

Hand Held Scanner

User's Maunal



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Chapter 1 Overview

As a keyboard scanner supports most of the popular PCs and IBM terminals.

As a RS232 serial scanner sends data by using RS232 communication protocol. The communication speed (baud rate) ranges from 300 bps to 38400bps.

As a RS232 terminal interface, systems with ANSI ASCII communication environment such as UNIX, XENIX are installed between a host computer and a terminal and supports full duplex and block communication modes.

As a wand emulation scanner, the output of the scanner emulates a wand scanner output. Two output formats are supported. Code 39 format and Native Code 39 format, the scanner always outputs the same data contents but with Code 39 what symbology. Native scanner the same contents and symbology as the scanned label.

The scanner supports the following bar code symbologies:

- | | |
|----------------------------------|-----------------------------------|
| *Code 39 Standard and Full ASCII | * Codabar. |
| *UPC/EAN with supplement codes. | * UCC/EAN128 |
| *Interleaved 2 of 5. | * Code 32(Italian pharmacy). |
| *Standard 2 of 5. | *Code 93. |
| *MSI code | *Code 128. |
| *Plessey code. | *China Postal Code (Toshiba Code) |

Chapter 2 Keyboard Interface

As a keyboard Interface, the scanner is actually installed between PC (or terminal) and keyboard. See Figure for reference. The scanner sends data to the host device by emulating the keyboard input and acts like an extension of the keyboard.

2.1 Installation

This scanner can be installed easily by following the installation guide illustrated below. Before you start the installation, locate a "Y" type cable in the package.

Installation procedures:

- 1) Plug the modular (RJ45) connector of the "Y" cable into the bottom of the scanner until you hear a click sound.

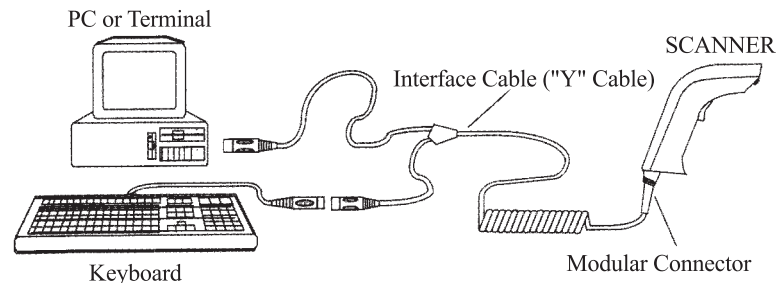


Figure 1. Installed as a Keyboard Interface

- 2) Turn off your PC or terminal.
- 3) Unplug the keyboard from the PC or terminal.
- 4) Plug the keyboard into a connector of the Y cable that mates with it.
- 5) Plug the remaining connector of the "Y" cable into the keyboard port of your PC or terminal.
- 6) Power up your PC or terminal you press the switch the beam should be out from the scanner.

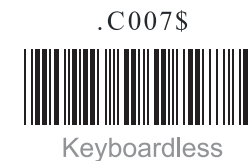
- 7) If nothing happens at step 6, check all cable connections first and make sure your PC or terminal has been powered. Contact technical support if.
- 8) Unless the scanner has been prior installed for the PC/terminal, user may have to select a proper device number from Group 1 of Appendix D.
- 9) The Default setting of this scanner is IBM PC/AT and PS/2. If you like to make sure that you have the right selection, you may scan the following label.



2.2 Installed on without keyboard or laptop computer

The scanner has the capability to answer the keyboard inquiry made by PC to avoid "Keyboard Error" message when keyboard is not present.

This implementation is useful to the applications where keyboard entry is not necessary. You may scan the following label to enable this feature. (Some of the laptop computers may not work properly with this feature. Please contact your local vendor for further support.)



2.3 Installed as an USB Interface

You can install the scanner with the USB interface cable to work with either PC or iMac USB port. See Figure 1.1 for reference. Your operating system may require the original setup CD to install the driver with initial setup.

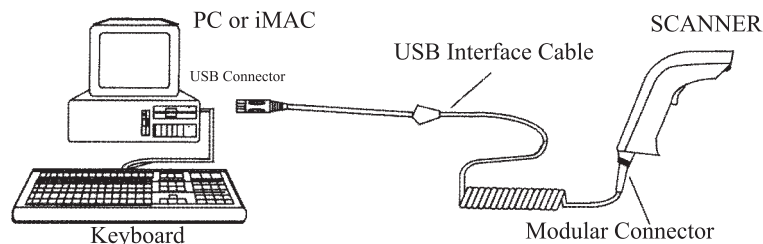


Figure 1.1 Installed as an USB Interface

The factory default setting should work with either PC or iMac USB Interface, you may also scan the following label to make sure you get the right device setting.



2.4 Understanding the Operating Parameters

There are some operating parameters that can be configured to work for different applications.

Intercharacter Delay

Intercharacter delay is the time period that the scanner will wait before transmitting the next character after the first character was sent. If data sent by the scanner was incorrect or missing characters, a longer intercharacter delay may solve the problem.

Interblock Delay

Interblock delay is the minimum time interval between two adjacent scanning. If the processing speed of your host device is slower than your scanning speed, a longer interblock delay may ensure the data integrity.

Function Code

The scanner can emulate function and other special keys on the keyboard by scanning some pre-defined labels. Appendix B includes those labels for special keys on PC, Macintosh, and IBM terminals. As an option, you may also print these labels by printing their corresponding Code 39 characters (in brackets) to work with scanner.

Caps-Lock

This parameter tells the scanner the current Caps-Lock status of the keyboard so that the character transmitted by the scanner is in correct case.

* Auto Trace (For PC AT/XT only):

In Auto Trace mode, the scanner will keep track of the Caps-Lock status automatically. For some PCs, the scanning performance may be compromised because of the auto tracing. If the scanning performance is poor (or can not scan), or the scanner can not output the upper/lower case characters correctly, try to select one of the next two choices instead of auto tracing.

* Lower Case:

When the keyboard is in the unshifted state (CapLock is not pressed), select "Lower Case".

* Upper Case:

When keyboard has the CapLock key on, select "Upper Case".

Alt Key Mode

"ALT Key Mode" is a choice in the language selection. Sending characters by ALT key plus keys on the numeric keypad is a feature in MS-DOS. When selecting "ALT Key Mode", the scanner sends out the native ASCII combination codes to represent each character of the bar code scanned. If your system accepts ALT key sending, you can enable this mode and ignore selections of the "Upper/Lower Case" and "Language".

You may find these settings on the Appendix D page D2 and D3.

Chapter 3 RS232 Serial Interface

3.1 Installation

To use the scanner as a RS232 serial interface, a RS232 interface cable and a power adaptor are required. See chapter 8 for cable pinout and adapter specification. Figure 2 shows an installation diagram for your reference.

Installation procedures:

- 1) Make sure the scanner's cable has the right connector and pinout for the RS232 port of the host device. If the pinout is different from device, swapping pins is necessary to achieve proper communication.
- 2) If the host device has power output at RS232 interface port, the scanner can be powered by connecting that power line to pin 9 of the scanner connector. If there is no power at RS232 port, adapter is needed Plug the adapter into the DB type connector at the end of the interface cable.

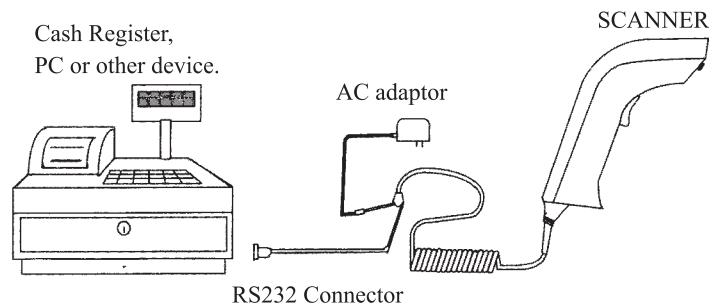


Figure 2. Installed as a Serial Interface

- 3) Plug the DB type connector of the interface cable into host's RS232 port and power up the device.
- 4) When the scanner is powered, a long beep sound indicates the scanner is ready to use.

3.2 Understanding the Operating Parameters

Device Type



Baud Rate, Parity and Data Bit:

These parameters set the scanner's communication protocol that must be matched by the host. The default setting for the serial interface is 9600 baud rate, none parity, and 8 data bit.

- * Baud Rate can be 300, 600, 1200, 2400, 4800, 9600, 19200, or 38400 bps.
- * Parity can be even, odd, space, mark, or none.
- * Data Bit can be 7 or 8 long.

The scanner may not support settings with Data Bit as 7 and Parity as none combination. Such combination is treated as 7 data bits with MARK parity.

Handshaking:

The scanner supports CTS/RTS handshaking as an option. The hardware handshaking is supported on character by character basis.

During the communication, the scanner will stop sending data until the CTS is valid within time specified by the Time Out parameter. During this time-out waiting period:

- If CTS is valid.
- If CTS is not valid, the scanner sounds an error beep and discards the current buffered data.

BCC Character:

BCC check character is calculated for entire data stream by using “Exclusive OR” method. It is sent after data stream for data verification.

Time Out:

You can adjust the Time Out duration for handshaking and ACK/NAK protocol to fit applications.

3.3 Serial TTL

This scanner supports serial TTL interface, which follows the RS232 communication data format but with TTL voltage output ranged from 0V to 5V.

Chapter 4 Terminal Interface

4.1 Installation

To install the scanner as a terminal interface, you need a DB25 RS232 cable, a terminal wedge “Y” cable and an AC adaptor. See Figure 3 for reference.

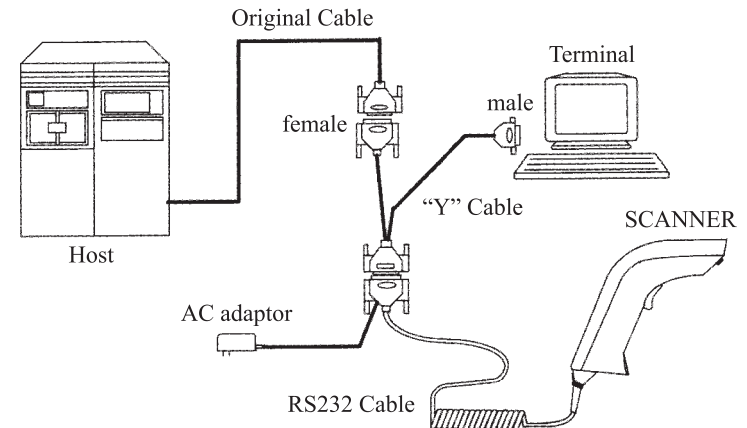


Figure 3. Installing as a Terminal Wedge

Installation procedures:

- 1) Power off the terminal and unplug the communication cable at terminal side.
- 2) Install the interface cable as shown in Figure 3. The “Y” cable provided in Figure 3 is for terminals with female connector on communication port. If there is a male connector on your terminal, you need a converter to change that male to female and another converter to change the female to male on host connector.
- 3) When the scanner is powered, a long beep sound indicates that the scanner is ready to use.

4.2 Understanding the Operating Parameters

Baud Rate, Parity and Data Bit:

These parameters set the scanner's communication protocol which the same setting by the host. The default setting for the terminal interface is 9600 baud rate, none parity, and 8 data bit.

- * Baud Rate can be 300, 600, 1200, 2400, 4800, 9600, 19200, or 38400 bps.
- * Parity can be even, odd, space, mark, or none.
- * Data Bit can be 7 or 8 long.

The scanner may not support settings with Data Bit as 7 and Parity as none combination. Such combination is treated as 7 data bits with MARK parity.

Data Direction:

This setting is only for the terminal wedge and corresponds to the terminal communication mode. If the terminal has:

- * "Full Duplex" mode, set the data direction to "Send to Host".
- * "Half Duplex" mode, set to "Send to Host and Terminal".
- * "Block" mode, set to "send to Terminal".

Chapter 5 Wand Emulation

5.1 Installation

Figure 4 shows how a wand emulation scanner is installed to a data collection terminal. User needs to pay attention to the scanner pinout that should be the same as specified by the terminal.

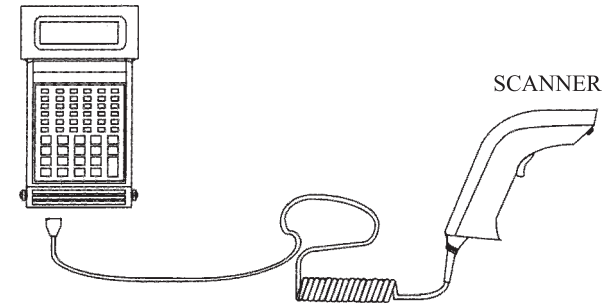


Figure4. Installdes as a Wand Emulation Scanner

5.2 Understanding the Operating Parameters

Code 39 output:

When device number "07" is selected, the scanner is set as wand emulation with Code 39 output. In this configuration, the scanner always outputs data with Code 39 symbology no matter what symbology of the label it scans. You may scan the following label if this setting matched your application.



Code 39 Wand Emulation

Native Output:

When device number "26" is selected, the scanner is set to wand emulation with native output. That means the scanner outputs data with both the same contents and symbology as the label represents.

Output of Wand Emulation: (Appendix D, 3)

Select one of the two choices for the polarity of data output:

*Level for bar (black) and low level for space (white).

*High for space (white) and low level for bar (black).

Level Duration of Minimum Width :

Determine the minimum time duration for bar or space either 200 us or 600 us. Longer time means of the wand scanner.

Polarity of

Polarity of idle (without scanning) can be selected either low or high.

Chapter 6 Setup

The scanner interface can be configured to fit the user's specific application. Configuration parameters are stored in a non-volatile memory, which is retained even if power is lost.

6.1 Bar Code Menu Setup

The setup menu in Appendix D contains eight groups:

* Group 1: Device selection.

* Group 2: Beep and delay.

* Group 3: Keyboard and Wand Emulation.

* Group 4: RS-232 Settings.

* Group 5: Scanner port.

* Group 7: Code 39, I 2 of 5, S 2 of 5 and Code 32.

* Group 8: Code 128, Code 93, Code 11, Codabar, and MSI.

* Group 9: UPC/EAN

* Group 10: Dump setup.

6.1.1 Setup Procedures

For most parameters, proceed the following steps for the setting:

- 1) Locate a group that contains the parameter to be changed.
- 2) When you hear beep, the new setting will have been defined or updated into the memory processor.

Default parameters are indicated in bold type and underlined characters.

The character font is BLACK.CD = Check Digit.

CDV = Check Digit Verification.

Most settings require only a single bar code, but a few need several different bar codes to be scanned in order to completely define a setting. They are:

Double Verification:

Step1: Scan Double Verification from Group 5

Step2: Scan one digit

Step3: Scan Double Verification

Min Length / Max Length

Step1: Scan MIN LENGTH or MAX LENGTH

Step2: Scan two digits from Appendix E.

Step3: Scan MIN LENGTH or MAX LENGTH.

NOTES:

1. The beep three times as a reminder that a is not yet complete.
2. If you make a mistake, forget a step, etc., scan.



6.1.2 Bar Code Length Setting:

The following example illustrates how to set Code 39 with a minimum length of 5 and a maximum length of 20:

- * Scan "Enter Group 7"
- * Scan "F1" to select Code 39.
- * Scan "MIN LENGTH" to enter minimum length setting.
- * Scan "0" and "5" to select length 5. (Appendix E)
- * Scan "MIN LENGTH" to end minimum length setting.
- * Scan "MAX LENGTH" to enter maximum length setting.
- * Scan "2" and "0" to select length 20. (Appendix E)
- * Scan "MAX LENGTH" to end maximum Length Setting.
- * Scan "Exit" to end setup.

6.1.3 Code ID Setting:

Each bar code symbology supported by the scanner has a default ID character defined as below:

CODE ID IDENTIFIER

SYMBOLOGIES	Factory ID	SYMBOLOGIES ID	Factory ID
MSI	eO	CODABAR	N
EAN 8	eO		
UPC -E	E		
UPC -A	A	UK PLESSY	P
EAN 13	F		
Code 93	L	FULL ASCII Code 39	M
Code 11	J	STANDARD Code 39	M
TELEPEN	J	S25 Code	H
EAN 128	FF	INDUSTRIAL 2 OF 5 (Code 2 of 5)	H
Code 128	K	China Post Code (Toshiba Code)	C
Code 32 (Code 39 PARAF)	T	INTERLEAVED 2 OF 5	I

SET ID - SETTING PROCEDURES

Setting steps:

- 1.Scan the SET ID bar code for a particular symbology
- 2.Scan one or two alphanumeric characters from the Full ASCII Table.
- 3.Scan the SET ID bar code again.

Example: Define the MSI Code ID = A, Code 93 = G9

MSI:
 Step1: Scan MSI Set ID (Group 8).
 Step2: "A"
 Step3: Scan MSI Set ID (Group 8).

Code 93:
 Step1: Scan Code 93 Set ID (Group 8).
 Step2: "G" from "A" Appendix E. Full ASCII Chart, Scan "9" from "A" Appendix E. Full ASCII Chart.
 Step3: Scan Code 93 Set ID (Group 8).

NOTES:

- 1.The length of a Code ID is one character. If one character is set, the Code ID output will be one character. If two characters are set, the Code ID output will be two characters.
- 2.Only one type of Code ID will be sent.

6.1.4 Preamble (Prefix) and Postamble(Suffix):

PREAMBLE & POSTAMBLE (PREFIX AND SUFFIX)



EXAMPLE:

Set PREAMBLE String as "##"
 POSTAMBLE String as "\$"

SETTING PROCEDURE:

- STEP 1 : Scan : PREAMBLE.
- STEP 2 : Scan : "#" twice from FULL ASCII Table.
- STEP 3 : Scan : PREAMBLE.
- STEP 4 : Scan : POSTAMBLE.
- STEP 5 : Scan : "\$" twice From FULL ASCII Table.
- STEP 6 : Scan : POSTAMBLE.

FORMAT:

{Preamble} {Code ID} {Bar Code} {Postamble}

NOTES:

- 1.A PREAMBLE is a string of up to 16 characters added to the beginning of a scanned barcode.
- 2.A POSTAMBLE is a string of up to 16 characters added to the end of a scanned bar code.
- 3.Default value for either: None.

6.2 Quick Setup

Appendix A has a quick setup chart, which gives you one label or one function convenience to the scanner. To setup the scanner, locate the label with the function you want and scan that label.

6.3 Batch Setup

If you need to configure more than one scanner, you may duplicate the settings of the scanner (master) to the others. You can do this by producing a set of custom setup labels derived from the master scanner and scanning these labels configuring the other scanners.

The following label is called “Dump Settings” label. Before you scan the label, please open a text editor application (such like, Notepad, Word, etc.) Scan the following label, the settings of the scanner will dump to the screen as one or several ASCII string(s). Use any barcode printing software, select 39 symbology, and use the string(s) to generate bar code labels. You use this batch setup labels to duplicate setting to the other scanners.



EXAMPLE:

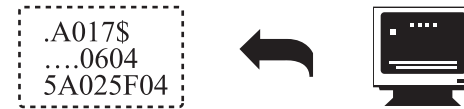
1.PROJECT ASSIGNMENTS:

- 1.1 Beep tone: BEEP LOW -- HIGH
- 1.2 Capslock Mode: CAPSLOCK ON (FIXED).
- 1.3 Reading Mode: CONTINUOUS AUTO OFF.

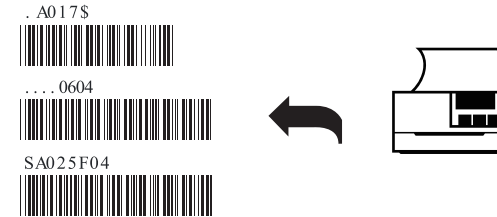
2.SETTING PROCEDURE:

- 2.1 Scan BEEP LOW. - -HIGH (GROUP 3)
- 2.2 Scan CAPSLOCK ON (FIXED). (GROUP 3)
- 2.3 Scan CONTINUOUS AUTO OFF. (GROUP 2).

3.All parameters will be converted to alphanumeric characters and shown on the monitor.

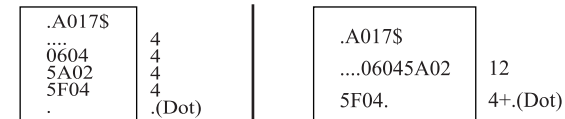


4.Print the results shown on the monitor as bar codes with a bar code printer. The bar codes should be in the Code 39 symbology.

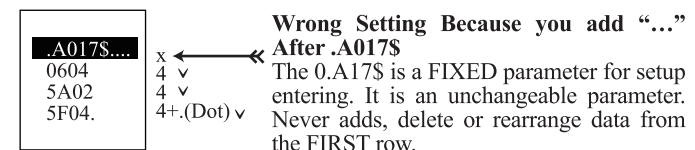
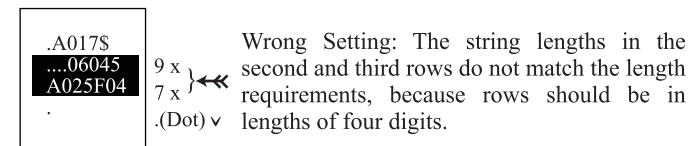
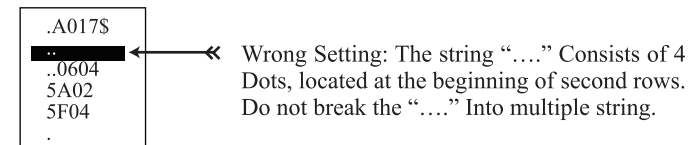


5.Scan these labels with any of the wands that must be programmed with the same settings as the first wand. Be sure to scan from the first row to the second and so on sequentially, top to bottom.

CORRECT SETTING



WRONG SETTING



- * Only the settings that are different from the default values will be dumped.
- * The settings can be dumped to a PC or terminal only if that PC or terminal matches the type defined by Device Type of the scanner. The previous example of “Keyboardless Wedge” as Device Type is equivalent to a PC/AT interface, so you cannot dump that settings to a system which does not support a PC/AT keyboard interface.

The following label dumps the settings to a PC/AT regardless of what kind of device has been chosen on the scanner.



- * You can adjust the length of the dumped strings by combining multiple strings into one or breaking one string into multiple strings. The following strings have the same effect as the dumped string listed above:

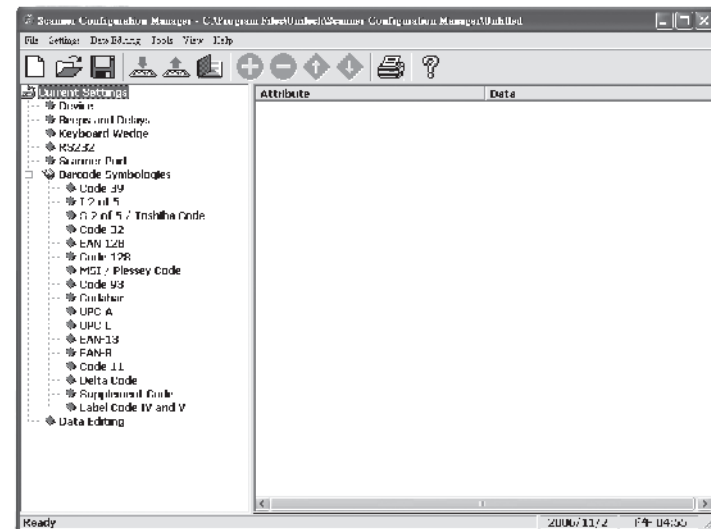
... I800C06D51DJ8080
80A007C005354415254.

You cannot delete any character from or add any character into the strings and the first three characters (“...”) must be present in the first string.

- * All characters in dumped strings are in upper case. If you see lowercase characters in dumped strings, change them to upper case.

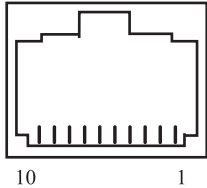
6.4 Scanner Configuration Manager Software

Scanner Configuration Manager is a utility program to allow users to configure scanner settings on a computer using the Microsoft Windows based operating system. Use this program to define the settings and then download the parameters to the scanner. Download the program from our web site at



Chapter 7 Pin Assignment and Specification

7.1 Pin Assignments



.G011\$

Modular Connector (Front View)

7.1.1 Keyboard Interface

The next table shows the modular connector pinout for keyboard interface:

Pin Number	Signal
1	Not Used
2	Not Used
3	DET
4	GND
5	Terminal Data
6	Terminal Clock
7	Power Input (+5V)
8	Keyboard Clock
9	Keyboard Data
10	Not Used

Note: DET signal is bi-directional I/O pin and for internal use only.

As keyboard interface, there are two other connectors on the interface cable. The connector type and pinout differ from terminal to terminal and are not listed here.

7.1.2 RS232 Interface

The scanner supports TTL RS232 at modular connector and standard RS232 after the interface cable is attached.

TTL RS232 Interface:

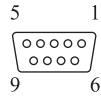
The following table shows pinout for TTL RS232 interface at modular connector:

Pin Number	Signal
1	Not Used
2	Not Used
3	DET
4	GND
5	TXD
6	RTS
7	Power Input (+5V)
8	CTS
9	RXD
10	Not Used

Note:

- (1) DET signal is bi-directional I/O pin and for internal use only.
- (2) CTS and RXD are input signals and take 0V to 5V only. If the scanner is used to interface with a standard RS232 port, those signals should not be connected.

Standard RS232 Interface:



DB9 Female (Front View)

Pin Number	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	VCC

7.1.3 Wand Emulation

The pinout on modular connector at the bottom of the scanner is:

Pin Number	Signal
1	Not Used
2	Not Used
3	Not Used
4	GND
5	Not Used
6	Bar Code Output
7	Power Input (+5V±5%) DC
8	Not Used
9	Not Used
10	Not Used

On the other end of the wand emulation cable is a squeeze released DB9 female connector. The pinout for this connector is:

Pin Number	Signal
1	Not Used
2	Bar Code Output
3	Not Used
4	Not Used
5	Not Used
6	Not Used
7	GND
8	Not Used
9	Power Input

7.2 Specification

- * Power:
 - Operating Voltage: +5V ±5% DC.
- * Temperature:
 - Operating: 0°C to 50°C (32°F to 122°F)
 - Storage: -20°C to 70°C (-4°F to 158°F)
- * Humidity:
 - 0% to 95% relative humidity.

Device Type

.C001\$



PC AT[PS/2]/USB

.C007\$



Keyboardless

.C003\$



Code39 Wand Emulation

.C002\$



Serial Interface

Scanner Mode

.F002\$



Trigger

.F001\$



Flash

UPC-E

.H010\$



Cut Leading Digit

.H011\$



Send Check Digit

.H053\$



UPC-A Conversion

Beep

.F012\$



None

.F013\$



Medium

Terminator

.D011\$



Enter

Scan Code

.C010\$



U.S

.C015\$



Alt Key

EAN-8

.H022\$



Cut Leading Digit

.H024\$



Cut Check Digit

EAN-13

.H016\$



Cut Leading Digit

.H018\$



Cut Check Digit

.H049\$



ISBN Conversion

Character Delay

.B010\$



140us

.B013\$



4ms

Code ID

.A009\$



No

.A015\$



Yes

UPC-A

.H004\$



Cut Leading Digit

.H006\$



Cut Check Digit

Supplement Code+2

.H028\$



No

.H027\$



Yes

Setup

.B015\$



Enable

.B016\$



Disable

.A007\$

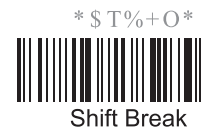
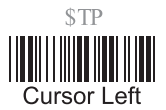


Display Version

.A001\$



Factory Default



Device ID Device Type

.C001\$

 01-IBM PC/AT, PS/2 MOD 40, 60, 80, USB etc.

.C007\$

 06-Keybaordless Wedge(PC/AT, Notebook)

.C002\$

 04-Serial Wedge

.C0004

 26-Wand emulation(Native Output)

.C003\$

 07-Wand emulation(with Code 39 output)

.A001\$

 Factory Default

Beep Tone

.F012\$

 None

.F017\$

 Low

.F013\$

 Medium

.F014\$

 High

.F015\$

 Low to High

.F016\$

 High to Low

Interblock Delay

.B001\$

 10 ms

.B002\$

 50 ms

.B003\$

 100 ms

.B004\$

 500 ms

.B005\$

 1 second

.B006\$

 3 seconds

Intercharacter Delay



Function Code



Caps-Lock



Output of Wand Emulation



Level Duration of Mini Width



Polarity of Idle Condition:



Language (For PC/XT, AT)



Use number Keypad digits



Baud Rate



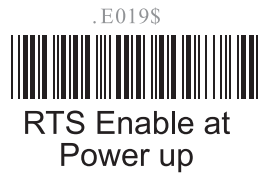
Parity



Data Bit



Handshaking
(for serial wedge)



ACK / NAK
(for serial wedge)



BCC Character
(for serial wedge)



Time Out
(for serial wedge)



Terminator



Code ID



Note:
This setting doesn't affect
EAN128 code ID. EAN128 has
its own Code ID setting of
page C. 7.

Label Type



Scanning Mode



Double Verification



Preamble / Postamble

Data Length
(Two Digits) Send

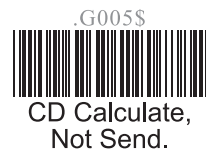


Scan 'PP'OO' for
 Pre/Postamble. Scan characters
 from Full ASCII char or
 Function

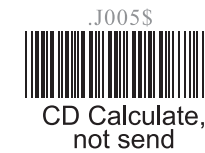
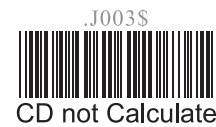
Define Code ID



Code 39
Define Code ID



I 2 of 5 (ITF)



S 2 of 5 / China Postal Code (Toshiba Code)



.K002\$

Disable



.K001\$

Enable



.K016\$

Fix Length on
(by first three reads)



.J017\$

Fix Length off



.K004\$

Check Digit(CD)
Calculate & Send



.K005\$

CD Calculate,
not send



.K003\$

CD not Calculate



.K006\$

Min Length 10



.K007\$

Max Length 64

Code 32
(Italian Pharmacy)



.K011\$

Disable



.K010\$

Enable



.K012\$

Leading Character Send



.K013\$

Leading Character
No Send



.K014\$

Tailing Character Send



.K015\$

Tailing Character
No Send

Telepen



.L015\$

Disable



.L014\$

Enable



.L020\$

Standard



.L021\$

Numeric set

Define the EAN 128
Fields separator



.M007\$

Define the EAN 128
Fields separator

Scan a ASCII code in full
ASCII code chart to select a
new fields separator



.G018\$

Define a separator
for double labers

Scan a ASCII code in full
ASCII code chart to select a
new definition of Funcl

UCC / EAN 128



.M002\$

Disable



.M001\$

Enable



.M004\$

Code ID Disable



.M003\$

Code ID Enable

Note: If EAN 128 be disabled,
the EAN 128 labels will be
decoded as Code 128

Code 128



Code 93



MSI / Plessey Code



Code 11



Codabar



UPC-A



UPC-E



EAN-13



EAN-8



Supplement
Code

.H028\$
Two Supplement
Code Off

.H026\$
Five Supplement
Code Off

.H057\$
Transmitted if Present

.H041\$
Space Separator
Inserted

.H027\$
Two Supplement
Code On

.H025\$
Five Supplement
Code On

.H058\$
Must Present

.H042\$
Space Separator
Not Inserted

See Section 6.3 for how to use the labels below.

.A016\$
Dump Settings

.A018\$
Dump Settings on PC/AT

.C001\$
PC/AT Interface Keyboard setting

.C002\$
RS232 Interface Keyboard setting

Speed=9600, Databit=8, Parity=None,
Stop=1 Flow Control=None

(Characters in parentheses represent Code 39 bar code printing)



NUL(%U)



BS(\$H)



SOH(\$A)



HT(\$I)



STX(\$B)



LF(\$J)



ETX(\$C)



VT(\$K)



EOT(\$D)



FF(\$L)



ENQ(\$E)



CR(\$M)



ACK(\$F)



SO(\$N)



BEL(\$G)



SI(\$O)



DLE(\$P)



ETB(\$W)



DC1(\$Q)



CAN(\$X)



DC2(\$R)



EM(\$Y)



DC3(\$S)



SUB(\$Z)



DC4(\$T)



ESC(\$A)



NAK(\$U)



FS(\$B)



SYN(\$V)



GS(\$C)



RS(%D)



US(%E)



SP



!(A)



\"(B)



#(/C)



\$



%



&(/F)



'(G)



((/H)



) (/I)



*(/J)



+



,(L)



-



.



/



0



1



2



3



4



5



6



7



8



9



: (/Z)



; (%F)



< (%G)



= (%H)



> (%I)



? (%J)



@ (%V)



A



B



C



D



E



F



G



H



I



J



K



L



M



N



O



P



Q



R



S



T



U



V



W



X



Y



Z



[(%K)



\(%L)



] (%M)



^ (%N)



_ (%O)



`(%W)



a(+A)



b(+B)



c(+C)



d(+D)



e(+E)



f(+F)



g(+G)



h(+H)



i(+I)



j(+J)



k(+K)



l(+L)



m(+M)



n(+N)



o(+O)



p(+P)



q(+Q)



r(+R)



s(+S)



t(+T)



u(+U)

Appendix E. Full ASCII Chart



v(+V)



w(+W)



x(+X)



y(+Y)



z(+Z)



{(%P)



|(%Q)



}(%R)



~(%S)



DEL(%T)

Appendix E. Bar Code Chart

EAN-13



EAN-8



UPC-A



UPC-E



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Inter leaved 2 of 5



Code 39



Code 39 with C / D



EAN 128



Code 128



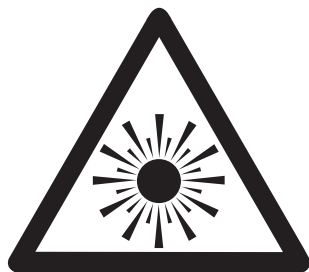
Codabar



MSI Code



LED RADIATION
DO NOT STARE INTO THE BEAM OR VIEW
DIRECTLY WITH OPTICAL INSTRUMENTS
CLASS 2M LASER PRODUCT
0.5mW, broadband CW
LIGHT SOURCE:625~660nm
IEC 60825-1



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