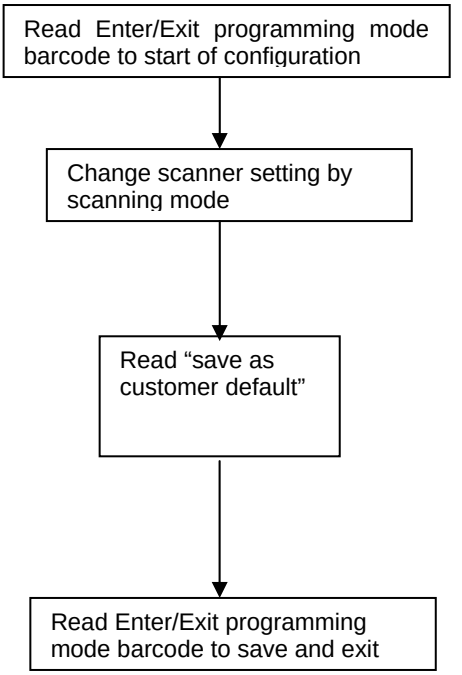
Save as customer default

The setting allows the multi-desired setting barcode to be saved as a customer default.

How to save as customer default

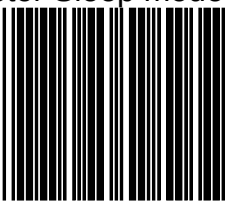


Sleep Timeouts selection

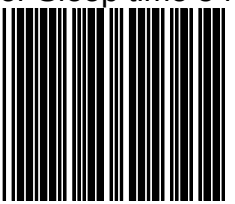
The series scanner with 2 step (laser and motor) enter to sleep mode.
The timeout programming barcode allow you to set the time for switching the motor or laser to off if the scanner isn't used. This feature is included to reduce power consumption and lengthen scanner life.

NOTE
Laser safety requires that the laser switch off before the motor. If you set the motor timeout shorter than the laser timeout, the laser will switch off when the motor times out.

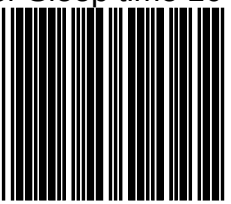
Motor Sleep mode off



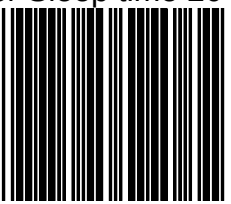
Motor Sleep time 5 min.



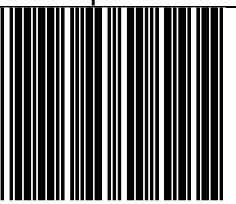
Motor Sleep time 10 min.



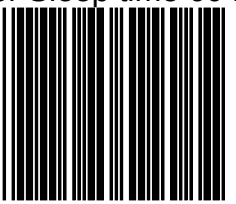
Motor Sleep time 20 min.



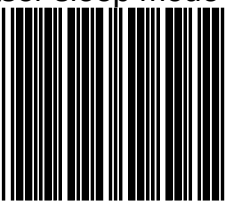
Motor Sleep time 30 min.



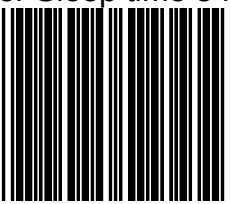
Motor Sleep time 60 min.



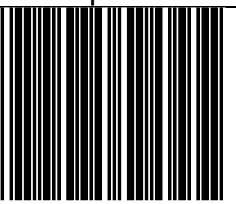
Laser sleep mode off



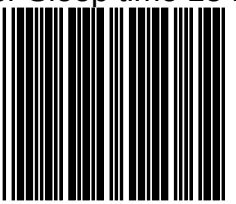
Laser Sleep time 5 min.



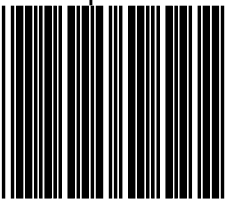
Laser Sleep time 10 min.



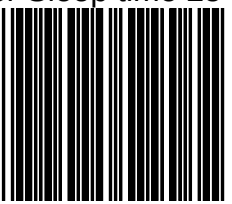
Laser Sleep time 15 min.



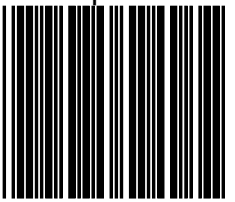
Laser sleep time 20 min.



Laser Sleep time 25 min.



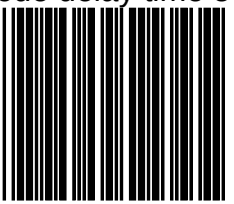
Laser Sleep time 30 min.



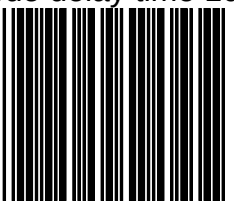
Same Code Delay Time

This parameter sets the minimum time between decodes of the same symbol.
A typical setting is 200msec

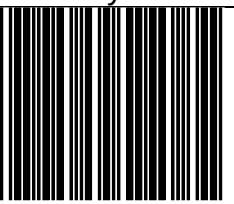
Same code delay time 50 msec.



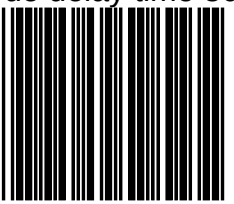
Same code delay time 100 msec.



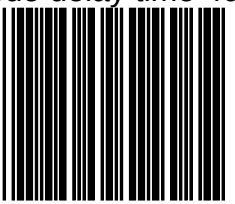
Same code delay time 200 msec.



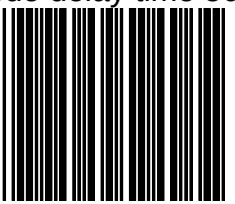
Same code delay time 300 msec.



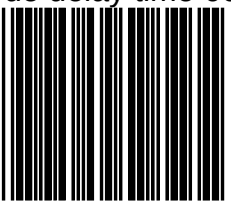
Same code delay time 400 msec.



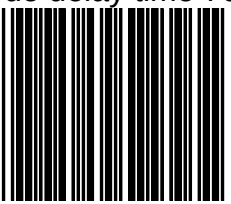
Same code delay time 500 mesc.



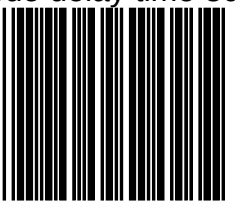
Same code delay time 600 msec.



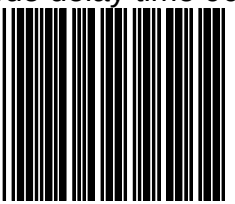
Same code delay time 700 msec.



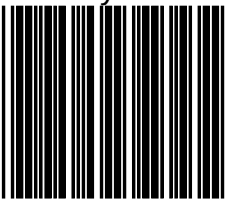
Same code delay time 800 msec.



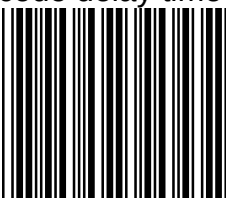
Same code delay time 900 msec.



Same code delay time 1000 msec.



Same code delay time infinite



Beeper Sound Selection

The beeper has below programmable feature

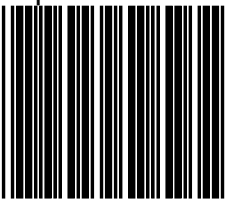
• The “good read” beep sound can be adjusted using Tone frequency ,Volume and duration time

• power on beep

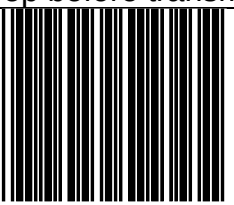
• enter to sleep mode is silent or sound

.

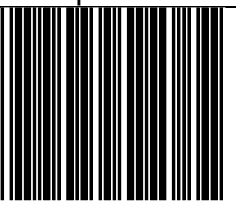
Led/Beep after transmission



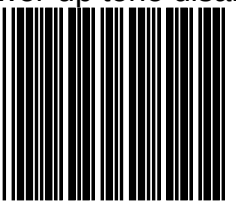
Led/Beep before transmission



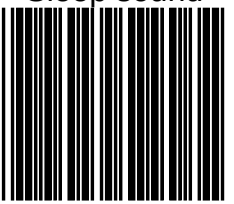
Power-up tone enable



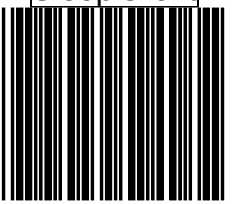
Power-up tone disable



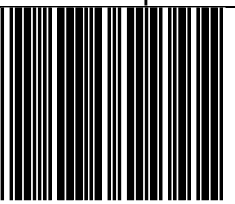
Sleep sound



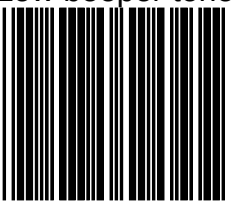
Sleep silent



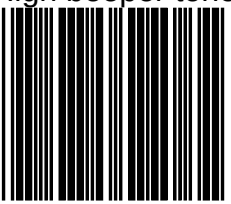
Medium beeper tone



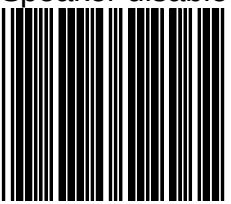
Low beeper tone



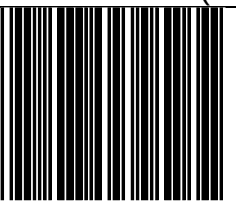
High beeper tone



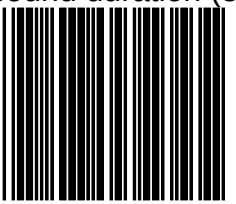
Speaker disable



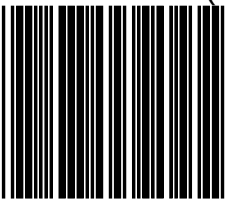
Beeper sound duration (100msec.)



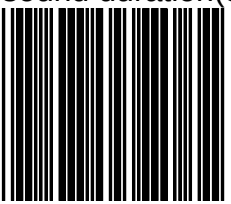
Beeper sound duration (50msec.)



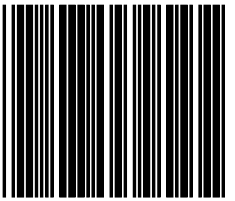
Beeper sound duration(20msec.)



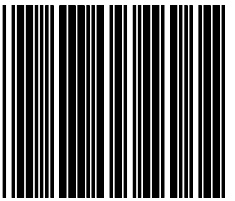
Beeper sound duration(5msec.)



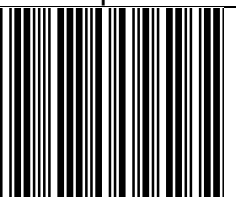
Beeper sound duration 200msec



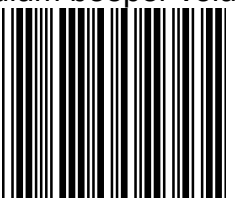
beeper sound duration 500msec



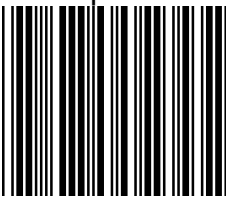
Loud beeper volume



Medium beeper volume



low beeper volume



Barcode Identifier code setting

The series scanner can transmit max.2 digit barcode identifier code for different type of barcode, Use enable or disable identifier setting barcode to choose transmit or not transmit barcode identifier code.

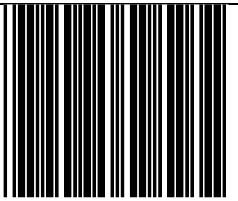
Each of the series type scanners also can set max.2digits as barcode identifier code according to different barcode. The procedure is as follows:

1.) Scan “Enter/Exit programming mode” label
2.) Scan “Barcode identifier setting code” label
3.) Scan the new code mark from ASCII table (max. two digits). For example, if one “AB” want for 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

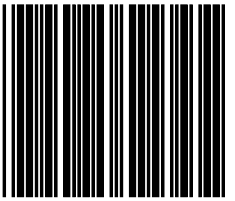
Disable identifier code



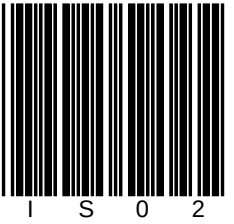
scan “enable identifier code” label to transmit the label ID as following table

Code 39	M
ITF 2 of 5	I
Chinese post code	H
UPC-A	A
UPC-E	E
EAN-13	F
EAN-8	FF
Codabar	N
Code 128	K
Code 93	L
MSI/Plessy	P

Enable identifier code

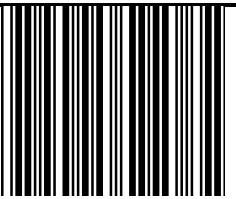


SET MESSAGE FORMAT WITH CODE IDENTIFIER AS ALPHA-30 FORMAT



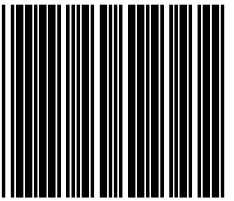
Code	Code identifier
UPC-A	A
UPC-E	E
EAN-8	FF
EAN-13	F
CODE 39	*
CODBAR	%
ITF 2 OF 5	i
CODE 93	&
CODE 128	#
MSI/PLESSY	@
EAN-128	P

Enable Identifier code table as AIM standard

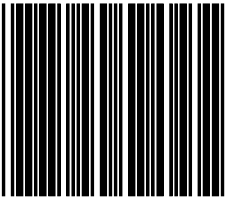


Barcode Identifier Code setting

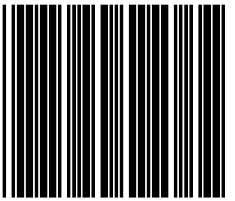
Code 39 identifier code setting



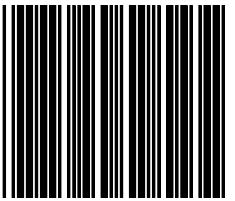
ITF 2 of 5 identifier code setting



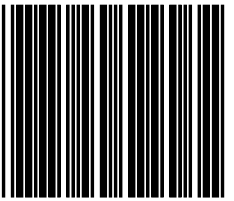
Chinese Post code identifier code setting



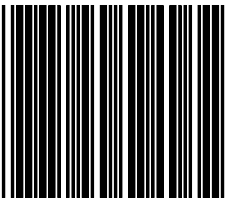
UPC-E identifier code setting



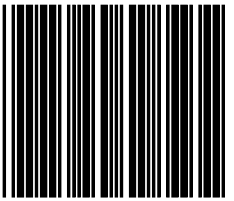
UPC-A identifier code setting



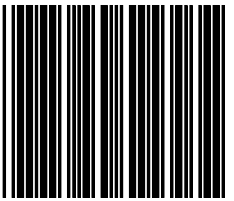
EAN-13 identifier code setting



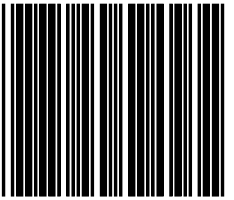
EAN-8 identifier code setting



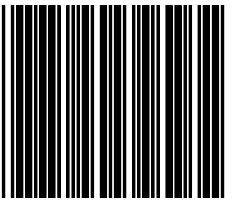
Codabar identifier code setting



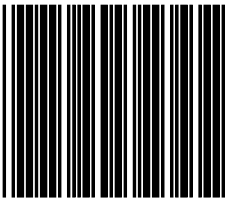
Code 128 identifier code setting



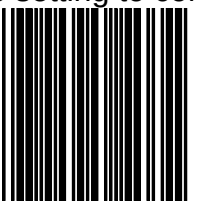
Code 93 identifier code setting



MSI identifier code setting



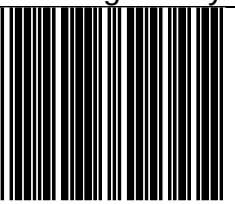
Save setting to confirm



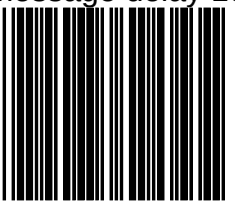
Message delay

The series scanner allow you to add a delay between two consecutive messages. This delay will be added before each date transmission.

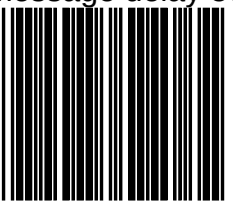
Enter message delay 0 ms



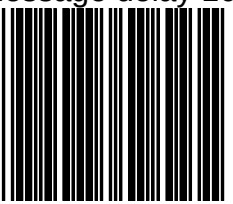
Inter message delay 100 ms



Inter message delay 500 ms



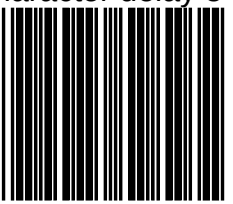
Inter message delay 1000 ms



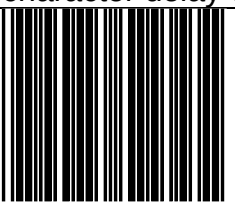
Character delay

This option governs delay time between two consecutive characters; the delay time can be altered by scanning the following labels.

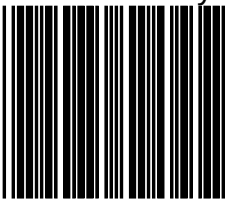
Character delay 5 ms



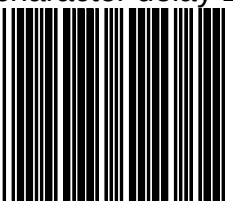
Inter character delay 0 ms



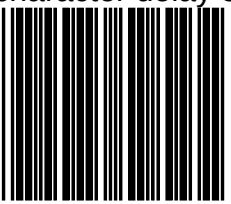
Inter character delay 10 ms



Inter character delay 20 ms



Inter character delay 50 ms



Interface Communication Setting

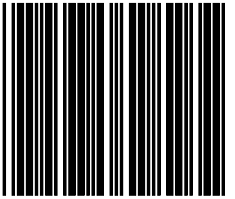
The series scanner must be configured to operate with your POS terminal. The following interfaces are supported:

*Keyboard wedge
*RS-232 C interface
*USB interface
*Wand emulation

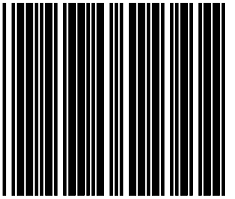
RS-232C interface configuration

Baud Rate setting

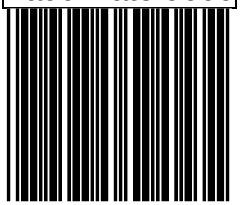
Baud Rate 38400



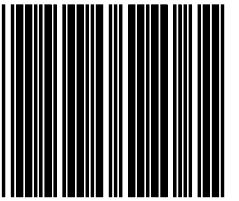
Baud Rate 19200



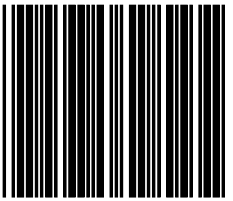
Baud Rate 9600



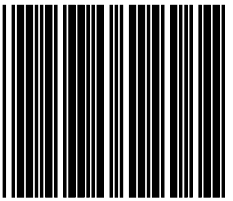
Baud Rate 4800



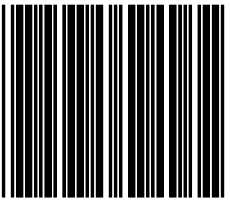
Baud Rate 2400



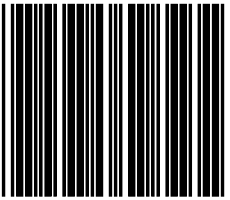
Baud Rate 1200



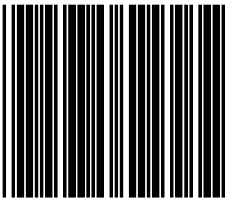
Baud Rate 600



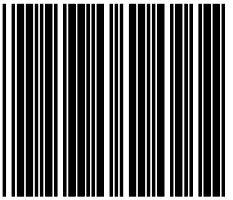
Baud Rate 300



Baud Rate 57600

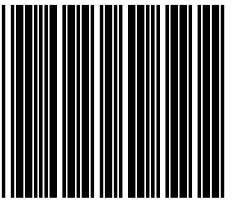


Baud Rate 115200

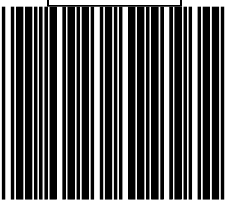


Date Bit Setting

7 data bit

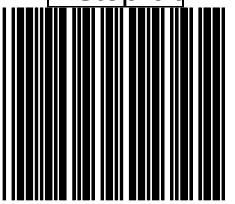


8 data bit

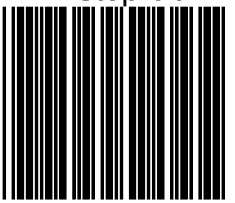


Stop Bit Setting

1 Stop bit

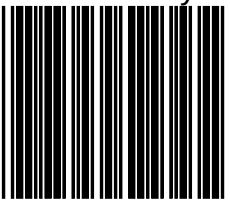


2 Stop bit

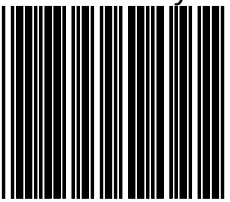


Parity Bit Setting

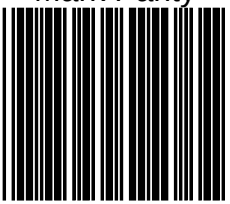
Even Parity



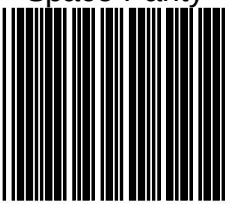
Odd Parity



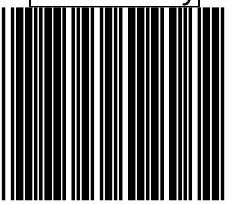
Mark Parity



Space Parity



None Parity



Handshaking Protocol

The RS-232C type scanner supports four handshaking protocols, With these options of communication protocol.you can tailor the scanner to meet the requirement of most system. These handshaking protocol are:

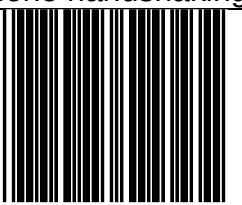
***None**: The scanner will transmit any read data unconditionally. The scanner will not check the receiving device nor the transmitted message.

***RTS/CTS**: Under this handshaking protocol, the scanner use the RTS pin to instruct the connected device to transmit data and test the CTS pin for readiness of the connected device to receive data.

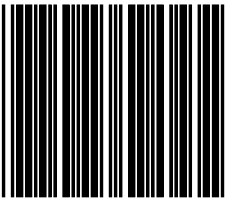
***ACK/NAK**: While selecting this option, the scanner waits for an a ACK or NAK signal from the host computer after each data transmission. Normally, the scanner will temporarily store the scanned data in the memory buffer before receiving the ACK or NAK signal. If the ACK signal is received, it will clear the transmitted data and continue to send the next data .In case of the NAK signal is received. it will repeat to transmit the same data until receiving the ACK signal.

***Xon/Xoff**: During the data communication, if a scanner receives an Xoff (ASCII 013H),it will stop the transmission at once. The scanner waits for a Xon (ASCII 01H) to start the transmission again.

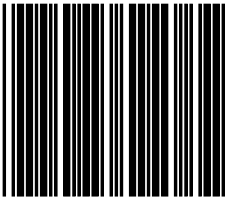
None handshaking



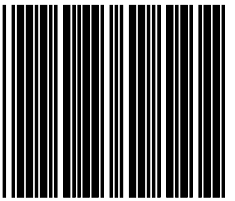
ACK/NAK



Xon/Xoff

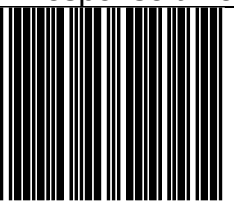


RTS/CTS

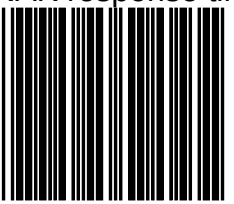


ACK/NAK Response Time Setting

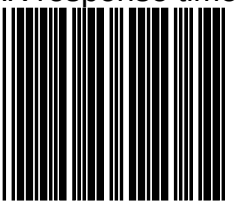
ACK/NAK response time 300ms



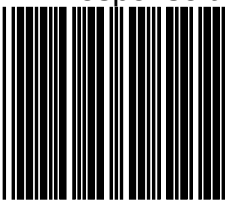
ACK/NAK response time 2s



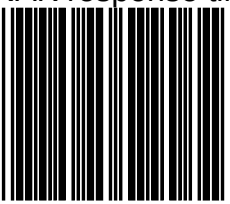
ACK/NAK response time 500ms



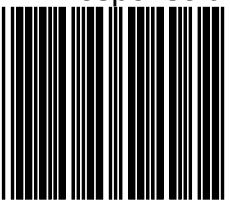
ACK/NAK response time 3s



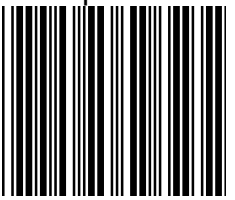
ACK/NAK response time 1s



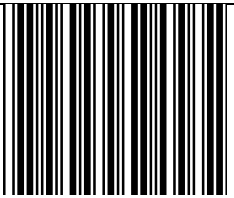
ACK/NAK response time 5s



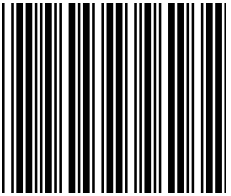
ACK/NAK response time Infinity



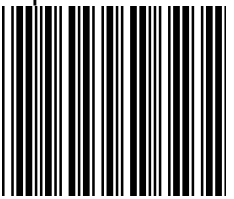
Disable ACK/NAK timeout beeper



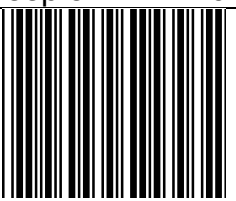
Enable ACK/NAK timeout beeper



Enable Beeper on<BEL> character



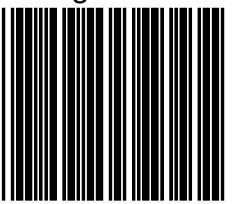
Ignore Beep on <BEL>character



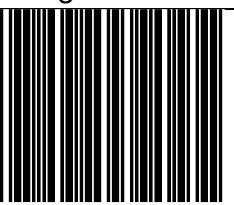
Message terminator for RS-232C

The series RS-232C type scanner can be programmed to append a terminator to every message sent via the serial port. Different terminator will be appended at the end of message sent from the serial port.

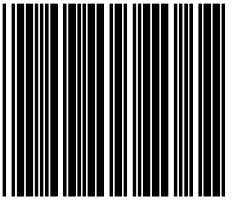
Rs-232 message terminator—none



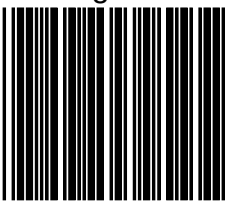
RS232-message terminator—CR/LF



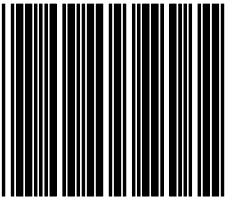
RS-232 message terminator—CR



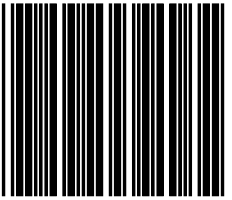
RS-232 message terminator—LF



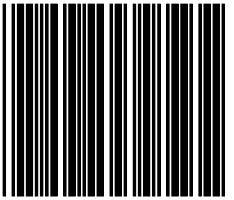
RS-232 message terminator—H tab



RS-232 message terminator—STX/ETX



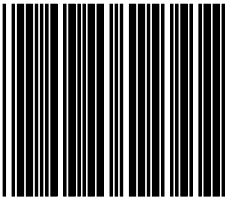
RS-232 message terminator—EOT



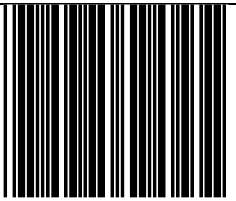
Keyboard wedge interface configuration

Message terminator for keyboard Wedge

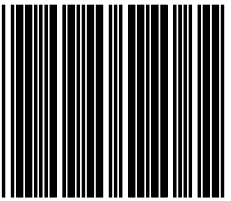
Keyboard terminator---none



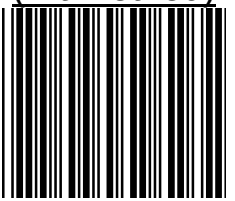
Keyboard terminator---Enter



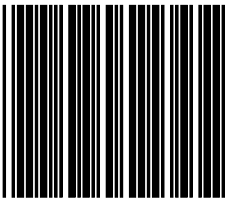
Keyboard terminator---H-TAB



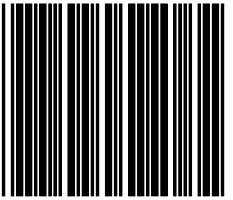
Keyboard Language selection
Enable International keyboard type
(Alt method)



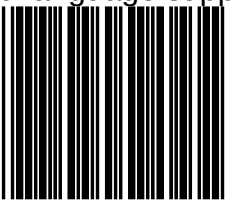
Keyboard language support---USA



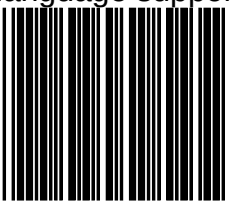
Keyboard language support---Germany



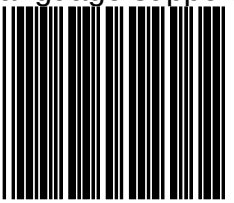
Keyboard language support---UK



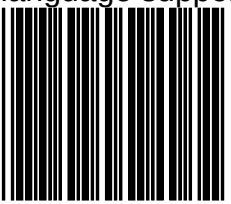
keyboard language support---French



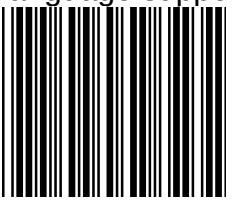
Keyboard language support---Spanish



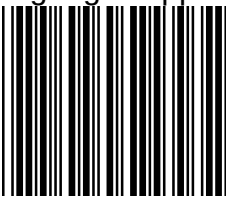
Keyboard language support--- Italian



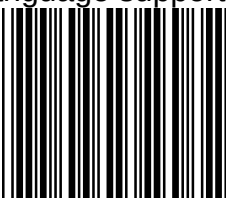
Keyboard language support--- Swiss



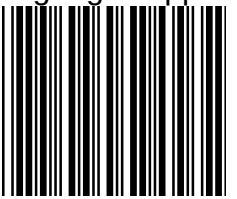
Keyboard language support---Swedish



Keyboard language support---Japanese



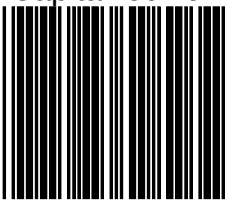
Keyboard language support---Belgium



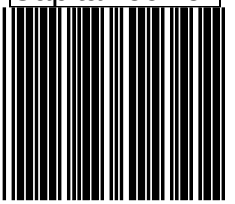
Capital Lock

Select the suitable code to match your keyboard caps lock status

Capital lock on



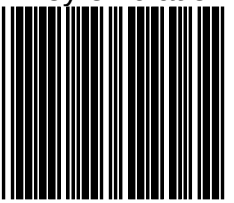
Capital lock off



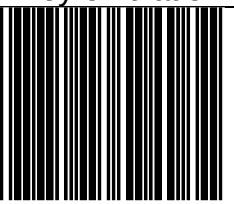
Function Key Emulation

The series allow you to emulate Function keys, Arrow keys, and many other “extended” keys. An IBM compatible keyboard does not translate to ASCII characters. It can be concatenated with input data as header and/or trailer. (see Appendix B)

Function key emulation enable



Function key emulation disable

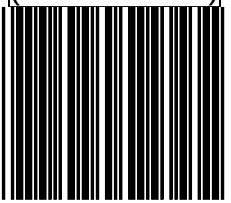


USB interface configuration

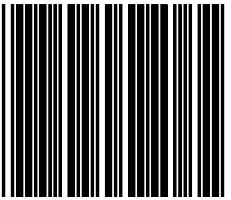
The USB mode is effectively a keyboard emulator that works with hosts, such as USB-compatible operating system and USB ports. USB compatible operating systems are Windows 98, Windows NT 5.0 and later, no additional software is needed since the USB driver support its built-in operating system

Keyboard Type

Keyboard type---USA
(Scan method)

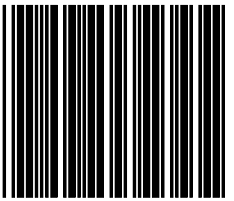


Keyboard type.
(ALT code method)

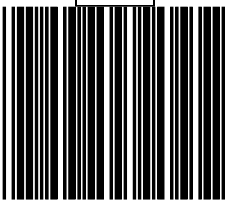


Message terminator for USB

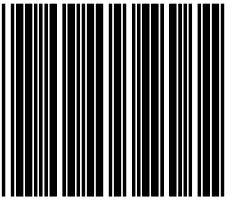
None



Enter



H tab

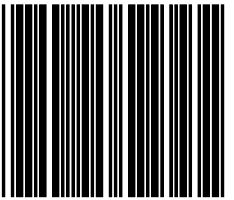


Wand emulation configuration

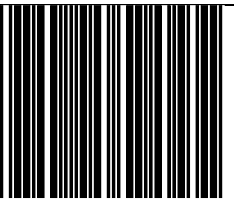
Emulation speed selection

The data output speed can be set to befit the external decoder

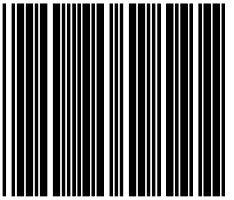
Wand emulation speed=Low
(1ms narrow element width)



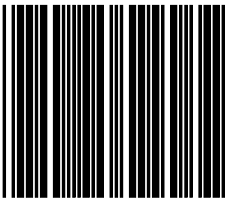
Wand emulation speed =medium
(600 us narrow element width)



Wand emulation speed= high
(300 us narrow element width)



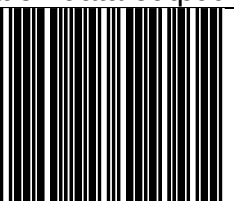
Wand emulation speed ---- higher
(100us narrow element width)



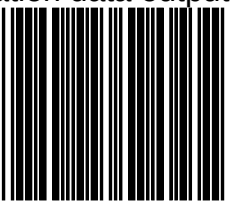
Emulation data output selection

The decoded data output logic level can be set to befit the external decoder

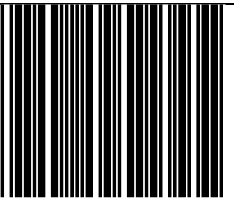
Wand emulation data output black = high



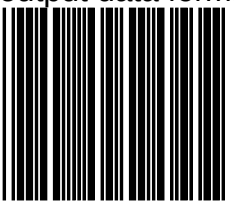
Wand emulation data output black = low



Wand Data Transmitted as Scanning



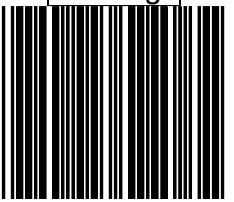
Enable Wand output data format as Code 39



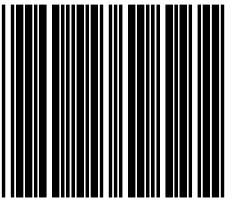
Emulation data idle state selection

The level refer to wand emulation data signal when not in use

Idle=high



Idle=low



Data Editing

HEADER AND TRAILER

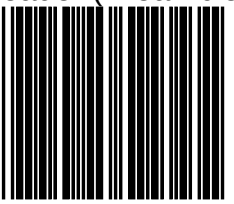
The **Header and Trailer** allows you to append a header and/or a trailer to every message transmitted via the serial ports ,USB or the keyboard port. There is no restriction in selecting header or trailer characters as far as the sum of the lengths of header and trailer is not greater than 10 digits.

1. Select either header or trailer you are going to program by scanning the corresponding label

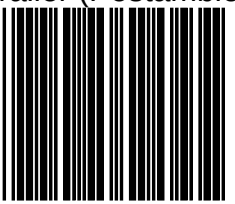
2. Scan the character(s) you want from the enclosed ASCII table to set as header or trailer (be sure to enable full ASCII code 39 option before you start).

3. Read the “save setting to confirm” label to confirm your choice into memory.

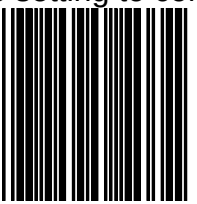
Header (Preamble)



Trailer (Postamble)



Save setting to confirm



Truncate Header/trailer character

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

1.) Scan ”Enter/Exit programming mode” label.

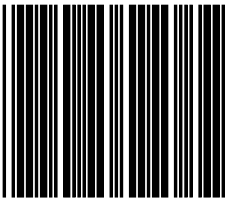
2.) Select ”truncate header or truncate trailer” label.

3.) Scan two barcode value from the full ASCII code table(0~9). For example, if 2 number of header that you want to clear, then scan ”0” and “2.

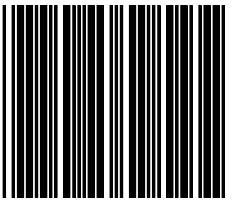
4,) Scan ”save setting to confirm” label

5,) Scan “Enter/Exit programming mode” label to end of configuration.

Truncate header character



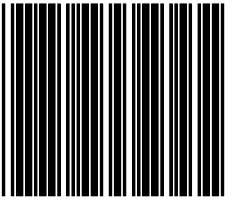
Truncate trailer character



Add Code Length

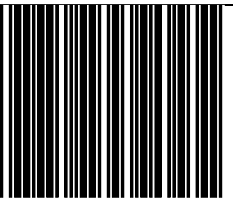
This option allows you to add the reading barcode numeric characters as header

Add code length as header enable(all barcode)



.

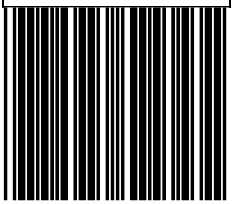
Add code length as header disable (all barcode)



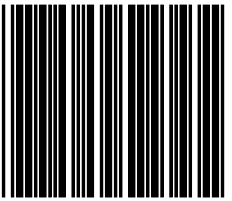
Symbology Configuration

The series scanner 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 those symbologies that will be in active use.

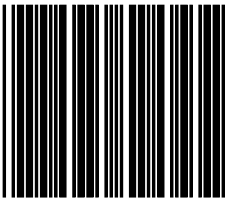
Code 39 enable



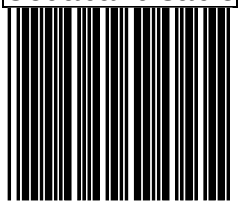
Code 39 disable



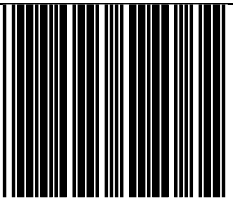
Codabar enable



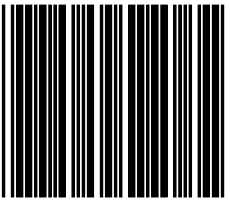
Codabar disable



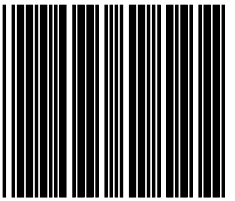
UPC/EAN/JAN enable



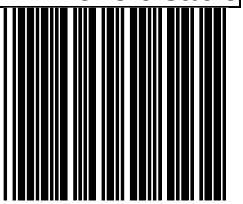
UPC/EAN/JAN disable
(only can’t transmitted but can decode)



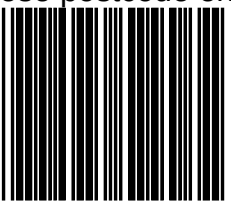
ITF 2 of 5 enable



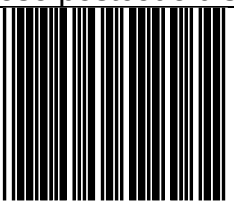
ITF 2 of 5 disable



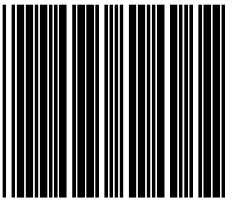
Chinese postcode enable



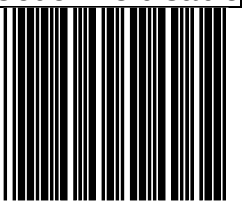
Chinese postcode disable



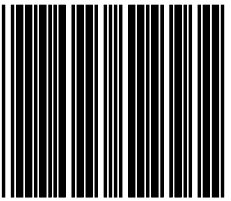
Code 128 enable



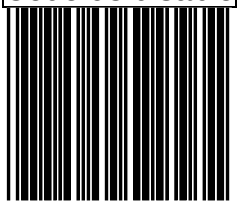
Code 128 disable



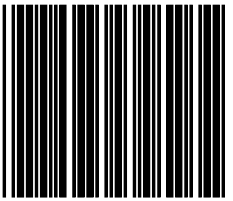
Code 93 enable



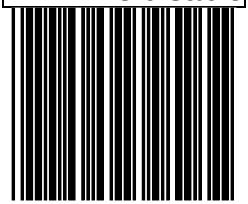
Code 93 disable



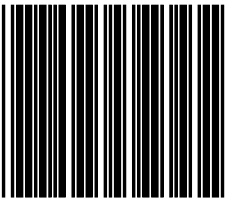
EAN-128 enable



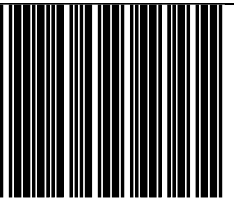
EAN-128 disable



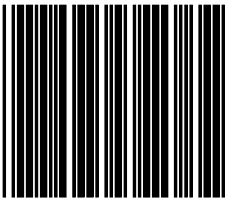
EAN convert to ISSN/ISBN



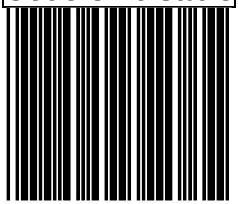
EAN convert to ISSN/ISBN disable



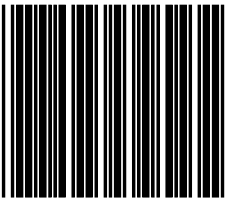
Code 32 enable



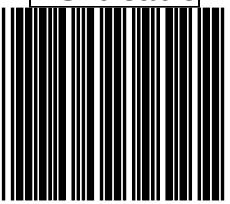
Code 32 disable



MSI enable



MSI disable



UPC/EAN Parameters setting

The series scanner can be programmed to recognize some or all derivatives of UPC, EAN.

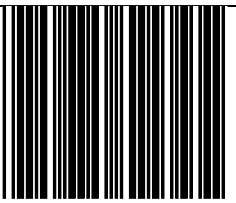
These derivatives are UPC-A,UPC-E,EAN-8,and EAN-13. Either 2 of 5 addendum digits are supported addendum digits are those additional digits after normal stop character.

The programming menu for UPC/EAN/JAN also provides several options to govern the transmission of scanned data.

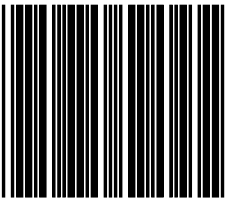
*UPC/EAN expansion
*Check digit transmission
*Data redundant check
*Addendum seek timeout
*Addendum left/right margin adjust

Format

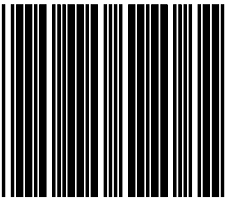
UPC/EAN/JAN all enable



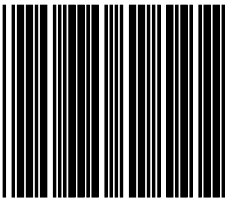
EAN-8 or EAN-13 enable



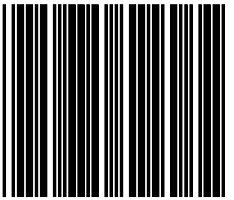
UPC-A and EAN-13 Enable



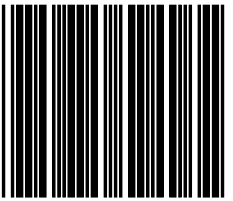
UPC-A and UPC-E Enable



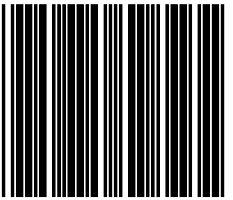
UPC-A enable



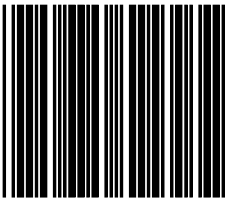
UPC-E enable



EAN-13 enable

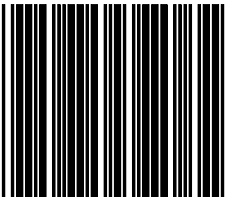


EAN-8 enable

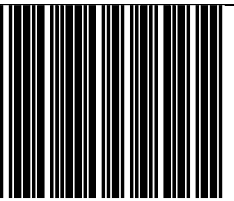


Force UPC-E to UPC-A format

Force UPC-E to UPC-A format enable

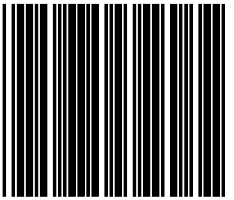


Force UPC-E to UPC-A format disable

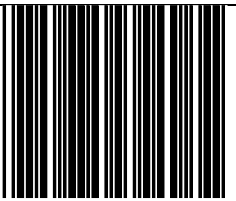


Force UPC-A to EAN-13 format

Force UPC-A to EAN-13 format enable

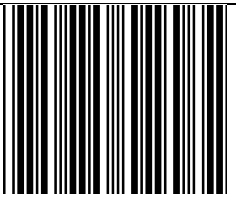


Force UPC-A to EAN-13 format disable

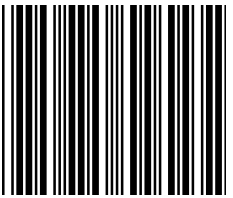


Force EAN-8 to EAN-13 format

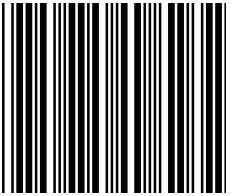
Force UPC-A to EAN-13 format disable



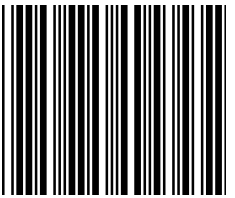
Force UPC-A to EAN-13 format enable



EAN-13 first “0” can transmitted

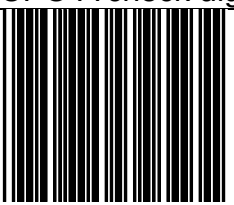


EAN-13 first “0” can’t transmitted

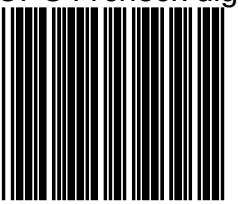


Transmit UPC-A check digit

Transmit UPC-A check digit enable

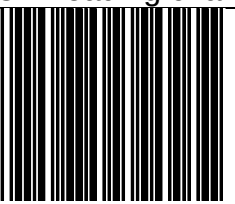


Transmit UPC-A check digit disable

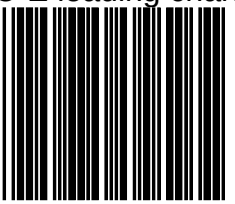


Transmit UPC-E leading character

Transmit UPC-E leading character enable

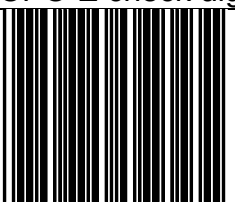


Transmit UPC-E leading character disable

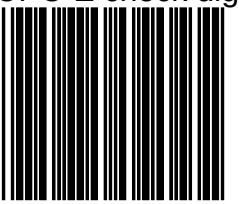


Transmit UPC-E check digit

Transmit UPC-E check digit enable

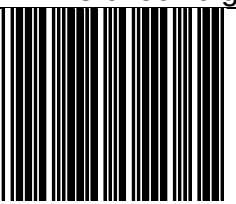


Transmit UPC-E check digit disable

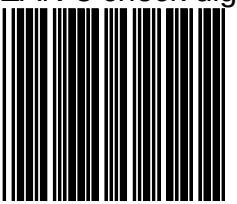


Transmit EAN-8 check digit

Transmit EAN-8 check digit enable

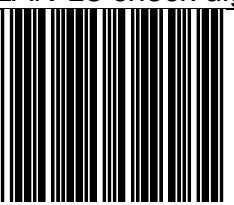


Transmit EAN-8 check digit disable

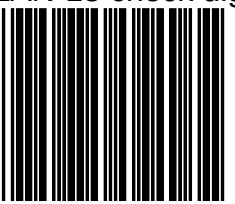


Transmit EAN-13 check digit

Transmit EAN-13 check digit enable

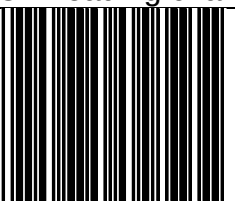


Transmit EAN-13 check digit disable

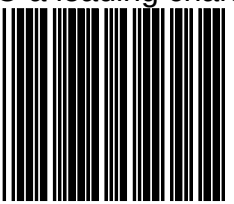


Transmit UPC-A leading character

Transmit UPC-A leading character enable

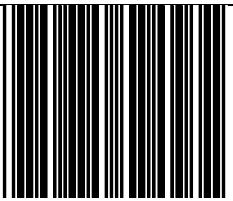


Transmit UPC-a leading character disable

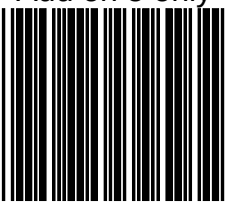


Addendum

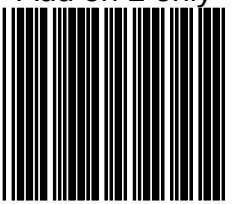
UPC/EAN add on off



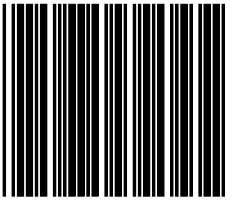
Add on 5 only



Add on 2 only

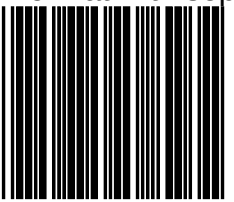


Add on 2 or 5

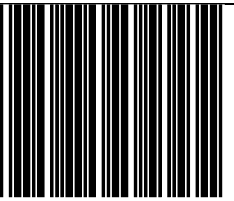


Add on format

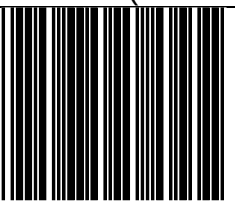
Add on format with separator



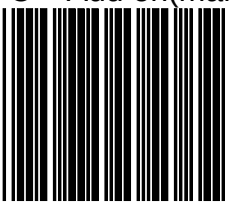
Add on format without separator



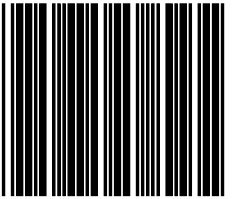
EAN/UPC +Add on (none mandatory)



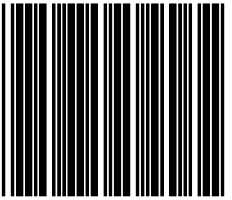
EAN/UPC + Add on(mandatory)



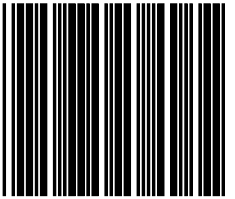
EAN/UPC + add on mandatory for 378/379
French Supplement requirement
Not sent for other



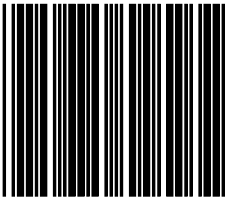
EAN/UPC +add on mandatory for 978/977
book land Supplement requirements
Not sent for other



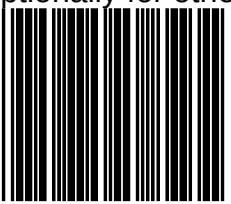
EAN/UPC + addon mandatory for 434/439
German Supplement requirement
Not sent for other



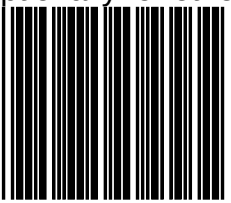
EAN/UPC + add on mandatory for 419/414
Euro amounts Supplement requirement
not sent for other



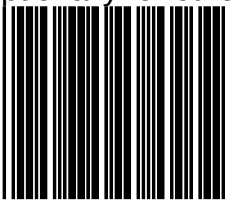
EAN/UPC + add on mandatory for 378/379
French Supplement requirement
optionally for other



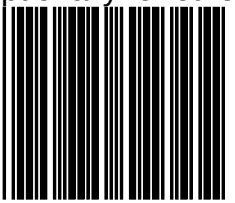
EAN/UPC + add on mandatory for 978/977
Book land Supplement requirement
optionally for other



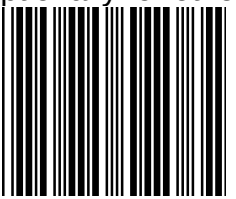
EAN/UPC + add on mandatory for 434/439
German Supplement requirement
optionally for other



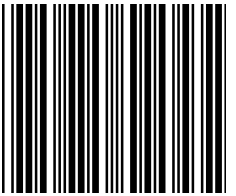
EAN/UPC + add on mandatory for 419/414
Euro amounts Supplement requirement
optionally for other



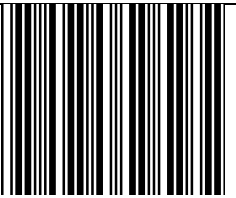
EAN/UPC + add on mandatory for 491 Japanese(bookland) Supplement requirement optionally for other



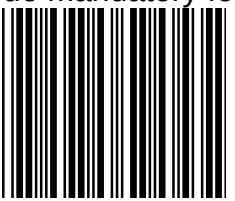
EAN/UPC + add on mandatory for 491 Japanese(bookland) Supplement requirement Not sent for other



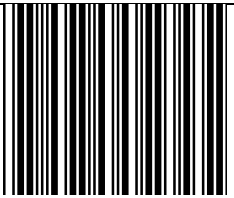
Double code not allowed



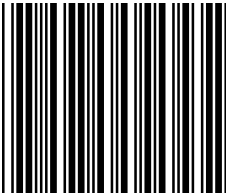
Double code mandatory for 978/192



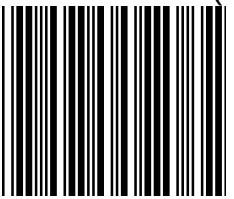
double code format without separator



double code format with separator



double code format with free (one character)

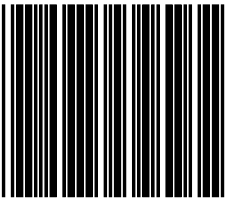


Data Redundant Check

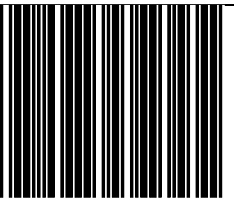
The option allows you to set decoder data redundant check. Before it is accept as a good read. A higher data redundant check read setting offers more assurance that a bar code has been read correctly, while a lower setting allows faster scanning performance.

UPC-A Data Redundant Check

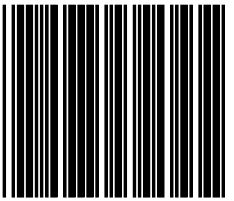
UPC-A data redundant check = 0



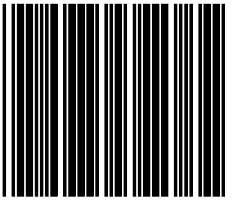
UPC-A data redundant check = 1



UPC-A data redundant check = 2

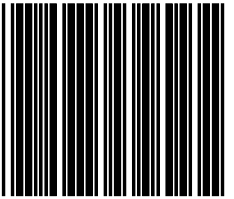


UPC-A data redundant check = 3

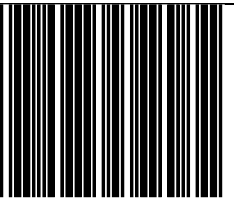


UPC-E Data Redundant Check

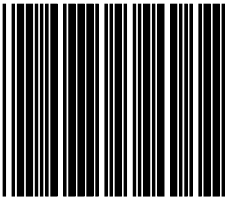
UPC-E data redundant check = 0



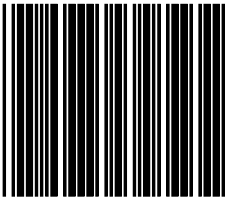
UPC-E data redundant check = 1



UPC-E data redundant check = 2

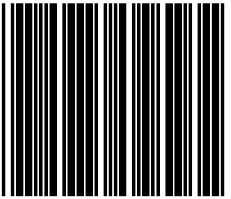


UPC-E data redundant check = 3

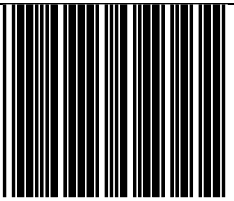


EAN-13 Data Redundant Check

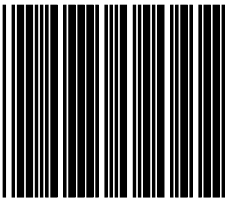
EAN-13 data redundant check = 0



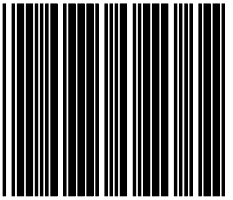
EAN- 13 data redundant check = 1



EAN-13 data redundant check = 2

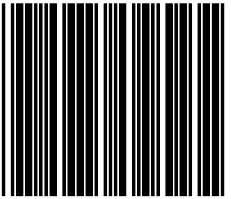


EAN-13 data redundant check = 3

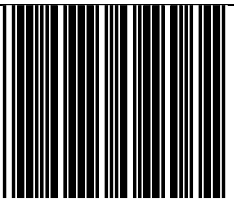


EAN-8 Data Redundant Check

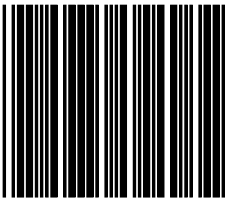
EAN-8 data redundant check = 0



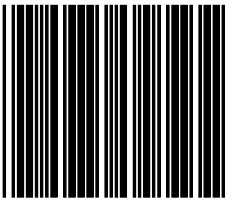
EAN-8 data redundant check = 1



EAN-8 data redundant check =2

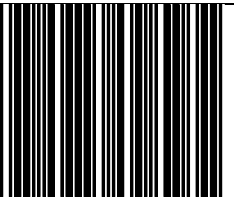


EAN-8 data redundant check = 3

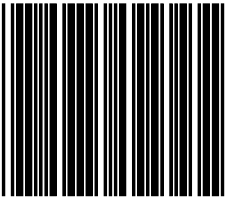


2 digit addendum data redundant check

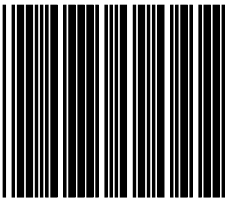
2 digit addendum data redundant check = 0



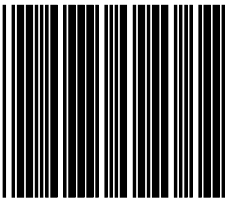
2 digit addendum data redundant check = 1



2 digit addendum data redundant check = 2

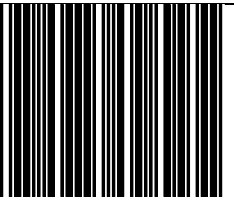


2 digit addendum data redundant check = 3

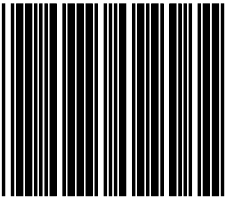


5 digit addendum data redundant check

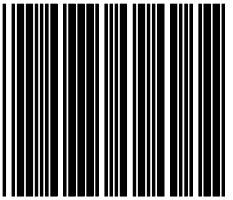
5 digit addendum data redundant check = 0



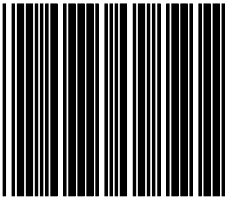
5 digit addendum data redundant check = 1



5 digit addendum data redundant check =2

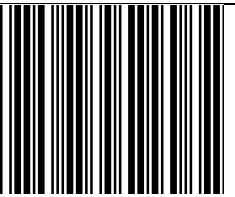


5 digit addendum data redundant check = 3

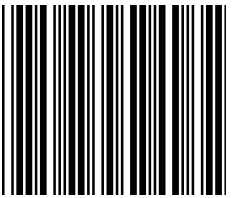


Addendum seek timeout

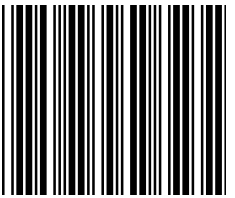
Addendum seek timeout =6



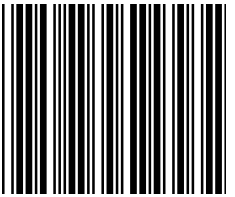
Addendum seek timeout=7



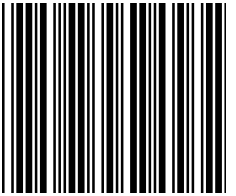
Addendum seek timeout=8



Addendum seek timeout=9

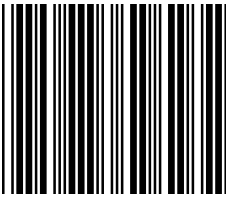


Addendum seek timeout=10

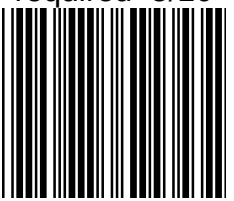


UPC/EAN left/Right margin parameter setting

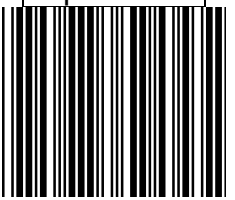
UPC/EAN addendum Left /Right margin required =15/15



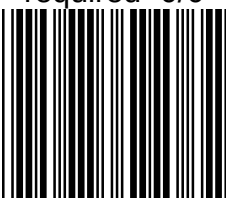
UPC/EAN addendum Left /Right margin required=5/10



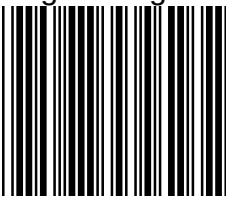
UPC/EAN addendum Left /Right margin required=1/5



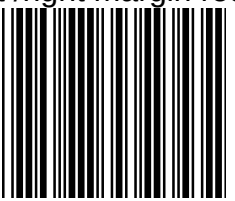
UPC/EAN addendum Left /Right margin required=0/0



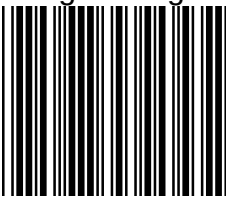
UPC/EAN left /right margin required=15/15



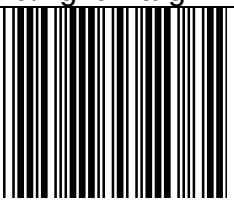
UPC/EAN left /right margin required=10/10



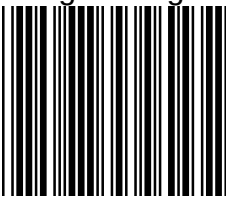
UPC/EAN left /right margin required=7/7



UPC/EAN left /right margin required=5/5



UPC/EAN left /right margin required=2/2

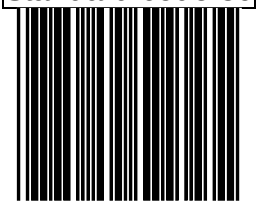


Code 39 Parameters setting

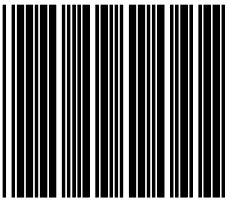
The scanner can program to support the standard code 39 or Full ASCII code 39. In addition, it is user's option to transmit or not to transmit the start and stop characters. You can also enable or disable the check digit feature. If the check digit feature is enabled, you have the further option to decide whether the check digit is transmitted or not.

Character Set

Standard code 39

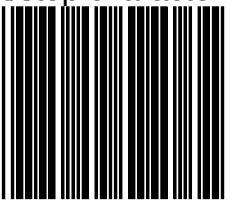


FULL ASCII code 39

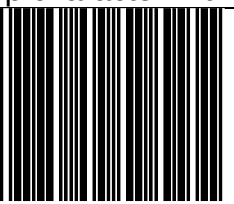


Start/Stop Character Transmission

Code 39 start/stop character transmission

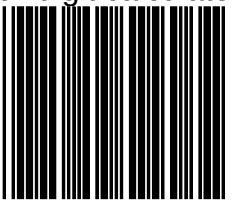


Code 39 start/stop character without transmission

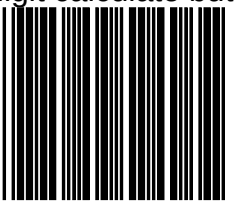


Check Digit

Code 39 check digit calculate and transmit



Code 39 check digit calculate but without transmit

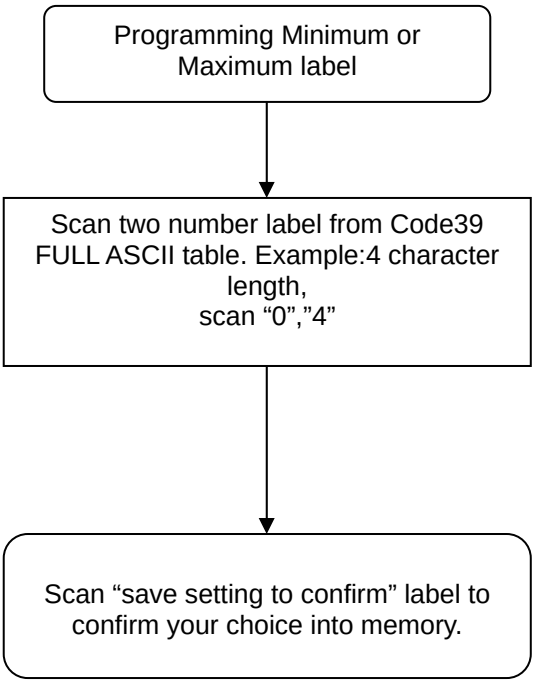


No check character

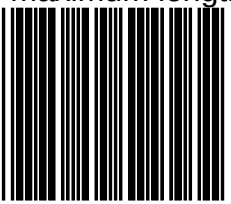
Code 39 reading length setting

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

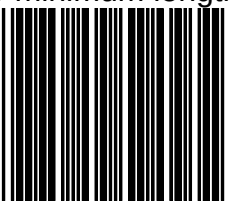
CODE LENGTH SETTING FLOW



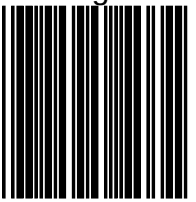
Code 39 maximum length setting



Code 39 minimum length setting

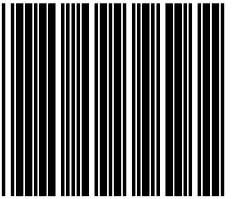


Save setting to confirm

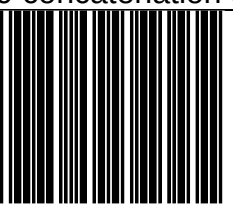


Concatenation

Code 39 concatenation enable

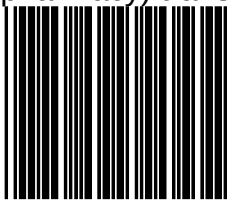


Code 39 concatenation disable

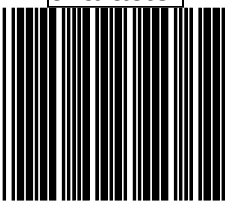


Code 32”A “ Character Transmit

Code 32 (Italian pharmacy) transmit “A” character



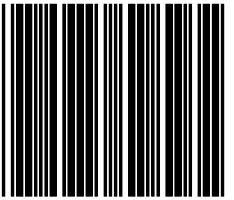
Code 32(Italian pharmacy) without transmit “A” character



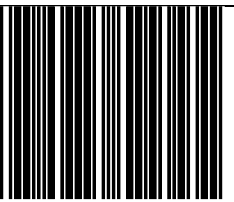
Data Redundant Check

The option allows you to set decoder data redundant check. Before it is accept as a good read. A higher data redundant check read setting offers more assurance that a bar code has been read correctly, while a lower setting allows faster scanning performance.

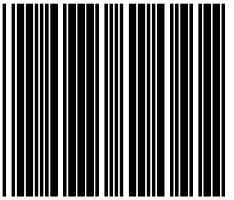
Code 39 data redundant check = 0



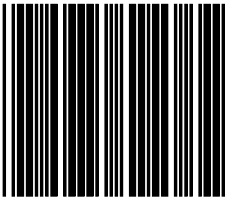
Code 39 data redundant check = 1



Code 39 data redundant check = 2



Code 39 data redundant check = 3

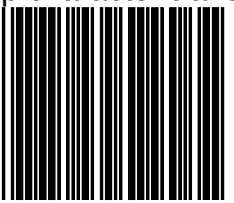


CODABAR Parameters Setting

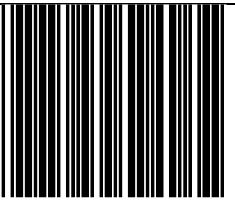
For this option, the Codabar symbology are contained
• Check Character Verification or Transmission
• CODABAR concatenation
•Data redundant check
• Start/Stop Characters
• Min./Max. length setting

Format

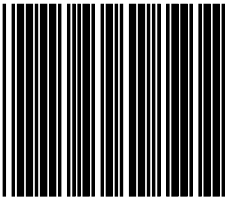
Codabar start/stop character transmission ----none



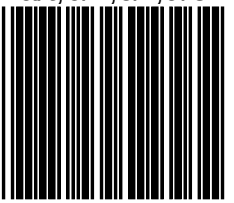
Codabar start/stop character transmission ---- A,B,C,D



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



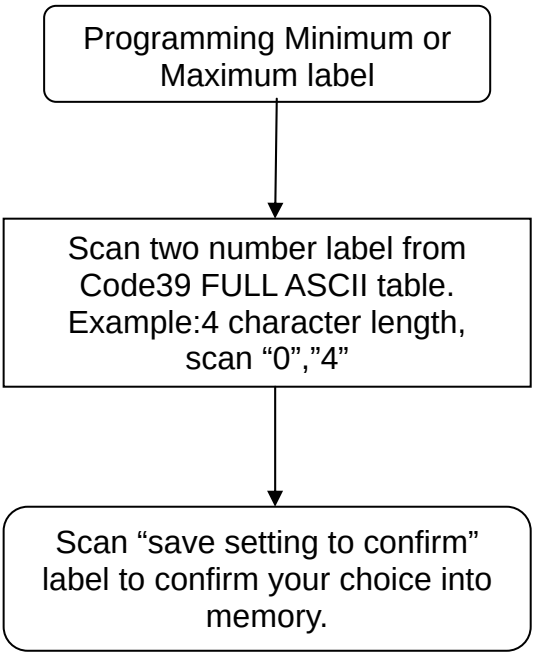
Codabar start/stop character transmission ----
a/t,b/n,c/*,d/e



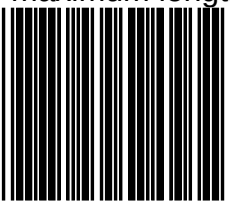
CODABAR reading length setting

The default CODABAR length is 6 ~32 character. It can be set at minimum 1 digit and maximum
62 digits

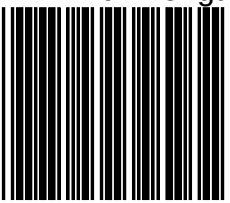
CODE LENGTH SETTING FLOW



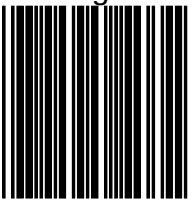
Codabar maximum length setting



Codabar minimum length setting

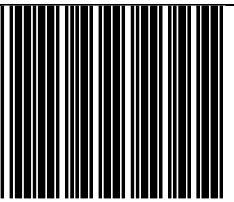


Save setting to confirm

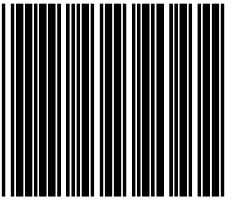


Concatenation

Codabar concatenation disable

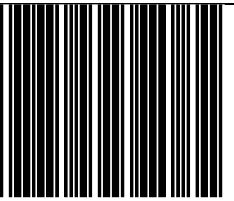


Codabar concatenation enable

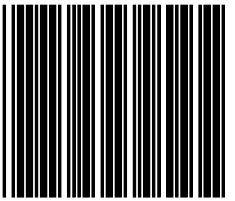


Check digit

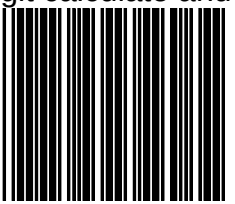
No check character



Check digits calculate but not transmit



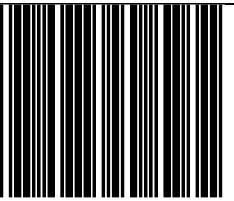
Check digit calculate and transmit



Data Redundant Check

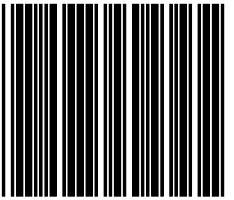
The option allows you to set decoder data redundant check. Before it is accept as a good read. A higher data redundant check read setting offers more assurance that a bar code has been read correctly, while a lower setting allows faster scanning performance.

Codabar data redundant check = 0



.

Codabar data redundant check = 1



Codabar data redundant check = 2

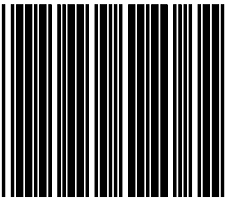
Codabar data redundant check = 3

Code 128 Parameters Setting

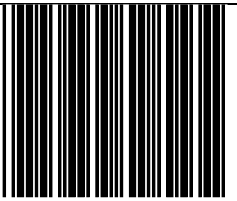
For this option the code 128 symbology are contained
• Check Character Verification or Transmission
• FNC2 concatenation
•Data redundant check
• FNC1 transmission for EAN-128
• Min./Max. length setting

Check Digit

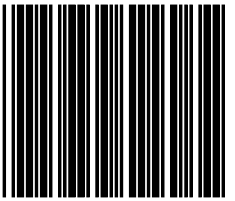
No check character



Calculate but not transmit



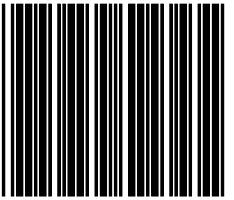
Calculate and transmit



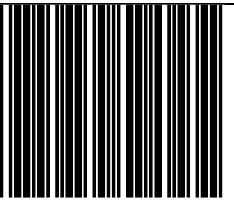
Code 128 FNC2 concatenation

This function permits the temporary storage of a codein the decoder, if this code starts with FNC 2 character. The message buffered will be concatenated and transmitted with the next code having no FNC 2 character

Code 128 FNC2 concatenation enable



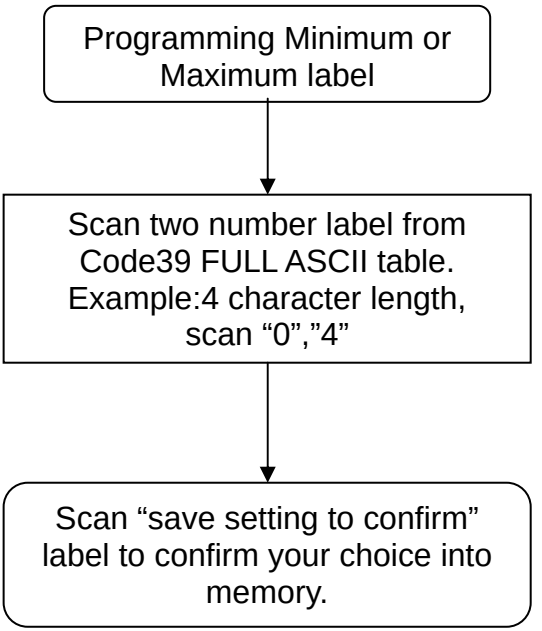
Code 128 FNC2 concatenation disable



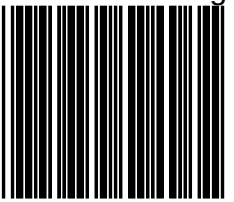
Code 128 reading length setting

The default code 128 length is 3 ~62 character. It can be set at minimum 1 digit and maximum 62 digits

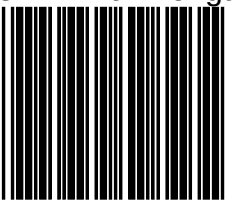
CODE LENGTH SETTING FLOW



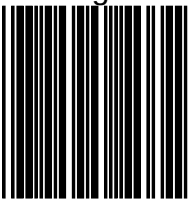
Code 128 maximum length setting



Code 128 minimum length setting

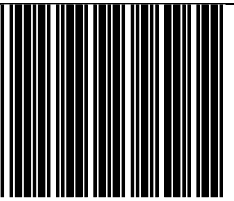


Save setting to confirm

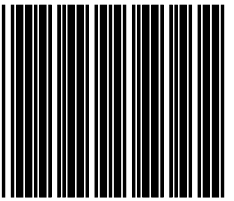


EAN-128 FNC1 Character

EAN-128 FNC1 Character transmitted



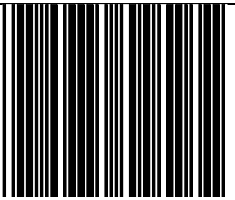
EAN-128 FNC1 not character transmitted



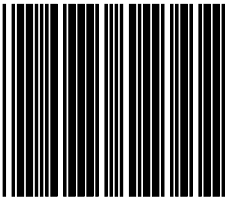
Data Redundant Check

The option allows you to set decoder data redundant check. Before it is accept as a good read. A higher data redundant check read setting offers more assurance that a bar code has been read correctly, while a lower setting allows faster scanning performance

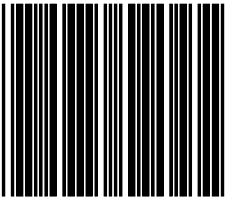
Code 128 data redundant check = 0



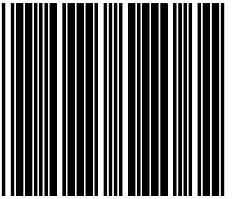
Code 128 data redundant check = 1



Code 128 data redundant check = 2



Code 128 data redundant check = 3

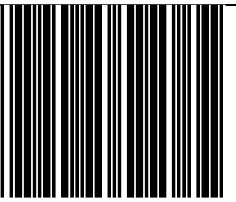


ITF 2 of 5 Parameters Setting

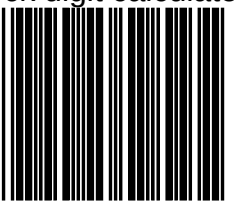
For this option the ITF 2 of 5 symbology are contained
• Check Character Verification or Transmission
•Data redundant check
•Two fixed length setting
• Min./Max. length setting

Check Digit

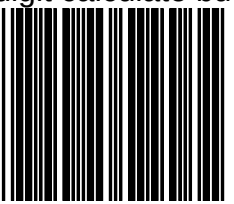
ITF 2 of 5 no check character



ITF 2 of 5 check digit calculate and transmit



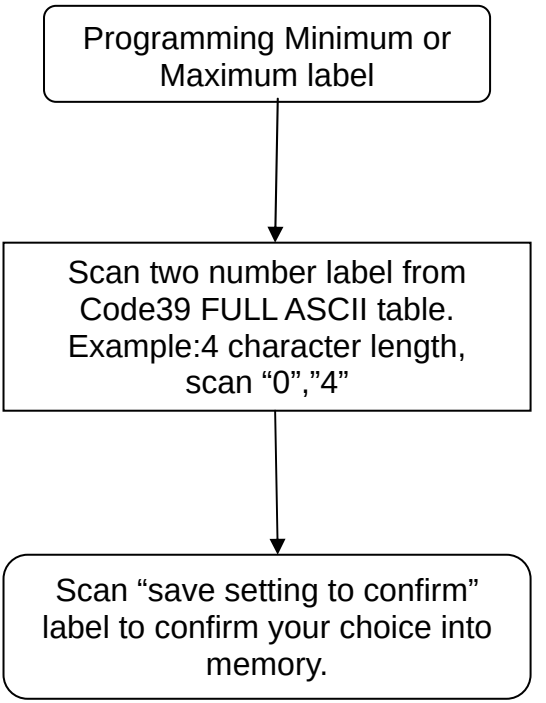
ITF 2 of 5 check digit calculate but without transmit



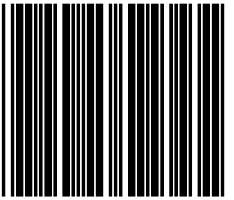
ITF 2 of 5 reading length setting

The default ITF 2 of 5 length is 6 ~32 character. It can be set at minimum 2 digit and maximum
62 digits

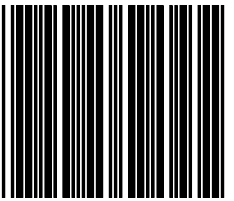
CODE LENGTH SETTING FLOW



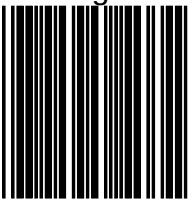
ITF 2 of 5 code maximum length setting



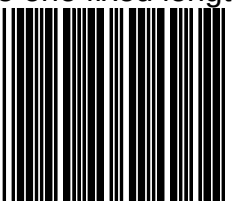
ITF 2 of 5 code minimum length setting



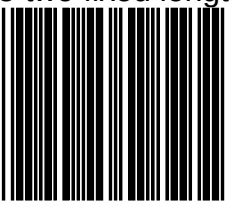
Save setting to confirm



ITF 2 of 5 one fixed length setting



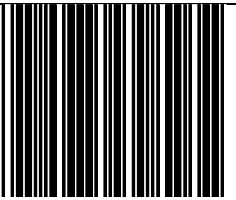
ITF 2 of 5 two fixed length setting



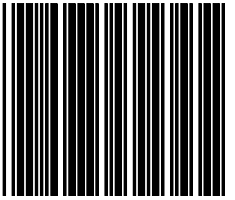
Data Redundant Check

The option allows you to set decoder data redundant check. Before it is accept as a good read. A higher data redundant check read setting offers more assurance that a bar code has been read correctly, while a lower setting allows faster scanning performance

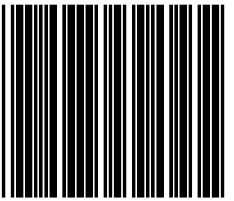
ITF 25 data redundant check =0



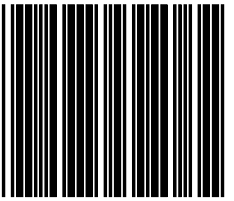
ITF 25 data redundant check = 1



ITF 25 data redundant check = 2



ITF 25 data redundant check = 3



Chinese post code Parameters Setting

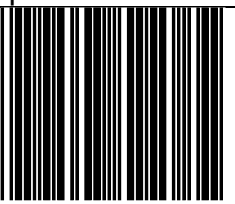
For this option the Chinese post code symbology are contained

- Check Character Verification or Transmission
- Data redundant check
- Min./Max. length setting

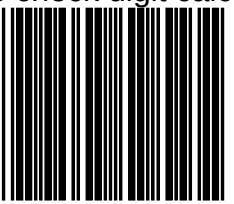
.

Check Digit

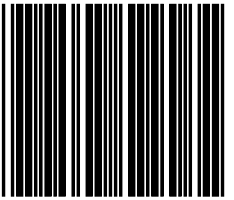
Chinese postcode no check digit



Chinese post code check digit calculate and transmit



Chinese postcode check digit calculate but without transmit

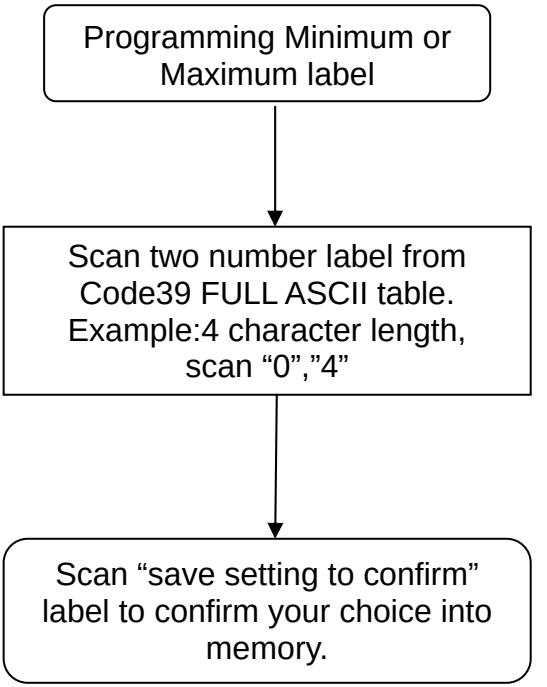


Chinese postcode reading length setting

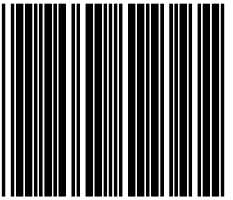
The default Chinese post code length is 10 ~32 character. It can be set at minimum 1 digit and maximum 62 digits.

In order to avoid missing characters when scanning is incomplete, we recommend to use a short-range length or fixed length to read.

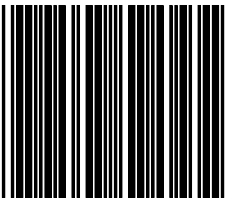
CODE LENGTH SETTING FLOW



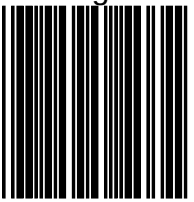
Chinese post code maximum length setting



Chinese post code minimum length setting



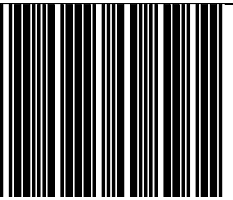
Save setting to confirm



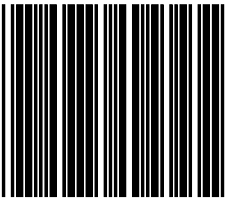
Data Redundant Check

The option allows you to set decoder data redundant check. Before it is accept as a good read. A higher data redundant check read setting offers more assurance that a bar code has been read correctly, while a lower setting allows faster scanning performance

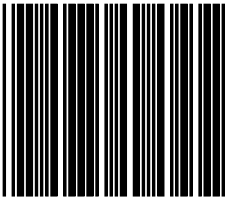
Chinese post code data redundant check = 0



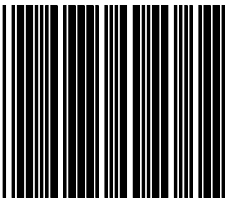
Chinese post code data redundant check = 1



Chinese post code data redundant check = 2



Chinese post code data redundant check = 3

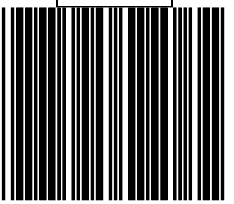


MSI/PLESSY code Parameters Setting

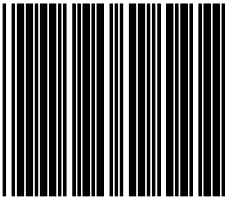
For this option the MSI/PLESSY symbology are contained
• Check Character Verification or Transmission
•Data redundant check
• Min./Max. length setting

Double Check Digit

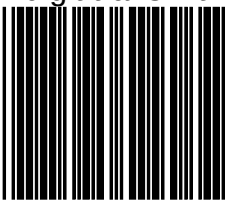
MSI/PLESSY double check digit calculate but not transmit



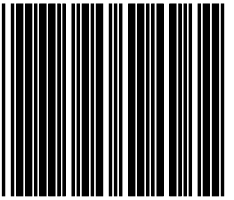
MSI/PLESSY double check digit without calculate and transmit



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

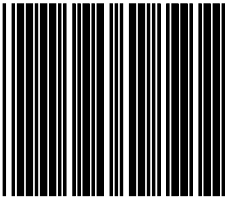


MSI/PLESSY double check digit calculate and both transmit

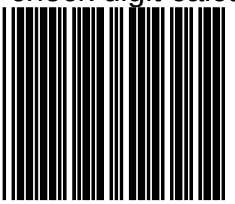


Single Check Digit

MSI/PLESSY single check digit calculate but without transmit



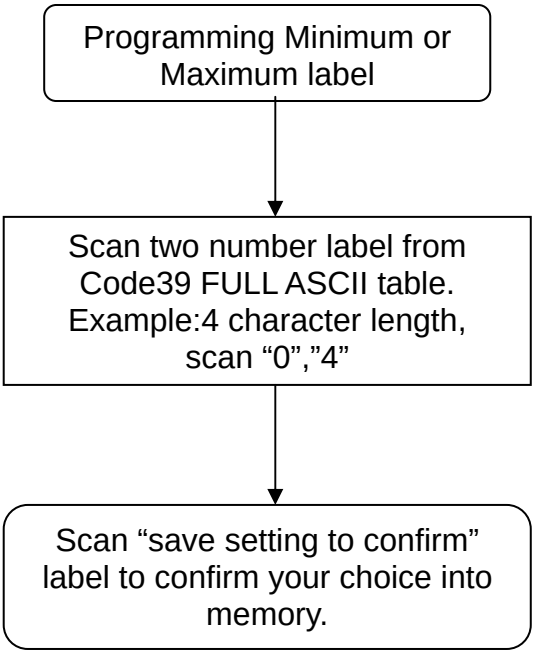
MSI/Plessy single check digit calculate and transmit



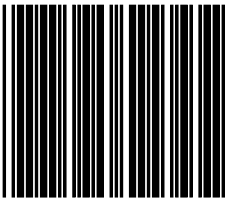
MSI/PLESSY code reading length setting

The default MSI/PLESSY code length is 6~32 character. It can be set at minimum 1 digit and maximum 62 digits

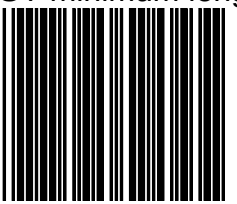
CODE LENGTH SETTING FLOW



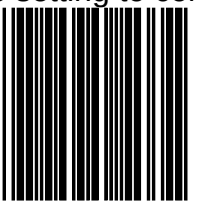
MSI/PLESSY maximum length setting



MSI/PLESSY minimum length setting



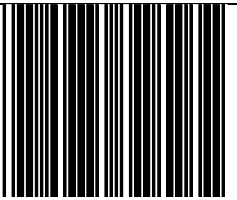
Save setting to confirm



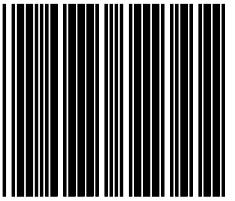
Data Redundant Check

The option allows you to set decoder data redundant check. Before it is accept as a good read. A higher data redundant check read setting offers more assurance that a bar code has been read correctly, while a lower setting allows faster scanning performance

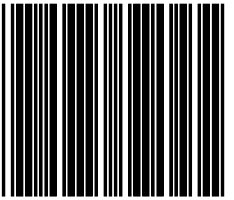
MSI data redundant check = 0



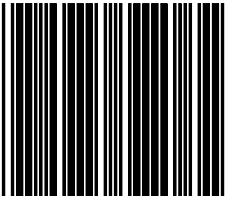
MSI data redundant check = 1



MSI data redundant check = 2



MSI data redundant check = 3

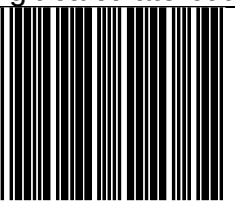


CODE 93 Parameters Setting

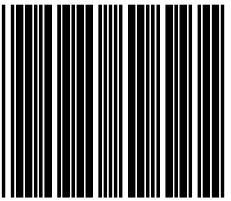
For this option the CODE 93 symbology are contained
• Check Character Verification or Transmission
•Data redundant check
• Min./Max. length setting

Check Digit

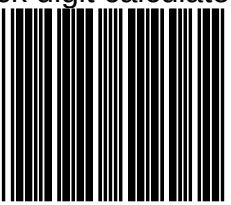
Code 93 check digit calculate but without transmit



Code 93 check digit not calculate and without transmit



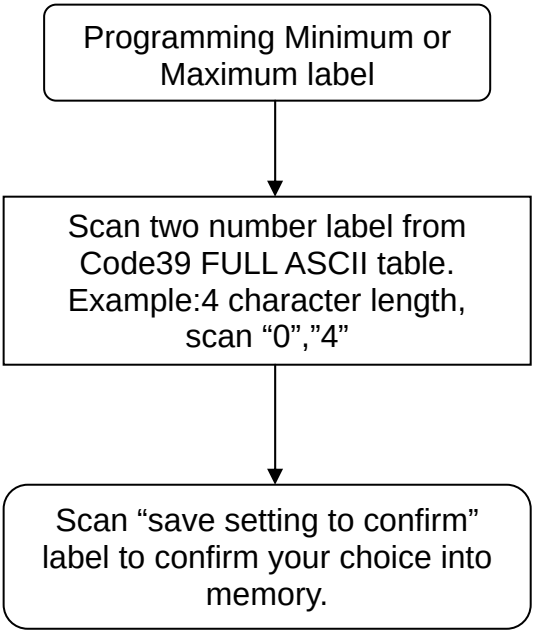
Code 93 check digit calculate and transmit



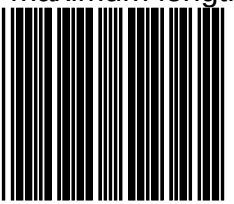
Code 93 code reading length setting

The default CODE93 code length is 3 ~32 character. It can be set at minimum 1 digit and maximum 62 digits.

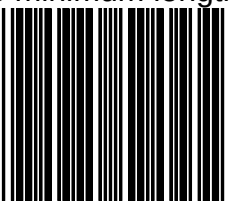
CODE LENGTH SETTING FLOW



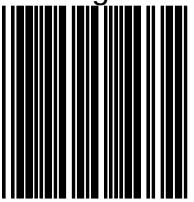
Code 93 maximum length setting



Code 93 minimum length setting



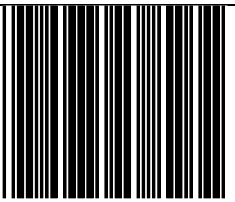
Save setting to confirm



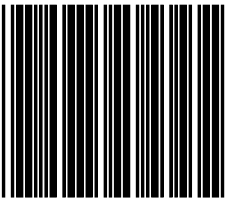
Data Redundant Check

The option allows you to set decoder data redundant check before it is accepted as a good read. A higher data redundant check read setting offers more assurance that a barcode has been read correctly, while a lower setting allows faster scanning performance.

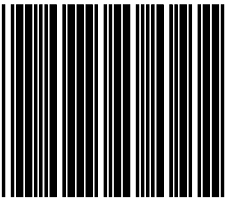
Code 93 data redundant check = 0



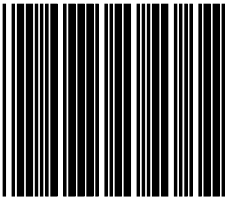
Code 93 data redundant check = 1



Code 93 data redundant check = 2

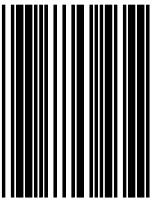


Code 93 data redundant check = 3

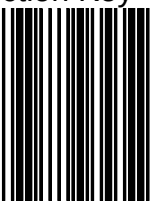


Full ASCII Code Table

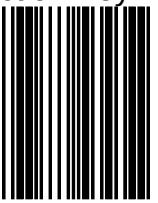
Full ASCII --- NUL



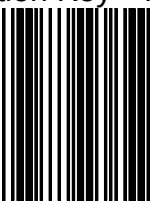
Full ASCII ---- SOH
(Function Key---Ins)



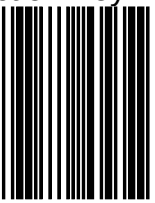
Full ASCII ----STX
(Function Key---Del)



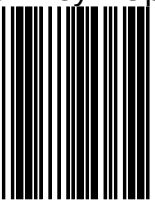
Full ASCII ---- ETX
(Function Key---Home)



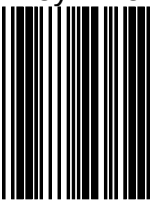
Full ASCII ---- EOT
(Function Key---End)



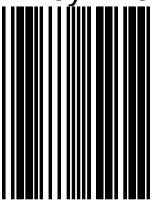
Full ASCII ---- ENQ
(Function Key---Up arrow)



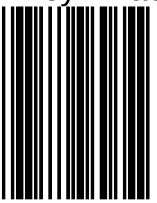
Full ASCII ---- ACK
(Function Key---Down arrow)



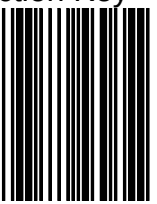
Full ASCII ---- BEL
(Function Key---Left arrow)



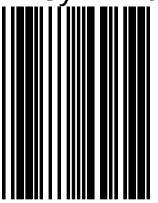
Full ASCII ---- BS
(Function Key---Backspace)



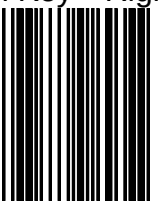
Full ASCII ---- HT
(Function Key---Tab)



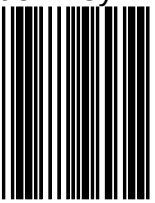
Full ASCII ---- LF
(Function Key---Enter(num))



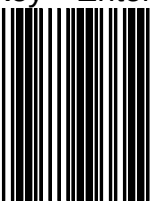
Full ASCII ---- VT
(Function Key---Right arrow)



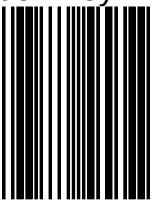
Full ASCII ---- FF
(Function Key---PgUp)



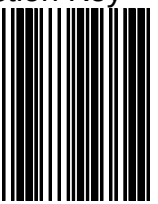
Full ASCII ---- CR
(Function Key---Enter(alphabet))



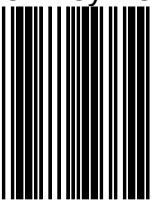
Full ASCII ---- SO
(Function Key---PgDn)



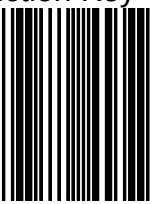
Full ASCII ---- SI
(Function Key---Shift)



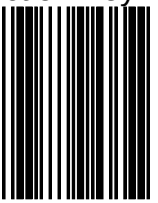
Full ASCII ---- DLE
(Function Key---5(num))



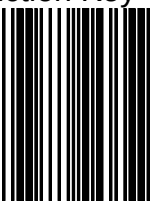
Full ASCII ---- DC1
(Function Key---F1)



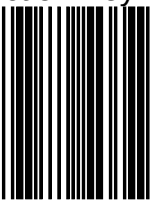
Full ASCII ---- DC2
(Function Key---F2)



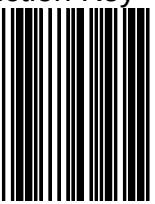
Full ASCII ---- DC3
(Function Key---F3)



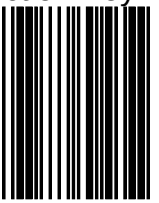
Full ASCII ---- DC4
(Function Key---F4)



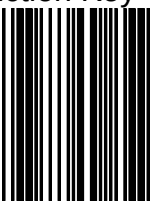
Full ASCII ---- NAK
(Function Key---F5)



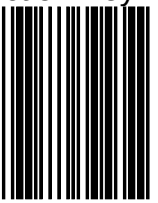
Full ASCII ---- SYN
(Function Key---F6)



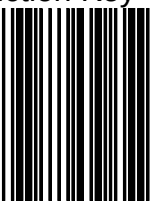
Full ASCII ---- ETB
(Function Key---F7)



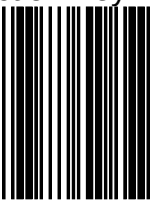
Full ASCII ---- CAN
(Function Key---F8)



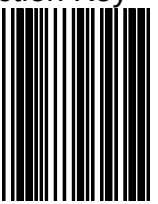
Full ASCII ---- EN
(Function Key---F9)



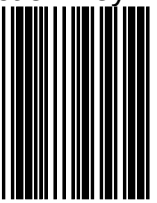
Full ASCII ---- SUB
(Function Key---F10)



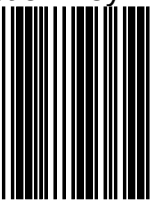
Full ASCII ---- ESC
(Function Key---F11)



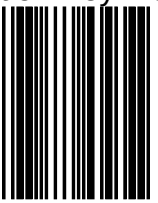
Full ASCII ---- FS
(Function Key---F12)



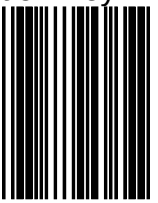
Full ASCII ---- GS
(Function Key---ESC)



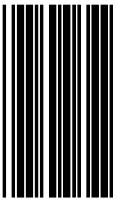
Full ASCII ---- RS
(Function Key---Ctl(L))



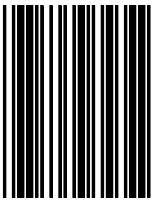
Full ASCII ---- US
(Function Key---Alt(L))



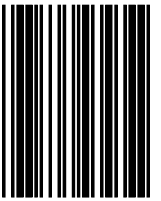
Full ASCII ---- SP



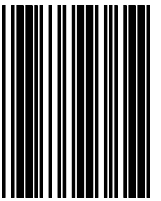
Full ASCII ---- !



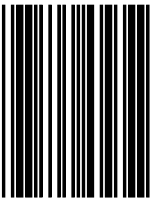
Full ASCII ---- “



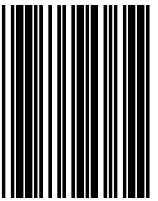
Full ASCII ---- #



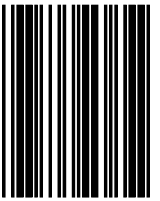
Full ASCII ---- $



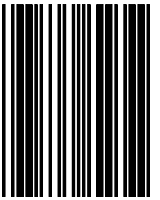
Full ASCII ---- %



Full ASCII ---- &



Full ASCII ---- ‘



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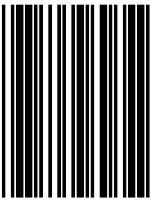
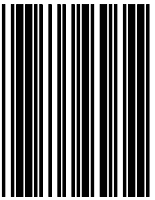


Full ASCII ----)



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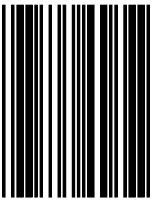
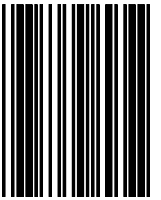
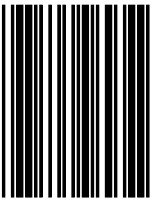


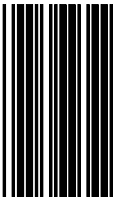
Full ASCII ---- +



Full ASCII ---- ,



Full ASCII ---- -



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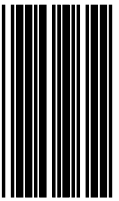
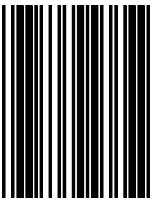
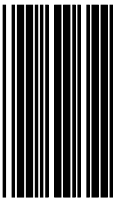


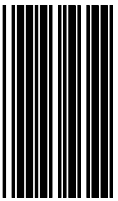
Full ASCII ---- /



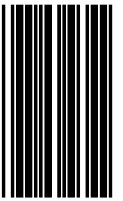
Full ASCII ---- 0



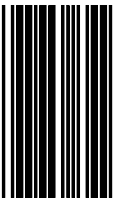
Full ASCII ---- 1



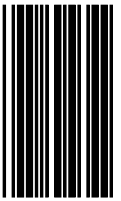
Full ASCII ---- 2



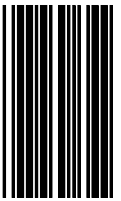
Full ASCII ---- 3



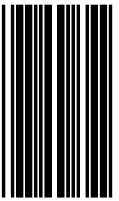
Full ASCII ---- 4



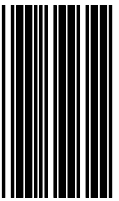
Full ASCII ---- 5



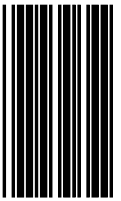
Full ASCII ---- 6



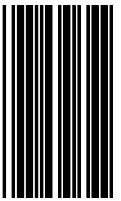
Full ASCII ---- 7



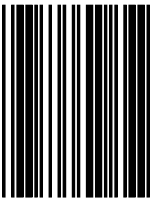
Full ASCII ---- 8



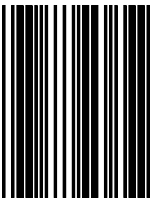
Full ASCII ----9



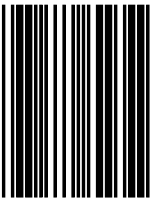
Full ASCII ---- :



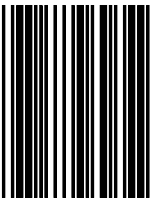
Full ASCII ---- ;



Full ASCII ---- <



Full ASCII ---- =



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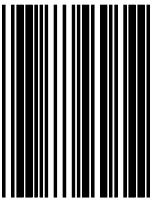
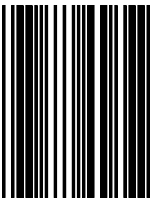
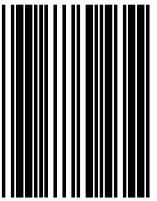


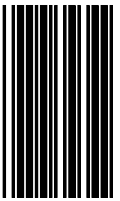
Full ASCII ---- ?



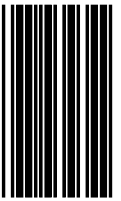
Full ASCII ---- @



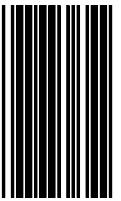
Full ASCII ---- A



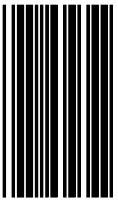
Full ASCII ---- B



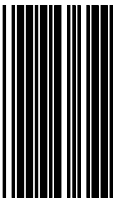
Full ASCII ---- C



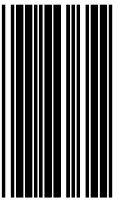
Full ASCII ---- D



Full ASCII ---- E



Full ASCII ---- F



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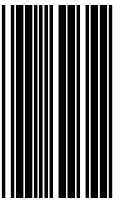

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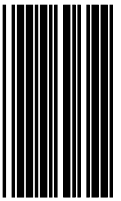

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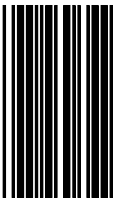

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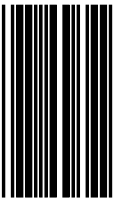

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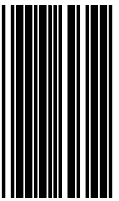

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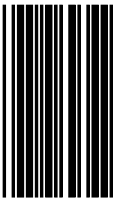

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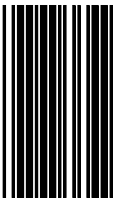

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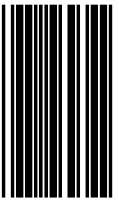

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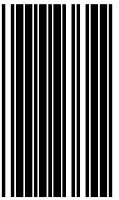

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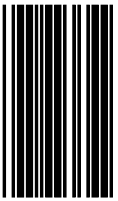

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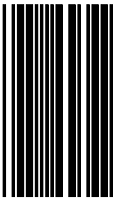

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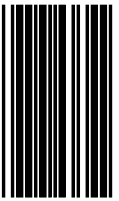

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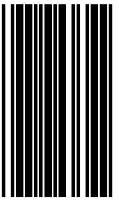

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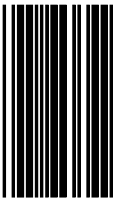

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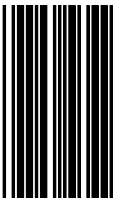

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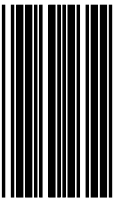

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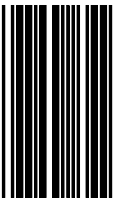

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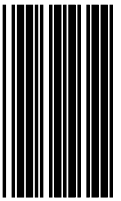

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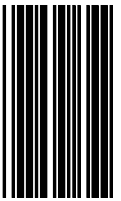

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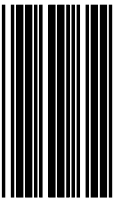

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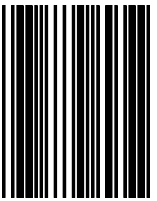

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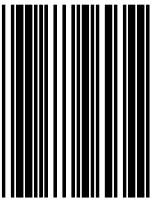

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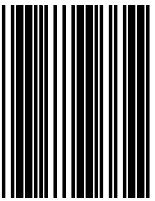

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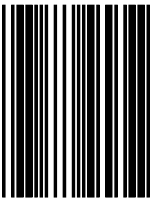

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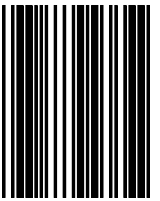

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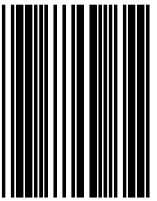

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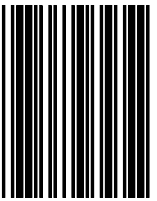

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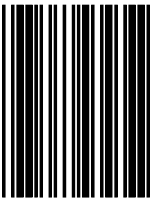

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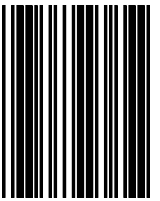

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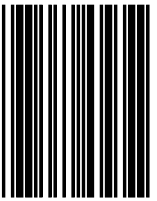

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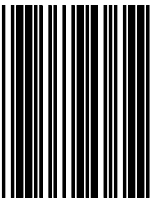

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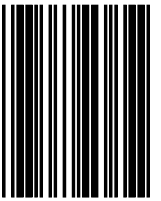

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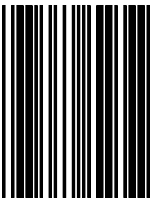

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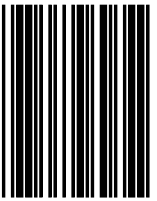

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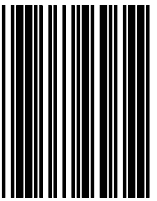

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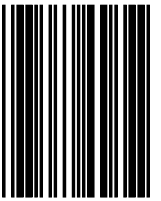

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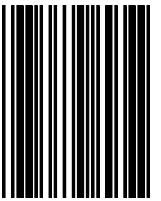

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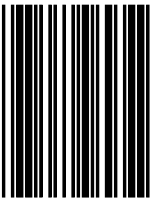

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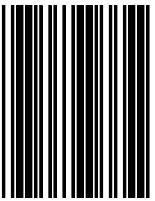

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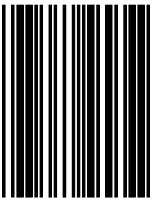

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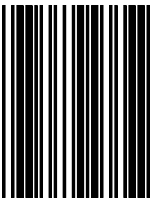

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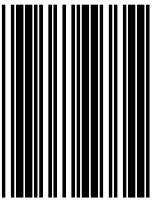

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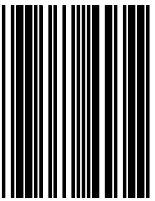

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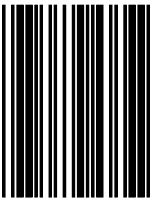

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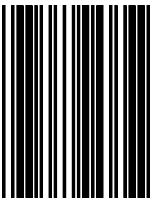

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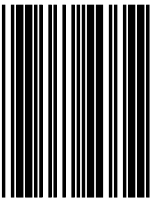

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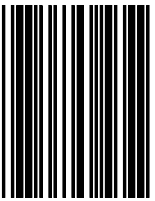

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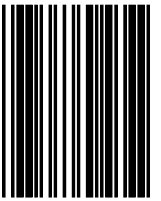

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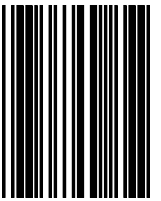

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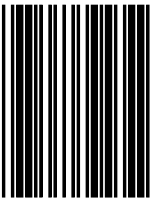

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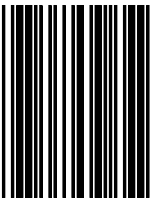

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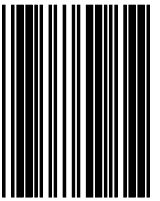

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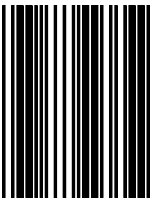

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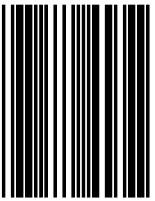
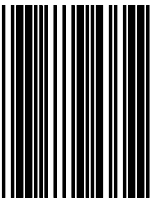
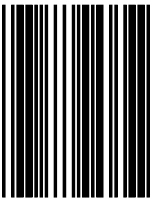


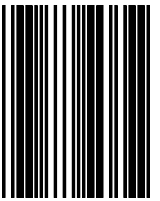
Full ASCII ---- }



Full ASCII ---- ~



Full ASCII ---- DEL



APPENDIXES

APPENDIX A

CODE 39 FULL ASCII CODE TABLE

ASCII	CODE 39	VALEUR HEXA.		ASCII	CODE 39	VALEUR HEXA.
NUL	%U	00		%	/E	25
SOH	$A	01		&	/F	26
STX	$B	02		'	/G	27
ETX	$C	03		(	/H	28
EOT	$D	04		)	/I	29
ENQ	$E	05		*	/J	2A
ACK	$F	06		+	/K	2B
BEL	$G	07		,	/L	2C
BS	$H	08		-	-	2D
HT	$I	09		.	.	2E
LF	$J	0A		/	/	2F
VT	$K	0B		0	0	30
FF	$L	0C		1	1	31
CR	$M	0D		2	2	32
SO	$N	0E		3	3	33
SI	$O	0F		4	4	34
DLE	$P	10		5	5	35
DC1	$Q	11		6	6	36
DC2	$R	12		7	7	37
DC3	$S	13		8	8	38
DC4	$T	14		9	9	39
NAK	$U	15		:	/Z	3A
SYN	$V	16		;	%F	3B
ETB	$W	17		<	%G	3C
CAN	$X	18		=	%H	3D
EM	$Y	19		>	%I	3E
SUB	$Z	1A		?	%J	3F
ESC	%A	1B		@	%V	40
FS	%B	1C		A	A	41
GS	%C	1D		B	B	42
RS	%D	1E		C	C	43
US	%E	1F		D	D	44
SP	SP	20		E	E	45
!	/A	21		F	F	46
"	/B	22		G	G	47
#	/C	23		H	H	48
$	/D	24		I	I	49

APPENDIX A

CODE 39 FULL ASCII CODE TABLE

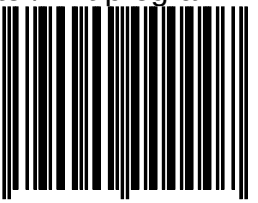
ASCII	CODE 39	VALEUR HEXA.		ASCII	CODE 39	VALEUR HEXA.
J	J	4A		e	+E	65
K	K	4B		f	+F	66
L	L	4C		g	+G	67
M	M	4D		h	+H	68
N	N	4E		i	+I	69
O	O	4F		j	+J	6A
P	P	50		k	+K	6B
Q	Q	51		l	+L	6C
R	R	52		m	+M	6D
S	S	53		n	+N	6E
T	T	54		o	+O	6F
U	U	55		p	+P	70
V	V	56		q	+Q	71
W	W	57		r	+R	72
X	X	58		s	+S	73
Y	Y	59		t	+T	74
Z	Z	5A		u	+U	75
[	%K	5B		v	+V	76
\	%L	5C		w	+W	77
]	%M	5D		x	+X	78
^	%N	5E		y	+Y	79
_	%O	5F		z	+Z	7A
`	%W	60		{	%P	7B
a	+A	61		|	%Q	7C
b	+B	62		}	%R	7D
c	+C	63		~	%S	7E
d	+D	64		DEL	%T	7F

APPENDIX B

FUNCTION KEY EMULATION

FUNCTION KEY	ASCII	CODE 39		FUNCTION KEY	ASCII	CODE 39
Ins	$A	01		F1	$Q	11
Del	$B	02		F2	$R	12
Home	$C	03		F3	$S	13
End	$D	04		F4	$T	14
Up	$E	05		F5	$U	15
Down	$F	06		F6	$V	16
Left	$G	07		F7	$W	17
Backspace	$H	08		F8	$X	18
TAB	$I	09		F9	$Y	19
Enter(num)	$J	0A		F10	$Z	1A
Right	$K	0B		F11	%A	1B
PgUp	$L	0C		F12	%B	1C
Enter	$M	0D		ESC	%C	1D
PgDn	$N	0E		Ctl(L)	%D	1E
shift	$O	0F		Alt(L)	%E	1F
5 (num)	$P	10				

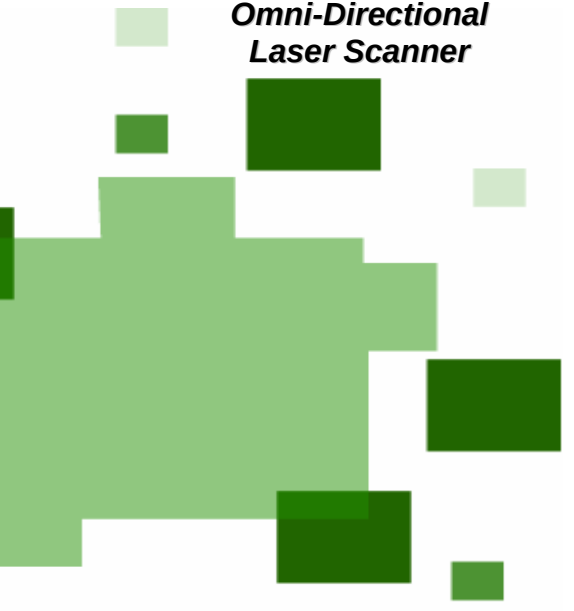
Enter/Exit programming



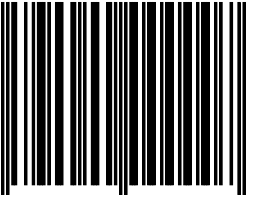
P/N: MUL-53243-03

Programming Guide

Omni-Directional Laser Scanner



Enter/Exit Programming Mode



(This barcode is also found at page 8.)

IMPORTANT NOTICE

Every effort is mode to ensure the accuracy of our product information; however, we accept no responsibility for errors or omissions. Specification or version may be subject to change without notice. The actual specification and version are based on the product delivered.

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1. INTRODUCTION

The series of scanners can be configured by scanning a series of programming barcode labels. 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.

The scanner is a multi-interface communication scanner. If you had ordered only the one type of interface, default will change the initial interface configuration to the interface requested, i.e. RS-232C, keyboard wedge, or USB. But if you had ordered as multi-interface, the initial interface configuration will be set as keyboard wedge (PC/AT); if needed to change to other interface, you need to set up from a programming guide.

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

2. CHANGE THE SCANNER SETTING

In order to change the scanner setting, please follow the sequence below

1. Scan Enter/Exit programming mode barcode (2 beeps Low—high)
2. Scan barcode for the desired feature (1beep)
3. Scan Enter/Exit programming mode barcode to save the configuration.(2 beeps ,long---short)

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

3. 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 and the laser scanner is in programming.

DEFAULT VALUES OF OPERATING PARAMETERS

Function	Default
Sleep mode	
Motor sleep mode	After 30 minutes
Laser sleep mode	After 15 minutes
Scanner timing	
Same code delay	500msec
Beeper Tone	
Frequency	medium
Duration	50msec
Code Identifiers	
Code ID	off
Code 39	M
ITF 2 of 5	I
Chinese post code	H
UPC-A	A
UPC-E	E
EAN-13	F
EAN-8	FF
Codabar	N
Code 128	K
Code 93	L
MSI/Plessy	P

DEFAULT VALUES OF KEYBOARD EMULATION PARAMETERS SETTING

Function	Default Values
Keyboard type selection	IBM PC/AT USA
Message terminator	Enter/ carriage return

DEFAULT VALUES OF RS-232C SERIAL COMMUNICATION PARAMETERS

Function	Default Values
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 USB EMULATION PARAMETERS

Function	Default Values
Keyboard Type	US Keyboard
Message Terminator	Enter

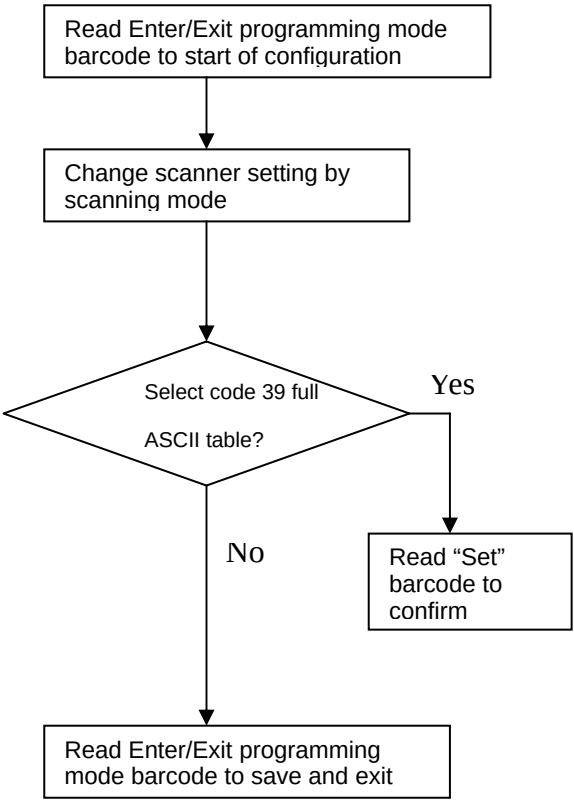
DEFAULT VALUES OF DECODING PARAMETERS

Function	Code	Default Value
Reading codes selection	Code 39	Enable
	ITF 2 of 5	Disable
	Chinese Post Code	Disable
	UPC/EAN/JAN	Enable
	Codabar	Disable
	※MSI/PLESSY	Disable
	Code 128	Disable
	Code 93	Disable
	※EAN-128	Disable
	Italian Pharmacy	Disable
	ISSN/ ISBN	Disable
Code 39	Codes	Standard
	Start/stop characters	Not transmitting
	Check digit	Disabled
	Concatenation	Off
Interleaved 2 of 5	Length	6-32
	Check digit	Disable
Chinese Post Code	Length	8~32
	Check digit	none
UPC/EAN /JAN	Format	All
	Addendum	Disable
	UPC-E=UPC-A	Disabled
	UPC-A leading digit	Transmit
	UPC-A check digit	Transmit
	UPC-E leading digit	Transmit

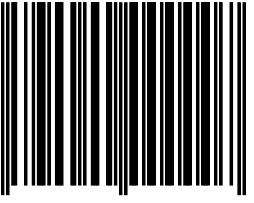
	UPC-E check digit	Transmit
Codabar	Type	Standard
	Start/stop characters	A,B,C,D
	Length	6~32 digits
Code 128	FNC 2 append	Disable
	Check digit	Disable
Code 93	Length	3~32
	Check digit	Not transmit
MSI	Length	6~32
	Check digit	Transmit
Italian Pharmacy	Transmit "A" Character	Not transmitting

Note: The configuration of the items with asterisk (※) is effective when being appointed in advance

PROGRAM PROCEDURE USING BARCODE MENUS



Enter/Exit Programming Mode

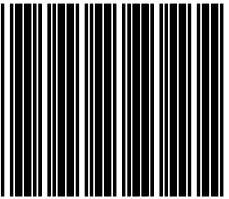


All framed barcode names represent

as default settings.

SYSTEM SETTING

RESET

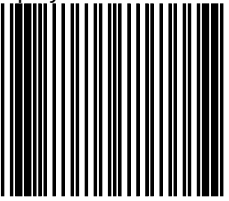


※ The reading of the “RESET” label turns all the parameters back to default values.

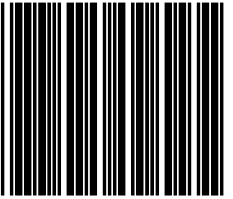
※ **The scanner remains in the last interface mode when the scanner is reset. The label below should be scanned if the scanner is configured for the first time.**

The reading of the “Show Version” label will show firmware version.

Display firmware version



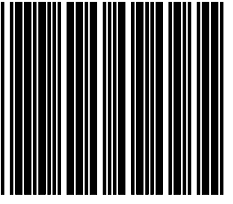
Save as Customer default



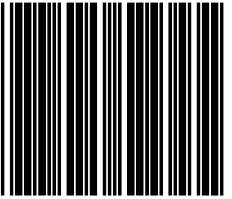
The setting allows the multi-desired setting barcode to be saved as a customer default.

The RS-232C interface scanner is used when connecting to the serial port of a PC or terminal

Return to RS-232C default

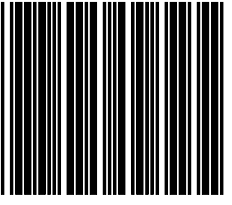


Return to PC/AT default

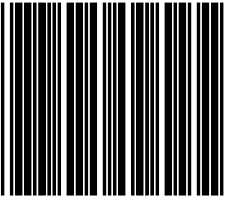


Keyboard wedge interface for IBM PC AT and compatibles

Return to USB default

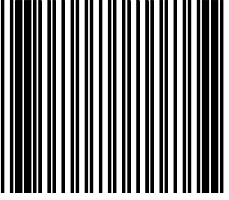


Return to customer default



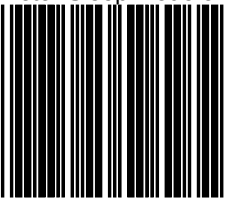
The reading of the “ABORT” label discards all the parameters reading prior to the “Enter/Exit of Programming”

Abort (Exit programming mode)

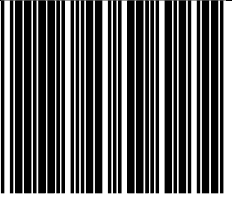


SLEEP MODE

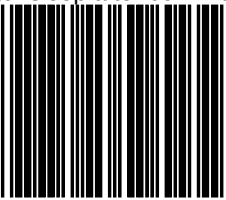
Motor Sleep mode off



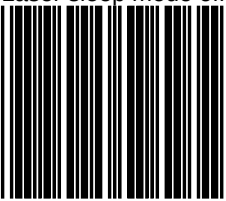
Motor Sleep after 30 minutes



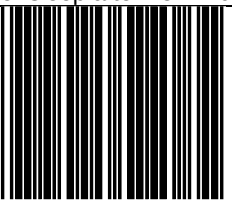
Motor sleep after 60 minutes



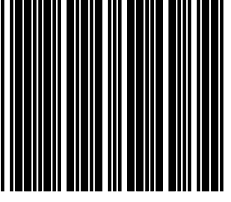
Laser sleep mode off



Laser sleep after 15 minutes

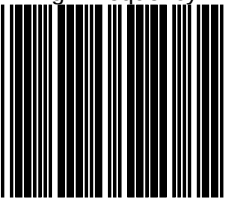


Laser sleep after 30 minutes

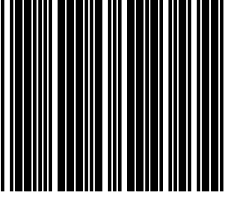


BEEPER TONE

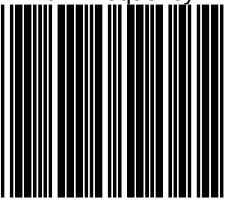
High Frequency



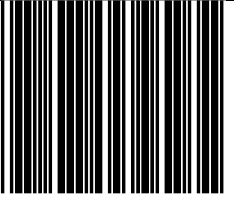
Medium Frequency



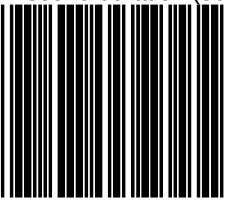
Low Frequency



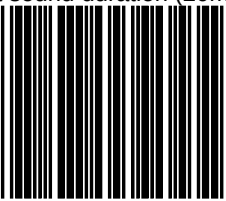
Long sound duration (100msec.)



Medium sound duration (50msec)

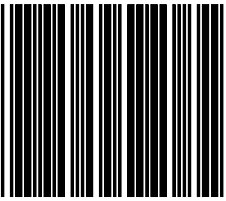


Short sound duration (20msec.)

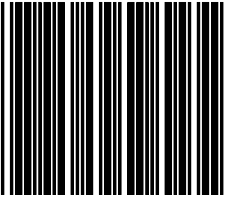


SCANNER TIMING

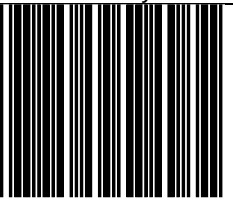
Same code delay time 200 msec.



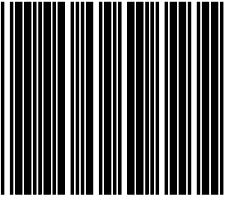
Same Code delay 300msec



Same code delay 500msec



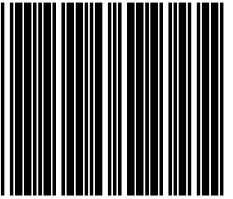
Same code delay time 600 msec.



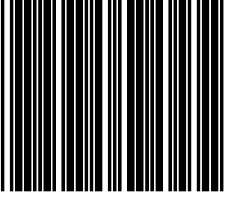
RS-232

COMMUNICATION

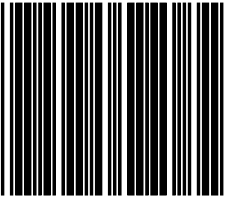
Baud Rate 19200



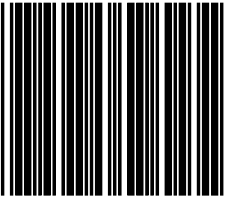
Baud Rate 9600



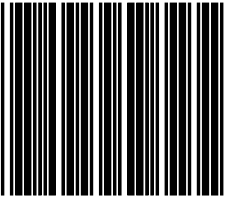
Baud Rate 4800



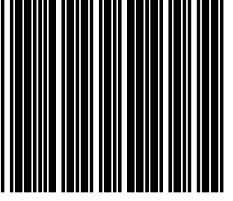
Baud Rate 2400



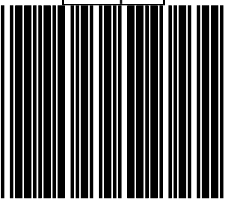
7 Data bit



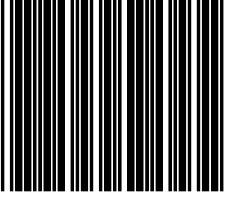
8 Data bit



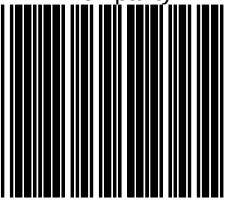
1 Stop bit



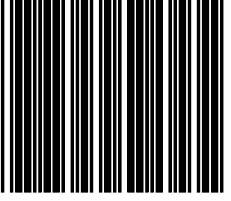
2 Stop bit



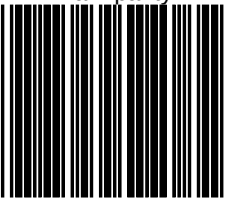
Even parity



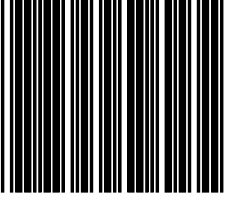
Odd Parity



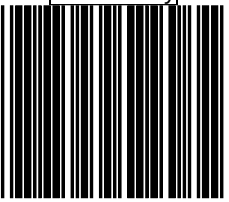
Mark parity



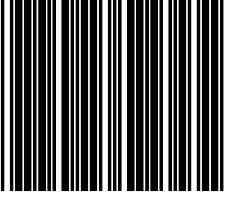
Space Parity



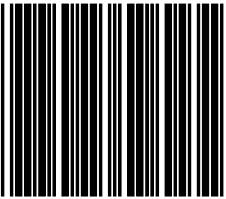
None Parity



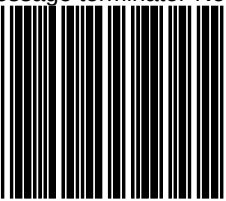
None Handshaking



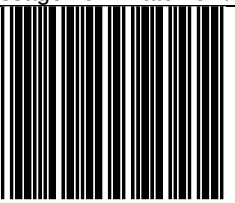
RTS/CTS on



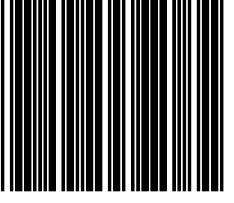
Message terminator-None



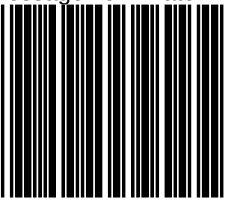
Message Terminator-CR/LF



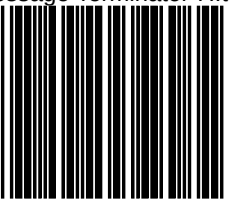
Message Terminator-CR



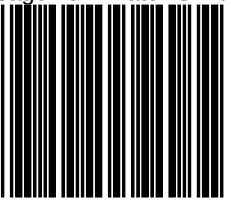
Message Terminator-LF



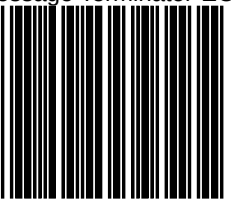
Message Terminator-H.tab



Message Terminator-STX/ETX

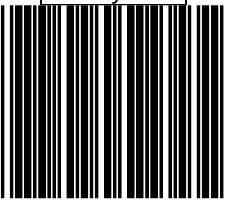


Message Terminator-EOT

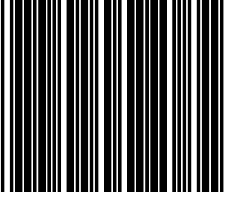


KEYBOARD WEDGE

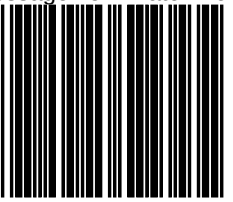
US Keyboard



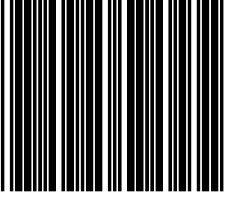
International Keyboard
(ALT method)



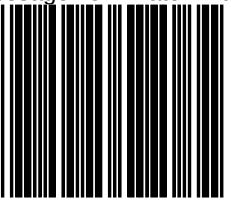
Message Terminator-None



Message Terminator-Enter



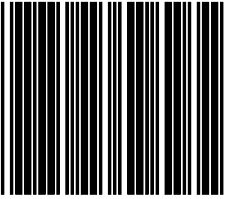
Message Terminator-H.tab



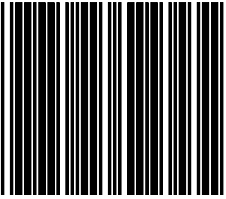
CAPITAL LOCK

Select the suitable code to match your keyboard caps lock status

Capital lock on



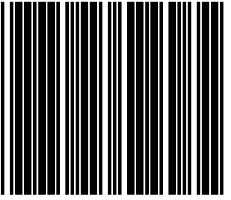
Capital lock off



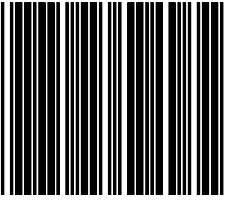
FUNCTION KEY EMULATION

The series allow you to emulate Function keys, Arrow keys, and many other “extended” keys. An IBM compatible keyboard does not translate to ASCII characters. It can be concatenated with input data as header and/or trailer. (see Appendix B)

Function key emulation enable

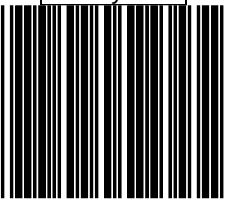


Function key emulation disable

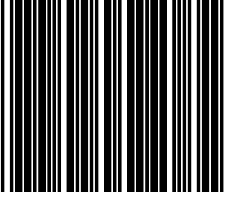


USB INTERFACE

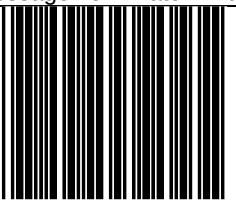
US Keyboard



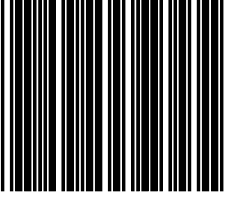
International Keyboard
(ALT method)



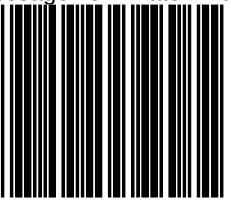
Message Terminator-Enter



Message terminator-None

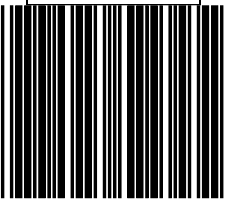


Message Terminator-H.tab

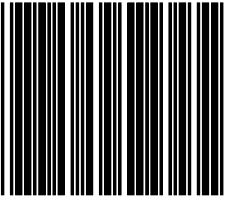


CODE SELECTION

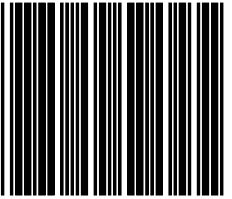
Code 39 Enable



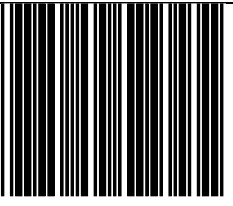
Code 39 Disable



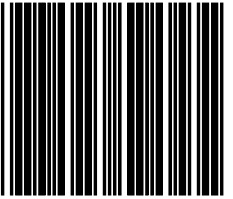
FULL ASCII CODE39 Enable



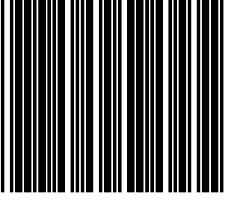
FULL ASCII CODE 39 Disable



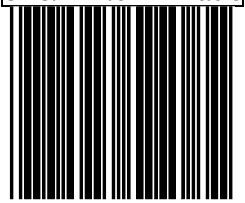
Codabar Enable



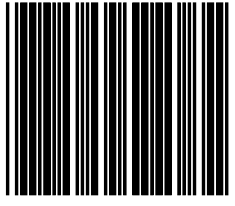
Codabar Disable



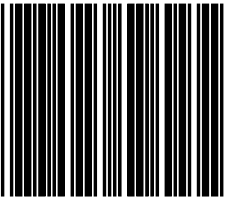
UPC/EAN/JAN Enable



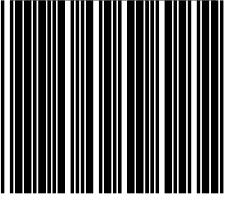
UPC/EAN/JAN Disable



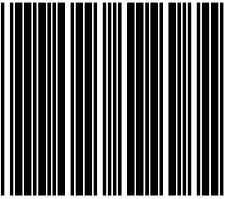
ITF 2 of 5 Enable



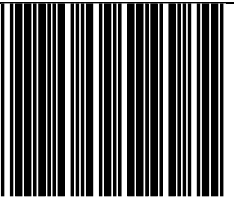
ITF 2 OF 5 Disable



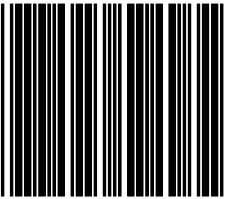
Chinese Post Code Enable



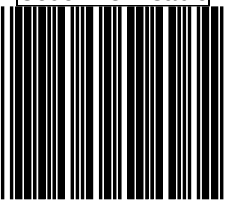
Chinese Post Code Disable



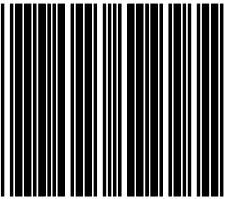
Code 128 Enable



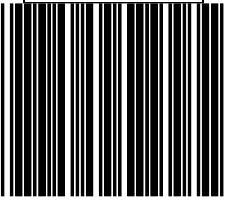
Code 128 Disable



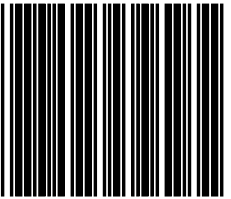
Code 93 Enable



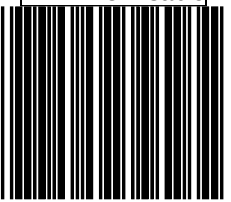
Code 93 Disable



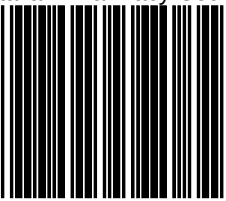
EAN-128 Enable



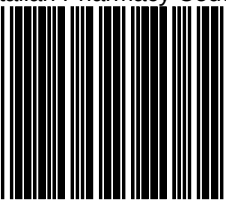
EAN-128 Disable



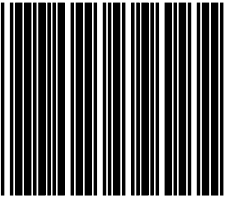
Code 32 Enable
(Italian Pharmacy Code)



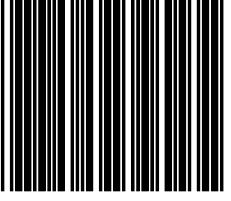
Code 32 Disable
(Italian Pharmacy Code)



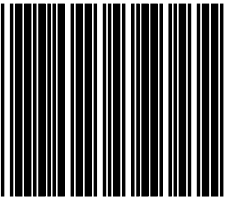
MSI enable



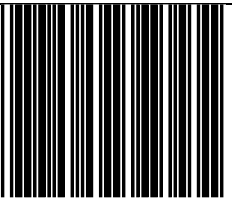
MSI Disable



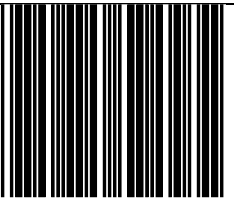
EAN-13 Convert to ISBN/ISSN Enable



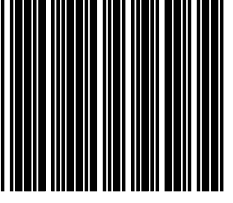
EAN-13 Convert to ISBN/ISSN Disable



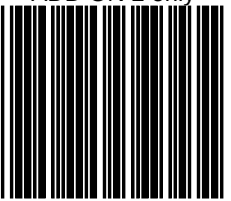
UPC/EAN ADD ON OFF



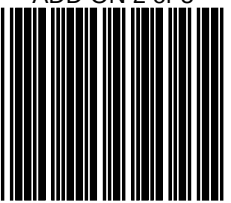
ADD ON 5 only



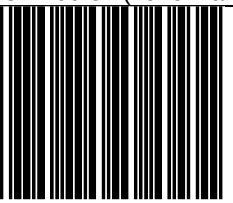
ADD ON 2 only



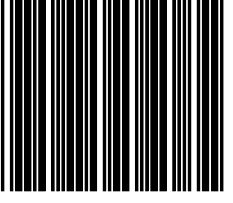
ADD ON 2 or 5



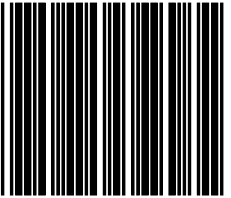
EAN/UPC +Add on (none mandatory)



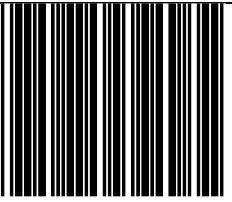
EAN/UPC + Add on (mandatory)



Force UPC-A to EAN-13 format enable



Force UPC-A to EAN-13 format disable



BARCODE IDENTIFIER CODE SETTING

The series scanner can transmit max.2 digit barcode identifier code for different type of barcode, Use enable or disable identifier setting barcode to choose transmit or not transmit barcode identifier code.

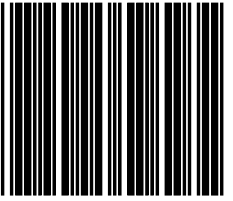
Each of the series type scanners also can set max.2digits as barcode identifier code according to different barcode. The procedure is as follows:

1.) Scan “Enter/Exit programming mode” label
2.) Scan “Barcode identifier setting code” label
3.) Scan the new code mark from ASCII table (max. two digits). For example, if one “AB” want for 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

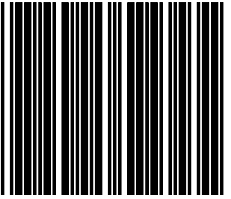
Disable identifier code



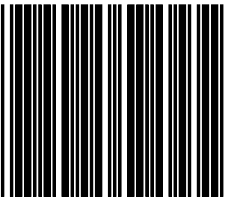
scan “enable identifier code” label to transmit the label ID as following table

Code 39	M
ITF 2 of 5	I
Chinese post code	H
UPC-A	A
UPC-E	E
EAN-13	F
EAN-8	FF
Codabar	N
Code 128	K
Code 93	L
MSI/Plessy	P

Enable identifier code



SET MESSAGE FORMAT WITH CODE IDENTIFIER AS ALPHA-30 FORMAT



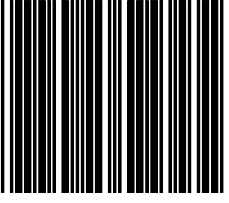
Code	Code identifier
UPC-A	A
UPC-E	E
EAN-8	FF
EAN-13	F
CODE 39	*
CODBAR	%
ITF 2 OF 5	i
CODE 93	&
CODE 128	#
MSI/PLESSY	@
EAN-128	P

DATA EDITING

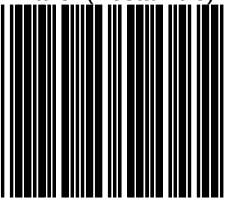
The **Header and Trailer** allows you to append a header and/or a trailer to every message transmitted via the serial ports or the keyboard port. There is no restriction in selecting header or trailer characters as far as the sum of the lengths of header and trailer is not greater than 10 digits.

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

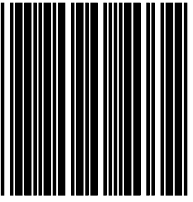
Header (preamble)



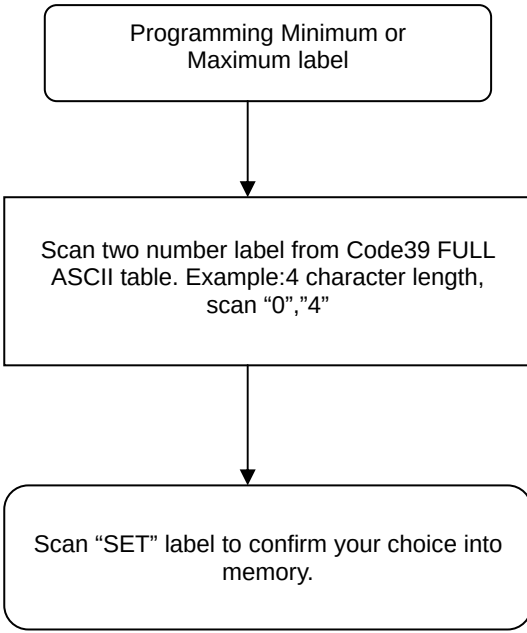
Trailer (Postamble)



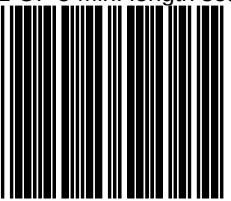
Set



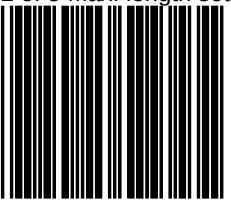
CODE LENGTH SETTING FLOW



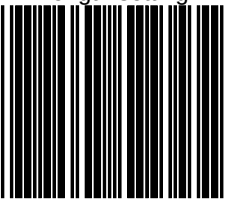
ITF 2 OF 5 Min. length setting



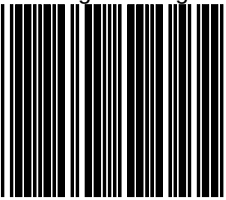
ITF 2 of 5 Max. length setting



Chinese post code maximum
Length setting

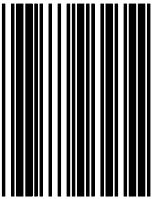


Chinese post code minimum
Length setting

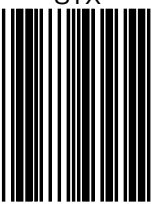


ASCII CHARACTER

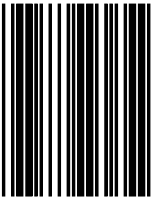
SOH



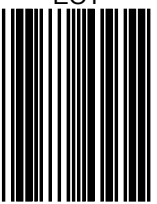
STX



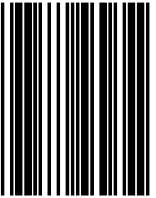
ETX



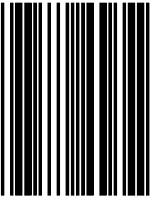
EOT



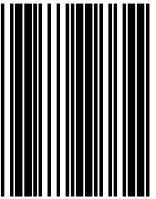
HT



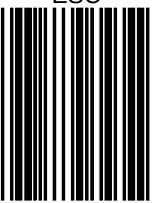
LF



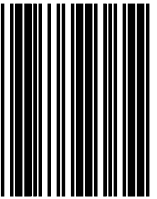
CR



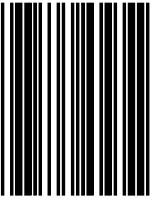
ESC



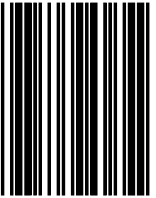
#



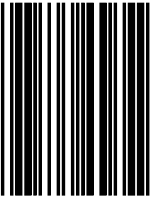
$

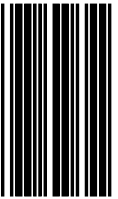


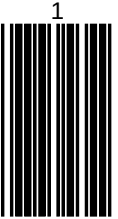
%



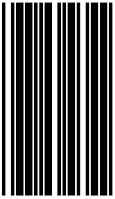
*



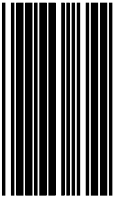


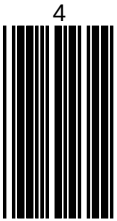


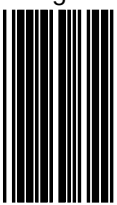
2

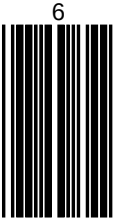


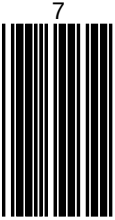
3




4


5


6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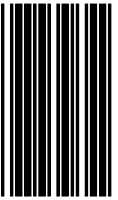

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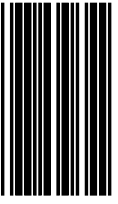
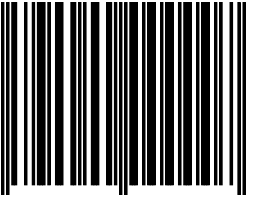
Enter/Exit Programming Mode