

Programming Guide

Handheld CCD / Laser Scanner

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

General handling precautions

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

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Radio Notice

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

Radio and Television Interference

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

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

- Reorient the receiving antenna.

- Relocate the device with respect to the receiver.

- Move the device away from the receiver.

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

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

For CE-countries

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

Laser Safety

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

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

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

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

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

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

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

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1. INTRODUCTION

This is a general guide for various scanners, and not all functions will perform in every scanner. Other than specified in this guide, for any special functions or specifications, please contact your dealer for details.

This manual contains a series of programming bar code labels, and by scanning these codes, it can configure the series scanners. This allows decoding options and interface protocols to be tailored to a specific application. The configuration is stored in non-volatile memory and will not be lost by removing power from the scanner.

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

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

2. PROGRAMMING OPTIONS

Programmable options are divided into four groups. The first group includes the options that show the general behavior of the laser scanner. The second group of options governs the operation of RS-232C type serial ports. The third group selects the keyboard type that the keyboard emulation type will be emulated. The last group sets the decoding parameters for each barcode symbology.

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 mode.

DEFAULT VALUES OF OPERATING PARAMETERS

Function	Default Values
Scanning Mode Selection	Trigger mode
Header and trailer	None
Inter-Message delay	Normal
Inter-Character delay	Normal
Message/Block mode selection	Message
Send command in block mode communication	Disable
Good read beeper tone selection	Medium
Code identifier transmitting	Disable

PREDEFINED BARCODE IDENTIFIERS*

Code 39 barcode identifier code	M
ITF 2 of 5 barcode identifier code	I
Chinese post code identifier code	H
UPC-E barcode identifier code	E
UPC-A barcode identifier code	A
EAN-13 barcode identifier code	F
EAN-8 barcode identifier code	FF
Codabar barcode identifier code	N
Code 128 barcode identifier code	K
Code 93 barcode identifier code	L
MSI barcode identifier code	P
MATRIX 25 barcode identifier code	G

*

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	Mark
Message terminator selection	CR/LF

DEFAULT VALUES OF WAND EMULATION PARAMETERS

	Function	Default Values
※	Wand emulation speed	Normal
※	Wand emulation output	Black = High

Note: For wand emulation, the configuration is only effective for the items with asterisk (※).

DEFAULT VALUES OF USB EMULATION PARAMETERS

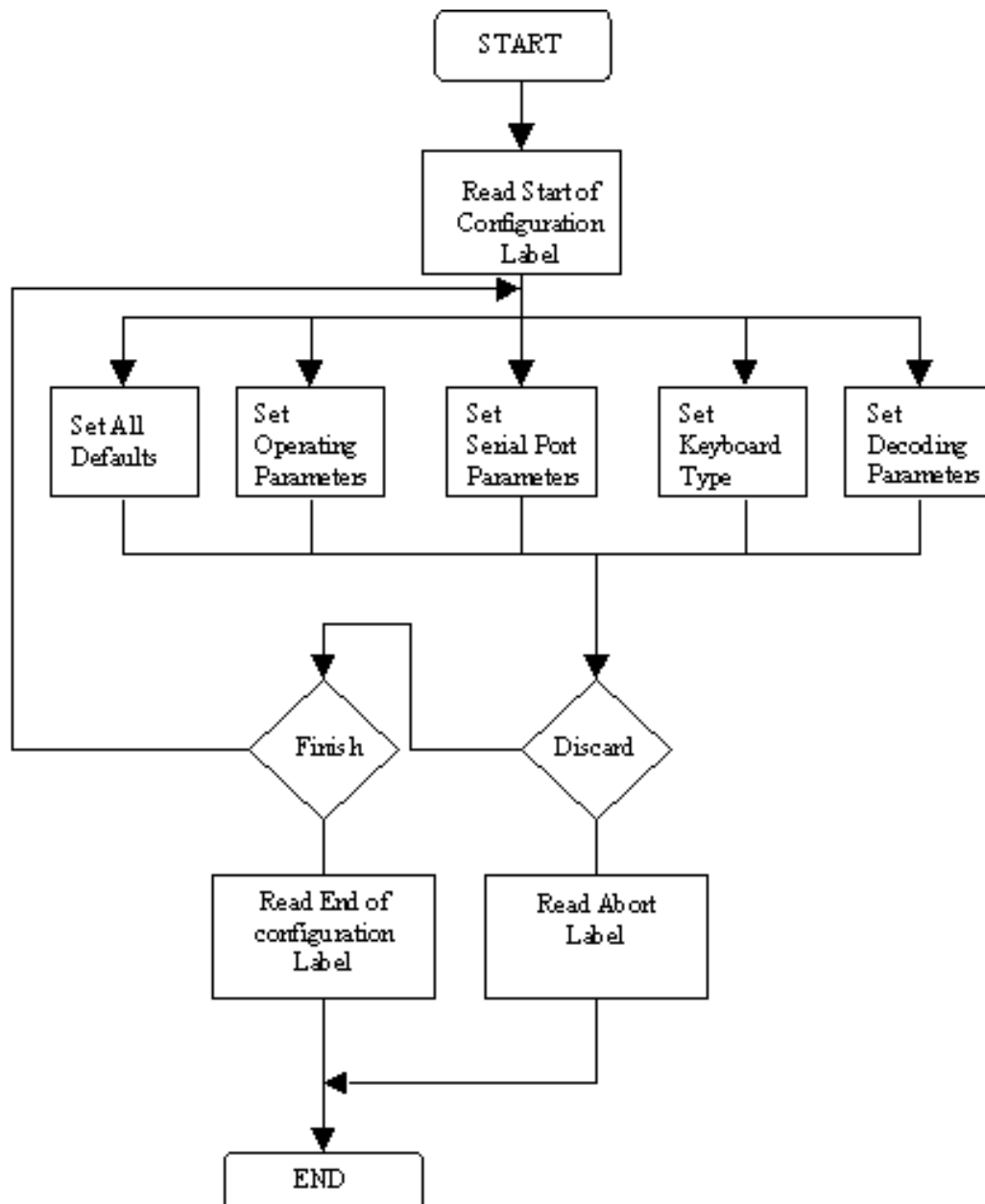
	Function	Default Values
※	Keyboard Type	US Keyboard
※	Message Terminator	Enter

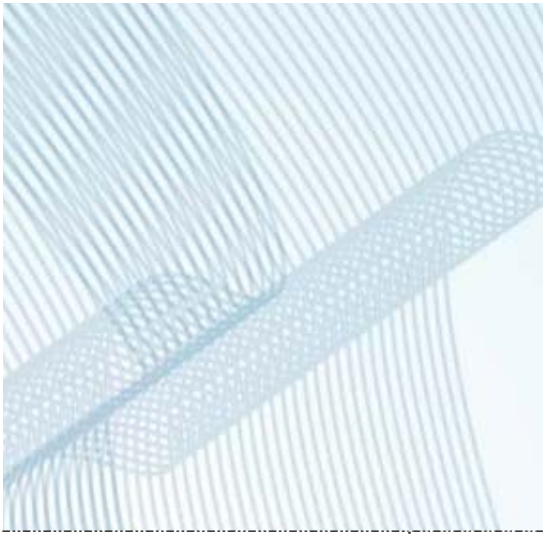
DEFAULT VALUES OF DECODING PARAMETERS

Function	Code	Default Value
Reading codes Selection	Code 39	Enable
	ITF 2 of 5	Enable
	Chinese Post Code	Disable
	UPC/EAN/JAN	Enable
	Coda bar	Enable
	※ MSI	Disable
	Code 128	Enable
	Code 93	Enable
	※ IATA	Disable
	※ EAN-128	Disable
	※ MATRIX 25	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 digits
	Check digit	Disable
Chinese Post Code	Length	10~16 digits
	Check digit	Transmit
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
Coda bar	Type	Standard
	Start/stop characters	A, B, C, D
	Length	6~32 digits
Code 128	FNC 2 append	Disable
	Check digit	Disable
MSI	Length	Variable
	Check digit	Transmit
Italian Pharmacy	Transmit "A" Character	Not transmitting

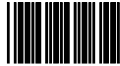
Note: The configuration of the items with asterisk (※) is effective when being appointed in advance.

3. PROGRAM PROCEDURE





SYSTEM SETTING



Start of Configuration



RESET

- The reading of the "RESET" label turns all the parameters back to default values.
- When you intend to turn your scanner back to default parameter, please scans the "Start of configuration" label first, then scan "RESET" label



ABORT

- The reading of the "ABORT" label discards all the parameters read prior to the "End of configuration".



RS-232C



PC/AT

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



USB

- The reading of the "SHOW VERSION" label will be show firmware version.



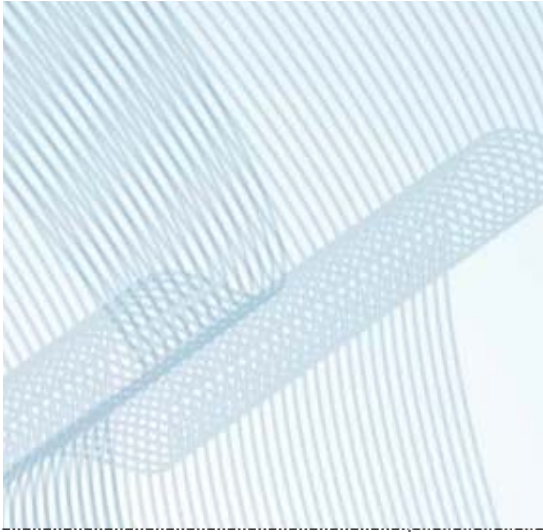
WAND EMULATION



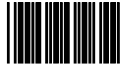
SHOW VERSION



End of Configuration



GENERAL CONFIGURATION



Start of Configuration

SCANNING MODE SELECTION

For Laser Scanner

For series laser scanners, there are 3 scanning modes to suit your application requirements.



Trigger Mode

The scanner becomes inactive as soon as the data is transmitted. It must be triggered to become active again.



Pulse Mode

The scanner will light up when press the pulse mode trigger switch once. And, the scanner will turn off for next pressing.

For CCD scanner

The scanner becomes inactive as soon as the data is transmitted. It must be triggered to become active again.



Trigger mode

In auto scan mode, the scanner is still active after the data is transmitted, but the successive transmission of the same bar code is not allowed when the trigger switch is pressed again.



Auto scan mode

This scanner will light up when press the scanner trigger switch once. And, the scanner will turn off for next pressing.



Alternate mode

This mode is similar to Auto scan mode, but double reading for the same barcode is prohibited if the scanner switch is pressed.



Repeat mode

1



End of Configuration



Start of Configuration

DATA REDUNDANT CHECK

The option allows you to set decoder data redundant check.



Enable



Disable

INTER-MESSAGE DELAY

These series of scanners allow you to add a delay between two consecutive messages. This delay will be added before each data transmission.



None



100 msec



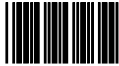
500 msec



1 Second



End of Configuration



Start of Configuration

INTER-CHARACTER DELAY

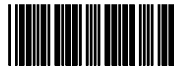
This option governs delay time between consecutive characters. Scanning the following labels can alter the delay time.



None



10 msec



20 msec



50 msec

MESSAGE/BLOCK MODE SELECTION

This option allows you to treat scanned data as either an independent message or a block message. In the message mode, the data scanned will be transmitted immediately. In block mode, the data scanned will be appended to the message buffer if the scanner is programmed in block mode. A block of message will only be transmitted after a "Send" command is entered. This mode is only available when the scanner is working with code 39 labels. You are free to choose any character as the "Send" command.



Message



Block



End of Configuration



Start of Configuration

SEND COMMAND IN BLOCK MODE COMMUNICATION

You can use this option to set your own “Send” command used in block mode communication.



Enable



Disable



Store



Set

GOOD READ BEEPER TONE SELECTION

You can use this option to set frequency and / or duration of the buzzer after successful reading.



Medium



Low



High



Disable



End of Configuration



Start of Configuration

SOUND DURATION



long(100 ms)



Medium(50 ms)



Short(20 ms)

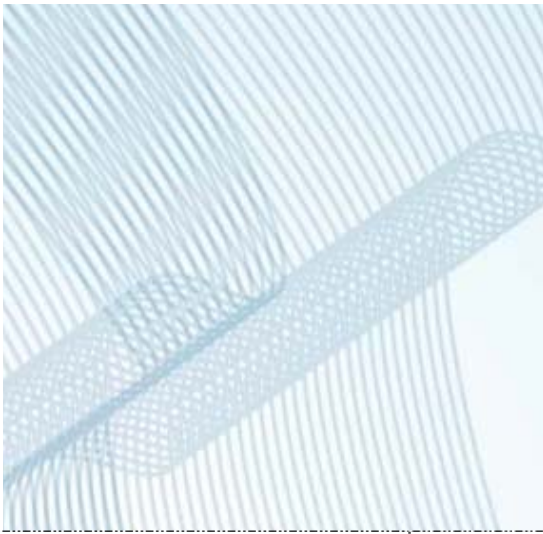


Very short(5 ms)

*For Alpha-70 and SC-2070 Series only Medium and disable setting available, it's hardware beeper control.



End of Configuration



INTERFACE CONFIGURATION

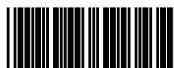


Start of Configuration

1. **RS-232C SERIAL COMMUNICATION PARAMETERS SETTING**

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

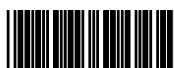
HANDSHAKING PROTOCOL



None



RTS/CTS



ACK/NAK



Xon/Xoff

ACK/NAK RESPONSE TIME SETTING



300 msec



2 sec



500 msec



End of Configuration



Start of Configuration

ACK/NAK RESPONSE TIME SETTING (Cont'd)



3 sec



1 sec



5 sec

BAUD RATE



19200



9600



4800



2400



1200



600



End of Configuration



Start of Configuration

DATA BIT



7



8

STOP BIT



1



2

PARITY



Even



Odd



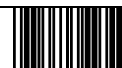
Mark



Space



None



End of Configuration

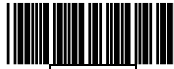


Start of Configuration

MESSAGE TERMINATOR (FOR RS-232C TYPE ONLY)



None



CR/LF



CR



LF



H Tab



STX/ETX



EOT



End of Configuration



Start of Configuration

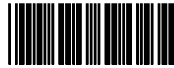
2. KEYBOARD EMULATION PARAMETERS SETTING

KEYBOARD TYPE SELECTION

The keyboard emulation scanners can emulate a number of personal computers keyboard and a number of terminal keyboard. Keyboard emulation is activated whenever you have selected the type of keyboard for which the scanner is going to emulate. Choose the appropriate type of keyboard emulation by scanning the labels under the following labels.



IBM AT



PS/2 30-80



IBM 5550



IBM 5295 Terminal



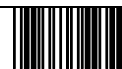
IBM XT



IBM 5530-SC



IBM 5530-ZC



End of Configuration



Start of Configuration

KEYBOARD TYPE SELECTION (Cont'd)



NEC 9801



IBM 3196 Terminal



APPLE MAC II(※)



IBM 3477/3472 Terminal



PS2/30/56



IBM 3477 Terminal
(Without break code)



NEC 5200(※)

Note: The configuration of the items with asterisk (※) is optional.



End of Configuration



Start of Configuration

KEYBOARD LANGUAGE SELECTION



USA



UK



Germany



French



Spanish



Italian



Swiss



Swedish



International Keyboard



End of Configuration



Start of Configuration

MESSAGE TERMINATOR (FOR KEYBOARD WEDGE USE)



None



Return /Enter



Hor. TAB



Execute

BREAK CODE ON/ OFF SETTING (FOR IBM Terminals 31xx, 34xx, 37xx USE)

To select the interface for these IBM terminals, read the correct key transmission code.



ON



OFF



End of Configuration



Start of Configuration

FUNCTION KEY ACTIVE ON/ OFF (FOR IBM AT USE)

Function keys can be concatenated with input data as header and/or trailer. See table on page 40.



ON



OFF

CAPITAL LOCK ON/ OFF

Select the suitable code to match your keyboard caps lock status.



ON



OFF

Number data format



Send number as normal data



Send number as keypad data



End of Configuration



Start of Configuration

3. WAND EMULATION PARAMETERS SETTING

EMULATION SPEED SELECTION



Low



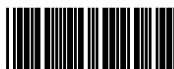
Medium



Normal



High



Higher

EMULATION DATA OUTPUT SELECTION

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



Black = High



Black = Low



End of Configuration



Start of Configuration

WAND EMULATION NARROW/WIDE RATIO



1:2



1:3

CURSOR PAD WORK AT NUMLOCK



ON



OFF



End of Configuration



Start of Configuration

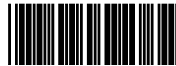
4. USB INTERFACE PARAMETERS SETTING

The USB mode is effectively a keyboard emulator that works with hosts that 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 is built into this operating system.

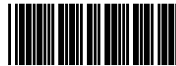
KEYBOARD Language TYPE



US Keyboard



Germany



French



Spanish



International Keyboard

MESSAGE TERMINATOR



None



Enter



H Tab



End of Configuration



THE SYMBOLOGIES

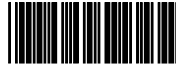


Start of Configuration

READING CODE SELECTION



Code 39 Enable



Code 39 Disable



Coda bar Enable



Coda bar 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



End of Configuration



Start of Configuration

READING CODE SELECTION (Cont'd)



Code 128 Disable



MSI Enable



MSI Disable



Code 93 Enable



Code 93 Disable



IATA Enable



IATA Disable



EAN- 128 Enable



EAN-128 Disable



End of Configuration



Start of Configuration

READING CODE SELECTION (Cont'd)



Italian Pharmacy Enable



Italian Pharmacy Disable

CODE 39 PARAMETERS SETTING

CHARACTER SET

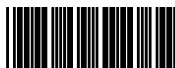


Standard Code 39



Full ASCII Code 39

START/STOP CHARACTER TRANSMISSION



Yes

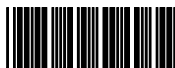


No

CHECK DIGIT



Calculate and Transmit



Calculate but not Transmit



End of Configuration



Start of Configuration

CODE 39 PARAMETERS SETTING (Cont'd)



NO

CONCATENATION



Enable



Disable

INTERLEAVED 2 OF 5 PARAMETERS SETTING

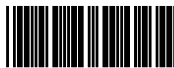
Examples: Felting length 4 to 8 digits

Steps: Scan barcodes "Start of Configuration" → "Min" → "0" → "4" → "Set" → "Max"
→ "0" → "8" → "Set" → "End of Configuration"

LENTGTH



Max



Min



Set



End of Configuration



Start of Configuration

CHECK DIGIT



NO



Calculate and Transmit



Calculate but not Transmit

CHINESE POST CODE PARAMETERS SETTING

Examples: Felting length 4 to 8 digits

Steps: Scan barcodes “Start of Configuration” → “Min” → “0” → “4” → “Set” → “Max”
→ “0” → “8” → “Set” → “End of Configuration”

LENGTH



MAX



MIN



Set



End of Configuration



Start of Configuration

CHECK DIGIT



NO



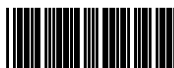
Calculate and Transmit



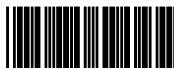
Calculate but not Transmit

UPC/EAN/JAN PARAMETERS SETTING

FORMAT



All



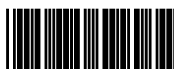
EAN-8 or EAN-13



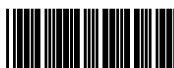
UPC-A and EAN-13



UPC-A and UPC-E



UPC-A



UPC-E



End of Configuration



Start of Configuration

UPC/EAN/JAN PARAMETERS SETTING (Cont'd)



EAN-13



EAN-8

ADDENDUM



NO



5 Characters



2 Characters



2 or 5 Characters

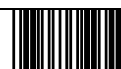
FORCE UPC-E TO UPC-A FORMAT



Yes



No



End of Configuration



Start of Configuration

FORCE UPC-A TO EAN-13 FORMAT



Yes



No

TRANSMIT UPC-A LEADING CHARACTER



Yes



No

TRANSMIT UPC-A CHECK DIGIT



Yes



No

TRANSMIT UPC-E LEADING CHARACTER



Yes



No



End of Configuration



Start of Configuration

TRANSMIT UPC-E CHECK DIGIT



Yes



No

TRANSMIT EAN-13 CHECK DIGIT



Yes



No

TRANSMIT EAN-8 CHECK DIGIT



Yes



No



End of Configuration



Start of Configuration

CODABAR/ MONARCH PARAMETERS SETTING

START/ STOP CHARACTER TRANSMISSION



No



A, B, C, D



DC1~DC4



a/ t, b/ n, c/ *, d/ e

CONCATENATION



Enable



Disable

CODE 128 PARAMETERS SETTING

FNC 2 CONCATENATION



Enable



Disable



End of Configuration



Start of Configuration

CODE 128 PARAMETERS SETTING (Cont'd)

CHECK DIGIT



No



Calculate but not Transmit



Calculate and Transmit

UCC/EAN128 PARAMETERS SETTING

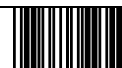
The character FNC1 can be transmitted or not using these codes.



FNC1 Character Transmitted



FNC1 not Transmitted



End of Configuration

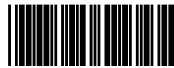


Start of Configuration

MSI/PLESSY PARAMETERS SETTING

Examples: Felting length 4 to 8 digits

Steps: Scan barcodes "Start of Configuration" → "Min" → "0" → "4" → "Set" → "Max"
 → "0" → "8" → "Set" → "End of Configuration"



MAX



MIN



SET

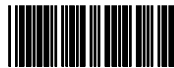
Double Check digit



Calculate but not Transmitted



No



Calculate but only first one Transmitted



Calculated and both Transmitted

Single Check digit



Calculated but not Transmitted



Calculated and transmitted



End of Configuration



Start of Configuration

ITALIAN PHARMACY PARAMETERS SETTING

TRANSMIT "A" CHARACTER



Yes



No



End of Configuration



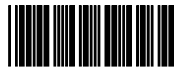
Start of Configuration

BARCODE LENGTH SETTING

CODE 39 LENGTH SETTING

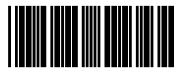


MAX

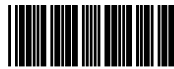


MIN

CODE 93 LENGTH SETTING



MAX



MIN

CODE 128 LENGTH SETTING



MAX



MIN

CODABAR LENGTH SETTING



MAX



MIN



SET



End of Configuration



Start of Configuration

ISBN/ ISSN CONVERSION

The function converts the UPC/EAN codes appearing on books and magazine not ISBN/ISSN format.



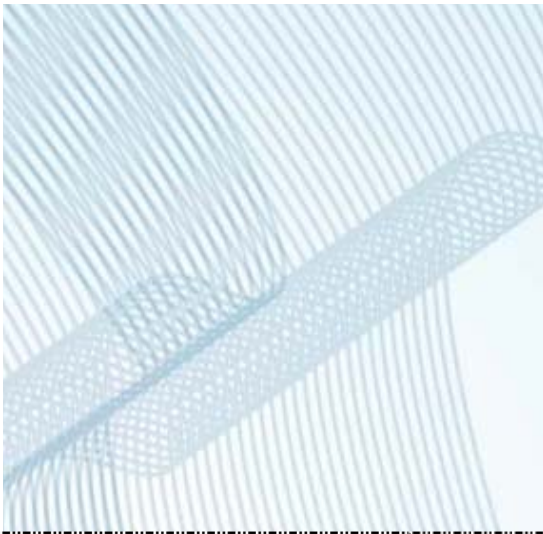
ACTIVE ISBN/ ISSN



INACTIVE ISBN/ ISSN



End of Configuration



DATA EDITING



Start of Configuration

HEADER AND TRAILER

This option 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.



Header



Trailer

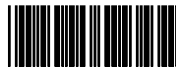


Set

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 set your choice into memory.

BARCODE IDENTIFIER CODE SELECTION

The series of scanners can transmit max.2-digit barcode identifier code for different types of barcodes. Use the labels to choose transmit or not transmit predefined barcode identifier code (ID's are listed on page 2):



Enable



Disable



End of Configuration

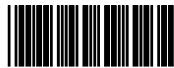


Start of Configuration

BARCODE IDENTIFIER CODE SETTING

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

- 1.Scan "Start of configuration" 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 "Set" label.
- 5.Scan "End of configuration" label.



UPC-E



UPC-A



EAN-13



EAN-8



Chinese post code



ITF 2 OF 5



End of Configuration



Start of Configuration

BARCODE IDENTIFIER CODE SETTING (Cont'd)



Coda bar



Code 39



Code 128



Code 93



MSI



Set



End of Configuration



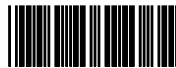
Start of Configuration

Truncate Header/Trailer Character

(Version az1.24, dz1.05, ac1.01, dz1.05,pl1.39

Or higher is required)

You can truncate a number header or trailer for a symbology. When you do, the specific character you select is deleted from the symbology you want.



Truncate header character



Truncate trailer character

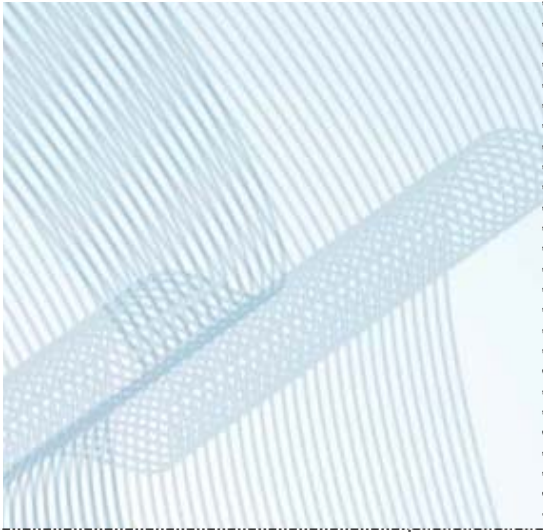


Set

1. Scan "start of configuration"
2. Select "truncate header or truncate trailer"
3. scan two barcode value from the full ASCII code table(0~9) For example, if 2 number header you want clear then scan "0" and "2"
4. Scan "set" barcode
5. end of configuration



End of Configuration



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 A

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			

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



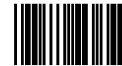
NUL



ENQ
(Up)



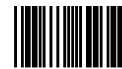
SOH
(Ins)



ACK
(Down)



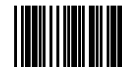
STX
(Del)



BEL
(Left)



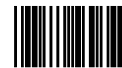
ETX
(Home)



BS
(Backspace)



EOT
(End)



HT
(TAB)



End of Configuration

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



LF
(Enter)(num)



VT
(Right)



FF
(PgUp)



CR
(Enter)



SO
(PgDn)



SI
shift(L)



DLE
5 (num)



DC1
(F1)



DC2
(F2)



DC3
(F3)



DC4
(F4)



NAK
(F5)



End of Configuration

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



SYN
(F6)



ETB
(F7)



CAN
(F8)



EM
(F9)



SUB
(F10)



ESC
(F11)



FS
(F12)



GS
(ESC)



RS
Ctl (L)



US
Alt (L)



SP



!



"



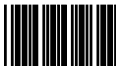
#



End of Configuration

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



\$



+



%



,



&



-



'



.



(



/



)



0



*



1



End of Configuration

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE

 Start of Configuration	
 2	 :
 3	 ;
 4	 <
 5	 =
 6	 >
 7	 ?
 8	 @
 9	 A
 End of Configuration	

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



B



C



D



E



F



G



H



I



J



K



L



M



N



O



End of Configuration

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



P



Q



R



S



T



U



V



W



X



Y



Z



[



\



]



End of Configuration

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



^



_



`



a



b



c



d



e



f



g



h



i



j



k



End of Configuration

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



l



m



n



o



p



q



r



s



t



u



v



w



x



y



End of Configuration

APPENDIX B

CODE 39 FULL ASCII BARCODE TABLE



Start of Configuration



Z



{



|



}



~



DEL



End of Configuration

APPENDIX C

BARCODE SAMPLES

Code 39



Code 128



Interleaved 2 of 5



Coda bar(NW-7)



UPC A



EAN-13





User's manual



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Radio Notice

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

Radio and Television Interference

Operation of this equipment in a residential area can cause interference to radio or television reception. This can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.

- Relocate the device with respect to the receiver.

- Move the device away from the receiver.

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

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

For CE-countries

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

Laser Safety

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

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

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

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

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

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

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

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1. General Information

1.1. Introduction

This scanner has two types scan engines, CCD and Laser, to choose from and they are well featured with Bluetooth® wireless technology, enabling working efficiency for simultaneous data transfer when scanning as well as working portability as not being constrained by short of cable length. Working places as shipping industry, cargo warehouses, superstores, pharmacies, and many more open-space or large-scale manufacturing sites are delighted to enjoy this move-around freedom.

The cradle, a Bluetooth® dongle or any device with Bluetooth® wireless technology can be the host of this scanner. As far as 100-meter connection range, all scanned data are instantly transferred to the connected host. As if out of connection range, the embedded 32KB flash memory provides sufficient data space to store up to 2000 sets of data.

Either scanning in the handheld or hands-free mode, this scanner always offers a high-accuracy and reliable scanning ability. This scanner would be your trusted tool scanning partner.

1.2. Unpacking

This scanner package contains:

- 1 ea. Wireless Single-Line CCD or Laser Scanner
- 1 ea. Charging Cradle or Cradle with Radio Communication
- 1 ea. DC 9V Power Adapter
- 2 ea. Ni-MH AA Recharge Battery
- 1 ea. Interface Cable (only for the cradle host)
- 1 ea. Hand stripe
- 1 ea. User's Manual

If any contents are damaged or missing, please contact your dealer immediately.

Please leave this user's manual within easy access of person using the scanner.

1.3. Scanner Outline



1.4. Cradle Outline



2. Getting Started

2.1. Installing and Charging Scanner Batteries

Installing Batteries

The rechargeable batteries are packed individually for shipping safety. Please follow up the steps below to install the batteries.



Always use the rechargeable batteries provided by the manufacturer to avoid any non-compatible danger or void the warranty.

1. Loosen the two screws enough to remove the battery cover. (It would not be necessary to remove the screws otherwise may result in losing them.)

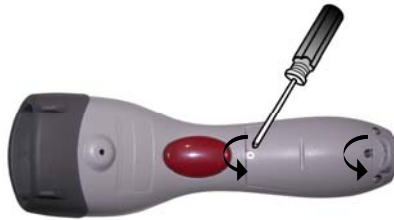


Figure 2-1

2. Insert the batteries into the scanner one by one. (positive pole to positive pole, negative pole to negative pole)

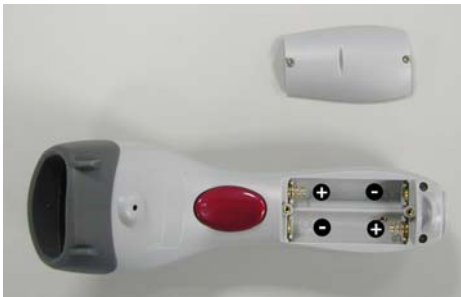


Figure 2-2



Figure 2-3

3. Put back the battery cover, and tighten both screws.

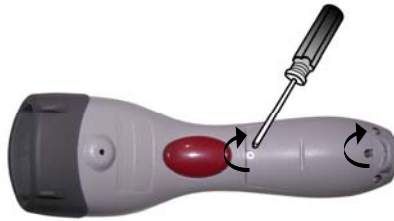


Figure 2-4

Charging Batteries

For users with the charging cradle, you can connect the charging cradle with power adapter and the scanner is now in charging.

For cradle host users, you can connect the cradle with the power adapter (shown as Figure 2-9 as example) first, then place the scanner into the cradle in a 30° angle (shown as Figure 2-5) and press down to make it seat tight into the cradle (shown as Figure 2-6); a clear and short beep is heard when position correctly into the cradle.



Figure 2-5



Figure 2-6

Once the scanner is well situated in the cradle, press down any one of the small buttons at the side of cradle LED lamp to start charging (Shown as Figure).



Figure 2-7 Press any one to start charging

The LED of scanner light in RED as in charge, and light in BLUE when full charged. Refer to Chapter 9 for LED indication.

We call this “Smart Charge”, as battery life is well depended on the charging number of times, so only charge the batteries when necessary by following the abovementioned procedures to prolong your battery life.

You may also set up auto-charging as every time the scanner is placed into the cradle. Follow and scan the appropriate barcode symbols to set up from programming section of this booklet

Note:

- ♦ *For first charging, always charge the batteries over 6 hours continuously to prolong your battery life.*
- ♦ *After every full charge, you may use the scanner for 8 hours continuously.*
- ♦ *Recommended charging environment is temperature in 0°C~35°C (32°F~95°F).*

2.2. Connecting the Cradle

There are two types of cradle to select for this scanner.

- ♦ Charging Cradle
- ♦ Cradle Host

Charging Cradle

This cradle designs for battery charging only, it does not support radio communication. Simply connect the external DC-9V9W power adapter into it and place scanner into cradle to start charging.

When charging is not required, it is recommended to remove the adapter plug to retain the battery life.

Cradle Host

The cradle host features with Bluetooth® wireless technology and designs to support radio communication to the scanner. It the same has charging functionality. Refer to Section 2.1 for battery charging instructions.

Connection on Cradle Host

The scanner pairs with the cradle, when the scanner scans barcode data and passes to cradle via radio communication, the cradle sends data to host by its interface cable. Steps to connect the cradle to host as follows:

1. Take the desirable interface cable and insert the RJ-45 connector to cradle cable box until you hear a clear and short “click” sound, then connect the other end to the host.
2. When using Keyboard wedge and USB interface for radio communication, it is not necessary to have an external power adapter if host has sufficient power. But these interfaces need external power adapter when charging batteries.

Note: When external power adapter (9V) is available, the cradle will disregard the power supply from host (5V).

3. If using RS-232 interface, it is necessary to plug an external power adapter always. Plug the power adapter into the DC-Jack of cradle cable box. (Shown as Figure 2-10)
4. Once cradle powers up, its LED lamp lights RED for one second then turns to flashes BLUE light. The BLUE LED means the cradle is waiting to be connected. If the scanner pairs with this cradle, they are connected, and BLUE LED light is always on.

2.3. Attach the Interface Cable

There are 3 types of interface cable to select from,

- ♦ Keyboard wedge cable
- ♦ RS-232 cable
- ♦ USB cable

Keyboard wedge cable



Figure2-8 Communication Only



Figure2-9 Communication and Charging

RS-232 Cable

Always require adapter for both communication and charging



Figure 2-10

USB Cable



Figure 2-11 Communication Only



Figure 2-12 Communication and Charging

2.4. Detach the Interface Cable

There is a hole on cradle cable box, and use a sharp pin to push down the hole while using another hand gently pull out the interface cable to release it slowly. (Shown in Figure 2-13)



Figure 2-13

3. Pairing Scanner and Cradle Host

This scanner supports three radio communication types,

- ♦ Cradle Host,
- ♦ SPP (Serial Protocol Profile) Slave
- ♦ SPP (Serial Protocol Profile) Master.

3.1. Cradle Host

The scanner and communication cradle in the same delivery box are paired in factory, as soon as both are powered on, it should find and connect to each other immediately.

However, in any circumstance that scanner and cradle are not paired with the cradle, follow steps below to redo pairing.

1. Follow procedures in Section 2.2 to connect the cradle and charging the scanner.
2. Power on the cradle and it should light in RED first then LED flashes "BLUE", and it is ready for pairing.
3. Place the scanner into cradle until a short beep heard to confirm position correctly.
4. Hold down simultaneously the two buttons at the side of cradle LED lamp (shown as Figure 3-1) for over 2 seconds.

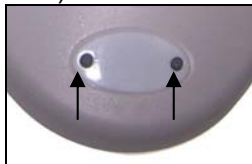


Figure 3-1

The cradle LED lights in RED and the scanner beeps as a High-Low-High beep tone, and then the scanner and cradle both LED flashes. If pairing is success, you will hear Low-High beep tone and cradle LED stays in BLUE and scanner LED stays in GREEN.

5. If the cradle is locked for pairing, or if scanner is not set in cradle host mode, it beeps twice and GREEN LED on scanner puts out.

Note:

In cradle host mode, the scanner is always in master mode and cradle is in slave mode. Therefore, you have to scan on "Unlock Pairing Mode" barcode symbol to unlock paired scanner and cradle, than connect or link to other devices.

6. As the scanner links to the communication cradle, the cradle LED stays in BLUE. If in any case the scanner link timeout or enters power down mode, then the cradle LED flashes in BLUE. Press scanner trigger or place the scanner back into the cradle, the communication links automatically again.

Note:

The default radio communication type of scanner sets in cradle host, if by any chance the scanner lost this setting, use the programming barcode symbologies provided in this booklet to set it as "Cradle Host" again.

3.2. SPP - Slave

In the mode of SPP Slave, the scanner is remote by connecting with Serial Protocol Profile (SPP) host. Therefore, please first make sure your host device is well equipped with a Bluetooth® wireless technology connectivity and an application software before following the steps below to start pairing.

Note:

All host device and application software has different operating features, here we take a Widcomm BTW utility as an example.

1. Turn on the host computer and activate its Bluetooth® connection.
2. Scan “Start of Configuration” to enter programming mode
3. Scan “SPP Slave” barcode label
4. Scan “End of Configuration” barcode label to exit programming mode. Now, the scanner LED flashes in GREEN, indicating it’s waiting to be connected.
5. In the host computer, execute the discovering procedure and find the scanner, it is always show as “ZBBT” as device name (Shown in Figure 3-2).

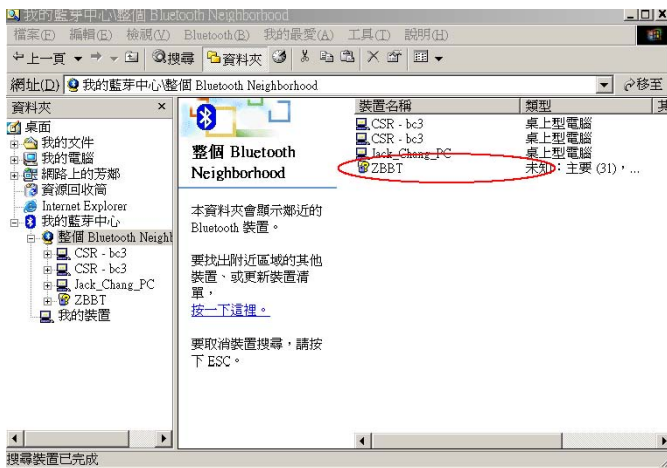


Figure 3-2

6. Select “ZBBT” the scanner, as the scanner default encryption is enabled, and you will be requested to enter the PIN code as “12345678” to start pairing.

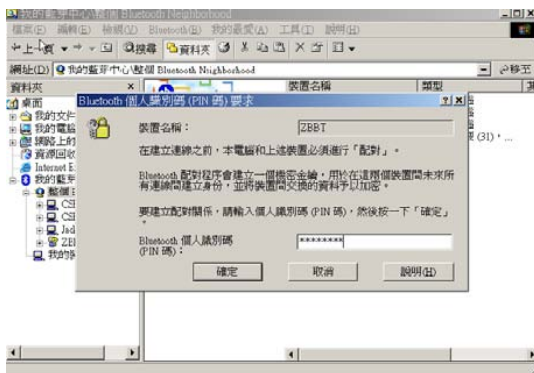


Figure 3-3

7. Double click on “ZBBT” selection and find as follow,



Figure 3-4

8. Right click on the icon and select “Connect Bluetooth Serial Port”. Once pairing is completed, the scanner will make low-high beep tone and the LED light in GREEN.

Note:

When scanner is set in slave mode, and the master device supports Piconet, this master device can connect with up to 7 slave mode scanners or equipments at the same time.



Figure 3-5

9. Right click on icon and select "Contents" and remember your SPP Bluetooth® COM port.



Figure 3-6

The following steps will help you verify the communication status; the actual application depends on your application software used.

10. Open "Program File" > "Communication" > "Hyper Terminal".

11. In the window below, enter any name and click on “OK”.



Figure 3-7

12. Select the appropriate COM port as you remembered.



Figure 3-8

13. Select COM port contents as follow then click on “OK”

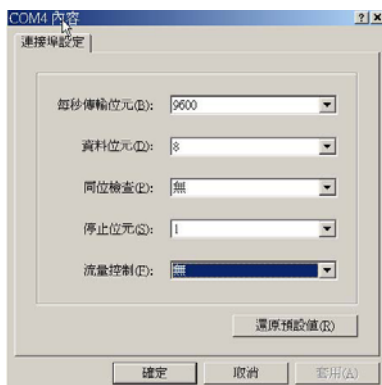


Figure 3-9

14. Test scan any barcode, and all scanned data should show in your screw.

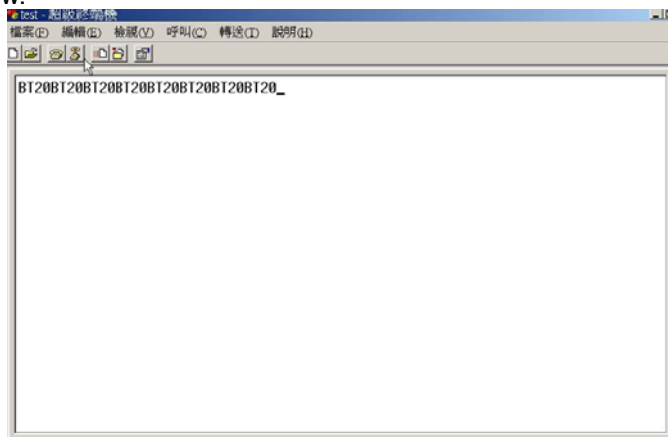


Figure 3-10

15. If the scanner LED flashes in GREEN light indicating it is off-line, or out of range. Trigger the scan button or move in of communication range to be on-line again.

3.3. SPP - Master

In this section, the scanner is configured as SPP-Master, and a pair barcode must be created to the remote Bluetooth® device to which the scanner can connect.

The 12 digits Bluetooth® address of the remote device and its PIN code must be obtained before start pairing. Such address and PIN code can be found in its manual. Follow the steps below to start pairing.

1. Power on of the remote device and have its address ready in hand.
2. Scan the “Start of Configuration” barcode label to enter programming mode.
3. Scan “SPP Master” barcode label.
4. Scan “Set Bluetooth Address” barcode label.
5. Scan from the ASCII table (Page) to enter these 12 digit address. E.g. the Bluetooth® address is “011B1345600”, scan the “0”, “0”, “1”, “1”, “B”, “1”, “3”, “4”, “5”, “6”, “0”, “0” from ASCII barcode labels.
6. Scan “Confirm the Setting” barcode label confirm the Bluetooth® address.

Hint:

It is often found too much trouble to scan ASCII barcode label, especially there are 12 digits to be entered. You can create a Code 39 barcode label of these 12 digits, and scan this code only for your Bluetooth® address entry and jump to scan “Confirm the Setting”.

The Code 39 barcode label formula as follow:

BxxxxxxxxxxT; where “x” represents as these 12 digits.

7. Scan “Set PIN Code” barcode label if required, otherwise jump to “Begin Pair with Slave”.

Note:

The PIN code is an 8 digit PIN code given by remote device, you may also enter “12345678” or ignore this entry and go directly to scan “Begin Pair with Slave” barcode label.

8. Scan “Confirm the Setting” barcode label to confirm the PIN code setting.
9. Scan “Begin Pair with Slave” barcode label and a beep tone is heard to confirm setting than start pairing.

At the same time, the scanner LED flashes in GREEN light, and if pairing successfully, then scanner will emit Low-High beep tone, GREEN light of scanner LED is on.

If pairing failed, the scanner emits a series beep tone and you can start set-up procedures all over again.

10. Scan “End of Configuration” to exit set up.

4. Paging the Scanner

Paging the scanner often happens when you have two or more pairs of scanners and communication cradles, and can not find which scanner pairs with its cradle.

Press any key on cradle, and it sends out a signal to its paired scanner, this scanner beeps 3 beeps and lights BLUE LED 3 times. But if the scanner is out of its receiving range, then it won't react to the cradle.

5. Scanning

There are two ways to scan with this device.

- ♦ Handheld scanning
- ♦ Hands-free scanning

5.1 Handheld Scanning

In the handheld scanning, hand held the scanner and simply aim at a barcode label and push the scanner trigger to scan (Shown as Figure 5-1). Avoid aim vertically to the barcode label as a total reflection might effect the scanning performance.



Figure 5-1

5.2 Hands-free Scanning

Put the scanner into the cradle for hands-free scanning, and move the barcode label approach the scanner scanning zone (Shown as Figure 5-2).



Figure 5-2

6. Data Transmit Method

The data transfer method includes four types, Normal (default), Out-of-Range Mode, Standard Batch Mode and Cradle Contact Batch Mode. Users may modify this setting according to their preferences.

6.1 Normal (default)

The scanner is not storing any data. When the scanner is within the connection range, the scanned data will be transferred to the host computer immediately (a good beep sound is made). If the scanner is out of its connecting range, the scanner scans and emits 4 high-tone series of beep sound, indicating data transmitting error.

6.2 Out-of-Range Mode

In this mode, the scanner is out of its wireless communication range. When scan a barcode label, the scanner LED flashes BLUE light indicating barcode reading success, but emit 4 high-tone series of beeps to indicate the communication breaks.

If the communication is not connected still, the scanner LED now flashes twice per second in GREEN light, and barcode data read is saved into memory.

When scanner is back into its communication range or re-connected, the stored data is sent when scanning next barcode label.

When data send to host, a medium-tone is heard indicating transmitting successfully.

6.3 Standard Batch Mode

Whether within the connection range or not, in Standard Batch Mode, the scanner stores all scanned data which will be transferred to the host computer after scanning "Send Batch Data" label.

6.4 Cradle Contact Batch Mode

Working the same as Standard Batch Mode except all scanned data will only be transferred to the host computer when the scanner is put into the cradle.

When the scanner is put into the cradle, a short-tone beep sound is made to confirm the scanner is fitted into the cradle correctly, then the scanner LED flashes 3 times in BLUE light and stay on, then the scanner starts transferring scanned data. Once the transfer is done, a long medium-tone beep sound will be made.

In this mode, the scanner is NOT required to be paired with the cradle to transfer the scanned data.

Note:

After the scanned data is transferred to the host computer, the scanner automatically clears out its flash memory.

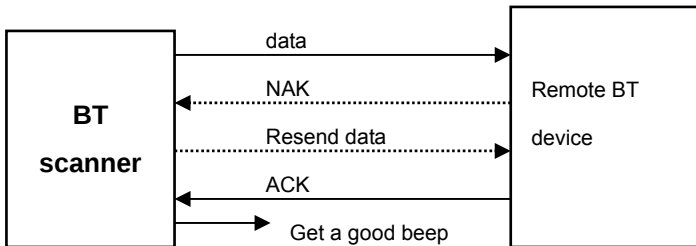
7. ACK/NAK protocol or Frame packing

When scanner is in SPP Master/Slave mode, and add in the data protocol or packing could confirm the data reliability. Refer to below for different setting options:

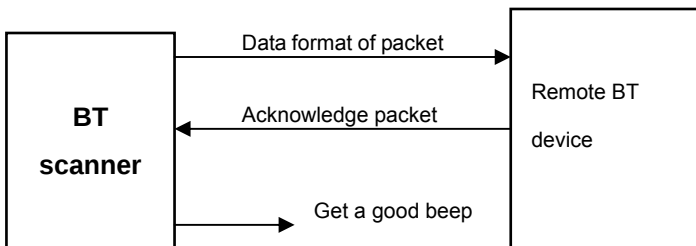
a) No ACK/NAK protocol:



b) ACK/NAK only



c) Frame packing:



Scanner to remote application

Data Format of packet

To send a data (barcode) to the remote application, the BT scanner has to encapsulate it:

EAH(Header)	Size of payload	FEH(Format Byte)	Data ID	Data	AEH(End of Byte)	Reserved Byte
1 byte	1 byte	1 byte	1 byte	Varies	1 byte	1 byte

Title	Definition
Header Character (EAH)	The character ID at the head of every data. It has to start with EAH.
Size of Payload	The encapsulated data length excluding header character.
Format Byte (FEH)	Differentiate data format; barcode data is always FEH.
Data ID	The number of each data. If receive the same ID more than once, only the first one is valid, delete the rest.
Data	Decoded barcode data
End of Byte (AEH)	Record data ends.
Reserved Byte	Reserved for future use

Example:

If barcode data is "ABCD", then sender sends out:

EAH + 9H + FEH + ID + "ABCD" + AEH + Reserved Byte

$$9 = 1+1+1+4+1+1$$

Acknowledge packet

55H (Header)	Data ID	55H (end of byte)
1 byte	1 byte	1 byte

Example:

If scanner sends out:

EAH , 9H , FEH , 01H , "ABCD " , AEH , EEH

Remote acknowledges:

55H +01H + 55H

8. Beeper Indication

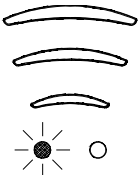
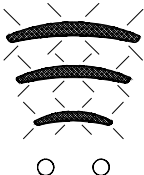
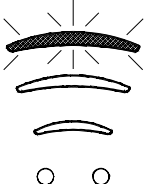
The scanner is featured with different beep sounds to assist understanding its working status. Please see below for detailed indications of beep sounds.

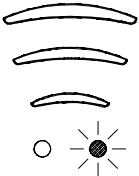
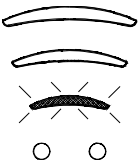
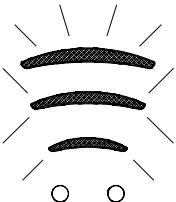
Beep Sound	Indication
Single beep	Good decode, and data is either transferred to the host computer or saved in the memory.
2 short high-tone beeps	Low battery warning.
3 short low-tone beeps	The flash memory is full.
2 long high-tone beeps	The scanner has completed data transfer in either Standard Batch Mode or Cradle Contact Batch Mode.
4 short high-tone beeps	Error occurred. ex. pairing is broken up, programming error and etc.
Low to high-tone beeps	The Bluetooth® connection is good.
Short high-low-high-tone beeps	Start pairing
Short medium-tone and long low-tone beeps	Powering off

9. LED Indication

The scanner and the radio communication cradle are both featured with LED lights, assisting you to understand their status during the work. Please see below for detailed LED indications.

9.1 The Scanner

LED Illustration	Indication
	GREEN LED Flash (i) Once per second The scanner is trying to pair with the host, or such pairing has broken up. (ii) Twice per second The scanner is in Out-of-Range mode, and the scanner is trying to build up a connection with the host, or such connection has broken up. (iii) Constantly on The scanner is paired.
	BLUE LED Bars Flash (i) Once A data has been decoded, and is either transferred to a host computer or saved in memory by the scanner. (ii) Continuously The scanner is in programming mode.
	Constant Light on with First "BLUE" LED Bar The scanner is either in Standard Batch Mode or in Cradle Contact Batch Mode.

	Constant RED LED Light On When the scanner is in the cradle, it indicates the scanner is under charging.
	Constant Light on with Third “BLUE” LED Bar When the scanner is in the cradle, it indicates the scanner charging is completed.
	All BLUE LED Bars (i) Constantly Light On The scanner is transferring data to the host computer and is in either Standard Batch Mode or Cradle Contact Batch Mode. (ii) Flash Twice Every 3 Seconds The scanner has a low battery

9.2 The Communication Cradle

LED Illustration	Indication
LED Flashes in BLUE Light	The cradle is waiting for pairing.
LED Constantly On in BLUE Light	The cradle is paired with a scanner.
LED Alternately Flashes in BLUE and RED Light	The cradle initiate failed and power reset is required.
RED LED Flashes Once	The cradle has received data from the paired scanner.
LED Constantly On in RED Light	The cradle is processing pairing.

10. Maintenance

This device provides reliable and efficient operation with a minimum of care. Although specific maintenance is not required, but as to prolong the operating life of the device, the following precautions needs to be ensured.

10.1 Cleaning the Window and Housing

Any visibly dirty, or scratch on the scanner window will degrade reading performance, therefore do not use abrasive wipes or tissues on the window. When the scanner is not operating, use a soft cloth or lens tissue and gently wipe the scanning window lens.

Do not spread liquid or submerge into liquid in any circumstance.

Never use solvents (e.g., acetone, benzene, ether, or phenol-based agents) on the housing or window, solvents may damage the housing finish or the window.

10.2 Inspecting on Interface Cables

Inspect regularly on the interface cables and its connectors, a badly worn or damaged cable or connectors may interfere the scanning operation. Contact your distributor for information on cable replacement.

10.3 Battery

The lifetime of rechargeable batteries would rely on the number of times the batteries are recharged. Hence, we recommend users to keep default setting and charge in Smart Charge mode (Refer to Section 2.1 for Charging Details). In general, we recommend charge the scanner at the end of each working day or when the scanner requires charging.

11. Programming Guide

Scanning a series of programming bar code labels can configure the scanner. 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 must be properly powered before programming. If you are about to change the cradle host of parameter, the scanner and cradle must be in pairing status to prevent failure in programming operation.

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

11.1 Default Parameters

The factory default setting 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 mode.

Factory Default Setting

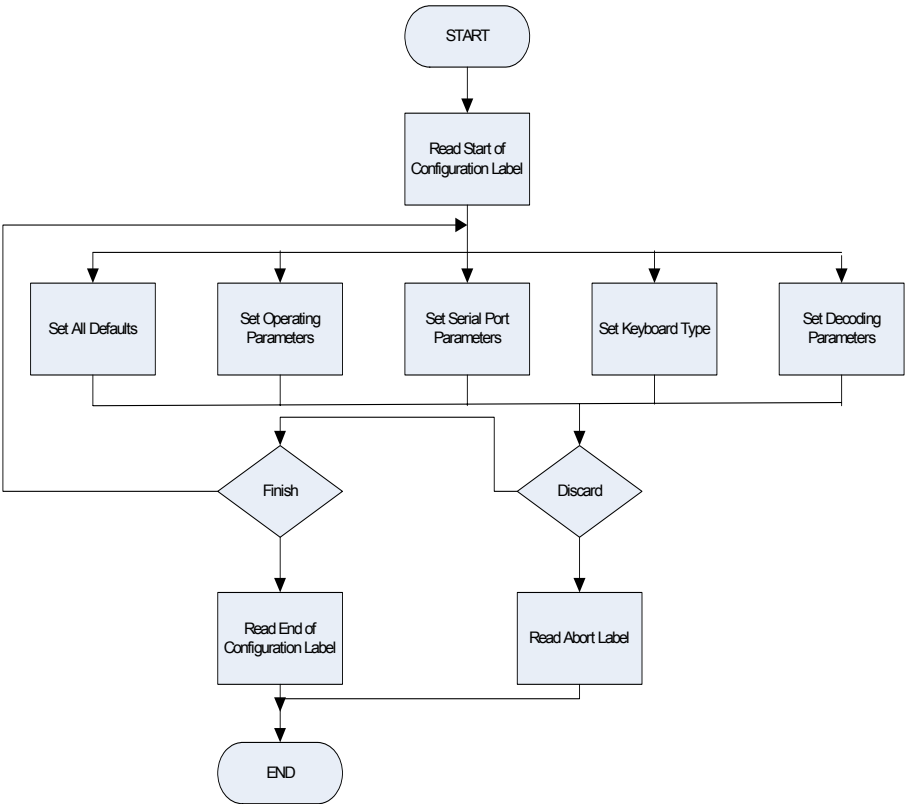
Parameter	Default
Radio communication	
Bluetooth Host	Cradle Host
Pairing mode	Unlocked
Data transmit	Normal
Radio protocol timeout	5 seconds
Power off timeout	20 minutes
Encryption	Enable
Cradle Host	
RS-232 communication	
Baud rate	9600
Parity	none
Data Bits	8
Stop Bit	1
RTS/CTS	off
Terminator	<CR><LF>
Keyboard Wedge Communication	
Terminal Type	PC/AT
Keyboard	US keyboard
Terminator	Enter(Alpha numeric)
USB Communication	
Terminator type	Enter
Code mode	Scan code

Keyboard	US keyboard
Wand Emulation	
Wand emulation speed	Normal
Data output	Black=high
Pair contact on cradle	Enable
Scanner	
Decoder Selection	Default
EAN/UPC	Enable
CODE 39	Enable
Code 32	Disable
CODABAR	Enable
ITF 2 OF 5	Enable
MSI	Disable
Chinese Post code	Disable
Code 93	Enable
Code 128	Enable
EAN-128	Disable
Beeper sound	Default
Frequency	High
Duration	Medium
Operating parameter	Default
Scan mode	Trigger mode
Stand mode	Enable
Header and Trailer	None
Inter-Message delay	None
Inter character delay	None
Code Identifiers	Default
Identifier code as ZEBEX standard	Disable
Identifier code as AIM standard	Disable
Code 39 identifier code	M
ITF 2 of 5 identifier code	I
Chinese post code identifier code	H
UPC-A identifier code	A
UPC-E identifier code	E
EAN-13 identifier code	F
EAN-8 identifier code	FF
Codabar identifier code	N
Code 128 identifier code	K
Code 93 identifier code	L
MSI identifier code	P

11.2 Default Data Transmit Format

Code	Message format
EAN-13	D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13
EAN-8	D1 D2 D3 D4 D5 D6 D7 D8
UPCA	D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12
UPCE	D1 D2 D3 D4 D5 D6 D7 D8
CODE128	D1-Dx (default 3~62)
EAN128	]C1 D1-Dx (default 3~62)
CODE39	D1-Dx (default 3~62)
CODABAR	D1-Dx (default 6~32)
INTERLEAVED 2/5	D1-Dx (default 6~32)
CHINESE POST CODE	D1-Dx (default 8~32)
CODE93	D1-Dx (default 3~32)
MSI	D1-Dx (default 6~32)

11.3 Program Procedure Using Barcode Manual



11.4 Parameter Setting

Note: Default values are highlighted in grey background.



Start Of Configuration

System Function Setting

Barcode Value

Description



Return **scanner** to factory defaults



Return **cradle host** to factory defaults



Display firmware version



Return to USB default
(Communication cradle link required)



Return to wand emulation default
(Communication cradle link required)



Return to RS232 default
(Communication cradle link required)



IBM PC/AT/PS/2 Keyboard emulation
(Communication cradle link required)



Abort
(exit programming mode without any updates)



End Of Configuration



Start Of Configuration

Radio Communication Setting

Cradle Host mode



Cradle Host mode enable



Pairing on cradle enable



Pairing on cradle disable



Unlock pairing mode



Lock pairing mode



Undo pairing



Charging on cradle always
(Batteries start charging whenever scanner is on cradle.)



Charging by press trigger on cradle



End Of Configuration



Start Of Configuration

SPP Master/Slave mode



Scanner SPP Master enable



Scanner SPP Slave enable



Setting Bluetooth® address (SPP Master only)



Set PIN code (SPP Master only)



Save setting to confirm (for address and pin code setting required)



Required Pair with slave (SPP Master)



Discover enable



Discover disable



Encryption enable



Encryption disable



Data communication without protocol



Data communication with ACK/NAK protocol



Data communication with Packing protocol



End Of Configuration



Start Of Configuration

Batch Mode



Data transmit normal



Out of range buffer enable



Standard Batch mode



Batch mode on cradle



Send Batch data by scanning this label



Clear batch data after send



Clear batch data by scanning "Delete batch data" label



Delete batch data



Send batch data on cradle contact



Send batch data by press trigger on cradle contact



Out of range resend data with beeper sound



Out of range resend data without beeper sound



End Of Configuration



Start Of Configuration

Radio protocol communication parameter



Radio protocol timeout= 3 second



Radio protocol timeout= 5 second



Radio protocol timeout =8 second



Radio protocol timeout= 10 second



Radio protocol timeout =13 second



Radio protocol timeout =16 second



Radio protocol timeout= 20 second



Power off timeout=5 minute



Power off timeout=10 minutes



End Of Configuration



Start Of Configuration



Power off timeout=20 minutes



Power off timeout=30 minutes



Power off timeout=1 hours



Power off by scanning this label



Link beeper enable



Link beeper disable



End Of Configuration



Start Of Configuration

Same Code Delay



50msec



200msec



400msec



600msec



800msec



100msec



300msec



500msec



700msec



1000msec



Infinite



End Of Configuration



Start Of Configuration

Operation Function Setting

Good Read Beeper Tone Selection



Medium beeper tone



High beeper tone



Low beeper tone



Speaker disable

Beeper Sound Selection



Long



Medium



Short



Ultra Short



Ultra Long



End Of Configuration



Start Of Configuration



Inter Character Delay
0ms



2ms



5ms



10ms



20ms



50ms



Inter Message Delay
0 ms



100 ms



500 ms



1000 ms



End Of Configuration

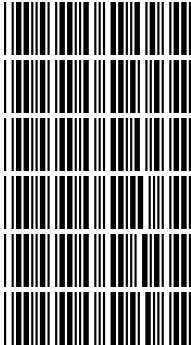


Start Of Configuration

Interface Settings

1. RS-232C Interface Setting

Baud Rate



115200

19200

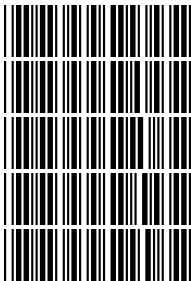
9600

4800

2400

1200

Parity Bit



Even parity

Odd parity

Mark parity

Space parity

None parity

Stop Bit



1 stop bit

2 stop bit

Data Bit



7 data bit

8 data bit



End Of Configuration



Start Of Configuration

Handshaking Protocol



None handshaking



ACK/NAK



Xon/Xoff



RTS/CTS



Enable BEEPER ON<BEL> CHARACTER



Ignore Beep on<BEL> character



Disable ACK/NAK timeout beeper



Enable ACK/NAK timeout beeper(three sound beeper sound)



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



End Of Configuration



Start Of Configuration



Message Terminator

RS-232 message terminator—none



RS-232 message terminator—CR/LF



RS-232 message terminator—C



RS-232 message terminator—LF



RS-232 message terminator—H tab



RS-232 message terminator—STX/ETX



RS-232 message terminator—EOT



End Of Configuration



Start Of Configuration

2. Keyboard Wedge Setting

Keyboard Wedge Setting



IBM PC/AT/PS/2 Keyboard emulation



International Keyboard mode.(ALT method).



Keyboard language support---USA



Keyboard language support---UK send scan code



Keyboard language support---GERMANY



Keyboard language support---FRENCH send scan code



Keyboard language support---SPANISH send scan code



Keyboard language support---ITALIAN send scan code



Keyboard language support---Switzerland send scan code



Keyboard language support---Belgium send scan code



Keyboard language support---Japanese



Capital lock on



Capital lock off



Function key emulation enable



Function key emulation disable



Send number as normal data



Send number as keypad data



End Of Configuration



Start Of Configuration



Message Terminator

Keyboard terminator---none



Keyboard terminator---Enter



Keyboard terminator---H-TAB



End Of Configuration



Start Of Configuration

3. USB Interface Setting

USB interface



International Keyboard mode.(ALT method).



Keyboard language support---USA



Keyboard language support---GERMANY



Keyboard language support---FRENCH send scan code



Keyboard language support---SPANISH send scan code



Keyboard language support---Japanese

Message Terminator



Keyboard terminator---none



Keyboard terminator---Enter



Keyboard terminator---H-TAB



End Of Configuration



Start Of Configuration

4. Wand Emulation Setting

Wand emulation is not supported as standard, if needed, please contact your distributor.

Wand Emulation



All barcode will be decoded and transmitted in that symbology



Enable Wand output data format as CODE39



Wand emulation data output black=high

- Scan this bar code to set quiet zones and spaces low and bars =high.



Wand emulation data output black=low

- Scan this bar code to set quiet zones and spaces high and bars=low



Idle = high

- Idle state refers to the TTL logic level of the Wand Emulation signal when not in use



Idle = low

- Idle state refers to the TTL logic level of the Wand Emulation signal when not in use



End Of Configuration



Start Of Configuration

Wand Emulation (Cont'd)



Wand emulation speed-----Low

- This option allows the transmission of wand emulation at 1ms narrow element width



Wand emulation speed-----medium

- This option allows the transmission of wand emulation at 600us narrow element width



Wand emulation speed-----normal



Wand emulation speed-----high

- This option allows the transmission of wand emulation at 300us narrow element width



Wand emulation speed-----higher

- This option allows the transmission of wand emulation at 100 us narrow element width



Wand emulation narrow/wide ratio 1:2



Wand emulation narrow/wide ratio 1:3



End Of Configuration



Start Of Configuration

The Symbolologies

CODABAR Parameter Setting



Codabar enable



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



CODABAR disable



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



Codabar start/stop character
transmission-----none



Codabar maximum length setting



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



Codabar minimum length setting



Save setting to confirm (for length setting)



Codabar concatenation disable



Validate modulo 16 and transmit



Codabar concatenation enable



Codabar data redundant check=off



No check character



Codabar data redundant check=1



Validate modulo 16,but don't transmit



Codabar data redundant check=2



End Of Configuration



Start Of Configuration

Code 39 Parameter Setting



Code 39 enable



FULL ASCII code 39



Code 39 disable



Code 39 start/stop character transmission



Code 39 start/stop character without transmission



Code 32 enable



Code 32 disable



Code 39 check digit calculate and transmit



No check character



Code 39 check digit calculate but without transmit



Code 39 data redundant check=off



Code 39 data redundant check=1



Code 39 data redundant check=2



End Of Configuration



Start Of Configuration

Code 39 Parameter Setting (Cont'd)



Code 39 maximum length setting



Code 39 minimum length setting



Save setting to confirm (for length setting)



Code 39 concatenation enable



Code 39 concatenation disable



Code 32 (Italian pharmacy) transmit "A"
character



Code 32 (Italian pharmacy) without transmit "A"
character



End Of Configuration



Start Of Configuration

Code 93 Parameter Setting



Code 93 enable



Code 93 disable



Code 93 data redundant check=off



Code 93 data redundant check=1



Code 93 data redundant check=2



Code 93 maximum length setting



Code 93 minimum length setting



Save setting to confirm (for length setting)



Code 93 check digit calculate but without transmit



Code 93 check digit not calculate and without transmit



Code 93 check digit calculate and transmit



End Of Configuration



Start Of Configuration

Code 128



Code 128 enable



Code 128 disable



EAN 128 enable



EAN 128 disable



Code128 FNC2 concatenation enable



Code128 FNC2 concatenation disable



Code 128 data redundant check=off



Code 128 data redundant check=1



Code 128 data redundant check=2



Code 128 maximum length setting



Code 128 minimum length setting



Save setting to confirm (for length setting)



End Of Configuration



Start Of Configuration



Chinese Post Code

Chinese post code enable



Chinese post code disable



Chinese post codedata redundant check=off



Chinese post code data redundant check=1



Chinese post codedata redundant check=2



Chinese post code maximum length setting



Chines post code code minimum length setting



Save setting to confirm (for length setting)



End Of Configuration



Start Of Configuration

MSI/Plessey



MSI enable



MSI disable



MSI data redundant check= off



MSI data redundant check=1



MSI data redundant check=2



MSI/PLESSY maximum length setting



MSI/PLESSY minimum length setting



Save setting to confirm (for length setting)



MSI/Plessey double check digit calculate but not transmit



MSI/Plessey double check digit calculate and both transmit



MSI/Plessey double check digit without calculate and transmit



MSI/Plessey single check digit calculate but without transmit



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



MSI/Plessey single check digit calculate and transmit



End Of Configuration



Start Of Configuration

ITF 2 of 5



ITF 2 of 5 enable



ITF 2 of 5 disable



IATA code enable



IATA disable



ITF 2 of 5 check digit calculate and transmit



ITF 2 of 5 check digit calculate but without transmit



ITF 2 of 5 no check character



ITF 2 of 5 one Fixed length setting



ITF 2 of 5 two Fixed length setting



ITF 25 data redundant check=off



ITF25 data redundant check=1



ITF25 data redundant check=2



ITF 2 of 5 code minimum length setting



ITF 2 of 5 length variable



ITF 2 of 5 code maximum length setting



Save setting to confirm (for length setting)



End Of Configuration



Start Of Configuration

UPC/EAN/JAN



EAN convert to ISSN/ISBN enable



EAN convert to ISSN.ISBN disable



UPC/EAN/JAN ALL ENABLE



EAN-8 ENABEL



UPC-A AND EAN-13 ENABLE



EAN-8 OR EAN-13 ENABLE



UPC-A AND UPC-E ENABLE



UPC-E ENABLE



EAN-13 ENABLE



UPC-A ENABEL



UPC/EAN Addendum Disable



Add on 5 only



Add on 2 only



Add on 2 or 5



Force UPC-E to UPC-A format enable



Force UPC-E to UPC-A format disable



End Of Configuration



Start Of Configuration

UPC/EAN/JAN (Cont'd)



Force UPC-A to EAN-13 format enable



Force UPC-A to EAN-13 format disable



Transmit UPC-A check digit enable



Transmit UPC-A check digit disable



Transmit UPC-E check digit enable



Transmit UPC-E check digit disable



Transmit UPC-E leading character enable



Transmit UPC-E leading character disable



Transmit UPC-A leading character enable



Transmit UPC-A leading character disable



Transmit EAN-13 check digit disable



Transmit EAN-13 check digit enable



Transmit EAN-8 check digit enable



Transmit EAN-8 check digit disable



End Of Configuration



Start Of Configuration

UPC/EAN/JAN (continued)



force EAN-8 to EAN-13 format enable



force EAN-8 to EAN-13 format disable



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



EAN-13 country code first:"0" can't be transmitted



Add-on format with separator



Add-on format without separator



EAN/UPC +add-on (none mandatory)



EAN/UPC +add-on (mandatory)



End Of Configuration



Start Of Configuration

Data Editing

Identifier Code



Disable identifier code



Enable identifier code table as ZEBEX standard



Enable identifier code table as AIM standard.



UPC-A identifier code setting



EAN-13 identifier code setting



EAN-8 identifier code setting



CODE 39 identifier code setting



CODABAR identifier code setting



ITF 2 of 5 identifier code setting



CODE 128 identifier code setting



CHINESE POST CODE identifier code setting



CODE 93 identifier code setting



UPC-E identifier code setting



MSI identifier code setting



Save setting to confirm (for length setting)



Add code length as header enable (2 Bytes)



Add code length as header disable (2 Bytes)



End Of Configuration



Start Of Configuration

Header And Trailer



Header (Preamble)



Trailer (Postamble)



Truncate header character



Truncate trailer character



End Of Configuration



Start Of Configuration

Full ASCII Code 39 Table

Code 39	ASCII	Hexa-code	Code 39	ASCII	Hexa-code
	Full ASCII ---NUL	00		Full ASCII ---SI Function key----"Shift"	0F
	Full ASCII ---SOH Function key----"Ins"	01		Full ASCII ---DLE Function key----"5(num)"	10
	Full ASCII ---STX Function key----"Del"	02		Full ASCII ---DC1 Function key----"F1"	11
	Full ASCII ---ETX Function key----"Home"	03		Full ASCII ---DC2 Function key----"F2"	12
	Full ASCII ---EOT Function key----"End"	04		Full ASCII ---DC3 Function key----"F3"	13
	Full ASCII ---ENQ Function key----"Up arrow"	05		Full ASCII ---DC4 Function key----"F4"	14
	Full ASCII ---ACK Function key----"Down arrow"	06		Full ASCII ---NAK Function key----"F5"	15
	Full ASCII ---BEL Function key----"Left arrow"	07		Full ASCII ---SYN Function key----"F6"	16
	Full ASCII ---BS Function key----"Backspace"	08		Full ASCII ---ETB Function key----"F7"	17
	Full ASCII ---HT Function key----"TAB"	09		Full ASCII ---CAN Function key----"F8"	18
	Full ASCII ---LF Function key----"Enter (alpha numeric)"	0A		Full ASCII ---EN Function key----"F9"	19
	Full ASCII ---VT Function key----"right arrow"	0B		Full ASCII ---SUB Function key----"F10"	1A
	Full ASCII ---FF Function key----"PgUp"	0C		Full ASCII ---ESC Function key----"F11"	1B
	Full ASCII ---CR Function key----"Enetr(num.)"	0D		Full ASCII ---FS Function key----"F12"	1C
	Full ASCII ---SO Function key----"PgDn"	0E		Full ASCII ---GS Function key----"ESC"	1D



End Of Configuration



Start Of Configuration

Full ASCII Code 39 Table (continued)

Code 39	ASCII	Hexa- code	Code 39	ASCII	Hexa- code
	Full ASCII ---RS Function key-----"CTL(L)"	1E		Full ASCII ----	2D
	Full ASCII ---US Function key-----"ALT(L)"	1F		Full ASCII ---	2E
	Full ASCII ---SP	20		Full ASCII ---/	2F
	Full ASCII ---!	21		Full ASCII ---0	30
	Full ASCII ---"	22		Full ASCII ---1	31
	Full ASCII ---#	23		Full ASCII ---2	32
	Full ASCII ---\$	24		Full ASCII ---3	33
	Full ASCII ---%	25		Full ASCII ---4	34
	Full ASCII ---&	26		Full ASCII ---5	35
	Full ASCII ---'	27		Full ASCII ---6	36
	Full ASCII --- (	28		Full ASCII ---7	37
	Full ASCII ---)	29		Full ASCII ---8	38
	Full ASCII ---*	2A		Full ASCII ---9	39
	Full ASCII ---+	2B		Full ASCII ---:	3A
	Full ASCII ---,	2C		Full ASCII ---;	3B



End Of Configuration



Start Of Configuration

Full ASCII Code 39 Table (continued)

Code 39	ASCII	Hexa- code	Code 39	ASCII	Hexa- code
	Full ASCII ---<	3C		Full ASCII ---K	4B
	Full ASCII ---=	3D		Full ASCII ---L	4C
	Full ASCII --->	3E		Full ASCII ---M	4D
	Full ASCII ---?	3F		Full ASCII ---N	4E
	Full ASCII ---@	40		Full ASCII ---O	4F
	Full ASCII ---A	41		Full ASCII ---P	50
	Full ASCII ---B	42		Full ASCII ---Q	51
	Full ASCII ---C	43		Full ASCII ---R	52
	Full ASCII ---D	44		Full ASCII ---S	53
	Full ASCII ---E	45		Full ASCII ---T	54
	Full ASCII ---F	46		Full ASCII ---U	55
	Full ASCII ---G	47		Full ASCII ---V	56
	Full ASCII ---H	48		Full ASCII ---W	57
	Full ASCII ---I	49		Full ASCII ---X	58
	Full ASCII ---J	4A		Full ASCII ---Y	59



End Of Configuration



Start Of Configuration

Full ASCII Code 39 Table (continued)

Code 39	ASCII	Hexa- code	Code 39	ASCII	Hexa- code
	Full ASCII ---Z	5A		Full ASCII ---i	69
	Full ASCII ---[	5B		Full ASCII ---j	6A
	Full ASCII ---\	5C		Full ASCII ---k	6B
	Full ASCII ---]	5D		Full ASCII ---l	6C
	Full ASCII ---^	5E		Full ASCII ---m	6D
	Full ASCII ---_	5F		Full ASCII ---n	6E
	Full ASCII ---`	60		Full ASCII ---o	6F
	Full ASCII ---a	61		Full ASCII ---p	70
	Full ASCII ---b	62		Full ASCII ---q	71
	Full ASCII ---c	63		Full ASCII ---r	72
	Full ASCII ---d	64		Full ASCII ---s	73
	Full ASCII ---e	65		Full ASCII ---t	74
	Full ASCII ---f	66		Full ASCII ---u	75
	Full ASCII ---g	67		Full ASCII ---v	76
	Full ASCII ---h	68		Full ASCII ---w	77



End Of Configuration



Start Of Configuration

Full ASCII Code 39 Table (continued)

Code 39	ASCII	Hexa- code	Code 39	ASCII	Hexa- code
	Full ASCII ---x	78		Full ASCII ---	7C
	Full ASCII ---y	79		Full ASCII ---}	7D
	Full ASCII ---z	7A		Full ASCII ---~	7E
	Full ASCII ---{	7B		Full ASCII ---DEL	7F



End Of Configuration