Intermec
Technologies Corporation

SE 1223 Integrated VLD Scanner

USER'S GUIDE

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General Information

SE 1223 Integrated VLD Scanner Overview

Your SE 1223 Integrated VLD Scanner is a miniature, visible-laser scanner with an integrated decoder. The SE 1223 scanner contains an inboard microcontroller that scans and processes bar codes into ASCII data.

The SE 1223 contains a miniature scan engine, on board voltage monitor, a watchdog timer, two hardware handshaking lines, and an EEPROM for storing decoder parameters. It also provides over-temperature protection that turns the laser off if the temperature rises above acceptable limits (50_C).

Definition of Terms

This section defines terms used in this User's Guide. These terms include general computer jargon, scanner descriptions, and brief descriptions of common bar code symbologies.

Aperture

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

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.

Bar

The dark element in a printed bar code symbol.

Bar Code Density

The number of characters represented per unit of measurement (e.g. characters per inch).

Bar Code Security

The level of bar code quality that the scanner will attempt to decode.

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.

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 I

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 II

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 encodation 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 interpreted.

Codabar

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

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 seven special characters (– . / + % $ and space). The code name is derived from the fact that 3 of the 9 elements representing a character are wide, while the remaining six 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 128

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

Code Length

Number of data characters in a bar code between the start and stop characters.

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.

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 such as 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.

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 Code

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

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 en-

coded; spaces are insignificant. Only numeric characters (0 to 9) and START/STOP characters may be encoded.

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.

Host Computer

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

IEC

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

IEC Class I (IEC 825 Class I)

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.

Intercharacter Gap

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

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.

Laser

An acronym for 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 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.

Lead-In Characters

Preamble characters

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.

MSI Plessey

A numeric-only bar code type. It can accept a variable number of digits up to 13. MSI Plessey consists of four bars and four adjacent spaces. Each bar\space pair consists of one information bit. A zero bit consists of a narrow bar followed by a wide space, while one bit consist of a wide bar followed by a narrow bar. The zero bit is one unit bar followed by a two-unit space and the one bit is a two-unit bar followed by a one unit space. The primary application for the MSI Plessey code is marking of retail shelves and subsequent scanning with portable devices for inventory purposes.

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 can be used over a range of magnifications (e.g., from 0.80 to 2.00 of nominal).

Parameter

A variable that can have different values assigned to it.

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, the probability should approach 100%.

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 = $(R_L - R_D) / R_L$, where R_L is the reflectance factor of the background and R_D the reflectance factor of the dark bars.

Programming Mode

The state in which a scanner is configured for parameter values.

Quiet Zone

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

Reflectance

Amount of light returned from an illuminated surface.

Resolution

The narrowest element dimensions which can be distinguished by a particular reading device or printed with a particular device or method.

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.

Self-Checking Code

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

Space

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

Specular Reflection

The mirror-like reflection of light from a surface which can "blind" a scanner.

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.

Substrate

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

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 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 such as UPC/EAN, Code 39, etc.

Tolerance

Allowable deviation from the nominal bar or space width.

UPC

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

Visible Laser Diode (VLD)

A solid state device which produces visible laser light. Laser light emitted from the diode has a wavelength of 670 to 680 nanometers.

Laser Hazard Classifications

B CAUTION: **Standard range and VIN scanners are Class II laser products. These products emit less than one milliwatt of laser light from the output window. The visible laser beam from a class II scanner by its very bright nature will be too dazzling to stare into. Momentary viewing is not considered hazardous since the upper radiant power limit on this type of device is 1 mW which corresponds to the total beam power entering the eye for a momentary exposure of 0.25 second that is just safe (i.e. the Maximum Permissible Exposures (MPE) for a 0.25 second exposure). No special safety measures are required to keep these products in compliance with Department of Health and Human Services (DHHS) regulations 21M Subchapter J. Do not stare into beam if protective cover is removed.**

WARNING: ***Long range scanners are Class IIIa laser products. These products emit a 5.0 milliwatt beam of laser light from the output window. A class IIIa laser or laser system can emit any wavelength, but it cannot produce a hazardous diffuse reflection unless focused or viewed for extended periods at close range. It is also not considered a fire hazard or a serious skin hazard. Any continuous wave laser that is not class I or class II is a class III device if its output power is 0.5 W or less. Since the output beam of such a laser is definitely hazardous for intrabeam viewing, control measures center on eliminating visual exposure. No maintenance is required to keep these products in compliance with Department of Health and Human Services (DHHS) regulations 21M Subchapter J. No controls are provided for operation or maintenance. Safety training is desirable for those using class III systems. Eyeware may be necessary if intrabeam viewing cannot be precluded. Do not stare into beam if protective cover is removed.***

Section 2

Scanner Parameters

Introduction

The SE 1223 Scanner is programmed to operate by scanning appropriate bar codes based on your needs. This section contains the bar codes necessary to program the scanner for each parameter selection. The default settings for your SE 1223 scanner are shown on page 2-4.

This section contains both the bar code to reset your scanner to the defaults, and to cancel user setup entry.

- To reset the parameters use the Reset to Default Settings bar code on page 2-4.
- To cancel the setting before the last bar code is scanned, use the Cancel bar code on page 2-88.

Identifying the Default Settings

Throughout this section, the default settings are identified by having a rectangle box surrounding it.

EXAMPLE: The default setting for Bidirectional Redundancy is DISABLE BIDIRECTIONAL REDUNDANCY. Therefore on page 2-16 you will see the default as follows:

DISABLE BIDIRECTIONAL REDUNDANCY

Scanning Sequence

You set the scanning parameter bar codes by scanning set-up bar codes. In most cases you need only to scan one bar code to set a specific parameter.

EXAMPLE: For example, the default for Code 39 is to have it enabled, if you want to disable Code 39, simply scan the DISABLE Code 39 bar code on page 2-44.

In some cases you need to scan more than one bar code.

EXAMPLE: For example, if you want to add or change the length of the preamble or postamble, you scan several bar codes. Multiple bar code parameter sequences beep to indicate acceptance, if you changed the setting's value after you scan the last bar code.

The scanner uses a power conservation method that causes it to power down after 1/2 to 1 second. Because of this, bar codes in a multiple bar code parameter sequence must be scanned within 1/2 second of each other.

" **NOTE:** *Tip: After reading a bar code, aim the scanner away from the bar codes and press the SCAN key within 1/2 second, to get the laser beam back on. While the laser beam is on, you have five seconds to find and scan the next bar code.*

Errors While Scanning

Should you make an error during a scanning sequence, no problem, simply rescan the correct sequence.

Reset to Default Settings

Scanning this bar code returns all parameters to the values listed in Table 2-1 on page 2-5

RESET TO DEFAULT SETTINGS

Decode Data Packet Format

Select this option after you scan Reset To Default Settings bar code. This is necessary for your terminal to receive any decodes.

SEND PACKETED DECODE DATA

Table 2-1
Scanner Default Settings

Parameter Name	Page Number	Default Setting
Reset to Default Settings	2-4	All Defaults
Laser On Time	2-8	3.0 Seconds
Aim Duration	2-9	0.0 Seconds
Transmit “No Read” Message	2-10	Disable
Parameter Scanning	2-11	Enable
Linear Code Type Security Levels	2-12	1
Bidirectional Redundancy	2-16	Disable
Symbology Types		
UPC/EAN		
UPC-A	2-18	Enable
UPC-E	2-18	Enable
UPC-E1	2-18	Disable
EAN-8	2-21	Enable
EAN-13	2-21	Enable
Bookland EAN	2-21	Disable
Decode UPC/EAN Supplementals	2-24	Ignore
Decode UPC/EAN Supplemental Redundancy	2-26	7
Transmit UPC-A Check Digit	2-27	Enable
Transmit UPC-E Check Digit	2-27	Enable
Transmit UPC-E1 Check Digit	2-29	Enable
UPC-A Preamble	2-30	System Character
UPC-E Preamble	2-31	System Character
UPC-E1 Preamble	2-32	System Character
Convert UPC-E to A	2-33	Disable

Table 2-1 (continued)
Scanner Default Settings

Parameter Name	Page Number	Default Setting
Convert UPC-E1 to A	2-34	Disable
EAN-8 Zero Extend	2-35	Disable
Convert EAN-8 to EAN-13 Type	2-36	Type is EAN-13
UPC/EAN Security Level	2-37	0
UPC/EAN Coupon Code	2-40	Disable
Code 128		
USS-128	2-41	Enable
UCC/EAN-128	2-42	Enable
ISBT 128	2-43	Enable
Code 39		
Code 39	2-44	Enable
Trioptic Code 39	2-45	Disable
Convert Code 39 to Code 32	2-46	Disable
Code 32 Prefix	2-47	Disable
Set Length(s) for Code 39	2-48	Disable
Code 39 Check Digit Verification	2-50	Disable
Transmit Code 39 Check Digit	2-51	Disable
Code 39 Full ASCII Conversion	2-51	Disable
Code 93		
Code 93	2-53	Disable
Set Length(s) for Code 93	2-54	4–55
Interleaved 2 of 5		
Interleaved 2 of 5	2-56	Enable
Set Length(s) for I 2 of 5	2-57	14
I 2 of 5 Check Digit Verification	2-60	Disable

Table 2-1 (continued)
Scanner Default Settings

Parameter Name	Page Number	Default Setting
Transmit I 2 of 5 Check Digit	2-61	Disable
Convert I 2 of 5 to EAN 13	2-62	Disable
Discrete 2 of 5		
Discrete 2 of 5	2-63	Disable
Set Length(s) for D 2 of 5	2-64	12
Codabar		
Codabar	2-67	Disable
Set Length(s) for Codabar	2-68	5–55
CLSI Editing	2-71	Disable
NOTIS Editing	2-72	Disable
MSI Plessey		
MSI Plessey	2-73	Disable
Set Length(s) for MSI Plessey	2-74	6–55
MSI Plessey Check Digit	2-77	One
Transmit MSI Plessey Check Digit	2-78	Disable
MSI Plessey Check Digit Algorithm	2-79	Mod 10/Mod 10
Data Options		
Transmit Code ID Character	2-80	None
Prefix/Suffix Values	2-82	
Prefix		NULL
Suffix 1		LF
Suffix 2		CR
Scan Data Transmission Format	2-84	Data as is

Laser On Time

This parameter sets the maximum time decode processing continues during a scan attempt. It is programmable in 0.1 second increments from 0.5 to 9.9 seconds.

To set **Laser On Time**, scan the bar code below. Next scan two numeric bar codes beginning on page 4-87 that correspond to the desired on time. Times less than one second must have a leading zero.

EXAMPLE: To set On Time of 0.5 seconds, scan the bar code below, then scan the 0 and 5 bar codes. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

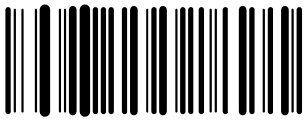
LASER ON TIME

Aim Duration

When a scanner with an aim mode is triggered either by a trigger pull, or a START_DECODE command, this parameter sets the duration the aiming pattern is seen before a scan attempt begins. It does not apply to the aim signal or the AIM_ON command. It is programmable in 0.1 second increments from 0.0 to 9.9 seconds. No aim pattern is visible when the value is 0.0.

To set an aim duration, scan the bar code below. Next scan two numeric bar codes beginning on page 4-87 that correspond to the desired aim duration. Times less than one second must have a leading zero.

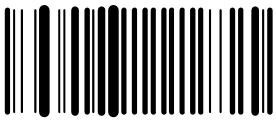
EXAMPLE: To set an aim duration of 0.5 seconds, scan the bar code below, then scan the 0 and 5 bar codes. If you make an error, or wish to change your selection, scan **CANCEL** on page 2-88.



AIM DURATION

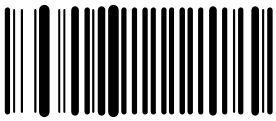
Transmit “No Read” Message

When enabled, if a symbol does not decode, “NR” is transmitted. Any prefix or suffixes which have been embedded are appended around this message.



ENABLE NO READ

When disabled, if a symbol does not read, nothing is sent to the host.



DISABLE NO READ

Parameter Scanning

To disable decoding of parameter bar codes, scan the **DISABLE PARAMETER SCANNING** bar code below.

" **NOTE:** *The **Reset to Default Settings** bar code will still be decoded.*

To enable decoding of parameter bar codes, either scan **ENABLE PARAMETER SCANNING**, **RESET TO DEFAULT SETTINGS**.

ENABLE PARAMETER SCANNING

DISABLE PARAMETER SCANNING

Linear Code Type Security Levels

" NOTE: *This does not apply to Code 128.*

The SE 1223 offers four levels of decode security for linear code types (e.g. Code 39, Interleaved 2 of 5). Higher security levels are selected for decreasing levels of bar code quality. As security levels increase, the scanner's aggressiveness decreases.

Select the security level appropriate for your bar code quality.

Linear Security Level 1

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

Code Type	Length
Codabar	All
MSI Plessey	4 or fewer
Discrete 2 of 5	8 or fewer
Interleaved 2 of 5	8 or fewer

Linear Security Level 2

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

Code Type	Length
All	All

LINEAR SECURITY LEVEL 2

Linear Security Level 3

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

Code Type	Length
MSI Plessey	4 or fewer
Discrete 2 of 5	8 or fewer
Interleaved 2 of 5	8 or fewer

LINEAR SECURITY LEVEL 3

Linear Security Level 4

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

Code Type	Length
All	All

LINEAR SECURITY LEVEL 4

Bidirectional Redundancy

This parameter is only valid when a **Linear Code Type Security Level** has been enabled (see page 2-12). When this parameter is enabled, a bar code must be successfully scanned in both directions (forward and reverse) before being decoded.

ENABLE BIDIRECTIONAL REDUNDANCY

DISABLE BIDIRECTIONAL REDUNDANCY

Symbology Types

The bar code selections enable the scanner to decode any or all of the following symbologies.

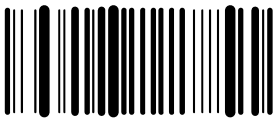
- UPC Versions A, E, and E1 (EAN 8 and 13)
- Codabar
- Code 39
- Code 93
- Interleaved and Discrete 2 of 5
- Code 128, UCC/EAN-128
- MSI Plessey

The scanner autodiscriminates among all of the above symbologies.

UPC/EAN

Enable/Disable UPC-A

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

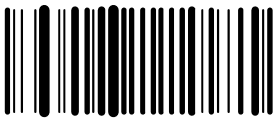


ENABLE UPC-A

DISABLE UPC-A

Enable/Disable UPC-E

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

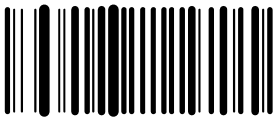


ENABLE UPC-E

DISABLE UPC-E

Enable/Disable UPC-E1

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

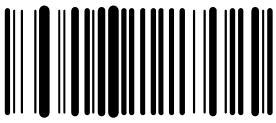


ENABLE UPC-E1

DISABLE UPC-E1

Enable/Disable EAN-8

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

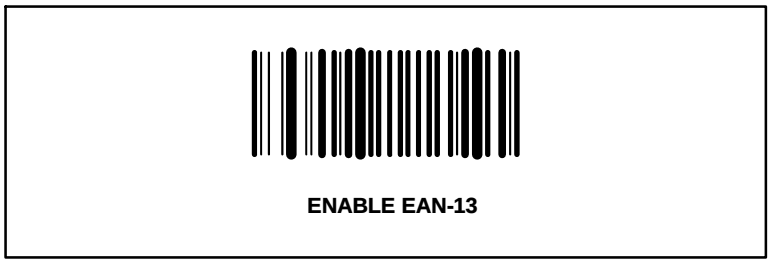


ENABLE EAN-8

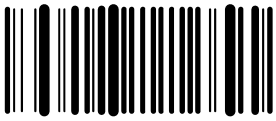
DISABLE EAN-8

Enable/Disable EAN-13

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



ENABLE EAN-13



DISABLE EAN-13

Enable/Disable Bookland EAN

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

ENABLE BOOKLAND EAN

DISABLE BOOKLAND EAN

Decode UPC/EAN Supplementals

Supplementals are additionally appended characters (2 or 5) according to specific code format conventions (e.g., UPC A +2, UPC E +2, EAN 8 +2). Three options are available.

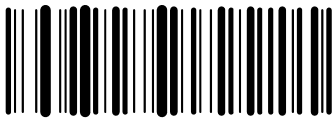
- If UPC/EAN with supplemental characters is selected, UPC/EAN symbols without supplemental characters are not decoded.
- If UPC/EAN without supplemental characters is selected, and the SE 1223 is presented with a UPC/EAN plus supplemental symbol, the UPC/EAN is decoded and the supplemental characters ignored.
- An autodiscriminate option is also available. If this option is selected, scan Decode UPC/EAN Supplemental Redundancy on page 2-26, then select a value from the numeric bar codes beginning on page 4-87. A value of 5 or more is recommended.

NOTE: *Five or more is recommended when decoding a mix of UPC/EAN symbols with and without supplements, and the autodiscriminate option is selected.*

NOTE: *In order to minimize the risk of invalid data transmission, we recommend that you select whether to read or ignore supplemental characters.*

Select the desired option by scanning one of the following UPC/EAN Supplemental bar codes.

DECODE UPC/EAN WITH SUPPLEMENTALS



IGNORE UPC/EAN WITH SUPPLEMENTALS

AUTODISCRIMINATE UPC/EAN SUPPLEMENTALS

Decode UPC/EAN Supplemental Redundancy

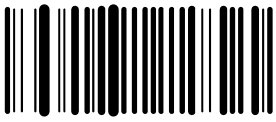
With Autodiscriminate UPC/EAN Supplementals selected, this option adjusts the number or times a symbol without supplementals will be decoded before transmission. The range is from 2 to 20 times.

Scan the bar code below to select a decode redundancy value. Next scan two numeric bar codes beginning on page 4-87. Single digit numbers must have a leading zero. If you make an error, or wish to change your selection, scan **CANCEL** on page 2-88.

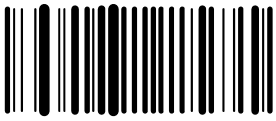
DECODE UPC/EAN SUPPLEMENTAL REDUNDANCY

Transmit UPC-A Check Digit

Scan the appropriate bar code to transmit the symbol with or without the UPC-A check digit.



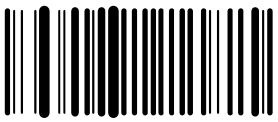
ENABLE TRANSMIT UPC-A CHECK DIGIT



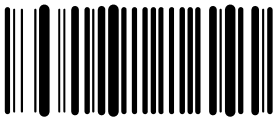
DO NOT TRANSMIT UPC-A CHECK DIGIT

Transmit UPC-E Check Digit

Scan the appropriate bar code to transmit the symbol with or without the UPC-E check digit.



ENABLE TRANSMIT UPC-E CHECK DIGIT

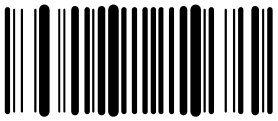


DO NOT TRANSMIT UPC-E CHECK DIGIT

Transmit UPC-E1 Check Digit

Scan the appropriate bar code to transmit the symbol with or without the UPC-E1 check digit.

ENABLE TRANSMIT UPC-E1 CHECK DIGIT

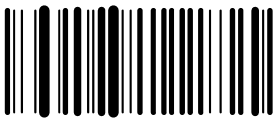


DO NOT TRANSMIT UPC-E1 CHECK DIGIT

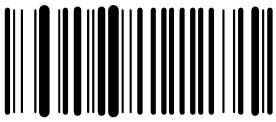
UPC-A Preamble

Three options are given for lead-in characters for UPC-A symbols transmitted to the host device:

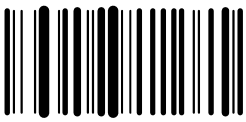
- No preamble required
- System character only
- System character and country code



NO PREAMBLE



SYSTEM CHARACTER (<SYSTEM CHARACTER><DATA>)

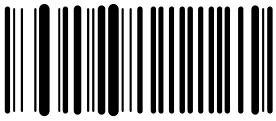


SYSTEM CHARACTER & COUNTRY CODE (<COUNTRY CODE> <SYSTEM CHARACTER><DATA>)

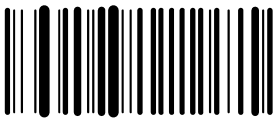
UPC-E Preamble

Three options are given for lead-in characters for UPC-E symbols transmitted to the host device:

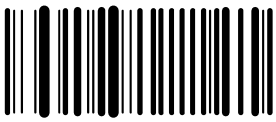
- No preamble required
- System character only
- System character and country code



NO PREAMBLE



SYSTEM CHARACTER (<SYSTEM CHARACTER><DATA>)

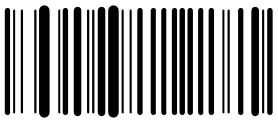


SYSTEM CHARACTER & COUNTRY CODE (<COUNTRY CODE> <SYSTEM CHARACTER><DATA>)

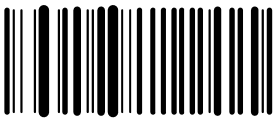
UPC-E1 Preamble

Three options are given for lead-in characters for UPC-E1 symbols transmitted to the host device:

- No preamble required
- System character only
- System character and country code



NO PREAMBLE



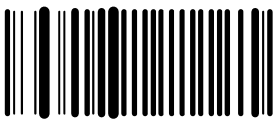
SYSTEM CHARACTER (<SYSTEM CHARACTER><DATA>)

SYSTEM CHARACTER & COUNTRY CODE (<COUNTRY CODE> <SYSTEM CHARACTER><DATA>)

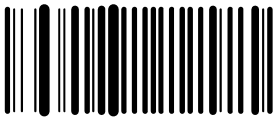
Convert UPC-E to UPC-A

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

Scanning the **DO NOT CONVERT UPC-E TO UPC-A** bar code, allows you to transmit UPC-E1 (zero suppressed) decoded data.



CONVERT UPC-E TO UPC-A (ENABLE)



DO NOT CONVERT UPC-E TO UPC-A (DISABLE)

Convert UPC-E1 to UPC-A

This parameter converts UPC-E1 (zero suppressed) decoded data to UPC-A format before transmission. After conversion, data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

Scanning the **DO NOT CONVERT UPC-E1 TO UPC-A** bar code, allows you to transmit UPC-E1 (zero suppressed) decoded data.

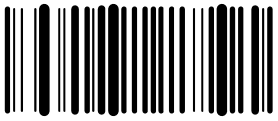
CONVERT UPC-E1 TO UPC-A (ENABLE)

DO NOT CONVERT UPC-E1 TO UPC-A (DISABLE)

EAN Zero Extend

When this parameter is enabled, five leading zeros are added to decoded EAN-8 symbols to make them compatible in format to EAN-13 symbols.

Disabling this parameter returns EAN-8 symbols to their normal format.



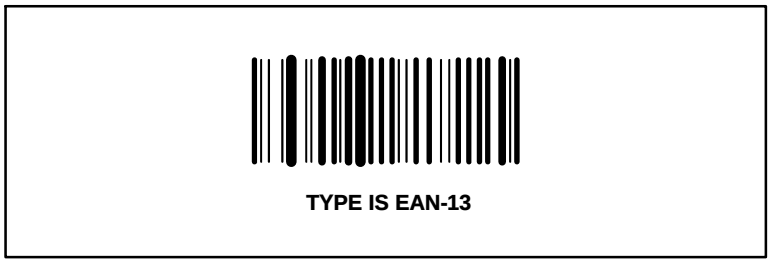
ENABLE EAN ZERO EXTEND

DISABLE EAN ZERO EXTEND

Convert EAN-8 to EAN-13 Type

Scan the appropriate bar code below to set the bar code id character to EAN-13 or EAN-8. This affects Transmit Code ID Character and DECODE_DATA message.

This parameter has no effect unless EAN Zero Extend is enabled. Furthermore, when EAN Zero Extend is disabled, bar code data is not effected.



TYPE IS EAN-13

TYPE IS EAN-8

UPC/EAN Security Level

The SE 1223 offers four levels of decode security for UPC/EAN bar codes. Increasing levels of security are provided for decreasing levels of bar code quality. There is an inverse relationship between security and scanner aggressiveness, so be sure to choose only that level of security necessary for any given application.

UPC/EAN Security Level 0

This is the default setting which allows the scanner to operate in its most aggressive state, while providing sufficient security in decoding "in-spec" UPC/EAN bar codes.

UPC/EAN SECURITY LEVEL 0

UPC/EAN Security Level 1

As bar code quality diminishes, certain characters become prone to misdecodes before others (i.e., 1, 2, 7, 8). If you are experiencing misdecodes of poorly printed bar codes, and the misdecodes are limited to these characters, select this security level.

UPC/EAN SECURITY LEVEL 1

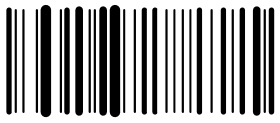
UPC/EAN Security Level 2

If you are experiencing misdecodes of poorly printed bar codes, and the misdecodes are not limited to 1, 2, 7, and 8, select this security level.

UPC/EAN SECURITY LEVEL 2

UPC/EAN Security Level 3

If you have tried Security Level 2, and are still experiencing misdecodes, select this security level. Be advised, selecting this option is an extreme measure against misdecoding severely out of spec bar codes. Selection of this level of security significantly impairs the decoding ability of the scanner. If this level of security is necessary, you should try to improve the quality of your bar codes.



UPC/EAN SECURITY LEVEL 3

UPC/EAN Coupon Code

When enabled, this parameter decodes UPC-A, UPC-A with 2 supplemental characters, UPC-A with 5 supplemental characters, and UPC-A/EAN 128 bar codes. Autodiscriminate UPC/EAN Supplementals must be enabled.

ENABLE UPC/EAN COUPON CODE

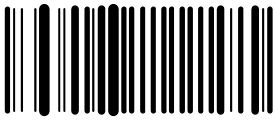
DISABLE UPC/EAN COUPON CODE

Code 128

Enable/Disable USS-128

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

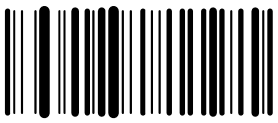
ENABLE USS-128



DISABLE USS-128

Enable/Disable UCC/EAN-128

To enable or disable UCC/EAN-128, scan the appropriate bar code.



ENABLE UCC/EAN-128

DISABLE UCC/EAN-128

Enable/Disable ISBT 128

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

ENABLE ISBT 128

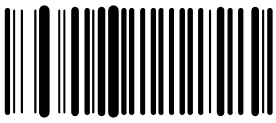
DISABLE ISBT 128

Code 39

Enable/Disable Code 39

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

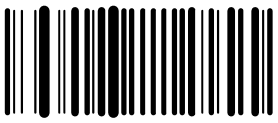
ENABLE CODE 39



DISABLE CODE 39

Enable/Disable Trioptic Code 39

Trioptic Code 39 symbols always contain six characters. Trioptic Code 39 and Code 39 Full ASCII should not be enabled simultaneously. To enable or disable Trioptic Code 39, scan the appropriate bar code.



ENABLE TRIOPTIC CODE 39

DISABLE TRIOPTIC CODE 39

Convert Code 39 to Code 32

Scan this symbol if you want to convert a Code 39 bar code to a Code 32 bar code.

CONVERT CODE 39 TO CODE 32 (ENABLE)

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

If you do not want to convert a Code 39 bar code to a Code 32 bar code, scan the following bar code.

DO NOT CONVERT CODE 39 TO CODE 32 (DISABLE)

Code 39 Prefix

Enable this parameter to add the prefix character “A” to all Code 39 bar codes.

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

ENABLE CODE 39 PREFIX

DISABLE CODE 39 PREFIX

Set Lengths for Code 39

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

One Discrete Length: This option allows you to decode only those codes containing a selected length.

EXAMPLE: If you select **Code 39 One Discrete Length**, then scan **1**, **4**, only Code 39 symbols containing 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

CODE 39-ONE DISCRETE LENGTH

Two Discrete Lengths: This option allows you to decode only those codes containing two selected lengths.

EXAMPLE: If you select **Code 39 Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, only Code 39 symbols containing 2 or 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

CODE 39–TWO DISCRETE LENGTHS

Length Within Range: This option allows you to decode a length within a specified range.

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** (single digit numbers must always be preceded by a leading zero).

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

CODE 39–LENGTH WITHIN RANGE

Any Length: Scanning this option allows you to decode Code 39 symbols containing any number of characters.

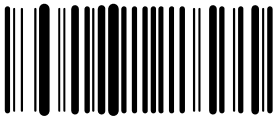
CODE 39–ANY LENGTH

Code 39 Check Digit Verification

When enabled, this parameter checks the integrity of a Code 39 symbol to ensure it complies with specified algorithms.

Only those Code 39 symbols which include a modulo 43 check digit are decoded when this parameter is enabled.

ENABLE CODE 39 CHECK DIGIT



DISABLE CODE 39 CHECK DIGIT

Transmit Code 39 Check Digit

Scan this symbol if you want to transmit the check digit with the data.

TRANSMIT CODE 39 CHECK DIGIT (ENABLE)

DO NOT TRANSMIT CODE 39 CHECK DIGIT (DISABLE)

Enable/Disable Code 39 Full ASCII

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

When enabled, the ASCII character set assigns a code to letters, punctuation marks, numerals, and most control keystrokes on the keyboard.

The first 32 codes are nonprintable and are assigned to keyboard control characters such as BACKSPACE and RETURN. The other 96 are called printable codes because all but SPACE and DELETE produce visible characters.

Code 39 Full ASCII interprets the bar code special character ($ + % /) preceding a Code 39 character and assigns an ASCII character value to the pair.

EXAMPLE: When Code 39 Full ASCII is enabled and a **+B** is scanned, it is interpreted as **b**, **%J** as **?**, and **$H** emulates the keystroke **BACKSPACE**. Scanning **ABC$M** outputs the keystrokes equivalent of **ABC ENTER**.

Code 39 Full ASCII and Trioptic Code 39 should not be enabled simultaneously.

The scanner will not autodiscriminate between Code 39 and Code 39 Full ASCII.

ENABLE CODE 39 FULL ASCII

DISABLE CODE 39 FULL ASCII

Code 93

Enable/Disable Code 93

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

ENABLE CODE 93

DISABLE CODE 93

Set Lengths for Code 93

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

One Discrete Length: This option allows you to set one bar code length. Only bar codes of this length will be decoded and passed to the application.

EXAMPLE: If you select **Code 93 One Discrete Length**, then scan **1**, **4**, only Code 39 symbols containing 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

CODE 93–ONE DISCRETE LENGTH

Two Discrete Lengths: This option allows you to set two valid bar code lengths. Only bar codes of either set lengths will be decoded and passed to the application.

EXAMPLE: If you select **Code 93 Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, only Code 39 symbols containing 2 or 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

CODE 93–TWO DISCRETE LENGTHS

Length Within Range: This option allows you to decode a length within a specified range.

EXAMPLE: To decode Code 39 symbols containing between 4 and 12 characters, first scan **Code 93 Length Within Range**. Then scan **0**, **4**, **1**, and **2** (single digit numbers must always be preceded by a leading zero).

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

CODE 93–LENGTH WITHIN RANGE

Any Length: Scanning this option allows you to decode Code 93 symbols containing any number of characters.

CODE 93–ANY LENGTH

Interleaved 2 of 5

Enable/Disable Interleaved 2 of 5

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

ENABLE INTERLEAVED 2 OF 5

DISABLE INTERLEAVED 2 OF 5

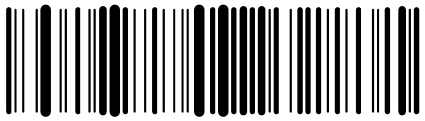
Set Lengths for Interleaved 2 of 5

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

One Discrete Length: This option allows you to set one bar code length. Only bar codes of this length will be decoded and passed to the application.

EXAMPLE: If you select **I 2 of 5 One Discrete Length**, then scan **1**, **4**, only I 2 of 5 symbols containing 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.



I 2 OF 5–ONE DISCRETE LENGTH

Two Discrete Lengths: This option allows you to set two valid bar code lengths. Only bar codes of either set lengths will be decoded and passed to the application.

EXAMPLE: If you select **I 2 of 5 Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, only I 2 of 5 symbols containing 2 or 14 characters are decoded.

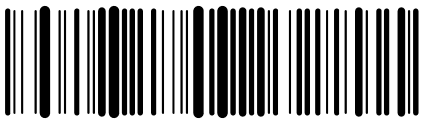
Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

I 2 OF 5–TWO DISCRETE LENGTHS

Length Within Range: This option allows you to decode a length within a specified range.

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** (single digit numbers must always be preceded by a leading zero).

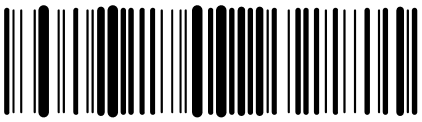
Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.



I 2 OF 5–LENGTH WITHIN RANGE

Any Length: Scanning this option allows you to decode I 2 of 5 symbols containing any number of characters.

" **NOTE:** *Selecting this option may lead to misdecodes for I 2 of 5 bar codes.*

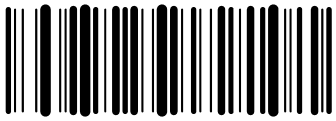


I 2 OF 5–ANY LENGTH

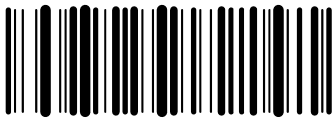
I 2 of 5 Check Digit Verification

When enabled, this parameter checks the integrity of an I 2 of 5 symbol to ensure it complies with a specified algorithm, either USS (Uniform Symbology Specification), or OPCC (Optical Product Code Council).

DISABLE



USS CHECK DIGIT



OPCC CHECK DIGIT

Transmit I 2 of 5 Check Digit

Scan this symbol if you want to transmit the check digit with the data.

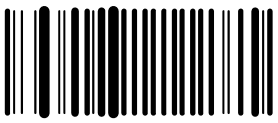
TRANSMIT I 2 OF 5 CHECK DIGIT (ENABLE)

Scan this symbol if you want to transmit the data without the check digit.

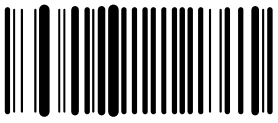
DO NOT TRANSMIT I 2 OF 5 CHECK DIGIT (DISABLE)

Convert I 2 of 5 to EAN-13

This parameter converts a 14 character I 2 of 5 code into EAN-13, and transmits to the host as EAN-13. In order to accomplish this, the I 2 of 5 code must be enabled, one length must be set to 14, and the code must have a leading zero and a valid EAN-13 check digit.



CONVERT I 2 OF 5 to EAN-13 (ENABLE)

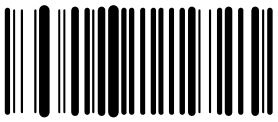


DO NOT CONVERT I 2 OF 5 to EAN-13 (DISABLE)

Discrete 2 of 5

Enable/Disable Discrete 2 of 5

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



ENABLE DISCRETE 2 OF 5

DISABLE DISCRETE 2 OF 5

Set Lengths for Discrete 2 of 5

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

One Discrete Length: This option allows you to set one bar code length. Only bar codes of this length will be decoded and passed to the application.

EXAMPLE: If you select **D 2 of 5 One Discrete Length**, then scan **1**, **4**, only D 2 of 5 symbols containing 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

D 2 OF 5-ONE DISCRETE LENGTH

Two Discrete Length: This option allows you to set two valid bar code lengths. Only bar codes of either set lengths will be decoded and passed to the application.

EXAMPLE: If you select **D 2 of 5 Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, only D 2 of 5 symbols containing 2 or 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

D 2 OF 5–TWO DISCRETE LENGTHS

Length Within Range: This option allows you to decode a length within a specified range.

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** (single digit numbers must always be preceded by a leading zero).

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

D 2 OF 5–LENGTH WITHIN RANGE

Any Length: Scanning this option allows you to decode I 2 of 5 symbols containing any number of characters.

" **NOTE:** *Selecting this option may lead to misdecodes for D 2 of 5 bar codes.*

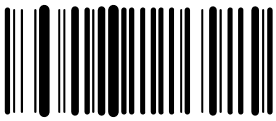
D 2 OF 5–ANY LENGTH

Codabar

Enable/Disable Codabar

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

ENABLE CODABAR



DISABLE CODABAR

Set Lengths for Codabar

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

One Discrete Length: This option allows you to set one bar code length. Only bar codes of this length will be decoded and passed to the application.

EXAMPLE: If you select **Codabar One Discrete Length**, then scan **1**, **4**, only Codabar symbols containing 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

CODABAR–ONE DISCRETE LENGTH

Two Discrete Lengths: This option allows you to set two valid bar code lengths. Only bar codes of either set lengths will be decoded and passed to the application.

EXAMPLE: If you select **Codabar Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, only Codabar symbols containing 2 or 14 characters are decoded.

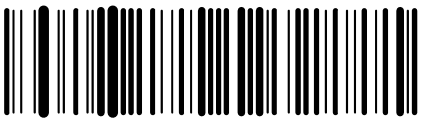
Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

CODABAR-TWO DISCRETE LENGTHS

Length Within Range: This option allows you to decode a length within a specified range.

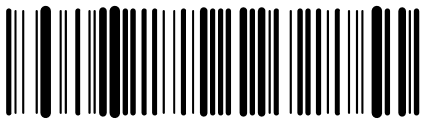
EXAMPLE: To decode Codabar symbols containing between 4 and 12 characters, first scan **Codabar Length Within Range**. Then scan **0**, **4**, **1**, and **2** (single digit numbers must always be preceded by a leading zero).

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.



CODABAR-LENGTH WITHIN RANGE

Any Length: Scanning this option allows you to decode Codabar symbols containing any number of characters.

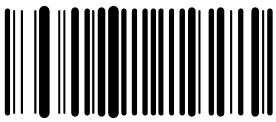


CODABAR–ANY LENGTH

CLSI Editing

When enabled, this parameter strips the start and stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar symbol.

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



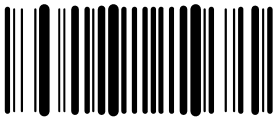
ENABLE CLSI EDITING

DISABLE CLSI EDITING

NOTIS Editing

When enabled, this parameter strips the start and stop characters from decoded Codabar symbol.

ENABLE NOTIS EDITING



DISABLE NOTIS EDITING

MSI Plessey

Enable/Disable MSI/Plessey

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

ENABLE MSI Plessey

DISABLE MSI Plessey

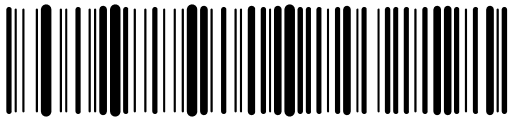
Set Lengths for MSI Plessey

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

One Discrete Length: This option allows you to set one bar code length. Only bar codes of this length will be decoded and passed to the application.

EXAMPLE: If you select **MSI Plessey One Discrete Length**, then scan **1**, **4**, only MSI Plessey symbols containing 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

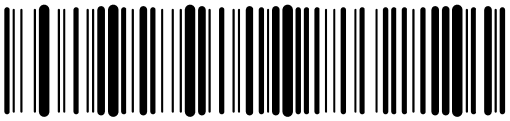


MSI Plessey–ONE DISCRETE LENGTH

Two Discrete Lengths: This option allows you to set two valid bar code lengths. Only bar codes of either set lengths will be decoded and passed to the application.

EXAMPLE: If you select **MSI Plessey Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, only MSI Plessey symbols containing 2 or 14 characters are decoded.

Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

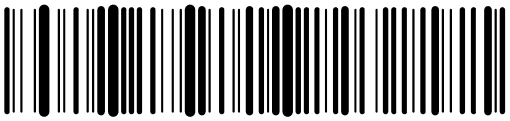


MSI Plessey–TWO DISCRETE LENGTHS

Length Within Range: This option allows you to decode a length within a specified range.

EXAMPLE: To decode MSI Plessey symbols containing between 4 and 12 characters, first scan **MSI Plessey Length Within Range**. Then scan **0**, **4**, **1**, and **2** (single digit numbers must always be preceded by a leading zero).

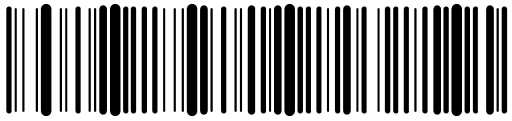
Numeric bar codes begin on page 4-87. If you make an error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.



MSI Plessey–LENGTH WITHIN RANGE

Any Length: Scanning this option allows you to decode Codabar symbols containing any number of characters.

" **NOTE:** *Selecting this option may lead to misdecodes for MSI Plessey bar codes.*



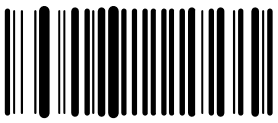
MSI Plessey–ANY LENGTH

MSI Plessey Check Digit

These check digits at the end of the bar code verify the integrity of the data. At least one check digit is always required. Check digits are not automatically transmitted with the data.

ONE MSI Plessey CHECK DIGIT

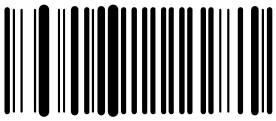
If two check digits is selected, an MSI Plessey Check Digit Algorithm must also be selected. See Page 2-79.



TWO MSI Plessey CHECK DIGITS

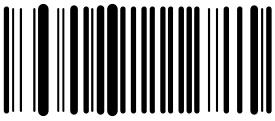
Transmit MSI Plessey Check Digit

Scan this symbol if you want to transmit the check digit with the data.



TRANSMIT MSI Plessey CHECK DIGIT (ENABLE)

Scan this symbol if you want to transmit the data without the check digit.

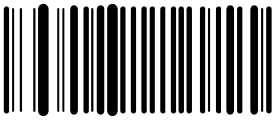


DO NOT TRANSMIT MSI Plessey CHECK DIGITS (DISABLE)

MSI Plessey Check Digit Algorithm

If **TWO MSI Plessey CHECK DIGITS** is selected, an additional verification is required to ensure integrity. One of the following check digit combinations must be selected.

MOD 10/MOD11



MOD 10/MOD 10

Transmit Code ID Character

A code ID character identifies the code type of a scanned bar code. This may be useful when the scanner is 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.

You may select no code ID character, a Symbol Code ID character, or an AIM Code ID character. The Symbol Code ID characters are listed below:

A = UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13

B = Code 39, Code 32

C = Codabar

D = Code 128, ISBT 128

E = Code 93

F = Interleaved 2 of 5

G = Discrete 2 of 5, or Discrete 2 of 5 IATA

J = MSI Plessey

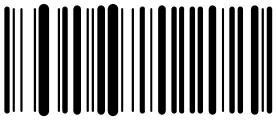
K = UCC/EAN-128

L = Bookland EAN

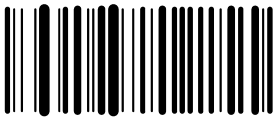
M = Trioptic Code 39

N = Coupon Code

SYMBOL CODE ID CHARACTER



AIM CODE ID CHARACTER



NONE

Prefix/Suffix Values

A prefix and one or two suffixes may be appended to scan data for use in data editing. These values are set by scanning a four digit number (i.e., four bar codes) that corresponds to key codes for various terminals.

Numeric bar codes begin on page 4-87. If you make a error, or wish to change your selection, scan the **CANCEL** bar code on page 2-88.

" **NOTE:** *In order to use Prefix/Suffix values, the Scan Data Transmission Format must be set (see page 2-84).*

SCAN PREFIX

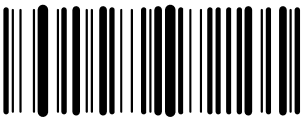
SCAN SUFFIX 1

SCAN SUFFIX 2

DATA FORMAT CANCEL

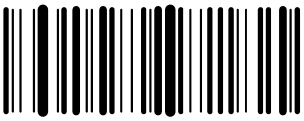
Scan Data Transmission Format

To change the Scan Data Transmission Format, scan one of the eight bar codes below or on the following page corresponding to the desired format.



DATA AS IS

<DATA>< SUFFIX 1>



<DATA>< SUFFIX 2>

<DATA><SUFFIX 1><SUFFIX 2>

<PREFIX><DATA>

<PREFIX><DATA><SUFFIX 1>

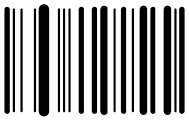
<PREFIX><DATA><SUFFIX 2>

<PREFIX><DATA><SUFFIX 1> <SUFFIX 2>

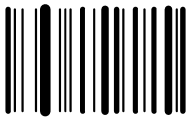
Numeric Bar Codes

For parameters requiring specific numeric values, scan the appropriate bar code(s) on this foldout page.

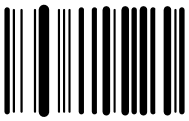
0



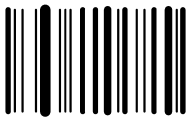
5



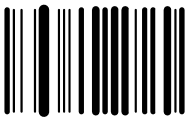
1



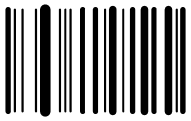
6



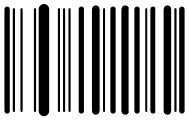
2



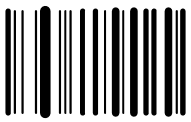
7



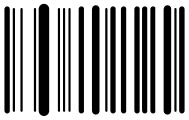
3



8



4



9

Cancel

If you make an error, or wish to change your selection, scan the bar code below.

CANCEL

Section 3

Scanner Specifications

This section details the specifications for the following versions of the SE 1223 Scanner:

- Standard
- Wide Angle
- Very High Density (VHD)
- Long Range (LR)

SE 1223 Standard Scanner

Table 3-1
SE 1223 Standard Scanner Technical Specifications

Item	Description
Power Requirements	5 volt dc ± 10%
Low Power Current	15 μA typ @ 5 V
Motor On Current	50 mA typical
Scan Session Current	
Motor and Laser On	100 mA typical
Surge Current	130 mA typical
Max V_{cc} Noise Level	200 mV point to point
Scan Repetition Rate	36 (± 3) scans/second (bi-directional)

Table 3-1 (continued)

SE 1223 Standard Scanner Technical Specifications

Item	Description	
Laser Power	0.8 mW ± 10%	
Scan Angle	42° ± 2°	
Pitch Angle	±55° from normal straight out	
Skew Tolerance	±65° from normal	
Roll	±20° from vertical	
Ambient Light Immunity		
Sunlight	8000 ft candles 86,112 lux with correct exposure	
Artifical Light	450 ft candles 4844 lux	
Shock	2000 G applied via any mounting surface @ 23°C (for .25 msec)	
Vibration	Withstands a sinusoidal vibration of 1 G along each of the 3 mutually perpendicular axes for a period of 1 hour per axis, over a frequency range of 5 Hz to 2000 Hz.	
Laser Class	CDRH Class II	
Operating Temperature	-22° to 131°F	-30° to 55°C
Storage Temperature	-40° to 140°F	-40° to 60°C
Humidity	5 to 95% non-condensing	
Height	0.76 in. max	1.93 cm
Width	1.51 in. max	3.83 cm
Depth	1.38 in. max	3.5 cm
Weight	1.33 oz. max	38 gm

SE 1223 Standard Scanner Decode Zone

The standard SE 1223 scanner decodes the symbols as described in Table 3-2. The numbers shown are typical values as well as guaranteed values. The minimum element width (or symbol density) is the width in mils of the narrowest element (bar or space) in the symbol.

Table 3-2
SE 1223 Standard Scanner Decode Distances

		Typical				Guaranteed			
Symbol Density		**Minimum**		**Maximum**		**Minimum**		**Maximum**	
In.	**mm**	**In.**	**cm**	**In.**	**cm**	**In.**	**cm**	**In.**	**cm**
0.005	0.127	3	7.62	6	15.24	3	7.62	5	12.7
0.0075	0.191	2.5	6.35	10	25.4	2.75	6.98	9	22.86
0.010	0.254	2	5.08	15	38.1	2.5	6.35	13	33.02
0.015	0.381	2	5.08	20	50.8	2.5	6.35	19	48.26
0.020	0.508	*		29	73.66	*		21	53.34
0.040	1.01	*		40	101.6	*		30	76.2
0.010	0.254	*		45	114.3	*		36	91.44

* Minimum distance determined by symbol length and scan angle.

The decode zone is a function of various symbol characteristics including density, print contrast, wide-to-narrow ratio, and edge acuity. Width of decode zone at any given distance must be considered when designing a system.

Usable scan length is calculated as follows:

L = 1.8 x (D + d) x Tan (A/2)

Where:

D = Distance (in inches) from the front edge of the housing.

d = The housing's internal optical path (in inches) from the edge of the housing to the front of the scanner.

A = Scan angle in degrees (42°).

So:

L = 1.8 x (D + d) x Tan 21°)

" NOTE: *Usable scan length determined by above formula, or 90% of scan line at any working distance.*

The calculation given above is based on good quality symbols in the center of the working range and length of bar code.

SE 1223 Wide Angle Scanner

Table 3-3
SE 1223 Wide Angle Scanner Technical Specifications

Item	Description
Power Requirements	5 volt dc ± 10%
Low Power Current	15 μA typ @ 5 V
Motor On Current	50 mA typical
Scan Session Current	
Motor and Laser On	100 mA typical
Surge Current	130 mA typical
Max V_{cc} Noise Level	200 mV point to point
Scan Repetition Rate	36 (± 3) scans/second (bi-directional)
Laser Power	0.54 mW ± 10%
Scan Angle	53° ± 2°
Pitch Angle	±55° from normal straight out
Skew Tolerance	±65° from normal

Table 3-3 (continued)

SE 1223 Wide Angle Scanner Technical Specifications

Item	Description	
Roll	±20° from vertical	
Ambient Light Immunity		
Sunlight	8000 ft candles 86,112 lux with correct exposure	
Artifical Light	450 ft candles 4844 lux	
Shock	2000 G applied via any mounting surface @ 23°C (for .25 msec)	
Vibration	Withstands a sinusoidal vibration of 1 G along each of the 3 mutually perpendicular axes for a period of 1 hour per axis, over a frequency range of 5 Hz to 2000 Hz.	
Laser Class	CDRH Class II	
Operating Temperature	32° to 104°F	0° to 40°C
Storage Temperature	-40° to 140°F	-40° to 60°C
Humidity	5 to 95% non-condensing	
Height	0.76 in. max	1.93 cm
Width	1.51 in. max	3.83 cm
Depth	1.38 in. max	3.5 cm
Weight	1.33 oz. max	38 gm

SE 1223 Wide Angle Scanner Decode Zone

The wide angle SE 1223 scanner decodes the symbols as described in Table 3-4. The numbers shown are typical values as well as guaranteed values. The minimum element width (or symbol density) is the width in mils of the narrowest element (bar or space) in the symbol.

Table 3-4
SE 1223 Wide Angle Scanner Decode Distances

		Typical				Guaranteed			
Symbol Density		**Minimum**		**Maximum**		**Minimum**		**Maximum**	
In.	**mm**	**In.**	**cm**	**In.**	**cm**	**In.**	**cm**	**In.**	**cm**
0.005	0.127	2	5.08	4	10.16	2	5.08	4	10.16
0.0075	0.191	1.5	3.81	7	17.78	1.5	3.81	7	17.78
100% UPC		1.5	3.81	12	30.48	1.5	3.81	10	25.4
0.020	0.508	*		16	40.64	*		14	35.56
0.040	1.01	*		20	50.8	*		18	45.72
0.055	1.40	*		25	63.5	*		23	58.42

* Minimum distance determined by symbol length and scan angle.

The decode zone is a function of various symbol characteristics including density, print contrast, wide-to-narrow ratio, and edge acuity. Width of decode zone at any given distance must be considered when designing a system.

Usable scan length is calculated as follows:

L = 1.8 x (D + d) x Tan (A/2)

Where:

D = Distance (in inches) from the front edge of the housing.

d = The housing's internal optical path (in inches) from the edge of the housing to the front of the scanner.

A = Scan angle in degrees (53°).

So:

L = 1.8 x (D + d) x Tan 26.5°)

" **NOTE:** *Usable scan length determined by above formula, or 90% of scan line at any working distance.*

The calculation given above is based on good quality symbols in the center of the working range and length of bar code.

SE 1223 Very High Density (VHD) Scanner

Table 3-5
SE 1223 VHD Scanner Technical Specifications

Item	Description
Power Requirements	5 volt dc ± 10%
Low Power Current	65 μA typ @ 5 V
Motor On Current	50 mA typical
Scan Session Current	
Motor and Laser On	100 mA typical
Surge Current	130 mA typical
Max V_{cc} Noise Level	100 mV point to point
Scan Repetition Rate	36 (± 3) scans/second (bi-directional)
Laser Power	0.36 mW ± 10%
Scan Angle	37° ± 2°
Pitch Angle	±65° from normal straight out

Table 3-5 (continued)

SE 1223 VHD Scanner Technical Specifications

Item	Description	
Skew Tolerance	±60° from normal	
Roll	±10° from vertical	
Ambient Light Immunity		
Sunlight	8000 ft candles 86,112 lux with correct exposure	
Artifical Light	450 ft candles 4844 lux	
Shock	2000 G applied via any mounting surface @ 23°C (for .25 msec)	
Vibration	Withstands a sinusoidal vibration of 1 G along each of the 3 mutually perpendicular axes for a period of 1 hour per axis, over a frequency range of 5 Hz to 2000 Hz.	
Laser Class	CDRH Class II	
Operating Temperature	32° to 104°F	0° to 40°C
Storage Temperature	-40° to 140°F	-40° to 60°C
Humidity	5 to 95% non-condensing	
Height	0.76 in. max	1.93 cm
Width	1.51 in. max	3.83 cm
Depth	1.0 in. max	2.54 cm
Weight	1.33 oz. max	38 gm

SE 1223 Very High Density (VHD) Scanner Decode Zone

The SE 1223 VHD scanner decodes the symbols as described in Table 3-6. The numbers shown are typical values as well as guaranteed values. The minimum element width (or symbol density) is the width in mils of the narrowest element (bar or space) in the symbol.

Table 3-6
SE 1223 VHD Scanner Decode Distances

		Typical				Guaranteed			
Symbol Density		**Minimum**		**Maximum**		**Minimum**		**Maximum**	
In.	**mm**	**In.**	**cm**	**In.**	**cm**	**In.**	**cm**	**In.**	**cm**
0.002	0.051	1.9	4.82	2.5	6.35	N/A		N/A	
0.0025	0.063	1.7	4.32	3.3	8.38	2.25	5.71	2.75	6.98
0.003	0.076	1.7	4.32	4.5	11.43	2.25	5.71	3.6	9.14
0.004	0.127	1.7	4.32	6.5	16.51	2	5.08	5	12.7
0.005	0.127	1.7	4.32	7	17.78	2	5.08	5	12.7
0.0075	0.191	1.5	3.81	7.5	19.05	2	5.08	5.6	14.22
100% UPC		2.5	6.35	8.5	21.59	2.75	6.98	6.9	17.53

* Minimum distance determined by symbol length and scan angle.

The decode zone is a function of various symbol characteristics including density, print contrast, wide-to-narrow ratio, and edge acuity. Width of decode zone at any given distance must be considered when designing a system.

Usable scan length is calculated as follows:

L = 1.8 x (D + d) x Tan (A/2)

Where:

D = Distance (in inches) from the front edge of the housing.

d = The housing's internal optical path (in inches) from the edge of the housing to the front of the scanner.

A = Scan angle in degrees (37°).

So:

L = 1.8 x (D + d) x Tan 18.5°)

" **NOTE:** *Usable scan length determined by above formula, or 90% of scan line at any working distance.*

The calculation given above is based on good quality symbols in the center of the working range and length of bar code.

SE 1223 Long Range (LR) Scanner

Table 3-7
SE 1223 LR Scanner Technical Specifications

Item	Description
Power Requirements	5 volt dc ± 10%
Low Power Current	65 μA typ @ 5 V
Motor On Current	50 mA typical
Scan Session Current	
Motor and Laser On	100 mA typical
Surge Current	130 mA typical
Max V_{cc} Noise Level	200 mV point to point
Scan Repetition Rate	36 (± 4) scans/second (bi-directional)
Laser Power	1.3 mW ± .1 mW
Scan Angle	23° ± 1°

Table 3-7 (continued)
SE 1223 LR Scanner Technical Specifications

Item	Description	
Pitch Angle	±65° from normal straight out	
Skew Tolerance	±60° from normal	
Roll	±10° from vertical	
Ambient Light Immunity		
Sunlight	8000 ft candles 86,112 lux with correct exposure	
Artifical Light	450 ft candles 4844 lux	
Shock	2000 G applied via any mounting surface @ 23°C (for .25 msec)	
Vibration	Withstands a sinusoidal vibration of 1 G along each of the 3 mutually perpendicular axes for a period of 1 hour per axis, over a frequency range of 5 Hz to 2000 Hz.	
Laser Class	CDRH Class II	
Operating Temperature	-22° to 131°F	-30° to 55°C
Storage Temperature	-40° to 140°F	-40° to 60°C
Humidity	5 to 95% non-condensing	
Height	0.76 in. max	1.93 cm
Width	1.51 in. max	3.83 cm
Depth	1.38 in. max	3.5 cm
Weight	1.33 oz. max	38 gm

SE 1223 Long Range (LR) Scanner Decode Zone

The SE 1223 LR scanner decodes the symbols as described in Table 3-8. The numbers shown are typical values as well as guaranteed values. The minimum element width (or symbol density) is the width in mils of the narrowest element (bar or space) in the symbol.

Table 3-8
SE 1223 Standard Scanner Decode Distances

		Typical				Guaranteed			
Symbol Density		**Minimum**		**Maximum**		**Minimum**		**Maximum**	
In.	**mm**	**In.**	**cm**	**In.**	**cm**	**In.**	**cm**	**In.**	**cm**
0.010	0.254	9	22.86	22	55.88	12	30.48	18	45.72
0.015	0.381	7.5	19.05	39	99.06	9	22.86	34	86.36
0.020	0.508	7	17.78	44	111.76	9	22.86	39	99.06
0.040	1.01	10	25.4	90	228.6	10	25.4	80	203.2
0.055	1.04	10	25.4	100	254.0	10	25.4	90	228.6
0.070*	1.79	60	152.4	180	457.2	70	177.8	162	411.48
0.100*	2.54	66	167.64	240	609.6	84	213.36	210	533.4

* Reflective symbol.

The decode zone is a function of various symbol characteristics including density, print contrast, wide-to-narrow ratio, and edge acuity. Width of decode zone at any given distance must be considered when designing a system.

Usable scan length is calculated as follows:

$$L = 1.8 \times (D + d) \times \tan(A/2)$$

Where:

D = Distance (in inches) from the front edge of the housing.

d = The housing's internal optical path (in inches) from the edge of the housing to the front of the scanner.

A = Scan angle in degrees (23°).

So:

$$L = 1.8 \times (D + d) \times \tan 11.5°$$

" **NOTE:** *Usable scan length determined by above formula, or 90% of scan line at any working distance.*

The calculation given above is based on good quality symbols in the center of the working range and length of bar code.

Appendix A

Prefix and Suffix Character Equivalent Table

Table A-1
Prefix and Suffix Character Equivalent

Scan Value	Hex Value	Full ASCII Code 39 Encode Character	Keystroke
1000	00h	%U	CTRL 2
1001	01h	$A	CTRL A
1002	02h	$B	CTRL B
1003	03h	$C	CTRL C
1004	04h	$D	CTRL D
1005	05h	$E	CTRL E
1006	06h	$F	CTRL F
1007	07h	$G	CTRL G
1008	08h	$H	CTRL H
1009	09h	$I	CTRL I
1010	0Ah	$J	CTRL J
1011	0Bh	$K	CTRL K
1012	0Ch	$L	CTRL L
1013	0Dh	$M	CTRL M
1014	0Eh	$N	CTRL N

Table A-1 (Continued)
Prefix and Suffix Character Equivalent

Scan Value	Hex Value	Full ASCII Code 39 Encode Character	Keystroke
1015	0Fh	$O	CTRL O
1016	10h	$P	CTRL P
1017	11h	$Q	CTRL Q
1018	12h	$R	CTRL R
1019	13h	$S	CTRL S
1020	14h	$T	CTRL T
1021	15h	$U	CTRL U
1022	16h	$V	CTRL V
1023	17h	$W	CTRL W
1024	18h	$X	CTRL X
1025	19h	$Y	CTRL Y
1026	1Ah	$Z	CTRL Z
1027	1Bh	%A	CTRL [
1028	1Ch	%B	CTRL \
1029	1Dh	%C	CTRL]
1030	1Eh	%D	CTRL 6
1031	1Fh	%E	CTRL –
1032	20h	Space	Space
1033	21h	/A	!
1034	22h	/B	“
1035	23h	/C	#
1036	24h	/D	$
1037	25h	/E	%
1038	26h	/F	&

Table A-1 (Continued)
Prefix and Suffix Character Equivalent

Scan Value	Hex Value	Full ASCII Code 39 Encode Character	Keystroke
1039	27h	/G	’
1040	28h	/H	(
1041	29h	/I	)
1042	2Ah	/J	*
1043	2Bh	/K	+
1044	2Ch	/L	,
1045	2Dh	–	–
1046	2Eh	.	.
1047	2Fh	/	/
1048	30h	0	0
1049	31h	1	1
1050	32h	2	2
1051	33h	3	3
1052	34h	4	4
1053	35h	5	5
1054	36h	6	6
1055	37h	7	7
1056	38h	8	8
1057	39h	9	9
1058	3Ah	/Z	:
1059	3Bh	%F	;
1060	3Ch	%G	<
1061	3Dh	%H	=
1062	3Eh	%I	>

Table A-1 (Continued)
Prefix and Suffix Character Equivalent

Scan Value	Hex Value	Full ASCII Code 39 Encode Character	Keystroke
1063	3Fh	%J	?
1064	49h	%V	@
1065	41h	A	A
1066	42h	B	B
1067	43h	C	C
1068	44h	D	D
1069	45h	E	E
1070	46h	F	F
1071	47h	G	G
1072	48h	H	H
1073	49h	I	I
1074	4Ah	J	J
1075	4Bh	K	K
1076	4Ch	L	L
1077	4Dh	M	M
1078	4Eh	N	N
1079	4Fh	O	O
1080	50h	P	P
1081	51h	Q	Q
1082	52h	R	R
1083	53h	S	S
1084	54h	T	T
1085	55h	U	U
1086	56h	V	V

Table A-1 (Continued)
Prefix and Suffix Character Equivalent

Scan Value	Hex Value	Full ASCII Code 39 Encode Character	Keystroke
1087	57h	W	W
1088	58h	X	X
1089	59h	Y	Y
1090	5Ah	Z	Z
1091	5Bh	%K	[
1092	5Ch	%L	\
1093	5Dh	%M	]
1094	5Eh	%N	^
1095	5Fh	%O	–
1096	60h	%W	‘
1097	61h	+A	a
1098	62h	+B	b
1099	63h	+C	c
1100	64h	+D	d
1101	65h	+E	e
1102	66h	+F	f
1103	67h	+G	g
1104	68h	+H	h
1105	69h	+I	i
1106	6Ah	+J	j
1107	6Bh	+K	k
1108	6Ch	+L	l
1109	6Dh	+M	m
1110	6Eh	+N	n

Table A-1 (Continued)
Prefix and Suffix Character Equivalent

Scan Value	Hex Value	Full ASCII Code 39 Encode Character	Keystroke
1111	6Fh	+O	o
1112	70h	+P	p
1113	71h	+Q	q
1114	72h	+R	r
1115	73h	+S	s
1116	74h	+T	t
1117	75h	+U	u
1118	76h	+V	v
1119	77h	+W	w
1120	78h	+X	x
1121	79h	+Y	y
1122	7Ah	+Z	z
1123	7Bh	%P	{
1124	7Ch	%Q	|
1125	7Dh	%R	}
1126	7Eh	%S	~
1127	7Fh		undefined

Values from 1128 through 1255 (hex values 80h through FFh for SSI) may also be set. But the conversion of those characters to printable characters is not standarized. Therefore, they are not included in this table.