

# **HT850**

## **INTEGRATION GUIDE**



DB50

INTEGRATION GUIDE

Revision. 13

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# Revision History

Changes to the original guide are listed below:

Change	Data	Description
Rev10	12/2015	Initial Release
Rev11	01/2016	RS232 changes to TTL with DB50
Rev12	02/2016	Add typical circuit
Rev13	07/2016	Add setting and saving custom defaults







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# ABOUT THIS GUIDE

## Introduction

The HT850 Decoder Integration Guide provides general instructions for mounting, setting up and programming the HT850 decoder.

## Notational Conventions

The following conventions are used in this document:

- *Italics* are used to highlight the following:
  - Chapters and sections in this and related documents
  - Dialog box, window and screen names
  - Drop-down list and list box names
  - Check box and radio button names
- **Bold** text is used to highlight the following:
  - Key names on a keypad
  - Button names on a screen
- Bullets (•) indicate:
  - Action items
  - Lists of alternatives
  - Lists of required steps that are not necessarily sequential
  - Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.
  - Throughout the programming bar code menus, asterisks (\*) are used to denote default parameter settings.



\*Indicates Default      \*Aim Mode On      Feature/Option

## **Service Information**

If you have a problem with your equipment, contact I Lab support for your region.

When contacting I Lab support, please have the following information available:

- Serial number of the DB50
- Model number or product name
- Software type and version number

I Lab responds to calls by e-mail, telephone or fax within the time limits set forth in service agreements.

If your problem cannot be solved by I Lab support, you may need to return your equipment for servicing and will be given specific directions. I Lab is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your business product from an I Lab business partner, please contact that business partner for support.

# CHAPTER 1 GETTING STARTED

## Introduction

The HT850 is a companion decoder module, which controls the imager, acquires images, and decodes 1D and 2D symbologies.

The HT850 is a multi-chip processing system, composed of an ARM core and related subsystems. The DB50 includes a variety of USB and single RS-232 interfaces.

DB50 architecture includes:

- Atmel AT91SAM9 processor core, 400 MHz
- 32 MB LPSDRAM
- 8 MB SPI flash
- Image Sensor Interface (ISI) port
- Host communication port.

System peripherals include:

- One UART (RS-232) channel
- I2C bus used for camera control
- USB 1.1 High Speed port for image and bar code data transfers.

This integration guide describes the decoder theory of operation, installation, specifications, and configuration.

# Theory of Operation

During image capture:

1. The image sensor array in the camera board captures an image of the bar code through the engine's optical lens. If necessary, the DB50 automatically adjusts illumination, exposure, and other parameters to obtain the best quality image.
2. The camera board sends the image to the HT850 decoder board.
3. The HT850 processes the image to identify the target bar code(s), decodes them, and transmits the decoded data to the host.

Set various parameters provided in this guide to adjust the performance of the camera board and DB50 to match the application or desired usage profile.

## HT850 Decoder

Figure 1-1 provides a block diagram for the decoder.

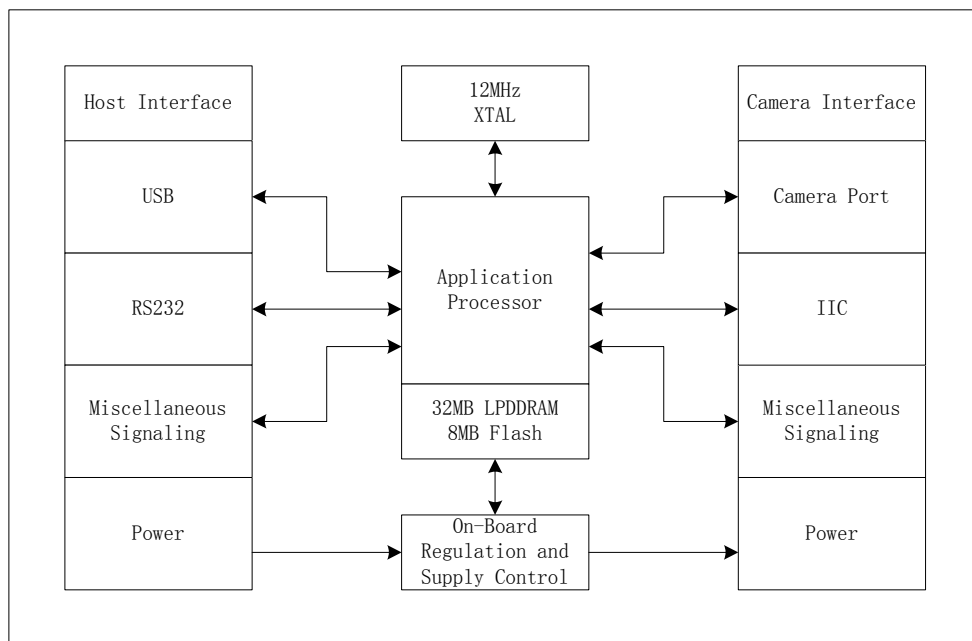


Figure 1-1 DB50 Decoder Block Diagram

## Power Management

### USB

The HT850 does not exceed the USB limit of 500mA when drawing power from the USB bus.

## RS232

When using RS232 host interface, HT850 works in one of the following power mode:

- **Normal mode:** The HT850 is fully awake and running, even when not in a decode session.
- **Power down mode:** The HT850 can enter into power down mode.

Method of waking up the HT850:

- Set the pin nTRIGGER\_UP to low.

## Interfaces

The DB50's host interface can be configured by scanning specific bar code or sending serial commands.

**Table 1-1** Host Interface Configuration

	Interfaces	Configuration Options
<b>Bar Code</b>	USB Keyboard(Default)	See section of <b>USB Keyboard(PC)</b>
	RS232	See section of <b>USB Serial</b>
	USB Serial	See section of <b>TTL Interface</b>
<b>Serial Command</b>	USB Keyboard(Default)	See section of <b>DB50 Menu Commands</b>
	RS232	
	USB Serial	

## Indicators

The pin BEEPER\_PWM and LED output lines provide user feedback but do not provide enough current for the actual beeper and led device. Additional buffering is required.



# Supported Symbologies

The following symbologies are supported and can be individually enabled or disabled:

## 1D Symbologies

EAN-8	EAN-13
UPC-A	UPC-A with Coupon Code
UPC-E0	UPC-E1
Code 39	Code 93
Codabar	Code 128
GS1-128	Code 32
Interleaved 2 of 5	Matrix 2 of 5
Straight 2 of 5 IATA(two-bar start/stop)	Straight 2 of 5 Industrial (three-bar start/stop)
Codablock A	Codablock F
GS1 DataBar Expanded	GS1 DataBar Limited
GS1 DataBar Omnidirectional	MSI
Telepen	Code 11

## 2 D Symbologies

QR Code	PDF417
MicroPDF417	Data Matrix
Aztec Code	Han Xin Code

Maxicode

TCIF Linked Code 39 (TLC39)

## **Postal Code Symbologies**

Korea Post

China Post(Hong Kong 2 of 5)

Australia Post

British Post

Canadian Post

Intelligent Mail/USPS 4-State

Japanese Post

KIX Post

Planet

Postnet

InfoMail

# CHAPTER 2 INSTALLATION AND SPECIFICATION

## Introduction

This chapter provides information for connecting and mounting the DB50 decoder.

## General Information

### Grounding

The mounting holes for the HT850 include exposed copper that may, if necessary, be used to electrically ground the decoder to the host using metal screws. If installing the HT850 in a host where there is a potential to inject ground noise, use nylon or other non-conductive hardware. In this case the HT850 ground is provided through the host connector.

### Electrical Isolation

Both sides of the HT850 decoder board include components and electrical conductors that must be isolated from contact with components on the host device.

### Electrostatic Discharge (ESD)

The HT850 decoder is protected from ESD events that can occur in an uncontrolled environment, however, use care when handling the module and apply standard ESD precautions such as using grounding wrist straps and handling only in a properly grounded work area.

### Environment

Enclose the HT850 decoder sufficiently to prevent dust from gathering on the printed circuit board and components. Dust and other contaminants can eventually degrade performance. IA does not guarantee performance of the decoder when used in an exposed application.

### Power Supply Noise

For reliable operation a low-noise power supply is required. Pay close attention to power supply quality and testing to ensure the best performance from the HT850 and imager engine components.

**VCC\_5V:** For a host that supplies 5 VDC to the decoder, the decoder maintains proper regulation and supply

quality.

## Thermal Considerations

The HT850 decoder module includes several high-power components that dissipate heat during operation. These components can exhibit high temperatures when the HT850 /imager engine pair is running at 30 frames per second with full illumination. Use care when integrating the HT850 /imager engine pair into the target application.

Protective measures that reduce power consumption and/or facilitate heat removal within a target system include but are not limited to:

- Reducing illumination intensity on the camera board
- Mounting the HT850 to a solid metallic surface using metal screws
- Selecting a housing design that allows for natural or forced convection.

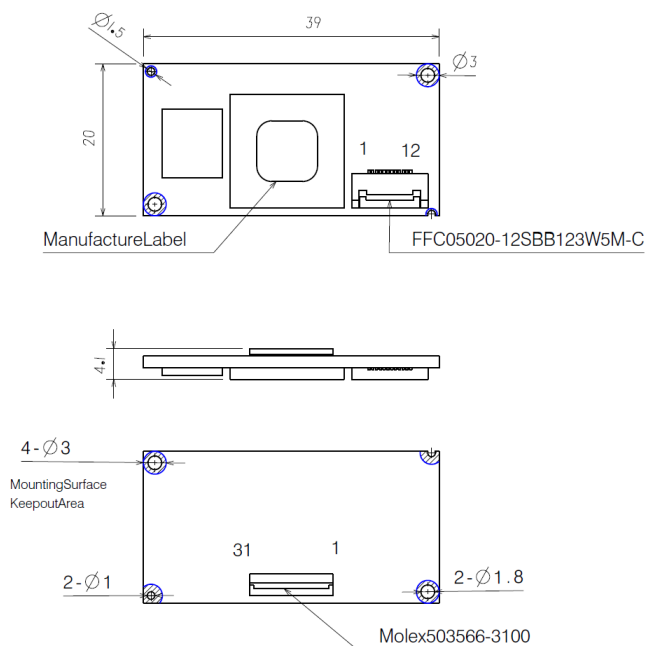
Note that running the HT850 /imager engine pair in continuous 30 fps with both aiming and illumination enabled full time is highly uncommon. Typical decoding and image capture applications are low duty cycle operations and internal temperature rise due to the HT850 /imager engine pair should be minimal.

## HT850 Decoder Board

There are two mounting holes (1.8 mm) on the decoder board.

The following figure provides an outline drawing for the HT850 decoder board. Position the board in the host equipment so that the connecting interface cable reaches the engine.

The HT850 boards contain components and circuitry on both sides.



**Figure 2-1** HT850 Decoder Board Drawing

**Notes:** Unless otherwise specified:

- This is a reference drawing and is not intended to specify or guarantee all possible integration requirements for this decoder.
- Dimensions are in mm.
- Tolerance for dimensions is  $\pm 0.25$  mm.

## HT850 Electrical Information

### Power Supply Requirements

The HT850 decoder board can be powered from Host 5 VDC. The HT850 uses an intelligent hardware multiplexer to configure the most efficient power supply arrangement for the combined HT850 /imager engine system

**Table 2-1** HT850 Electrical Characteristics-Power

Symbol	Parameter	Condition	Minimum	Typical	Maximum	Units
VCC_5V	Supply	Voltage	4.5	5	5.5	V

### DC Characteristics

**Table 2-2** HT850 Electrical Characteristics-DC characteristics

Signals	Min	Nominal	Max	Unit
nRESET_IN	4.5	5	5.5	V
BEEPER_PWM	2.7	3.3	3.6	V
LED	2.7	3.3	3.6	V
nTRIG_UP	2.7	3.3	3.6	V

## Electrical Interface

**Table 2-3** and **Table 2-4** list the pin functions of the imager engine and HT850 interfaces, and illustrate typical input and output circuitry.

**Note:** Signal directions are listed relative to HT850 decoder module.

**Table 2-3** Imager Engine Signal Descriptions

Signal Name	Description	Dir	Engine Interface
PWR_DN	Module enter deep sleep mode	Input	1
LDO_EN	Power on/off sensor	Input	2
VSS	Ground	Ground power	3
PCLK	Pixel data synchronizing clock output	Output	4
VSS	Ground	Ground power	5
VSYNC	Vertical synchronizing signal output	Output	6
HSYNC	Horizontal synchronizing output	Output	7
D7	Data output 7	Output	8
D6	Data output 6	Output	9
D5	Data output 5	Output	10
D4	Data output 4	Output	11
D3	Data output 3	Output	12

D2	Data output 2	Output	13
D1	Data output 1	Output	14
D0	Data output 0	Output	15
VSS	Ground	Ground power	16
MCLK	Main clock input	Input	17
VSS	Ground	Ground power	18
I2C_SCL	I2C serial bus clock	Input	19
I2C_SDA	I2C serial bus data	Bi-directional	20
LED_PWR_EN1	Flash LED control 1	Input	21
LED_PWR_EN0	Flash LED control 0	Input	22
AIM_PWR_EN	Aimer LED control	Input	23
NC	NC	NC	24
VCC_SENSOR_IO	Sensor IO power	1.8V or 2.8V	25
VCC_SENSOR	Sensor analog power	2.8V or 3.3V	26
VCC_SENSOR	Sensor analog power	2.8V or 3.3V	27
VSS	Ground	Ground power	28
VSS	Ground	Ground power	29

VCC_ILLUM	Flash & Aimer LED power	3.3V	30
VCC_ILLUM	Flash & Aimer LED power	3.3V	31

**Table 2-4** DB50 Signal Descriptions

Signal Name	Description	Dir	Engine Interface
VCC_5V	Module Power Supply 5V	Input	1
VCC_5V	Module Power Supply 5V	Input	2
GND	Ground	Ground power	3
UART_RXD	TTL signal	Input	4
UART_TXD	TTL signal	Output	5
USB_DM	USB Negative Differential Data Signal	Input /Output	6
USB_DP	USB Positive Differential Data Signal	Input /Output	7
GND	Ground	Ground power	8
BEEPER_PWM	PWM Output to Control	Output	9
LED	External Indication LED Signal	Output	10
nRESET_IN	Reset System Signal	Input	11
uTRIGGER_UP	Used to start a decode session or wake up system from power down mode.	Input	12



## Technical Specifications

**Table 2-5** provides the technical specifications for the HT850 decoder. Note that current draw figures are valid for a HT850 with an attached IA200 imager engine.

**Table 2-5** HT850 Decoder Technical Specifications at 23°C

Item	Description
Power Requirements:	Supply currents listed below are typical values in mA, RMS, at nominal supply voltage unless otherwise specified.
Host Supply 5V:	
Supply Voltage	5 V +/- 0.5 V
Idle Current	25.6 mA
Operating Current	80.0 mA
Peak Current	190.0 mA
Maximum Power Supply Noise	100 mVp-p - bar code and image capture applications,
Start Up Time	
From Power On	TTL: 1052 ms USB : Host dependent
Baud Rate	300,600,1200,2400,4800,9600, 19200, 38400, 57600, 115200
Dimensions	39.0 mm x 20.0 mm x 4.1 mm

## Typical Interface Board Circuit

**Figure 2-2** shows the typical circuit for signal of LED. **Figure 2-3** shows the typical circuit for signal of BEEPER\_PWM. **Figure 2-4** shows the typical circuit for signal of nRESET\_IN. **Figure 2-5** shows the typical circuit for signal of uTRIG\_UP.

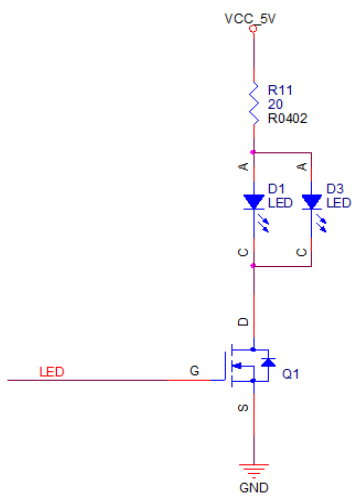


Figure 2-2 The typical circuit for signal of LED

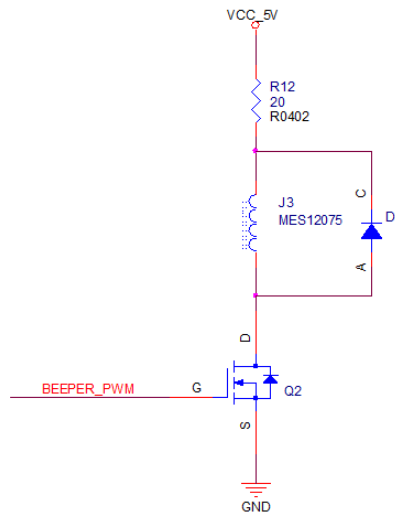


Figure 2-3 The typical circuit for signal of BEEPER\_PWM

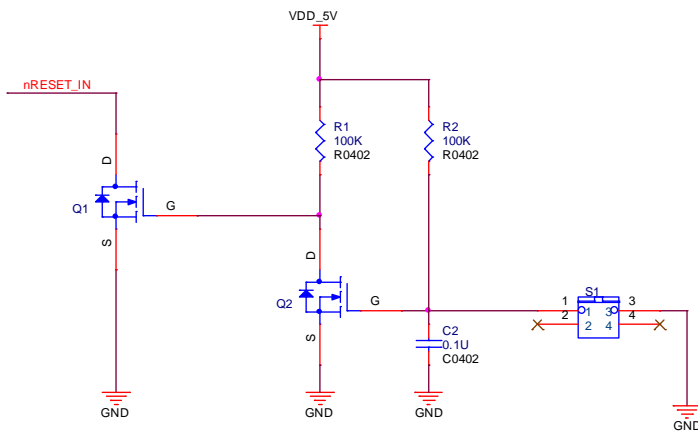


Figure 2-4 The typical circuit for signal of nRESET\_IN

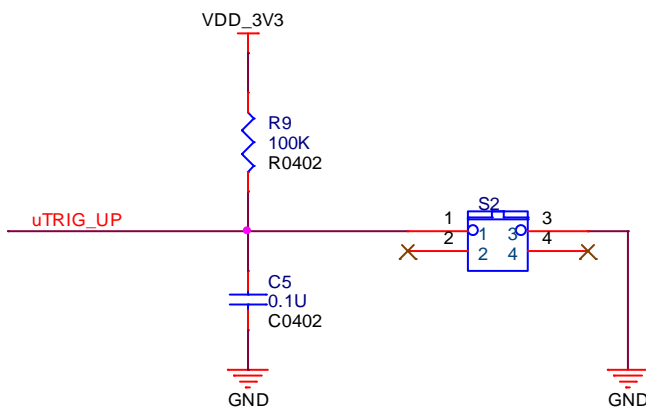


Figure 2-5 The typical circuit for signal of uTRIG\_UP

# CHAPTER 3 ACCESSORIES

The accessories of HT850 are listed below:

1. 12 Pin Connector for connecting HT850 to a host,
2. 31 Pin Connector for connecting HT850 to imager engine(e.g. IA200).

The drawings of the two connectors is shown by the following figures: **Figure 3-1, Figure 3-2, Figure 3-3 and Figure 3-4.**

Figure 3-1 12-Pin connector(TXGA)

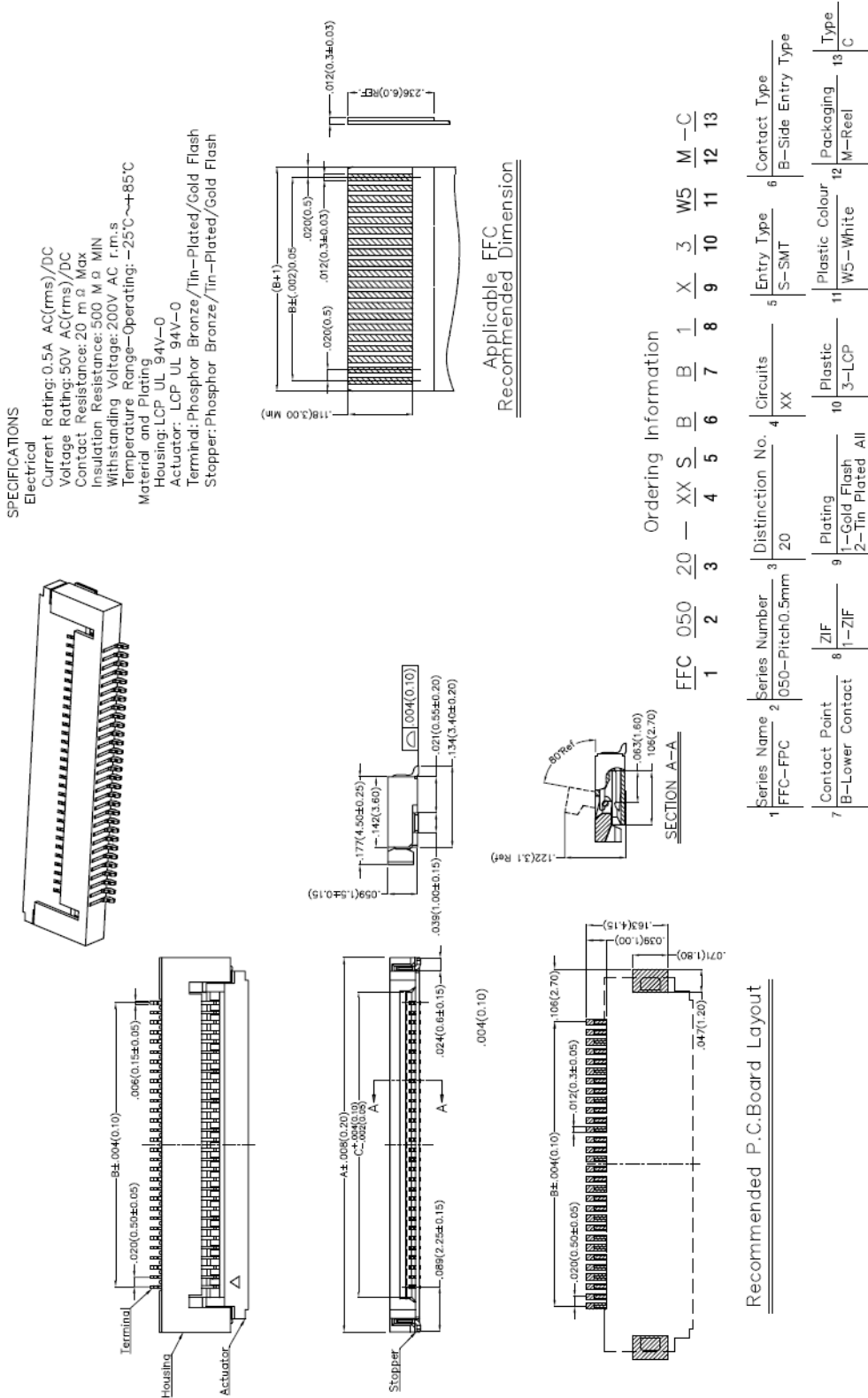
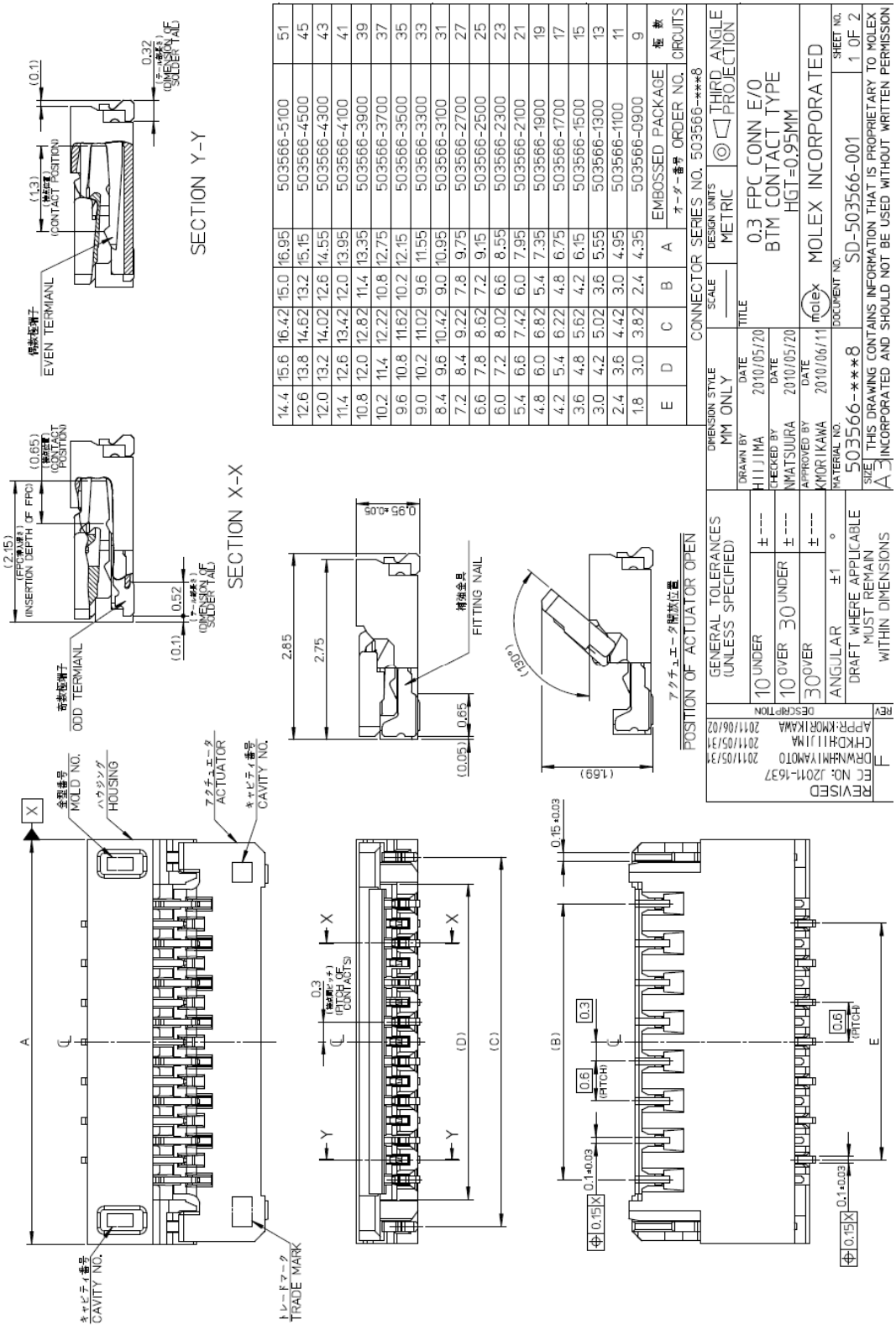


Figure 3-2 12-Pin connector(TXGA),Continued

Note: Contact Tin-Plated				Note: Contact Gold Flash					
Circuits (n)	Part No.	Dimensions(in./mm)			Circuits (n)	Part No.	Dimensions(in./mm)		
		A	B	C			A	B	C
6	FFC05020-06SBB123WSM-C	.280(7.10)	.098(2.50)	.172(3.60)	6	FFC05020-06SBB113WSM-C	.280(7.10)	.098(2.50)	.172(3.60)
8	FFC05020-08SBB123WSM-C	.319(8.10)	.138(3.50)	.181(4.60)	8	FFC05020-08SBB113WSM-C	.319(8.10)	.138(3.50)	.181(4.60)
9	FFC05020-09SBB123WSM-C	.339(8.60)	.157(4.00)	.201(5.10)	9	FFC05020-09SBB113WSM-C	.339(8.60)	.157(4.00)	.201(5.10)
10	FFC05020-10SBB123WSM-C	.358(9.10)	.177(4.50)	.220(5.60)	10	FFC05020-10SBB113WSM-C	.358(9.10)	.177(4.50)	.220(5.60)
12	FFC05020-12SBB123WSM-C	.398(10.10)	.217(5.50)	.260(6.60)	12	FFC05020-12SBB113WSM-C	.398(10.10)	.217(5.50)	.260(6.60)
20	FFC05020-20SBB123WSM-C	.555(14.10)	.374(9.50)	.417(10.60)	20	FFC05020-20SBB113WSM-C	.555(14.10)	.374(9.50)	.417(10.60)
24	FFC05020-24SBB123WSM-C	.634(16.10)	.453(11.50)	.493(12.60)	24	FFC05020-24SBB113WSM-C	.634(16.10)	.453(11.50)	.493(12.60)
26	FFC05020-26SBB123WSM-C	.673(17.10)	.492(12.50)	.535(13.60)	26	FFC05020-26SBB113WSM-C	.673(17.10)	.492(12.50)	.535(13.60)
30	FFC05020-30SBB123WSM-C	.752(19.10)	.571(14.50)	.614(15.60)	30	FFC05020-30SBB113WSM-C	.752(19.10)	.571(14.50)	.614(15.60)
34	FFC05020-34SBB123WSM-C	.830(21.10)	.650(16.50)	.693(17.60)	34	FFC05020-34SBB113WSM-C	.830(21.10)	.650(16.50)	.693(17.60)
35	FFC05020-35SBB123WSM-C	.850(21.60)	.669(17.00)	.713(18.10)	35	FFC05020-35SBB113WSM-C	.850(21.60)	.669(17.00)	.713(18.10)
36	FFC05020-36SBB123WSM-C	.870(22.10)	.689(17.50)	.732(18.60)	36	FFC05020-36SBB113WSM-C	.870(22.10)	.689(17.50)	.732(18.60)
40	FFC05020-40SBB123WSM-C	.949(24.10)	.768(19.50)	.811(20.60)	40	FFC05020-40SBB113WSM-C	.949(24.10)	.768(19.50)	.811(20.60)
50	FFC05020-50SBB123WSM-C	1.146(29.10)	.965(24.50)	1.008(25.60)	50	FFC05020-50SBB113WSM-C	1.146(29.10)	.965(24.50)	1.008(25.60)
54	FFC05020-54SBB123WSM-C	1.224(31.10)	1.043(26.50)	1.087(27.60)	54	FFC05020-54SBB113WSM-C	1.224(31.10)	1.043(26.50)	1.087(27.60)
60	FFC05020-60SBB123WSM-C	1.343(34.10)	1.161(29.50)	1.205(30.60)	60	FFC05020-60SBB113WSM-C	1.343(34.10)	1.161(29.50)	1.205(30.60)

Figure 3.3 31-Pin connector(Molex)



14.4	15.6	16.42	15.0	16.95	503566-5100	51
12.6	13.8	14.62	13.2	15.15	503566-4500	45
12.0	13.2	14.02	12.6	14.55	503566-4300	43
11.4	12.6	13.42	12.0	13.95	503566-4100	41
10.8	12.0	12.82	11.4	13.35	503566-3900	39
10.2	11.4	12.22	10.8	12.75	503566-3700	37
9.6	10.8	11.62	10.2	12.15	503566-3500	35
9.0	10.2	11.02	9.6	11.55	503566-3300	33
8.4	9.6	10.42	9.0	10.95	503566-3100	31
7.2	8.4	9.22	7.8	9.75	503566-2700	27
6.6	7.8	8.62	7.2	9.15	503566-2500	25
6.0	7.2	8.02	6.6	8.55	503566-2300	23
5.4	6.6	7.42	6.0	7.95	503566-2100	21
4.8	6.0	6.82	5.4	7.35	503566-1900	19
4.2	5.4	6.22	4.8	6.75	503566-1700	17
3.6	4.8	5.62	4.2	6.15	503566-1500	15
3.0	4.2	5.02	3.6	5.55	503566-1300	13
2.4	3.6	4.42	3.0	4.95	503566-1100	11
1.8	3.0	3.82	2.4	4.35	503566-0900	9
E	D	C	B	A	EMBOSSED PACKAGE オールドマーク ORDER NO. 090015	板数

CONNECTOR SERIES NO. 503566-****8		SCALE		DESIGN UNITS		THIRD ANGLE PROJECTION	
DIMENSION STYLE		MM ONLY		METRIC		PROJECTION	
GENERAL TOLERANCES (UNLESS SPECIFIED)		TITLE		0.3 FPC CONN E/O		BTM CONTACT TYPE	
DRAWN BY HILJIMA 2010/05/20		DATE		HGT=0.95MM		MOLEX INCORPORATED	
CHECKED BY NMATSUURA 2010/05/20		DATE		DOCUMENT NO.		SD-503566-001	
APPROVED BY KIMORI KAWA 2010/06/11		DATE		SHEET NO.		1 OF 2	
MATERIAL NO.		DRAWN BY		SIZE		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX	
503566-****8		HILJIMA		A		INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DRAWN BY NMATSUURA 2011/05/23		CHECKED BY		REVISION			
APPROVED BY CHIKOHJI JIMA 2011/05/23		DATE		DESCRIPTION			
MATERIAL NO.		DRAWN BY		REVISION			
503566-****8		NMATSUURA		1			
DRAWN BY KIMORI KAWA 2011/06/02		DATE		DESCRIPTION			
APPROVED BY CHIKOHJI JIMA 2011/06/02		DATE		REVISION			
MATERIAL NO.		DRAWN BY		REVISION			
503566-****8		KIMORI KAWA		1			
DRAWN BY CHIKOHJI JIMA 2011/05/23		DATE		DESCRIPTION			
APPROVED BY NMATSUURA 2011/05/23		DATE		REVISION			
MATERIAL NO.		DRAWN BY		REVISION			
503566-****8		NMATSUURA		1			
DRAWN BY KIMORI KAWA 2011/06/02		DATE		DESCRIPTION			
APPROVED BY CHIKOHJI JIMA 2011/06/02		DATE		REVISION			
MATERIAL NO.		DRAWN BY		REVISION			
503566-****8		KIMORI KAWA		1			



# CHAPTER 4 USER PREFERENCES & MISCELLANEOUS OPTIONS

## OPTIONS

### Introduction

This chapter describes each user preference feature and provides the programming bar codes necessary for selecting these features.

### Resetting the Custom Defaults

To default all settings restored in your scanner, you can scan the **Activate Custom Defaults** bar code below.



Activate Custom Defaults

### Setting Custom Defaults

You can scan **Set Custom Defaults** bar code before scanning the normal menu bar code for your custom defaults. When you have entered all the commands you want to save for your custom defaults, scan the **Save Custom Defaults** bar code, then scan **Activate Custom Defaults** bar code.



Set Custom Defaults



Save Custom Defaults

### Resetting the Factory Defaults

If you want to restore the unit to factory default setting, first scan the **Remove Custom Defaults** bar code, then scan **Activate Defaults**.





Remove Custom Defaults



Activate Defaults

## Suppress Power-up Beeps

To select whether or not to suppress the decoder's power-up beeps, you can scan a bar code below.

*Default =Power Up Beeper On Scanner.*



Power Up Beeper Off



\*Power Up Beeper On

## Beep on <BEL>

When this function is enabled, the decoder issues a beep when it detects a <BEL> character on the serial line. <BEL> gains a user's attention to an illegal entry or other important event.

*Default=Beep On BEL Off*



\*Beep on BEL Off



Beep on BEL On

## Trigger Click

To hear an audible click every time you press the scanner button, you can scan the **Trigger Click On** bar code below. If you don't wish to hear the click, you can scan the **Trigger Click Off** code below.

*Default = Trigger Click Off.*



\*Trigger Click Off



Trigger Click On

**NOTE:** This feature has no effect on serial or automatic triggering.

## Good Read and Error Indicators

### Beeper – Good Read

The beeper may be programmed **On** or **Off** in response to a good read. Turning this option off, only turns off the beeper response to a good read indication. All error and menu beeps are still audible.

*Default = Beeper -Good Read On.*



Beeper-Good Read Off



\*Beeper-Good Read On

### Beeper Tone-Good Read

To select a decode beep frequency (tone), you can scan the **Low Frequency**, **Medium Frequency**, or **High Frequency** bar code below.

*Default =Low Frequency (800 Hz).*



\*Low Frequency(800 Hz)



Medium Frequency(1600 Hz)



High Frequency(3200 Hz)

## **Beeper Tone-User Specified Setting**

If you want to set your specified beep frequency (tone), scan the bar code below, then set the frequency (from 400-9,000 Hz) by scanning digits from the [APPENDIX B Programming Number](#), then scanning **Save**.



Beeper Tone- User Specified Setting

## **Beeper Volume-Good Read**

To select a beeper volume, you can scan the **Low Volume**, **Medium Volume**, or **High Volume** bar code below.

*Default =High Volume.*



Off



Low Volume



Medium Volume



\*High Volume

### Beeper Duration-Good Read

To select the duration for the beeper, you can scan one of the following bar codes.

*Default =Normal Beep.*



\* Normal Beep



Short Beep

### Number of Good Decode Beeps- Good Read

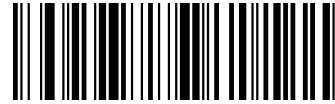
The number of beeps in response to a good decode can be programmed from bar codes as below .The same number of beeps will be applied to both the beeper and LED in response to a good decode.

For example: if you select 2 beeps, there will be 2 beeps and 2 LED flashes in response to a good decode. The

beeps and LED flashes are in sync with each other.



\*1 Good Read Beep/LED Flash



2 Good Read Beeps/LED Flashes



3 Good Read Beeps/LED Flashes

## LED – Good Read

To select whether or not to program the LED indicator in response to a good decode, you can select a bar code below.

*Default = Program LED Indicator After Good Decode.*



Don't Program LED Indicator After Good Decode



\*Program LED Indicator After Good Decode

## Good Read Delay

This sets the minimum amount of time before the scanner can read another bar code.

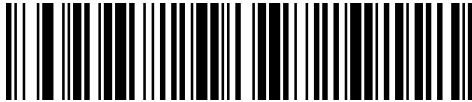
*Default = 0 ms (No Delay).*



\*No Delay



Short Delay(500 ms)



Medium Delay(1000 ms)



Long Delay(1500 ms)

## Manual Trigger Mode

When in manual trigger mode, the scanner scans until a bar code is read, or until the button is released.

*Default = Manual Trigger-Normal.*



\*Manual Trigger - Normal

## LED Illumination - Manual Trigger

If you wish to set the illumination LED brightness, scan one of the barcodes below. This sets the LED illumination for the scanner when the trigger is pressed.

*Default = High.*

**Note:** The LEDs are like a flash on a camera. The lower the ambient light in the room, the brighter the LEDs need to be so the scanner can “see” the bar codes.



Low



\*High

## Aim Mode

It sets the aim illumination for the scanner when the trigger is pressed.

*Default = Aim Mode On.*



Aim Mode Off



\*Aim Mode On

## Presentation Mode

Presentation Mode uses ambient light to detect bar codes. When no bar code is presented to the scanner, the LED dims. When a bar code is presented to the scanner, the LED brightens to read the code.

**Note:** If the light level in the room is not high enough, Presentation Mode may not work properly.



Presentation Mode

## Idle Illumination - Presentation Mode

Scan one of the bar codes below to set the LED illumination for the scanner when it is in an idle state in Presentation Mode.

*Default = Low.*

**Note:** If you use one of the lower Idle Illumination settings, and there is not enough ambient light, the scanner may have difficulty detecting when a bar code is presented to it. If the scanner has difficulty “waking up” to read bar codes, you may need to set the Idle Illumination to a brighter setting.



\*Low



High

## Presentation Sensitivity

Presentation Sensitivity is a numeric range that increases or decreases the scanner's reaction time to bar code presentation. To set the sensitivity, scan the **Sensitivity** bar code, then scan the degree of sensitivity (from 0-20) from the inside back cover, and **Save**. 0 is the most sensitive setting, and 20 is the least sensitive.

*Default = 4.*



Sensitivity

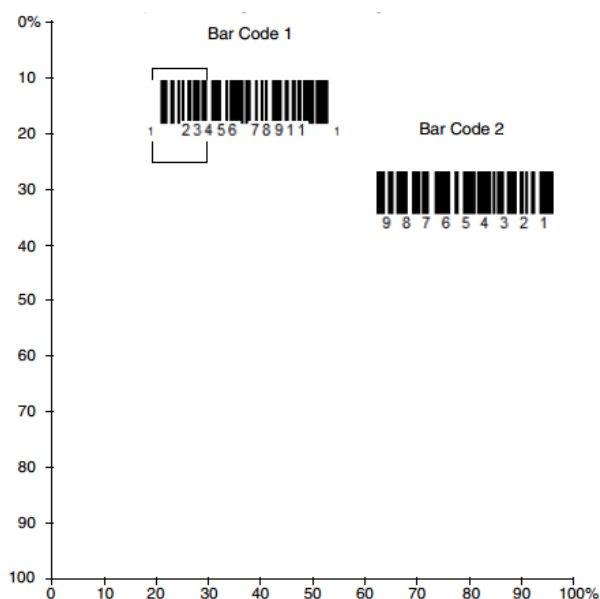


## Presentation Centering

Use Presentation Centering to narrow the scanner's field of view when it is in the stand to make sure the scanner reads only those bar codes intended by the user. For instance, if multiple codes are placed closely together, Presentation Centering will insure that only the desired codes are read.

**Note:** To adjust centering when the scanner is hand-held, see Manual Trigger Centering . If a bar code is not touched by a predefined window, it will not be decoded or output by the scanner. If Presentation Centering is turned on by scanning Presentation Centering On, the scanner only reads codes that pass through the centering window you specify using the Top of Presentation Centering Window, Bottom of Presentation Centering Window, Left, and Right of Presentation Centering Window bar codes.

In the example below, the white box is the centering window. The centering window has been set to 20% left, 30% right, 8% top, and 25% bottom. Since Bar Code 1 passes through the centering window, it will be read. Bar Code 2 does not pass through the centering window, so it will not be read.



**Note:** A bar code needs only to be touched by the centering window in order to be read. It does not need to pass completely through the centering window.

Scan **Presentation Centering On**, then scan one of the following bar codes to change the **top, bottom, left, or right of the centering window**. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual. Scan **Save**.

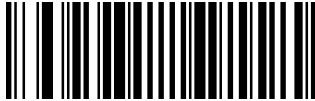
*Default Presentation Centering = 40% for Top and Left, 60% for Bottom and Right.*



\*Presentation Centering Off



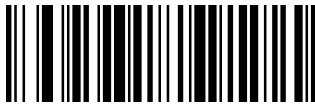
Presentation Centering On



Top of Presentation Centering Window



Bottom of Presentation Centering Window



Left of Presentation Centering Window



Right of Presentation Centering Window

## Mobile Phone/Display Mode

This mode improves bar code reading performance with target bar codes displayed on mobile phones and electronic displays.



Hand Held Scanning - Mobile Phone



Presentation Scanning - Mobile Phone

**Note:** To turn off Mobil Phone Read Mode, scan the Manual Trigger Mode bar Code.

## Hands Free Time-Out

The Scan Stand and Presentation Modes are referred to as “hands free” modes. If the scanner’s button is pressed when using a hands free mode, the scanner changes to manual trigger mode. You can set the time the scanner should remain in manual trigger mode by setting the Hands Free Time-Out. Once the time-out value is reached, (if there have been no further button presses) the scanner reverts to the original hands free mode. Scan the **Hands Free Time-Out** bar code, then scan the time-out duration (from 0-300,000 milliseconds) from the inside back cover, and **Save**.

*Default =5,000 ms.*



Hands Free Time-Out

## Reread Delay

Use this option in Presentation Mode to prevent multiple reads of a symbol left in the decoder’s field of view.

The timeout begins when you remove the symbol from the field of view.

*Default = Medium(1000 ms).*



No Delay



Short (500 ms)



\* Medium (1000 ms)



Extra Long(2000 ms)

## User-Specified Reread Delay

If you want to set your own length for the reread delay, scan the bar code below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**.



User-Specified Reread Delay

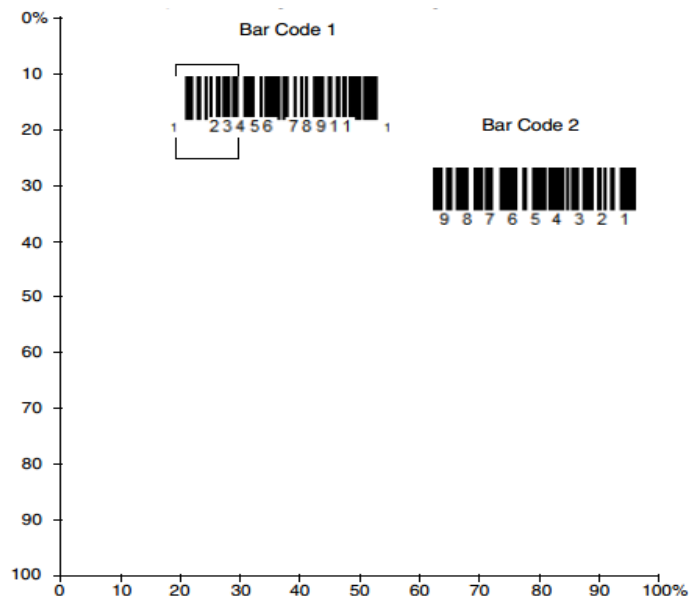
## Manual Trigger Centering

Use Centering to narrow the scanner's field of view to make sure that when the scanner is hand-held, it reads only those bar codes intended by the user. For instance, if multiple codes are placed closely together, centering will insure that only the desired codes are read.

**Note:** To adjust centering when the scanner is in the stand, see Presentation Centering .

If a bar code is not touched by a predefined window, it will not be decoded or output by the scanner. If centering is turned on by scanning Centering On, the scanner only reads codes that pass through the centering window you specify using the **Top of Centering Window**, **Bottom of Centering Window**, **Left**, and **Right of Centering Window** bar codes.

In the example below, the white box is the centering window. The centering window has been set to 20% left, 30% right, 8% top, and 25% bottom. Since Bar Code 1 passes through the centering window, it will be read. Bar Code 2 does not pass through the centering window, so it will not be read.



**Note:** A bar code needs only to be touched by the centering window in order to be read. It does not need to pass completely through the centering window.

Scan **Centering On**, then scan one of the following bar codes to change the top, bottom, left, or right of the centering window. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual. Scan **Save**.

*Default Centering = 40% for Top and Left, 60% for Bottom and Right.*



\* Manual Trigger Centering Off



Manual Trigger Centering On



Top of Manual Trigger Centering Window



Bottom of Manual Trigger Centering Window



Left of Manual Trigger Centering Window



Right of Manual Trigger Centering Window

## Video Reverse

**Video Reverse Off** :Disable Video Reverse.

**Video Reverse Only**: Read only inverted bar codes.

**Video Reverse and Standard Bar Codes** :Read both types of codes.

**Note**: After scanning **Video Reverse Only**, menu bar codes cannot be read. You must scan **Video Reverse Off** or **Video Reverse and Standard Bar Codes** in order to read menu bar codes.

**Note**: Images downloaded from the unit are not reversed. This is a setting for decoding only.



\* Video Reverse Off



Video Reverse and Standard Bar Codes



Video Reverse Only

## Working Orientation

Some bar codes are direction-sensitive. For example, KIX codes and OCR can misread when scanned sideways or upside down. Use the working orientation settings if your direction-sensitive codes will not usually be presented upright to the scanner.

*Default = Upright.*

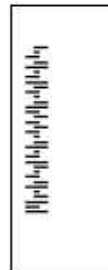
Upright:



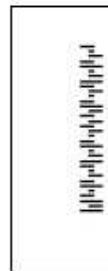
Upside Down:



Vertical, Top to Bottom:  
(Rotate CW 90°)



Vertical, Bottom to Top:  
(Rotate CCW 90°)





\*Upright



Vertical, Bottom to Top



Upside Down



Vertical, Top to Bottom

## Show Revision

Scan the bar code below to output the current software revision, serial number, and other product information.



Show Revision

## Resetting the Factory Defaults

If you aren't sure what programming options are in your scanner, or you've changed some options and want to restore the scanner to factory default settings, first scan the **Remove Custom Defaults** bar code, then scan **Activate Custom Defaults**. This resets the scanner to the factory default settings. **NOTE:** This selection erases all your settings and resets to the original factory defaults and disables all plugins.



Remove Custom Defaults



Activate Custom Defaults

# CHAPTER 5 USB INTERFACE

## USB Serial

Scan the following code to program the scanner to emulate a regular RS232-based COM Port. If you are using a Microsoft® Windows® PC, you will need to a driver from the IA Lab. The driver will use the next available COM Port number.



USB Serial

**Note:** No extra configuration (e.g., baud rate) is necessary.

## ACK/NAK Mode



\*ACK/NAK Mode Off



ACK/NAK Mode On

## USB PC or Macintosh Keyboard

Scan one of the following codes to program the scanner for USB PC Keyboard or USB Macintosh Keyboard. Scanning these codes also adds a CR and LF.



USB Keyboard(PC)



USB Keyboard(Mac)



USB Japanese Keyboard(PC)



# Keyboard Country Layout

Scan the appropriate country code below to program the keyboard layout for your country or language. As a general rule, the following characters are supported, but need special care for countries other than the United States: @ | \$ # { } [ ] = / ' \ < > ~



\*United States



United States(Dvorak)



United States(Dvorak left)



United States(Dvorak right)



United States(International)



Albania



Azeri(Cyrillic)



Azeri (Latin)



Belarus



Belgium



Bosnia



Brazil



Brazil (MS)



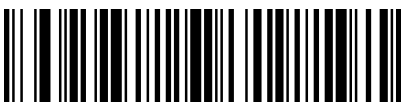
Bulgaria (Cyrillic)



Bulgaria (Latin)



Canada (French legacy)



Canada (French)



Canada (Multilingual)



Croatia



Czech



Czech (Programmers)



Czech (QWERTY)



Czech (QWERTZ)



Denmark



Dutch (Netherlands)



Estonia



Faeroese



Finland



France



Gaelic



Germany



Greek



Greek (220 Latin)



Greek (220)



Greek (319 Latin)



Greek (319)



Greek (Latin)



Greek (MS)



Greek (Polytonic)



Hebrew



Hungarian (101 key)



Hungary



Iceland



Irish



Italian (142)



Italy



Japan ASCII



Kazakh



Kyrgyz (Cyrillic)



Latin America



Latvia



Latvia (QWERTY)



Lithuania



Lithuania (IBM)



Macedonia



Malta



Mongolian (Cyrillic)



Norway



Poland



Polish (214)



Polish (Programmers)



Portugal



Romania



Russia



Russian (MS)



Russian (Typewriter)



SCS



Serbia (Cyrillic)



Serbia (Latin)



Slovakia



Slovakia (QWERTY)



Slovakia (QWERTZ)



Slovenia



Spain



Spanish variation



Sweden



Switzerland (French)



Switzerland (German)





Tatar



Turkey F



Turkey Q



Ukrainian



United Kingdom



Uzbek (Cyrillic)

## Keyboard Style

This programs keyboard styles, such as Caps Lock and Shift Lock. If you have used Keyboard Conversion settings, they will override any of the following Keyboard Style settings.

*Default = Regular.*

**Regular** is used when you normally have the Caps Lock key off.



\* Regular

**Caps Lock** is used when you normally have the Caps Lock key on.



Caps Lock

**Shift Lock** is used when you normally have the Shift Lock key on (not common to U.S. keyboards).



Shift Lock

**Automatic Caps Lock** is used if you change the Caps Lock key on and off. The software tracks and reflects if you have Caps Lock on or off . This selection can only be used with systems that have an LED that notes the Caps Lock status .



Automatic Caps Lock

**Autocaps via NumLock** bar code should be scanned in countries (e.g., Germany, France) where the Caps Lock key cannot be used to toggle Caps Lock. The NumLock option works similarly to the regular Autocaps, but uses the NumLock key to retrieve the current state of the Caps Lock.



Autocaps via NumLock

**Emulate External Keyboard** should be scanned if you do not have an external keyboard (IBM AT or equivalent).



Emulate External Keyboard

**Note:** After scanning the Emulate External Keyboard bar code, you must power cycle your computer.

## Keyboard Conversion

Alphabetic keyboard characters can be forced to be all upper case or all lowercase. So if you have the following bar

code: “1a2B3c4D5e,” you can make the output “1A2B3C4D5E” by scanning Convert All Characters to Upper Case, or to “1a2b3c4d5e” by scanning Convert All Characters to Lower Case.

These settings override Keyboard Style selections.

**Note:** If your interface is a keyboard wedge, first scan the menu code for Automatic Caps Lock . Otherwise, your output may not be as expected.

*Default = Keyboard Conversion Off.*



\* Keyboard Conversion Off



Convert All Characters to Upper Case



Convert All Characters to Lower Case

## Control Character Output

This selection sends a text string instead of a control character. For example, when the control character for a carriage return is expected, the output would display [CR] instead of the ASCII code of 0D. Refer to [APPENDIX D ASCII Conversion Chart](#). Only codes 00 through 1F are converted (the first column of the chart).

**Note:** Control + ASCII Mode overrides this mode.

*Default = Off.*



\* Control Character Output Off



Control Character Output On

## Keyboard Modifiers

This modifies special keyboard features, such as CTRL+ ASCII codes and Turbo Mode.

**Control + ASCII Mode On:** The scanner sends key combinations for ASCII control characters for values 00-1F. Windows is the preferred mode. All keyboard country codes are supported.

**DOS mode** is a legacy mode, and it does not support all keyboard country codes. New users should use the Windows mode. Refer to [APPENDIX A Interface Keys](#) for CTRL+ ASCII Values.

**Windows Mode Prefix/Suffix Off:** The scanner sends key combinations for ASCII control characters for values 00-1F, but it does not translate any prefix or suffix information.

*Default = Control + ASCII Mode Off.*



\* Control + ASCII Mode Off



DOS Mode Control + ASCII Mode On



Windows Mode Control + ASCII Mode On



Windows Mode Prefix/Suffix Off

# CHAPTER 6 SERIAL INTERFACE

## Introduction

This chapter describes how to set up the decoder with a serial host. The DB50 supports TTL signal. So the serial interface which converts TTL signal to RS232 signal connects the decoder to point-of-sale devices, host computers, or other devices with an available serial port (e.g., com port).

## RS232 Serial Port

The **RS232 Interface** bar code is used when connecting to the serial port of a PC or terminal. The following **RS232 Interface** bar code also programs a carriage return (CR) and a line feed (LF) suffix, baud rate, and data format as indicated below. It also changes the trigger mode to manual.



RS232 Interface

Parameter	Factory Default
Serial Communication	Standard RS232
Baud Rate	115200
Parity Check	None
Data Bits	8
Stop Bits	1
Hardware Flow Control	None

## Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the decoder's baud rate to match the baud rate setting of the host device. Otherwise, data may not reach the host device or may reach it in distorted form.

*Default=Band Rate 115200*



Band Rate 300



Band Rate 600



Band Rate 1200



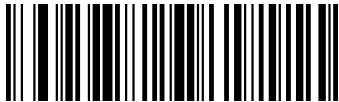
Band Rate 2400



Band Rate 4800



Band Rate 9600



Band Rate 19200



Band Rate 38400



Band Rate 57600



\*Band Rate 115200

## RS232 Receiver Time-Out

The DB50 runs normal until the RS232 Receiver Time-Out expires and the DB50 will enter in Power Down mode which the DB50 power consumption is none . A manual trigger resets the time-out and wake up the DB50. The receiver Change the RS232 receiver time-out by scanning the bar code below, then scanning digits from the inside back cover of this manual, then scanning Save. The range is 0 to 300 seconds.

*Default = 0 seconds (no time-out - always on).*



RS232 Receiver Time-Out

# CHAPTER 7 SYMBOLOGIES

## Introduction

This chapter describes symbology features and provides the programming bar codes for selecting these features. If the default values suit requirements, programming is not necessary.

## All Symbologies

**All Symbologies Off:** To disable all symbologies, scan the **All Symbologies Off** bar code. This is useful when enabling only a few code types.

**All Symbologies On:** To enable all symbologies, scan the **All Symbologies On** bar code.



All Symbologies Off

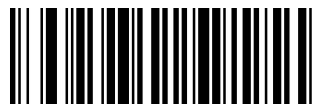


All Symbologies On

## UPC/EAN

### Default All UPC-A Settings

To default all UPC-A Settings, scan the bar code below.



Default All UPC-A Settings



## Enable/Disable UPC-A

To enable or disable UPC-A, scan the appropriate bar code below.

*Default =UPC-A On.*



UPC-A Off



\*UPC-A On

**Note:** When **UPC-A Off** is scanned, UPC-A bar codes are transmitted as EAN-13.

## UPC-A Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the UPC-A check digit. It is always verified to guarantee the integrity of the data.

*Default= UPC-A check digit On.*



UPC-A check digit Off



\*UPC-A check digit On

## UPC-A Number System

The numeric system digit of a U.P.C. symbol is normally transmitted at the beginning of the scanned data. To select whether or not to transmit the number system, you can scan one of the bar codes below.

*Default = UPC-A Number System On.*



UPC-A Number System Off



\*UPC-A Number System On

## UPC-A Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC-A data.

*Default = Off for both 2 Digit and 5 Digit Addenda.*



\* 2 Digit Addenda Off



2 Digit Addenda On



\* 5 Digit Addenda Off



5 Digit Addenda On

## UPC-A Addenda Required

When **UPC-A Addenda Required** bar code is scanned, the scanner only can read UPC-A bar codes that have addenda.

*Default = UPC-A Addenda Not Required.*



\* UPC-A Addenda Not Required



UPC-A Addenda Required

## UPC-A Addenda Separator

**UPC-A Addenda Separator On:** There is a space between the data from the bar code and the data from the addenda.

**UPC-A Addenda Separator Off:** There is no space between the data from the bar code and the data from the addenda.

*Default = UPC-A Addenda Separator On.*



UPC-A Addenda Separator Off



\* UPC-A Addenda Separator On

## UPC-A/EAN-13 with Extended Coupon Code

To enable or disable UPC-A and EAN-13 with Extended Coupon Code, you can scan the bar codes below.

**Off:** Treats Coupon Codes and Extended Coupon Codes as single bar codes.

**Allow Concatenation:** The scanner sees the coupon code and the extended coupon code in a single read, it transmits both as separate symbologies. Otherwise, it transmits the first coupon code it reads.

**Require Concatenation:** The scanner must see and read the coupon code and extended coupon code in a single read to transmit the data. No data is output unless both codes are read.

*Default = Off.*



\* Off



Require Concatenation



Allow Concatenation

## Coupon GS1 DataBar Output

If you scan coupons that have both UPC and GS1 DataBar codes, you may wish to scan and output only the data from the GS1 DataBar code.

To scan and output only the GS1 DataBar code data, you can scan the **GS1 Output On** code below.

*Default = GS1 Output Off.*



\*GS1 Output Off



GS1 Output On

## Default All UPC-E0 Settings

Most U.P.C. bar codes lead with the 0 number system. To read these codes, use the UPC-E0 On selection.

To default all UPC-E0 Settings, scan the bar code below.



Default all UPC-E0 Settings

## Enable/Disable UPC-E0

To enable or disable UPC-E, scan the appropriate bar code below.

*Default =UPC-E0 On.*



UPC-E0 Off



\* UPC-E0 On

## UPC-E0 Expand

UPC-E Expand expands the UPC-E code to the 12 digit, UPC-A format.

*Default = UPC-E0 Expand Off.*



\*UPC-E0 Expand Off



UPC-E0 Expand On

## UPC-E0 Number System

The numeric system digit of a U.P.C. symbol is normally transmitted at the beginning of the scanned data. To select whether or not to transmit the number system, you can scan one of the bar codes below.

*Default = UPC-E0 Number System On.*



UPC-E0 Number System Off



\*UPC-E0 Number System On

## UPC-E0 Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC-E data.

*Default = Off for both 2 Digit and 5 Digit Addenda.*



\* 2 Digit Addenda Off



2 Digit Addenda On



\* 5 Digit Addenda Off



5 Digit Addenda On

## UPC-E0 Addenda Required

When **UPC-E0 Addenda Required** bar code is scanned, the scanner only can read UPC-E0 bar codes that have addenda.

*Default =UPC-E0 Addenda Not Required.*



\* UPC-E0 Addenda Not Required



UPC-E0 Addenda Required

## UPC-E0 Addenda Separator

**UPC-E0 Addenda Separator On:** There is a space between the data from the bar code and the data from the addenda.

**UPC-E0 Addenda Separator Off:** There is no space between the data from the bar code and the data from the addenda.

*Default =UPC-E0 Addenda Separator On.*



UPC-E0 Addenda Separator Off



\*UPC-E0 Addenda Separator On

## Transmit UPC-E0 Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the UPC-E0 check digit. It is always verified to guarantee the integrity of the data.

Default= UPC-E0 Check Digit On.



UPC-E0 Check Digit Off



\*UPC-E0 Check Digit On

## Enable/Disable UPC-E1

To enable or disable UPC-E1, scan the appropriate bar code below. *Default= UPC-E1 Off.*

**NOTE:** UPC-E1 is not a UCC (Uniform Code Council) approved symbology.



\* UPC-E1 Off



UPC-E1 On

## Default All EAN/JAN-8 Settings

To default all EAN/JAN-8 Settings, scan the bar code below.



Default all EAN/JAN-8 Settings

## Enable/Disable EAN/JAN-8

To enable or disable EAN-8/JAN-8, scan the appropriate bar code below.



*Default =EAN/JAN-8 On.*



EAN/JAN-8 Off



\*EAN/JAN-8 On

## **EAN/JAN-8 Check Digit**

The check digit is the last character of the symbol used to verify the integrity of the data.

Scan the appropriate bar code below to transmit the bar code data with or without the EAN/JAN-8 check digit. It is always verified to guarantee the integrity of the data.

*Default = EAN/JAN-8 Check Digit On.*



EAN/JAN-8 Check Digit Off



\*EAN/JAN-8 Check Digit On

## **EAN/JAN-8 Addenda**

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-8 data.

*Default = Off for both 2 Digit and 5 Digit Addenda.*



\* 2 Digit Addenda Off



2 Digit Addenda On



\* 5 Digit Addenda Off



5 Digit Addenda On

### **EAN/JAN-8 Addenda Required**

When **EAN/JAN-8 Addenda Required** bar code is scanned, the scanner only can read EAN/JAN-8 bar codes that have addenda.

*Default =EAN/JAN-8 Addenda Not Required.*



\* EAN/JAN-8 Addenda Not Required



EAN/JAN-8 Addenda Required

### **EAN/JAN-8 Addenda Separator**

**EAN/JAN-8 Addenda Separator On:** There is a space between the data from the bar code and the data from the addenda.

**EAN/JAN-8 Addenda Separator Off:** There is no space between the data from the bar code and the data from the addenda.

*Default =EAN/JAN-8 Addenda Separator On.*



EAN/JAN-8 Addenda Separator Off



\* EAN/JAN-8 Addenda Separator On

## Default All EAN/JAN-13 Settings

To default all EAN/JAN-13 Settings, scan the bar code below.



Default all EAN/JAN-13 Settings

## Enable/Disable EAN/JAN-13

To enable or disable EAN-13/JAN-13, scan the appropriate bar code below.

*Default =EAN/JAN-13 Off.*



\*EAN/JAN-13 Off



EAN/JAN-13 On

**Note:** If you want to convert UPC-A bar codes to EAN-13 format, scan the **UPC-A Off** bar code.

## EAN/JAN-13 Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the EAN/JAN-13 check digit. It is always verified to guarantee the integrity of the data.

*Default = EAN/JAN-13 Check Digit On.*



EAN/JAN-13 Check Digit Off



\*EAN/JAN-13 Check Digit On

## EAN/JAN-13 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-13 data.

*Default = Off for both 2 Digit and 5 Digit Addenda.*



\* 2 Digit Addenda Off



2 Digit Addenda On



\* 5 Digit Addenda Off



5 Digit Addenda On

## EAN/JAN-13 Addenda Required

When **EAN/JAN-13 Addenda Required** bar code is scanned, the scanner only can read EAN/JAN-13 bar codes that have addenda.

*Default =EAN/JAN-13 Addenda Not Required.*



\* EAN/JAN-13 Addenda Not Required



EAN/JAN-13 Addenda Required

## EAN/JAN-13 Addenda Separator

**EAN/JAN-13 Addenda Separator On:** There is a space between the data from the bar code and the data from the addenda.

**EAN/JAN-13 Addenda Separator Off:** There is no space between the data from the bar code and the data from the addenda.

*Default = EAN/JAN-13 Addenda Separator On.*



EAN/JAN-13 Addenda Separator Off



\* EAN/JAN-13 Addenda Separator On

**Note:** If you want to enable or disable EAN13 with Extended Coupon Code, refer to UPC-A/EAN-13 with Extended Coupon Code.

## ISBN Translate

**ISBN Translate Off:** The decoder reports Bookland data (starting with either 978 or 979) as EAN-13 in 13-digit

format to meet the 2007 ISBN-13 protocol.

**ISBN Translate On:** EAN-13 Bookland symbols are translated into their equivalent ISBN number format.

*Default=ISBN Translate Off.*



\* ISBN Translate Off



ISBN Translate On

## Code 128

### Default All Code 128 Settings

To default all Code 128 Settings, scan the bar code below.



Default all Code 128 Settings

### Enable/Disable Code 128

To enable or disable Code 128, scan the appropriate bar code below.

*Default =Code 128 On.*



Code 128 Off



\*Code 128 On

## ISBT 128 Concatenation

**ISBT Concatenation Off:** The decoder does not concatenate pairs of ISBT codes it encounters.

**ISBT Concatenation On:** There must be two ISBT codes in order for the decoder to decode and perform concatenation. The decoder does not decode single ISBT symbols.

The use of ISBT formats requires a paid license. The ISBT 128 Application Specification describes 1) the critical data elements for labeling blood products, 2) the current recommendation to use Code 128 due to its high degree of security and its space-efficient design, 3) a variation of Code 128 that supports concatenation of neighboring symbols, and 4) the standard layout for bar codes on a blood product label. Use the bar codes below to turn concatenation on or off.

*Default = ISBT 128 Off.*



\* ISBT 128 Off



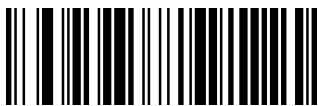
ISBT 128 On

## Code 128 Message Length

To change the message length of Code 128, you can scan the bar codes below.

Minimum and Maximum lengths = 0-80.

*Minimum Default = 0, Maximum Default = 80.*



Minimum Message Length



Maximum Message Length

## Code 128 Append

This function allows the scanner to append the data from several Code 128 bar codes together before transmitting them to the host computer. When the scanner encounters a Code 128 bar code with the append trigger character(s), it buffers Code 128 bar codes until it reads a Code 128 bar code that does not have the append trigger. The data is then transmitted in the order in which the bar codes were read (FIFO).

*Default =Code 128 Append Off.*



\* Code 128 Append Off



Code 128 Append On

## Code 128 Code Page32

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created, and scan the value and the **Save** bar code from the [APPENDIX B Programming Number](#) on the inside the back cover of this manual. The data characters should then appear properly.



Code 128 Code Page

## Default All GS1-128 Settings

To default all GS1-128 Settings, scan the bar code below.





Default all GS1-128 Settings

## Enable/Disable GS1-128

To enable or disable GS1-128, scan the appropriate bar code below.

*Default =GS1-128 On.*



GS1-128 Off



\*GS1-128 On

## GS1-128 Message Length

To change the message length of GS1-128, you can scan the bar codes below. Minimum and Maximum lengths = 1-80.

*Minimum Default = 1, Maximum Default = 80.*



Minimum Message Length



Maximum Message Length

# Telepen

## Default All Telepen Settings

To default all Telepen Settings, scan the bar code below.



Default All Telepen Settings

## Enable/Disable Telepen

To enable or disable Telepen, scan the appropriate bar code below.

*Default =Telepen Off.*



\*Telepen Off



Telepen On

## Telepen Output

**AIM Telepen Output:** The scanner reads symbols with start/stop pattern 1 and decodes them as standard full ASCII.

**Original Telepen Output:** The scanner reads symbols with start/stop pattern 1 and decodes them as compressed numeric with optional full ASCII.

*Default = AIM Telepen Output.*



\* AIM Telepen Output

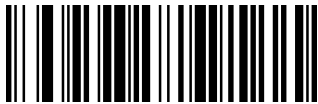


Original Telepen Output

## Telepen Message Length

To change the message length of Telepen, you can scan the bar codes below. Minimum and Maximum lengths = 1-60.

*Minimum Default = 1, Maximum Default = 60.*



Minimum Message Length



Maximum Message Length

## Code 39

### Default All Code 39 Settings

To default all Code 39 Settings, scan the bar code below.



Default all Code 39 Settings

## Enable/Disable Code 39

To enable or disable Code 39, scan the appropriate bar code below.

*Default = Code 39 On.*



Code 39 Off



\*Code 39 On

## Code 39 Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters.

*Default = Don't Transmit Start/Stop Characters.*



\* Don't Transmit Start/Stop Characters



Transmit Start/Stop Characters

## Code 39 Check Character

**No Check Character:** The scanner reads and transmits bar code data with or without a check character.

**Validate, but Don't Transmit:** The unit only reads Code 39 bar codes printed with a check character, but will not transmit the check character with the scanned data.

**Validate and Transmit:** The scanner only reads Code 39 bar codes printed with a check character, and will transmit this character at the end of the scanned data.

*Default = No Check Character.*



\* No Check Character



Validate and Transmit



Validate, but Don't Transmit

## Code 39 Message Length

To change the message length of Code 39, you can scan the bar codes below.

Minimum and Maximum lengths = 0-48.

*Minimum Default = 0, Maximum Default = 48.*



Minimum Message Length



Maximum Message Length

## Code 39 Append

This function allows the scanner to append the data from several Code 39 bar codes together before transmitting them to the host computer. When the scanner encounters a Code 39 bar code with the append trigger character(s), it buffers Code 39 bar codes until it reads a Code 39 bar code that does not have the append trigger. The data is then transmitted in the order in which the bar codes were read (FIFO).

*Default = Code 39 Append Off.*



\* Code 39 Append Off



Code 39 Append On

## Convert Code 39 to Code 32

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan the appropriate bar code below to enable or disable converting Code 39 to Code 32.

**NOTE:** Code 39 must be enabled for this parameter to function.

*Default =Convert Code 39 to Code 32 Off.*



\* Convert Code 39 to Code 32 Off



Convert Code 39 to Code 32 On

## Full ASCII

Code 39 Full ASCII is a variant of Code 39 which pairs characters to encode the full ASCII character set. To enable or disable Code 39 Full ASCII, scan the appropriate bar code below.

*Default=Full ASCII Off.*

NUL %U	DLE \$P	SP SPACE	0 0	@ %V	P P	' %W	p +P
SOH \$A	DC1 \$Q	! /A	1 1	A A	Q Q	a +A	q +Q
STX \$B	DC2 \$R	" /B	2 2	B B	R R	b +B	r +R
ETX \$C	DC3 \$S	# /C	3 3	C C	S S	c +C	s +S
EOT \$D	DC4 \$T	\$ /D	4 4	D D	T T	d +D	t +T
ENQ \$E	NAK \$U	% /E	5 5	E E	U U	e +E	u +U
ACK \$F	SYN \$V	& /F	6 6	F F	V V	f +F	v +V
BEL \$G	ETB \$W	' /G	7 7	G G	W W	g +G	w +W
BS \$H	CAN \$X	( /H	8 8	H H	X X	h +H	x +X
HT \$I	EM \$Y	) /I	9 9	I I	Y Y	i +I	y +Y
LF \$J	SUB \$Z	* /J	:	/Z	J J	Z Z	j +J z +Z
VT \$K	ESC %A	+ /K	:	%F	K K	[ %K	k +K { %P
FF \$L	FS %B	, /L	<	%G	L L	\ %L	l +L   %Q
CR \$M	GS %C	-	=	%H	M M	] %M	m +M } %R
SO \$N	RS %D	.	>	%I	N N	^ %N	n +N ~ %S
SI \$O	US %E	/	/O	? %J	O O	_ %O	o +O DEL %T



\* Full ASCII Off



Full ASCII On

## Code 39 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created, and scan the value and the **Save** bar code from the [APPENDIX B Programming Number](#) on the inside the back cover of this manual. The data characters should then appear properly.



Code 39 Code Page

## Code 93

### Default All Code 93 Settings

To default all Code 93 Settings, scan the bar code below.



Default all Code 93 Settings

## Enable/Disable Code 93

To enable or disable Code 93, scan the appropriate bar code below.

*Default =Code 93 On.*



Code 93 Off



\*Code 93 On

## Code 93 Message Length

To change the message length of Code 93, you can scan the bar codes below. Minimum and Maximum lengths = 0-80.

*Minimum Default = 0, Maximum Default = 80.*



Minimum Message Length



Maximum Message Length

## Code 93 Append

This function allows the scanner to append the data from several Code 93 bar codes together before transmitting



them to the host computer. When this function is enabled, the scanner stores those Code 93 bar codes that start with a space (excluding the start and stop symbols), and does not immediately transmit the data. The scanner stores the data in the order in which the bar codes are read, deleting the first space from each. The scanner transmits the appended data when it reads a Code 93 bar code that starts with a character other than a space.

*Default = Code 39 Append Off.*



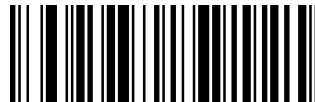
\* Code 93 Append Off



Code 39 Append On

## Code 93 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created, and scan the value and the **Save** bar code from the [APPENDIX B Programming Number](#) on the inside the back cover of this manual. The data characters should then appear properly.



Code 93 Code Page

## Code 11

### Default All Code 11 Settings

To default all Code 11 Settings, scan the bar code below.



Default all Code 11 Settings

## Enable/Disable Code 11

To enable or disable Code 11, scan the appropriate bar code below.

*Default = Code 11 Off*



\*Code 11 Off



Code 11 On

## Code 11 Check Digits Required

This option sets whether 1 or 2 check digits are required with Code 11 bar codes.

*Default = Two Check Digits.*



One Check Digit



\* Two Check Digits

## Code 11 Message Length

To change the message length of Code 11, you can scan the bar codes below. Mini-mum and Maximum lengths =

1-80.

*Minimum Default = 4, Maximum Default = 80.*



Minimum Message Length



Maximum Message Length

## **Interleaved 2 of 5 (ITF)**

### **Default All Interleaved 2 of 5 Settings**

To default all Interleaved2 of 5 Settings, scan the bar code below.



Default all Interleaved2 of 5 Settings

### **Enable/Disable Interleaved 2 of 5**

To enable or disable Interleaved 2 of 5, scan the appropriate bar code below, and select an Interleaved 2 of 5 length from the following pages.

*Default =Interleaved 2 of 5 On.*



Interleaved 2 of 5 Off



\*Interleaved 2 of 5 On

## Interleaved 2 of 5 Check Digit

**No Check Digit:** The scanner reads and transmits bar code data with or without a check digit.

**Validate, but Don't Transmit:** The unit only reads Interleaved 2 of 5 bar codes printed with a check digit, but will not transmit the check digit with the scanned data.

**Validate and Transmit:** The scanner only reads Interleaved 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data.

*Default = No Check Digit.*



\* No Check Digit



Validate and Transmit



Validate, but Don't Transmit

## Interleaved 2 of 5 Message Length

To change the message length of Interleaved 2 of 5, you can scan the bar codes below. Minimum and Maximum lengths = 2-80.

*Minimum Default = 4, Maximum Default = 80.*



Minimum Message Length



Maximum Message Length

## NEC 2 of 5

### Default All NEC 2 of 5 Settings

To default all NEC 2 of 5 Settings, scan the bar code.



Default all NEC 2 of 5 Settings

### Enable/Disable NEC 2 of 5

To enable or disable NEC 2 of 5, scan the appropriate bar code below.

*Default = NEC 2 of 5 On.*



NEC 2 of 5 Off



\*NEC 2 of 5 On

### Check Digit

**No Check Digit:** The scanner reads and transmits bar code data with or without a check digit.

**Validate, but Don't Transmit:** The unit only reads NEC 2 of 5 bar codes printed with a check digit, but will not transmit the check digit with the scanned data.

**Validate and Transmit:** The scanner only reads NEC 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data.

*Default = No Check Digit.*



\* No Check Digit



Validate and Transmit



Validate, but Don't Transmit

## NEC 2 of 5 Message Length

To change the message length of NEC 2 of 5, you can scan the bar codes below. Minimum and Maximum lengths = 2-80.

*Minimum Default = 4, Maximum Default = 80.*



Minimum Message Length



Maximum Message Length

## Straight 2 of 5 Industrial (three-bar start/stop)

### Default All Straight 2 of 5 Industrial Settings

To default all Straight 2 of 5 Industrial Settings, scan the bar code below.



Default All Straight 2 of 5 Industrial Settings

## Enable/Disable Straight 2 of 5 Industrial

To enable or disable Straight 2 of 5 Industrial, scan the appropriate bar code below.

*Default =Straight 2 of 5 Industrial Off.*



\*Straight 2 of 5 Industrial Off



Straight 2 of 5 Industrial On

## Straight 2 of 5 Industrial Message Length

To change the message length of Straight 2 of 5 Industrial, you can scan the bar codes below. Minimum and Maximum lengths = 1-48.

*Minimum Default = 4, Maximum Default = 48.*



Minimum Message Length



Maximum Message Length

## Straight 2 of 5 IATA (two-bar start/stop)

### Default All Straight 2 of 5 IATA Settings

To default all Straight 2 of 5 IATA Settings, scan the bar code below.



Default All Straight 2 of 5 IATA Settings

### Enable/Disable Straight 2 of 5 IATA

To enable or disable Straight 2 of 5 IATA, scan the appropriate bar code below.

*Default =Straight 2 of 5 IATA Off.*



\*Straight 2 of 5 IATA Off



Straight 2 of 5 IATA On

### Straight 2 of 5 IATA Message Length

To change the message length of Straight 2 of 5 IATA, you can scan the bar codes below. Minimum and Maximum lengths = 1-48.

*Minimum Default = 4, Maximum Default = 48.*





Minimum Message Length



Maximum Message Length

## Codablock A

### Default All Codablock A Settings

To default all Codablock A Settings, scan the bar code below.



Default All Codablock A Settings

### Enable/Disable Codablock A

To enable or disable Codablock A, scan the appropriate bar code below.

*Default =Codablock A Off*



\*Codablock A Off



Codablock A On

## Codablock A Message Length

To change the message length of Codablock A, you can scan the bar codes below. Minimum and Maximum lengths = 1-600.

*Minimum Default = 1, Maximum Default = 600.*



Minimum Message Length

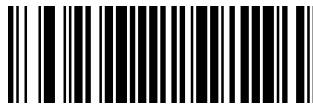


Maximum Message Length

## Codablock F

### Default All Codablock F Settings

To default all Codablock F Settings, scan the bar code below.



Default All Codablock F Settings

### Enable/Disable Codablock F

To enable or disable Codablock F, scan the appropriate bar code below.

*Default =Codablock F Off.*



\*Codablock F Off

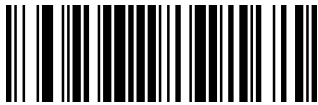


Codablock F On

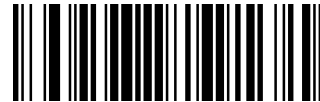
### Codablock F Message Length

To change the message length of Codablock F, you can scan the bar codes below. Minimum and Maximum lengths = 1-2048.

*Minimum Default = 1, Maximum Default = 2048.*



Minimum Message Length

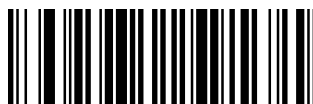


Maximum Message Length

### Codabar (NW - 7)

#### Default All Codabar Settings

To default all Codabar Settings, scan the bar code below.



Default all Codabar Settings

## Enable/Disable Codabar

To enable or disable Codabar, scan the appropriate bar code below.

*Default= Codabar On.*



Codabar Off



\*Codabar On

## Codabar Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. To choose whether or not to transmit Start/Stop characters, you can scan the bar codes below.

*Default = Don't Transmit Codabar Start/Stop Characters.*



\* Don't Transmit Codabar Start/Stop Characters



Transmit Codabar Start/Stop Characters

## Codabar Check Character

Codabar check characters are created using different "modulos." You can program the scanner to read only Codabar bar codes with Modulo 16 check characters. *Default = No Check Character.*

**No Check Character:** The scanner reads and transmits bar code data with or without a check character.

**Validate and Transmit:** The scanner will only read Codabar bar codes printed with a check character, and will transmit this character at the end of the scanned data.

**Validate, but Don't Transmit:** The unit will only read Codabar bar codes printed with a check character, but will not

transmit the check character with the scanned data.



\* No Check Character



Validate Modulo 16 and Transmit



Validate Modulo 16, but Don't Transmit

## Codabar Concatenation

**Codabar Concatenation On:** The scanner looks for a Codabar symbol having a “D” start character, adjacent to a symbol having a “D” stop character. In this case the two messages are concatenated into one with the “D” characters omitted.



**Require:** Prevent the scanner from decoding a single “D” Codabar symbol without its companion. This selection has no effect on Codabar symbols without Stop/Start D characters.



\*Codabar Concatenation Off



Codabar Concatenation On



Require

## Codabar Message Length

To change the message length of Codabar, you can scan the bar codes below. Minimum and Maximum lengths = 2-60.

*Minimum Default = 4, Maximum Default = 60.*



Minimum Message Length

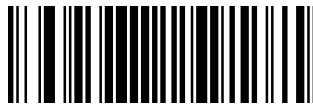


Maximum Message Length

## MSI

### Default All MSI Settings

To default all MSI Settings, scan the bar code below.



Default all MSI Settings

### Enable/Disable MSI

To enable or disable MSI, scan the appropriate bar code below.

*Default = MSI Off.*



\* MSI Off



MSI On

### MSI Check Character

Different types of check characters are used with MSI bar codes. *Default = Validate Type 10, but Don't Transmit.*

**Validate Type 10/11 and Transmit:** The scanner will only read MSI bar codes printed with the specified type check character(s), and will transmit the character(s) at the end of the scanned data.

**Validate Type 10/11, but Don't Transmit:** The unit will only read MSI bar codes printed with the specified type check character(s), but will not transmit the check character(s) with the scanned data.



\* Validate Type 10, but Don't Transmit



Validate Type 10 and Transmit



Validate 2 Type 10 Characters, but Don't Transmit



Validate 2 Type 10 Characters  
and Transmit



Validate Type 11 then Type 10 Character, but Don't

Transmit



Disable MSI Check Characters

Validate Type 11 then Type 10 Character and Transmit

## MSI Message Length

To change the message length of MSI, you can scan the bar codes below. Minimum and Maximum lengths = 4-48.

*Minimum Default = 4, Maximum Default = 48.*



Minimum Message Length



Maximum Message Length

## Matrix 2 of 5

### Default All Matrix 2 of 5 Settings

To default all Matrix 2 of 5 Settings, scan the Bar code.



Default all Matrix 2 of 5 Settings



## Enable/Disable Matrix 2 of 5

To enable or disable Matrix 2 of 5, scan the appropriate bar code below.

*Default =Matrix 2 of 5 Off.*



\*Matrix 2 of 5 Off



Matrix 2 of 5 On

## Matrix 2 of 5 Message Length

To change the message length of Matrix 2 of 5, you can scan the bar codes below. Minimum and Maximum lengths = 1-80.

*Minimum Default = 4, Maximum Default = 80.*



Minimum Message Length



Maximum Message Length

## GS1 DataBar

### GS1 DataBar Omnidirectional

#### Default All GS1 DataBar Omnidirectional Settings

To default all GS1 DataBar Omnidirectional Settings, scan the bar code below.



Default all GS1 DataBar Omnidirectional Settings

### **Enable/Disable GS1 DataBar Omnidirectional**

To enable or disable GS1 DataBar Omnidirectional, scan the appropriate bar code below.

*Default =GS1 DataBar Omnidirectional On.*



GS1 DataBar Omnidirectional Off



\*GS1 DataBar Omnidirectional On

### **GS1 DataBar Limited**

#### **Default All GS1 DataBar Limited Settings**

To default all GS1 DataBar Limited Settings, scan the bar code below.



Default all GS1 DataBar Limited Settings

#### **Enable/Disable GS1 DataBar Limited**

To enable or disable GS1 DataBar Limited, scan the appropriate bar code below.

*Default =GS1 DataBar Limited On.*



GS1 DataBar Limited Off



\*GS1 DataBar Limited On

## GS1 DataBar Expanded

### Default All GS1 DataBar Expanded Settings

To default all GS1 DataBar Expanded Settings, scan the bar code below.



Default All GS1 DataBar Expanded Settings

### Enable/Disable GS1 DataBar Expanded

To enable or disable GS1 DataBar Expanded, scan the appropriate bar code below.

*Default =GS1 DataBar Expanded On.*



GS1 DataBar Expanded Off



\*GS1 DataBar Expanded On

### GS1 DataBar Expanded Message Length

To change the message length of GS1 DataBar Expanded, you can scan the bar codes below. Minimum and Maximum lengths = 4-74.

*Minimum Default = 4, Maximum Default = 74.*



Minimum Message Length



Maximum Message Length

## GS1 Composite Codes

**GS1 Composite symbology:** A new class combined linear codes with a unique 2D composite component. GS1 Composite symbologies allow for the co-existence of symbologies already in use.

*Default = GS1 Composite Codes Off.*



\* GS1 Composite Codes Off



GS1 Composite Codes On

## UPC/EAN Version

**UPC/EAN Version On:** Decode GS1 Composite symbols that have a U.P.C. or an EAN linear component. (This does not affect GS1 Composite symbols with a GS1-128 or GS1 linear component.)

*Default = UPC/EAN Version Off.*



\* UPC/EAN Version Off



UPC/EAN Version On

**Note:** If you scan coupons that have both UPC and GS1 DataBar codes, you may wish to scan and output only the data from the GS1 DataBar code. See Coupon GS1 DataBar Output for further information.

## GS1 Composite Code Message Length

To change the message length of GS1 Composite Code, you can scan the bar codes below. Minimum and Maximum lengths = 1-2435.

*Minimum Default = 1, Maximum Default = 2435.*



Minimum Message Length



Maximum Message Length

## GS1 Emulation

The scanner can automatically format the output from any GS1 data carrier to emulate what would be encoded in an equivalent GS1-128 or GS1 DataBar symbol. GS1 data carriers include UPC-A and UPC-E, EAN-13 and EAN-8, ITF-14, GS1-128, and GS1-128 DataBar and GS1 Composites. (Any application that accepts GS1 data can be simplified since it only needs to recognize one data carrier type.)

**GS1-128 Emulation:** All retail codes (U.P.C., UPC-E, EAN8, EAN13) are expanded out to 16 digits. If the AIM ID is enabled, the value will be the GS1-128 AIM ID, ] C1 .

**GS1 DataBar Emulation:** All retail codes (U.P.C., UPC-E, EAN8, EAN13) are expanded out to 16 digits. If the AIM ID is enabled, the value will be the GS1-DataBar AIM ID, ] em .

**GS1 Code Expansion Off:** Retail code expansion is disabled, and UPC-E expansion is controlled by the UPC-E0 Expand setting. If the AIM ID is enabled, the value will be the GS1-128 AIM ID, ] C1.

**EAN8 to EAN13 Conversion:** All EAN8 bar codes are converted to EAN13 format.

*Default = GS1 Emulation Off.*



\* GS1 Emulation Off





GS1-128 Emulation

GS1 DataBar Emulation



EAN8 to EAN13 Conversion



GS1 Code Expansion Off

## TCIF Linked Code 39 (TLC39)

To enable or disable Composite bar codes of TLC39, you can scan the bar codes below.

*Default =TCIF Linked Code 39 Off.*

**NOTE:** The MicroPDF417 component can only be decoded if TLC39 is on. The linear component may be decoded as Code 39 even if TLC39 is off.



\* TCIF Linked Code 39 Off



TCIF Linked Code 39 On

## PDF417

### Default All PDF417 Settings

To default all PDF417 Settings, scan the bar code below.



Default all PDF417 Settings

## Enable/Disable PDF417

To enable or disable PDF417, scan the appropriate bar code below.

*Default =PDF417 On.*



PDF417 Off



\* PDF417 On

## PDF417 Message Length

To change the message length of PDF417, you can scan the bar codes below. Mini-mum and Maximum lengths = 1-2750.

*Minimum Default = 1, Maximum Default = 2750.*



Minimum Message Length



Maximum Message Length

## Enable/Disable MacroPDF417

MacroPDF417 is an implementation of PDF417 capable of encoding very large amounts of data into multiple

PDF417 bar codes.

**MacroPDF417 On:** These multiple bar codes are assembled into a single data string.

*Default = MacroPDF417 On.*

To enable or disable MacroPDF417, scan the appropriate bar code below.



MacroPDF417 Off



\* MacroPDF417 On

## Default All MicroPDF417 Settings

To default all MicroPDF417 Settings, scan the bar code below.



Default all MicroPDF417 Settings

## Enable/Disable MicroPDF417

To enable or disable MicroPDF417, scan the appropriate bar code below.

*Default =MicroPDF417 Off.*



\* MicroPDF417 Off



MicroPDF417 On



## MicroPDF417 Message Length

To change the message length of MicroPDF417, you can scan the bar codes below. Minimum and Maximum lengths = 1-366.

*Minimum Default = 1, Maximum Default = 366.*



Minimum Message Length



Maximum Message Length

## Data Matrix

### Default All Data Matrix Settings

To default all Data Matrix Settings, scan the bar code below.



Default All Data Matrix Settings

### Enable/Disable Data Matrix

To enable or disable Data Matrix, scan the appropriate bar code below.

*Default =Data Matrix On.*



Data Matrix Off



\*Data Matrix On

## Data Matrix Message Length

To change the message length of Data Matrix, you can scan the bar codes below. Minimum and Maximum lengths = 1-3116.

*Minimum Default = 1, Maximum Default = 3116.*



Minimum Message Length



Maximum Message Length

## Maxicode

### Default All MaxiCode Settings

To default all Maxicode Settings, scan the bar code below.



Default all Maxicode Settings

### Enable/Disable MaxiCode

To enable or disable Maxicode, scan the appropriate bar code below.

*Default =MaxiCode Off.*



\* MaxiCode Off



MaxiCode On

## MaxiCode Message Length

To change the message length of MaxiCode, you can scan the bar codes below. Minimum and Maximum lengths = 1-150.

*Minimum Default = 1, Maximum Default = 150.*



Minimum Message Length



Maximum Message Length

## QR Code

### Default All QR Code Settings

To default all QR Code Settings, scan the bar code below.



Default all QR Code Settings

## Enable/Disable QR Code

To enable or disable QR Code, scan the appropriate bar code below.

**Notes:** This selection below applies to both QR Code and Micro QR Code.

Default =QR Code On.



QR Code Off



\*QR Code On

## QR Code Message Length

To change the message length of QR Code, you can scan the bar codes below. Minimum and Maximum lengths = 1-7089.

*Minimum Default = 1, Maximum Default = 7089.*



Minimum Message Length



Maximum Message Length

## Aztec Code

### Default All Aztec Settings

To default all Aztec Settings, scan the bar code below.



Default All Aztec Settings

## Enable/Disable Aztec

To enable or disable Aztec, scan the appropriate bar code below.

*Default =Aztec On.*



Aztec Off



\*Aztec On

## Aztec Code Message Length

To change the message length of Aztec Code, you can scan the bar codes below. Minimum and Maximum lengths = 1-3832.

*Minimum Default = 1, Maximum Default = 3832.*



Minimum Message Length



Maximum Message Length

## Aztec Append

This function allows the scanner to append the data from several Aztec bar codes together before transmitting

them to the host computer. When the scanner encounters an Aztec bar code with the append trigger character(s), it buffers the number of Aztec bar codes determined by information encoded in those bar codes. Once the proper number of codes is reached, the data is output in the order specified in the bar codes.

*Default =Aztec Append Off.*



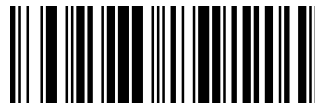
\*Aztec Append Off



Aztec Append On

## Aztec Code Page

Aztec Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created, and scan the value and the **Save** bar code from the [APPENDIX B Programming Number](#). The data characters should then appear properly.



Aztec Code Page

## Chinese Sensible (Han Xin) Code

### Default All Chinese Sensible (Han Xin) Code Settings

To default all Chinese Sensible (Han Xin) Code Settings, scan the bar code below.



Default all Chinese Sensible (Han Xin) Code Settings

## Enable/Disable Chinese Sensible (Han Xin) Code

To enable or disable Chinese Sensible (Han Xin) Code, scan the appropriate bar code below.

*Default =Chinese Sensible (Han Xin) Code Off.*



\*Chinese Sensible (Han Xin) Code Off



Chinese Sensible (Han Xin) Code On

## Han Xin Code Message Length

To change the message length of Han Xin Code, you can scan the bar codes below. Minimum and Maximum lengths = 1-7833.

*Minimum Default = 1, Maximum Default = 7833.*



Minimum Message Length



Maximum Message Length

## Postal Codes – Linear

The following lists linear postal codes. Any combination of linear postal code selections can be active at a time.

### China Post (Hong Kong 2 of 5)

#### Default All China Post Settings

To default all China Post Settings, scan the bar code below.



Default All China Post Settings

### **Enable/Disable China Post**

To enable or disable China Post, scan the appropriate bar code below.

*Default =China Post Off.*



\*China Post Off



China Post On

### **China Post (Hong Kong 2 of 5) Message Length**

To change the message length of China Post (Hong Kong 2 of 5), you can scan the bar codes below. Minimum and Maximum lengths = 2-80.

*Minimum Default = 4, Maximum Default = 80.*



Minimum Message Length



Maximum Message Length

### **Korea Post**

#### **Default All Korea Post Settings**

To default all Korea Post Settings, scan the bar code below.





Default All Korea Post Settings

### **Enable/Disable Korea Post**

To enable or disable Korea Post, scan the appropriate bar code below.

*Default =Korea Post Off.*



\*Korea Post Off



Korea Post On

### **Korea Post Message Length**

To change the message length of Korea Post, you can scan the bar codes below. Minimum and Maximum lengths = 2-80.

*Minimum Default = 4, Maximum Default = 48.*



Minimum Message Length



Maximum Message Length

### **Korea Post Check Digit**

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the Korea Post check digit. It is always verified to guarantee the integrity of the data.

*Default = Don't Transmit Check Digit.*



\* Don't Transmit Check Digit



Transmit Check Digit

## Postal Codes - 2D

The following lists the possible 2D postal codes, and 2D postal code combinations that are allowed. Only one 2D postal code selection can be active at a time. If you scan a second 2D postal code selection, the first selection is overwritten.

*Default = 2D Postal Codes Off.*



\* 2D Postal Codes Off

## Single 2D Postal Codes



Australian Post On



British Post On



Canadian Post On



Japanese Post On



Planet Code On



Postal-4i On



InfoMail On



Intelligent Mail Bar Code On



KIX Post On



Postnet On



Postnet with B and B' Fields On

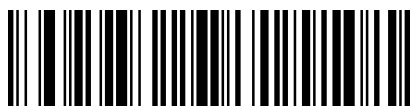
## Combination 2D Postal Codes



InfoMail and British Post On



Intelligent Mail Bar Code and Postnet with B and B'  
Fields On



Postnet and Postal-4i On



Postnet and Intelligent Mail Bar Code On



Postal-4i and Intelligent Mail Bar Code On



Postal-4i and Postnet with B and B' Fields On



Planet Code and Postnet On



Planet Code and Postnet with B and B' Fields On



Planet Code and Postal-4i On



Planet Code and Intelligent Mail Bar Code On

Planet Code, Postnet, and Postal-4i On



Planet Code, Postnet, and Intelligent Mail Bar Code On

Planet Code, Postal-4i, and Intelligent Mail Bar Code On



Postnet, Postal-4i, and Intelligent Mail Bar Code On

Planet Code, Postal-4i, and Postnet with B and B' Fields On



Planet Code, Intelligent Mail Bar Code, and Postnet with B and B' Fields On



Postal-4i, Intelligent Mail Bar Code, and Postnet with B and B' Fields On



Planet Code, Postal-4i, Intelligent Mail Bar Code, and Postnet On



Planet Code, Postal-4i, Intelligent Mail Bar Code, and  
Postnet with B and B' Fields On

## Planet Code Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the Planet Code check digit. It is always verified to guarantee the integrity of the data.

*Default = Don't Transmit Check Digit .*



\* Don't Transmit Check Digit



Transmit Check Digit

## Postnet Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the Postnet check digit. It is always verified to guarantee the integrity of the data.

*Default = Don't Transmit Check Digit.*



\* Don't Transmit Check Digit



Transmit Check Digit

## Australian Post Interpretation

This option controls what interpretation is applied to customer fields in Australian 4-State symbols.

**Bar Output:** It lists the bar patterns in "0123" format.

**Numeric N Table:** It causes that field to be interpreted as numeric data using the N Table.

**Alphanumeric C Table:** It causes the field to be interpreted as alphanumeric data using the C Table. Refer to the Australian Post Specification Tables.

**Combination C and N Tables:** It causes the field to be interpreted using either the C or N Tables.

*Default =Bar Output.*



\* Bar Output



Numeric N Table



Alphanumeric C Table



Combination C and N Tables

# CHAPTER 8 PREFIX AND SUFFIX

When a bar code is scanned, additional information is sent to the host computer along with the bar code data. This group of bar code data and additional, user-defined data is called a “message string.” The selections in this section are used to build the user-defined data into the message string. Prefix and Suffix characters are data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. The following illustration shows the breakdown of a message string:

Prefix	Scanned Data	Suffix
--------	--------------	--------

- The selections in this chapter are only used if you wish to alter the default settings.

*Default prefix = None. Default suffix = None.*

- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix from the [APPENDIX D ASCII Conversion Chart](#).
- You can string together several entries for several symbologies at one time.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.
- When setting up for specific symbologies (as opposed to all symbologies), the specific symbology ID value counts as an added prefix or suffix character.
- The maximum size of a prefix or suffix configuration is 200 characters, which includes header information.

## Add a Prefix or Suffix:

1. Scan the **Add Prefix** or **Add Suffix** symbol .
2. Determine the 2 digit Hex value from the Symbology Chart (included in the [APPENDIX C Symbology Charts - AIM ID](#)) for the symbology to which you want to apply the prefix or suffix. For example, for Code 128, Hex ID is “6A”.
3. Scan the 2 hex digits from the [APPENDIX B Programming Number](#) inside the back cover of this manual or scan **9, 9** for all symbologies.
4. Determine the hex value from the [APPENDIX D ASCII Conversion Chart](#), for the prefix or suffix you wish to enter.
5. Scan the 2 digit hex value from the [APPENDIX B Programming Number](#) inside the back cover of this manual.
6. Repeat Steps 4 and 5 for every prefix or suffix character.
7. To add AIM I.D., scan **5, C, 8, 1**.

To add a backslash (\), scan **5, C, 5, C**.

**Note:** To add a backslash (\) as in Step 7, you must scan 5C twice – once to create the leading backslash



and then to create the backslash itself.

8. Scan **Save** to exit and save, or scan **Discard** to exit without saving. Repeat Steps 1-6 to add a prefix or suffix for another symbology.

## Example: Add a Suffix to a specific symbology

To send a CR (carriage return) Suffix for U.P.C. only:

1. Scan **Add Suffix**.
2. Determine the 2 digit hex value from the Symbology Chart (included in the [APPENDIX C Symbology Charts - AIM ID](#)) for U.P.C..
3. Scan **6, 3** from the [APPENDIX B Programming Number](#) inside the back cover of this manual.
4. Determine the hex value from the [APPENDIX D ASCII Conversion Chart](#), for the CR (carriage return).
5. Scan **0, D** from the [APPENDIX B Programming Number](#) inside the back cover of this manual.
6. Scan **Save**, or scan **Discard** to exit without saving.

## Clear One or All Prefixes or Suffixes

You can clear a single prefix or suffix, or clear all prefixes/suffixes for a symbology. If you have been entering prefixes and suffixes for single symbologies, you can use **Clear One Prefix (Suffix)** to delete a specific character from a symbology. When you **Clear All Prefixes (Suffixes)**, all the prefixes or suffixes for a symbology are deleted.

1. Scan the **Clear One Prefix** or **Clear One Suffix** symbol.
2. Determine the 2 digit Hex value from the Symbology Chart (included in the [APPENDIX C Symbology Charts - AIM ID](#)) for the symbology from which you want to clear the prefix or suffix.
3. Scan the 2 digit hex value from the [APPENDIX B Programming Number](#) inside the back cover of this manual or scan **9, 9** for all symbologies. Your change is automatically saved.

## Add a Carriage Return Suffix to All Symbologies

Scan the following bar code if you wish to add a carriage return suffix to all symbologies at once. This action first clears all current suffixes, then programs a carriage return suffix for all symbologies.



Add CR Suffix All Symbologies

## Prefix Selections



Add Prefix



Clear One Prefix



Clear All Prefixes

## Suffix Selections



Add Suffix



Clear One Suffix



Clear All Suffixes

## Function Code Transmit

When this selection is enabled and function codes are contained within the scanned data, the scanner transmits the function code to the terminal. Charts of these function codes are provided in Supported Interface Keys starting on [APPENDIX A Interface Keys](#). When the scanner is in keyboard wedge mode, the scan code is converted to a key code before it is transmitted.

*Default = Enable.*



\*Enable Function Code Transmit



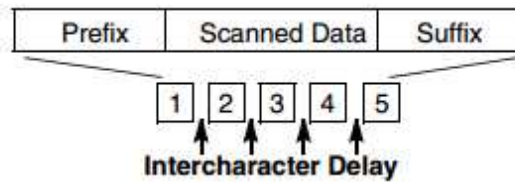
Disable Function Code Transmit

## Intercharacter, Interfunction, and Intermessage Delays

Some terminals drop information (characters) if data comes through too quickly. Intercharacter, interfunction, and intermessage delays slow the transmission of data, increasing data integrity.

### Intercharacter Delay

An intercharacter delay of up to 5000 milliseconds (in 5ms increments) may be placed between the transmission of each character of scanned data. Scan the **Intercharacter Delay** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the [APPENDIX B Programming Number](#) inside the back cover of this manual.



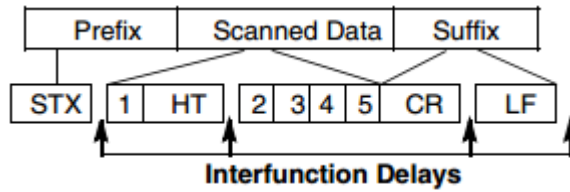
Intercharacter Delay

To remove this delay, scan the **Intercharacter Delay** bar code, then set the number of delays to 0. Scan the **Save** bar code using the [APPENDIX B Programming Number](#) inside the back cover of this manual.

**Note:** Intercharacter delays are not supported in USB serial emulation.

### Interfunction Delay

An interfunction delay of up to 5000 milliseconds (in 5ms increments) may be placed between the transmission of each segment of the message string. Scan the Interfunction Delay bar code below, then scan the number of 5ms delays, and the Save bar code using the Programming Chart inside the back cover of this manual.

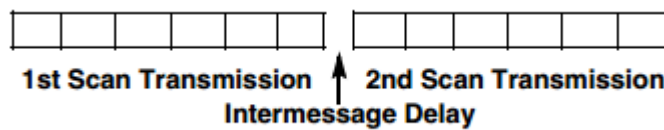


Interfunction Delay

To remove this delay, scan the **Interfunction Delay** bar code, then set the number of delays to 0. Scan the **Save** bar code using the [APPENDIX B Programming Number](#) inside the back cover of this manual.

### Intermessage Delay

An intermessage delay of up to 5000 milliseconds (in 5ms increments) may be placed between each scan transmission. Scan the Intermesage Delay bar code below, then scan the number of 5ms delays, and the Save bar code using the [APPENDIX B Programming Number](#) inside the back cover of this manual.



Intermessage Delay

To remove this delay, scan the **Intermessage Delay** bar code, then set the number of delays to 0. Scan the **Save** bar code using the [APPENDIX B Programming Number](#) inside the back cover of this manual.

# CHAPTER 9 SERIAL PROGRAMMING 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 RS232 interface . The following commands can be sent via a PC COM port using terminal emulation software.

## Function Commands

The serial function commands have the following formation:

STX + CMD(see table 11-1) + EXT

**Table 9-1** Function Commands

Function	Command	Formation
Beeper Bell	\x07	\x02\x07\x03
Trigger	T	\x02T\x03
Untrigger	U	\x02U\x03

## Menu Commands

The menu commands have the following syntax:

Header + Group + Item + .

Header consists of three characters. The details refer to **Table 9-2** .

**Table 9-2** Header

	Command	Function
First Character(Menu type)	M	Normal type menu
Second Character(Storage type)	R	Store in RAM
	N	Store in ROM
	C	Store in customer setting place
Third Character(Action)	S	Setting
	Q	Query the current setting

	R	Return the valid setting range
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**Note:** As the default action is setting and default storage is in ROM, the 'MNS' can be simplified to be 'M'.

The serial menu commands which sets the DB50 have the following formation:

STX + @ + MENU(see table 11-2) + EXT

For example:

- Set the DB50 default: \x02@M0401.\x03
- Query the current interface: \x02@MRQ0201.\x03
- Query the range value of reread delay : \x02@MRR1102.\x03

## Resetting the Custom Defaults

If you want the custom default settings restored to your scanner, scan the **Activate Custom Defaults** bar code below. This resets the scanner to the custom default settings. If there are no custom defaults, it will reset the scanner to the factory default settings. Any settings that have not been specified through the custom defaults will be defaulted to the factory default settings.



Activate Custom Defaults

The charts on the following pages list the factory default settings for each of the commands (indicated by an asterisk (\*) on the programming pages).

## DB50 Menu Commands

<b>Resetting the Factory Defaults</b>	Activate Defaults	M0401.
<b>Interfaces</b>	RS232 Serial Port	M0501.
	USB Keyboard (PC)	M0502.
	USB Keyboard (Mac)	M0503.
	USB Japanese Keyboard (PC)	M0201_134.
	USB Serial	M0201_130.

<b>USB</b>	CTS/RTS Emulation Off	M0701_0.
	CTS/RTS Emulation On	M0701_1.
	ACK/NAK Mode Off	M0702_0.
	ACK/NAK Mode On	M0702_1.
<b>Keyboard Country</b>	U.S.A.	M0801_0.
	Albania	M0801_35.
	Azeri (Cyrillic)	M0801_81.
	Azeri (Latin)	M0801_80.
	Belarus	M0801_82.
	Belgium	M0801_1.
	Bosnia	M0801_33.
	Brazil	M0801_16.
	Brazil (MS)	M0801_59.
	Bulgaria (Cyrillic)	M0801_52.
	Bulgaria (Latin)	M0801_53.
	Canada (French legacy)	M0801_54.
	Canada (French)	M0801_18.
	Canada (Multilingual)	M0801_55.
	Croatia	M0801_32.
	Czech	M0801_15.
	Czech (Programmers)	M0801_40.
	Czech (QWERTY)	M0801_39.
	Czech (QWERTZ)	M0801_38.
	Denmark	M0801_8.
	Dutch (Netherlands)	M0801_11.
	Estonia	M0801_41.
	Faeroese	M0801_83.
	Finland	M0801_2.

	France	M0801_3.
	Gaelic	M0801_84.
	Germany	M0801_4.
	Greek	M0801_17.
	Greek (220 Latin)	M0801_64.
	Greek (220)	M0801_61.
	Greek (319 Latin)	M0801_65.
	Greek (319)	M0801_62.
	Greek (Latin)	M0801_63.
	Greek (MS)	M0801_66.
	Greek (Polytonic)	M0801_60.
	Hebrew	M0801_12.
	Hungarian (101 key)	M0801_50.
	Hungary	M0801_19.
	Iceland	M0801_75.
	Irish	M0801_73.
	Italian (142)	M0801_56.
	Italy	M0801_5.
	Japan ASCII	M0801_28.
	Kazakh	M0801_78.
	Kyrgyz (Cyrillic)	M0801_79.
	Latin America	M0801_14.
	Latvia	M0801_42.
	Latvia (QWERTY)	M0801_43.
	Lithuania	M0801_44.
	Lithuania (IBM)	M0801_45.
	Macedonia	M0801_34.
	Malta	M0801_74.



Mongolian (Cyrillic)	M0801_86.
Norway	M0801_9.
Poland	M0801_20.
Polish (214)	M0801_57.
Polish (Programmers)	M0801_58.
Portugal	M0801_13.
Romania	M0801_25.
Russia	M0801_26.
Russian (MS)	M0801_67.
Russian (Typewriter)	M0801_68.
SCS	M0801_21.
Serbia (Cyrillic)	M0801_37.
Serbia (Latin)	M0801_36.
Slovakia	M0801_22.
Slovakia (QWERTY)	M0801_49.
Slovakia (QWERTZ)	M0801_48.
Slovenia	M0801_31.
Spain	M0801_10.
Spanish variation	M0801_51.
Sweden	M0801_23.
Switzerland (French)	M0801_29.
Switzerland (German)	M0801_6.
Tatar	M0801_85.
Turkey F	M0801_27.
Turkey Q	M0801_24.
Ukrainian	M0801_76.
United Kingdom	M0801_7.
United States (Dvorak right)	M0801_89.

	United States (Dvorak left)	M0801_88
	United States (Dvorak)	M0801_87.
	United States (International)	M0801_30.
	Uzbek (Cyrillic)	M0801_77.
<b>Keyboard Style</b>	Regular	M0802_0.
	Caps Lock	M0802_1.
	Shift Lock	M0802_2.
	Automatic Caps Lock	M0802_6.
	Emulate External Keyboard	M0802_5.
	Autocaps via NumLock	M0802_7.
<b>Keyboard Conversion</b>	Keyboard Conversion Off	M0803_0.
	Convert all Characters to Upper Case	M0803_1.
	Convert all Characters to Lower Case	M0803_3.
<b>Keyboard Control Character Output</b>	Control Character Output Off	M0804_0.
	Control Character Output On	M0804_1.
<b>Keyboard Modifiers</b>	Control + ASCII Off	M0805_0.
	DOS Mode Control+ ASCII	M0805_1.
	Windows Mode Control + ASCII	M0805_2.
	Windows Mode Prefix/Suffix Off	M0805_3.
	Turbo Mode Off	M0806_0.
	Turbo Mode On	M0806_1.
	Numeric Keypad Off	M0807_0.
	Numeric Keypad On	M0807_1.
<b>RS232 Baud Rate</b>	300 BPS	M0901_0.
	600 BPS	M0901_1.
	1200 BPS	M0901_2.
	2400 BPS	M0901_3.
	4800 BPS	M0901_4.

	9600 BPS	M0901_5.
	19200 BPS	M0901_6.
	38400 BPS	M0901_7.
	57600 BPS	M0901_8.
	115200 BPS	M0901_9.
<b>RS232 Receiver TimeOut</b>	RS232 receiver time-out	M0903.
<b>Suppress Power-up Beeps</b>	Power Up Beeper Off	M1001_0.
	Power Up Beeper On	M1001_1.
<b>Beeper on BEL</b>	Beep on BEL Off	M1002_0.
	Beep on BEL On	M1002_1.
<b>Trigger Click</b>	Trigger Click Off	M1003_0.
	Trigger Click On	M1003_1.
<b>Beeper – Good Read</b>	Beeper-Good Read Off	M1004_0.
	Beeper-Good Read On	M1004_1.
<b>Beeper Volume-Good Read</b>	Off	M1005_0.
	Low Volume	M1005_1.
	Medium Volume	M1005_2.
	High Volume	M1005_3.
<b>Beeper Tone-Good Read</b>	Low Frequency(800 Hz)	M1006_800.
	Medium Frequency (1600 Hz)	M1006_1600.
	High Frequency (3200 Hz)	M1006_3200.
<b>Beeper Tone- User Specified Setting</b>	User specified setting of beeper tone	M1006.
<b>Beeper Pitch – Error</b>	Razz(250 Hz)	M1007_250.
	Medium(3250 Hz)	M1007_3250.
	High(4200 Hz)	M1007_4200.
	Normal Beep	M1008_0.

**Beeper Duration-Good**

<b>Read</b>	Short Beep	M1008_1.
<b>LED – Good Read</b>	LED-Good Read Off	M1009_0.
	LED-Good Read On	M1009_1.
<b>Number of Good Decode Beeps- Good Read</b>	1 Good Read Beep/LED Flash	M1010_1.
	2 Good Read Beeps/LED Flashes	M1010_2.
	3 Good Read Beeps/LED Flashes	M1010_3.
<b>Number of Beeps – Error</b>	Number of Error Beeps/LED Flashes	M1011.
<b>Good Read Delay</b>	No Delay	M1101_0.
	Short Delay(500 ms)	M1101_500.
	Medium Delay(1000 ms)	M1101_1000.
	Long Delay(1500 ms)	M1101_1500.
<b>Reread Delay</b>	No Delay	M1102_0.
	Short (500 ms)	M1102_500.
	Medium (1000 ms)	M1102_1000.
	Extra Long (2000 ms)	M1102_2000.
<b>User-Specified Reread Delay</b>	User-Specified Reread Delay	M1102.
<b>Intercharacter Delay</b>	Intercharacter Delay	M1103.
<b>User Specified Intercharacter Delay</b>	Delay Length	M1104.
	Character to Trigger Delay	M1105.
<b>Interfunction Delay</b>	Interfunction Delay	M1106.
<b>Intermessage Delay</b>	Intermessage Delay	M1107.
<b>LED Illumination - Manual Trigger</b>	Low	M1201_50.
	High	M1201_80.
<b>Idle Illumination - Presentation Mode</b>	Low	M1202_50.
	High	M1202_80.

<b>Manual Trigger Mode</b>	Manual Trigger - Normal	M1301.
<b>Presentation Mode</b>	Presentation Mode	M1302.
<b>Mobile Phone/Display Mode</b>	Hand Held Scanning - Mobile Phone	M1303.
	Presentation Scanning - Mobile Phone	M1304.
<b>Presentation Sensitivity</b>	High Sensitivity	M1402.
<b>Hands Free Time-Out</b>	Hands Free Time-Out	M1403.
<b>Presentation Centering</b>	Presentation Centering Off	M1501_0.
	Presentation Centering On	M1501_1.
	Top of Presentation Centering Window	M1502.
	Bottom of Presentation Centering Window	M1503.
	Left of Presentation Centering Window	M1504.
	Right of Presentation Centering Window	M1505.
<b>Manual Trigger Centering</b>	Manual Trigger Centering Off	M1701_0.
	Manual Trigger Centering On	M1701_1.
	Top of Manual Trigger Centering Window	M1702.
	Bottom of Manual Trigger Centering Window	M1703.
	Left of Manual Trigger Centering Window	M1704.
	Right of Manual Trigger Centering Window	M1705.
<b>Video Reverse</b>	Video Reverse Off	M1603_0.
	Video Reverse Only	M1603_1.
	Video Reverse and Standard Bar Codes	M1603_2.
<b>Working Orientation</b>	Upright	M1604_0.
	Vertical, Bottom to Top	M1604_1.

	Upside Down	M1604_2.
	Vertical, Top to Bottom	M1604_3.
<b>Function Code Transmit</b>	Enable	M1605_0.
	Disable	M1605_1.
<b>To Add a Carriage Return Suffix to All Symbologies</b>	Add CR Suffix All Symbologies	M1801.
<b>Prefix</b>	Add Prefix	M1802.
	Clear One Prefix	M1803.
	Clear All Prefixes	M1804.
<b>Suffix</b>	Add Suffix	M1805.
	Clear One Suffix	M1806.
	Clear All Suffixes	M1807.
<b>Data Format Editor</b>	Default Data Format	M1901.
	Enter Data Format	M1903.
	Clear One Data Format	M1904.
	Clear All Data Formats	M1905.
<b>Data Formatter</b>	Data Formatter Off	M1902_0.
	Data Formatter On, Not Required, Keep Prefix/Suffix	M1902_1.
	Data Format Required, Keep Prefix/Suffix	M1902_2.
<b>Primary/Alternate Data Formats</b>	Primary Data Format	M1906_0.
	Data Format 1	M1906_1.
	Data Format 2	M1906_2.
	Data Format 3	M1906_3.
<b>Show Software Revision</b>	Show Revision	M2003.
<b>Aim Mode</b>	Aim Mode Off	M2101_0.
	Aim Mode On	M2101_3.

<b>All Symbologies</b>	All Symbologies Off	M3001_0.
	All Symbologies On	M3001_1.
<b>Codabar</b>	Default All Codabar Settings	M3101.
	Off	M3102_0.
	On	M3102_1.
<b>Codabar Start/Stop Char</b>	Don't Transmit	M3103_0.
	Transmit	M3103_1.
<b>Codabar Check Char</b>	No Check Char.	M3104_0.
	Validate, But Don't Transmit	M3104_1.
	Validate, and Transmit	M3104_2.
<b>Codabar Concatenation</b>	Off	M3105_0.
	On	M3105_1.
	Require	M3105_2.
<b>Codabar Message Length</b>	Minimum (2 - 60)	M3106.
	Maximum (2 - 60)	M3107.
<b>Code 39</b>	Default All Code 39 Settings	M3201.
	Off	M3202_0.
	On	M3202_1.
<b>Code 39 Start/Stop Char</b>	Don't Transmit	M3203_0.
	Transmit	M3203_1.
<b>Code 39 Check Char</b>	No Check Char.	M3204_0.
	Validate, But Don't Transmit	M3204_1.
	Validate, and Transmit	M3204_2.
<b>Code 39 Message Length</b>	Minimum (0 - 48)	M3205.
	Maximum (0 - 48)	M3206.
	Off	M3207_0.

Code 39 Append

	On	M3207_1.
<b>Code 32 Pharmaceutical</b>	Off	M3208_0.
	On	M3208_1.
<b>Code 39 Full ASCII</b>	Off	M3209_0.
	On	M3209_1.
	Code 39 Code Page	M3210.
<b>Interleaved 2 of 5</b>	Default All Interleaved 2 of 5 Settings	M3301.
	Off	M3302_0.
	On	M3302_1.
<b>Interleaved 2 of 5 Check Digit</b>	No Check Char.	M3303_0.
	Validate, But Don't Transmit	M3303_1.
	Validate, and Transmit	M3303_2.
<b>Interleaved 2 of 5 Message Length</b>	Minimum (2 - 80)	M3304.
	Maximum (2 - 80)	M3305.
<b>NEC 2 of 5</b>	Default All NEC 2 of 5 Settings	M3401.
	Off	M3402_0.
	On	M3402_1.
<b>NEC 2 of 5 Check Digit</b>	No Check Char.	M3403_0.
	Validate, But Don't Transmit	M3403_1.
	Validate, and Transmit	M3403_2.
<b>NEC 2 of 5 Message Length</b>	Minimum (2 - 80)	M3404.
	Maximum (2 - 80)	M3405.
<b>Code 93</b>	Default All Code 93 Settings	M3501.
	Off	M3502_0.
	On	M3502_1.



<b>Code 93 Message Length</b>	Minimum (0 - 80)	M3503.
	Maximum (0 - 80)	M3504.
<b>Code 93 Append</b>	Off	M3505_0.
	On	M3505_1.
<b>Code 93 Code Page</b>	Code 93 Code Page	M3506.
<b>Straight 2 of 5 Industrial</b>	Default All Straight 2 of 5 Industrial Settings	M3601.
	Off	M3602_0.
	On	M3602_1.
<b>Straight 2 of 5 Industrial Message Length</b>	Minimum (1 - 48)	M3603.
	Maximum (1 - 48)	M3604.
<b>Straight 2 of 5 IATA</b>	Default All Straight 2 of 5 IATA Settings	M3701.
	Off	M3702_0.
	On	M3702_1.
<b>Straight 2 of 5 IATA Message Length</b>	Minimum (1 - 48)	M3703.
	Maximum (1 - 48)	M3704.
<b>Matrix 2 of 5</b>	Default All Matrix 2 of 5 Settings	M3801.
	Off	M3802_0.
	On	M3802_1.
<b>Matrix 2 of 5 Message Length</b>	Minimum (1 - 80)	M3803.
	Maximum (1 - 80)	M3804.
<b>Code 11</b>	Default All Code 11 Settings	M3901.
	Off	M3902_0.
	On	M3902_1.
<b>Code 128</b>	Default All Code 128 Settings	M4001.

	Off	M4002_0.
	On	M4002_1.
<b>ISBT Concatenation</b>	Off	M4003_0.
	On	M4003_1.
<b>Code 128 Message Length</b>	Minimum (0 - 80)	M4004.
	Maximum (0 - 80)	M4005.
<b>Code 128 Append</b>	Off	M4006_0.
	On	M4006_1.
<b>Code 128 Code Page</b>	Code 128 Code Page	M4007.
<b>GS1-128</b>	Default All GS1-128 Settings	M4101.
	Off	M4102_0.
	On	M4102_1.
<b>GS1-128 Message Length</b>	Minimum (1 - 80)	M4103.
	Maximum (0 - 80)	M4104.
<b>Telepen</b>	Default All Telepen Settings	M4201.
	Off	M4202_0.
	On	M4202_1.
<b>Telepen Output</b>	AIM Telepen Output	M4203_0.
	Original Telepen Output	M4203_1.
<b>UPC-A</b>	Default All UPC-A Settings	M4301.
	Off	M4302_0.
	On	M4302_1.
<b>UPC-A Check Digit</b>	Off	M4303_0.
	On	M4303_1.
<b>UPC-A Number System</b>	Off	M4304_0.
	On	M4304_1.

<b>UPC-A 2 Digit Addenda</b>	Off	M4305_0.
	On	M4305_1.
<b>UPC-A 5 Digit Addenda</b>	Off	M4306_0.
	On	M4306_1.
<b>UPC-A Addenda Required</b>	Not Required	M4307_0.
	Required	M4307_1.
<b>UPC-A Addenda Separator</b>	Off	M4308_0.
	On	M4308_1.
<b>UPC-A/EAN-13 with Extended Coupon Code</b>	Off	M4401_0.
	Allow Concatenation	M4401_1.
	Require Concatenation	M4401_2.
<b>Coupon GS1 DataBar Output</b>	GS1 Output Off	M4402_0.
	GS1 Output On	M4402_1.
<b>UPC-E0</b>	Default All UPC-E Settings	M4501.
	Off	M4502_0.
	On	M4502_1.
<b>UPC-E0 Expand</b>	Off	M4503_0.
	On	M4503_1.
<b>UPC-E0 Addenda Required</b>	Not Required	M4504_0.
	Required	M4504_1.
<b>UPC-E0 Addenda Separator</b>	Off	M4505_0.
	On	M4505_1.
<b>UPC-E0 Check Digit</b>	Off	M4506_0.
	On	M4506_1.
<b>UPC-E0 Number System</b>	Off	M4507_0.
	On	M4507_1.
	2 Digit Addenda Off	M4508_0.

**UPC-E0 Addenda**

	2 Digit Addenda On	M4508_1.
	5 Digit Addenda Off	M4509_0.
	5 Digit Addenda On	M4509_1.
<b>UPC-E1</b>	Off	M4510_0.
	On	M4510_1.
<b>EAN/JAN-13</b>	Default All EAN/JAN Settings	M4601.
	Off	M4602_0.
	On	M4602_1.
<b>EAN/JAN-13 Check Digit</b>	Off	M4603_0.
	On	M4603_1.
<b>EAN/JAN-13 2 Digit Addenda</b>	2 Digit Addenda Off	M4604_0.
	2 Digit Addenda On	M4604_1.
	5 Digit Addenda Off	M4605_0.
	5 Digit Addenda On	M4605_1.
<b>EAN/JAN-13 Addenda Required</b>	Not Required	M4606_0.
	Required	M4606_1.
<b>EAN/JAN-13 Addenda Separator</b>	Off	M4607_0.
	On	M4607_1.
<b>ISBN Translate</b>	Off	M4608_0.
	On	M4608_1.
<b>EAN/JAN-8</b>	Default All EAN/JAN 8 Settings	M4701.
	Off	M4702_0.
	On	M4702_1.
<b>EAN/JAN-8 Check Digit</b>	Off	M4703_0.
	On	M4703_1.
<b>EAN/JAN-8 Addenda</b>	2 Digit Addenda Off	M4704_0.
	2 Digit Addenda On	M4704_1.

	5 Digit Addenda Off	M4705_0.
	5 Digit Addenda On	M4705_1.
<b>EAN/JAN-8 Addenda Required</b>	Not Required	M4706_0.
	Required	M4706_1.
<b>EAN/JAN-8 Addenda Separator</b>	Off	M4707_0.
	On	M4707_1.
<b>MSI</b>	Default All MSI Settings	M4801.
	Off	M4802_0.
	On	M4802_1.
<b>MSI Check Character</b>	Validate Type 10, but Don't Transmit	M4803_0.
	Validate Type 10 and Transmit	M4803_1.
	Validate 2 Type 10 Chars, but Don't Transmit	M4803_2.
	Validate 2 Type 10 Chars and Transmit	M4803_3.
	Validate Type 10 then Type 11 Char, but Don't Transmit	M4803_4.
	Validate Type 10 then Type 11 Char and Transmit	M4803_5.
	Disable MSI Check Characters	M4803_6.
<b>MSI Message Length</b>	Minimum (4 - 48)	M4804.
	Maximum (4 - 48)	M4805.
<b>GS1 DataBar Omnidirectional</b>	Default All GS1 DataBar Omnidirectional Settings	M4901.
	Off	M4902_0.
	On	M4902_1.
<b>GS1 DataBar Limited</b>	Default All GS1 DataBar Limited Settings	M5001.
	Off	M5002_0.
	On	M5002_1.

<b>GS1 DataBar Expanded</b>	Default All GS1 DataBar Expanded Settings	M5101.
	Off	M5102_0.
	On	M5102_1.
<b>GS1 DataBar Expanded Msg. Length</b>	Minimum (4 - 74)	M5103.
	Maximum (4 - 74)	M5104.
<b>Codablock A</b>	Default All Codablock A Settings	M5001.
	Off	M5002_0.
	On	M5002_1.
<b>Codablock A Message Length</b>	Minimum (1 - 600)	M5003.
	Maximum (1 - 600)	M5004.
<b>Codablock F</b>	Default All Codablock F Settings	M5301.
	Off	M5302_0.
	On	M5302_1.
<b>Codablock F Msg. Length</b>	Minimum (1 - 2048)	M5303.
	Maximum (1 - 2048)	M5304.
<b>PDF417</b>	Default All PDF417 Settings	M5401.
	Off	M5402_0.
	On	M5402_1.
<b>PDF417 Msg. Length</b>	Minimum (1-2750)	M5403.
	Maximum (1-2750)	M5404.
<b>MacroPDF417</b>	Off	M5405_0.
	On	M5405_1.
<b>MicroPDF417</b>	Default All MicroPDF417 Settings	M5501.
	Off	M5502_0.
	On	M5502_1.
<b>MicroPDF417 Msg. Length</b>	Minimum (1-366)	M5503.
	Maximum (1-366)	M5504.

<b>GS1 Composite Codes</b>	Off	M5601_0.
	On	M5601_1.
<b>UPC/EAN Version</b>	Off	M5602_0.
	On	M5602_1.
<b>GS1 Composite Codes Msg.Length</b>	Minimum (1-2435)	M5603.
	Maximum (1-2435)	M5604.
<b>GS1 Emulation</b>	GS1-128 Emulation	M5701_1.
	GS1 DataBar Emulation	M5701_2.
	GS1 Code Expansion Off	M5701_3.
	EAN8 to EAN13 Conversion	M5701_4.
	GS1Emulation Off	M5701_0.
<b>TCIF Linked Code 39</b>	Off	M5801_0.
	On	M5801_1.
<b>QR Code</b>	Default All QR Code Settings	M5901.
	Off	M5902_0.
	On	M5902_1.
<b>QR Code Msg. Length</b>	Minimum (1-7089)	M5903.
	Maximum (1-7089)	M5904.
<b>QR Code Append</b>	Off	M5905_0.
	On	M5905_1.
<b>QR Code Page</b>	QR Code Page	M5906.
<b>Data Matrix</b>	Default All Data Matrix Settings	M6001.
	Off	M6002_0.
	On	M6002_1.
<b>Data Matrix Msg. Length</b>	Minimum (1-3116)	M6003.
	Maximum (1-3116)	M6004.

<b>Data Matrix Append</b>	Off	M6005_0.
	On	M6005_1.
<b>Data Matrix Code Page</b>	Data Matrix Code Page	M6006.
<b>MaxiCode</b>	Default All MaxiCode Settings	M6101.
	Off	M6102_0.
	On	M6102_1.
<b>MaxiCode Msg. Length</b>	Minimum (1-150)	M6103.
	Maximum (1-150)	M6104.
<b>Aztec Code</b>	Default All Aztec Code Settings	M6201.
	Off	M6202_0.
	On	M6202_1.
<b>Aztec Code Msg. Length</b>	Minimum (1-3832)	M6203.
	Maximum (1-3832)	M6204.
<b>Aztec Append</b>	Off	M6205_0.
	On	M6205_1.
<b>Aztec Code Page</b>	Aztec Code Page	M6206.
<b>Chinese Sensible (Han Xin) Code</b>	Default All Han Xin Code Settings	M6301.
	Off	M6302_0.
	On	M6302_1.
<b>Chinese Sensible (Han Xin) Code Msg. Length</b>	Minimum (1-7833)	M6303.
	Maximum (1-7833)	M6304.
<b>China Post (Hong Kong 2 of 5)</b>	Default All China Post (Hong Kong 2 of 5) Settings	M6401.
	Off	M6402_0.
	On	M6402_1.
<b>China Post (Hong Kong 2 of 5) Msg. Length</b>	Minimum (2 - 80)	M6403.
	Maximum (2 - 80)	M6404.



<b>Korea Post</b>	Default All Korea Post Settings	M6501.
	Off	M6502_0.
	On	M6502_1.
<b>Korea Post Msg. Length</b>	Minimum (2 - 80)	M6503.
	Maximum (2 - 80)	M6504.
<b>Korea Post Check Digit</b>	Transmit Check Digit	M6505_0.
	Don't Transmit Check Digit	M6505_1.
<b>2D Postal Codes</b>	Off	M6601_0.
<b>Single 2D Postal Codes</b>	Australian Post On	M6601_1.
	British Post On	M6601_7.
	Canadian Post On	M6601_30.
	Intelligent Mail Bar Code On	M6601_10.
	Japanese Post On	M6601_3.
	KIX Post On	M6601_4.
	Planet Code On	M6601_5.
	Postal-4i On	M6601_9.
	Postnet On	M6601_6.
	Postnet with B and B' Fields On	M6601_11.
	InfoMail On	M6601_2.
<b>Combination 2D Postal Codes</b>	InfoMail and British Post On	M6601_8.
	Intelligent Mail Bar Code and Postnet with B and B' Fields On	M6601_20.
	Postnet and Postal-4i On	M6601_14.
	Postnet and Intelligent Mail Bar Code On	M6601_16.
	Postal-4i and Intelligent Mail Bar Code On	M6601_17.

	Postal-4i and Postnet with B and B' Fields On	M6601_19.
	Planet and Postnet On	M6601_12.
	Planet and Postnet with B and B' Fields On	M6601_18.
	Planet and Postal-4i On	M6601_13.
	Planet and Intelligent Mail Bar Code On	M6601_15.
	Planet, Postnet, and Postal-4i On	M6601_21.
	Planet, Postnet, and Intelligent Mail Bar Code On	M6601_22.
	Planet,Postal-4i, and Intelligent Mail Bar Code On	M6601_23.
	Postnet, Postal-4i, and Intelligent Mail Bar Code On	M6601_24.
	Planet,Postal-4i, and Postnet with B and B' Fields On	M6601_25.
	Planet, Intelligent Mail Bar Code, and Postnet with B and B' Fields On	M6601_26.
	Postal-4i, Intelligent Mail Bar Code, and Postnet with B and B' Fields On	M6601_27.
	Planet, Postal-4i, Intelligent Mail Bar Code, and Postnet On	M6601_28.
	Planet, Postal-4i,Intelligent Mail Bar Code, and Postnet with B and B' Fields On	M6601_29.
<b>Planet Code Check Digit</b>	Don't Transmit	M6602_0.
	Transmit	M6602_1.
	Don't Transmit	M6603_0.

**Postnet Check Digit**

	Transmit	M6603_1.
<b>Australian Post Interpretation</b>	Bar Output	M6604_0.
	Numeric N Table	M6604_1.
	Alphanumeric C Table	M6604_2.
	Combination N and C Tables	M6604_4.

# APPENDIX A Interface Keys

## Keyboard Function Relationships

The following Keyboard Function Code, Hex/ASCII Value, and Full ASCII “CTRL”+ relationships apply to all terminals that can be used with the scanner.

Function Code	HEX/ASCII Value	Full ASCII “CTRL” +
NUL	00	@
SOH	01	A
STX	02	B
ETX	03	C
EOT	04	D
ENQ	05	E
ACK	06	F
BEL	07	G
BS	08	H
HT	09	I
LF	0A	J
VT	0B	K
FF	0C	L
CR	0D	M
SO	0E	N
SI	0F	O
DLE	10	P
DC1	11	Q
DC2	12	R
DC3	13	S

DC4	14	T
NAK	15	U
SYN	16	V
ETB	17	W
CAN	18	X
EM	19	Y
SUB	1A	Z
ESC	1B	[
FS	1C	\
GS	1D	]
RS	1E	^
US	1F	-

The last five characters in the Full ASCII "CTRL"+ column ([ \ ] 6 -), apply to US only. The following chart indicates the equivalents of these five characters for different countries.

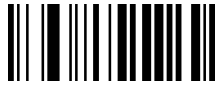
Country	Codes				
United States	[	\	]	6	-
Belgium	[	<	]	6	-
Scandinavia	8	<	9	6	-
France	^	8	\$	6	=
Germany		Ã	+	6	-
Italy		\	+	6	-
Switzerland		<	..	6	-
United Kingdom	[	ç	]	6	-
Denmark	8	\	9	6	-
Norway	8	\	9	6	-
Spain	[	\	]	6	-

## Supported Interface Keys

ASCII	HEX	IBM PC/AT and Compatibles, USB PC Keyboard	Apple Mac/iMac Supported Keys
NUL	00	Reserved	Reserved
SOH	01	Enter (KP)	Enter/Numpad Enter
STX	02	Cap Lock	CAPS
ETX	03	ALT make	ALT make
EOT	04	ALT break	ALT break
ENQ	05	CTRL make	CNTRL make
ACK	06	CTRL break	CNTRL break
BEL	07	CR/Enter	RETURN
BS	08	Reserved	APPLE make
HT	09	Tab	TAB
LF	0A	Reserved	APPLE break
VT	0B	Tab	TAB
FF	0C	Delete	Del
CR	0D	CR/Enter	RETURN
SO	0E	Insert	Ins Help
SI	0F	Escape	ESC
DLE	10	F11	F11
DC1	11	Home	Home
DC2	12	Print	Prnt Scrn
DC3	13	Back Space	BACKSPACE
DC4	14	Back Tab	LSHIFT TAB
NAK	15	F12	F12

<b>SYN</b>	16	F1	F1
<b>ETB</b>	17	F2	F2
<b>CAN</b>	18	F3	F3
<b>EM</b>	19	F4	F4
<b>SUB</b>	1A	F5	F5
<b>ESC</b>	1B	F6	F6
<b>FS</b>	1C	F7	F7
<b>GS</b>	1D	F8	F8
<b>RS</b>	1E	F9	F9
<b>US</b>	1F	F10	F10
<b>DEL</b>	7F		BACKSPACE

# APPENDIX B Programming Number



0



1



2



3



4



5



6



7



8



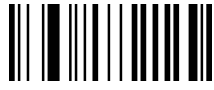
9



A







C



E



Save

B



D



F



Discard

# APPENDIX C Symbology Charts-AIM ID

## 1D Symbologies

AIM			
Symbology	ID	Possible modifiers(m)	Hex
<b>All Symbologies</b>			99
<b>UPC</b>		0,1,2,3,8,9,A,B,C	
UPC-A	]E0		63
UPC-A with Add-On	]E3		63
UPC-A with Extended Coupon Code	]E3		63
UPC-E	]E0		45
UPC-E with Add-On	]E3		45
UPC-E1	]X0		45
<b>EAN</b>	]Em	0, 1, 3, 4	64
EAN-13 (including Bookland EAN)	]E0		64
EAN-13 with Add-On	]E3		64
EAN-13 with Extended Coupon Code	]E3		64
EAN-8	]E4		44
EAN-8 with Add-On	]E3		44
<b>Code 128</b>	]Cm	0, 1, 2, 4	6A
<b>Telepen</b>	]Bm		74

<b>Code 39 (supports Full ASCII mode)</b>	]Am	0, 1, 3, 4, 5, 7	62
TCIF Linked Code 39 (TLC39)	]L2		54
Code 32 Pharmaceutical (PARAF)	]X0		3C
<b>Code 93 and 93i</b>	]Gm	0-9, A-Z, a-m	69
<b>Code 11</b>	]H3		68
<b>2 of 5</b>			
China Post (Hong Kong 2 of 5)	]X0		51
Interleaved 2 of 5	]Im	0, 1, 3	65
Matrix 2 of 5	]X0		6D
NEC 2 of 5	]X0		59
Straight 2 of 5 IATA	]Rm	0, 1, 3	66
Straight 2 of 5 Industrial	]S0		66
<b>Codabar</b>	]Fm	0-1	61
<b>MSI</b>	]Mm	0,1	67
<b>GS1</b>			
GS1 DataBar	]em	0	79
GS1 DataBar Limited	]em		7B
GS1 DataBar Expanded	]em		7D
GS1-128	]C1		49

Add AIM Code ID			5C81
Add Backslash			5C5C
Batch mode quantity			35

## 2D Symbologies

AIM			
Symbology	ID	Possible modifiers (m)	Hex
All Symbologies			99
<b>Aztec Code</b>	]zm	0-9, A-C	7A
<b>Chinese Sensible Code (Han Xin Code)</b>	]X0		48
<b>Codablock A</b>	]O6	0, 1, 4, 5, 6	56
<b>Codablock F</b>	]Om	0, 1, 4, 5, 6	71
<b>Code 49</b>	]Tm	0, 1, 2, 4	6C
<b>GS1</b>	]em	0-3	79
GS1 Composite	]em	0-3	79
GS1 DataBar Omnidirectional	]em	0-3	79
<b>PDF417</b>	]Lm	0-2	72
MicroPDF417	]Lm	0-5	52
<b>MaxiCode</b>	]Um	0-3	78
<b>Data Matrix</b>	]dm	0-6	77
<b>QR Code</b>	]Qm	0-6	73
Micro QR Code	]Qm		73

## Postal Symbologies

AIM			
Symbology	ID	Possible modifiers (m)	Hex
All Symbologies			99
<b>Australian Post</b>	]X0		41
<b>British Post</b>	]X0		42
<b>Canadian Post</b>	]X0		43
<b>China Post</b>	]X0		51
<b>InfoMail</b>	]X0		2c
<b>Intelligent Mail Bar Code</b>	]X0		4D
<b>Japanese Post</b>	]X0		4A
<b>KIX (Netherlands) Post</b>	]X0		4B
<b>Korea Post</b>	]X0		3F
<b>Planet Code</b>	]X0		4C
<b>Postal-4i</b>	]X0		4E
<b>Postnet</b>	]X0		50

## APPENDIX D ASCII Conversion Chart

In keyboard applications, ASCII Control Characters can be represented in 3 different ways, as shown below. The CTRL+X function is OS and application dependent. The following table lists some commonly used Microsoft functionality. This table applies to U.S. style keyboards. Certain characters may differ depending on your Country Code/PC regional settings.

Non-printable ASCII control characters			Keyboard Control + ASCII (CTRL+X) Mode		
DEC	HEX	Char	Control + X Mode Off	Windows Mode Control + X Mode On	
				CTRL + X	CTRL + X function
0	00	NUL	Reserved	CTRL+ @	
1	01	SOH	NP Enter	CTRL+ A	Select all
2	02	STX	Caps Lock	CTRL+ B	Bold
3	03	ETX	ALT Make	CTRL+ C	Copy
4	04	EOT	ALT Break	CTRL+ D	Bookmark
5	05	ENQ	CTRL Make	CTRL+ E	Center
6	06	ACK	CTRL Break	CTRL+ F	Find
7	07	BEL	Enter / Ret	CTRL+ G	
8	08	BS	(Apple Make)	CTRL+ H	History
9	09	HT	Tab	CTRL+ I	Italic
10	0A	LF	(Apple Break)	CTRL+ J	Justify
11	0B	VT	Tab	CTRL+ K	hyperlink
12	0C	FF	Delete	CTRL+ L	list, left align
13	0D	CR	Enter / Ret	CTRL+ M	

14	0E	SO	Insert	CTRL+ N	New
15	0F	SI	ESC	CTRL+ O	Open
16	10	DLE	F11	CTRL+ P	Print
17	11	DC1	Home	CTRL+ Q	Quit
18	12	DC2	PrtScn	CTRL+ R	
19	13	DC3	Backspace	CTRL+ S	Save
20	14	DC4	Back Tab	CTRL+ T	
21	15	NAK	F12	CTRL+ U	
22	16	SYN	F1	CTRL+ V	Paste
23	17	ETB	F2	CTRL+ W	
24	18	CAN	F3	CTRL+ X	
25	19	EM	F4	CTRL+ Y	
26	1A	SUB	F5	CTRL+ Z	
27	1B	ESC	F6	CTRL+ [	
28	1C	FS	F7	CTRL+ \	
29	1D	GS	F8	CTRL+ ]	
30	1E	RS	F9	CTRL+ ^	
31	1F	US	F10	CTRL+ -	
127	7F	␣	NP Enter		

## Lower ASCII Reference Table

**Note:** Windows Code page 1252 and lower ASCII use the same characters.

Printable Characters								
DEC	HEX	Character	DEC	HEX	Character	DEC	HEX	Character
32	20	<SPACE>	64	40	@	96	60	`
33	21	!	65	41	A	97	61	a
34	22	”	66	42	B	98	62	b
35	23	#	67	43	C	99	63	c
36	24	\$	68	44	D	100	64	d
37	25	%	69	45	E	101	65	e
38	26	&	70	46	F	102	66	f
39	27	'	71	47	G	103	67	g
40	28	(	72	48	H	104	68	h
41	29	)	73	49	I	105	69	i
42	2A	*	74	4A	J	106	6A	j
43	2B	+	75	4B	K	107	6B	k
44	2C	,	76	4C	L	108	6C	l
45	2D	-	77	4D	M	109	6D	m
46	2E	.	78	4E	N	110	6E	n
47	2F	/	79	4F	O	111	6F	o
48	30	0	80	50	P	112	70	p
49	31	1	81	51	Q	113	71	q
50	32	2	82	52	R	114	72	r
51	33	3	83	53	S	115	73	s
52	34	4	84	54	T	116	74	t
53	35	5	85	55	U	117	75	u
54	36	6	86	56	V	118	76	v



55	37	7	87	57	W	119	77	w
56	38	8	88	58	X	120	78	x
57	39	9	89	59	Y	121	79	y
58	3A	:	90	5A	Z	122	7A	z
59	3B	;	91	5B	[	123	7B	{
60	3C	<	92	5C	\	124	7C	
61	3D	=	93	5D	]	125	7D	}
62	3E	>	94	5E	^	126	7E	~
63	3F	?	95	5F	_	127	7F	␣

Extended ASCII Characters					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
128	80	€	Ç	up arrow ↑	0x48
129	81		ü	down arrow ↓	0x50
130	82	,	é	right arrow →	0x4B
131	83	f	â	left arrow ←	0x4D
132	84	„	ä	Insert	0x52
133	85	…	à	Delete	0x53
134	86	†	å	Home	0x47
135	87	‡	ç	End	0x4F
136	88	^	ê	Page Up	0x49
137	89	‰	ë	Page Down	0x51
138	8A	Š	è	Right ALT	0x38
139	8B	‹	ï	Right CTRL	0x1D
140	8C	Œ	î	Reserved	n/a
141	8D		ì	Reserved	n/a
142	8E	Ž	Ä	Numeric Keypad Enter	0x1C
143	8F		Å	Numeric Keypad /	0x35
144	90		É	F1	0x3B
145	91	‘	æ	F2	0x3C
146	92	’	Æ	F3	0x3D
147	93	“	ô	F4	0x3E
148	94	”	ö	F5	0x3F
149	95	•	ò	F6	0x40
150	96	–	û	F7	0x41
151	97	—	ù	F8	0x42

152	98	~	ÿ	F9	0x43
153	99	™	Ö	F10	0x44
154	9A	š	Ü	F11	0x57
155	9B	>	ç	F12	0x58
156	9C	œ	£	Numeric Keypad +	0x4E
157	9D		¥	Numeric Keypad -	0x4A
158	9E	ž	Pts	Numeric Keypad *	0x37
159	9F	ÿ	f	Caps Lock	0x3A
160	A0		á	Num Lock	0x45
161	A1	ı	í	Left Alt	0x38
162	A2	ç	ó	Left Ctrl	0x1D
163	A3	£	ú	Left Shift	0x2A
164	A4	☒	ñ	Right Shift	0x36
165	A5	¥	Ñ	Print Screen	n/a
166	A6	ı	ª	Tab	0x0F
167	A7	§	º	Shift Tab	0x8F
168	A8	¨	ı	Enter	0x1C
169	A9	©	ˆ	Esc	0x01
170	AA	ª	˜	Alt Make	0x36
171	AB	«	½	Alt Break	0xB6
172	AC	˜	¼	Control Make	0x1D
173	AD		ı	Control Break	0x9D
174	AE	®	«	Alt Sequence with 1 Character	0x36
175	AF	—	»	Ctrl Sequence with 1 Character	0x1D
176	B0	°	⋮		
177	B1	±	⋮		
178	B2	²	⋮		
179	B3	³			

180	B4	´	⌋		
181	B5	μ	⌋		
182	B6	¶	⌋		
183	B7	•	⌋		
184	B8	,	⌋		
185	B9	¹	⌋		
186	BA	°	⌋		
187	BB	»	⌋		
188	BC	¼	⌋		
189	BD	½	⌋		
190	BE	¾	⌋		
191	BF	¿	⌋		
192	C0	À	⌋		
193	C1	Á	⌋		
194	C2	Â	⌋		
195	C3	Ã	⌋		
196	C4	Ä	⌋		
197	C5	Å	⌋		
198	C6	Æ	⌋		
199	C7	Ç	⌋		
200	C8	È	⌋		
201	C9	É	⌋		
202	CA	Ê	⌋		
203	CB	Ë	⌋		
204	CC	Ì	⌋		
205	CD	Í	⌋		
206	CE	Î	⌋		
207	CF	Ï	⌋		

208	D0	Ð	⊥		
209	D1	Ñ	⊥		
210	D2	Ò	⊥		
211	D3	Ó	⊥		
212	D4	Ô	⊥		
213	D5	Õ	⊥		
214	D6	Ö	⊥		
215	D7	×	⊥		
216	D8	∅	⊥		
217	D9	Ù	⊥		
218	DA	Ú	⊥		
219	DB	Û	■		
220	DC	Ü	■		
221	DD	Ý	■		
222	DE	Þ	■		
223	DF	ƒ	■		
224	E0	à	α		
225	E1	á	β		
226	E2	â	Γ		
227	E3	ã	π		
228	E4	ä	Σ		
229	E5	å	σ		
230	E6	æ	μ		
231	E7	ç	τ		
232	E8	è	Φ		
233	E9	é	Θ		
234	EA	ê	Ω		
235	EB	ë	δ		

236	EC	ì	∞		
237	ED	í	ϕ		
238	EE	î	ε		
239	EF	ï	∩		
240	F0	ð	≡		
241	F1	ñ	±		
242	F2	ò	≥		
243	F3	ó	≤		
244	F4	ô	┌		
245	F5	õ	┐		
246	F6	ö	÷		
247	F7	÷	≈		
248	F8	ø	°		
249	F9	ù	•		
250	FA	ú	•		
251	FB	û	√		
252	FC	ü	ⁿ		
253	FD	ý	²		
254	FE	þ	■		
255	FF	ÿ			