
SuperLead

2D Barcode Reader

User Guide B

V1.7

Table of Contents

Disclaimer	4
1 Getting Started	5
1.1 About This Guide	5
1.2 Barcode Scanning	5
1.3 Factory Defaults	5
2 Communication Interfaces	6
2.1 TTL-232 Interface	6
2.2 Baud Rate	7
2.3 Data Bit & Parity Check& Stop Bit	8
2.4 USB HID-KB	8
2.5 USB Country Keyboard Types	8
2.6 Convert Case	9
2.7 USB COM Port Emulation	9
3 General Configuration	10
3.1 Trigger Mode	10
3.2 Presentation Mode	10
3.3 Cell Phone Mode	11
3.4 Inverse color	12
3.5 Illumination for Trigger Mode	12
3.6 Illumination for Presentation Mode	12
3.7 Beeper - Good Read	14
3.8 Beeper Tone - Good Read	14
3.9 Beeper Duration - Good Read	14
3.10 Beeper Number - Good Read	14
3.11 Barcode Scanning Delay	15
4 Data Formatting	16
4.1 General Configuration	16
4.2 Add Prefix	17
4.3 Add Suffix	18
4.4 Clear All Prefix and Suffix	18
5 Symbolologies	19
5.1 General Settings	19

5.2	1D Symbologies	20
5.2.1	Code 128	20
5.2.2	EAN-8	21
5.2.3	EAN-13	23
5.2.4	UPC-E	25
5.2.5	UPC-A	28
5.2.6	Interleaved 2 of 5	30
5.2.7	Matrix 2 of 5	31
5.2.8	Industrial 2 of 5	32
5.2.9	Code 39	33
5.2.10	Coda bar	35
5.2.11	Code 93	37
5.2.12	GS1-128	38
5.2.13	MSI	39
5.3	2D Symbologies	41
5.3.1	PDF 417	41
5.3.2	Micro PDF 417	42
5.3.3	QR Code	43
5.3.4	Data Matrix	44
5.3.5	Maxi code	45
5.3.6	Aztec	46
5.3.7	Hanxin	47
5.4	Postal Symbologies	48
5.4.1	China Postal Code	48
5.4.2	Telepen	49
6	Serial Commands	50
6.1	Function Commands	50
6.2	Menu Commands	50
6.3	Menu number	51
7	Appendix	59
7.1	Appendix 1: AIM ID Table	59
7.2	Appendix 2: ASCII Table	61
7.3	Appendix 3: Digit Barcodes	65

Disclaimer

©2013 Suzhou SuperLead Smart System Co., Ltd (abbreviated as SUPERLEAD). All rights reserved.

Please read through the manual carefully before using the product and operate it according to the manual. It is advised that you should keep this manual for future reference.

Do not disassemble the device or remove the seal label from the device. Otherwise, Suzhou SuperLead Smart System Co., Ltd. does not assume responsibility for the warranty or replacement.

All pictures in this manual are for reference only and actual product may differ. To improve reliability, function, or design, SUPERLEAD reserves the right to make changes to any software or product at any time without notice. Besides, the information contained herein is subject to change without prior notice.

The products depicted in this manual may include software copyrighted by SUPERLEAD or a third party. The user, corporation or individual, shall not duplicate, in whole or in part, distribute, modify, decompile, disassemble, decode, reverse engineer, rent, transfer or sublicense such software without prior written consent from the copyright holders.

This manual is copyrighted. No part of this publication may be reproduced or used in any form without written permission from SUPERLEAD.

SUPERLEAD reserves the right to make final interpretation of the statement above Smart System Co., Ltd.

<http://www.isupermax.com>

1 Getting Started

1.1 About This Guide

This guide provides programming instructions for the 2D BARCODER READER. Users can configure the 2D BARCODER READER by scanning the programming barcodes included in this manual.

1.2 Barcode Scanning

Powered by area-imaging technology and 2D BARCODER READER patented “Hercules” technology, the 2D BARCODER READER features fast scanning and decoding accuracy. Barcodes rotated at any angle can still be read with ease. When scanning a barcode, simply center the aiming dot/beam or pattern projected by the 2D BARCODER READER over the barcode.

1.3 Factory Defaults

Scanning the following barcode can restore the engine to the factory defaults.

Note: Use this feature with discretion.



0D0100.

Restore All Factory Defaults

2 Communication Interfaces

The 2D BARCODER READER provides a TTL-232 interface and a USB interface to communicate with the host device. The host device can receive scanned data and send commands to control the engine or to access/alter the configuration information of the engine via the TTL-232 or USB interface.

2.1 TTL-232 Interface

Before using Serial Communication interface, scanner must be configured as 232 interface.



091804.

232 Interface

Serial communication interface is usually used when connecting the engine to a host device (like PC, POS). However, to ensure smooth communication and accuracy of data, you need to set communication parameters (including baud rate, parity check, data bit and stop bit) to match the host device.

The serial communication interface provided by the engine is based on TTL-level signals. TTL-232 can be used for most application architectures. For those requiring RS-232, an external conversion circuit is needed. The conversion circuit is available only to some models.

Default serial communication parameters are listed below. Make sure all parameters match the host requirements.

Parameter	Factory Default
Serial Communication	Standard TTL-232
Baud Rate	115200
Parity Check	None
Data Bits	8
Stop Bits	1
Hardware Flow Control	None

2.2 Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the baud rate to match the Host requirements.



0607023.

2400



0607024.

4800



0607025.

9600



0607026.

19200



0607027.

38400



0607028.

57600



0607029.

115200 (default)

2.3 Data Bit & Parity Check& Stop Bit



0607032.

None Parity /8 Data Bits/1 Stop Bit(default)



0607035.

Even Parity /8 Data Bits/1 Stop Bit



0607038.

Odd Parity /8 Data Bits/1 Stop Bit

2.4 USB HID-KB

When you connect the engine to the Host via a USB connection, you can enable the **USB HID-KB** feature by scanning the barcode below. Then engine's transmission will be simulated as USB keyboard input. The Host receives keystrokes on the virtual keyboard. It works on a Plug and Play basis and no driver is required.



091809.

USB HID-KB

2.5 USB Country Keyboard Types

Keyboard layouts vary from country to country. The default setting is U.S. keyboard, and only U.S. keyboard is supported now.

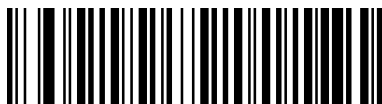
2.6 Convert Case

Scan the appropriate barcode below to convert barcode data to your desired case.



060D020.

No Case Conversion (default)



060D021.

Convert All to Upper Case



060D022.

Convert All to Lower Case

Example: When the **Convert All to Lower Case** feature is enabled, barcode data “AbC” is transmitted as “abc”.

2.7 USB COM Port Emulation

If you connect the engine to the Host via a USB connection, the **USB COM Port Emulation** feature allows the Host to receive data in the way as a serial port does. A driver is required for this feature.



060500130.

USB COM Port Emulation

3 General Configuration

3.1 Trigger Mode

If the Trigger Mode is enabled, you could activate the scanner by providing an external hardware trigger, or using a serial trigger command. When in manual trigger mode, the scanner scans until a barcode is read, or until the hardware trigger is released. When in serial mode, the scanner scans until a barcode has been read or until the deactivate command is sent.



Trigger Mode(default)

3.2 Presentation Mode

This set the scanner to work in Presentation mode.



Presentation Mode

3.3 Cell Phone Mode

If the Cell Phone Mode is enabled, the engine activates a special capturing image and illumination session.

If you want to enable Cell Phone reading in Trigger Mode, please scan below barcode:



091B00.

Trigger Mode with Cell Phone reading

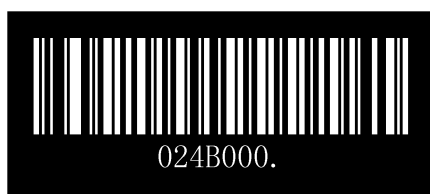
If you want to enable Cell Phone reading in Presentation Mode, please scan below barcode:



090902.

Presentation Mode with Cell Phone reading

3.4 Inverse color



Off(default)



Only Inverse On



Inverse and Normal Both On

3.5 Illumination for Trigger Mode

Illumination setting for Trigger Mode



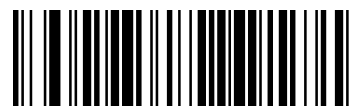
High Level Illumination



Normal Level Illumination 1(default)



Mid Level Illumination



Low Level Illumination



Illumination OFF

3.6 Illumination for Presentation Mode

Illumination setting when in Scanning



0401000.

High Level Illumination



0401001.

Normal Level Illumination(default)



0401002.

Mid Level Illumination



0401003.

Low Level Illumination



0401004.

Illumination OFF

Illumination setting when in Idle



0401010.

High Level Illumination



0401011.

Normal Level Illumination



0401012.

Mid Level Illumination



0401013.

Low Level Illumination(default)



0401014.

Illumination OFF

3.7 Beeper - Good Read



0502101.

On (default)



0502100.

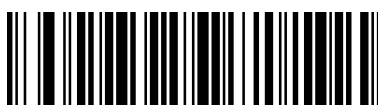
Off

3.8 Beeper Tone - Good Read



05021D1.

Low



05021D2.

Middle



05021D3.

High (default)

3.9 Beeper Duration - Good Read



0502160.

Normal (default)



0502161.

Short

3.10 Beeper Number - Good Read



05020E1.

1 (default)



05020E2.

2



05020E3.

3



05020E4.

4



05020E5.

5



05020E6.

6

3.11 Barcode Scanning Delay



080B080.

No Delay (default)



080B08500.

Delay 500MS

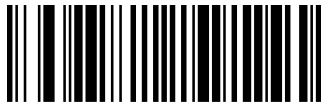


080B082000.

Delay 2000ms

4 Data Formatting

4.1 General Configuration



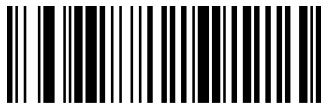
090200.

Add CR



090202.

Add LF



090300.

Add CRLF



090201.

Add TAB

4.2 Add Prefix



080400.

Set Custom Prefix



0D0400.

Save



0D0500.

Not Save

To set a customer prefix, scan the “Set Custom Prefix” barcode and the numeric barcodes which representing the hexadecimal values of a desired prefix, and then scan the “Save” barcode. Refer to Appendix 2: ASCII Table for hexadecimal values of characters.

Example: Set the custom Prefix to “ODE”

1. Check the hex values of “ODE” in the ASCII Table. (“ODE”: 4F, 44, 45)
2. Scan the **Set Custom Prefix** barcode.
3. Scan the numeric barcodes “9”, “9”, “4”, “F”, “4”, “4”, “4” and “5” in Appendix 5 .
4. Scan the **Save** barcode.

4.3 Add Suffix



080500.

Set Custom Suffix



0D0400.

Save



0D0500.

Not Save

To set a customer suffix, scan the “Set Custom Suffix” barcode and the numeric barcodes which representing the hexadecimal values of a desired suffix, and then scan the “Save” barcode. Refer to Appendix 4: ASCII Table for hexadecimal values of characters.

Example: Set the custom Suffix to “ODE”

1. Check the hex values of “ODE” in the ASCII Table. (“ODE”: 4F, 44, 45)
2. Scan the **Set Custom Suffix** barcode.
3. Scan the numeric barcodes “9”, “9”, “4”, “F”, “4”, “4”, “4” and “5” in Appendix 5 .
4. Scan the **Save** barcode.

4.4 Clear All Prefix and Suffix



080404;080507.

Clear all prefix and suffix (default)

5 Symbologies

5.1 General Settings

Enable/Disable All Symbologies

If the **Disable All Symbologies** feature is enabled, the engine will not be able to read any non-programming barcodes except the programming barcodes.



0201001.

Enable All Symbologies



0201000.

Disable All Symbologies

5.2 1D Symbolologies

5.2.1 Code 128

Restore Factory Defaults



020A00.

Restore the Factory Defaults of Code 128 (default)

Enable/Disable Code 128



020A011.

Enable Code 128 (default)



020A010.

Disable Code 128

Message Length

Message length can be set to the maximum value or minimum value. The value between the maximum and the minimum is valid.

The maximum value and minimum value can be set using “Programming Command”. Please check the programming command guide for the detail.

Code 128 max length command: 020A03. The parameter of this command can be set from min to 90.

Code 128 min length command: 020A02. The parameter of this command can be set from 0 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

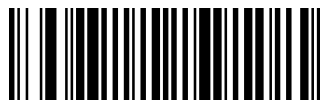
Programming command:

Max: 020A0325.

Min: 020A0210.

5.2.2 EAN-8

Restore Factory Defaults



021400.

Restore the Factory Defaults of EAN-8 (default)

Enable/Disable EAN-8



0214011.

Enable EAN-8 (default)



0214010.

Disable EAN-8

Transmit Check Digit

EAN-8 is 8 digits in length with the last one as its check digit used to verify the accuracy of the data.



0214021.

Transmit EAN-8 Check Digit (default)



0214020.

Do Not Transmit EAN-8 Check Digit

Add-On Code

An EAN-8 barcode can be augmented with a two-digit or five-digit add-on code on code to form a new one. In the examples below, the part surrounded by blue dotted line is an EAN-8 barcode while the part circled by red dotted line is add-on code.





0214031.

Enable 2-Digit Add-On Code

0214030.

Disable 2-Digit Add-On Code (default)

0214041.

Enable 5-Digit Add-On Code

0214040.

Disable 5-Digit Add-On Code (default)**Add-On Code Required**

0214051.

EAN-8 Add-On Code Required

0214050.

EAN-8 Add-On Code Not Required (default)**ENA/JAN-8 Addenda Separator**

When this feature is enabled, there is a space between barcode and addenda. When this feature is disabled, there is no space.



0214061.

Enable EAN/JAN-8 Addenda Separator (default)

0214060.

Disable EAN/JAN-8 Addenda Separator

5.2.3 EAN-13

Restore Factory Defaults



021300.

Restore the Factory Defaults of EAN-13 (default)

Enable/Disable EAN-13



0213011.

Enable EAN-13 (default)



0213010.

Disable EAN-13

Transmit Check Digit



0213021.

Transmit EAN-13 Check Digit (default)



0213020.

Do Not Transmit EAN-13 Check Digit

Add-On Code



0213031.

Enable 2-Digit Add-On Code



0213030.

Disable 2-Digit Add-On Code (default)



0213041.

Enable 5-Digit Add-On Code



0213040.

Disable 5-Digit Add-On Code (default)

Add-On Code Required



0213051.

EAN-13 Add-On Code Required

0213050.

EAN-13 Add-On Code Not Required (default)**ENA/JAN-13 Addenda Separator**

When this feature is enabled, there is a space between barcode and addenda. When this feature is disabled, there is no space.



0213061.

Enable ENA/JAN-13 Addenda Separator (default)

0213060.

Disable ENA/JAN-13 Addenda Separator**ISBN Translate**

When enable this feature and is scanned, ENA13 Book land symbols are translated into their equivalent ISBN number format.



0213071.

Enable ISBN Translate

0213070.

Disable ISBN Translate (default)

5.2.4 UPC-E

Restore Factory Defaults



021200.

Restore the Factory Defaults of UPC-E (default)

Enable/Disable UPC-E0/E1



0212011.

Enable UPC-E0 (default)



0212010.

Disable UPC-E0



0212021.

Enable UPC-E1(default)



0212020.

Disable UPC-E1

UPCE0 Check Digit



0212041.

Enable UPC-E0 Check Digit (default)



0212040.

Disable UPC-E0 Check Digit

UPCE0 Expand

UPCE0 expand expands the UPCE code to the 12 digits, UPC-A format.



0212031.

Enable UPC-E0 Expand



0212030.

Disable UPC-E0 Expand (default)

UPCE0 Addenda Required

When required is scanned, the scanner will only read UPC-E barcodes that have addenda.



0212081.

Enable UPC-E0 Required



0212080.

Disable UPC-E0 Required (default)

UPCE0 Addenda Separator



0212091.

Enable UPC-E0 Separator (default)



0212090.

Disable UPC-E0 Separator

UPCE0 Number System

The number system digit of UPC symbol is normally transmitted at the beginning of the scanned data, but the unit can be programmed so it will be not transmitted.



0212051.

Enable UPC-E0 Number System (default)



0212050.

Disable UPC-E0 Number System

UPCE0 Addenda



0212061.

Enable 2 Digit Addenda



0212060.

Disable 2 Digit Addenda (default)



0212071.

Enable 5 Digit Addenda



0212070.

Disable 5 Digit Addenda (default)

5.2.5 UPC-A

Restore Factory Defaults



021100.

Restore the Factory Defaults of UPC-A (default)

Enable/Disable UPC-A



0211011.

Enable UPC-A (default)



0211010.

Disable UPC-A

UPC-A Check Digit



0211021.

Enable UPC-A Check Digit (default)



0211020.

Disable UPC-A Check Digit

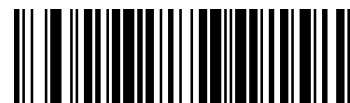
UPC-A Addenda Required

When required is scanned, the scanner will only read UPC-E barcodes that have addenda.



0211061.

Enable UPC-A Required



0211060.

Disable UPC-A Required (default)

UPC-A Addenda Separator**Enable UPC-A Separator (default)****Disable UPC-A Separator****UPC-A: Number System**

The number system digit of UPC symbol is normally transmitted at the beginning of the scanned data, but the unit can be programmed so it will be not transmitted.

**Enable UPC-A Number System (default)****Disable UPC-A Number System****UPC-A: Addenda****Enable 2 Digit Addenda****Disable 2 Digit Addenda (default)****Enable 5 Digit Addenda****Disable 5 Digit (default)**

5.2.6 Interleaved 2 of 5

Restore Factory Defaults



020400.

Restore the Factory Defaults of Interleaved 2 of 5 (default)

Enable/Disable Interleaved 2 of 5



0204011.

Enable Interleaved 2 of 5 (default)



0204010.

Disable Interleaved 2 of 5

Message Length

Message length can be set to the maximum value, minimum value. The data between the maximum and the minimum is valid.

The maximum value and minimum value can be set using Programming Command. Please check the programming command guide for the detail.

Interleaved 2 of 5 max length command: 020404. The parameter of this command can be set from min to 80.

Interleaved 2 of 5 min length command: 020403. The parameter of this command can be set from 2 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02040425.

Min: 02040310.

Interleaved 2 of 5 Check Digit



0204020.

No check Char (default)



0204022.

Validate and Transmit



0204021.

Validate not Transmit

5.2.7 Matrix 2 of 5

Restore Factory Defaults



020800.

Restore the Factory Defaults of Matrix 2 of 5 (default)

Enable/Disable Matrix 2 of 5



0208011.

Enable Matrix 2 of 5



0208010.

Disable Matrix 2 of 5 (default)

Message Length

Message length can be set to the maximum value, minimum value. The value is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Matrix 2 of 5 max length command: 020803. The parameter of this command can be set from min to 80.

Matrix 2 of 5 min length command: 020802. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02080325.

Min: 02080210.

5.2.8 Industrial 2 of 5

Restore Factory Defaults



020600.

Restore the Factory Defaults of Industrial 2 of 5 (default)

Enable/Disable Industrial 2 of 5



0206011.

Enable Industrial 2 of 5



0206010.

Disable Industrial 2 of 5 (default)

Message Length

Message length can be set to the maximum value, minimum value. The value is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Industrial 2 of 5 max length command: 020603. The parameter of this command can be set from min to 48.

Industrial 2 of 5 min length command: 020602. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02060325.

Min: 02060210.

5.2.9 Code 39

Restore Factory Defaults



020300.

Restore the Factory Defaults of Code 39 (default)

Enable/Disable Code 39



0203011.

Enable Code 39 (default)



0203010.

Disable Code 39

Transmit Start/Stop Character



0203051.

Transmit Start/Stop Character



0203050.

Do not Transmit Start/Stop Character (default)

Code 39 Check Character



0203040.

No Check Char (default)



0203042.

Validate and Transmit



0203041.

Validate no Transmit

Code 39 Full ASCII



0203021.

Enable Code 39 Full ASCII



0203020.

Disable Code 39 Full ASCII (default)

Message Length

Message length can be set to the maximum value, minimum value. The value is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Code 39 max length command: 020308. The parameter of this command can be set from min to 48.

Code 39 min length command: 020307. The parameter of this command can be set from 0 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02030825.

Min: 02030710.

5.2.10 Coda bar

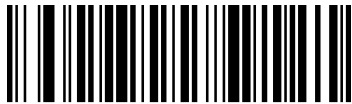
Restore Factory Defaults



020200.

Restore the Factory Defaults of Coda bar (default)

Enable/Disable Codabar



0202011.

Enable Coda bar (default)



0202010.

Disable Coda bar

Message Length

Message length can be set to the maximum value, minimum value. The data between the maximum and the minimum is valid.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Coda bar max length command: 020206. The parameter of this command can be set from min to 60.

Coda bar min length command: 020205. The parameter of this command can be set from 2 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02020625.

Min: 02020510.

Transmit Start/Stop Character



0202021.

Transmit Start/Stop Character



0202020.

Do not Transmit Start/Stop Character (default)

Coda bar Check Character



0202030.

No Check Char (default)



0202032.

Validate and Transmit



0202031.

Validate no Transmit

5.2.11 Code 93

Restore Factory Defaults



020D00.

Restore the Factory Defaults of Code 93 (default)

Enable/Disable Code 93



020D011.

Enable Code 93



020D010.

Disable Code 93 (default)

Message Length

Message length can be set to the maximum value, minimum value. The data between the maximum and the minimum is valid.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Code 93 max length command: 020D03. The parameter of this command can be set from min to 80.

Code 93 min length command: 020D02. The parameter of this command can be set from 0 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 020D0325.

Min: 020D0210.

5.2.12 GS1-128

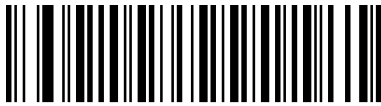
Restore Factory Defaults



020B01.

Restore the Factory Defaults of GS1-128 (default)

Enable/Disable GS1-128



020B001.

Enable GS1-128 (default)



020B000.

Disable GS1-128

Message Length

Message length can be set to the maximum value, minimum value. The data between the maximum and the minimum is valid.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

GS1-128 max length command: 020B03. The parameter of this command can be set from min to 80.

GS1-128 min length command: 020B02. The parameter of this command can be set from 0 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 020B0325.

Min: 020B0210.

5.2.13 MSI

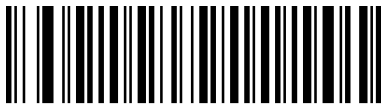
Restore Factory Defaults



020E00.

Restore the Factory Defaults of MSI (default)

Enable/Disable MSI



020E011.

Enable MSI



020E010.

Disable MSI (default)

Message Length

Message length can be set to the maximum value, minimum value. The data is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

MSI max length command: 020E04. The parameter of this command can be set from min to 48.

MSI min length command: 020E03. The parameter of this command can be set from 4 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 020E0425.

Min: 020E0310.

MSI Check Character



020E020.

Validate Type 10, No Transmit (Default)



020E021.

Validate Type 10, Transmit



020E022.

Validate 2 Type 10 Characters, No Transmit



020E023.

Validate 2 Type 10 Characters, Transmit



020E024.

**Validate Type 11 Then Type 10 Character,
No Transmit**



020E025.

**Validate Type 11 Then Type 10 Characters,
Transmit**



020E026.

Disable MSI Check Characters

5.3 2D Symbologies

5.3.1 PDF 417

Restore Factory Defaults



021F00.

Restore the Factory Defaults of PDF 417 (default)

Enable/Disable PDF 417



021F011.

Enable PDF 417 (default)



021F010.

Disable PDF 417

Message Length

Message length can be set to the maximum value, minimum value. The data is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

PDF417 max length command: 021F06. The parameter of this command can be set from min to 2750.

PDF417 min length command: 021F05. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 021F0625.

Min: 021F0510.

5.3.2 Micro PDF 417

Restore Factory Defaults



022000.

Restore the Factory Defaults of Micro PDF 417 (default)

Enable/Disable Micro PDF 417



0220011.

Enable PDF 417



0220010.

Disable PDF 417 (default)

Message Length

Message length can be set to the maximum value, minimum value. The data is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

PDF417 max length command: 022003. The parameter of this command can be set from min to 2750.

PDF417 min length command: 022002. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02200325.

Min: 02200310.

5.3.3 QR Code

Restore Factory Defaults



023700.

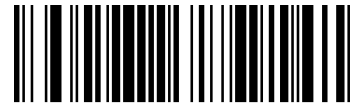
Restore the Factory Defaults of QR Code (default)

Enable/Disable QR Code



0237011.

Enable QR Code (default)



0237010.

Disable QR Code

Message Length

Message length can be set to the maximum value, minimum value. The data is valid between the maximum and the minimum is valid.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

QR max length command: 023703. The parameter of this command can be set from min to 7089.

QR min length command: 023702. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02370325.

Min: 02370210.

5.3.4 Data Matrix

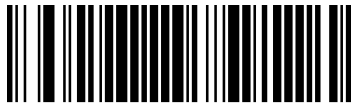
Restore Factory Defaults



023600.

Restore the Factory Defaults of Data Matrix (default)

Enable/Disable Data Matrix



0236011.

Enable Data Matrix (default)



0236010.

Disable Data Matrix

Message Length

Message length can be set to the maximum value, minimum value. The data is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Data Matrix max length command: 023603. The parameter of this command can be set from min to 3116.

Data Matrix min length command: 023602. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02360325.

Min: 02360210.

5.3.5 Maxi code

Restore Factory Defaults



023400.

Restore the Factory Defaults of Maxi code (default)

Enable/Disable Maxi code



0234011.

Enable Maxi code



0234010.

Disable Maxi code (default)

Message Length

Message length can be set to the maximum value, minimum value. The data is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Maxi Code max length command: 023403. The parameter of this command can be set from min to 150.

Maxi Code min length command: 023402. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02340325.

Min: 02340210.

5.3.6 Aztec

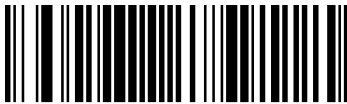
Restore Factory Defaults



023300.

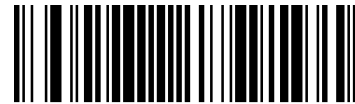
Restore the Factory Defaults of Aztec (default)

Enable/Disable Aztec



023301.

Enable Aztec



023300.

Disable Aztec (default)

Message Length

Message length can be set to the maximum value, minimum value. The data is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Aztec max length command: 023306. The parameter of this command can be set from min to 3832.

Aztec min length command: 023305. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02330625.

Min: 02330510.

5.3.7 Hanxin

Restore Factory Defaults



023800.

Restore the Factory Defaults of Hanxin (default)

Enable/Disable Hanxin



0238011.

Enable Hanxin



0238010.

Disable Hanxin (default)

Message Length

Message length can be set to the maximum value, minimum value. The data is valid between the maximum and the minimum.

The maximum value and minimum value can be set using Programming command. Please check the programming command guide for the detail.

Hanxin max length command: 023803. The parameter of this command can be set from min to 7833.

Hanxin min length command: 023802. The parameter of this command can be set from 1 to max.

Example: Set the Barcode Message length of the minimum value is 10; the maximum value is 25.

Programming command

Max: 02380325.

Min: 02380210

5.4 Postal Symbologies

5.4.1 China Postal Code

Restore Factory Defaults



021800.

Restore the Factory Defaults of China Postal Code (default)

Enable/Disable China Postal Code



0218011.

Enable China Postal Code



0218010.

Disable China Postal Code (default)

5.4.2 Telepen

Restore Factory Defaults



021000.

Restore the Factory Defaults of Telepen (default)

Enable/Disable Telepen



0210011.

Enable Telepen



0210010.

Disable Telepen (default)

6 Serial Commands

The serial programming commands can be used in place of the programming bar codes. Both the serial commands and the programming bar codes will program the scanner. For complete descriptions and examples of each serial programming command, refer to the corresponding programming bar code in this manual.

The device must be set to an TTL-RS232 interface. The following commands can be sent via a PC COM port using terminal emulation software.

6.1 Function Commands

The serial function commands have the following formation:

STX + CMD(see following table) + EXT

Function	Command	Formation
Trigger	\xF4	\x02\xF4\x03
Untrigger	\xF5	\x02\xF5\x03

6.2 Menu Commands

The menu commands have the following syntax:

\x02\xF0\x03 + Menu Number + Setting Value + Character

Character consists of three characters. The details refer to following table.

Character	Function
.	Store in ROM
!	Store in RAM
?	Query the current setting
*	Return the valid setting range

Example:

Action	Send Commands	Response
Set the unit default	\x02\xF0\x030D0100.	0D0100 [ACK].
Set unit mid-level illumination 1 (saved in ROM)	\x02\xF0\x038002001.	8002001[ACK].
Set unit mid-level illumination 1 (saved in RAM)	\x02\xF0\x038002001!	8002001[ACK]!
Query the current illumination level	\x02\xF0\x03800200?.	8002000[ACK].
Query the range value of barcode scanning delay	\x02\xF0\x03080B08*.	080B080-30000[ACK].

6.3 Menu number

Function	Details	Menu Number	Setting Value
Restore All Factory Defaults	Activate Defaults	0D0100	NA
Interface	232 Interface	091804	NA
232 Interface Baud rate	2400 BPS	060702	3
	4800 BPS		4
	9600 BPS		5
	19200 BPS		6
	38400 BPS		7
	57600 BPS		8
	115200 BPS(default)		9
232 Interface Data Bit & Parity Check& Stop Bit	None Parity /8 Data Bits/1 Stop Bit(default)	060703	2
	Even Parity /8 Data Bits/1 Stop Bit		5
	Odd Parity /8 Data Bits/1 Stop Bit		8
USB HID-KB	USB HID-KB	091809	NA
	No Case Conversion (default)	060D02	0
	Convert All to Upper Case		1
	Convert All to Lower Case		2
USB COM Port	USB COM Port Emulation	060500	130
Scanning Mode	Trigger Mode(default)	091A00	NA
	Presentation Mode	090901	NA
	Trigger Mode with cell phone reading	091B00	NA
	Presentation Mode with cell phone reading	090902	NA
Inverse Color	Off(default)	024B00	0
	Only Inverse On		1
	Inverse and Normal Both On		2
Illumination for Trigger Mode	High Level Illumination (default)	040102	0
	Mid Level Illumination 1		1
	Mid Level Illumination 2		2
	Low Level Illumination		3
	Illumination OFF		4

Illumination for Presentation Mode in Scanning	High Level Illumination (default)	040100	0
	Mid Level Illumination 1		1
	Mid Level Illumination 2		2
	Low Level Illumination		3
	Illumination OFF		4
Illumination for Presentation Mode in Idle	High Level Illumination	040101	0
	Mid Level Illumination 1		1
	Mid Level Illumination 2		2
	Low Level Illumination (default)		3
	Illumination OFF		4
Beeper - Good Read	On (default)	050210	1
	Off		0
Beeper Tone – Good Read	Low	05021D	1
	Middle		2
	High (default)		3
Beeper Duration – Good Read	Normal (default)	050216	0
	Short		1
Beeper Number-Good Read	1(default)	05020E	1
	2		2
	3		3
	4		4
	5		5
Barcode Scanning Delay	No Delay (default)	080B08	0
	Delay 500MS		500
	Delay 2000ms		2000
Add Specified Suffix	Add CR	080500	990D
	Add LF		990A
	Add CRLF		990D0A
	Add TAB		9909
Prefix	Add Prefix	080400	99XX
Suffix	Add Suffix	080500	99XX
Clear all prefix and suffix (default)	Clear all prefix and suffix (default)	080404;080507	NA

Save	Save setting	0D0400	NA
Not Save	Not save setting	0D0500	NA
Enable/Disable All Symbologies	Enable All Symbologies	020100	1
	Disable All Symbologies		0
Code 128	Restore the Factory Defaults of Code 128 (default)	020A00	NA
	Enable Code 128 (default)	020A01	1
	Disable Code 128		0
	Code 128 max length	020A03	Min~90
	Code 128 min length	020A02	0~max
EAN-8	Restore the Factory Defaults of EAN-8 (default)	021400	NA
	Enable EAN-8 (default)	021401	1
	Disable EAN-8		0
	Transmit EAN-8 Check Digit (default)	021402	1
	Do Not Transmit EAN-8 Check Digit		0
	Enable 2-Digit Add-On Code	021403	1
	Disable 2-Digit Add-On Code (default)		0
	Enable 5-Digit Add-On Code	021404	1
	Disable 5-Digit Add-On Code (default)		0
	EAN-8 Add-On Code Required	021405	1
	EAN-8 Add-On Code Not Required (default)		0
	Enable ENA/JAN-8 Addenda Separator (default)	021406	1
	Disable ENA/JAN-8 Addenda Separator UPC		0
EAN-13	Restore the Factory Defaults of EAN-13 (default)	021300	NA
	Enable EAN-13 (default)	021301	1
	Disable EAN-13		0
	Transmit EAN-13 Check Digit (default)	021302	1
	Do Not Transmit EAN-13 Check Digit		0
	Enable 2-Digit Add-On Code	021303	1
	Disable 2-Digit Add-On Code(default)		0
	Enable 5-Digit Add-On Code	021304	1
	Disable 5-Digit Add-On Code(default)		0
	EAN-13 Add-On Code Required	021305	1

	EAN-13 Add-On Code Not Required (default)		0
	Enable ENA/JAN-13 Addenda Separator (default)	021306	1
	Disable ENA/JAN-13 Addenda Separator		0
	Enable ISBN Translate	021307	1
	Disable ISBN Translate (default)		0
UPC-E	Restore the Factory Defaults of UPC-E (default)	021200	NA
	Enable UPC-E0 (default)	021201	1
	Disable UPC-E0		0
	Enable UPC-E1 (default)	021202	1
	Disable UPC-E1		0
	Enable UPC-E0 Check Digit (default)	021204	1
	Disable UPC-E0 Check Digit		0
	Enable UPC-E0 Expand	021203	1
	Disable UPC-E0 Expand (default)		0
	Enable UPC-E0 Required	021208	1
	Disable UPC-E0 Required (default)		0
	Enable UPC-E0 Separator (default)	021209	1
	Disable UPC-E0 Separator		0
	Enable UPC-E0 Number System (default)	021205	1
	Disable UPC-E0 Number System		0
	Enable 2 Digit Addenda	021206	1
	Disable 2 Digit Addenda (default)		0
	Enable 5 Digit Addenda	021207	1
	Disable 5 Digit Addenda (default)		0
UPC-A	Restore the Factory Defaults of UPC-A (default)	021100	NA
	Enable UPC-A (default)	021101	1
	Disable UPC-A		0
	Enable UPC-A Check Digit (default)	021102	1
	Disable UPC-A Check Digit		0
	Enable UPC-A Required	021106	1
	Disable UPC-A Required (default)		0
	Enable UPC-A Separator (default)	021107	1

	Disable UPC-A Separator		0
	Enable UPC-A Number System (default)	021103	1
	Disable UPC-A Number System		0
	Enable 2 Digit Addenda	021104	1
	Disable 2 Digit Addenda (default)		0
	Enable 5 Digit Addenda	021105	1
	Disable 5 Digit (default)		0
Interleaved 2 of 5	Restore the Factory Defaults of Interleaved 2 of 5 (default)	020400	NA
	Enable Industrial 2 of 5	020401	1
	Disable Interleaved 2 of 5		0
	No check Char (default)	020402	0
	Validate and Transmit		2
	Validate not Transmit		1
	Interleaved 2 of 5 max length	020404	Min~80
	Interleaved 2 of 5 min length	020403	2~max
Matrix 2 of 5	Restore the Factory Defaults of Matrix 2 of 5 (default)	020800	NA
	Enable Matrix 2 of 5	020801	1
	Disable Matrix 2 of 5 (default)		0
	Matrix 2 of 5 max length	020803	Min~80
	Matrix 2 of 5 min length	020802	1~max
Industrial 2 of 5	Restore the Factory Defaults of Industrial 2 of 5 (default)	020600	NA
	Enable Industrial 2 of 5	020601	1
	Disable Industrial 2 of 5 (default)		0
	Industrial 2 of 5 max length	020603	Min~48
	Industrial 2 of 5 min length	020602	1~max
Code 39	Restore the Factory Defaults of Code 39 (default)	020300	NA
	Enable Code 39 (default)	020301	1
	Disable Code 39		0
	Transmit Start/Stop Character	020305	1
	Do not Transmit Start/Stop Character (default)		0
	No Check Char (default)	020304	0

	Validate and Transmit		2
	Validate no Transmit		1
	Enable Code 39 Full ASCII	020302	1
	Disable Code 39 Full ASCII (default)		0
	Code 39 max length	020308	Min~48
	Code 39 min length	020307	0~max
Coda bar	Restore the Factory Defaults of Coda bar (default)	020200	NA
	Enable Coda bar (default)	020201	1
	Disable Coda bar		0
	Coda bar max length	020206	Min~60
	Coda bar min length	020205	2~max
	Transmit Start/Stop Character	020202	1
	Do not Transmit Start/Stop Character (default)		0
	No Check Char (default)	020203	0
	Validate and Transmit		2
	Validate no Transmit		1
Code 93	Restore the Factory Defaults of Code 93 (default)	020D00	NA
	Enable Code 93	020D01	1
	Disable Code 93 (default)		0
	Code 93 max length	020D03	Min~80
	Code 93 min length	020D02	0~max
GS1-128	Restore the Factory Defaults of GS1-128 (default)	020B01	NA
	Enable GS1-128 (default)	020B00	1
	Disable GS1-128		0
	GS1-128 max length	020B03	Min~80
	GS1-128 min length	020B02	0~max
MSI	Restore the Factory Defaults of MSI (default)	020E00	NA
	Enable MSI	020E01	1
	Disable MSI (default)		0
	MSI max length	020E04	Min~48
	MSI min length	020E03	4~max
	Validate Type 10, No Transmit (Default)	020E02	0

	Validate Type 10, Transmit		1
	Validate 2 Type 10 Characters, No Transmit		2
	Validate 2 Type 10 Characters, Transmit		3
	Validate Type 11 Then Type 10 Character, No Transmit		4
	Validate Type 11 Then Type 10 Characters, Transmit		5
	Disable MSI Check Characters		6
PDF 417	Restore the Factory Defaults of PDF 417 (default)	021F00	NA
	Enable PDF 417 (default)	021F01	1
	Disable PDF 417		0
	PDF417 max length	021F06	Min~2750
	PDF417 min length	021F05	1~max
Micro PDF 417	Restore the Factory Defaults of Micro PDF 417 (default)	022000	NA
	Enable Micro PDF 417	022001	1
	Disable Micro PDF 417 (default)		0
	Micro PDF417 max length	022003	Min~2750
	Micro PDF417 min length	022002	1~max
QR Code	Restore the Factory Defaults of QR Code (default)	023700	NA
	Enable QR Code (default)	023701	1
	Disable QR Code		0
	QR max length	023703	Min~7089
	QR max length	023702	1~max
Data Matrix	Restore the Factory Defaults of Data Matrix (default)	023600	NA
	Enable Data Matrix (default)	023601	1
	Disable Data Matrix		0
	Data Matrix max length	023603	Min~3116
	Data Matrix min length	023602	1~max
Maxi code	Restore the Factory Defaults of Maxi code (default)	023400	NA
	Enable Maxi code	023401	1
	Disable Maxi code (default)		0
	Maxi Code max length	023403	Min~150
	Maxi Code min length	023402	1~max

Aztec	Restore the Factory Defaults of Aztec (default)	023300	NA
	Enable Aztec	023301	1
	Disable Aztec (default)		0
	Aztec max length	023306	Min~3832
	Aztec min length	023305	0~Max
Hanxin	Restore the Factory Defaults of Hanxin (default)	023800	NA
	Enable Hanxin	023801	1
	Disable Hanxin (default)		0
	Hanxin max length	023803	Min~7833
	Hanxin min length	023802	1~max
China Postal Code	Restore the Factory Defaults of China Postal Code (default)	021800	NA
	Enable China Postal Code	021801	1
	Disable China Postal Code (default)		0
Telepen	Restore the Factory Defaults of Telepen (default)	021000	NA
	Enable Telepen	021001	1
	Disable Telepen (default)		0

7 Appendix

7.1 Appendix 1: AIM ID Table

Symbology	AIM ID	Remark
EAN-13	J E0	Standard EAN-13
	J E3	EAN-13 + 2/5-Digit Add-On Code
EAN-8	J E4	Standard EAN-8
	J E4...J E1...	EAN-8 + 2-Digit Add-On Code
	J E4...J E2...	EAN-8 + 5-Digit Add-On Code
UPC-E	J E0	Standard UPC-E
	J E3	UPC-E + 2/5-Digit Add-On Code
UPC-A	J E0	Standard UPC-A
	J E3	UPC-A + 2/5-Digit Add-On Code
Code 128	J C0	Standard Code 128
GS1-128 (UCC/EAN-128)	J C1	FNC1 is the character right after the start character
AIM-128	J C2	FNC1 is the 2nd character after the start character
ISBT-128	J C4	
Interleaved 2 of 5	J I0	No parity check
	J I1	Transmit check digit after parity check
	J I3	Do not transmit check digit after parity check
ITF-6	J I1	Transmit check digit
	J I3	Do not transmit check digit
ITF-14	J I1	Transmit check digit
	J I3	Do not transmit check digit
Industrial 2 of 5	J S0	Not specified
Standard 2 of 5	J R0	No parity check
	J R8	One check digit, MOD10; do not transmit check digit
	J R9	One check digit, MOD10; transmit check digit
Code 39	J A0	Transmit barcodes as is; Full ASCII disabled; no parity check
	J A1	One check digit, MOD43; transmit check digit
	J A3	One check digit, MOD43; do not transmit check digit
	J A4	Full ASCII enabled; no parity check
	J A5	Full ASCII enabled; transmit check digit
	J A7	Full ASCII enabled; do not transmit check digit
Codabar	J F0	Standard Codabar
	J F2	Transmit check digit after parity check
	J F4	Do not transmit check digit after parity check

Symbology	AIM ID	Remark
Code 93	JG0	Standard Code 93
Code 11	JH0	One check digit MOD11; transmit check digit
	JH1	Two check digits, MOD11/MOD11; transmit check digit
	JH3	Do not transmit check digit after parity check
	JH9	No parity check
GS1-DataBar (RSS)	Je0	Standard GS1-DataBar
Plessey	JP0	Standard Plessey
MSI-Plessey	JM0	One check digit, MOD10; transmit check digit
	JM1	One check digit, MOD10; do not transmit check digit
	JM8	Two check digits
	JM9	No parity check
Matrix 2 of 5	JX0	Specified by the manufacturer
	JX1	No parity check
	JX2	One check digit, MOD10; transmit check digit
	JX3	One check digit, MOD11; do not transmit check digit
ISBN	JX4	Standard ISBN
ISSN	JX5	Standard ISSN
PDF417	JL0	Comply with 1994 PDF417 specifications
Data Matrix	Jd0	ECC000 - ECC140
	Jd1	ECC200
	Jd2	ECC200, FNC1 is the 1st or 5th character after the start character
	Jd3	ECC200, FNC1 is the 2nd or 6th character after the start character
	Jd4	ECC200, ECI included
	Jd5	ECC200, FNC1 is the 1st or 5th character after the start character, ECI included
	Jd6	ECC200, FNC1 is the 2nd or 6th character after the start character, ECI included
QR Code	JQ0	QR1
	JQ1	2005 version, ECI excluded
	JQ2	2005 version, ECI included
	JQ3	QR Code 2005, ECI excluded, FNC1 is the 1st character after the start character
	JQ4	QR Code 2005, ECI included, FNC1 is the 1st character after the start character
	JQ5	QR Code 2005, ECI excluded, FNC1 is the 2nd character after the start character
	JQ6	QR Code 2005, ECI included, FNC1 is the 2nd character after the start character

Reference: ISO/IEC 15424:2008 Information technology – Automatic identification and data capture techniques – Data Carrier

Identifiers (including Symbology Identifiers).

7.2 Appendix 2: ASCII Table





Hex	Dec	Char
00	0	NUL (Null char.)
01	1	SOH (Start of Header)
02	2	STX (Start of Text)
03	3	ETX (End of Text)
04	4	EOT (End of Transmission)
05	5	ENQ (Enquiry)
06	6	ACK (Acknowledgment)
07	7	BEL (Bell)
08	8	BS (Backspace)
09	9	HT (Horizontal Tab)
0a	10	LF (Line Feed)
0b	11	VT (Vertical Tab)
0c	12	FF (Form Feed)
0d	13	CR (Carriage Return)
0e	14	SO (Shift Out)
0f	15	SI (Shift In)
10	16	DLE (Data Link Escape)
11	17	DC1 (XON) (Device Control 1)
12	18	DC2 (Device Control 2)
13	19	DC3 (XOFF) (Device Control 3)
14	20	DC4 (Device Control 4)
15	21	NAK (Negative Acknowledgment)
16	22	SYN (Synchronous Idle)
17	23	ETB (End of Trans. Block)
18	24	CAN (Cancel)
19	25	EM (End of Medium)
1a	26	SUB (Substitute)
1b	27	ESC (Escape)
1c	28	FS (File Separator)
1d	29	GS (Group Separator)
1e	30	RS (Request to Send)
1f	31	US (Unit Separator)

Hex	Dec	Char
20	32	SP (Space)
21	33	! (Exclamation Mark)
22	34	" (Double Quote)
23	35	# (Number Sign)
24	36	\$ (Dollar Sign)
25	37	% (Percent)
26	38	& (Ampersand)
27	39	` (Single Quote)
28	40	((Right / Closing Parenthesis)
29	41) (Right / Closing Parenthesis)
2a	42	* (Asterisk)
2b	43	+ (Plus)
2c	44	, (Comma)
2d	45	- (Minus / Dash)
2e	46	. (Dot)
2f	47	/ (Forward Slash)
30	48	0
31	49	1
32	50	2
33	51	3
34	52	4
35	53	5
36	54	6
37	55	7
38	56	8
39	57	9
3a	58	: (Colon)
3b	59	; (Semi-colon)
3c	60	< (Less Than)
3d	61	= (Equal Sign)
3e	62	> (Greater Than)
3f	63	? (Question Mark)

Hex	Dec	Char
40	64	@ (AT Symbol)
41	65	A
42	66	B
43	67	C
44	68	D
45	69	E
46	70	F
47	71	G
48	72	H
49	73	I
4a	74	J
4b	75	K
4c	76	L
4d	77	M
4e	78	N
4f	79	O
50	80	P
51	81	Q
52	82	R
53	83	S
54	84	T
55	85	U
56	86	V
57	87	W
58	88	X
59	89	Y
5a	90	Z
5b	91	[(Left / Opening Bracket)
5c	92	\ (Back Slash)
5d	93] (Right / Closing Bracket)
5e	94	^ (Caret / Circumflex)
5f	95	_ (Underscore)

Hex	Dec	Char
60	96	' (Grave Accent)
61	97	a
62	98	b
63	99	c
64	100	d
65	101	e
66	102	f
67	103	g
68	104	h
69	105	i
6a	106	j
6b	107	k
6c	108	l
6d	109	m
6e	110	n
6f	111	o
70	112	p
71	113	q
72	114	r
73	115	s
74	116	t
75	117	u
76	118	v
77	119	w
78	120	x
79	121	y
7a	122	z
7b	123	{ (Left/ Opening Brace)
7c	124	(Vertical Bar)
7d	125	} (Right/Closing Brace)
7e	126	~ (Tilde)
7f	127	DEL (Delete)

7.3 Appendix 3: Digit Barcodes

0	1	2	3
			
Y0Y	Y1Y	Y2Y	Y3Y
4	5	6	7
			
Y4Y	Y5Y	Y6Y	Y7Y
8	9	A	B
			
Y8Y	Y9Y	YAY	YBY
C	D	E	F
			
YCY	YDY	YFY	YFY