

Revision History

Changes to the original guide are listed below:

Change	Data	Description
Rev10	12/2015	Initial Release

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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 HT850
- 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 HT850 includes a variety of USB and single RS-232 interfaces.

HT850 architecture includes:

- Atmel AT91SAM9 processor core, 400 MHz
- 32 MB LPDDRAM
- 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 HT850 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 HT850 to match the application or desired usage profile.

HT850 Decoder

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

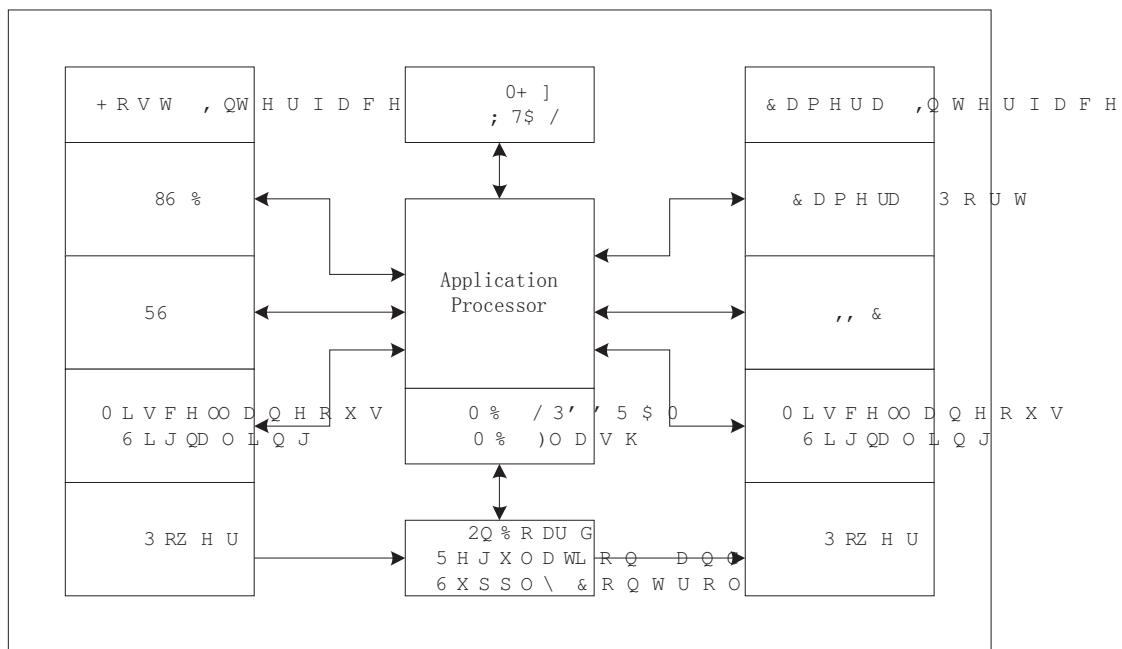


Figure 1-1 HT850 Decoder Block Diagram

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 HT850's host interface can be configured by scanning specific bar code or sending serial commands.

Table 1-1 Host Interface Configuration

	Interfaces	Configuration Options
Bar Code	USB Keyboard(Default)	See section of USB Keyboard(PC)
	RS232	See section of USB Serial
	USB Serial	See section of RS232 Interface
Serial Command	USB Keyboard(Default)	See section of HT850 Menu Commands
	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)

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 HT850 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.

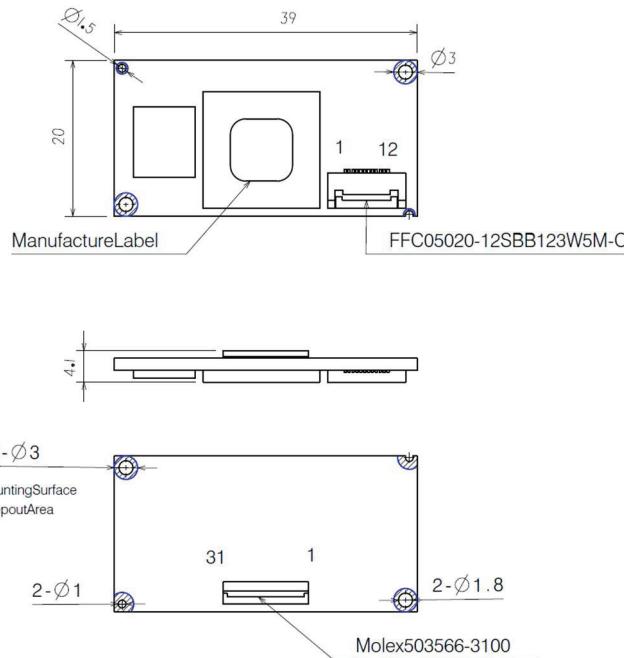


Figure 2-1 HT850 Decoder Board Drawing

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 ± 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 HT850 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	RS232: 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

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)

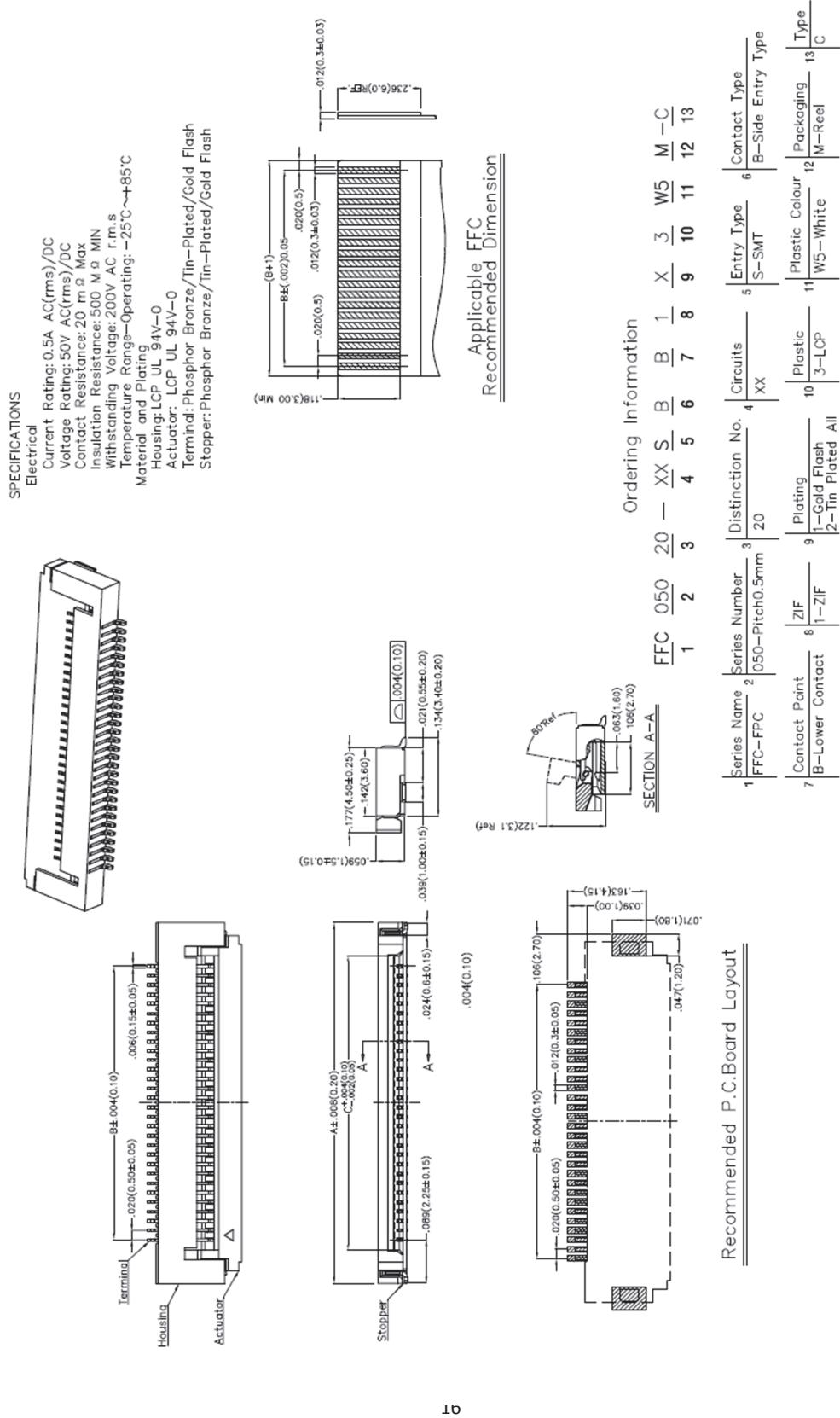


Figure 3-2 12-Pin connector(TXGA),Continued

Circuits (n)	Part No.	Dimensions(in/mm)			Note: Contact Circuits (n)	Part No.	Dimensions(in/mm)			Note: Contact Gold Flash C
		A	B	C			A	B	C	
6	FFC05020-06SBB123W5M-C	.280(7.10)	.098(2.50)	.172(3.60)	6	FFC05020-06SBB113W5M-C	.280(7.10)	.098(2.50)	.172(3.60)	
8	FFC05020-08SBB123W5M-C	.319(8.10)	.138(3.50)	.181(4.60)	8	FFC05020-08SBB113W5M-C	.319(8.10)	.138(3.50)	.181(4.60)	
9	FFC05020-09SBB123W5M-C	.339(8.60)	.157(4.00)	.201(5.10)	9	FFC05020-09SBB113W5M-C	.339(8.60)	.157(4.00)	.201(5.10)	
10	FFC05020-10SBB123W5M-C	.358(9.10)	.177(4.50)	.220(5.60)	10	FFC05020-10SBB113W5M-C	.358(9.10)	.177(4.50)	.220(5.60)	
12	FFC05020-12SBB123W5M-C	.398(10.10)	.217(5.50)	.260(6.60)	12	FFC05020-12SBB113W5M-C	.398(10.10)	.217(5.50)	.260(6.60)	
20	FFC05020-20SBB123W5M-C	.555(14.10)	.374(9.50)	.417(10.60)	20	FFC05020-20SBB113W5M-C	.555(14.10)	.374(9.50)	.417(10.60)	
24	FFC05020-24SBB123W5M-C	.634(16.10)	.453(11.50)	.493(12.60)	24	FFC05020-24SBB113W5M-C	.634(16.10)	.453(11.50)	.493(12.60)	
26	FFC05020-26SBB123W5M-C	.673(17.10)	.492(12.50)	.535(13.60)	26	FFC05020-26SBB113W5M-C	.673(17.10)	.492(12.50)	.535(13.60)	
30	FFC05020-30SBB123W5M-C	.752(19.10)	.571(14.50)	.614(15.60)	30	FFC05020-30SBB113W5M-C	.752(19.10)	.571(14.50)	.614(15.60)	
34	FFC05020-34SBB123W5M-C	.830(21.10)	.650(16.50)	.693(17.60)	34	FFC05020-34SBB113W5M-C	.830(21.10)	.650(16.50)	.693(17.60)	
35	FFC05020-35SBB123W5M-C	.850(21.60)	.669(17.00)	.713(18.10)	35	FFC05020-35SBB113W5M-C	.850(21.60)	.669(17.00)	.713(18.10)	
36	FFC05020-36SBB123W5M-C	.870(22.10)	.689(17.50)	.732(18.60)	36	FFC05020-36SBB113W5M-C	.870(22.10)	.689(17.50)	.732(18.60)	
40	FFC05020-40SBB123W5M-C	.949(24.10)	.768(19.50)	.811(20.60)	40	FFC05020-40SBB113W5M-C	.949(24.10)	.768(19.50)	.811(20.60)	
50	FFC05020-50SBB123W5M-C	1.146(29.10)	.965(24.50)	1.008(25.60)	50	FFC05020-50SBB113W5M-C	1.146(29.10)	.965(24.50)	1.008(25.60)	
54	FFC05020-54SBB123W5M-C	1.224(31.10)	1.043(26.50)	1.087(27.60)	54	FFC05020-54SBB113W5M-C	1.224(31.10)	1.043(26.50)	1.087(27.60)	
60	FFC05020-60SBB123W5M-C	1.343(34.10)	1.161(29.50)	1.205(30.60)	60	FFC05020-60SBB113W5M-C	1.343(34.10)	1.161(29.50)	1.205(30.60)	

Figure 3.3 31-Pin connector(Molex)

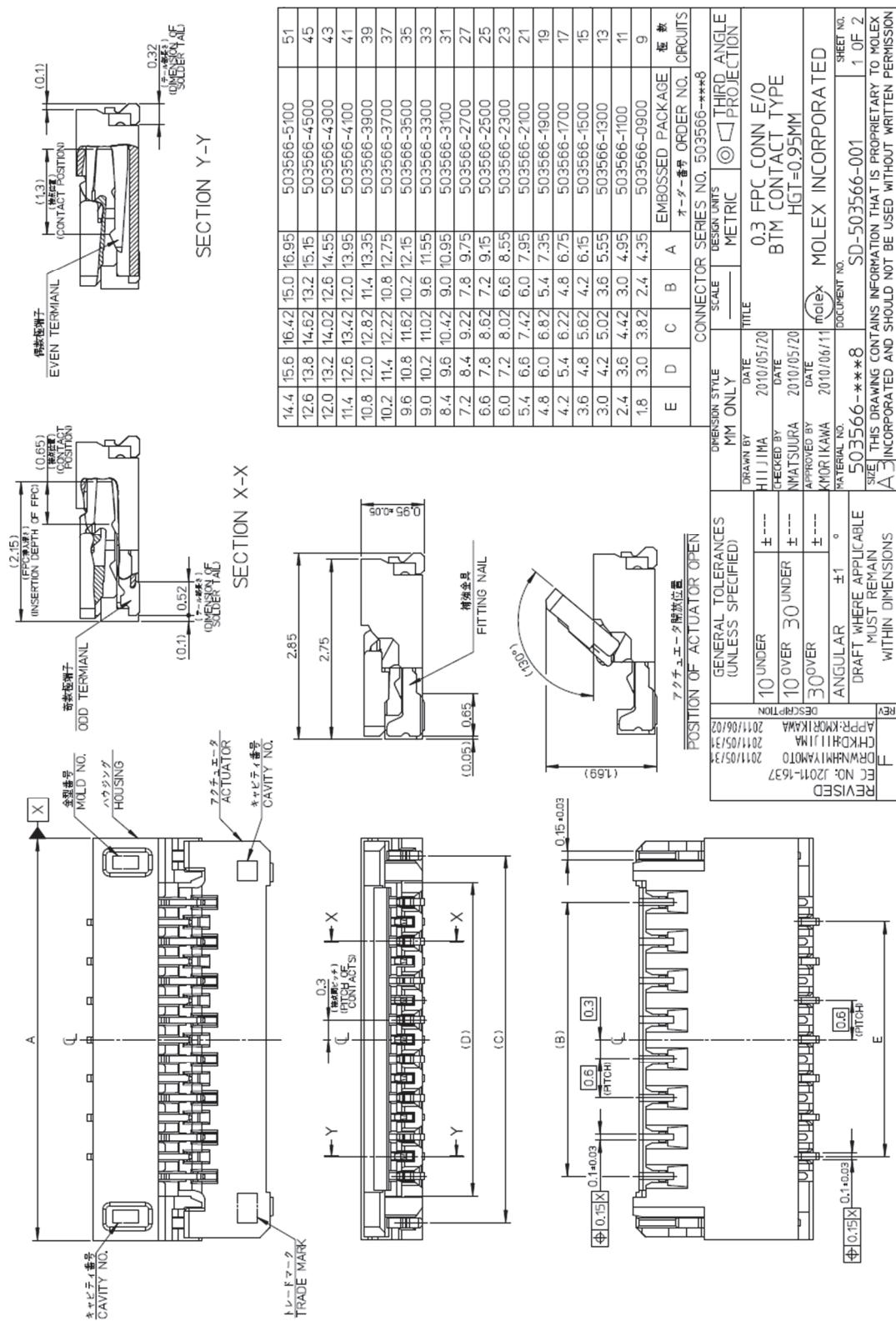
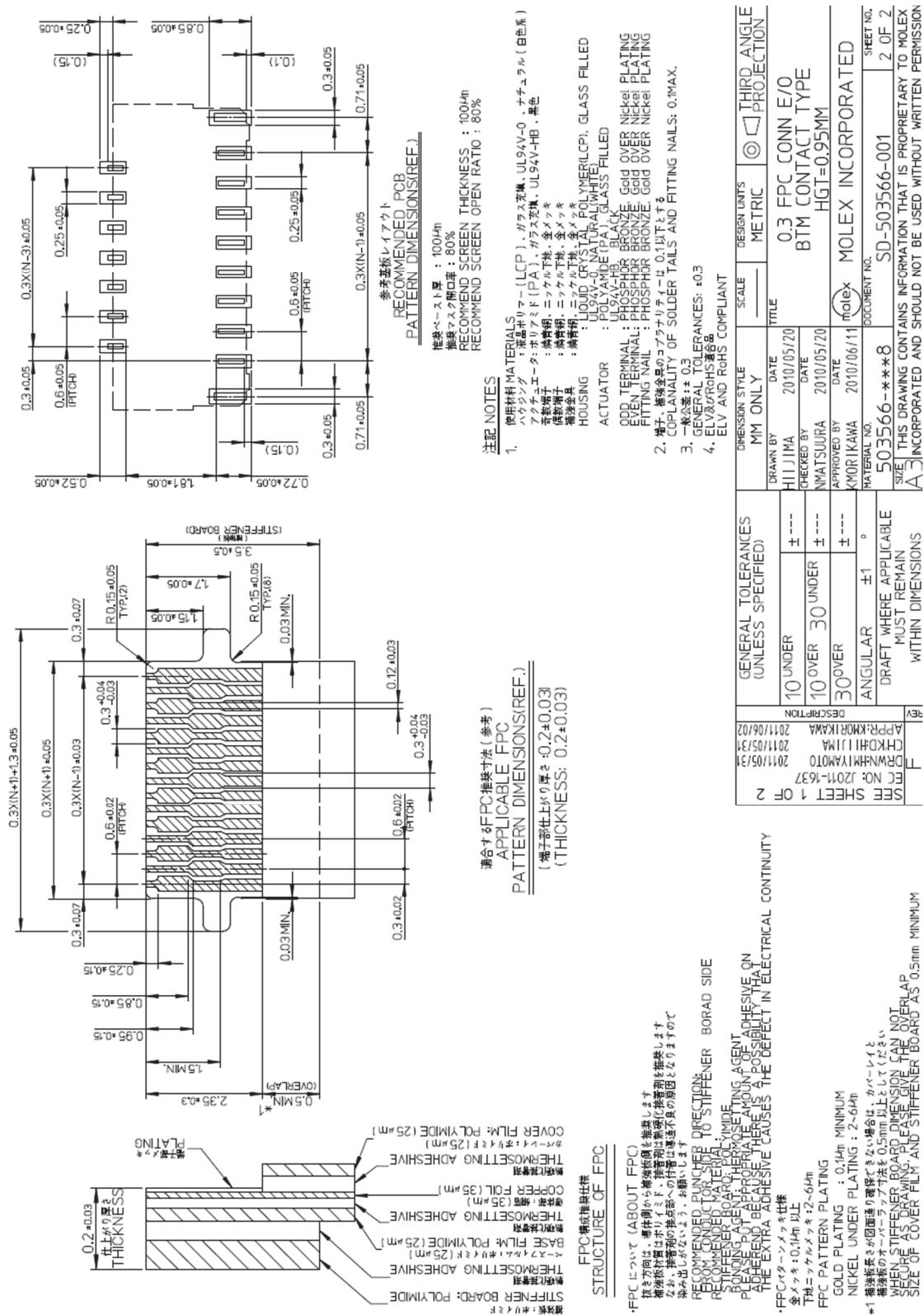


Figure 3-4 31-Pin connector(Molex),continued



CHAPTER 4 USER PREFERENCES & MISCELLANEOUS 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

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.



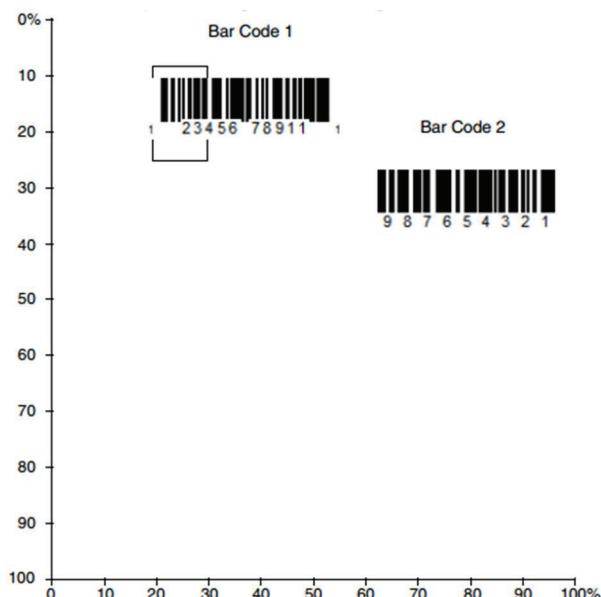
Sensitivity

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

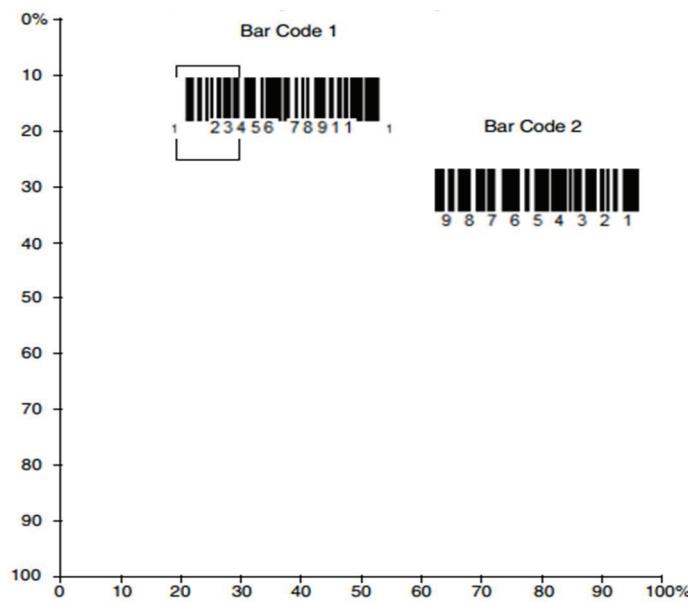
Manual Trigger Centering

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.

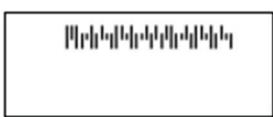
Upright:



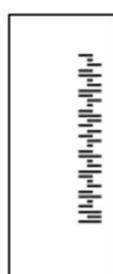
Vertical, Top to Bottom:
(Rotate CW 90°)



Upside Down:



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





*Upright



Vertical, Bottom to Top



Upside Down



Vertical, Top to Bottom

Show Software 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 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 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 I Lab. The driver will use the next available COM Port number.



USB Serial COM

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 HID 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)



Latvia

Latin America



Lithuania

Latvia (QWERTY)



Macedonia

Lithuania (IBM)



Mongolian (Cyrillic)

Malta



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 serial interface 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 HT850 runs normal until the RS232 Receiver Time-Out expires and the HT850 will enter in Power Down mode which the HT850 power consumption is none . A manual trigger resets the time-out and wake up the HT850. 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 SYMOLOGIES

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.

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	:	J J	Z Z	j +J	z +Z
VT \$K	ESC %A	+ /K	:	%F	K K	[%K	k +K
FF \$L	FS %B	, /L	<	%G	L L	\ %L	| +L
CR \$M	GS %C	- -	=	%H	M M	] %M	m +M
SO \$N	RS %D	. .	>	%I	N N	^ %N	n +N
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. Minimum 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 5Check 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. Mini-mum 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



Validate Type 11 then Type 10 Character and Transmit

Disable MSI Check Characters

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 DataBar Emulation



GS1-128 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. Minimum 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



Intelligent Mail Bar Code On



Japanese Post On



Planet Code On



Postnet On



Postal-4i On



Postnet with B and B' Fields On



InfoMail 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



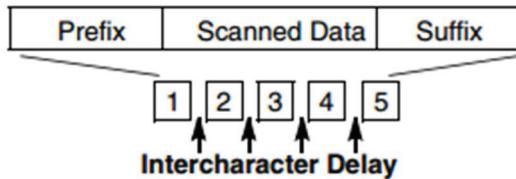
Disable Function Code Transmit

Intercharacter, Interfunction, and Intermassage 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.



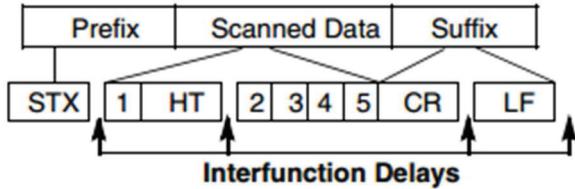
Intercharacter Delay

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.

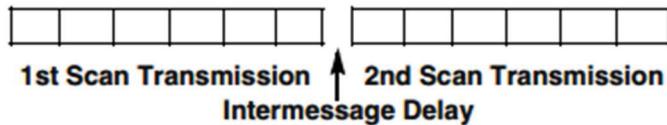


Interfunction Delay

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 Intermessage 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

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 HT850 have the following formation:

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

For example:

- Set the HT850 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).

HT850 Menu Commands

Resetting the Factory Defaults	Activate Defaults	M0401.
Interfaces	RS232 Serial Port	M0501.
	USB Keyboard (PC)	M0502.
	USB Keyboard (Mac)	M0503.
	USB Japanese Keyboard (PC)	M0201_134.
	USB Serial	M0201_130.
USB	CTS/RTS Emulation Off	M0701_0.
	CTS/RTS Emulation On	M0701_1.

	ACK/NAK Mode Off	M0702_0.
	ACK/NAK Mode On	M0702_1.
Keyboard Country	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.
Keyboard Style	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.
Keyboard Conversion	Keyboard Conversion Off	M0803_0.
	Convert all Characters to Upper Case	M0803_1.
	Convert all Characters to Lower Case	M0803_3.
Keyboard Control Character Output	Control Character Output Off	M0804_0.
	Control Character Output On	M0804_1.
Keyboard Modifiers	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.
RS232 Baud Rate	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.
RS232 Receiver TimeOut	RS232 receiver time-out	M0903.
Suppress Power-up Beeps	Power Up Beeper Off	M1001_0.
	Power Up Beeper On	M1001_1.
Beeper on BEL	Beep on BEL Off	M1002_0.
	Beep on BEL On	M1002_1.
Trigger Click	Trigger Click Off	M1003_0.
	Trigger Click On	M1003_1.
Beeper – Good Read	Beeper-Good Read Off	M1004_0.
	Beeper-Good Read On	M1004_1.
Beeper Volume-Good Read	Off	M1005_0.
	Low Volume	M1005_1.
	Medium Volume	M1005_2.
	High Volume	M1005_3.
Beeper Tone-Good Read	Low Frequency(800 Hz)	M1006_800.
	Medium Frequency (1600 Hz)	M1006_1600.
	High Frequency (3200 Hz)	M1006_3200.
Beeper Tone- User Specified Setting	User specified setting of beeper tone	M1006.
Beeper Pitch – Error	Razz(250 Hz)	M1007_250.
	Medium(3250 Hz)	M1007_3250.
	High(4200 Hz)	M1007_4200.
Beeper Duration-Good Read	Normal Beep	M1008_0.
	Short Beep	M1008_1.
LED – Good Read	LED-Good Read Off	M1009_0.

	LED-Good Read On	M1009_1.
Number of Good Decode Beeps- Good Read	1 Good Read Beep/LED Flash	M1010_1.
	2 Good Read Beeps/LED Flashes	M1010_2.
	3 Good Read Beeps/LED Flashes	M1010_3.
Number of Beeps – Error	Number of Error Beeps/LED Flashes	M1011.
Good Read Delay	No Delay	M1101_0.
	Short Delay(500 ms)	M1101_500.
	Medium Delay(1000 ms)	M1101_1000.
	Long Delay(1500 ms)	M1101_1500.
Reread Delay	No Delay	M1102_0.
	Short (500 ms)	M1102_500.
	Medium (1000 ms)	M1102_1000.
	Extra Long (2000 ms)	M1102_2000.
User-Specified Reread Delay	User-Specified Reread Delay	M1102.
Intercharacter Delay	Intercharacter Delay	M1103.
User Specified Intercharacter Delay	Delay Length	M1104.
	Character to Trigger Delay	M1105.
Interfunction Delay	Interfunction Delay	M1106.
Intermessage Delay	Intermessage Delay	M1107.
LED Illumination - Manual Trigger	Low	M1201_50.
	High	M1201_80.
Idle Illumination - Presentation Mode	Low	M1202_50.
	High	M1202_80.
Manual Trigger Mode	Manual Trigger - Normal	M1301.
Presentation Mode	Presentation Mode	M1302.

Mobile Phone/Display Mode	Hand Held Scanning - Mobile Phone	M1303.
	Presentation Scanning - Mobile Phone	M1304.
Presentation Sensitivity	High Sensitivity	M1402.
Hands Free Time-Out	Hands Free Time-Out	M1403.
Presentation Centering	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.
Manual Trigger Centering	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.
Video Reverse	Video Reverse Off	M1603_0.
	Video Reverse Only	M1603_1.
	Video Reverse and Standard Bar Codes	M1603_2.
Working Orientation	Upright	M1604_0.
	Vertical, Bottom to Top	M1604_1.
	Upside Down	M1604_2.
	Vertical, Top to Bottom	M1604_3.
Function Code Transmit	Enable	M1605_0.

	Disable	M1605_1.
To Add a Carriage Return Suffix to All Symbolologies	Add CR Suffix All Symbolologies	M1801.
Prefix	Add Prefix	M1802.
	Clear One Prefix	M1803.
	Clear All Prefixes	M1804.
Suffix	Add Suffix	M1805.
	Clear One Suffix	M1806.
	Clear All Suffixes	M1807.
Data Format Editor	Default Data Format	M1901.
	Enter Data Format	M1903.
	Clear One Data Format	M1904.
	Clear All Data Formats	M1905.
Data Formatter	Data Formatter Off	M1902_0.
	Data Formatter On, Not Required, Keep Prefix/Suffix	M1902_1.
	Data Format Required, Keep Prefix/Suffix	M1902_2.
Primary/Alternate Data Formats	Primary Data Format	M1906_0.
	Data Format 1	M1906_1.
	Data Format 2	M1906_2.
	Data Format 3	M1906_3.
Show Software Revision	Show Revision	M2003.
Aim Mode	Aim Mode Off	M2101_0.
	Aim Mode On	M2101_3.
All Symbolologies	All Symbolologies Off	M3001_0.
	All Symbolologies On	M3001_1.
Codabar	Default All Codabar	M3101.

	Settings	
	Off	M3102_0.
	On	M3102_1.
Codabar Start/Stop Char	Don't Transmit	M3103_0.
	Transmit	M3103_1.
Codabar Check Char	No Check Char.	M3104_0.
	Validate, But Don't Transmit	M3104_1.
	Validate, and Transmit	M3104_2.
Codabar Concatenation	Off	M3105_0.
	On	M3105_1.
	Require	M3105_2.
Codabar Message Length	Minimum (2 - 60)	M3106.
	Maximum (2 - 60)	M3107.
Code 39	Default All Code 39 Settings	M3201.
	Off	M3202_0.
	On	M3202_1.
Code 39 Start/Stop Char	Don't Transmit	M3203_0.
	Transmit	M3203_1.
Code 39 Check Char	No Check Char.	M3204_0.
	Validate, But Don't Transmit	M3204_1.
	Validate, and Transmit	M3204_2.
Code 39 Message Length	Minimum (0 - 48)	M3205.
	Maximum (0 - 48)	M3206.
Code 39 Append	Off	M3207_0.
	On	M3207_1.
Code 32 Pharmaceutical	Off	M3208_0.
	On	M3208_1.

Code 39 Full ASCII	Off	M3209_0.
	On	M3209_1.
	Code 39 Code Page	M3210.
Interleaved 2 of 5	Default All Interleaved 2 of 5 Settings	M3301.
	Off	M3302_0.
	On	M3302_1.
Interleaved 2 of 5 Check Digit	No Check Char.	M3303_0.
	Validate, But Don't Transmit	M3303_1.
	Validate, and Transmit	M3303_2.
Interleaved 2 of 5 Message Length	Minimum (2 - 80)	M3304.
	Maximum (2 - 80)	M3305.
NEC 2 of 5	Default All NEC 2 of 5 Settings	M3401.
	Off	M3402_0.
	On	M3402_1.
NEC 2 of 5 Check Digit	No Check Char.	M3403_0.
	Validate, But Don't Transmit	M3403_1.
	Validate, and Transmit	M3403_2.
NEC 2 of 5 Message Length	Minimum (2 - 80)	M3404.
	Maximum (2 - 80)	M3405.
Code 93	Default All Code 93 Settings	M3501.
	Off	M3502_0.
	On	M3502_1.
Code 93 Message Length	Minimum (0 - 80)	M3503.
	Maximum (0 - 80)	M3504.
Code 93 Append	Off	M3505_0.

	On	M3505_1.
Code 93 Code Page	Code 93 Code Page	M3506.
Straight 2 of 5 Industrial	Default All Straight 2 of 5 Industrial Settings	M3601.
	Off	M3602_0.
	On	M3602_1.
Straight 2 of 5 Industrial Message Length	Minimum (1 - 48)	M3603.
	Maximum (1 - 48)	M3604.
Straight 2 of 5 IATA	Default All Straight 2 of 5 IATA Settings	M3701.
	Off	M3702_0.
	On	M3702_1.
	Minimum (1 - 48)	M3703.
Straight 2 of 5 IATA Message Length	Maximum (1 - 48)	M3704.
	Default All Matrix 2 of 5 Settings	M3801.
Matrix 2 of 5	Off	M3802_0.
	On	M3802_1.
	Minimum (1 - 80)	M3803.
Matrix 2 of 5 Message Length	Maximum (1 - 80)	M3804.
	Default All Code 11 Settings	M3901.
Code 11	Off	M3902_0.
	On	M3902_1.
	Default All Code 128 Settings	M4001.
Code 128	Off	M4002_0.
	On	M4002_1.
ISBT Concatenation	Off	M4003_0.

	On	M4003_1.
Code 128 Message Length	Minimum (0 - 80)	M4004.
	Maximum (0 - 80)	M4005.
Code 128 Append	Off	M4006_0.
	On	M4006_1.
Code 128 Code Page	Code 128 Code Page	M4007.
GS1-128	Default All GS1-128 Settings	M4101.
	Off	M4102_0.
	On	M4102_1.
GS1-128 Message Length	Minimum (1 - 80)	M4103.
	Maximum (0 - 80)	M4104.
Telepen	Default All Telepen Settings	M4201.
	Off	M4202_0.
	On	M4202_1.
Telepen Output	AIM Telepen Output	M4203_0.
	Original Telepen Output	M4203_1.
UPC-A	Default All UPC-A Settings	M4301.
	Off	M4302_0.
	On	M4302_1.
UPC-A Check Digit	Off	M4303_0.
	On	M4303_1.
UPC-A Number System	Off	M4304_0.
	On	M4304_1.
UPC-A 2 Digit Addenda	Off	M4305_0.
	On	M4305_1.
UPC-A 5 Digit Addenda	Off	M4306_0.

	On	M4306_1.
UPC-A Addenda Required	Not Required	M4307_0.
	Required	M4307_1.
UPC-A Addenda Separator	Off	M4308_0.
	On	M4308_1.
UPC-A/EAN-13 with Extended Coupon Code	Off	M4401_0.
	Allow Concatenation	M4401_1.
	Require Concatenation	M4401_2.
Coupon GS1 DataBar Output	GS1 Output Off	M4402_0.
	GS1 Output On	M4402_1.
UPC-E0	Default All UPC-E Settings	M4501.
	Off	M4502_0.
	On	M4502_1.
UPC-E0 Expand	Off	M4503_0.
	On	M4503_1.
UPC-E0 Addenda Required	Not Required	M4504_0.
	Required	M4504_1.
UPC-E0 Addenda Separator	Off	M4505_0.
	On	M4505_1.
UPC-E0 Check Digit	Off	M4506_0.
	On	M4506_1.
UPC-E0 Number System	Off	M4507_0.
	On	M4507_1.
UPC-E0 Addenda	2 Digit Addenda Off	M4508_0.
	2 Digit Addenda On	M4508_1.
	5 Digit Addenda Off	M4509_0.
	5 Digit Addenda On	M4509_1.

UPC-E1	Off	M4510_0.
	On	M4510_1.
EAN/JAN-13	Default All EAN/JAN Settings	M4601.
	Off	M4602_0.
	On	M4602_1.
EAN/JAN-13 Check Digit	Off	M4603_0.
	On	M4603_1.
EAN/JAN-13 2 Digit Addenda	2 Digit Addenda Off	M4604_0.
	2 Digit Addenda On	M4604_1.
	5 Digit Addenda Off	M4605_0.
	5 Digit Addenda On	M4605_1.
EAN/JAN-13 Addenda Required	Not Required	M4606_0.
	Required	M4606_1.
EAN/JAN-13 Addenda Separator	Off	M4607_0.
	On	M4607_1.
ISBN Translate	Off	M4608_0.
	On	M4608_1.
EAN/JAN-8	Default All EAN/JAN 8 Settings	M4701.
	Off	M4702_0.
	On	M4702_1.
EAN/JAN-8 Check Digit	Off	M4703_0.
	On	M4703_1.
EAN/JAN-8 Addenda	2 Digit Addenda Off	M4704_0.
	2 Digit Addenda On	M4704_1.
	5 Digit Addenda Off	M4705_0.
	5 Digit Addenda On	M4705_1.
EAN/JAN-8 Addenda	Not Required	M4706_0.

Required	Required	M4706_1.
EAN/JAN-8 Addenda Separator	Off	M4707_0.
	On	M4707_1.
MSI	Default All MSI Settings	M4801.
	Off	M4802_0.
	On	M4802_1.
MSI Check Character	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.
MSI Message Length	Minimum (4 - 48)	M4804.
	Maximum (4 - 48)	M4805.
GS1 DataBar Omnidirectional	Default All GS1 DataBar Omnidirectional Settings	M4901.
	Off	M4902_0.
	On	M4902_1.
GS1 DataBar Limited	Default All GS1 DataBarLimited Settings	M5001.
	Off	M5002_0.
	On	M5002_1.
GS1 DataBar Expanded	Default All GS1 DataBar Expanded Settings	M5101.
	Off	M5102_0.

	On	M5102_1.
GS1 DataBar Expanded Msg. Length	Minimum (4 - 74)	M5103.
	Maximum (4 - 74)	M5104.
Codablock A	Default All Codablock A Settings	M5001.
	Off	M5002_0.
	On	M5002_1.
Codablock A Message Length	Minimum (1 - 600)	M5003.
	Maximum (1 - 600)	M5004.
Codablock F	Default All Codablock F Settings	M5301.
	Off	M5302_0.
	On	M5302_1.
Codablock F Msg. Length	Minimum (1 - 2048)	M5303.
	Maximum (1 - 2048)	M5304.
PDF417	Default All PDF417 Settings	M5401.
	Off	M5402_0.
	On	M5402_1.
PDF417 Msg. Length	Minimum (1-2750)	M5403.
	Maximum (1-2750)	M5404.
MacroPDF417	Off	M5405_0.
	On	M5405_1.
MicroPDF417	Default All MicroPDF417 Settings	M5501.
	Off	M5502_0.
	On	M5502_1.
MicroPDF417 Msg. Length	Minimum (1-366)	M5503.
	Maximum (1-366)	M5504.
GS1 Composite Codes	Off	M5601_0.
	On	M5601_1.
UPC/EAN Version	Off	M5602_0.

	On	M5602_1.
GS1 Composite Codes Msg.Length	Minimum (1-2435)	M5603.
	Maximum (1-2435)	M5604.
GS1 Emulation	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.
TCIF Linked Code 39	Off	M5801_0.
	On	M5801_1.
QR Code	Default All QR Code Settings	M5901.
	Off	M5902_0.
	On	M5902_1.
QR Code Msg. Length	Minimum (1-7089)	M5903.
	Maximum (1-7089)	M5904.
QR Code Append	Off	M5905_0.
	On	M5905_1.
QR Code Page	QR Code Page	M5906.
Data Matrix	Default All Data Matrix Settings	M6001.
	Off	M6002_0.
	On	M6002_1.
Data Matrix Msg. Length	Minimum (1-3116)	M6003.
	Maximum (1-3116)	M6004.
Data Matrix Append	Off	M6005_0.
	On	M6005_1.
Data Matrix Code Page	Data Matrix Code Page	M6006.

MaxiCode	Default All MaxiCode Settings	M6101.
	Off	M6102_0.
	On	M6102_1.
MaxiCode Msg. Length	Minimum (1-150)	M6103.
	Maximum (1-150)	M6104.
Aztec Code	Default All Aztec Code Settings	M6201.
	Off	M6202_0.
	On	M6202_1.
Aztec Code Msg. Length	Minimum (1-3832)	M6203.
	Maximum (1-3832)	M6204.
Aztec Append	Off	M6205_0.
	On	M6205_1.
Aztec Code Page	Aztec Code Page	M6206.
Chinese Sensible (Han Xin) Code	Default All Han Xin Code Settings	M6301.
	Off	M6302_0.
	On	M6302_1.
Chinese Sensible (Han Xin) Code Msg. Length	Minimum (1-7833)	M6303.
	Maximum (1-7833)	M6304.
China Post (Hong Kong 2 of 5)	Default All China Post (Hong Kong 2 of 5) Settings	M6401.
	Off	M6402_0.
	On	M6402_1.
China Post (Hong Kong 2 of 5) Msg. Length	Minimum (2 - 80)	M6403.
	Maximum (2 - 80)	M6404.
Korea Post	Default All Korea Post Settings	M6501.
	Off	M6502_0.
	On	M6502_1.

Korea Post Msg. Length	Minimum (2 - 80)	M6503.
	Maximum (2 - 80)	M6504.
Korea Post Check Digit	Transmit Check Digit	M6505_0.
	Don't Transmit Check Digit	M6505_1.
2D Postal Codes	Off	M6601_0.
Single 2D Postal Codes	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.
Combination 2D Postal Codes	InfoMail On	M6601_2.
	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.
Planet Code Check Digit	Don't Transmit	M6602_0.
	Transmit	M6602_1.
Postnet Check Digit	Don't Transmit	M6603_0.
	Transmit	M6603_1.
Australian Post Interpretation	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	[	¢	]	6	-	
Denmark	8	\	9	6	-	
Norway	8	\	9	6	-	
Spain	[	\	\]	6	-	

Supported Interface Keys

ASCII	HEX	IBM PC/AT and Compatibles,	Apple Mac/iMac Supported Keys
USB PC Keyboard			
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
SYN	16	F1	F1
ETB	17	F2	F2

CAN	18	F3	F3
EM	19	F4	F4
SUB	1A	F5	F5
ESC	1B	F6	F6
FS	1C	F7	F7
GS	1D	F8	F8
RS	1E	F9	F9
US	1F	F10	F10
DEL	7F		BACKSPACE

APPENDIX B Programming Number



0



1



2



3



4



5



6



7



8



9



A



B



C



D



E



F

Save



Discard

APPENDIX C Symbology Charts-AIM ID

1D Symbologies

AIM			
Symbology	ID	Possible modifiers(m)	Hex
All Symbologies			99
UPC		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
EAN	]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
Code 128	]Cm	0, 1, 2, 4	6A
Telepen	]Bm		74
Code 39 (supports Full ASCII mode)	]Am	0, 1, 3, 4, 5, 7	62

TCIF Linked Code 39 (TLC39)	]L2		54
Code 32 Pharmaceutical (PARAF)	]X0		3C
Code 93 and 93i	]Gm	0-9, A-Z, a-m	69
Code 11	]H3		68
2 of 5			
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
Codabar	]Fm	0-1	61
MSI	]Mm	0,1	67
GS1			
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 Symbolologies

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

Postal Symbolologies

AIM			
Symbology	ID	Possible modifiers (m)	Hex
All Symbolologies			99
Australian Post	]X0		41
British Post	]X0		42
Canadian Post	]X0		43
China Post	]X0		51
InfoMail	]X0		2c
Intelligent Mail Bar Code	]X0		4D
Japanese Post	]X0		4A
KIX (Netherlands) Post	]X0		4B
Korea Post	]X0		3F
Planet Code	]X0		4C
Postal-4i	]X0		4E
Postnet	]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 (KBDCAS0)	Windows Mode Control + X Mode On (KBDCAS2)	
				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		ú	down arrow	0x50
130	82	(	ł	right arrow	0x4B
131	83	%	â	left arrow	0x4D
132	84	)	ä	Insert	0x52
133	85		í	Delete	0x53
134	86	*	å	Home	0x47
135	87	+	ç	End	0x4F
136	88	&	ṁ	Page Up	0x49
137	89		ë	Page Down	0x51
138	8A	"	k	Right ALT	0x38
139	8B	-	ī	Right CTRL	0x1D
140	8C		î	Reserved	n/a
141	8D		n	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	,	p	F6	0x40
150	96	"	û	F7	0x41
151	97	'	s	F8	0x42
152	98	'	ÿ	F9	0x43

181	B5	μ	⊣		
182	B6		E		
183	B7	g	9		
184	B8		8		
185	B9		F		
186	BA	L	4		
187	BB	»	:		
188	BC	Œ	@		
189	BD	◦	?		
190	BE		>		
191	BF		Y		
192	C0	À	}		
193	C1	Á			
194	C2	Â			
195	C3	Ã			
196	C4	Ä	ı		
197	C5	Å	o		
198	C6	Æ	A		
199	C7	ç	B		
200	C8	È	=		
201	C9	É	7		
202	CA	Ê	L		
203	CB	Ë	I		
204	CC	Ì	C		
205	CD	Í	3		
206	CE	Î	O		
207	CF	Ї	J		
208	D0	Đ	K		

209	D1	Ñ	ꝑ		
210	D2	Ò	Ꝕ		
211	D3	Ó	ꝕ		
212	D4	Ô	Ꝗ		
213	D5	Õ	ꝗ		
214	D6	Ö	Ꝉ		
215	D7	h	N		
216	D8	ø	M		
217	D9	Ù			
218	DA	Ú	u		
219	DB	Û	^		
220	DC	Ü	z		
221	DD	Ý	b		
222	DE	þ	█		
223	DF	ß	■		
224	E0	í	ç		
225	E1	j	ß		
226	E2	â			
227	E3	ã	-		
228	E4	ä			
229	E5	å	‡		
230	E6	æ	μ		
231	E7	ç	•		
232	E8	k			
233	E9	l			
234	EA	m	Ω		
235	EB	ë	¥		
236	EC	n			

237	ED	í	¶		
238	EE	î	f		
239	EF	ï	#		
240	F0	ð	/		
241	F1	ñ	ƒ		
242	F2	p	l		
243	F3	q	o		
244	F4	ô	ſ		
245	F5	õ	j		
246	F6	ö	r		
247	F7	r	,		
248	F8	ø	e		
249	F9	s	g		
250	FA	t	g		
251	FB	û			
252	FC	u	n		
253	FD	ý	æ		
254	FE	þ			
255	FF	ÿ			