

Other parameters, such as **Serial Response Time-Out** or **Data Transmission Formats**, require scanning several bar codes. See these parameter descriptions for this procedure.

Errors While Scanning

Unless otherwise specified, to correct an error during a scanning sequence, just re-scan the correct parameter.

User Preferences/Miscellaneous Options Parameter Defaults

Table 9 lists defaults for user preferences parameters.

Scan the appropriate bar codes in this guide. These new values replace the standard default values in memory. To recall the default parameter values, scan the [Set Default Parameter on page 72](#).

✓ **NOTE:** See [Appendix , Standard Default Parameters](#) for all user preferences, hosts, symbologies, and miscellaneous default parameters.

Table 9 User Preferences Parameter Defaults

Parameter	Parameter Number	Default	Page Number
User Preferences			
Motion Sensing Control		Enabled	<Blue><Italic>8-58
Proximity Sensing Control		Enabled	<Blue><Italic>8-59
Proximity Continuous		Enabled	<Blue><Italic>8-59
Proximity Continuous Enable		Disabled	<Blue><Italic>8-59
Good Scan indication delay Control		600 ms	<Blue><Italic>8-60
Set Default Parameter		Set Defaults	<Blue><Italic>9-72
Parameter Bar Code Scanning	ECh	Enabled	<Blue><Italic>9-73
Beep After Good Decode	38h	Enabled	<Blue><Italic>9-74
Beeper Tone	91h	Medium	<Blue><Italic>9-75
Beeper Volume	8Ch	High	<Blue><Italic>9-76

Table 9 User Preferences Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
Picklist Mode	F0h 92h	Disabled Always	<Blue><Italic>9-78
Fuzzy 1D Processing	F1h 02h	Enabled	<Blue><Italic>9-79
Decoding Illumination	F0h, 2Ah	Enabled	<Blue><Italic>9-80
Miscellaneous Options			
Transmit Code ID Character	2Dh	None	<Blue><Italic>9-83
Prefix Value	63h, 69h	7013 <CR><LF>	<Blue><Italic>9-84
Suffix 1 Value Suffix 2 Value	62h 68h 64h 6Ah	7013 <CR><LF>	<Blue><Italic>9-84
Scan Data Transmission Format	EBh	Data as is	<Blue><Italic>9-85
FN1 Substitution Values	67h 6Dh	Set	<Blue><Italic>9-87
Transmit "No Read" Message	5Eh	Disabled	<Blue><Italic>9-88
Bluetooth Pairing Bar Code		None	<Blue><Italic>5-25
Bluetooth Un-pairing Bar Code		None	<Blue><Italic>5-26

User Preferences

Set Default Parameter

You can reset the Imager to two types of defaults: factory defaults or custom defaults. Scan the appropriate bar code below to reset the decoder to its default settings and/or set its current settings as custom defaults.

- **Set Defaults** - Scan this bar code to reset all parameters to custom default settings.

- **Set Factory Defaults** - Scan this bar code to restore the factory default values listed in [Table 17](#). This deletes any custom defaults set.



***Set Defaults**



Set Factory Defaults

Parameter Bar Code Scanning

Parameter # ECh

To disable the decoding of parameter bar codes, including the **Set Defaults** parameter bar codes, scan the **Disable Parameter Scanning** bar code below. To enable decoding of parameter bar codes, scan **Enable Parameter Scanning**.



***Enable Parameter Bar Code Scanning
(01h)**



**Disable Parameter Bar Code Scanning
(00h)**

Beep After Good Decode

Parameter # 38h

Scan a bar code below to select whether or not the Imager beeps after a good decode. If selecting **Do Not Beep After Good Decode**, the beeper still operates during parameter menu scanning and to indicate error conditions.



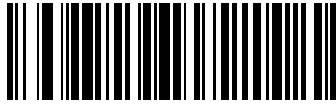
***Beep After Good Decode
(Enable)
(01h)**



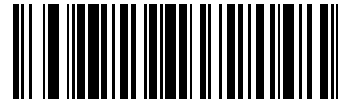
**Do Not Beep After Good Decode
(Disable)
(00h)**

Beeper Tone**Parameter # 91h**

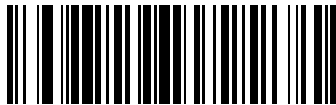
To select a decode beep frequency (tone), scan one of the following bar codes.



Low Tone
(02h)



***Medium Tone**
(01h)



High Tone
(00h)

Beeper Volume**Parameter # 8Ch**

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



Low Volume
(02h)



Medium Volume
(01h)



***High Volume**
(00h)

Imager Activity Modes

The Imager is capable of four modes of activity:

- **Busy (Run) Mode** – The Imager is scanning or transferring data using Bluetooth.
- **Standby Mode** – The Imager enters Standby mode (Low Power Mode) when it is idle for more than one second. The Imager wakes-up and returns to busy (run) mode upon at least one of the following events:
 - Scan trigger
 - Motion activity
 - Bluetooth activity
 - Press of the Restore key
 - Real time clock (a system inside the Imager)
- **Deep Sleep (Critical Off) Mode** – The deep sleep mode is only applicable when the Imager is connected to a mobile computer in cordless mode. When the battery power of the Imager is below 3V, the Imager turns off and enters Standby mode. To recover from Deep Sleep mode, replace the battery with a charged battery (See *Remove the Battery* on page 20.)
- **OFF Mode** – The Imager is not connected to power source.

Picklist Mode

Parameter # F0h 92h

Picklist mode enables the Imager to decode only bar codes that are aligned under the laser crosshair. Select one of the following picklist modes for the Imager:

- **Disabled Always** - Picklist mode is always disabled.
- **Enabled Always** - Picklist mode is always enabled.



NOTE: For the DS9808-LR, if you configure Trigger B for Imager Decoding and enable Picklist Mode, activating Trigger B turns on the imager aiming pattern, and releasing the trigger activates decoding.



***Disabled Always
(00h)**



**Enabled Always
(02h)**

Fuzzy 1D Processing

Parameter # F1h 02h

This option is enabled by default to optimize decode performance on 1D bar codes, including damaged and poor quality symbols. Disable this only if you experience time delays when decoding 2D bar codes, or in detecting a no decode.



***Enable Fuzzy 1D Processing
(01h)**



**Disable Fuzzy 1D Processing
(00h)**

Decoding Illumination

Parameter # F0h, 2Ah

Selecting **Enable Decoding Illumination** causes the Imager to flash illumination to aid decoding. Select **Disable Decoding Illumination** to prevent the Imager from using decoding illumination.

Enabling illumination usually results in superior images. The effectiveness of the illumination decreases as the distance to the target increases.



***Enable Decoding Illumination
(01h)**



**Disable Decoding Illumination
(00h)**

Low Battery Indication Cycle

The Low Battery Indication Cycle parameter sets low battery indication recurrence.

*Every 10 seconds



Every 20 seconds



Every 30 seconds



Every 40 seconds



Every 50 seconds



Bluetooth Disconnection Alert Control

Bluetooth Disconnect Indication

When this parameter is enabled, the RS507 plays a beep every 10 sec when the RS507 Bluetooth is disconnected.

*Disable



Enable



Bluetooth Disconnect Indication After Battery Insert

Time delay for Bluetooth disconnect indication after battery installed.

60 Seconds



180 seconds



240 Seconds



300 Seconds



Bluetooth Disconnect Indication After Bluetooth Disconnection

Time delay for Bluetooth disconnect indication after Bluetooth disconnection.

*30 Seconds



60 Seconds



90 Seconds



120 Seconds

**Bluetooth Disconnect Indication - Beep Duration**

* 3 High/Short Beeps



3 Low/Short Beeps



3 High/Long beep.



High/Low/High Beep



Bluetooth Disconnect Indication - LED Indication

Green LED turns on for 600ms



Green LED turns on for 1000ms



Red LED turns on for 600ms



*Red LED turns on for 600ms



Miscellaneous Scanner Parameters

Transmit Code ID Character

Parameter # 2Dh

A Code ID character identifies the code type of a scanned bar code. This is useful when decoding more than one code type. In addition to any single character prefix already selected, the Code ID character is inserted between the prefix and the decoded symbol.

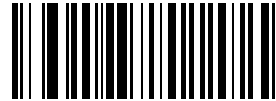
Select no Code ID character, a Symbol Code ID character, or an AIM Code ID character. For Code ID Characters, see [Symbol Code Identifiers on page 14-235](#) and [AIM Code Identifiers on page 14-236](#).



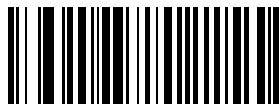
NOTE: If you enable Symbol Code ID Character or AIM Code ID Character, and enable [Transmit "No Read" Message on page 88](#), the Imager appends the code ID for Code 39 to the NR message.



Symbol Code ID Character
(02h)



AIM Code ID Character
(01h)



*None
(00h)

Prefix/Suffix Values

Key Category Parameter # P = 63h, S1 = 62h, S2 = 64h

Decimal Value Parameter # P = 69h, S1 = 68h, S2 = 6Ah

You can append a prefix and/or one or two suffixes to scan data for use in data editing. To set a value for a prefix or suffix, scan a four-digit number (i.e., four bar codes from [Appendix , Numeric Bar Codes](#)) that corresponds to that value.

When using host commands to set the prefix or suffix, set the key category parameter to 1, then set the 3-digit decimal value.

To correct an error or change a selection, scan [Cancel on page 16-246](#).



NOTE: To use Prefix/Suffix values, first set the [Scan Data Transmission Format on page 85](#).



Scan Prefix
(07h)



Scan Suffix 1
(06h)



Scan Suffix 2
(08h)



Data Format Cancel

Scan Data Transmission Format

Parameter # EBh

To change the scan data format, scan one of the following eight bar codes corresponding to the desired format.



NOTE: If using this parameter do not use ADF rules to set the prefix/suffix.

To set values for the prefix and/or suffix, see [Prefix/Suffix Values on page 84](#).



***Data As Is**
(00h)



<DATA> <SUFFIX 1>
(01h)



<DATA> <SUFFIX 2>
(02h)



<DATA> <SUFFIX 1> <SUFFIX 2>
(03h)



<PREFIX> <DATA>
(04h)

Scan Data Transmission Format (continued)



<PREFIX> <DATA> <SUFFIX 1>
(05h)



<PREFIX> <DATA> <SUFFIX 2>
(06h)



<PREFIX> <DATA> <SUFFIX 1> <SUFFIX 2>
(07h)

FN1 Substitution Values

Key Category Parameter # 67h

Decimal Value Parameter # 6Dh

The Wedge and USB HID Keyboard hosts support a FN1 Substitution feature. Enabling this substitutes any FN1 character (0x1b) in an EAN128 bar code with a value. This value defaults to 7013 (Enter Key).

When using host commands to set the FN1 substitution value, set the key category parameter to 1, then set the 3-digit keystroke value. See the ASCII Character Set table for the current host interface for the desired value.

To select a FN1 substitution value via bar code menus:

1. Scan the bar code below.



Set FN1 Substitution Value

2. Locate the keystroke desired for FN1 Substitution in the ASCII Character Set table for the current host interface. Enter the 4-digit ASCII Value by scanning each digit in [Appendix , Numeric Bar Codes](#).

To correct an error or change the selection, scan **Cancel**.

To enable FN1 substitution for USB HID keyboard, scan the **Enable FN1 Substitution** bar code on page 87.

Transmit “No Read” Message

Parameter # 5Eh

Scan a bar code below to select whether or not to transmit a No Read message. Enable this to transmit the characters NR when a bar code does not decoded. Disable this to send nothing to the host if a symbol does not decode.



NOTE: If you enable **Transmit No Read**, and also enable Symbol Code ID Character or AIM Code ID Character for [Transmit Code ID Character on page 83](#), the Imager appends the code ID for Code 39 to the NR message.



Enable No Read
(01h)



*Disable No Read
(00h)

Symbologies

Introduction

This chapter describes symbology features and provides programming bar codes for selecting these features. Before programming, follow the instructions in [Getting Started](#).

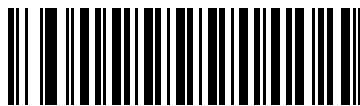
✓ **NOTE:** When the Imager is connected to a mobile computer, configuration by scanning bar codes is disabled. In such case, programming the Imager is performed by an application running on the mobile computer.

When the Imager is connected to a mobile computer, the configuration application running on the mobile computer may override the parameters previously entered by scanning. Once configured, the new parameters are saved in the Imager memory after disconnecting the Imager or terminating the application.

To set feature values, scan a single bar code or a short bar code sequence. The settings are stored in non-volatile memory and are preserved even when the Imager powers down.

Select a host type after the power-up beeps sound. This is only necessary upon the first power-up when connected to a new host.

To return all features to default values, scan the default bar code (see [Set Default Parameter on page 72](#)). Throughout the programming bar code menus, asterisks (*) indicate default values.



* Indicates Default — *Enable UPC-A — Feature/Option
(01h) — Option Hex Value for programming via SSI command

Scanning Sequence Examples

In most cases, scanning one bar code sets the parameter value. For example, to transmit bar code data without the UPC-A check digit, simply scan the **Do Not Transmit UPC-A Check Digit** bar code under [Transmit UPC-A Check Digit on page 106](#). The Imager issues a fast warble beep and the LEDs turn green, signifying a successful parameter entry.

Other parameters, such as **Set Length(s) for D 2 of 5** require scanning several bar codes. See the individual parameter, such as **Set Length(s) for D 2 of 5**, for this procedure.

Errors While Scanning

Unless otherwise specified, to correct an error during a scanning sequence, just re-scan the correct parameter.

Symbology Parameter Defaults

Table 10 lists the defaults for all symbology parameters. There are two ways to change the default values:

- Scan the appropriate bar codes in this guide. These new values replace the standard default values in memory. To recall the default parameter values, scan the [Set Default Parameter on page 72](#).
- Download data through the device's serial port using SSI. Hexadecimal parameter numbers appear in this chapter below the parameter title, and options appear in parenthesis beneath the accompanying bar codes. Refer to the Simple Serial Interface (SSI) Programmer's Guide for detailed instructions for changing parameters using this method.



NOTE: See [Appendix , Standard Default Parameters](#) for all user preferences, hosts, and miscellaneous default parameters.

Table 10 Parameter Defaults

Parameter	Parameter Number	Default	Page Number
UPC/EAN			
UPC-A	01h	Enabled	<Blue><Italic>10-99
UPC-E	02h	Enabled	<Blue><Italic>10-99
UPC-E1	0Ch	Disabled	<Blue><Italic>10-100
EAN-8/JAN 8	04h	Enabled	<Blue><Italic>10-100
EAN-13/JAN 13	03h	Enabled	<Blue><Italic>10-101
Bookland EAN	53h	Disabled	<Blue><Italic>10-101
Decode UPC/EAN/JAN Supplementals (2 and 5 digits)	10h	Ignore	<Blue><Italic>10-103
User-Programmable Supplementals			<Blue><Italic>10-105
Supplemental 1:	F1h 43h		
Supplemental 2:	F1h 44h		

Table 10 Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
UPC/EAN/JAN Supplemental Redundancy	50h	10	<Blue><Italic>10-105
Decode UPC/EAN/JAN Supplemental AIM ID	F1h A0h	Combined	<Blue><Italic>10-106
Transmit UPC-A Check Digit	28h	Enabled	<Blue><Italic>10-106
Transmit UPC-E Check Digit	29h	Enabled	<Blue><Italic>10-106
Transmit UPC-E1 Check Digit	2Ah	Enabled	<Blue><Italic>10-107
UPC-A Preamble	22h	System Character	<Blue><Italic>10-107
UPC-E Preamble	23h	System Character	<Blue><Italic>10-107
UPC-E1 Preamble	24h	System Character	<Blue><Italic>10-109
Convert UPC-E to A	25h	Disabled	<Blue><Italic>10-111
Convert UPC-E1 to A	26h	Disabled	<Blue><Italic>10-111
EAN-8/JAN-8 Extend	27h	Disabled	<Blue><Italic>10-112
Bookland ISBN Format	F1h 40h	ISBN-10	<Blue><Italic>10-113
UCC Coupon Extended Code	55h	Enabled	<Blue><Italic>10-114
ISSN EAN	F1h 69h	Disabled	<Blue><Italic>10-114

Table 10 Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
Code 128			
Code 128	08h	Enabled	<Blue><Italic>10-115
Set Length(s) for Code 128	D1h D2h	Any Length	<Blue><Italic>10-115
GS1-128 (formerly UCC/EAN-128)	0Eh	Enabled	<Blue><Italic>10-116
ISBT 128	54h	Enabled	<Blue><Italic>10-117
ISBT Concatenation	F1h 41h	Disabled	<Blue><Italic>10-118
Check ISBT Table	F1h 42h	Enabled	<Blue><Italic>10-119
ISBT Concatenation Redundancy	DFh	10	<Blue><Italic>10-119
Code 39			
Code 39	00h	Enabled	<Blue><Italic>10-120
Trioptic Code 39	0Dh	Disabled	<Blue><Italic>10-120
Convert Code 39 to Code 32 (Italian Pharmacy Code)	56h	Disabled	<Blue><Italic>10-121
Code 32 Prefix	E7h	Disabled	<Blue><Italic>10-121
Set Length(s) for Code 39	12h 13h	2 to 55	<Blue><Italic>10-122
Code 39 Check Digit Verification	30h	Disabled	<Blue><Italic>10-123

Table 10 Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
Transmit Code 39 Check Digit	2Bh	Disabled	<Blue><Italic>10-123
Code 39 Full ASCII Conversion	11h	Disabled	<Blue><Italic>10-124
Buffer Code 39	71h	Disabled	<Blue><Italic>10-124
Code 93			
Code 93	09h	Disabled	<Blue><Italic>10-127
Set Length(s) for Code 93	1Ah 1Bh	4 to 55	<Blue><Italic>10-127
Code 11			
Code 11	0Ah	Disabled	<Blue><Italic>10-129
Set Lengths for Code 11	1Ch 1Dh	4 to 55	<Blue><Italic>10-129
Code 11 Check Digit Verification	34h	Disabled	<Blue><Italic>10-130
Transmit Code 11 Check Digit(s)	2Fh	Disabled	<Blue><Italic>10-132
Interleaved 2 of 5 (ITF)			
Interleaved 2 of 5 (ITF)	06h	Disabled	<Blue><Italic>10-132
Set Lengths for I 2 of 5	16h 17h	14	<Blue><Italic>10-133
I 2 of 5 Check Digit Verification	31h	Disabled	<Blue><Italic>10-135

Table 10 Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
Transmit I 2 of 5 Check Digit	2Ch	Disabled	<Blue><Italic>10-135
Convert I 2 of 5 to EAN 13	52h	Disabled	<Blue><Italic>10-136
Discrete 2 of 5 (DTF)			
Discrete 2 of 5	05h	Disabled	<Blue><Italic>10-136
Set Length(s) for D 2 of 5	14h 15h	12	<Blue><Italic>10-137
Codabar (NW - 7)			
Codabar	07h	Disabled	<Blue><Italic>10-139
Set Lengths for Codabar	18h 19h	5 to 55	<Blue><Italic>10-139
CLSI Editing	36h	Disabled	<Blue><Italic>10-140
NOTIS Editing	37h	Disabled	<Blue><Italic>10-141
MSI			
MSI	0Bh	Disabled	<Blue><Italic>10-142
Set Length(s) for MSI	1Eh 1Fh	4 to 55	<Blue><Italic>10-142
MSI Check Digits	32h	One	<Blue><Italic>10-143
Transmit MSI Check Digit	2Eh	Disabled	<Blue><Italic>10-144

Table 10 Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
MSI Check Digit Algorithm	33h	Mod 10/Mod 10	<Blue><Italic>10-145
Chinese 2 of 5			
Chinese 2 of 5	F0h 98h	Disabled	<Blue><Italic>10-145
Matrix 2 of 5			
Matrix 2 of 5	F1h 6Ah	Disabled	<Blue><Italic>10-146
Matrix 2 of 5 Lengths	F1h 6Bh F1h 6Ch	1 Length - 14	<Blue><Italic>10-147
Matrix 2 of 5 Redundancy	F1h 6Dh	Disabled	<Blue><Italic>10-148
Matrix 2 of 5 Check Digit	F1h 6Eh	Disabled	<Blue><Italic>10-149
Transmit Matrix 2 of 5 Check Digit	F1h 6Fh	Disabled	<Blue><Italic>10-149
Inverse 1D	F1h 4Ah	Regular	<Blue><Italic>10-149
Postal Codes			
US Postnet	59h	Disabled	<Blue><Italic>10-150
US Planet	5Ah	Disabled	<Blue><Italic>10-151
Transmit US Postal Check Digit	5Fh	Enabled	<Blue><Italic>10-151
UK Postal	5Bh	Disabled	<Blue><Italic>10-152

Table 10 Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
Transmit UK Postal Check Digit	60h	Enabled	<Blue><Italic>10-15 2
Japan Postal	F0h 22h	Disabled	<Blue><Italic>10-15 3
Australian Postal	F0h 23h	Disabled	<Blue><Italic>10-15 4
Netherlands KIX Code	F0h 46h	Disabled	<Blue><Italic>10-15 4
USPS 4CB/One Code/Intelligent Mail	F1h 50h	Disabled	<Blue><Italic>10-15 5
UPU FICS Postal	F1h 63h	Disabled	<Blue><Italic>10-15 5
GS1 DataBar			
GS1 DataBar-14	F0h 52h	Disabled	<Blue><Italic>10-15 6
GS1 DataBar Limited	F0h 53h	Disabled	<Blue><Italic>10-15 6
GS1 DataBar Expanded	F0h 54h	Disabled	<Blue><Italic>10-15 7
Convert GS1 DataBar to UPC/EAN	F0h 8Dh	Disabled	<Blue><Italic>10-15 7
Composite			
Composite CC-C	F0h 55h	Disabled	<Blue><Italic>10-15 8
Composite CC-A/B	F0h 56h	Disabled	<Blue><Italic>10-15 8
Composite TLC-39	F0h 73h	Disabled	<Blue><Italic>10-15 9

Table 10 Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
UPC Composite Mode	F0h 58h	Never Linked	<Blue><Italic>10-159
Composite Beep Mode	F0h 8Eh	Beep As Each Code Type is Decoded	<Blue><Italic>10-160
GS1-128 Emulation Mode for UCC/EAN Composite Codes	F0h ABh	Disabled	<Blue><Italic>10-160
2D Symbologies			
PDF417	0Fh	Enabled	<Blue><Italic>10-161
MicroPDF417	E3h	Disabled	<Blue><Italic>10-161
Code 128 Emulation	7Bh	Disabled	<Blue><Italic>10-161
Data Matrix	F0h 24h	Enabled	<Blue><Italic>10-163
Data Matrix Inverse	F1h 4Ch	Regular	<Blue><Italic>10-163
Maxicode	F0h 26h	Disabled	<Blue><Italic>10-164
QR Code	F0h 25h	Enabled	<Blue><Italic>10-164
QR Inverse	F1h 4Bh	Regular	<Blue><Italic>10-165
MicroQR	F1h 3Dh	Enabled	<Blue><Italic>10-165
Aztec	F1h 3Eh	Enabled	<Blue><Italic>10-166

Table 10 Parameter Defaults (Continued)

Parameter	Parameter Number	Default	Page Number
Aztec Inverse	F1h 4Dh	Regular	<Blue><Italic>10-166
Symbology-Specific Security Levels			
Redundancy Level	4Eh	1	<Blue><Italic>10-167
Security Level	4Dh	0	<Blue><Italic>10-168
Intercharacter Gap Size	F0h 7Dh	Normal	<Blue><Italic>10-169
Report Version			<Blue><Italic>10-170
Macro PDF			
Flush Macro PDF Buffer			<Blue><Italic>10-171
Abort Macro PDF Entry			<Blue><Italic>10-171

UPC/EAN

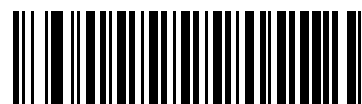
Enable/Disable UPC-A

Parameter # 01h

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



***Enable UPC-A
(01h)**

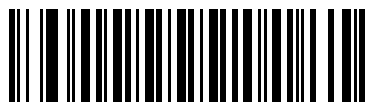


**Disable UPC-A
(00h)**

Enable/Disable UPC-E

Parameter # 02h

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



***Enable UPC-E
(01h)**



**Disable UPC-E
(00h)**

Enable/Disable UPC-E1

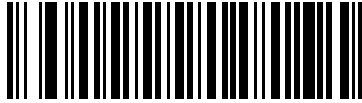
Parameter # 0Ch

UPC-E1 is disabled by default.

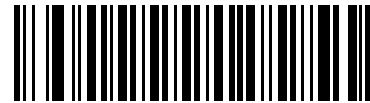
To enable or disable UPC-E1, scan the appropriate bar code below.



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



**Enable UPC-E1
(01h)**

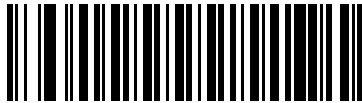


***Disable UPC-E1
(00h)**

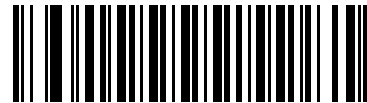
Enable/Disable EAN-8/JAN-8

Parameter # 04h

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



***Enable EAN-8/JAN-8
(01h)**

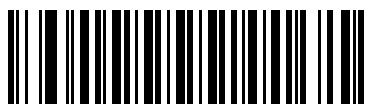


**Disable EAN-8/JAN-8
(00h)**

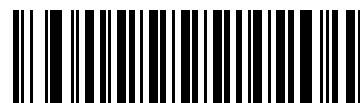
Enable/Disable EAN-13/JAN-13

Parameter # 03h

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



***Enable EAN-13/JAN-13
(01h)**



**Disable EAN-13/JAN-13
(00h)**

Enable/Disable Bookland EAN

Parameter # 53h

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



**Enable Bookland EAN
(01h)**



***Disable Bookland EAN
(00h)**



NOTE: If you enable Bookland EAN, select a [Bookland ISBN Format on page 113](#). Also select either Decode UPC/EAN Supplementals, Autodiscriminate UPC/EAN Supplementals, or Enable 978/979 Supplemental Mode in [Decode UPC/EAN/JAN Supplementals on page 102](#).

Decode UPC/EAN/JAN Supplementals

Parameter # 10h

Supplementals are bar codes appended according to specific format conventions (e.g., UPC A+2, UPC E+2, EAN 13+2). The following options are available:

- If you select **Ignore UPC/EAN with Supplementals**, and the digital scanner is presented with a UPC/EAN plus supplemental symbol, the scanner decodes UPC/EAN and ignores the supplemental characters.
- If you select **Decode UPC/EAN with Supplementals**, the digital scanner only decodes UPC/EAN symbols with supplemental characters, and ignores symbols without supplementals.
- If you select **Autodiscriminate UPC/EAN Supplementals**, the digital scanner decodes UPC/EAN symbols with supplemental characters immediately. If the symbol does not have a supplemental, the digital scanner must decode the bar code the number of times set via [UPC/EAN/JAN Supplemental Redundancy on page 105](#) before transmitting its data to confirm that there is no supplemental.
- If you select one of the following **Supplemental Mode** options, the digital scanner immediately transmits EAN-13 bar codes starting with that prefix that have supplemental characters. If the symbol does not have a supplemental, the digital scanner must decode the bar code the number of times set via [UPC/EAN/JAN Supplemental Redundancy on page 105](#) before transmitting its data to confirm that there is no supplemental. The digital scanner transmits UPC/EAN bar codes that do not have that prefix immediately.
 - Enable 378/379 Supplemental Mode
 - **Enable 978/979 Supplemental Mode**

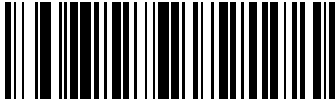


NOTE: If you select 978/979 Supplemental Mode and are scanning Bookland EAN bar codes, see [Enable/Disable Bookland EAN on page 101](#) to enable Bookland EAN, and select a format using [Bookland ISBN Format on page 113](#).

- Enable 977 Supplemental Mode
- Enable 414/419/434/439 Supplemental Mode
- Enable 491 Supplemental Mode
- **Enable Smart Supplemental Mode** - applies to EAN-13 bar codes starting with any prefix listed previously.
- **Supplemental User-Programmable Type 1** - applies to EAN-13 bar codes starting with a 3-digit user-defined prefix. Set this 3-digit prefix using [User-Programmable Supplementals on page 105](#).
- **Supplemental User-Programmable Type 1 and 2** - applies to EAN-13 bar codes starting with either of two 3-digit user-defined prefixes. Set the 3-digit prefixes using [User-Programmable Supplementals on page 105](#).
- **Smart Supplemental Plus User-Programmable 1** - applies to EAN-13 bar codes starting with any prefix listed previously or the user-defined prefix set using [User-Programmable Supplementals on page 105](#).
- **Smart Supplemental Plus User-Programmable 1 and 2** - applies to EAN-13 bar codes starting with any prefix listed previously or one of the two user-defined prefixes set using [User-Programmable Supplementals on page 105](#).



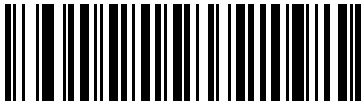
NOTE: To minimize the risk of invalid data transmission, select either to decode or ignore supplemental characters.

Decode UPC/EAN/JAN Supplementals (continued)

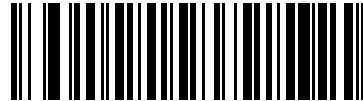
**Decode UPC/EAN/JAN Only With Supplementals
(01h)**



***Ignore Supplementals
(00h)**



**Autodiscriminate UPC/EAN/JAN Supplementals
(02h)**



**Enable 378/379 Supplemental Mode
(04h)**



**Enable 978/979 Supplemental Mode
(05h)**



**Enable 977 Supplemental Mode
(07h)**

Decode UPC/EAN/JAN Supplementals (continued)

Enable 414/419/434/439 Supplemental Mode
(06h)



Enable 491 Supplemental Mode
(08h)



Enable Smart Supplemental Mode
(03h)



Supplemental User-Programmable Type 1
(09h)



Supplemental User-Programmable Type 1 and 2
(0Ah)



Smart Supplemental Plus User-Programmable 1
(0Bh)



Smart Supplemental Plus User-Programmable 1 and 2
(0Ch)

User-Programmable Supplementals

Supplemental 1: Parameter # F1h 43h

Supplemental 2: Parameter # F1h 44h

If you selected a Supplemental User-Programmable option from [Decode UPC/EAN/JAN Supplementals on page 102](#), select **User-Programmable Supplemental 1** to set the 3-digit prefix. Then select the 3 digits using the numeric bar codes beginning on [page 16-245](#). Select **User-Programmable Supplemental 2** to set a second 3-digit prefix. Then select the 3 digits using the numeric bar codes beginning on [page 16-245](#).



User-Programmable Supplemental 1



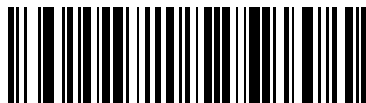
User-Programmable Supplemental 2

UPC/EAN/JAN Supplemental Redundancy

Parameter # 50h

If you selected **Autodiscriminate UPC/EAN/JAN Supplementals**, this option adjusts the number of times to decode a symbol without supplementals before transmission. The range is from two to thirty times. Five or above is recommended when decoding a mix of UPC/EAN/JAN symbols with and without supplementals. The default is 10.

Scan the bar code below to set a decode redundancy value. Next, scan two numeric bar codes in [Appendix , Numeric Bar Codes](#). Enter a leading zero for single digit numbers. To correct an error or change a selection, scan [Cancel on page 16-246](#).



UPC/EAN/JAN Supplemental Redundancy

UPC/EAN/JAN Supplemental AIM ID Format

Parameter # F1h A0h

Select an output format when reporting UPC/EAN/JAN bar codes with supplementals with AIM ID enabled:

- Separate - UPC/EAN with supplementals transmit as]E<0 or 4><data>]E<1 or 2>[supp data]
- Combined - EAN-8 with supplementals transmit as]E4<data>]E<1 or 2>[supp data]
All other UPC/EAN with supplementals transmit as]E3<data+supps>



Separate
(00h)

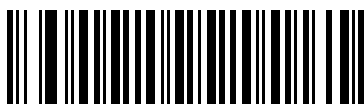


*Combined
(01h)

Transmit UPC-A Check Digit

Parameter # 28h

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.



*Transmit UPC-A Check Digit
(01h)

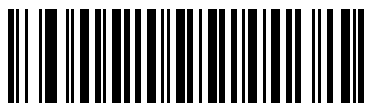


Do Not Transmit UPC-A Check Digit
(00h)

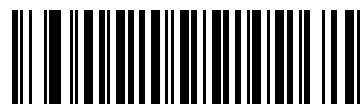
Transmit UPC-E Check Digit

Parameter # 29h

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-E check digit. It is always verified to guarantee the integrity of the data.



***Transmit UPC-E Check Digit
(01h)**

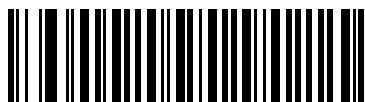


**Do Not Transmit UPC-E Check Digit
(00h)**

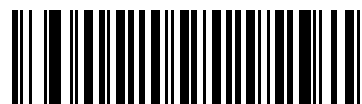
Transmit UPC-E1 Check Digit

Parameter # 2Ah

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-E1 check digit. It is always verified to guarantee the integrity of the data.



***Transmit UPC-E1 Check Digit
(01h)**



**Do Not Transmit UPC-E1 Check Digit
(00h)**

UPC-A Preamble

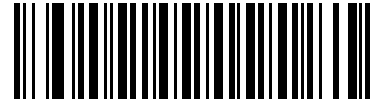
Parameter # 22h

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-A preamble to the host device: transmit System Character only, transmit

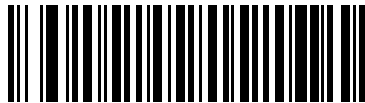
System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.



No Preamble (<DATA>)
(00h)



*System Character (<SYSTEM CHARACTER> <DATA>)
(01h)



System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(02h)

UPC-E Preamble

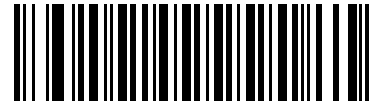
Parameter # 23h

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-E preamble to the host device: transmit System Character only, transmit

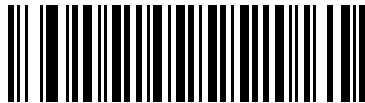
System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.



No Preamble (<DATA>)
(00h)



*System Character (<SYSTEM CHARACTER> <DATA>)
(01h)



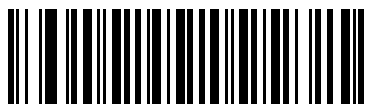
System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(02h)

UPC-E1 Preamble

Parameter # 24h

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-E1 preamble to the host device: transmit System Character only, transmit

System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.



No Preamble (<DATA>)
(00h)



*System Character (<SYSTEM CHARACTER> <DATA>)
(01h)



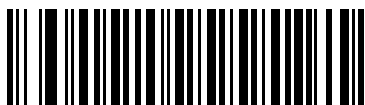
System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(02h)

Convert UPC-E to UPC-A

Parameter # 25h

Enable this to convert UPC-E (zero suppressed) decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

Disable this to transmit UPC-E decoded data as UPC-E data, without conversion.



Convert UPC-E to UPC-A (Enable)
(01h)



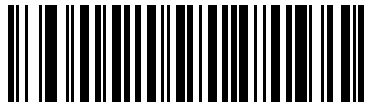
*Do Not Convert UPC-E to UPC-A (Disable)
(00h)

Convert UPC-E1 to UPC-A

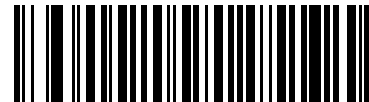
Parameter # 26h

Enable this to convert UPC-E1 decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

Disable this to transmit UPC-E1 decoded data as UPC-E1 data, without conversion.



Convert UPC-E1 to UPC-A (Enable)
(01h)

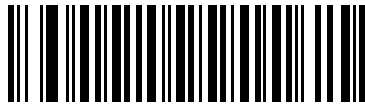


*Do Not Convert UPC-E1 to UPC-A (Disable)
(00h)

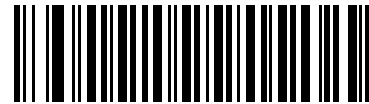
EAN-8/JAN-8 Extend**Parameter # 27h**

Enable this parameter to add five leading zeros to decoded EAN-8 symbols to make them compatible in format to EAN-13 symbols.

Disable this to transmit EAN-8 symbols as is.



**Enable EAN/JAN Zero Extend
(01h)**



***Disable EAN/JAN Zero Extend
(00h)**

Bookland ISBN Format

Parameter # F1h 40h

If you enabled Bookland EAN using [Enable/Disable Bookland EAN on page 101](#), select one of the following formats for Bookland data:

- **Bookland ISBN-10** - The digital scanner reports Bookland data starting with 978 in traditional 10-digit format with the special Bookland check digit for backward-compatibility. Data starting with 979 is not considered Bookland in this mode.
- **Bookland ISBN-13** - The digital scanner reports Bookland data (starting with either 978 or 979) as EAN-13 in 13-digit format to meet the 2007 ISBN-13 protocol.



***Bookland ISBN-10**
(00h)



Bookland ISBN-13
(01h)

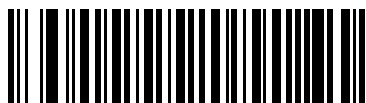


NOTE: For Bookland EAN to function properly, first enable Bookland EAN using [Enable/Disable Bookland EAN on page 101](#), then select either Decode UPC/EAN Supplementals, Autodiscriminate UPC/EAN Supplementals, or Enable 978/979 Supplemental Mode in [Decode UPC/EAN/JAN Supplementals on page 102](#).

UCC Coupon Extended Code

Parameter # 55h

Enable this parameter to decode UPC-A bar codes starting with digit '5', EAN-13 bar codes starting with digit '99', and UPC-A/GS1-128 Coupon Codes. UPCA, EAN-13, and GS1-128 must be enabled to scan all types of Coupon Codes.



***Enable UCC Coupon Extended Code
(01h)**



**Disable UCC Coupon Extended Code
(00h)**



NOTE: See [UPC/EAN/JAN Supplemental Redundancy on page 105](#) to control autodiscrimination of the GS1-128 (right half) of a coupon code.

ISSN EAN

Parameter # F1h 69h

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



**Enable ISSN EAN
(01h)**



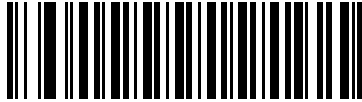
***Disable ISSN EAN
(00h)**

Code 128

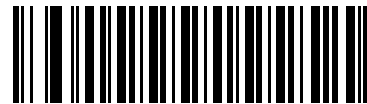
Enable/Disable Code 128

Parameter # 08h

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



***Enable Code 128**
(01h)



Disable Code 128
(00h)

Set Lengths for Code 128

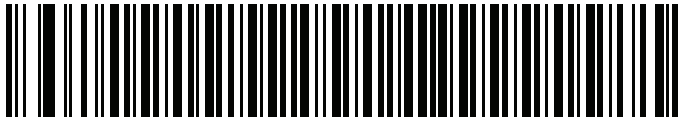
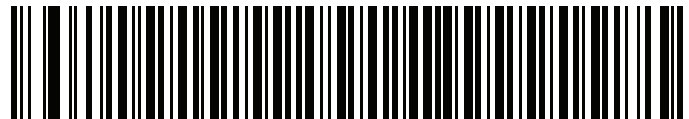
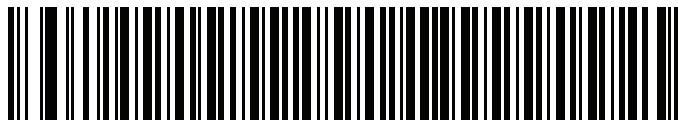
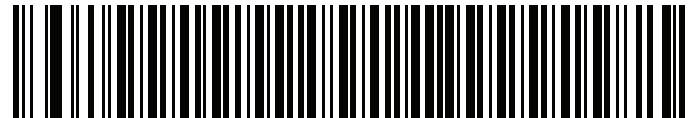
Parameter # L1 = D1h, L2 = D2h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 128 to any length, one or two discrete lengths, or lengths within a specific range.



NOTE: When setting lengths for different bar code types, enter a leading zero for single digit numbers.

- **One Discrete Length** - Select this option to decode only Code 128 symbols containing a selected length. Select the length using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only Code 128 symbols with 14 characters, scan **Code 128 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or change the selection, scan [Appendix , Numeric Bar Codes](#).
- **Two Discrete Lengths** - Select this option to decode only Code 128 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only Code 128 symbols containing either 2 or 14 characters, select **Code 128 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or change the selection, scan [Appendix , Numeric Bar Codes](#).
- **Length Within Range** - Select this option to decode a Code 128 symbol with a specific length range. Select lengths using numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode Code 128 symbols containing between 4 and 12 characters, first scan **Code 128 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [Appendix , Numeric Bar Codes](#).
- **Any Length** - Select this option to decode Code 128 symbols containing any number of characters within the digital scanner's capability.

Set Lengths for Code 128 (continued)**Code 128 - One Discrete Length****Code 128 - Two Discrete Lengths****Code 128 - Length Within Range*****Code 128 - Any Length****Enable/Disable GS1-128 (formerly UCC/EAN-128)****Parameter # 0Eh**

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

***Enable GS1-128
(01h)****Disable GS1-128
(00h)**

Enable/Disable ISBT 128

Parameter # 54h

ISBT 128 is a variant of Code 128 used in the blood bank industry. Scan a bar code below to enable or disable ISBT 128. If necessary, the host must perform concatenation of the ISBT data.



***Enable ISBT 128**
(01h)



Disable ISBT 128
(00h)

ISBT Concatenation

Parameter # F1h 41h

Select an option for concatenating pairs of ISBT code types:

- If you select **Disable ISBT Concatenation**, the digital scanner does not concatenate pairs of ISBT codes it encounters.
- If you select **Enable ISBT Concatenation**, there must be two ISBT codes in order for the digital scanner to decode and perform concatenation. The digital scanner does not decode single ISBT symbols.
- If you select **Autodiscriminate ISBT Concatenation**, the digital scanner decodes and concatenates pairs of ISBT codes immediately. If only a single ISBT symbol is present, the digital scanner must decode the symbol the number of times set via [ISBT Concatenation Redundancy on page 119](#) before transmitting its data to confirm that there is no additional ISBT symbol.



***Disable ISBT Concatenation**
(00h)



Enable ISBT Concatenation
(01h)

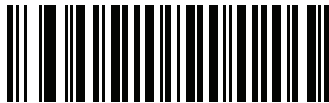


Autodiscriminate ISBT Concatenation
(00h)

Check ISBT Table

Parameter # F1h 42h

The ISBT specification includes a table that lists several types of ISBT bar codes that are commonly used in pairs. If you set **ISBT Concatenation** to **Enable**, enable **Check ISBT Table** to concatenate only those pairs found in this table. Other types of ISBT codes are not concatenated.



***Enable Check ISBT Table
(01h)**



**Disable Check ISBT Table
(00h)**

ISBT Concatenation Redundancy

Parameter # DFh

If you set **ISBT Concatenation** to **Autodiscriminate**, use this parameter to set the number of times the digital scanner must decode an ISBT symbol before determining that there is no additional symbol.

Scan the bar code below, then scan two numeric bar codes in [Appendix , Numeric Bar Codes](#) to set a value between 2 and 20. Enter a leading zero for single digit numbers. To correct an error or change a selection, scan [Cancel on page 16-246](#). The default is 10.



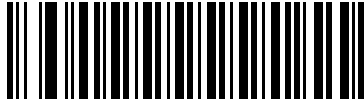
ISBT Concatenation Redundancy

Code 39

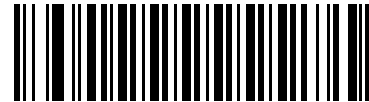
Enable/Disable Code 39

Parameter # 00h

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



***Enable Code 39
(01h)**

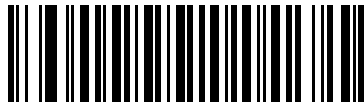


**Disable Code 39
(00h)**

Enable/Disable Trioptic Code 39

Parameter # 0Dh

Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. Trioptic Code 39 symbols always contain six characters. To enable or disable Trioptic Code 39, scan the appropriate bar code below.



**Enable Trioptic Code 39
(01h)**



***Disable Trioptic Code 39
(00h)**



NOTE: You cannot enable Trioptic Code 39 and Code 39 Full ASCII simultaneously.

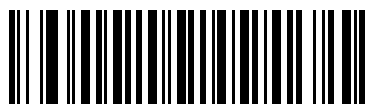
Convert Code 39 to Code 32

Parameter # 56h

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.



Enable Convert Code 39 to Code 32
(01h)



*Disable Convert Code 39 to Code 32
(00h)

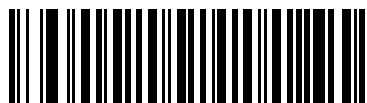
Code 32 Prefix

Parameter # E7h

Scan the appropriate bar code below to enable or disable adding the prefix character "A" to all Code 32 bar codes.



NOTE: Convert Code 39 to Code 32 must be enabled for this parameter to function.



Enable Code 32 Prefix
(01h)



*Disable Code 32 Prefix
(00h)

Set Lengths for Code 39

Parameter # L1 = 12h, L2 = 13h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 39 to any length, one or two discrete lengths, or lengths within a specific range. If Code 39 Full ASCII is enabled, **Length Within a Range** or **Any Length** are the preferred options.

✓ **NOTE:** When setting lengths for different bar code types, enter a leading zero for single digit numbers.

- **One Discrete Length** - Select this option to decode only Code 39 symbols containing a selected length. Select the length using the numeric bar codes in [<em_Emphasis>Appendix , Numeric Bar Codes](#). For example, to decode only Code 39 symbols with 14 characters, scan **Code 39 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or change the selection, scan [<em_Emphasis>Cancel on page 16-246](#).
- **Two Discrete Lengths** - Select this option to decode only Code 39 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [<em_Emphasis>Appendix , Numeric Bar Codes](#). For example, to decode only Code 39 symbols containing either 2 or 14 characters, select **Code 39 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or change the selection, scan [<em_Emphasis>Cancel on page 16-246](#).
- **Length Within Range** - Select this option to decode a Code 39 symbol with a specific length range. Select lengths using numeric bar codes in [<em_Emphasis>Appendix , Numeric Bar Codes](#). For example, to decode Code 39 symbols containing between 4 and 12 characters, first scan **Code 39 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [<em_Emphasis>Cancel on page 16-246](#).
- **Any Length** - Select this option to decode Code 39 symbols containing any number of characters within the digital scanner's capability.



Code 39 - One Discrete Length



Code 39 - Two Discrete Lengths



Code 39 - Length Within Range

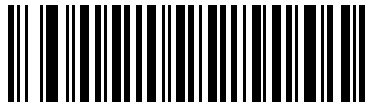


Code 39 - Any Length

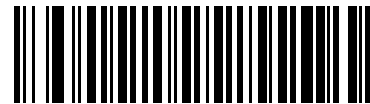
Code 39 Check Digit Verification

Parameter # 30h

Enable this feature to check the integrity of all Code 39 symbols to verify that the data complies with specified check digit algorithm. Only Code 39 symbols which include a modulo 43 check digit are decoded. Enable this feature if the Code 39 symbols contain a Modulo 43 check digit.



Enable Code 39 Check Digit
(01h)

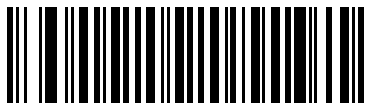


*Disable Code 39 Check Digit
(00h)

Transmit Code 39 Check Digit

Parameter # 2Bh

Scan a bar code below to transmit Code 39 data with or without the check digit.



Transmit Code 39 Check Digit (Enable)
(01h)



*Do Not Transmit Code 39 Check Digit (Disable)
(00h)

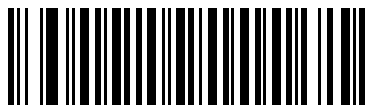


NOTE: Code 39 Check Digit Verification must be enabled for this parameter to function.

Code 39 Full ASCII Conversion

Parameter # 11h

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.



Enable Code 39 Full ASCII
(01h)



*Disable Code 39 Full ASCII
(00h)



NOTE: You cannot enable Trioptic Code 39 and Code 39 Full ASCII simultaneously.

Code 39 Full ASCII to Full ASCII Correlation is host-dependent, and is therefore described in the ASCII Character Set Table for the appropriate interface.

Code 39 Buffering - Scan & Store

Parameter # 71h

This feature allows the digital scanner to accumulate data from multiple Code 39 symbols.

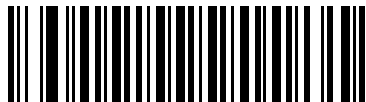
Selecting the Scan and Store option (Buffer Code 39) temporarily buffers all Code 39 symbols having a leading space as a first character for later transmission. The leading space is not buffered.

Decoding a Code 39 symbol with no leading space transmits in sequence all buffered data in a first-in first-out format, plus the “triggering” symbol. See the following pages for further details.

Select **Do Not Buffer Code 39** to transmit all decoded Code 39 symbols immediately without storing them in the buffer.

Code 39 Buffering - Scan & Store (continued)

This feature affects Code 39 only. If selecting **Buffer Code 39**, we recommend configuring the digital scanner to decode Code 39 symbology only.



Buffer Code 39 (Enable)
(01h)



***Do Not Buffer Code 39 (Disable)**
(00h)

While there is data in the transmission buffer, you cannot select **Do Not Buffer Code 39**. The buffer holds 200 bytes of information.

To disable Code 39 buffering when there is data in the transmission buffer, first force the buffer transmission (see [Transmit Buffer on page 126](#)) or clear the buffer.

Buffer Data

To buffer data, enable Code 39 buffering and scan a Code 39 symbol with a space immediately following the start pattern.

- Unless the data overflows the transmission buffer, the digital scanner issues a low/high beep to indicate successful decode and buffering. (For overflow conditions, see [Overfilling Transmission Buffer on page 126](#).)
- The digital scanner adds the decoded data excluding the leading space to the transmission buffer.
- No transmission occurs.

Clear Transmission Buffer

To clear the transmission buffer, scan the **Clear Buffer** bar code below, which contains only a start character, a dash (minus), and a stop character.

- The digital scanner issues a short high/low/high beep.
- The digital scanner erases the transmission buffer.

- No transmission occurs.



Clear Buffer



NOTE: The Clear Buffer contains only the dash (minus) character. In order to scan this command, set Code 39 lengths to include length 1.

Transmit Buffer

There are two methods to transmit the Code 39 buffer.

1. Scan the **Transmit Buffer** bar code below, which includes only a start character, a plus (+), and a stop character.
2. The digital scanner transmits and clears the buffer.
 - The digital scanner issues a low/high beep.



Transmit Buffer

3. Scan a Code 39 bar code with a leading character other than a space.
 - The digital scanner appends new decode data to buffered data.
 - The digital scanner transmits and clears the buffer.
 - The digital scanner signals that it transmitted the buffer with a low/high beep.
 - The digital scanner transmits and clears the buffer.



NOTE: The Transmit Buffer contains only a plus (+) character. In order to scan this command, set Code 39 lengths to include length 1.

Overfilling Transmission Buffer

The Code 39 buffer holds 200 characters. If the symbol just read overflows the transmission buffer:

- The digital scanner indicates that it rejected the symbol by issuing three long, high beeps.
- No transmission occurs. The data in the buffer is not affected.

Attempt to Transmit an Empty Buffer

If you scan the **Transmit Buffer** symbol and the Code 39 buffer is empty:

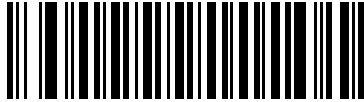
- A short low/high/low beep signals that the buffer is empty.
- No transmission occurs.
- The buffer remains empty.

Code 93

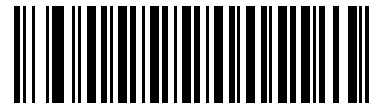
Enable/Disable Code 93

Parameter # 09h

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



Enable Code 93
(01h)



*Disable Code 93
(00h)

Set Lengths for Code 93

Parameter # L1 = 1Ah, L2 = 1Bh

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 93 to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only Code 93 symbols containing a selected length. Select the length using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only Code 93 symbols with 14 characters, scan **Code 93 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Two Discrete Lengths** - Select this option to decode only Code 93 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only Code 93 symbols containing either 2 or 14 characters, select **Code 93 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Length Within Range** - Select this option to decode a Code 93 symbol with a specific length range. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode Code 93 symbols containing between 4 and 12 characters, first scan **Code 93 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [Cancel on page 16-246](#).
- **Any Length** - Scan this option to decode Code 93 symbols containing any number of characters within the digital scanner's capability.

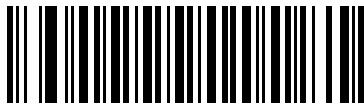
Set Lengths for Code 93 (continued)**Code 93 - One Discrete Length****Code 93 - Two Discrete Lengths****Code 93 - Length Within Range****Code 93 - Any Length**

Code 11

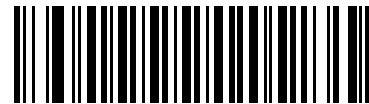
Code 11

Parameter # 0Ah

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



Enable Code 11
(01h)



*Disable Code 11
(00h)

Set Lengths for Code 11

Parameter # L1 = 1Ch, L2 = 1Dh

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 11 to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only Code 11 symbols containing a selected length. Select the length using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only Code 11 symbols with 14 characters, scan **Code 11 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Two Discrete Lengths** - Select this option to decode only Code 11 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only Code 11 symbols containing either 2 or 14 characters, select **Code 11 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Length Within Range** - Select this option to decode a Code 11 symbol with a specific length range. Select lengths using numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode Code 11 symbols containing between 4 and 12 characters, first scan **Code 11 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [Cancel on page 16-246](#).
- **Any Length** - Scan this option to decode Code 11 symbols containing any number of characters within the digital scanner's capability.

Set Lengths for Code 11 (continued)



Code 11 - One Discrete Length



Code 11 - Two Discrete Lengths



Code 11 - Length Within Range



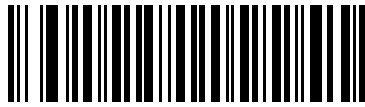
Code 11 - Any Length

Code 11 Check Digit Verification

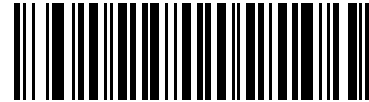
Parameter # 34h

This feature allows the digital scanner to check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm. This selects the check digit mechanism for the decoded Code 11 bar code. The options are to check for one check digit, check for two check digits, or disable the feature.

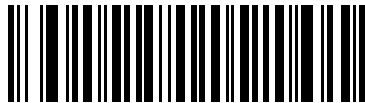
To enable this feature, scan the bar code below corresponding to the number of check digits encoded in the Code 11 symbols.



***Disable
(00h)**



**One Check Digit
(01h)**

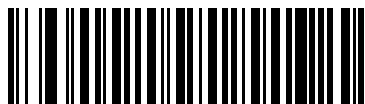


**Two Check Digits
(02h)**

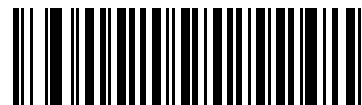
Transmit Code 11 Check Digits

Parameter # 2Fh

This feature selects whether or not to transmit the Code 11 check digit(s).



Transmit Code 11 Check Digit(s) (Enable)
(01h)



*Do Not Transmit Code 11 Check Digit(s) (Disable)
(00h)



NOTE: Code 11 Check Digit Verification must be enabled for this parameter to function.

Interleaved 2 of 5 (ITF)

Enable/Disable Interleaved 2 of 5

Parameter # 06h

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.



Enable Interleaved 2 of 5
(01h)



*Disable Interleaved 2 of 5
(00h)

Set Lengths for Interleaved 2 of 5

Parameter # L1 = 16h, L2 = 17h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for I 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The range for Interleaved 2 of 5 lengths is 0 - 55.

- **One Discrete Length** - Select this option to decode only I 2 of 5 symbols containing a selected length. Select the length using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only I 2 of 5 symbols with 14 characters, scan **I 2 of 5 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Two Discrete Lengths** - Select this option to decode only I 2 of 5 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only I 2 of 5 symbols containing either 2 or 14 characters, select **I 2 of 5 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Length Within Range** - Select this option to decode an I 2 of 5 symbol with a specific length range. Select lengths using numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, first scan **I 2 of 5 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [Cancel on page 16-246](#).
- **Any Length** - Scan this option to decode I 2 of 5 symbols containing any number of characters within the digital scanner's capability.



NOTE: Due to the construction of the I 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (I 2 of 5 - One Discrete Length, Two Discrete Lengths) for I 2 of 5 applications.

Set Lengths for Interleaved 2 of 5 (continued)**I 2 of 5 - One Discrete Length****I 2 of 5 - Two Discrete Lengths****I 2 of 5 - Length Within Range****I 2 of 5 - Any Length**

I 2 of 5 Check Digit Verification

Parameter # 31h

Enable this feature to check the integrity of all I 2 of 5 symbols to verify the data complies with either the specified Uniform Symbology Specification (USS), or the Optical Product Code Council (OPCC) check digit algorithm.



***Disable**
(00h)



USS Check Digit
(01h)

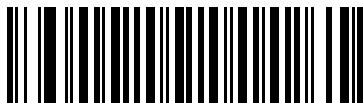


OPCC Check Digit
(02h)

Transmit I 2 of 5 Check Digit

Parameter # 2Ch

Scan the appropriate bar code below to transmit I 2 of 5 data with or without the check digit.



Transmit I 2 of 5 Check Digit (Enable)
(01h)

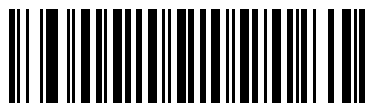


***Do Not Transmit I 2 of 5 Check Digit (Disable)**
(00h)

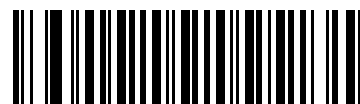
Convert I 2 of 5 to EAN-13

Parameter # 52h

Enable this parameter to convert 14-character I 2 of 5 codes to EAN-13, and transmit to the host as EAN-13. To accomplish this, the I 2 of 5 code must be enabled, and the code must have a leading zero and a valid EAN-13 check digit.



Convert I 2 of 5 to EAN-13 (Enable)
(01h)



*Do Not Convert I 2 of 5 to EAN-13 (Disable)
(00h)

Discrete 2 of 5 (DTF)

Enable/Disable Discrete 2 of 5

Parameter # 05h

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



Enable Discrete 2 of 5
(01h)



*Disable Discrete 2 of 5
(00h)

Set Lengths for Discrete 2 of 5

Parameter # L1 = 14h, L2 = 15h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for D 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The range for Discrete 2 of 5 lengths is 0 - 55.

- **One Discrete Length** - Select this option to decode only D 2 of 5 symbols containing a selected length. Select the length using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only D 2 of 5 symbols with 14 characters, scan **D 2 of 5 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Two Discrete Lengths** - Select this option to decode only D 2 of 5 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only D 2 of 5 symbols containing either 2 or 14 characters, select **D 2 of 5 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Length Within Range** - Select this option to decode a D 2 of 5 symbol with a specific length range. Select lengths using numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, first scan **D 2 of 5 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [Cancel on page 16-246](#).
- **Any Length** - Scan this option to decode D 2 of 5 symbols containing any number of characters within the digital scanner's capability.



NOTE: Due to the construction of the D 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (**D 2 of 5 - One Discrete Length, Two Discrete Lengths**) for D 2 of 5 applications.

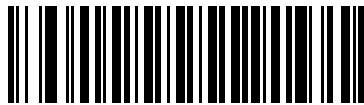
Set Lengths for Discrete 2 of 5 (continued)**D 2 of 5 - One Discrete Length****D 2 of 5 - Two Discrete Lengths****D 2 of 5 - Length Within Range****D 2 of 5 - Any Length**

Codabar (NW - 7)

Enable/Disable Codabar

Parameter # 07h

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



Enable Codabar
(01h)



*Disable Codabar
(00h)

Set Lengths for Codabar

Parameter # L1 = 18h, L2 = 19h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Codabar to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only Codabar symbols containing a selected length. Select the length using the numeric bar codes in [<em_Emphasis>Appendix , Numeric Bar Codes](#). For example, to decode only Codabar symbols with 14 characters, scan **Codabar - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan [<em_Emphasis>Cancel on page 16-246](#).
- **Two Discrete Lengths** - Select this option to decode only Codabar symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [<em_Emphasis>Appendix , Numeric Bar Codes](#). For example, to decode only Codabar symbols containing either 2 or 14 characters, select **Codabar - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan [<em_Emphasis>Cancel on page 16-246](#).
- **Length Within Range** - Select this option to decode a Codabar symbol with a specific length range. Select lengths using numeric bar codes in [<em_Emphasis>Appendix , Numeric Bar Codes](#). For example, to decode Codabar symbols containing between 4 and 12 characters, first scan **Codabar - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [<em_Emphasis>Cancel on page 16-246](#).
- **Any Length** - Scan this option to decode Codabar symbols containing any number of characters within the digital scanner's capability.

Set Lengths for Codabar (continued)



Codabar - One Discrete Length



Codabar - Two Discrete Lengths



Codabar - Length Within Range



Codabar - Any Length

CLSI Editing

Parameter # 36h

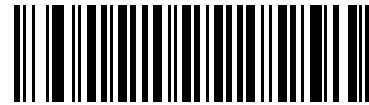
Enable this parameter to strip the start and stop characters and insert a space after the first, fifth, and tenth characters of a 14-character Codabar symbol. Enable this feature if the host system requires this data format.



NOTE: Symbol length does not include start and stop characters.



**Enable CLSI Editing
(01h)**

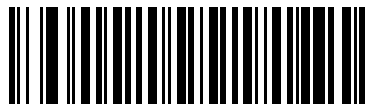


***Disable CLSI Editing
(00h)**

NOTIS Editing

Parameter # 37h

Enable this parameter to strip the start and stop characters from a decoded Codabar symbol. Enable this feature if the host system requires this data format.



**Enable NOTIS Editing
(01h)**



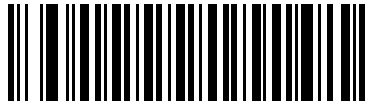
***Disable NOTIS Editing
(00h)**

MSI

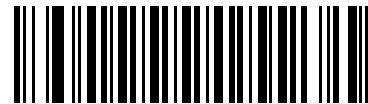
Enable/Disable MSI

Parameter # 0Bh

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



Enable MSI
(01h)



*Disable MSI
(00h)

Set Lengths for MSI

Parameter # L1 = 1Eh, L2 = 1Fh

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for MSI to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only MSI symbols containing a selected length. Select the length using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only MSI symbols with 14 characters, scan **MSI - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Two Discrete Lengths** - Select this option to decode only MSI symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only MSI symbols containing either 2 or 14 characters, select **MSI - Two Discrete Lengths**, then scan **0, 2, 1**, and then **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Length Within Range** - Select this option to decode a MSI symbol with a specific length range. Select lengths using numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode MSI symbols containing between 4 and 12 characters, first scan **MSI - Length Within Range**. Then scan **0, 4, 1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [Cancel on page 16-246](#).
- **Any Length** - Scan this option to decode MSI symbols containing any number of characters within the digital scanner's capability.

Set Lengths for MSI (continued)



NOTE: Due to the construction of the MSI symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (**MSI - One Discrete Length, Two Discrete Lengths**) for MSI applications.



MSI - One Discrete Length



MSI - Two Discrete Lengths



MSI - Length Within Range



MSI - Any Length

MSI Check Digits

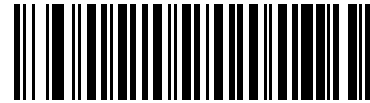
Parameter # 32h

With MSI symbols, one check digit is mandatory and always verified by the reader. The second check digit is optional. If the MSI codes include two check digits, scan the **Two MSI Check Digits** bar code to enable verification of the second check digit.

See [MSI Check Digit Algorithm on page 145](#) for the selection of second digit algorithms.



***One MSI Check Digit
(00h)**

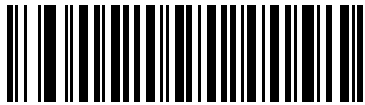


**Two MSI Check Digits
(01h)**

Transmit MSI Check Digit(s)

Parameter # 2Eh

Scan a bar code below to transmit MSI data with or without the check digit.



**Transmit MSI Check Digit(s) (Enable)
(01h)**



***Do Not Transmit MSI Check Digit(s) (Disable)
(00h)**

MSI Check Digit Algorithm

Parameter # 33h

Two algorithms are possible for the verification of the second MSI check digit. Select the bar code below corresponding to the algorithm used to encode the check digit.



MOD 10/MOD 11
(00h)



*MOD 10/MOD 10
(01h)

Chinese 2 of 5

Enable/Disable Chinese 2 of 5

Parameter # F0h 98h

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



Enable Chinese 2 of 5
(01h)



*Disable Chinese 2 of 5
(00h)

Matrix 2 of 5

Enable/Disable Matrix 2 of 5

Parameter # F1h 6Ah

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



Enable Matrix 2 of 5
(01h)



***Disable Matrix 2 of 5**
(00h)

Set Lengths for Matrix 2 of 5

Parameter # L1 = F1h 6Bh, L2 = F1h 6Ch

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Matrix 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only Matrix 2 of 5 symbols containing a selected length. Select the length using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only Matrix 2 of 5 symbols with 14 characters, scan **Matrix 2 of 5 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Two Discrete Lengths** - Select this option to decode only Matrix 2 of 5 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode only Matrix 2 of 5 symbols containing either 2 or 14 characters, select **Matrix 2 of 5 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan [Cancel on page 16-246](#).
- **Length Within Range** - Select this option to decode a Matrix 2 of 5 symbol with a specific length range. Select lengths using the numeric bar codes in [Appendix , Numeric Bar Codes](#). For example, to decode Matrix 2 of 5 symbols containing between 4 and 12 characters, first scan **Matrix 2 of 5 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan [Cancel on page 16-246](#).

- **Any Length** - Scan this option to decode Matrix 2 of 5 symbols containing any number of characters within the digital scanner's capability.



*Matrix 2 of 5 - One Discrete Length



Matrix 2 of 5 - Two Discrete Lengths



Matrix 2 of 5 - Length Within Range

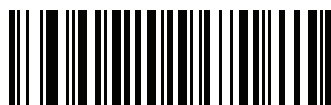


Matrix 2 of 5 - Any Length

Matrix 2 of 5 Redundancy

Parameter # F1h 6Dh

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



Enable Matrix 2 of 5 Redundancy
(01h)



*Disable Matrix 2 of 5 Redundancy
(00h)

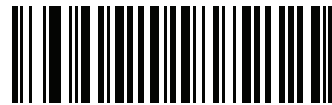
Matrix 2 of 5 Check Digit

Parameter # F1h 6Eh

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 Matrix 2 of 5 check digit.



Enable Matrix 2 of 5 Check Digit
(01h)



*Disable Matrix 2 of 5 Check Digit
(00h)

Transmit Matrix 2 of 5 Check Digit

Parameter # F1h 6Fh

Scan a bar code below to transmit Matrix 2 of 5 data with or without the check digit.



Transmit Matrix 2 of 5 Check Digit
(01h)



*Do Not Transmit Matrix 2 of 5 Check Digit
(00h)

Inverse 1D

Parameter # F1h 4Ah

This parameter sets the 1D inverse decoder setting. Options are:

- **Regular Only** - the digital scanner decodes regular 1D bar codes only.
- **Inverse Only** - the digital scanner decodes inverse 1D bar codes only.

- **Inverse Autodetect** - the digital scanner decodes both regular and inverse 1D bar codes.



***Regular
(00h)**



**Inverse Only
(01h)**



**Inverse Autodetect
(02h)**

Postal Codes

US Postnet

Parameter # 59h

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



**Enable US Postnet
(01h)**



***Disable US Postnet
(00h)**

US Planet

Parameter # 5Ah

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



Enable US Planet
(01h)



*Disable US Planet
(00h)

Transmit US Postal Check Digit

Parameter # 5Fh

Select whether to transmit US Postal data, which includes both US Postnet and US Planet, with or without the check digit.



*Transmit US Postal Check Digit
(01h)



Do Not Transmit US Postal Check Digit
(00h)

UK Postal

Parameter # 5Bh

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



Enable UK Postal
(01h)



***Disable UK Postal**
(00h)

Transmit UK Postal Check Digit

Parameter # 60h

Select whether to transmit UK Postal data with or without the check digit.



***Transmit UK Postal**
Check Digit
(01h)



Do Not Transmit UK Postal Check Digit
(00h)

Japan Postal**Parameter # F0h, 22h**

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



**Enable Japan Postal
(01h)**



***Disable Japan Postal
(00h)**

Australian Postal**Parameter # F0h, 23h**

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



**Enable Australian Postal
(01h)**



***Disable Australian Postal
(00h)**

Netherlands KIX Code**Parameter # F0h, 46h**

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



**Enable Netherlands KIX Code
(01h)**



***Disable Netherlands KIX Code
(00h)**

USPS 4CB/One Code/Intelligent Mail

Parameter # F1h 50h

To enable or disable USPS 4CB/One Code/Intelligent Mail, scan the appropriate bar code below.



Enable USPS 4CB/One Code/Intelligent Mail
(01h)



*Disable USPS 4CB/One Code/Intelligent Mail
(00h)

UPU FICS Postal

Parameter # F1h 63h

To enable or disable UPU FICS Postal, scan the appropriate bar code below.



Enable UPU FICS Postal
(01h)



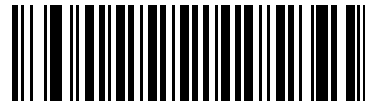
*Disable UPU FICS Postal
(00h)

GS1 DataBar

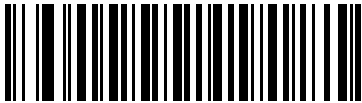
The variants of GS1 DataBar are DataBar-14, DataBar Expanded, and DataBar Limited. The limited and expanded versions have stacked variants. Scan the appropriate bar codes to enable or disable each variant of GS1 DataBar.

GS1 DataBar-14**Parameter # F0h 52h.**

**Enable GS1 DataBar-14
(01h)**



***Disable GS1 DataBar 14
(00h)**

GS1 DataBar Limited**Parameter # F0h 53h.**

**Enable GS1 DataBar Limited
(01h)**



***Disable GS1 DataBar Limited
(00h)**

GS1 DataBar Expanded

Parameter # F0h 54h.



Enable GS1 DataBar Expanded
(01h)



*Disable GS1 DataBar Expanded
(00h)

Convert GS1 DataBar to UPC/EAN

Parameter # F0h, 8Dh

This parameter only applies to GS1 DataBar-14 and GS1 DataBar Limited symbols not decoded as part of a Composite symbol. Enable this to strip the leading '010' from DataBar-14 and DataBar Limited symbols encoding a single zero as the first digit, and report the bar code as EAN-13.

For bar codes beginning with two or more zeros but not six zeros, this parameter strips the leading '0100' and reports the bar code as UPC-A. The UPC-A Preamble parameter that transmits the system character and country code applies to converted bar codes. Note that neither the system character nor the check digit can be stripped.



Enable Convert GS1 DataBar to UPC/EAN
(01h)



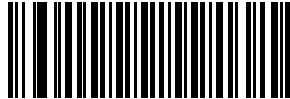
*Disable Convert GS1 DataBar to UPC/EAN
(00h)

Composite

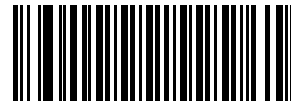
Composite CC-C

Parameter # F0h 55h

Scan a bar code below to enable or disable Composite bar codes of type CC-C.



Enable CC-C
(01h)



*Disable CC-C
(00h)

Composite CC-A/B

Parameter # F0h 56h

Scan a bar code below to enable or disable Composite bar codes of type CC-A/B.



Enable CC-A/B
(01h)

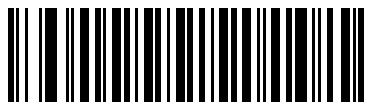


*Disable CC-A/B
(00h)

Composite TLC-39

Parameter # F0h 73h

Scan a bar code below to enable or disable Composite bar codes of type TLC-39.



Enable TLC39
(01h)



*Disable TLC39
(00h)

UPC Composite Mode

Parameter # F0h 58h

Select an option for linking UPC symbols with a 2D symbol during transmission as if they were one symbol:

- Select **UPC Never Linked** to transmit UPC bar codes regardless of whether a 2D symbol is detected.
- Select **UPC Always Linked** to transmit UPC bar codes and the 2D portion.
If 2D is not present, the UPC bar code does not transmit.
- If you select **Autodiscriminate UPC Composites**, the digital scanner determines if there is a 2D portion, then transmits the UPC, as well as the 2D portion if present.



*UPC Never Linked
(00h)



UPC Always Linked
(01h)

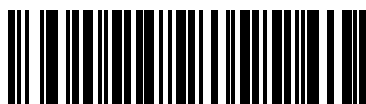


Autodiscriminate UPC Composites
(02h)

Composite Beep Mode

Parameter # F0h, 8Eh

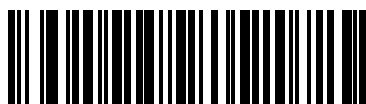
To select the number of decode beeps when a composite bar code is decoded, scan the appropriate bar code.



Single Beep after both are decoded
(00h)



*Beep as each code type is decoded
(01h)



Double Beep after both are decoded
(02h)

GS1-128 Emulation Mode for UCC/EAN Composite Codes

Parameter # F0h, ABh

Select whether to enable or disable this mode.



Enable GS1-128 Emulation Mode for
UCC/EAN Composite Codes
(01h)



*Disable GS1-128 Emulation Mode for
UCC/EAN Composite Codes
(00h)

2D Symbologies

Enable/Disable PDF417

Parameter # 0Fh

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



***Enable PDF417**
(01h)



Disable PDF417
(00h)

Enable/Disable MicroPDF417

Parameter # E3h

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



Enable MicroPDF417
(01h)



***Disable MicroPDF417**
(00h)

Code 128 Emulation

Parameter # 7Bh

Enable this parameter to transmit data from certain MicroPDF417 symbols as Code 128. [AIM Code ID Character \(01h\) on page 84](#) must be enabled for this parameter to work.

Enable Code 128 Emulation to transmit these MicroPDF417 symbols with one of the following prefixes:

]C1if the first codeword is 903-905

]C2if the first codeword is 908 or 909

]C0if the first codeword is 910 or 911

Disable Code 128 Emulation to transmit these MicroPDF417 symbols with one of the following prefixes:

]L3if the first codeword is 903-905

]L4if the first codeword is 908 or 909

]L5if the first codeword is 910 or 911

Scan a bar code below to enable or disable Code 128 Emulation.



NOTE: Linked MicroPDF codewords 906, 907, 912, 914, and 915 are not supported. Use GS1 Composites instead.



**Enable Code 128 Emulation
(01h)**



***Disable Code 128 Emulation
(00h)**

Data Matrix

Parameter # F0h, 24h

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



***Enable Data Matrix
(01h)**



**Disable Data Matrix
(00h)**

Data Matrix Inverse

Parameter # F1h 4Ch

This parameter sets the Data Matrix inverse decoder setting. Options are:

- **Regular Only** - the digital scanner decodes regular Data Matrix bar codes only.
- **Inverse Only** - the digital scanner decodes inverse Data Matrix bar codes only.
- **Inverse Autodetect** - the digital scanner decodes both regular and inverse Data Matrix bar codes.



***Regular
(00h)**



**Inverse Only
(01h)**



**Inverse Autodetect
(02h)**

Maxicode**Parameter # F0h, 26h**

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



**Enable Maxicode
(01h)**



***Disable Maxicode
(00h)**

QR Code**Parameter # F0h,25h**

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



***Enable QR Code
(01h)**



**Disable QR Code
(00h)**

QR Inverse

Parameter # F1h 4Bh

This parameter sets the QR inverse decoder setting. Options are:

- **Regular Only** - the digital scanner decodes regular QR bar codes only.
- **Inverse Only** - the digital scanner decodes inverse QR bar codes only.
- **Inverse Autodetect** - the digital scanner decodes both regular and inverse QR bar codes.



***Regular**
(00h)



Inverse Only
(01h)



Inverse Autodetect
(02h)

MicroQR

Parameter # F1h 3Dh

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



***Enable MicroQR**
(01h)



Disable MicroQR
(00h)

Aztec

Parameter # F1h 3Eh

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



***Enable Aztec
(01h)**



**Disable Aztec
(00h)**

Aztec Inverse

Parameter # F1h 4Dh

This parameter sets the Aztec inverse decoder setting. Options are:

- **Regular Only** - the digital scanner decodes regular Aztec bar codes only.
- **Inverse Only** - the digital scanner decodes inverse Aztec bar codes only.
- **Inverse Autodetect** - the digital scanner decodes both regular and inverse Aztec bar codes.



***Regular
(00h)**



**Inverse Only
(01h)**



**Inverse Autodetect
(02h)**

Redundancy Level

Parameter # 4Eh

The digital scanner offers four levels of decode redundancy. Select higher redundancy levels for decreasing levels of bar code quality. As redundancy levels increase, the digital scanner's aggressiveness decreases.

Select the redundancy level appropriate for the bar code quality.

Redundancy Level 1

The following code types must be successfully read twice before being decoded:

Table 11 Redundancy Level 1 Codes

Code Type	Code Length
Codabar	8 characters or less
MSI	4 characters or less
D 2 of 5	8 characters or less
I 2 of 5	8 characters or less

Redundancy Level 2

The following code types must be successfully read twice before being decoded:

Table 12 Redundancy Level 2 Codes

Code Type	Code Length
All	All

Redundancy Level 3

Code types other than the following must be successfully read twice before being decoded. The following codes must be read three times:

Table 13 Redundancy Level 3 Codes

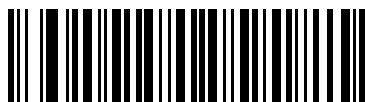
Code Type	Code Length
MSI	4 characters or less
D 2 of 5	8 characters or less
I 2 of 5	8 characters or less
Codabar	8 characters or less

Redundancy Level 4

The following code types must be successfully read three times before being decoded:

Table 14 Redundancy Level 4 Codes

Code Type	Code Length
All	All



***Redundancy Level 1
(01h)**



**Redundancy Level 2
(02h)**



**Redundancy Level 3
(03h)**



**Redundancy Level 4
(04h)**

Security Level

Parameter # 4Dh

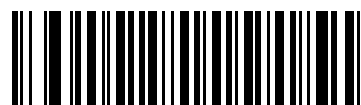
The digital scanner offers four levels of decode security for delta bar codes, which include the Code 128 family, UPC/EAN, and Code 93. Select increasing levels of security for decreasing levels of bar code quality. There is an inverse relationship between security and digital scanner aggressiveness, so choose only that level of security necessary for any given application.

- **Security Level 0:** This setting allows the digital scanner to operate in its most aggressive state, while providing sufficient security in decoding most “in-spec” bar codes.
- **Security Level 1:** This default setting eliminates most misdecodes.

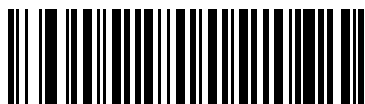
- **Security Level 2:** Select this option if Security level 1 fails to eliminate misdecodes.
- **Security Level 3:** If you selected Security Level 2 and misdecodes still occur, select this security level. Be advised, selecting this option is an extreme measure against mis-decoding severely out of spec bar codes. Selecting this level of security significantly impairs the decoding ability of the digital scanner. If you need this level of security, try to improve the quality of the bar codes.



***Security Level 0**
(00h)



Security Level 1
(01h)



Security Level 2
(02h)



Security Level 3
(03h)

Intercharacter Gap Size

Parameter # F0h, 7Dh

The Code 39 and Codabar symbologies have an intercharacter gap that is typically quite small. Due to various bar code-printing technologies, this gap can grow larger than the maximum size allowed, preventing the digital scanner

from decoding the symbol. If this problem occurs, scan the **Large Intercharacter Gaps** parameter to tolerate these out-of-specification bar codes.



***Normal Intercharacter Gaps
(06h)**



**Large Intercharacter Gaps
(0Ah)**

Report Version

Scan the bar code below to report the version of software installed in the digital scanner.



Report Software Version

Macro PDF Features

Macro PDF is a special feature for concatenating multiple PDF symbols into one file. The scanner can decode symbols that are encoded with this feature, and can store more than 64 Kb of decoded data stored in up to 50 MacroPDF symbols.



CAUTION: When printing, keep each Macro PDF sequence separate, as each sequence has unique identifiers. Do not mix bar codes from several Macro PDF sequences, even if they encode the same data. When scanning Macro PDF sequences, scan the entire Macro PDF sequence without interruption. If, when scanning a mixed sequence, the digital scanner emits two long low beeps (Low/Low) this indicates an inconsistent file ID or inconsistent symbology error.

Flush Macro Buffer

This flushes the buffer of all decoded Macro PDF data stored to that point, transmits it to the host device, and aborts from Macro PDF mode.



Flush Macro PDF Buffer

Abort Macro PDF Entry

This clears all currently-stored Macro PDF data in the buffer without transmission and aborts from Macro PDF mode.



Abort Macro PDF Entry

Bluetooth Connection Using HID and SPP Profiles

Introduction

The RS507 is designed to connect over Bluetooth and also operate hand in hand with a personal computer or non-Zebra terminals. This chapter describes the Bluetooth connection modes of the RS507 to a personal computer and non-Zebra terminals.

This chapter includes the following sections:

- [RS507 to Computer Bluetooth Connection Modes on page 172](#)
- [RS507 Important hardware features on page 173](#)
- [Refreshing Boot Choices on page 173](#)
- [HID \(Human Interface Device\) Mode on page 174](#)
- [Serial Port Profile \(SPP\) Mode on page 188](#)
- [Firmware upgrade on page 207](#)
- [Retrieving the RS507 log file on page 211](#)
- [Bluetooth Bar Codes on page 215](#)

RS507 to Computer Bluetooth Connection Modes

The RS507 can connect to a computer over Bluetooth using the Serial Port Profile (SPP) or Human Interface Device (HID) Bluetooth modes.

SSI (SCAN) Mode

SSI Simple Serial Interface (SCAN) is the default mode before changing to operate in SPP or HID Bluetooth mode.

SSI (SCAN) mode is also used when the RS507 is connected to a Zebra MPA-based mobile terminal or when using the PC Tool application ([Upgrading using a computer and the PC Tool application on page 207](#)).

Serial Port Profile (SPP) Mode

The SPP mode is used when the RS507 is connected to a computer as serial device.

The data of the scanned bar codes is transferred directly to the serial port of the computer. The scanned data can be edited by a wedge application.

Human Interface Device (HID) Mode

In HID mode, the RS507 is connected over Bluetooth to a computer as a keyboard device. The computer decodes the emulated key strokes sent by the RS507. The scanned data can be received by any Windows application that accepts keyboard data.

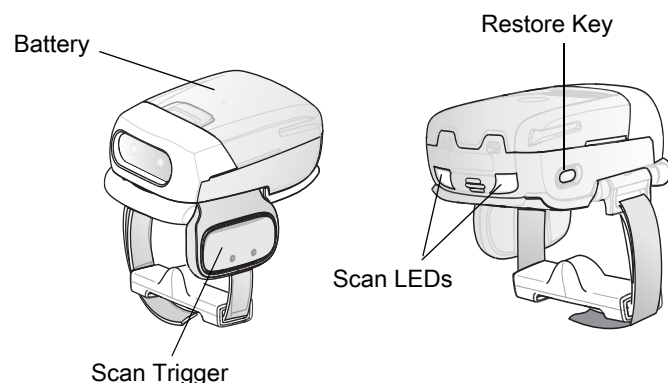
The scanned data can also be processed to suit particular requirements before transmitted to a computer application using Advanced Data Formatting (ADF). For information and programming bar codes for ADF, refer to the Advanced Data Formatting Programmer Guide, p/n 72E-69680-xx (refer only to the programming bar codes that relate to bar code imagers, not Laser bar code scanners).

RS507 Important hardware features

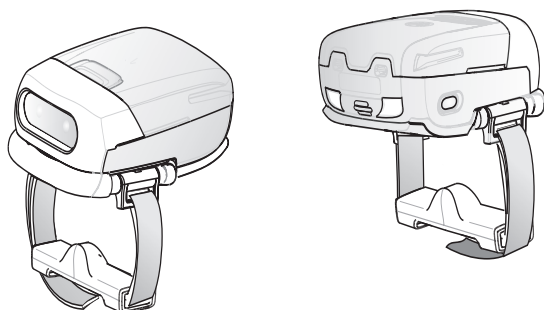
The following figure shows important hardware features of the RS507 referred to in this section.

Figure 64 RS507 Important hardware features

Trigger Configuration



Triggerless Configuration



Refreshing Boot Choices

The following boot choices are referred to in this section:

Cold Boot

Cold Boot restores the RS507 operation by resetting its software. To perform a cold boot, remove and re-insert the battery onto the RS507.

Clean Boot

Clean Boot restores the RS507 to its factory default configuration.

To perform Clean Boot:

1. Remove the battery from the RS507.
2. Press and hold the Restore Key.
3. Insert the Battery onto the RS507.
4. Keep holding the Restore Key pressed for about five seconds until a chirp is heard and the Scan LEDs flash green. The RS507 is now in its factory default configuration.

Warm Boot

Warm boot restores the RS507 operation by resetting its software but retains the RAM content. Warm boot is used when a log file has to be retrieved from the RS507 during application debugging.

To perform warm boot, press and hold the Restore Key for more than six seconds.

HID (Human Interface Device) Mode



NOTE: Notebook computer manufacturers may provide their own brand of a Bluetooth stack with different connection screens. However, all stacks provide the same functionality.

How to change to HID mode

1. Perform Clean Boot to the RS507:
 - Remove the battery from the RS507.
 - Press and hold the Restore key.
 - Install the battery onto the RS507.
 - Keep holding the **Restore key** pressed for about five seconds until a chirp is heard and the **Scan LEDs** flash green.
2. Scan the HID bar code.

HID bar code



3. Perform a Cold Boot by removing and re-installing the battery onto the RS507. The RS507 starts to operate and is discoverable as a keyboard.

How to format the scanned data

Advanced Data Formatting (ADF)

The scanned bar code data can be processed and formatted before the RS507 sends it to an application. For Zebra Advanced Data Formatting. For information and programming bar codes for ADF, refer to the Advanced Data Formatting Programmer Guide, p/n 72E-69680-xx (refer only to the programming bar codes that relate to bar code imagers, not Laser bar code scanners).

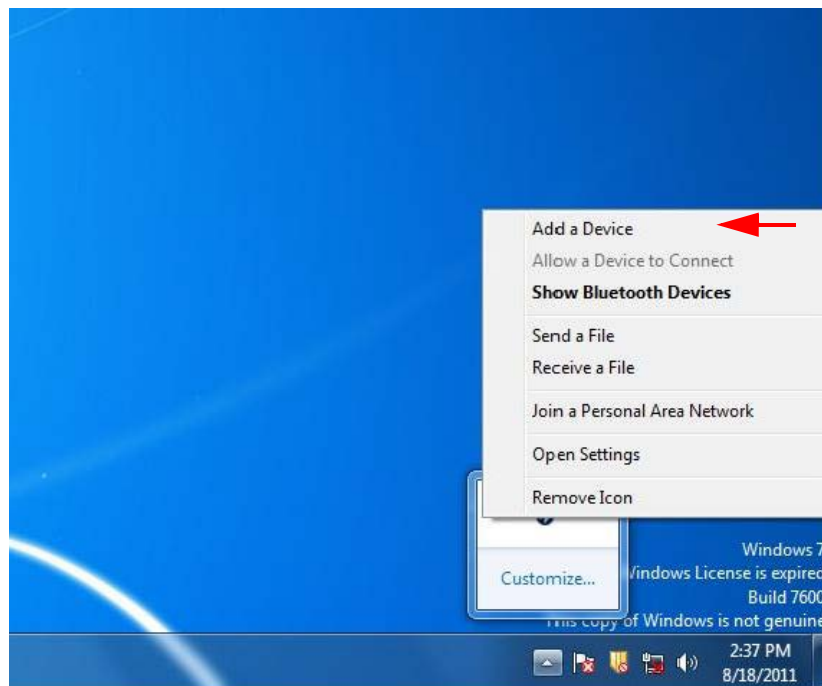
How to pair and connect with a computer running Windows 7 SP1

- ✓ **NOTE:** - For best user experience, it is recommend using Secure Simple Pairing (SSP). Windows 7 SP1 supports Bluetooth 2.1 and as such, supports SSP.
- SSP reduces the number of steps to minimal or none when compared to legacy Bluetooth pairing.
 - If the computer does not include an integrated Bluetooth module, a USB Bluetooth dongle can be used.
 - Use off-the-shelf dongle that supports Bluetooth v2.1 for effortless pairing in SSP.

To pair and connect the RS507:

1. Right click on Bluetooth icon and select **Open Setting > Add a Device**.

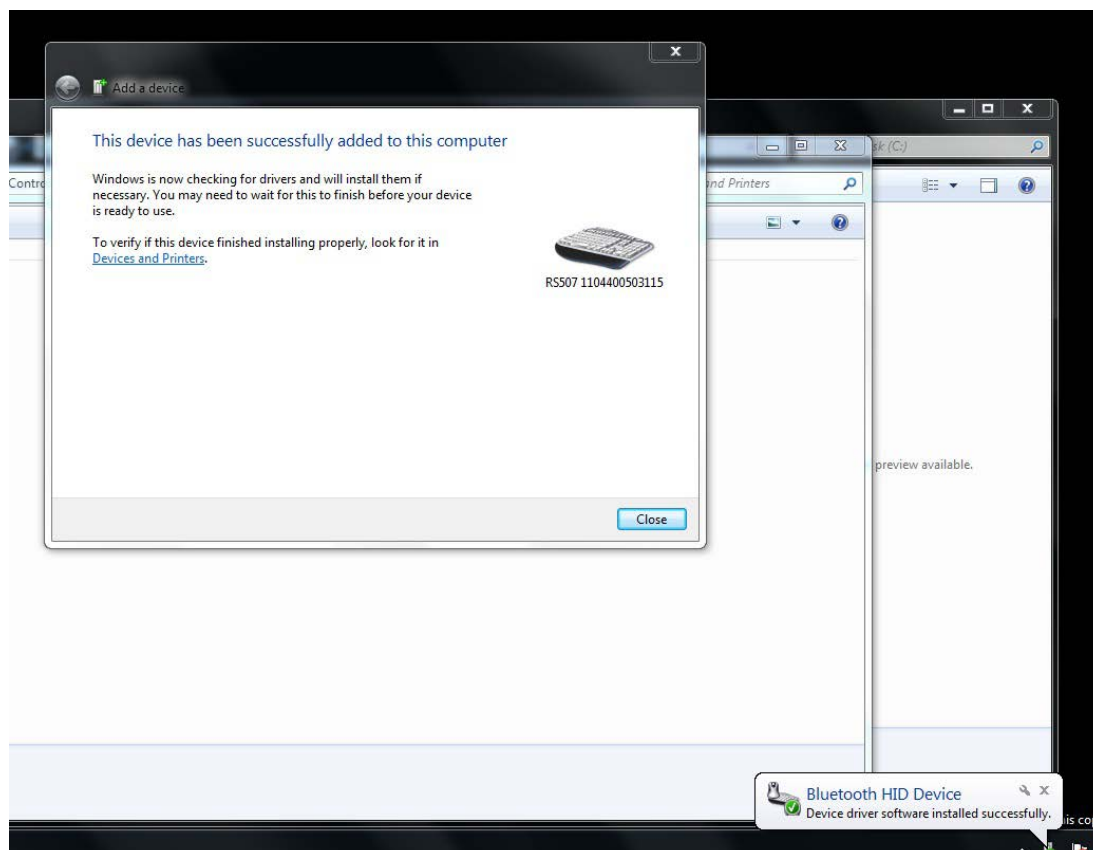
Figure 65 HID - Open Setting Screen - Windows 7 SP1



2. From the **Add a device** screen, select the RS507 (shown as Bluetooth Keyboard) and click **Next**.

Figure 66 HID - Add Device Screen - Windows 7 SP1

The computer connects to the RS507 and the following screen is displayed.

Figure 67 HID - Device Successfully Added Screen - Windows 7SP1

How to pair and connect with a computer running Windows XP SP3 and Bluetooth 2.1

For best user experience it is recommended to use Secure Simple Pairing (SSP) that is supported in Bluetooth V2.1. SSP reduces the number of steps to minimal or none when compared to legacy Bluetooth pairing.

To pair and connect with a computer:

1. Verifying that Windows XP Service Pack 3 (SP3) is installed.
2. Since Windows XP does not support Bluetooth V2.1, load new Bluetooth stack that supports Bluetooth V2.1 by either:
3. Following the instructions on the Broadcom site at: www.broadcom.com/support/bluetooth/update.php and install the WIDCOMM stack.
4. Purchasing an off-the-shelf USB Bluetooth dongle that supports Bluetooth V2.1 and installing the provided Bluetooth V2.1 drivers. Using USB Bluetooth dongle is the only option if the computer does not include an integrated Bluetooth module. When using earlier Bluetooth versions, you will need to enter passkey **12345** or disable authentication by scanning:

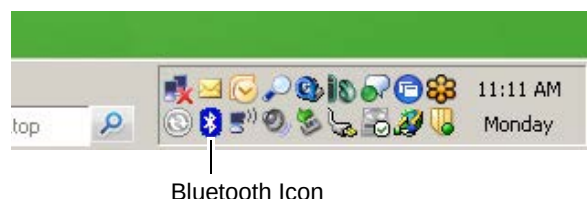
Disable Authentication bar code



Pair and connect the RS507 as follows:

1. Right click the Bluetooth icon on the computer desktop tray.

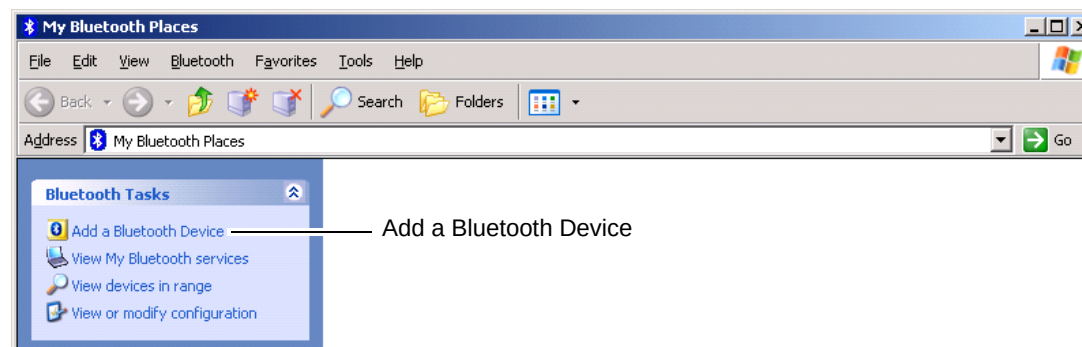
Figure 68 HID - Bluetooth Icon On Computer Desktop Tray - Windows XP SP3 and Bluetooth V2.1



Or

From My Bluetooth Places > Bluetooth Tasks bar, select Add a Bluetooth Device.

Figure 69 HID - My Bluetooth Places Screen - Windows XP SP3 and Bluetooth V2.1



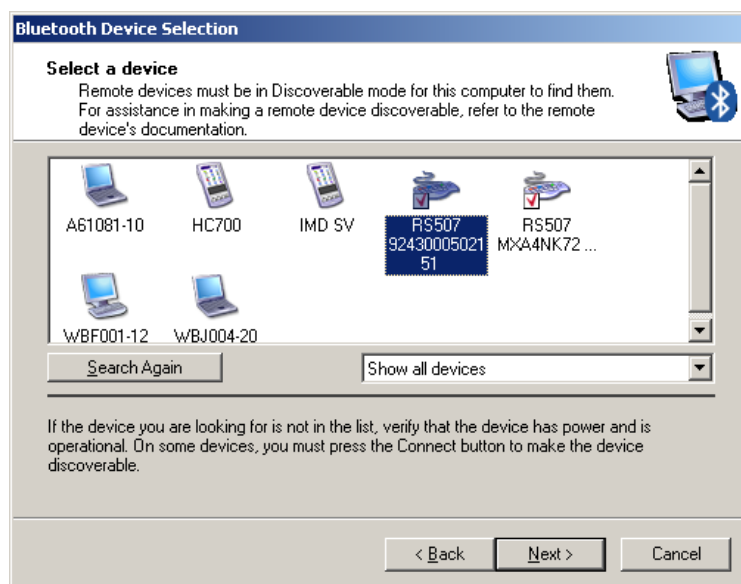
2. Check the My device set up and ready to be found box and click **Next**.

Figure 70 HID - Bluetooth Setup Screen - Windows XP SP3 and Bluetooth V2.1

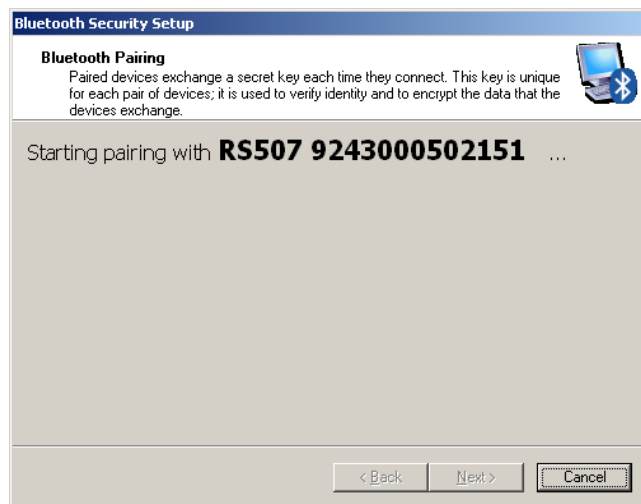


3. Verify that the RS507 is found by the Host in the **Bluetooth Device Selection** screen. Select the RS507 and click **Next** to start the SSP process.

Figure 71 HID - Bluetooth Device Selection Screen - Windows XP SP3 and Bluetooth V2.1



The Secure Simple Pairing starts.

Figure 72 HID - Bluetooth Security Setup Screen - Windows XP SP3 and Bluetooth V2.1

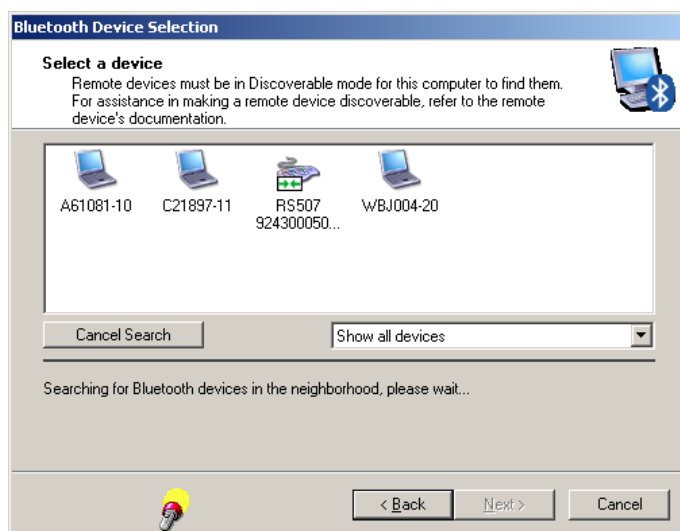
If earlier Bluetooth stack is used (not equipped with SSP), check the **Let me choose my own passkey** button, enter **12345** (or scan the Disable Bluetooth Authentication bar code) and click **Next**. The pairing process completes and the RS507 connects without any further intervention.

Figure 73 HID - Bluetooth Pairing Success Screen - Windows XP SP3 and Bluetooth V2.1

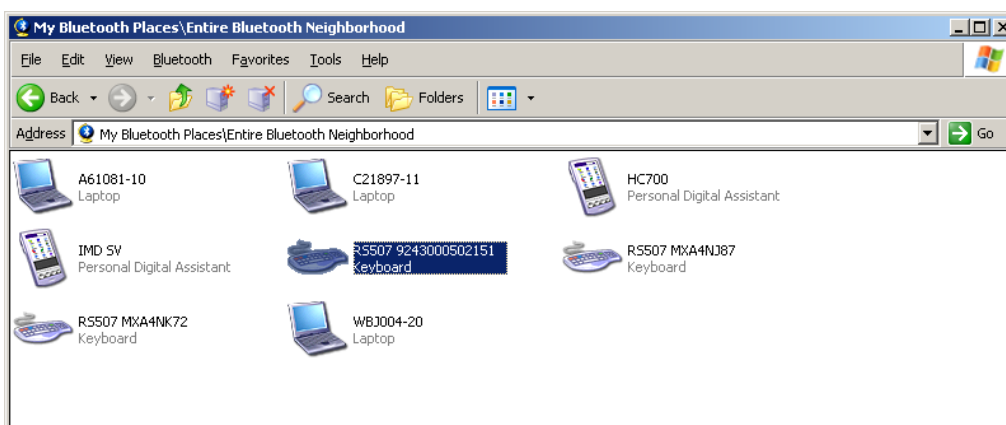
Upon successful Bluetooth pairing, the Bluetooth icon in the computer desktop tray turns green.

Figure 74 HID - Bluetooth Icon In Computer Desktop Tray - Windows 7SP1

NOTE: The next time you explore the **Bluetooth Devices Selection** screen, the RS507 will show connected.

Figure 75 HID - Select a device Screen - Windows XP SP3 and Bluetooth V2.1

1. If pairing results in an error, remove the RS507 from the Bluetooth stack by selecting it on the **My Bluetooth Places \ Entire Bluetooth Neighborhood** screen, right click and select **Disable**.

Figure 76 HID - Entire Bluetooth Neighborhood Screen - Windows XP SP3 and Bluetooth V2.1

2. Scan the Un-Pairing bar code.

Un-pairing bar code



3. The RS507 emits one string of high/low beeps indicating that Bluetooth communication with the PC is removed.
4. If that does not help, perform Clean Boot (see [Clean Boot on page 174](#)) the RS507 and start the Bluetooth pairing again.

How to pair and connect with other devices

The RS507 can pair and connect as an emulated keyboard using the Bluetooth HID profile to other devices that support HID using the device discovery feature.



NOTE: Not all devices support HID. If the RS507 is not discovered as a keyboard (when it is in HID mode), consult the device information.

Reconnecting

Automatic reconnection

The RS507 maintains Bluetooth communication with the connected device within a range of 10 meters (30 feet).

When the RS507 fails to establish connection or connection is lost during operation:

1. The RS507 emits one string of low/high beeps.
2. The RS507 automatically attempts to reconnect to the computer for 30 seconds (the Scan LEDs flash green).

Manual reconnection to Restore Lost Bluetooth Connection

If automatic re-connection fails, verify that the RS507 is within Bluetooth range and briefly press the small Restore key on the side of the RS507 to reconnect.

1. The RS507 Scan LEDs start to flash green, indicating that the RS507 is attempting to establish connection with the computer.
2. The Scan LEDs turn off and the RS507 emits one string of low/high beeps indicating that the RS507 is connected and ready for scanning.



NOTE: When the RS507 is in HID connection mode, pressing the **Restore key** after any RS507 boot reconnects the RS507 to the last paired device. Connection is established as long as the link key (the authentication key used to establish a link between devices) on the RS507 side is not deleted.

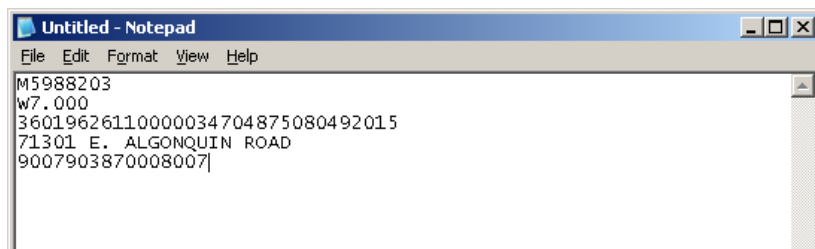
How to demonstrate HID connection with a computer

Following a successful connection, data can be scanned into any Windows application field that accepts keyboard data; for example, the Notepad application.

To scan a bar code:

1. Run the Notepad application.
2. Scan a bar code. The scanned bar code information is displayed on the Notepad window.

Figure 77 HID - Scanned Bar Code Information On Notepad Window



Country keyboard type change

While in HID mode, the RS507 supports several keyboard layouts.

To change the North American Standard Keyboards layout (see bar code marked by * below) to a different country code layout, scan the required bar code corresponding to the country keyboard type.



* North American Standard Keyboards



French Windows



German Windows



French Canadian Windows 98



Spanish Windows



Italian Windows



Swedish Windows



UK English Windows



Japanese Windows



French Canadian Windows 2000/XP



Portuguese/Brazilian Windows

Connecting multiple RS507 into single device

Multiple RS507 devices can concurrently connect to one device application.

In HID connection mode, all RS507 devices enter their virtual key strokes into the same data field of the device application.

Using random PIN code

To establish a Bluetooth connection with a computer using a random PIN code:

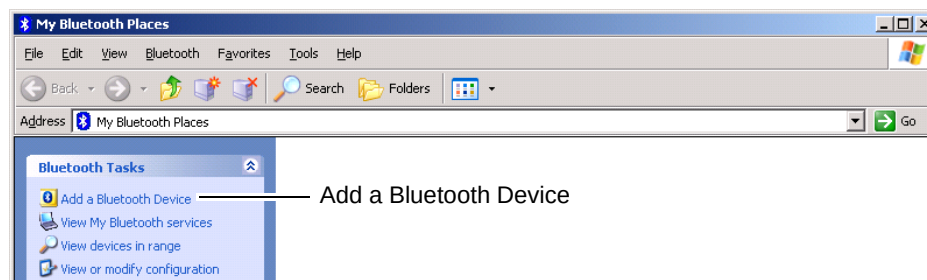
1. Scan the bar code of the Variable PIN code.

Variable PIN Code bar code



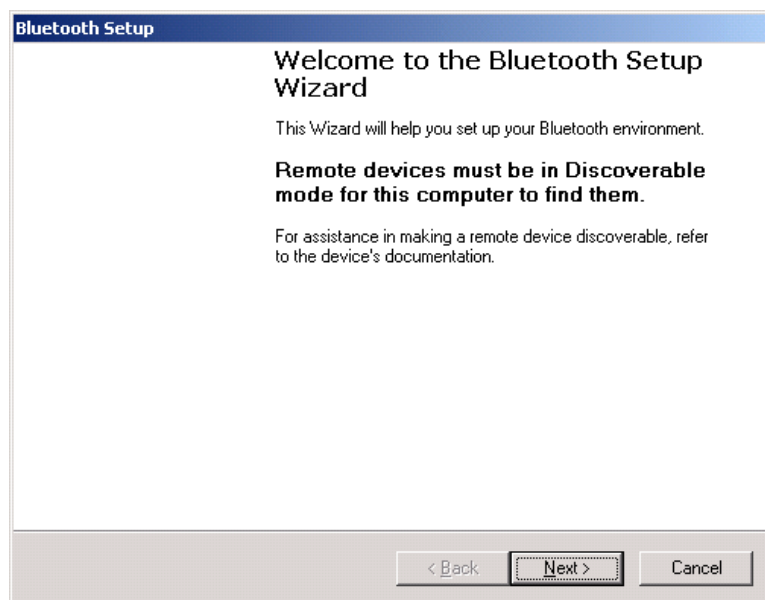
2. On the **Windows Explorer** screen, click the **My Bluetooth Places** icon.
3. From the **Bluetooth Tasks** bar, click on **Add a Bluetooth Device** to start the **Bluetooth Setup** wizard.

Figure 78 HID - Using Random PIN Code - My Bluetooth Places Screen

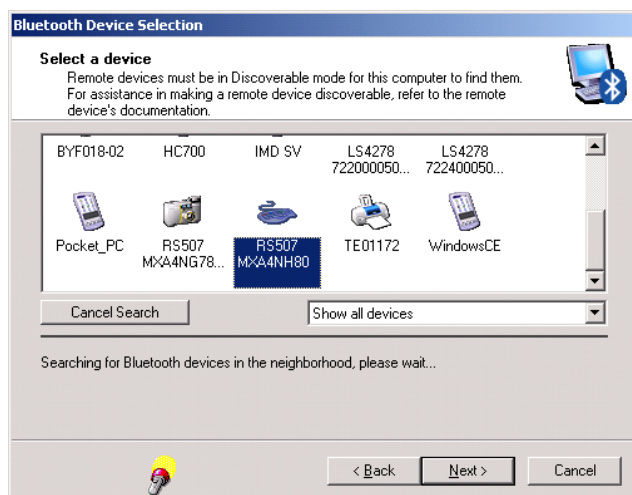


4. On **Bluetooth Setup** screen, click the **Next** button.

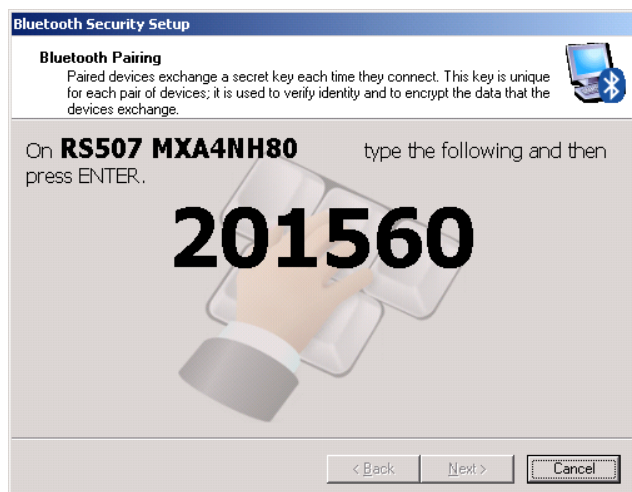
Figure 79 Using Random PIN Code - Bluetooth Setup Wizard Screen



5. On the **Bluetooth Device Selection** screen, select the RS507 displayed as a keyboard icon (MXA4NH80 is the serial number of the RS507) and click the **Next** button.

Figure 80 HID - Using Random PIN Code - Bluetooth Device Selection Screen

The RS507 beeps once indicating that it is waiting for an alphanumeric passkey entry.

Figure 81 HID - Using Random PIN Code - Bluetooth Security / Alphanumeric Passkey Entry Screen

6. Enter the provided passkey by scanning the alphanumeric bar codes shown below.

Alphanumeric Keyboard Bar Codes



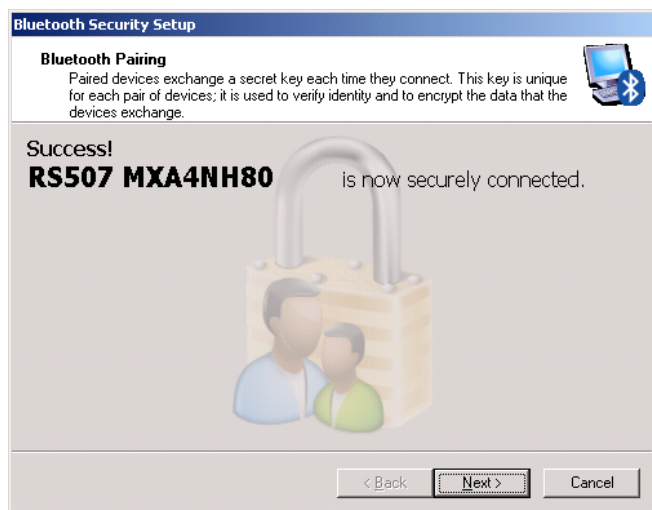


7. Scan the End of Message bar code if the PIN code has less than 16 characters.

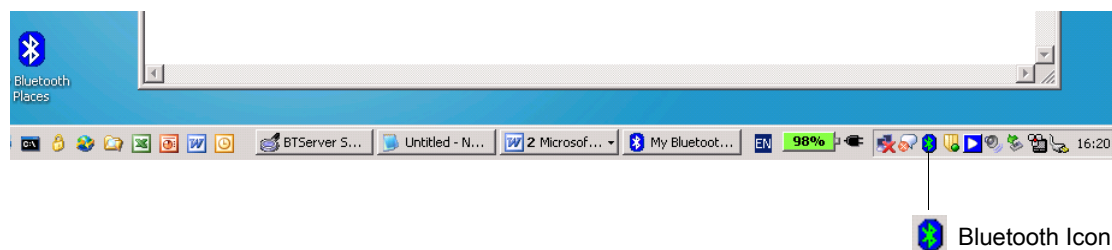
End of Message bar code



The RS507 emits a short high beep while scanning the alphanumeric bar codes and a high/low/high/low upon scanning the End of Message bar code. When the passkey is scanned successfully, Success! is displayed on the **Bluetooth Security Setup** screen.

Figure 82 HID - Using Random PIN Code - Bluetooth Security Screen / Passkey Scanned Successfully

8. Click **Next** to complete the association. The RS507 emits a short string of low/high beeps to indicate a successful pairing. When the connection is completed, the color of the Bluetooth icon on the quick launch bar of the PC is blue and green.

Figure 83 HID - Using Random PIN Code - Successful Pairing Bluetooth Icon

How to return to SSI (SCAN) mode

To return to SSI mode so that connection to Zebra terminals can be established, perform the following:

1. Perform Clean Boot to the RS507:
 - Remove the battery from the RS507.
 - Press and hold the Restore key.
 - Install the Battery onto the RS507.
 - Keep holding the Restore key pressed for about five seconds until a chirp is heard and the **Scan LEDs** flash green.
2. Scan the SSI (SCAN) bar code..

✓ **NOTE:** The SCAN (SCAN) bar code can also be scanned directly from a computer screen.

SSI (SCAN) bar code



3. Perform a Cold Boot by removing and re-installing the battery onto the RS507 (see [Cold Boot on page 174](#)). The RS507 starts to operate using SSI (SCAN) mode.

Serial Port Profile (SPP) Mode

The RS507 can connect to a computer or other device that supports Bluetooth SPP interface as either a Master (the RS507 initiate the connection) or a Slave (the computer or other device initiate the connection and the RS507 is discovered by the computer).

- ✓ **NOTE:** Notebook computer manufacturers may provide their own brand of a Bluetooth stack with different connection screens. However, all stacks provide the same functionality.

How to change to SPP mode

- ✓ **NOTE:** - Since the SPP connection does not support automatic acknowledgement when the data is received by the computer application, a BELL indication is used. The BELL indication allows the computer application to send single binary character 0x07 to the RS507 (as defined in ASCII table). Upon receiving the BELL character, the RS507 beeps. To configure the beep, see [BELL Indication \(SPP mode only\) on page 218](#).

To change the RS507 to SPP mode:

1. Perform Clean Boot to the RS507 (see [Clean Boot on page 174](#)):
 - Remove the battery from the RS507.
 - Press and hold the Restore key.
 - Install the Battery onto the RS507.
 - Keep holding the Restore key pressed for about five seconds until a chirp is heard and the **Scan LEDs** flash green.
2. Scan SPP bar code.

SPP bar code



3. Perform a Cold Boot by removing and re-installing the battery onto the RS507. The RS507 starts to operate and is discoverable as a Bluetooth serial device (like a camera).

How to format the scanned data the data

Advanced Data Formatting (ADF)

The scanned bar code data can be processed and formatted before the RS507 sends it to an application using Advanced Data Formatting (ADF).

For information and programming bar codes for ADF, refer to the Advanced Data Formatting Programmer Guide, p/n 72E-69680-xx (refer only to the programming bar codes that relate to bar code imagers, not Laser bar code scanners).

Wedge

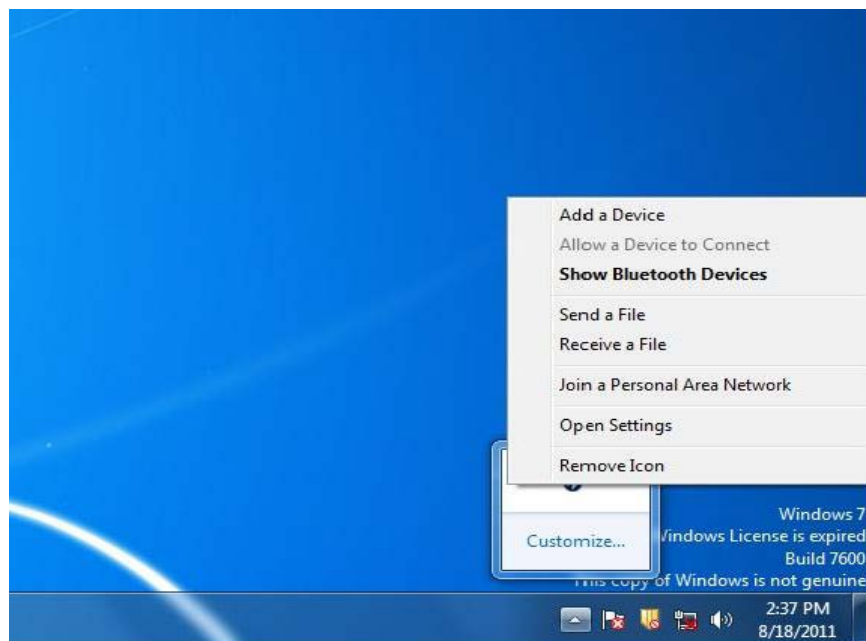
The scanned bar code data can also be processed and formatted before the RS507 send it to the application by using a 3rd party data wedge application. Such wedge applications are available for free download from 3rd party providers sites.

How to pair and connect with a computer running Windows 7 SP1

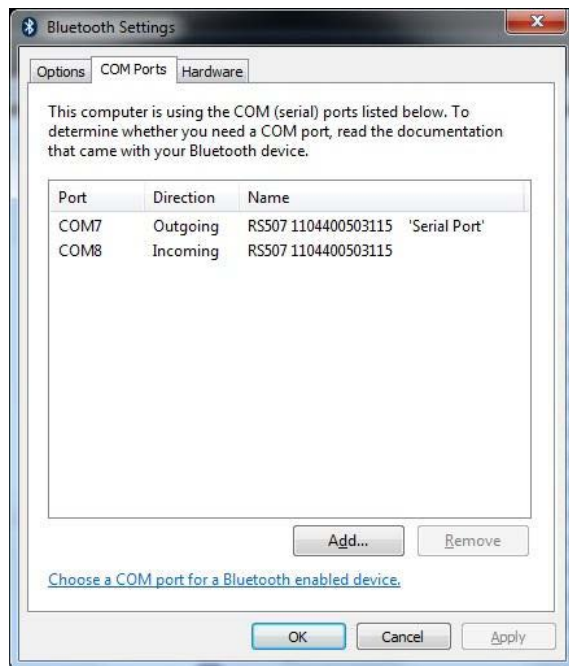
SPP connection with RS507 as a Master

1. Right click on the Bluetooth icon and select **Open Setting** to add a COM port

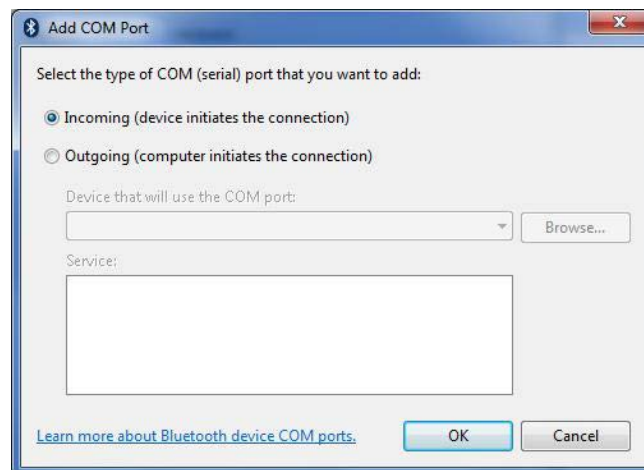
Figure 84 SPP - Open Setting Screen - Windows 7 SP1



2. Select the **COM Ports** tab and click **Add**.

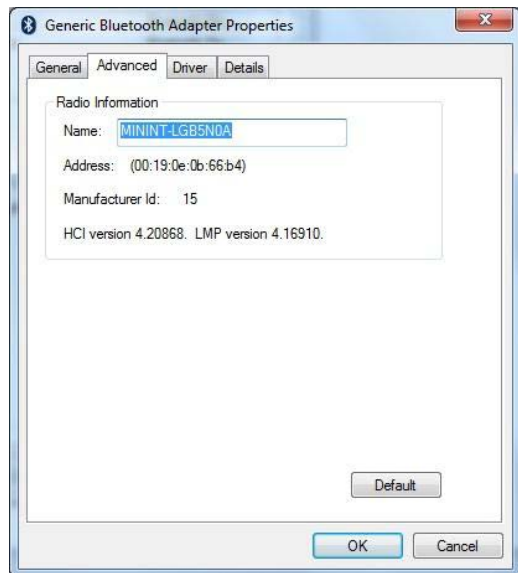
Figure 85 SPP - Bluetooth Settings - Com Ports Tab

3. Check the **Incoming** box and click **OK**.

Figure 86 SPP - Bluetooth Settings - Add Com Port Screen

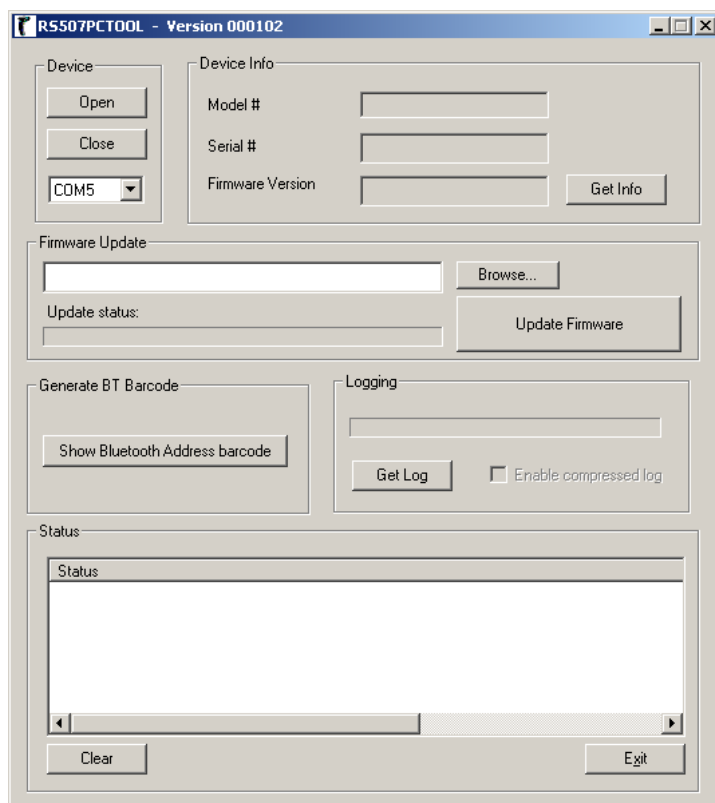
4. Click the **Hardware** tab to retrieve the Bluetooth radio BD address.

Figure 87 SPP - Bluetooth Settings - Bluetooth Radio BD Address



5. Run the PC Tool application.

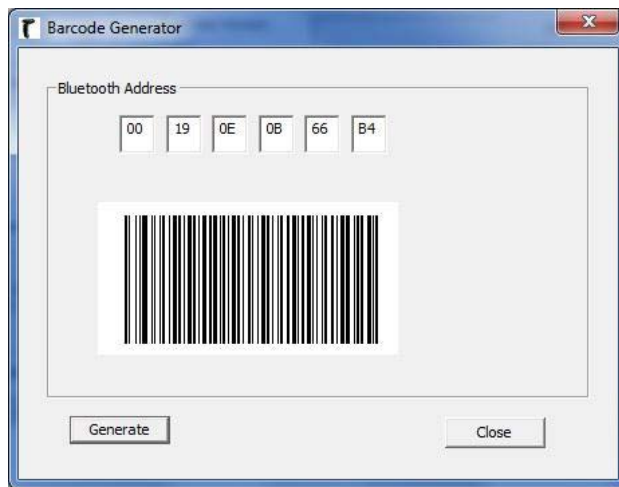
Figure 88 SPP - PC Tool application



6. Click the **Show Bluetooth Address barcode** button.

7. Manually enter the BD address to the PC Tool application and click the **Generate** button.

Figure 89 SPP - PC Tool Application - Bar Code Generator

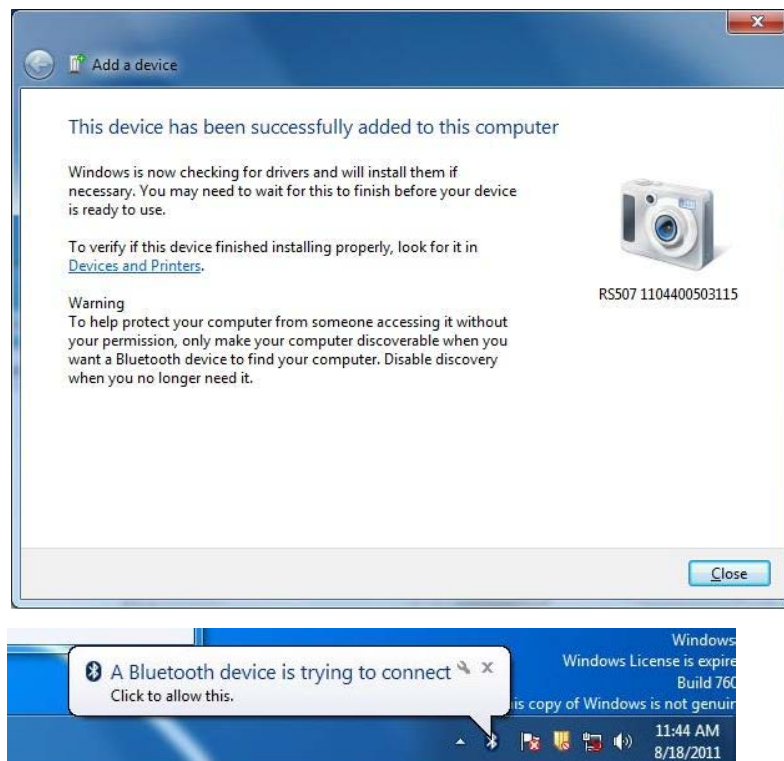


8. Open the incoming COM port assigned (for example, COM7) in the application. After the COM port is opened the computer connects to the RS507 and a beep will sound. For demonstration, refer to *<Blue>How to demonstrate SPP connection with a computer on page 11-203.*



NOTE: If the COM port is not opened prior to the connection, the RS507 will fail to connect.

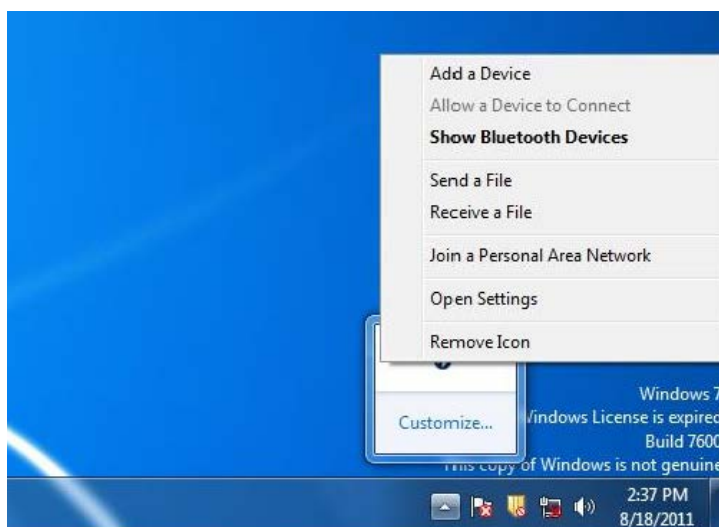
9. To start the connection process:
 - Aim the RS507 at about 7" (18 cm) away from the computer screen and scan the bar code of the BD address of the computer (or the other target device).
 - The RS507 Scan LEDs start flashing green indicating that the RS507 is attempting to establish connection with the computer. The following notifications are displayed upon successful connection.

Figure 90 SPP - Device Successfully Added Screen

✓ **NOTE:** In case you do not hear the connected beep on the RS507, press on the RS507 **Restore key** to connect.

SPP connection with RS507 as a Slave

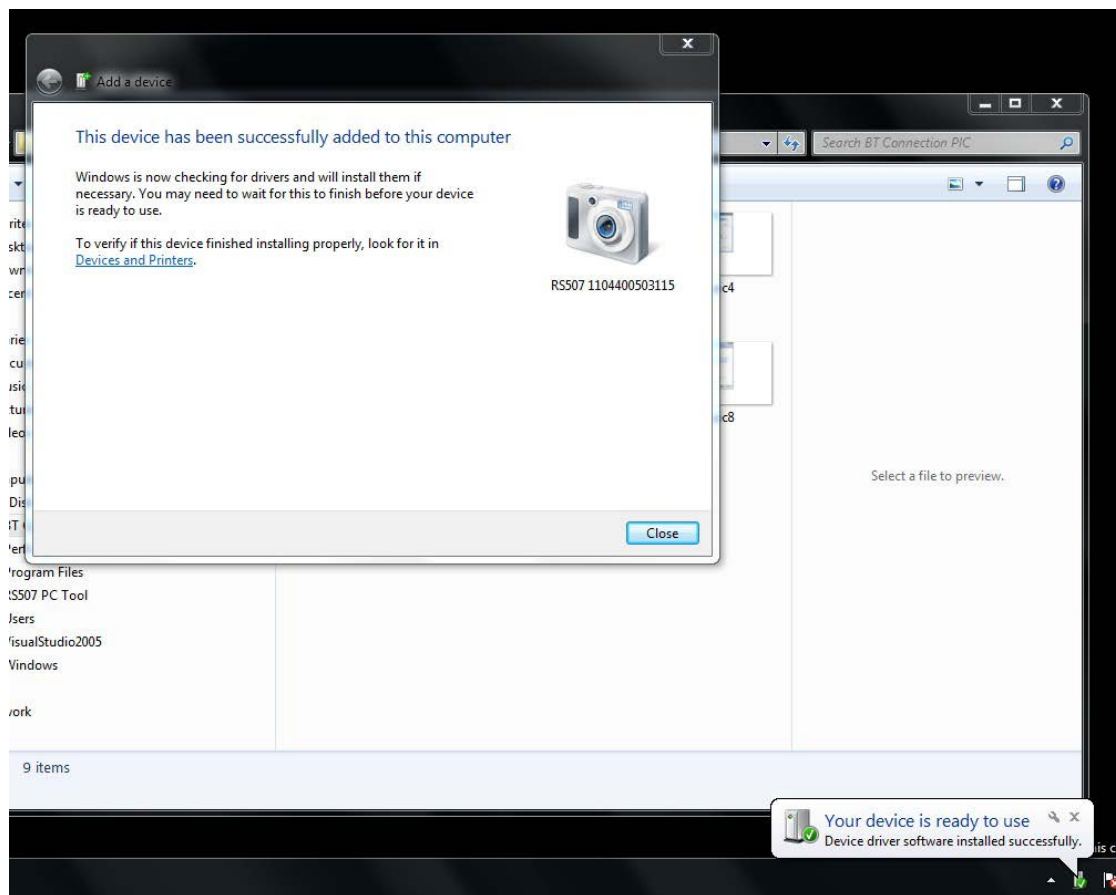
1. Right click the Bluetooth icon and select **Open Settings > Add Device**.

Figure 91 SPP connection with RS507 as a Slave - Open Settings

2. Select the RS507 (see Bluetooth Camera icon below) and click **Next**

Figure 92 SPP connection with RS507 as a Slave - Add Device Screen

3. The computer attempts to connect to the RS507.

Figure 93 SPP connection with RS507 as a Slave - Device Successfully Added Screen

4. Open the incoming COM port assigned (for example, COM7) in the application. After the COM port is opened the computer connects to the RS507 and a beep will sound. For demonstration, refer to *<Blue>How to demonstrate SPP connection with a computer on page 11-203.*

✓ **NOTE:** Make sure the same COM port is closed in other applications.

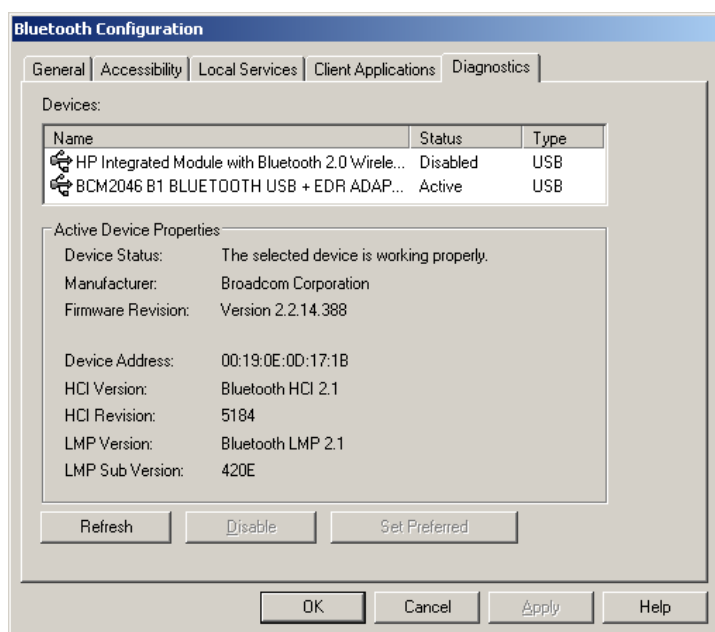
How to pair and connect with a computer running Windows XP SP3

SPP connection with RS507 as a Master

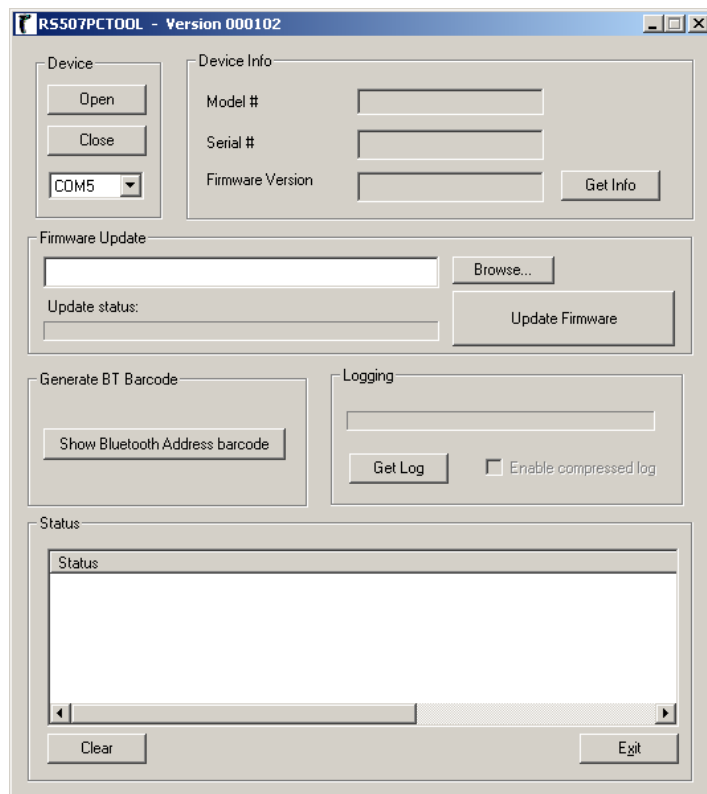
To pair the RS507 with a computer:

1. Find the Bluetooth Device (BD) address of the computer (or the target device) in **Bluetooth Configuration > Diagnostics** tab.

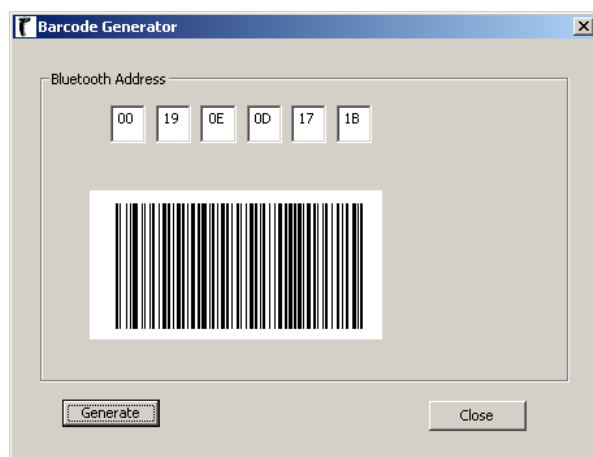
Figure 94 Bluetooth Configuration Screen - Windows XP SP3



2. Run the PC Tool application.

Figure 95 PC Tool Application Screen

3. Click the **Show Bluetooth Address barcode** button.
4. Manually enter the computer BD address and click the **Generate** button.

Figure 96 PC Tool Application - Bar Code Generator

NOTE: The PC Tool application retains the last BD address entered. To recreate a new bar code image, enter the BD address and click the Generate button.

5. To start the connection process, aim the RS507 at about 7" (18 cm) away from the front of the computer screen.
6. Scan the bar code of the BD address of the computer (or other target device).

7. The RS507 Scan LEDs start flashing green indicating that the RS507 is attempting to establish connection with the computer.
8. Check the **Always allow this device to access this service** box and click **OK**.

Figure 97 Bluetooth Service Authorization Dialog



- ✓ **NOTE:** When using an earlier Bluetooth version that is not equipped with Secure Simple Pairing, a passkey is required only for the first connection. Check the ***Let me choose my own passkey*** button, enter ***12345*** and click **Next**.

Upon successful Bluetooth pairing, RS507 bleeps and the Bluetooth icon in the computer desktop tray turns green.

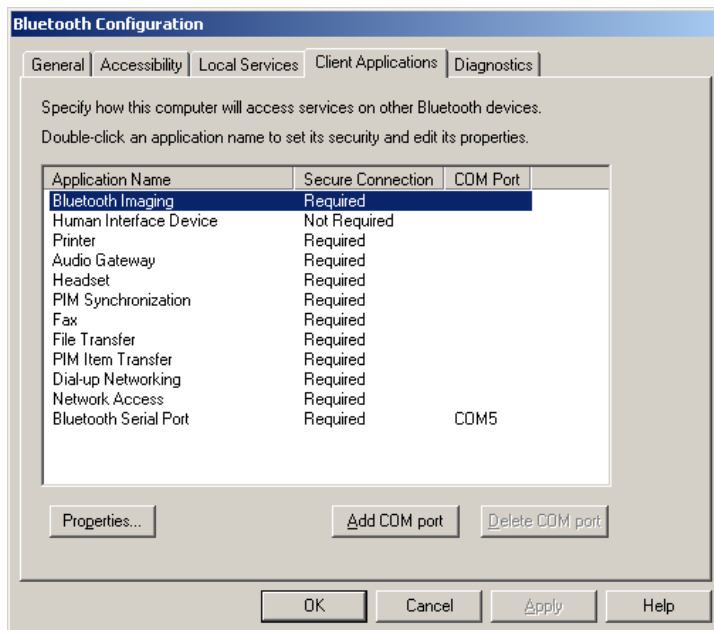
Figure 98 Bluetooth Icon In Computer Desktop Tray - Windows XP SP3



At this point, the RS507 is ready to scan and send bar codes over the assigned serial port.

9. Find the assigned serial incoming port, right click the Bluetooth icon and select **Bluetooth Configuration > Client Applications** tab.

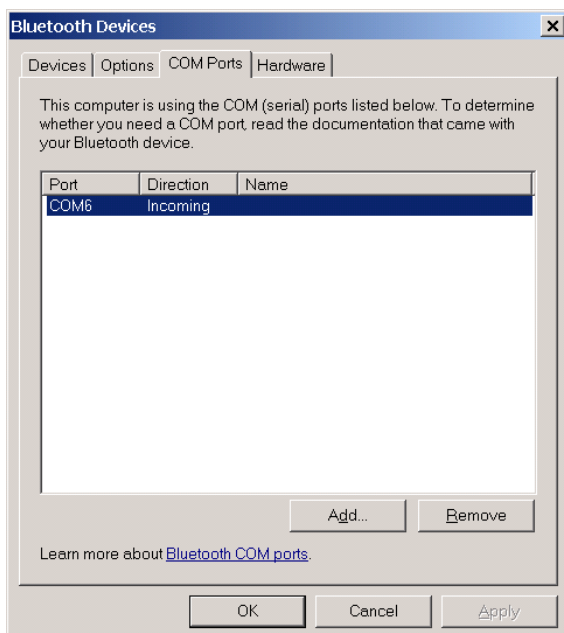
- ✓ **NOTE:** Do not confuse the Bluetooth serial port assigned as Incoming (RS507 initiates the connection) with the Bluetooth serial port assigned as Outgoing (The computer initiates the connection and RS507 is discovered - Slave Mode).

Figure 99 Bluetooth Configuration Screen - Windows XP SP3

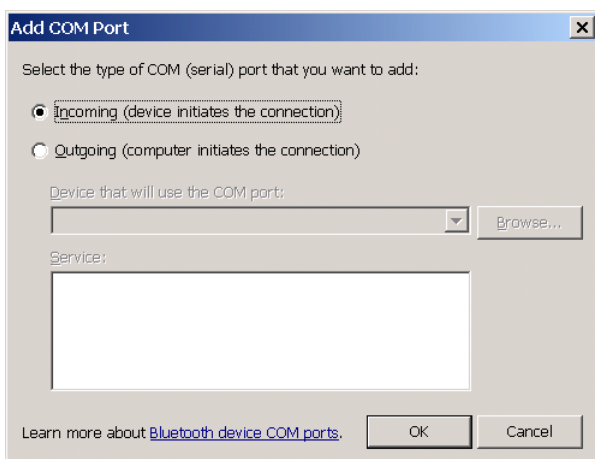
The COM ports can also be identified through the Control Panel.

To access the Bluetooth COM port allocation through the Control Panel:

1. From the **Control Panel** screen, open the **Bluetooth Devices** screen on the computer.

Figure 100 Bluetooth Devices screen - Windows XP SP3

2. Click the **COM Ports** tab and verify that a COM port is assigned. If no COM port is assigned, click the **Add** button and select **Incoming (device initiates the connection)** to set the RS507 as Master and the computer as Slave.
3. Click **OK** to complete the settings.

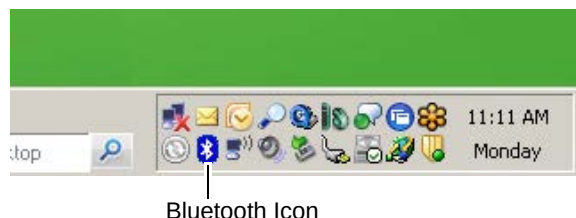
Figure 101 Add COM Port Screen - Windows XP SP3

- After the Bluetooth COM port is assigned, run the application on the computer and open the COM port assigned as Incoming in the application (for example, COM7). After the COM port is opened, the computer connects to the RS507 and a beep will sound. For demonstration, refer to <Blue><Italic>How to demonstrate SPP connection with a computer on page 11-203.

✓ **NOTE:** If the COM port is not opened prior to the connection, the RS507 will fail to connect. Make sure the same COM port is closed in other applications.

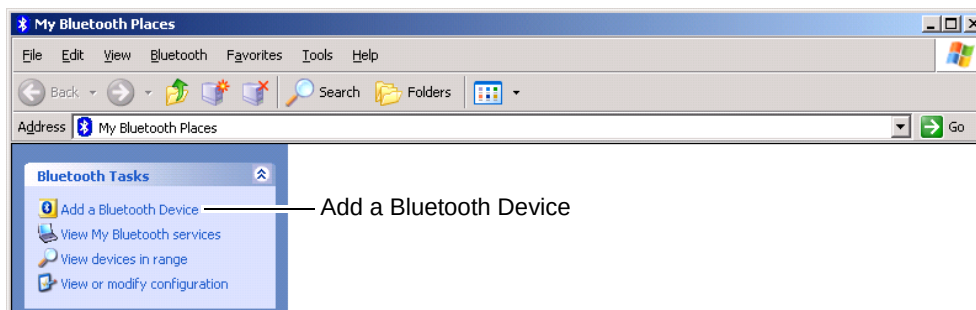
SPP connection with RS507 as a Slave

- Right click the Bluetooth icon on the computer desktop tray.

Figure 102 Bluetooth Icon In Computer Desktop Tray - SPP connection with RS507 as a Slave

Or

From **My Bluetooth Places** screen, select **Bluetooth Tasks** bar and select **Add a Bluetooth Device**.

Figure 103 My Bluetooth Places Screen - SPP connection with RS507 as a Slave

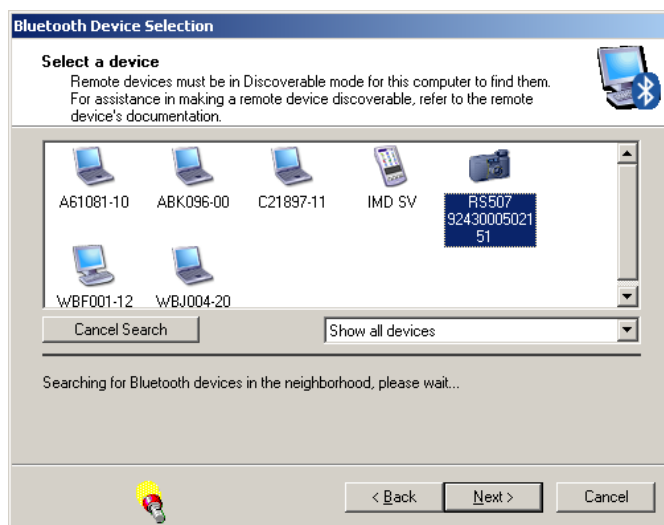
- Check **My device set up and ready to be found** box and click **Next**.

Figure 104 Bluetooth Setup Screen - SPP connection with RS507 as a Slave

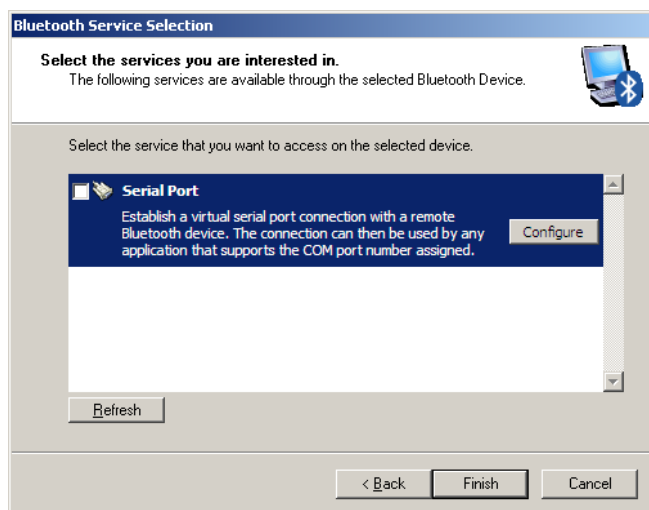


3. Verify that the RS507 is found by the Host, select the RS507 that you want to add and click **Next**.

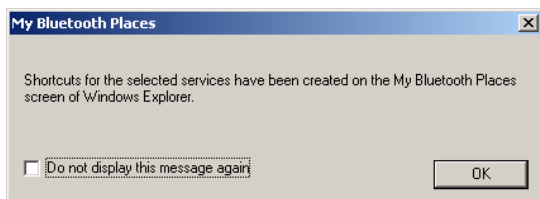
Figure 105 Bluetooth Device Selection Screen - SPP connection with RS507 as a Slave



4. Check the **Serial Port** box and click **Next**.

Figure 106 Bluetooth Service Selection - Serial Port Screen - SPP connection with RS507 as a Slave

5. The Secure Simple Pairing starts and a shortcut will be created. Click **OK**.

Figure 107 Bluetooth Shortcut Confirmation Box - SPP connection with RS507 as a Slave

6. Once completed click **Finish**.

Figure 108 Bluetooth Setup Wizard - SPP connection with RS507 as a Slave

NOTE: When using an earlier Bluetooth version that is not equipped with Secure Simple Pairing, a passkey is required only for the first connection. Check the **Let me choose my own passkey** button, enter **12345** and click Next.

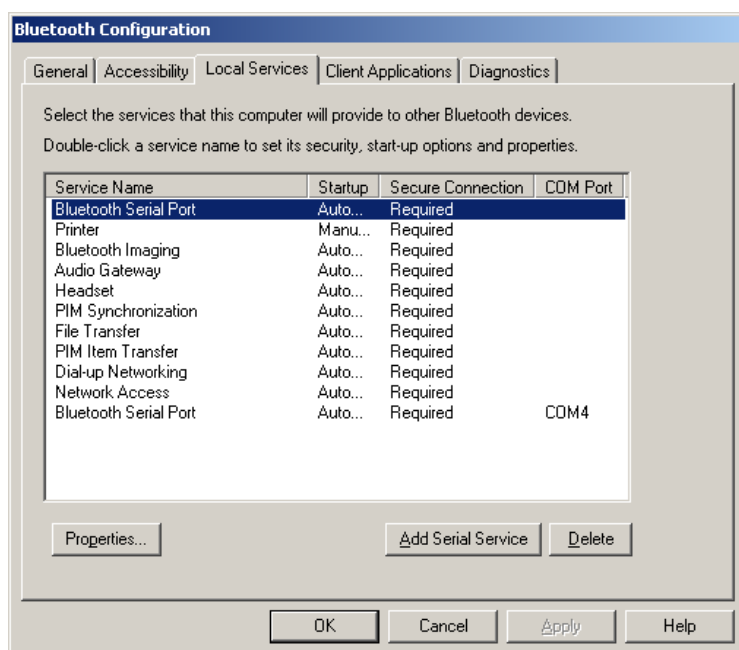
The RS507 is ready to scan and send bar codes over the assigned serial port.

- Find the assigned serial Outgoing port, right click the Bluetooth icon and select **Bluetooth Configuration** and the **Local Services** tab.



NOTE: Do not confuse the Bluetooth serial port assigned as Incoming (RS507 initiates the connection) with the Bluetooth serial port assigned as Outgoing (The computer initiates the connection and RS507 is discovered - Slave Mode).

Figure 109 Bluetooth Configuration Screen - SPP connection with RS507 as a Slave



- Open the COM port assigned as Incoming COM port in the application (for example, COM7). After the COM port is opened the computer connects to the RS507 and a beep will sound. For demonstration, refer to [How to demonstrate SPP connection with a computer on page 203](#).



NOTE: If the COM port is not opened prior to the connection, the RS507 will fail to connect. Make sure the same COM port is closed in other applications.

How to pair and connect with other devices

The RS507 can pair and connect as a serial port device using the Bluetooth SPP profile to other devices that support SPP using the device either the RS507 as a Master (recommended) or the device discovery feature.

The PC Tool application can be used to generate the Bluetooth Device (BD) address of the target device for testing. Otherwise this bar code can be printed on a label and affixed to the device.



NOTE: Not all devices support SPP. If the RS507 is not discovered as a serial port device (camera), check with the device vendor.

Reconnecting

Automatic reconnection

The RS507 maintains Bluetooth communication with the connected device within a range of 10 meters (30 feet). When the RS507 fails to establish connection or connection is lost during operation:

- The RS507 emits one string of low/high beeps.
- The RS507 automatically attempts to reconnect to the computer for 30 seconds (the **Scan LEDs** flash green).

Manual reconnection to Restore Lost Bluetooth Connection

If automatic re-connection fails, verify that the RS507 is within Bluetooth range and briefly press the small Restore key on the side of the RS507 to reconnect.

- The RS507 **Scan LEDs** start to flash green, indicating that the RS507 is attempting to establish connection with the computer.
- The **Scan LEDs** turn off and the RS507 emits one string of low/high beeps indicating that the RS507 is connected and ready for scanning.



NOTE: When the RS507 is in SPP connection mode, pressing the **Restore key** after a Warm or Cold boot reconnects the RS507 to the last paired device. Connection is established as long as the link key on the device side is not deleted (the authentication key used to establish a link between devices).

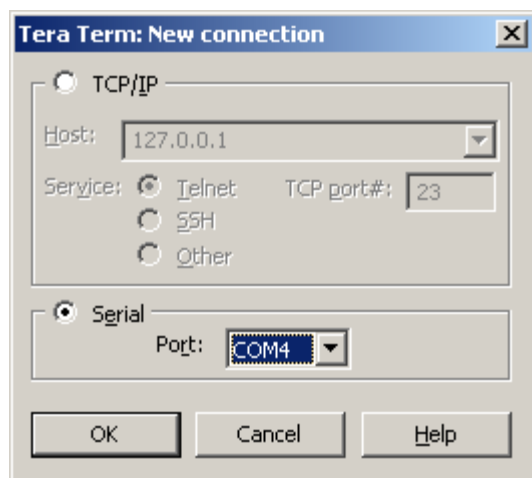
How to demonstrate SPP connection with a computer

Once SPP connection is established, an application is required to demonstrate the RS507.

To scan a bar code:

1. If the RS507 is still connected to the PC Tool application, close the COM port on the PC Tool application.
2. Run a hyper terminal application such as the Tera Term application.
(<http://www.ayera.com/teraterm/download.cfm>).

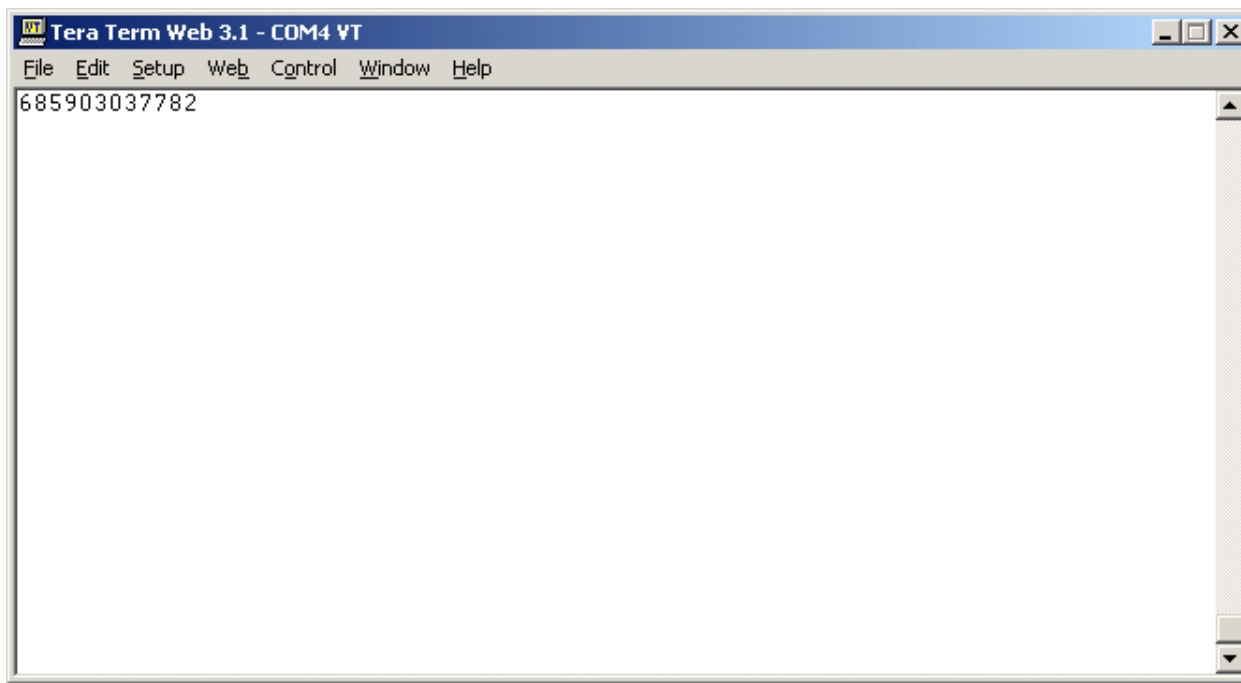
Figure 110 Tera Term Application Screen



3. Select the virtual COM port set for the RS507 connection.

4. Scan bar codes. Successful decoding of a bar code is indicated by one green flash of the **Scan LEDs** and a high beep sound. In case of Bluetooth disconnection, the RS507 emits one high beep followed by four low beeps.

Figure 111 Tera Term Entry Screen



Connecting multiple RS507 into single device

Multiple RS507 units can be connected a single computer running an application that accepts more than one RS507, each with its own assigned COM port. The number of RS507 units concurrently connected is depended on the computer's Bluetooth stack.

How to return to SSI (SCAN) mode

To change the RS507 to SSI (SCAN) mode:

1. Perform Clean Boot to the RS507:
 - Remove the battery from the RS507.
 - Press and hold the Restore key.
 - Install the Battery onto the RS507.
 - Keep holding the Restore key pressed for about five seconds until a chirp is heard and the **Scan LEDs** flash green.

2. Scan the SSI (SCAN) bar code.

SSI (SCAN) bar code



3. Perform a Cold Boot by removing and re-installing the battery onto the RS507. The RS507 starts to operate under SSI (SCAN) for connection to Zebra terminals.

Switching between SSI (SCAN), HID and SPP

To switch the RS507 from one mode to another:

1. Perform Clean Boot to the RS507:
 - Remove the battery from the RS507.
 - Press and hold the Restore key.
 - Install the Battery onto the RS507.
 - Keep holding the Restore key pressed for about five seconds until a chirp is heard and the **Scan LEDs** flash green.
2. Scan the required profile bar code (see the following bar codes).

SPP bar code



SSI (SCAN) bar code



HID bar code

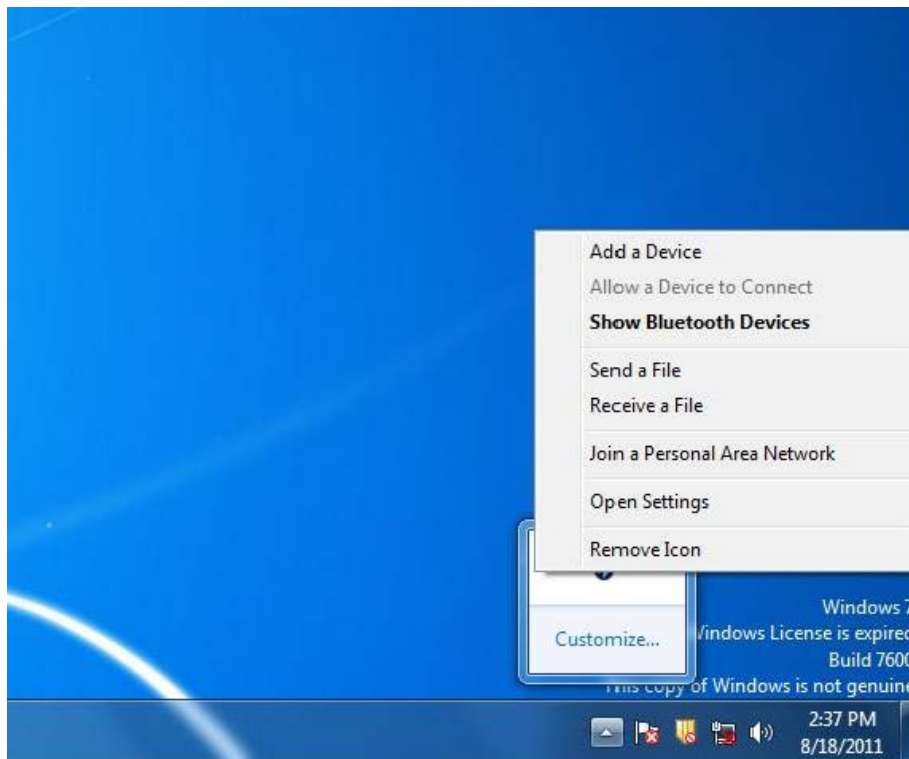


3. Perform a Cold Boot by removing and re-installing the battery onto the RS507 (see [Cold Boot on page 11-174](#)). The RS507 starts to operate and is also discoverable as a keyboard (HID) or serial device (SPP).

IMPORTANT: In Win 7 SP1, when switching between SPP connection and HID connection and vice versa, the RS507 device must be removed from the computer pairing list.

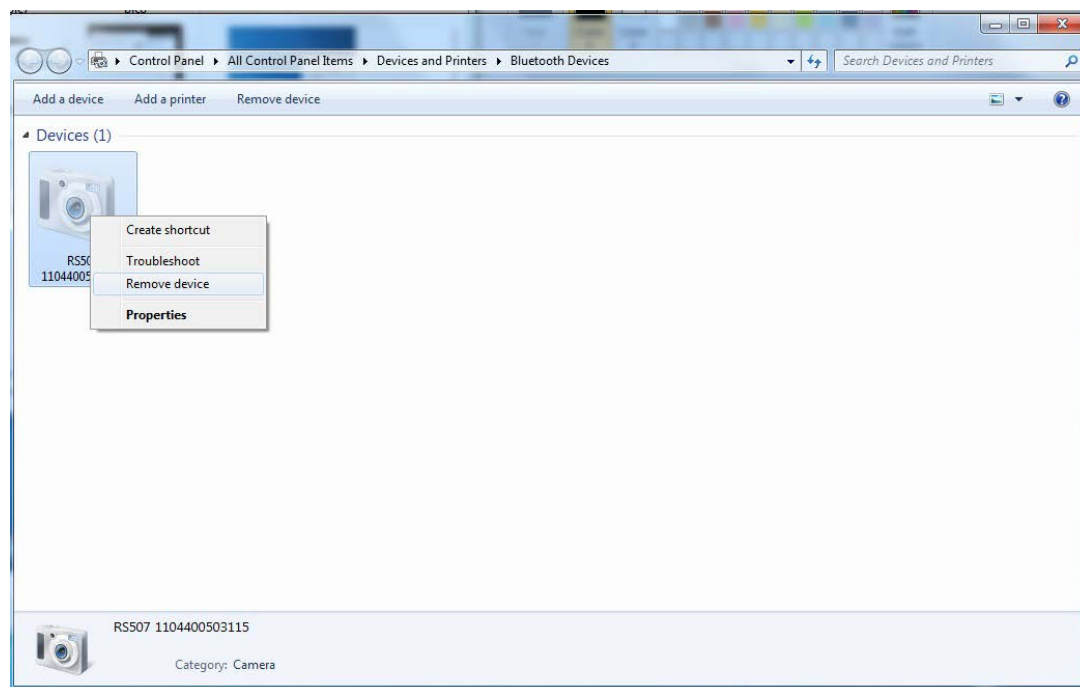
4. Remove the RS507 from the computer Bluetooth stack by right clicking the Bluetooth icon and selecting **Show Bluetooth Devices**

Figure 112 Computer Bluetooth Stack Screen - Switching Between SSI (SCAN), HID and SPP



5. Right click the RS507 icon (camera icon) and select **Remove device**

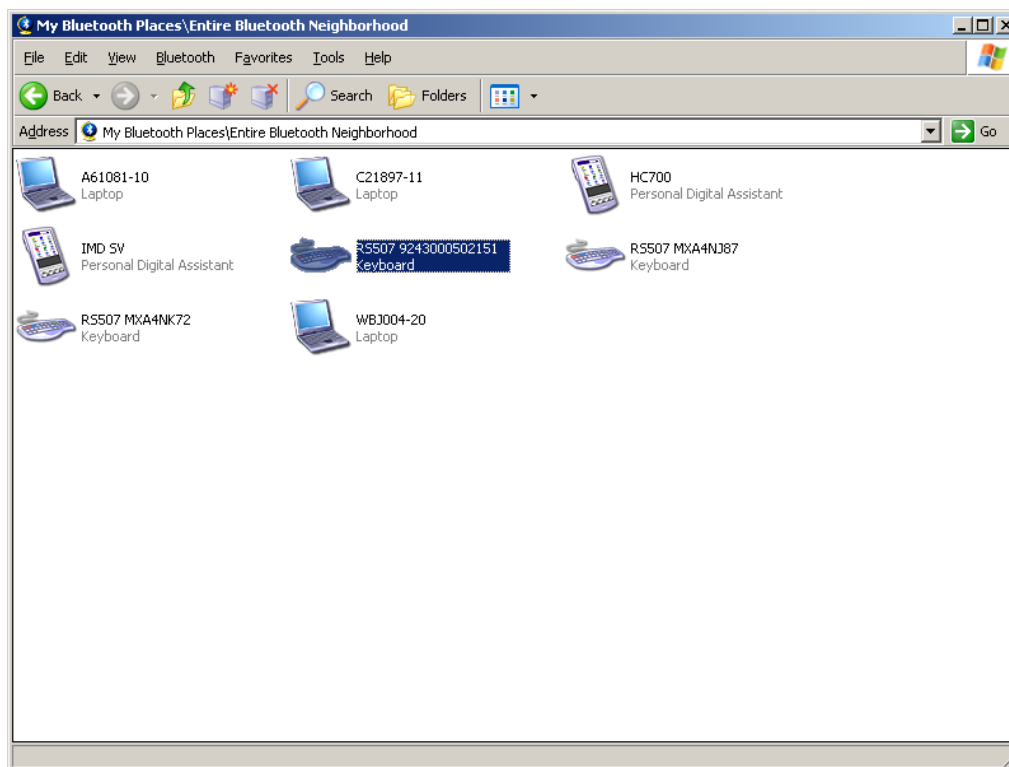
Figure 113 Device Screen - Switching Between SSI (SCAN), HID and SPP



IMPORTANT: In Win XP SP3:, when switching between SPP connection and HID connection and vice versa, the RS507 device must be removed from the computer pairing list, to remove the RS507 please do as follow:

- Remove the RS507 from the Bluetooth stack by selecting it on the **My Bluetooth Places > Entire Bluetooth Neighborhood**, right click and select **Disable**.

Figure 114 Entire Bluetooth Neighborhood Screen - Switching Between SSI (SCAN), HID and SPP



Firmware upgrade

Upgrading using a computer and the PC Tool application

Older RS507 devices can be upgraded and re-flashed with a new firmware. The update is performed by downloading the firmware to the RS507 flash memory. If download fails, the previous firmware remains operational.

The firmware remains inside the RS507 memory even when powering the RS507 off/on (removing and re-installing the battery).

To update the firmware of the RS507:

- Install a fully charged RS507 battery and wait until the RS507 emits a beep and stops, indicating that the power up process is completed.
- Press the Scan trigger and verify that the Scan LEDs illuminate and the aimer light is shown while the scan trigger is pressed.

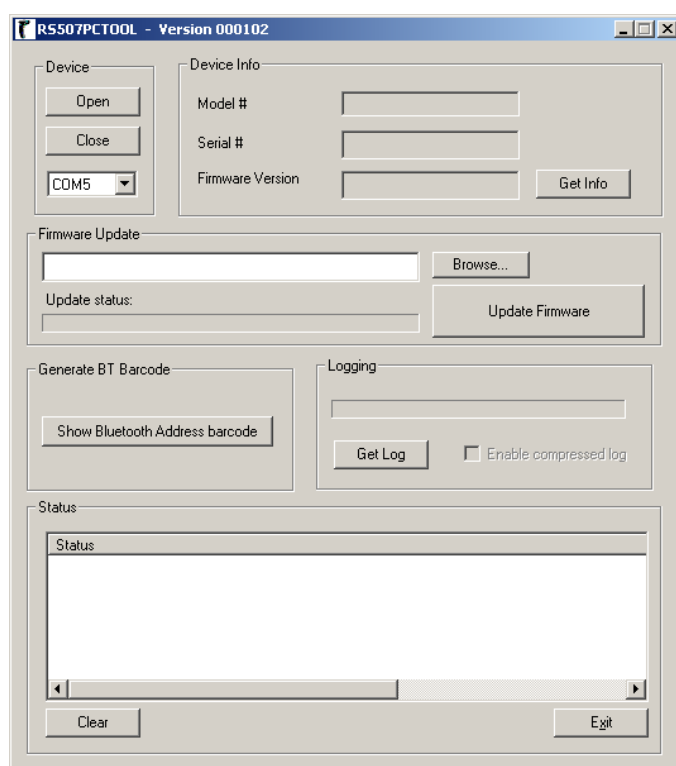
3. Establish SSI connection by scanning the SSI (SCAN) bar code to change the RS507 mode to SSI (SCAN) mode. The SSI (SCAN) mode allows the RS507 to communicate with the computer through SPP during the firmware update session. The SSI (SCAN) bar code can also be scanned directly from a computer screen.

SSI (SCAN) bar code



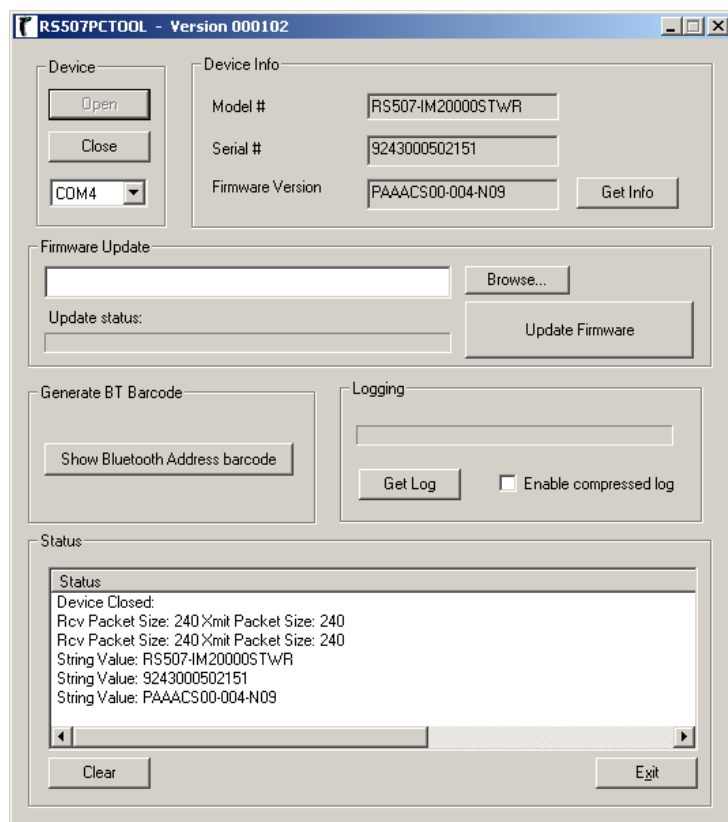
4. Perform a Cold Boot by removing and re-installing the battery onto the RS507. The RS507 starts to operate under SSI mode using an SPP connection with the computer. Notice the COM port that was assigned to the RS507.
5. On the computer, run the PC Tool application.

Figure 115 PC Tool Application - Firmware Upgrade

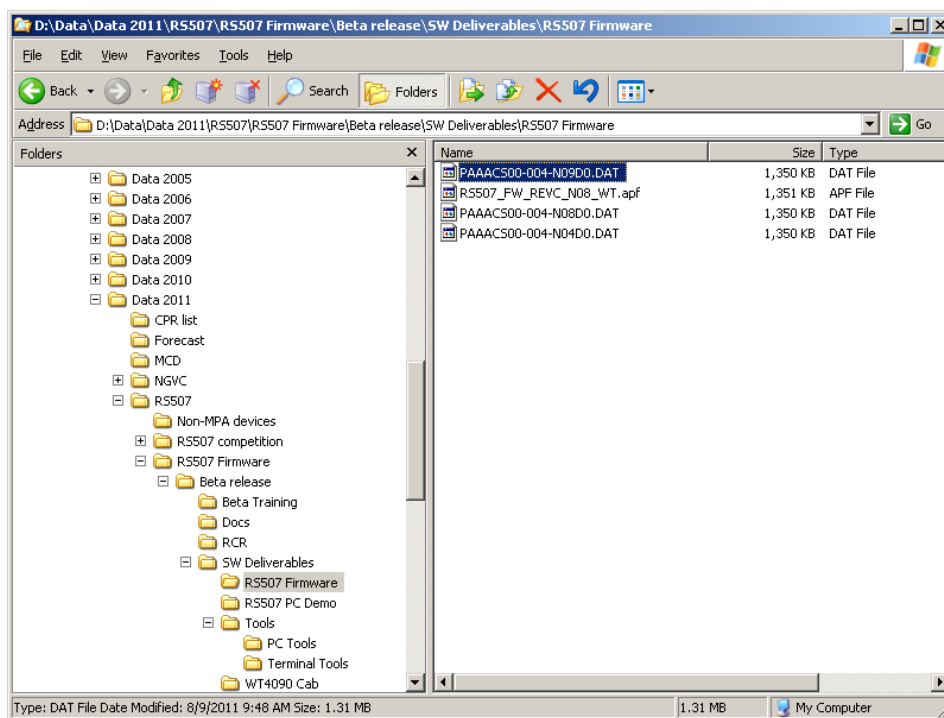


NOTE: When using older Bluetooth version, enter PIN code **12345**.

6. Follow the instructions for [SPP connection with RS507 as a Master on page 189](#) under Windows 7 SP1 or [SPP connection with RS507 as a Master on page 195](#) under Windows XP SP3 except, this time use it while the RS507 is in SSI (SCAN) mode.
7. Once paired and connected to the computer, select Bluetooth COM port.
8. Click the **Open** button. The RS507 information is displayed on the Device Info fields.

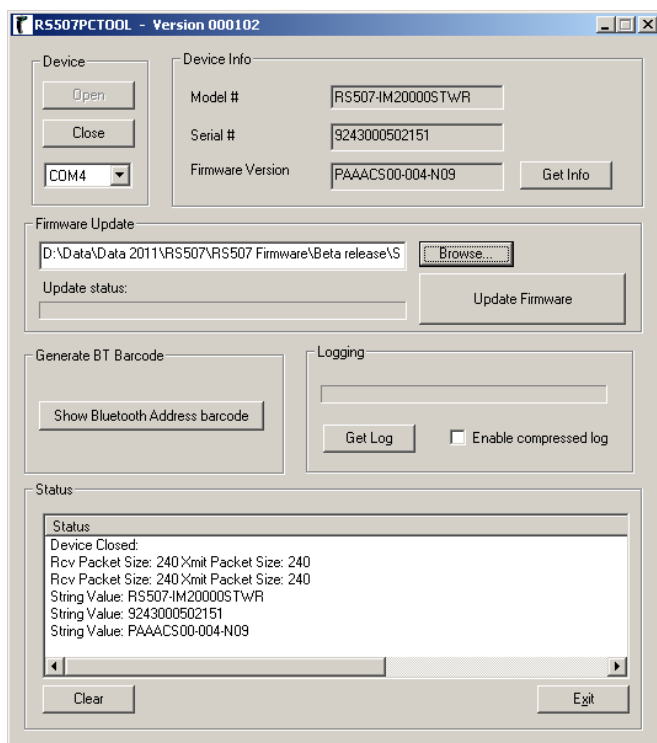
Figure 116 PC Tool Application Device Info fields - Firmware Upgrade

9. Press the **Browse** button, select the RS507 firmware dat file (for example: PAAACS00-004-N09D0.dat) and press the **Open** button.

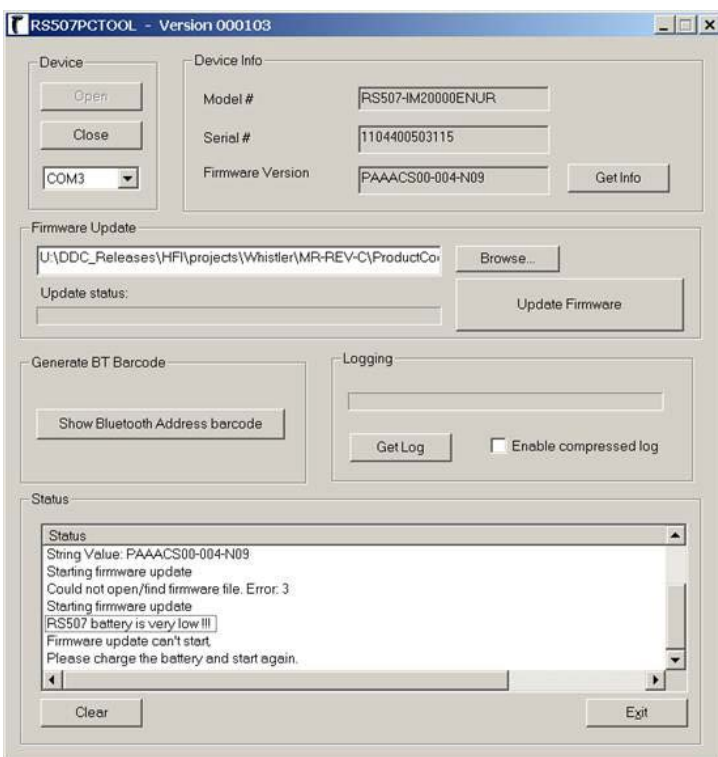
Figure 117 Firmware Update - dat File

10. Press the **Update Firmware** button to start the firmware update process.

Figure 118 Firmware Update - Start Process



11. If the battery level is too low, the firmware update will not start. In such case, replace the battery with a fully charged battery, close the Com port, re-open the Com port and again, start to download.

Figure 119 Download Screen - PC Tool Application

12. During firmware update, the RS507 Scan LEDs blink red. When the firmware update successfully ends, wait for RS507 internal flash programming to complete (the Scan LEDs turn off).
At the end of the firmware update, the RS507 performs Warm Boot (see [Warm Boot on page 174](#)).

13. Perform Clean Boot to the RS507:

- Remove the battery from the RS507.
- Press and hold the Restore key.
- Install the battery onto the RS507.
- Keep holding the Restore key pressed for about five seconds until a chirp is heard and the Scan LEDs flash green.

At this point, the RS507 firmware is updated and ready for connection with the updated firmware.



NOTE: After Clean Boot is performed, the RS507 defaults are changed to SSI (SCAN) mode to interface to Zebra terminals.

Upgrading with a Zebra terminal

Firmware update utility application was included in the CAB files provided for WT40x0, MC9090, MC709x, MC3090 and VC5090. For step-by-step instructions, refer to *<Blue><Italic>Imager Firmware Update* on page 8-64.

For firmware update of other terminals, use the PC Tool application.

Retrieving the RS507 log file

The events of the RS507 software log includes debug information and SW diagnostics logged during the RS507 operation. The log is saved on the RAM of the RS507 and is lost once the RS507 battery is removed.

To retrieve the RS507 log file:

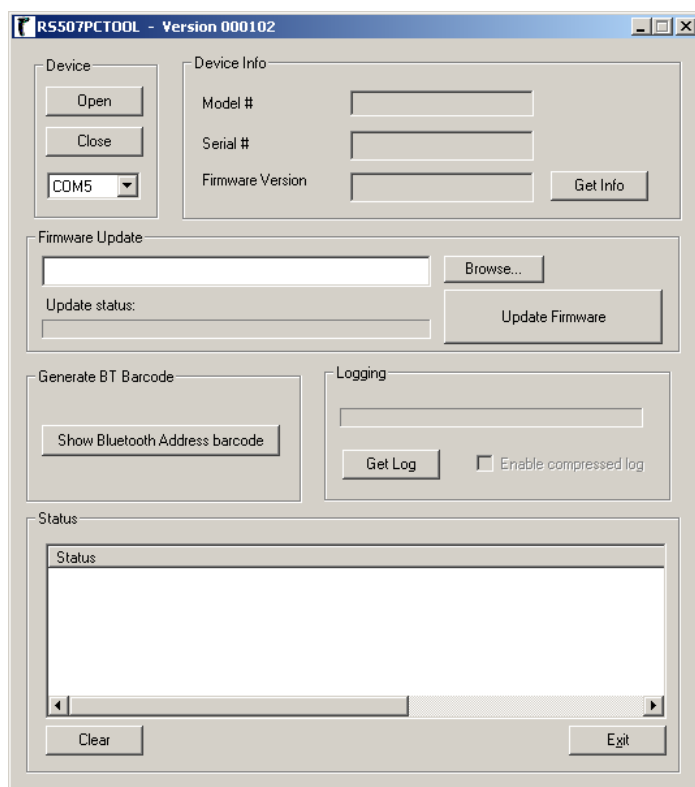
1. If the RS507 is stuck or do not behave as expected once connected to the application, do not remove the battery. Instead, perform a Warm Boot by pressing and holding the Restore Key for more than six seconds.
2. Establish SSI connection by scanning the SSI (SCAN) bar code to change the RS507 mode to SSI (SCAN) mode. The SSI (SCAN) mode allows the RS507 to communicate with the computer through SPP during the firmware update session. The SSI (SCAN) bar code can also be scanned directly from a computer screen.

SSI (SCAN) bar code

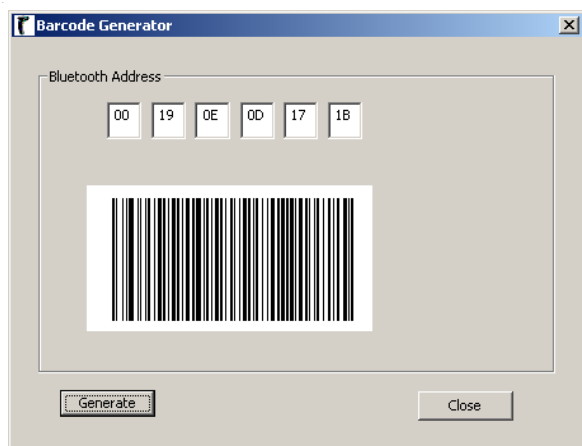


3. Perform a Warm Boot by pressing and holding the Restore Key for more than six seconds. The RS507 starts to operate under SSI (SCAN) using an SPP connection with the computer.
4. Locate the COM port that was assigned to the RS507.
5. On the computer, run the PC Tool application.

Figure 120 PC Tool Application Screen



6. Click the **Show Bluetooth Address barcode** button.
7. Manually enter the computer BD address and click the **Generate** button.

Figure 121 Bar Code Generator - PC Tool Application

NOTE: The PC Tool application retains the last BD address entered so next time press the **Generate** button to recreate the bar code image.

8. To start the connection process, aim the RS507 at about 7" (18 cm) away from the front of the computer screen and scan the bar code of the computer (or the other target device) BD address. The RS507 **Scan LEDs** start flashing green indicating that the RS507 is attempting to establish connection with the computer.
9. If the following Windows pops up, check the box **Always allow this device to access this service** and click **OK**.



10. The RS507 bleeps, establishes the SSI over SPP connection and is ready log file retrieval.

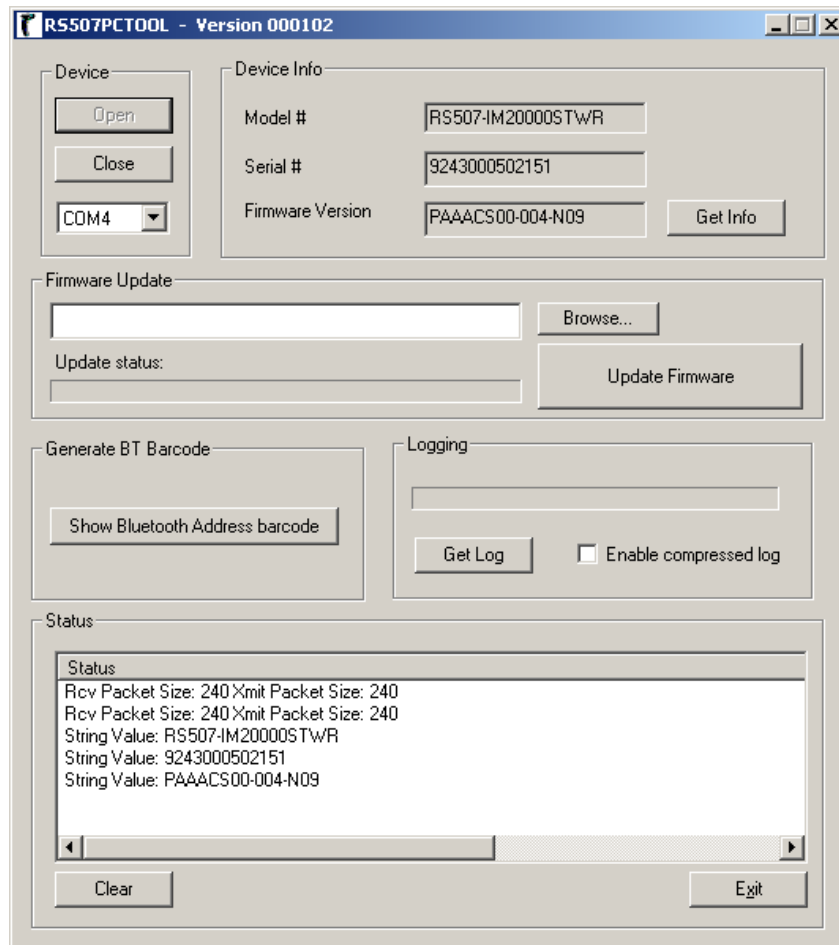


11. Select Bluetooth COM port assigned to the RS507.



NOTE: The RS507 can connect to a computer or other device that supports Bluetooth Serial Port Profile interface as either a Master (the RS507 initiate the connection) or a Slave (the computer or other device initiate the connection and the RS507 is discovered by the computer).

12. Click the **Open** button - the application displays the RS507 status information.

Figure 122 RS507 Status Information - PC Tool Application

13. Click the **Get Log** button to download the RS507 log file.
14. When you expect a large log file, check the **Enable compress log** to get a compressed log file in .zip format. The log file is saved on the computer at the same folder of the PC Tool application.
15. from the same directory of the PC Tool application.

Figure 123 Retrieve RS507 Log File - PC Tool Application

RS507PCTOOL - Version 000102

Device

Open

Close

COM4

Device Info

Model # RS507-IM20000STWR

Serial # 9243000502151

Firmware Version PAAACS00-004-N09

Get Info

Firmware Update

Browse...

Update status:

Update Firmware

Generate BT Barcode

Show Bluetooth Address barcode

Logging

Get Log

☐ Enable compressed log

Status

Status

Rcv Packet Size: 240 Xmit Packet Size: 240

Rcv Packet Size: 240 Xmit Packet Size: 240

String Value: RS507-IM20000STWR

String Value: 9243000502151

String Value: PAAACS00-004-N09

Getting log file, Please wait...

Finished getting log file.

Clear

Exit

Bluetooth Bar Codes

✓ **NOTE:** Bar codes marked with * Indicate default configuration.

Bluetooth Authentication Control

Bluetooth Authentication

The Bluetooth Authentication parameter enables/disables Bluetooth authentication connection.

Disable



*Enable



Bluetooth Automatic Reconnection Control

Bluetooth Auto Reconnection

The Bluetooth Auto Reconnection parameter sets Bluetooth automatic reconnection when unexpected Bluetooth disconnection occurs.

*None



On power up



On out of range



Both on power up or out of range



Reconnect Attempts Timeout

The Reconnect Attempts parameter defines the auto reconnect attempt time duration after Bluetooth disconnection.

*30 seconds



35 seconds



40 seconds



45 seconds



50 seconds



55 seconds



60 seconds



Force Pairing Save

The Force Pairing Save parameter enables/disables saving the remote Bluetooth address after each Bluetooth connection attempt.

When this parameter is disabled, the Bluetooth address is saved only after a successful Bluetooth connection. If the Bluetooth connection fails, the Bluetooth address is not saved.



NOTE: This parameter is effective when the RS507 connects as Master.

Disable



*Enable



Bell Indication Control

BELL Indication (SPP mode only)

The BELL Indication parameter configures the beep tone sequence of the bell indication when a bell character is received. This feature is valid only in SPP mode for PC connection.

*Disable



Enable



GP_1_HI_SHORT



GP_2_HI_SHORT



GP_3_HI_SHORT



GP_4_HI_SHORT



GP_5_HI_SHORT



GP_1_LO_SHORT



GP_2_LO_SHORT



GP_3_LO_SHORT



GP_4_LO_SHORT



GP_5_LO_SHORT



GP_1_HI_LONG



GP_2_HI_LONG



GP_3_HI_LONG



GP_4_HI_LONG



GP_5_HI_LONG



GP_1_LO_LONG



GP_2_LO_LONG



GP_3_LO_LONG



GP_4_LO_LONG



GP_5_LO_LONG



GP_FAST_WARBLE



GP_SLOW_WARBLE



GP_HI_LO



GP_LO_HI



GP_HI_LO_HI



GP_LO_HI_LO



GP_HI_HI_LO_LO



APP_ERROR_BEEP



APP_CLICK



LOW_CLICK

**Bluetooth HID Country Keyboard Types (Country Codes)**

Scan the bar code corresponding to the keyboard type.



***North American Standard Keyboards**



French Windows



German Windows



French Canadian Windows 98



Spanish Windows



Italian Windows



Swedish Windows



UK English Windows



Japanese Windows



French Canadian Windows 2000/XP



Portuguese/Brazilian Windows

Bluetooth Profile Control

To configure the RS507 to a Bluetooth Connection Mode:

1. Scan the required profile bar code (see the following bar codes).
2. Perform a cold boot by removing and re-installing the battery onto the RS507. The RS507 starts to operate and is also discoverable as a keyboard (HID) or serial device (SPP).

SPP bar code



HID bar code



Scan bar code



Bluetooth Pairing Control

Remove Bluetooth Connection

Remove the Bluetooth connection to allow the RS507 to connect to another PC or before switching the RS507 to a different connection profile.

To remove the Bluetooth connection, scan an un-pairing bar code to disconnect the RS507 from the PC.

Un-pairing bar code Label



The RS507 emits one string of high/low beeps indicating that Bluetooth communication with the PC is removed.

Another way to remove a Bluetooth connection is removing and re-installing the RS507 battery.

Specifications

Technical Specifications

Imager

Table 15 Imager Technical Specifications

Item	Description
Physical Characteristics	
Dimensions (H x W x L):	Triggerless, standard battery: 2.9 x 5.3 x 7.4 cm/1.16 x 2.1 x 2.92 in. Triggerless, extended battery: 3.6 x 5.3 x 7.4 cm/1.42 x 2.1 x 2.92 in. Triggered, standard battery: 2.9 x 5.3 x 7.4 cm /1.16 x 2.1 x 2.92 in. Triggered, corded (cord length not included): 3.3 x 5.3 x 7.4 cm/1.3 x 2.1 x 2.92 in.
Weight:	Triggerless, standard battery: 121.4 g/4.3 oz. Triggerless, extended battery: 146.4 g/5.2 oz. Triggered, standard battery: 134.8 g/4.8 oz. Triggered, corded: 140.8 g/5.0 oz.
Performance Characteristics	
Optical Resolution:	WVGA 752 H x 480 V pixels (gray scale)
Roll:	360°
Pitch Angle:	± 60° from normal
Skew Tolerance:	± 60° from normal
Aiming Element:	655 nm ± 10 nm Visible Laser Diode
Illumination Element	25 nm ± 5 nm Red LEDs
Field of View:	Horizontal: 39.6°; Vertical: 25.7°

Item	Description
Nominal Working Distance from exit window:	Density: 5 mil 7.5 mil 20 mil 13 mil 1D Code Type: 39 39 39 UPC Near: 2 inches 1.5 inches Far: 7.4 inches 10.5 inches 24.6 inches 15.4 inches Density: 6.67 mil 10 mil 15 mil 2D Code Type: PDF417 PDF417 PDF417 Near: 3.3 inches Far: 7.0 inches 10 inches ¹ 4.6 inches
Ambient Light Immunity:	From total darkness Indoor: 450 ft. candles (4,845 lux). Outdoor: 9,000 ft. candles (96,900 lux).
Motion Tolerance:	63.5 cm (25 inches) per second, typical.
Supported Symbologies	1D enabled by default: Codabar, Code 39, Code 128, EAN-13, EAN-8, Interleaved 2 of 5, UPC-A and UPC-E. 1D disabled by default: Code 11, Code 32 Pharmaceutical (PARAF), Code 93, MSI, Reduced Space Symbology (RSS-14, RSS Limited, RSS Expanded), Straight 2 of 5 IATA (two-bar start/stop), Straight 2 of 5 Industrial (three-bar start/stop), Trioptic, UPC-E1. 2D enabled by default: 4-CB (4-State Customer Bar code), Aztec, MicroPDF417, PDF417, MaxiCode. 2D disabled by default: Australian Post, British Post (4 state code and "infomail"), Data Matrix, Japanese Post, KIX (Netherlands) Post, Planet Code, Postnet, QR Code, EAN•UCC Composite, TCIF Linked Code 39 (TLC39).
Supported Aiming Modes:	Class 2 Laser, cross hair with bright center for sunlight visibility; Pick List mode option.
Interface:	Cordless: Bluetooth: Class II, v 2.1 with Adaptive Frequency Hopping (AFH). Supported profiles: Serial Port Profile (SPP), Human Interface Device Profile (HID), Service Discovery Application Profile (SDAP). Pairing: by reading terminal Bluetooth address as bar code off the display or from a printed label. Corded (to WT4090): Serial.

Item	Description
Field Replaceable Parts:	Batteries, corded adaptor, trigger clamp, triggerless clamp, comfort pad, straps and strap buckle.
User Interface	
LED:	Two (parallel), multi color, rear left and rear right.
Beeper:	Rear center, up to 80 dBA SPL @ 10 cm.
Restore Key:	User accessible for emergency boot up and Bluetooth reconnect (after excessive disconnection period).
Scan Triggering:	Manual or automatic using Interactive Sensing Technology (IST).
User Environment	
Operating Temperature:	-20° to 55° C/-4° to 131° F.
Storage Temperature:	-40° to 70° C/-40° to 158° F excl. Battery -40° to 60° C/-40° to 140° F incl. Battery
Humidity:	5% to 85% (non-condensing).
Drop Specification:	6 ft./1.8 m multiple drops to concrete across operating temperature range.
Sealing:	IP54
Electrostatic Discharge (ESD):	±15kV air discharge, ±8kV direct discharge.
Power	
Cordless:	Standard battery: Li-Ion 970 mAh, 3.7 V with up to 35,000 scans (continuous) or up to 10 hours with 900 scans per hour on a single charge using fresh batteries. Extended battery: Li-Ion 1940 mAh, 3.7 V with up to 70,000 scans (continuous) or up to 20 hours with 900 scans per hour on a single charge using fresh batteries.
Corded:	Corded adaptor to WT4090
Software Compatibility	
	Zebra Services Platform (MSP); DataWedge; Wavelink's Terminal Emulation (TE), among others.
Peripherals and Accessories	
Battery charger:	Charger accommodates eight standard and extended batteries simultaneously each with LED indicator and battery age test.
Regulatory	
Electrical Safety:	Certified to UL60950-1, CSA C22.2 No. 60950-1, EN60950-1, IEC 60950-1.
Laser Safety:	CDRH Class II, IEC 60825-1 Class 2.

Item	Description
EMI/RFI:	FCC Part 15 Class B, ICES-003 Class B, European Union EMC and R&TT. Directives, Australian AS/NZS 60950.1.
RoHS:	Compliance with RoHS standards.

Charger

Table 16 Imager Technical Specifications

Item	Description
Physical Characteristics	
Dimensions (H x W x L):	10.2 x 11.4 x 26.6 cm (4.02 x 4.49 x 10.50 in.) without cord and external power supply.
Performance Characteristics	
Charging Duration:	Less than 4 hours (for both standard and extended capacity batteries).
User Interface	
LED:	One Bi color LED per charging bay.
Age Test Key	Activate age test cycle for docked batteries.
User Environment	
Operating Temperature:	0° to 50° C/32° to 122° F (charging is performed until battery temperature is 45° C/113° F)
Storage Temperature:	-40° to 85° C/-40° to 158° F
Humidity:	5% to 85% (non-condensing)
Electrostatic Discharge (ESD):	±15kV air discharge, ±8kV direct discharge.
Power	
External Power Supply:	AC Input: 90-264 V AC 50-60 Hz with IEC320 C8 AC inlet DC Output: 12 V/4.17A
Peripherals and Accessories	
RS507 Batteries:	Charges and tests both standard and extended capacity RS507 batteries.
Regulatory	
Electrical Safety:	Certified to UL60950-1, CSA C22.2 No. 60950-1, EN60950-1, IEC 60950-1
EMI/RFI:	FCC Part 15 Class B, ICES-003 Class B
RoHS:	Compliance with RoHS standards.

Standard Default Parameters

Standard Default Parameters Table

Table 17 Standard Default Parameters Table

Parameter	Parameter Number	Default	Page Number
User Preferences			
Set Default Parameter		Set Defaults	<Blue><Italic>9-72
Parameter Bar Code Scanning	ECh	Enabled	<Blue><Italic>9-73
Beep After Good Decode	38h	Enabled	<Blue><Italic>9-74
Beeper Tone	91h	Medium	<Blue><Italic>9-75
Beeper Volume	8Ch	High	<Blue><Italic>9-76
Picklist Mode	F0h 92h	Disabled	<Blue><Italic>9-78
Fuzzy 1D Processing	F1h 02h	Enabled	<Blue><Italic>9-79
Decoding Illumination	F0h, 2Ah	Enabled	<Blue><Italic>9-80
UPC/EAN			
UPC-A	01h	Enabled	<Blue><Italic>10-99
UPC-E	02h	Enabled	<Blue><Italic>10-99
UPC-E1	0Ch	Disabled	<Blue><Italic>10-99

Table 17 Standard Default Parameters Table (Continued)

Parameter	Parameter Number	Default	Page Number
EAN-8/JAN 8	04h	Enabled	<Blue><Italic>10-100
EAN-13/JAN 13	03h	Enabled	<Blue><Italic>10-101
Bookland EAN	53h	Disabled	<Blue><Italic>10-101
Decode UPC/EAN/JAN Supplementals (2 and 5 digits)	10h	Ignore	<Blue><Italic>10-102
User-Programmable Supplementals Supplemental 1: Supplemental 2:	F1h 43h F1h 44h		<Blue><Italic>10-105
UPC/EAN/JAN Supplemental Redundancy	50h	10	<Blue><Italic>10-105
Decode UPC/EAN/JAN Supplemental AIM ID	F1h A0h	Combined	<Blue><Italic>10-106
Transmit UPC-A Check Digit	28h	Enabled	<Blue><Italic>10-106
Transmit UPC-E Check Digit	29h	Enabled	<Blue><Italic>10-107
Transmit UPC-E1 Check Digit	2Ah	Enabled	<Blue><Italic>10-107
UPC-A Preamble	22h	System Character	<Blue><Italic>10-107
UPC-E Preamble	23h	System Character	<Blue><Italic>10-108
UPC-E1 Preamble	24h	System Character	<Blue><Italic>10-109
Convert UPC-E to A	25h	Disabled	<Blue><Italic>10-110
Convert UPC-E1 to A	26h	Disabled	<Blue><Italic>10-111
EAN-8/JAN-8 Extend	27h	Disabled	<Blue><Italic>10-114
Bookland ISBN Format	F1h 40h	ISBN-10	<Blue><Italic>10-113
UCC Coupon Extended Code	55h	Enabled	<Blue><Italic>10-114
ISSN EAN	F1h 69h	Disabled	<Blue><Italic>10-114

Table 17 Standard Default Parameters Table (Continued)

Parameter	Parameter Number	Default	Page Number
Code 128			
Code 128	08h	Enabled	<Blue><Italic>10-115
Set Length(s) for Code 128	D1h D2h	Any Length	<Blue><Italic>10-115
GS1-128	0Eh	Enabled	<Blue><Italic>10-116
ISBT 128	54h	Enabled	<Blue><Italic>10-117
ISBT Concatenation	F1h 41h	Disabled	<Blue><Italic>10-118
Check ISBT Table	F1h 42h	Enabled	<Blue><Italic>10-119
ISBT Concatenation Redundancy	DFh	10	<Blue><Italic>10-119
Code 39			
Code 39	00h	Enabled	<Blue><Italic>10-120
Trioptic Code 39	0Dh	Disabled	<Blue><Italic>10-120
Convert Code 39 to Code 32 (Italian Pharmacy Code)	56h	Disabled	<Blue><Italic>10-121
Code 32 Prefix	E7h	Disabled	<Blue><Italic>10-121
Set Length(s) for Code 39	12h 13h	2 to 55	<Blue><Italic>10-122
Code 39 Check Digit Verification	30h	Disabled	<Blue><Italic>10-123
Transmit Code 39 Check Digit	2Bh	Disabled	<Blue><Italic>10-123
Code 39 Full ASCII Conversion	11h	Disabled	<Blue><Italic>10-124
Buffer Code 39	71h	Disabled	<Blue><Italic>10-124
Code 93			
Code 93	09h	Disabled	<Blue><Italic>10-127

Table 17 Standard Default Parameters Table (Continued)

Parameter	Parameter Number	Default	Page Number
Set Length(s) for Code 93	1Ah 1Bh	4 to 55	<Blue><Italic>10-127
Code 11			
Code 11	0Ah	Disabled	<Blue><Italic>10-129
Set Lengths for Code 11	1Ch 1Dh	4 to 55	<Blue><Italic>10-129
Code 11 Check Digit Verification	34h	Disabled	<Blue><Italic>10-130
Transmit Code 11 Check Digit(s)	2Fh	Disabled	<Blue><Italic>10-132
Interleaved 2 of 5 (ITF)			
Interleaved 2 of 5 (ITF)	06h	Disabled	<Blue><Italic>10-132
Set Lengths for I 2 of 5	16h 17h	14	<Blue><Italic>10-133
I 2 of 5 Check Digit Verification	31h	Disabled	<Blue><Italic>10-135
Transmit I 2 of 5 Check Digit	2Ch	Disabled	<Blue><Italic>10-135
Convert I 2 of 5 to EAN 13	52h	Disabled	<Blue><Italic>10-136
Discrete 2 of 5 (DTF)			
Discrete 2 of 5	05h	Disabled	<Blue><Italic>10-136
Set Length(s) for D 2 of 5	14h 15h	12	<Blue><Italic>10-137
Codabar (NW - 7)			
Codabar	07h	Disabled	<Blue><Italic>10-139
Set Lengths for Codabar	18h 19h	5 to 55	<Blue><Italic>10-139
CLSI Editing	36h	Disabled	<Blue><Italic>10-140
NOTIS Editing	37h	Disabled	<Blue><Italic>10-141

Table 17 Standard Default Parameters Table (Continued)

Parameter	Parameter Number	Default	Page Number
MSI			
MSI	0Bh	Disabled	<Blue><Italic>10-142
Set Length(s) for MSI	1Eh 1Fh	4 to 55	<Blue><Italic>10-142
MSI Check Digits	32h	One	<Blue><Italic>10-143
Transmit MSI Check Digit	2Eh	Disabled	<Blue><Italic>10-144
MSI Check Digit Algorithm	33h	Mod 10/Mod 10	<Blue><Italic>10-145
Chinese 2 of 5			
Chinese 2 of 5	F0h 98h	Disabled	<Blue><Italic>10-145
Matrix 2 of 5			
Matrix 2 of 5	F1h 6Ah	Disable	<Blue><Italic>10-146
Matrix 2 of 5 Lengths	F1h 6Bh F1h 6Ch	1 Length - 14	<Blue><Italic>10-147
Matrix 2 of 5 Redundancy	F1h 6Dh	Disabled	<Blue><Italic>10-148
Matrix 2 of 5 Check Digit	F1h 6Eh	Disabled	<Blue><Italic>10-149
Transmit Matrix 2 of 5 Check Digit	F1h 6Fh	Disabled	<Blue><Italic>10-149
Inverse 1D	F1h 4Ah	Regular	<Blue><Italic>10-149
Postal Codes			
US Postnet	59h	Disabled	<Blue><Italic>10-150
US Planet	5Ah	Disabled	<Blue><Italic>10-151
Transmit US Postal Check Digit	5Fh	Enabled	<Blue><Italic>10-151
UK Postal	5Bh	Disabled	<Blue><Italic>10-152
Transmit UK Postal Check Digit	60h	Enabled	<Blue><Italic>10-152

Table 17 Standard Default Parameters Table (Continued)

Parameter	Parameter Number	Default	Page Number
Japan Postal	F0h 22h	Disabled	<Blue><Italic>10-153
Australian Postal	F0h 23h	Disabled	<Blue><Italic>10-154
Netherlands KIX Code	F0h 46h	Disabled	<Blue><Italic>10-154
USPS 4CB/One Code/Intelligent Mail	F1h 50h	Disabled	<Blue><Italic>10-155
UPU FICS Postal	F1h 63h	Disabled	<Blue><Italic>10-155
GS1 DataBar			
GS1 DataBar-14	F0h 52h	Disabled	<Blue><Italic>10-156
GS1 DataBar Limited	F0h 53h	Disabled	<Blue><Italic>10-156
GS1 DataBar Expanded	F0h 54h	Disabled	<Blue><Italic>10-157
Convert GS1 DataBar to UPC/EAN	F0h 8Dh	Disabled	<Blue><Italic>10-157
Composite			
Composite CC-C	F0h 55h	Disabled	<Blue><Italic>10-158
Composite CC-A/B	F0h 56h	Disabled	<Blue><Italic>10-158
Composite TLC-39	F0h 73h	Disabled	<Blue><Italic>10-159
UPC Composite Mode	F0h 58h	Never Linked	<Blue><Italic>10-159
Composite Beep Mode	F0h 8Eh	Beep As Each Code Type is Decoded	<Blue><Italic>10-160
GS1-128 Emulation Mode for UCC/EAN Composite Codes	F0h ABh	Disabled	<Blue><Italic>10-160
2D Symbolologies			
PDF417	0Fh	Enabled	<Blue><Italic>10-161
MicroPDF417	E3h	Disabled	<Blue><Italic>10-161
Code 128 Emulation	7Bh	Disabled	<Blue><Italic>10-161

Table 17 Standard Default Parameters Table (Continued)

Parameter	Parameter Number	Default	Page Number
Data Matrix	F0h 24h	Enabled	<Blue><Italic>10-163
Data Matrix Inverse	F1h 4Ch	Regular	<Blue><Italic>10-163
Maxicode	F0h 26h	Disabled	<Blue><Italic>10-164
QR Code	F0h 25h	Enabled	<Blue><Italic>10-164
QR Inverse	F1h 4Bh	Regular	<Blue><Italic>10-165
MicroQR	F1h 3Dh	Enabled	<Blue><Italic>10-165
Aztec	F1h 3Eh	Enabled	<Blue><Italic>10-166
Aztec Inverse	F1h 4Dh	Regular	<Blue><Italic>10-166
Symbology-Specific Security Levels			
Redundancy Level	4Eh	1	<Blue><Italic>10-167
Security Level	4Dh	0	<Blue><Italic>10-168
Intercharacter Gap Size	F0h 7Dh	Normal	<Blue><Italic>10-169
Report Version			<Blue><Italic>10-170
Macro PDF			
Flush Macro PDF Buffer			<Blue><Italic>10-171
Abort Macro PDF Entry			<Blue><Italic>10-171

Programming Reference

Symbol Code Identifiers

Table 18 Symbol Code Characters

Code Character	Code Type
A	UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13
B	Code 39, Code 32
C	Codabar
D	Code 128
E	Code 93
F	Interleaved 2 of 5
G	Discrete 2 of 5, or Discrete 2 of 5 IATA
H	Code 11
J	MSI
K	GS1-128
L	Bookland EAN
M	Trioptic Code 39
N	Coupon Code
R	GS1 DataBar Family
T	UCC Composite, TLC 39
X	PDF417, Macro PDF417, Micro PDF417
z	Aztec, Aztec Rune
P00	Data Matrix
P01	QR Code, MicroQR
P02	Maxicode
P03	US Postnet

Table 18 Symbol Code Characters (Continued)

Code Character	Code Type
P04	US Planet
P05	Japan Postal
P06	UK Postal
P08	Netherlands KIX Code
P09	Australian Postal
P0A	USPS 4CB/One Code/Intelligent Mail
P0B	UPU FICS Postal

AIM Code Identifiers

Each AIM Code Identifier contains the three-character string **jcm** where:

- j = Flag Character (ASCII 93)
- c = Code Character (see [Table 19](#))
- m = Modifier Character (see [Table 20](#))

Table 19 Aim Code Characters

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, Coupon (Code 128 portion)
d	Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	GS1 DataBar Family
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 2 of 5
L	PDF417, Macro PDF417, Micro PDF417
M	MSI
Q	QR Code, MicroQR
S	Discrete 2 of 5, IATA 2 of 5
U	Maxicode

Table 19 Aim Code Characters (Continued)

Code Character	Code Type
z	Aztec, Aztec Rune
X	Bookland EAN, Trioptic Code 39, US Postnet, US Planet, UK Postal, Japan Postal, Australian Postal, Netherlands KIX Code, USPS 4CB/One Code/Intelligent Mail, UPU FICS Postal

The modifier character is the sum of the applicable option values based on [Table 20](#).

Table 20 Modifier Characters

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII bar code with check character W, A+I+MI+DW , is transmitted as J A7 AIMID where 7 = (3+4).	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic bar code 412356 is transmitted as J X0 412356	
Code 128	0	Standard data packet, no Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
	Example: A Code (EAN) 128 bar code with Function 1 character ^{FNC1} in the first position, AIMID is transmitted as J C1 AIMID	
I 2 of 5	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
	Example: An I 2 of 5 bar code without check digit, 4123, is transmitted as J I0 4123	
Codabar	0	No check digit processing.
	1	Reader has checked check digit.
	3	Reader has stripped check digit before transmission.
	Example: A Codabar bar code without check digit, 4123, is transmitted as J F0 4123	
Code 93	0	No options specified at this time. Always transmit 0.
	Example: A Code 93 bar code 012345678905 is transmitted as J G00 12345678905	

Table 20 Modifier Characters (Continued)

Code Type	Option Value	Option
MSI	0	Check digits are sent.
	1	No check digit is sent.
	Example: An MSI bar code 4123, with a single check digit checked, is transmitted as JM14123	
D 2 of 5	0	No options specified at this time. Always transmit 0.
	Example: A D 2 of 5 bar code 4123, is transmitted as JS04123	
UPC/EAN	0	Standard data packet in full EAN format, i.e. 13 digits for UPC-A, UPC-E, and EAN-13 (not including supplemental data).
	1	Two digit supplemental data only.
	2	Five digit supplemental data only.
	3	Combined data packet comprising 13 digits from EAN-13, UPC-A or UPC-E symbol and 2 or 5 digits from supplemental symbol.
	4	EAN-8 data packet.
	Example: A UPC-A bar code 012345678905 is transmitted as JE00012345678905	
Bookland EAN	0	No options specified at this time. Always transmit 0.
	Example: A Bookland EAN bar code 123456789X is transmitted as JX0123456789X	
Code 11	0	Single check digit
	1	Two check digits
	3	Check characters validated but not transmitted.
GS1 DataBar Family		No option specified at this time. Always transmit 0. GS1 DataBar-14 and GS1 DataBar Limited transmit with an Application Identifier "01". Note: In GS1-128 emulation mode, GS1 DataBar is transmitted using Code 128 rules (i.e., JC1).
	Example: A GS1 DataBar-14 bar code 100123456788902 is transmitted as Je001100123456788902 .	

Table 20 Modifier Characters (Continued)

Code Type	Option Value	Option
EAN.UCC Composites (GS1 DataBar, GS1-128, 2D portion of UPC composite)		Native mode transmission. Note: UPC portion of composite is transmitted using UPC rules.
	0	Standard data packet.
	1	Data packet containing the data following an encoded symbol separator character.
	2	Data packet containing the data following an escape mechanism character. The data packet does not support the ECI protocol.
	3	Data packet containing the data following an escape mechanism character. The data packet supports the ECI protocol.
		GS1-128 emulation Note: UPC portion of composite is transmitted using UPC rules.
	1	Data packet is a GS1-128 symbol (i.e., data is preceded with]JC1).
PDF417, Micro PDF417	0	Reader set to conform to protocol defined in 1994 PDF417 symbology specifications. Note: When this option is transmitted, the receiver cannot reliably determine whether ECIs have been invoked or whether data byte 92 _{DEC} has been doubled in transmission.
	1	Reader set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92 _{DEC} are doubled.
	2	Reader set for Basic Channel operation (no escape character transmission protocol). Data characters 92 _{DEC} are not doubled. Note: When decoders are set to this mode, unbuffered Macro symbols and symbols requiring the decoder to convey ECI escape sequences cannot be transmitted.
	3	The bar code contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The bar code contains a GS1-128 symbol, and the first codeword is in the range 908-909.
	5	The bar code contains a GS1-128 symbol, and the first codeword is in the range 910-911.
		Example: A PDF417 bar code ABCD, with no transmission protocol enabled, is transmitted as]L2ABCD.
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.

Table 20 Modifier Characters (Continued)

Code Type	Option Value	Option
MaxiCode	0	Symbol in Mode 4 or 5.
	1	Symbol in Mode 2 or 3.
	2	Symbol in Mode 4 or 5, ECI protocol implemented.
	3	Symbol in Mode 2 or 3, ECI protocol implemented in secondary message.
QR Code	0	Model 1 symbol.
	1	Model 2 / MicroQR symbol, ECI protocol not implemented.
	2	Model 2 symbol, ECI protocol implemented.
	3	Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.
	4	Model 2 symbol, ECI protocol implemented, FNC1 implied in first position.
	5	Model 2 symbol, ECI protocol not implemented, FNC1 implied in second position.
	6	Model 2 symbol, ECI protocol implemented, FNC1 implied in second position.
Aztec	0	Aztec symbol.
	C	Aztec Rune symbol.

Sample Bar Codes

Code 39



UPC/EAN

UPC-A, 100%



EAN-13, 100%

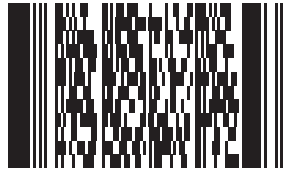
Code 128

Interleaved 2 of 5

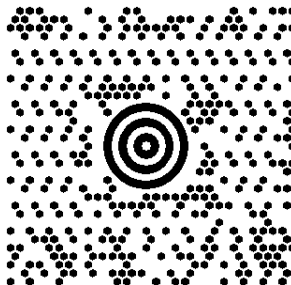
GS1 DataBar-14

NOTE: DataBar-14 must be enabled to read the bar code below.



PDF417

Data Matrix

Maxicode

QR Code

US Postnet

UK Postal

Numeric Bar Codes

Numeric Bar Codes

For parameters requiring specific numeric values, scan the appropriately numbered bar code(s).



0



1



2



3



4

Numeric Bar Codes (continued)



Cancel

To correct an error or change a selection, scan the bar code below.



Glossary

A

Aperture. The opening in an optical system defined by a lens or baffle that establishes the field of view.

API. An interface by means of which one software component communicates with or controls another. Usually used to refer to services provided by one software component to another, usually via software interrupts or function calls

Application Programming Interface. See **API**.

ASCII. American Standard Code for Information Interchange. A 7 bit-plus-parity code representing 128 letters, numerals, punctuation marks and control characters. It is a standard data transmission code in the U.S.

Autodiscrimination. The ability of an interface controller to determine the code type of a scanned bar code. After this determination is made, the information content is decoded.

B

Bar. The dark element in a printed bar code symbol.

Bar Code. A pattern of variable-width bars and spaces which represents numeric or alphanumeric data in machine-readable form. The general format of a bar code symbol consists of a leading margin, start character, data or message character, check character (if any), stop character, and trailing margin. Within this framework, each recognizable symbology uses its own unique format. See **Symbology**.

Bar Code Density. The number of characters represented per unit of measurement (e.g., characters per inch).

Bar Height. The dimension of a bar measured perpendicular to the bar width.

Bar Width. Thickness of a bar measured from the edge closest to the symbol start character to the trailing edge of the same bar.

BIOS. Basic Input Output System. A collection of ROM-based code with a standard API used to interface with standard PC hardware.

Bit. Binary digit. One bit is the basic unit of binary information. Generally, eight consecutive bits compose one byte of data. The pattern of 0 and 1 values within the byte determines its meaning.

Bits per Second (bps). Bits transmitted or received.

Boot or Boot-up. The process a computer goes through when it starts. During boot-up, the computer can run self-diagnostic tests and configure hardware and software.

BOOTP. A protocol for remote booting of diskless devices. Assigns an IP address to a machine and may specify a boot file. The client sends a bootp request as a broadcast to the bootp server port (67) and the bootp server responds using the bootp client port (68). The bootp server must have a table of all devices, associated MAC addresses and IP addresses.

bps. See **Bits Per Second**.

Byte. On an addressable boundary, eight adjacent binary digits (0 and 1) combined in a pattern to represent a specific character or numeric value. Bits are numbered from the right, 0 through 7, with bit 0 the low-order bit. One byte in memory is used to store one ASCII character.

C

CDRH. Center for Devices and Radiological Health. A federal agency responsible for regulating laser product safety. This agency specifies various laser operation classes based on power output during operation.

CDRH Class 1. This is the lowest power CDRH laser classification. This class is considered intrinsically safe, even if all laser output were directed into the eye's pupil. There are no special operating procedures for this class.

CDRH Class 2. No additional software mechanisms are needed to conform to this limit. Laser operation in this class poses no danger for unintentional direct human exposure.

Character. A pattern of bars and spaces which either directly represents data or indicates a control function, such as a number, letter, punctuation mark, or communications control contained in a message.

Character Set. Those characters available for encoding in a particular bar code symbology.

Check Digit. A digit used to verify a correct symbol decode. The scanner inserts the decoded data into an arithmetic formula and checks that the resulting number matches the encoded check digit. Check digits are required for UPC but are optional for other symbologies. Using check digits decreases the chance of substitution errors when a symbol is decoded.

Codabar. A discrete self-checking code with a character set consisting of digits 0 to 9 and six additional characters: (- \$: / , +).

Code 128. A high density symbology which allows the controller to encode all 128 ASCII characters without adding extra symbol elements.

Code 3 of 9 (Code 39). A versatile and widely used alphanumeric bar code symbology with a set of 43 character types, including all uppercase letters, numerals from 0 to 9 and 7 special characters (- . / + % \$ and space). The code name is derived from the fact that 3 of 9 elements representing a character are wide, while the remaining 6 are narrow.

Code 93. An industrial symbology compatible with Code 39 but offering a full character ASCII set and a higher coding density than Code 39.

Code Length. Number of data characters in a bar code between the start and stop characters, not including those characters.

Cold Boot. A cold boot restarts the mobile computer and erases all user stored records and entries.

COM port. Communication port; ports are identified by number, e.g., COM1, COM2.

Continuous Code. A bar code or symbol in which all spaces within the symbol are parts of characters. There are no intercharacter gaps in a continuous code. The absence of gaps allows for greater information density.

Cradle. A cradle is used for charging the terminal battery and for communicating with a host computer, and provides a storage place for the terminal when not in use.

D

Dead Zone. An area within a scanner's field of view, in which specular reflection may prevent a successful decode.

Decode. To recognize a bar code symbology (e.g., UPC/EAN) and then analyze the content of the specific bar code scanned.

Decode Algorithm. A decoding scheme that converts pulse widths into data representation of the letters or numbers encoded within a bar code symbol.

Decryption. Decryption is the decoding and unscrambling of received encrypted data. Also see, **Encryption** and **Key**.

Depth of Field. The range between minimum and maximum distances at which a scanner can read a symbol with a certain minimum element width.

Discrete 2 of 5. A binary bar code symbology representing each character by a group of five bars, two of which are wide. The location of wide bars in the group determines which character is encoded; spaces are insignificant. Only numeric characters (0 to 9) and START/STOP characters may be encoded.

Discrete Code. A bar code or symbol in which the spaces between characters (intercharacter gaps) are not part of the code.

DRAM. Dynamic random access memory.

E

EAN. European Article Number. This European/International version of the UPC provides its own coding format and symbology standards. Element dimensions are specified metrically. EAN is used primarily in retail.

Element. Generic term for a bar or space.

Encoded Area. Total linear dimension occupied by all characters of a code pattern, including start/stop characters and data.

ENQ (RS-232). ENQ software handshaking is also supported for the data sent to the host.

ESD. Electro-Static Discharge

F

Flash Disk. An additional megabyte of non-volatile memory for storing application and configuration files.

Flash Memory. Flash memory is responsible for storing the system firmware and is non-volatile. If the system power is interrupted the data is not be lost.

FTP. See **File Transfer Protocol**.

H

Hard Reset. See **Cold Boot**.

Host Computer. A computer that serves other terminals in a network, providing such services as computation, database access, supervisory programs and network control.

Hz. Hertz; A unit of frequency equal to one cycle per second.

I

IDE. Intelligent drive electronics. Refers to the solid-state hard drive type.

IEC. International Electrotechnical Commission. This international agency regulates laser safety by specifying various laser operation classes based on power output during operation.

IEC (825) Class 1. This is the lowest power IEC laser classification. Conformity is ensured through a software restriction of 120 seconds of laser operation within any 1000 second window and an automatic laser shutdown if the scanner's oscillating mirror fails.

IEEE Address. See **MAC Address**.

Input/Output Ports. I/O ports are primarily dedicated to passing information into or out of the terminal's memory. Series 9000 mobile computers include Serial and USB ports.

Intercharacter Gap. The space between two adjacent bar code characters in a discrete code.

Interleaved 2 of 5. A binary bar code symbology representing character pairs in groups of five bars and five interleaved spaces. Interleaving provides for greater information density. The location of wide elements (bar/spaces) within each group determines which characters are encoded. This continuous code type uses no intercharacter spaces. Only numeric (0 to 9) and START/STOP characters may be encoded.

Interleaved Bar Code. A bar code in which characters are paired together, using bars to represent the first character and the intervening spaces to represent the second.

Interleaved 2 of 5. A binary bar code symbology representing character pairs in groups of five bars and five interleaved spaces. Interleaving provides for greater information density. The location of wide elements (bar/spaces) within each group determines which characters are encoded. This continuous code type uses no intercharacter spaces. Only numeric (0 to 9) and START/STOP characters may be encoded.

I/O Ports. interface The connection between two devices, defined by common physical characteristics, signal characteristics, and signal meanings. Types of interfaces include RS-232 and PCMCIA.

IOCTL. Input/Output Control.

IP Address. (Internet Protocol address) The address of a computer attached to an IP network. Every client and server station must have a unique IP address. A 32-bit address used by a computer on a IP network. Client workstations have either a permanent address or one that is dynamically assigned to them each session. IP addresses are written as four sets of numbers separated by periods; for example, 204.171.64.2.

IPX/SPX. Internet Package Exchange/Sequential Packet Exchange. A communications protocol for Novell. IPX is Novell's Layer 3 protocol, similar to XNS and IP, and used in NetWare networks. SPX is Novell's version of the Xerox SPP protocol.

IS-95. Interim Standard 95. The EIA/TIA standard that governs the operation of CDMA cellular service. Versions include IS-95A and IS-95B. See CDMA.

K

Key. A key is the specific code used by the algorithm to encrypt or decrypt the data. Also see, **Encryption** and **Decrypting**.

L

LASER. Light Amplification by Stimulated Emission of Radiation. The laser is an intense light source. Light from a laser is all the same frequency, unlike the output of an incandescent bulb. Laser light is typically coherent and has a high energy density.

Laser Diode. A gallium-arsenide semiconductor type of laser connected to a power source to generate a laser beam. This laser type is a compact source of coherent light.

Laser Scanner. A type of bar code reader that uses a beam of laser light.

LCD. See **Liquid Crystal Display**.

LED Indicator. A semiconductor diode (LED - Light Emitting Diode) used as an indicator, often in digital displays. The semiconductor uses applied voltage to produce light of a certain frequency determined by the semiconductor's particular chemical composition.

Light Emitting Diode. See **LED**.

Liquid Crystal Display (LCD). A display that uses liquid crystal sealed between two glass plates. The crystals are excited by precise electrical charges, causing them to reflect light outside according to their bias. They use little electricity and react relatively quickly. They require external light to reflect their information to the user.

M

MIL. 1 mil = 1 thousandth of an inch.

Misread (Misdecode). A condition which occurs when the data output of a reader or interface controller does not agree with the data encoded within a bar code symbol.

N

Nominal. The exact (or ideal) intended value for a specified parameter. Tolerances are specified as positive and negative deviations from this value.

Nominal Size. Standard size for a bar code symbol. Most UPC/EAN codes are used over a range of magnifications (e.g., from 0.80 to 2.00 of nominal).

NVM. Non-Volatile Memory.

O

ODI. See **Open Data-Link Interface**.

Open Data-Link Interface (ODI). Novell's driver specification for an interface between network hardware and higher-level protocols. It supports multiple protocols on a single NIC (Network Interface Controller). It is capable of understanding and translating any network information or request sent by any other ODI-compatible protocol into something a NetWare client can understand and process.

Open System Authentication. Open System authentication is a null authentication algorithm.

P

PAN . Personal area network. Using Bluetooth wireless technology, PANs enable devices to communicate wirelessly. Generally, a wireless PAN consists of a dynamic group of less than 255 devices that communicate within about a 33-foot range. Only devices within this limited area typically participate in the network.

Parameter. A variable that can have different values assigned to it.

PC Card. A plug-in expansion card for laptop computers and other devices, also called a PCMCIA card. PC Cards are 85.6mm long x 54 mm wide, and have a 68 pin connector. There are several different kinds:

- Type I; 3.3 mm high; use - RAM or Flash RAM
- Type II; 5 mm high; use - modems, LAN adaptors
- Type III; 10.5 mm high; use - Hard Disks

PCMCIA. Personal Computer Memory Card Interface Association. See **PC Card**.

Percent Decode. The average probability that a single scan of a bar code would result in a successful decode. In a well-designed bar code scanning system, that probability should approach near 100%.

PING. (Packet Internet Groper) An Internet utility used to determine whether a particular IP address is online. It is used to test and debug a network by sending out a packet and waiting for a response.

Print Contrast Signal (PCS). Measurement of the contrast (brightness difference) between the bars and spaces of a symbol. A minimum PCS value is needed for a bar code symbol to be scannable. $PCS = (RL - RD) / RL$, where RL is the reflectance factor of the background and RD the reflectance factor of the dark bars.

Programming Mode. The state in which a scanner is configured for parameter values. See **Scanning Mode**.

Q

Quiet Zone. A clear space, containing no dark marks, which precedes the start character of a bar code symbol and follows the stop character.

QWERTY. A standard keyboard commonly used on North American and some European PC keyboards. "QWERTY" refers to the arrangement of keys on the left side of the third row of keys.

R

RAM. Random Access Memory. Data in RAM can be accessed in random order, and quickly written and read.

Reflectance. Amount of light returned from an illuminated surface.

Resolution. The narrowest element dimension which is distinguished by a particular reading device or printed with a particular device or method.

RF. Radio Frequency.

ROM. Read-Only Memory. Data stored in ROM cannot be changed or removed.

Router. A device that connects networks and supports the required protocols for packet filtering. Routers are typically used to extend the range of cabling and to organize the topology of a network into subnets. See **Subnet**.

RS-232. An Electronic Industries Association (EIA) standard that defines the connector, connector pins, and signals used to transfer data serially from one device to another.

S

Scan Area. Area intended to contain a symbol.

Scanner. An electronic device used to scan bar code symbols and produce a digitized pattern that corresponds to the bars and spaces of the symbol. Its three main components are: 1) Light source (laser or photoelectric cell) - illuminates a bar code;; 2) Photodetector - registers the difference in reflected light (more light reflected from spaces); 3) Signal conditioning circuit - transforms optical detector output into a digitized bar pattern.

Scanning Mode. The scanner is energized, programmed and ready to read a bar code.

Scanning Sequence. A method of programming or configuring parameters for a bar code reading system by scanning bar code menus.

SDK. Software Development Kit

Self-Checking Code. A symbology that uses a checking algorithm to detect encoding errors within the characters of a bar code symbol.

Shared Key. Shared Key authentication is an algorithm where both the AP and the MU share an authentication key.

SHIP. Symbol Host Interface Program.

SID. System Identification code. An identifier issued by the FCC for each market. It is also broadcast by the cellular carriers to allow cellular devices to distinguish between the home and roaming service.

Soft Reset. See **Warm Boot**.

Space. The lighter element of a bar code formed by the background between bars.

Specular Reflection. The mirror-like direct reflection of light from a surface, which can cause difficulty decoding a bar code.

Standard Trigger Mode. The Imager uses this mode when lifted off the counter or removed from the wall mount. In this mode, aim the Imager at a bar code and pull the trigger to decode.

Start/Stop Character. A pattern of bars and spaces that provides the scanner with start and stop reading instructions and scanning direction. The start and stop characters are normally to the left and right margins of a horizontal code.

STEP. Symbol Terminal Enabler Program.

Subnet. A subset of nodes on a network that are serviced by the same router. See **Router**.

Subnet Mask. A 32-bit number used to separate the network and host sections of an IP address. A custom subnet mask subdivides an IP network into smaller subsections. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets. Default is often 255.255.255.0.

Substrate. A foundation material on which a substance or image is placed.

SVTP. Symbol Virtual Terminal Program.

Symbol. A scannable unit that encodes data within the conventions of a certain symbology, usually including start/stop characters, quiet zones, data characters and check characters.

Symbol Aspect Ratio. The ratio of symbol height to symbol width.

Symbol Height. The distance between the outside edges of the quiet zones of the first row and the last row.

Symbol Length. Length of symbol measured from the beginning of the quiet zone (margin) adjacent to the start character to the end of the quiet zone (margin) adjacent to a stop character.

Symbology. The structural rules and conventions for representing data within a particular bar code type (e.g. UPC/EAN, Code 39, PDF417, etc.).

T

TCP/IP. (Transmission Control Protocol/Internet Protocol) A communications protocol used to internetwork dissimilar systems. This standard is the protocol of the Internet and has become the global standard for communications. TCP provides transport functions, which ensures that the total amount of bytes sent is received correctly at the other end. UDP is an alternate transport that does not guarantee delivery. It is widely used for real-time voice and video transmissions where erroneous packets are not retransmitted. IP provides the routing mechanism. TCP/IP is a routable protocol, which means that all messages contain not only the address of the destination station, but the address of a destination network. This allows TCP/IP messages to be sent to multiple networks within an organization or around the world, hence its use in the worldwide Internet. Every client and server in a TCP/IP network requires an IP address, which is either permanently assigned or dynamically assigned at startup.

Telnet. A terminal emulation protocol commonly used on the Internet and TCP/IP-based networks. It allows a user at a terminal or computer to log onto a remote device and run a program.

Terminal Emulation. A "terminal emulation" emulates a character-based mainframe session on a remote non-mainframe terminal, including all display features, commands and function keys. The VC5000 Series supports Terminal Emulations in 3270, 5250 and VT220.

Terminate and Stay Resident (TSR). A program under DOS that ends its foreground execution to remain resident in memory to service hardware/software interrupts, providing background operation. It remains in memory and may provide services on behalf of other DOS programs.

TFTP. (Trivial File Transfer Protocol) A version of the TCP/IP FTP (File Transfer Protocol) protocol that has no directory or password capability. It is the protocol used for upgrading firmware, downloading software and remote booting of diskless devices.

Tolerance. Allowable deviation from the nominal bar or space width.

Transmission Control Protocol/Internet Protocol. See **TCP/IP**.

Trivial File Transfer Protocol. See **TFTP**.

TSR. See **Terminate and Stay Resident**.

U

UDP. User Datagram Protocol. A protocol within the IP protocol suite that is used in place of TCP when a reliable delivery is not required. For example, UDP is used for real-time audio and video traffic where lost packets are

simply ignored, because there is no time to retransmit. If UDP is used and a reliable delivery is required, packet sequence checking and error notification must be written into the applications.

UPC. Universal Product Code. A relatively complex numeric symbology. Each character consists of two bars and two spaces, each of which is any of four widths. The standard symbology for retail food packages in the United States.

V

Visible Laser Diode (VLD). A solid state device which produces visible laser light.

W

Warm Boot. A warm boot restarts the mobile computer by closing all running programs. All data that is not saved to flash memory is lost.

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