

Bar Code Reader

Models 1000/1002

USER'S MANUAL



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FCC NOTICE

WARNING: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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INTRODUCTION

The Model 1000/1002 bar code reader is an easy to use system that accepts a wand or slot reader as an input device. The reader installs quickly between the keyboard and personal computer. Data is sent to the computer as if it were typed in from the keyboard. No hardware or software changes are necessary.

Tailor the reader to individual applications by simply scanning a bar code from the menu. It's that simple! All these features make the Model 1000/1002 an ideal data collection device that provides quality and performance in one package.

FEATURES:

Bar Code Data Appears as Keyboard Input to the PC.

Reader Automatically Recognizes and Reads the Following Bar Code Types:

- Code 39
- Extended Code 39 (Full ASCII)
- Interleaved 2 of 5
- UPC-A, UPC-E(0), UPC-E(1)
- EAN-8, EAN-13
- UPC & EAN Supplements (2 and 5 Character)
- Codabar
- Code 128
- Code 93
- Code 11
- MSI/Plessey

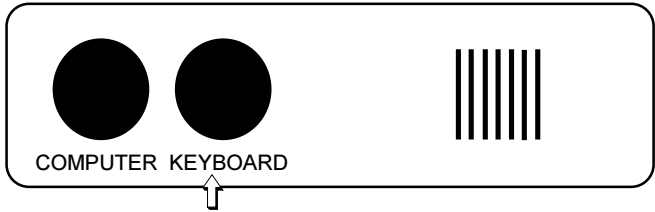
Power/Ready Light Indicates Scanner Status.

INSTALLATION INSTRUCTIONS

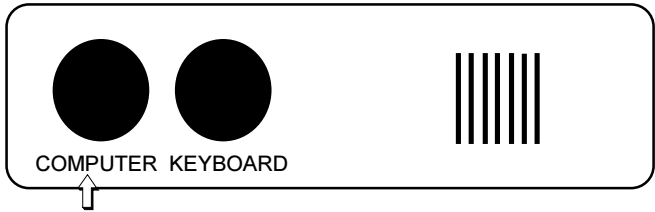
OVERVIEW

Installation requires connecting cables between the reader and your computer.

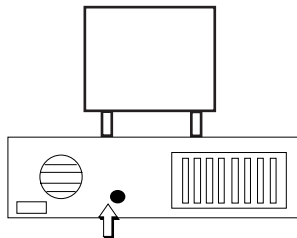
- Step 1: Turn OFF the power to the computer.
- Step 2: Unplug the KEYBOARD cable from the back of the computer and plug it into the connector labeled "KEYBOARD" on the rear panel of the reader.



- Step 3: Plug one end of the cable (supplied with the reader) into the connector labeled "COMPUTER" on the rear panel of the reader.



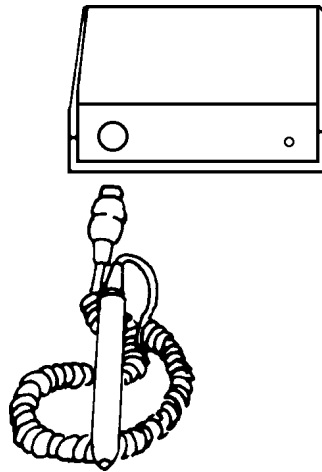
- Step 4: Plug the other end of the cable (supplied with the reader) into the KEYBOARD connector located on the back of your computer.



Step 5: CONNECTING INPUT DEVICES:

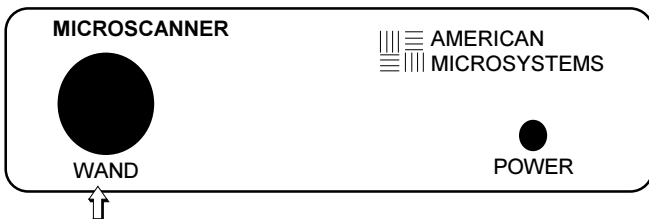
Installing a Wand

Plug the end of the WAND cable into the circular connector labeled "WAND" on the front panel of the reader.

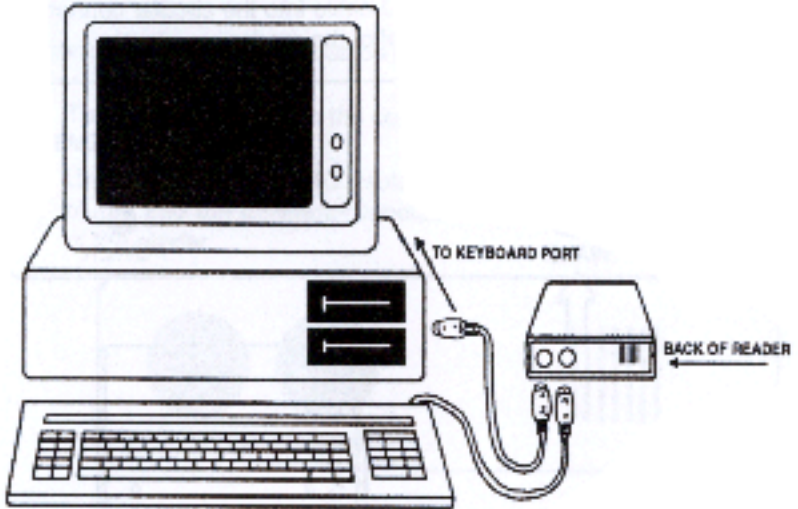


Installing A Slot Reader

Plug the end of the SLOT READER cable into the circular connector labeled "WAND" on the front panel of the reader.



Step 6: Verify that the cables are connected as shown below:

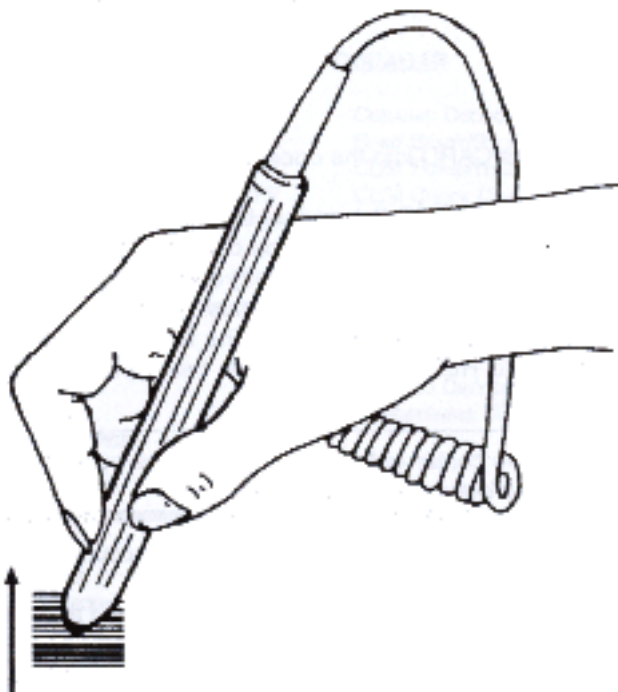


- Step 7: Turn ON the power to the computer. (The reader receives its power from the computer just like the keyboard.)
- Step 8: The "POWER" display light on the front panel of the reader will display RED and the reader will BEEP twice. Approximately 1/2 second later the display will change to GREEN.
- Step 9: The GREEN color indicates the reader is ready to use. The keyboard remains fully functional and you may enter data as before.

SCANNING BAR CODES

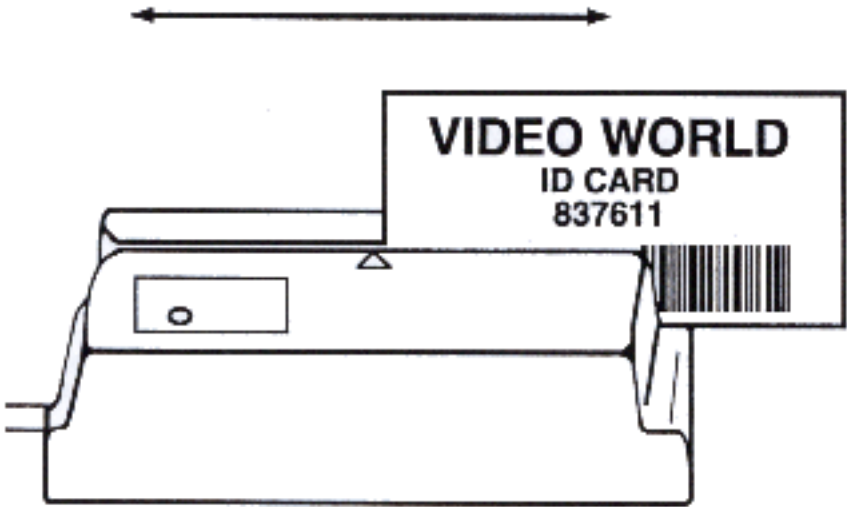
WAND SCANNING

- Step 1:** HOLD THE WAND LIKE A PENCIL, tilted at an angle of 10° to 30° from vertical.
- Step 2:** TOUCH the wand tip to the WHITE SPACE before the label.
- Step 3:** Move the wand QUICKLY across the label as if you were drawing a straight line through the middle of it.
- Step 4:** Begin and end your stroke in the WHITE SPACE. Maintain a smooth, even stroke while scanning. You can read labels bi-directionally (either left-to-right or right-to-left) and the data will output correctly to your computer.
- Step 5:** If you scanned the label correctly, you will hear a short BEEP. When the "POWER" light turns GREEN the reader is ready to scan another label.



SLOT READER (Badge Reader)

Step 1: Hold the CARD so that the bar code label is on the bottom and FACES the ARROW on the slot reader.



Step 2: Insert the CARD into the opening on either side of the reader.

Step 3: Holding the CARD flat against the bottom of the reader, SLIDE the card through the opening. You can slide the CARD bi-directionally (either left-to-right or right-to-left) and the data will output correctly to your computer. The CARD must maintain contact with the base of the reader while scanning. The front panel "POWER" light will change to RED while the card is being pulled through the SLOT READER.

NOTE: The center of the bar code must be positioned 0.5" from the bottom edge of the card.

Step 4: After a successful read the following will occur:

- The decoder will BEEP.
- The bar code data is transmitted to the computer.

Step 5: When the front panel "POWER" light changes to GREEN, the reader is ready to scan another card.

DEFAULT SETTINGS

The Model 1000/1002 is shipped from the factory with the following default settings:

CODE 39

CODE 39 DECODER	ON
FULL ASCII	OFF
MOD 43 CHECK DIGIT	OFF
SEND CHECK DIGIT	OFF
CONCATENATE MODE	OFF

UPC

UPC DECODER	ON
CONVERT UPC-E TO UPC-A	OFF
CONVERT UPC-A TO EAN-13	OFF
SEND UPC-A NUMBER SYSTEM	ON
SEND UPC-E NUMBER SYSTEM	ON
SEND UPC-A CHECK DIGIT	ON
SEND UPC-E CHECK DIGIT	ON

EAN

EAN DECODER	ON
ZERO FILL EAN-8 TO EAN-13	OFF
SEND EAN-13 COUNTRY CODE	ON
SEND EAN-8 COUNTRY CODE	ON
SEND EAN-13 CHECK DIGIT	ON
SEND EAN-8 CHECK DIGIT	ON
ISBN CONVERSION	OFF

UPC/EAN SUPPLEMENTS

SUPPLEMENTS DECODER	OFF
ALLOW 2 DIGIT SUPPLEMENTS	ON
ALLOW 5 DIGIT SUPPLEMENTS	ON
REQUIRE SUPPLEMENTS	OFF
SEND SEPARATOR SPACE	OFF

INT. 2 OF 5

1 2 OF 5 DECODER	ON
CHECK DIGIT	NONE
SEND CHECK DIGIT	OFF
FIXED LENGTH	OFF
SET FIXED LENGTH #1	06
SET FIXED LENGTH #2	00

CODABAR

CODABAR DECODER	ON
SEND START/STOP	OFF
CLSI FORMATTING	OFF
CLSI CHECK DIGIT	OFF

CODE 128

CODE 128 DECODER	ON
UCC-128 VERIFICATION	OFF
SEND MOD 10 CHECK DIGIT	ON

CODE 93

CODE 93 DECODER	ON
CONCATENATE MODE	OFF

MSI/PLESSEY

MSI/PLESSEY DECODER	OFF
TWO CHECK DIGITS REQUIRED	OFF
FIRST CHECK DIGIT MOD 11	OFF
SEND 1ST CHECK DIGIT	OFF
SEND 2ND CHECK DIGIT	OFF
ISBN PLESSEY	OFF

CODE 11

CODE 11 DECODER	OFF
TWO CHECK DIGITS REQUIRED	OFF
SEND 1ST CHECK DIGIT	OFF
SEND 2ND CHECK DIGIT	OFF

PREAMBLE

ENTER PREAMBLE	NONE
PREAMBLE SEND DELAY	0.0 SEC.
ACTIVE TYPES	ALL

POSTAMBLE

ENTER POSTAMBLE	NONE
POSTAMBLE SEND DELAY	0.0 SEC.
ACTIVE	ALL

TERMINATION CHARACTER

TERMINATION CHARACTER	CR
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BAR CODE EDIT

BAR CODE EDITING	OFF
ENTER # OF LEADING STRIP CHAR'S	0
ENTER # OF TRAILING STRIP CHAR'S	0
ENTER BAR CODE TYPE TO EDIT	ALL
STRIP LEADING & TRAILING SPACES	OFF

BEEP TONE

BEEP TONE	MEDIUM
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BEEP LENGTH

BEEP LENGTH	MEDIUM SHORT
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COMPUTER TYPE

COMPUTER TYPE	IBM AT
KEYBOARD TYPE	USA
KEYBOARD INSTALLED	ON

TRANSMIT SPEED

TRANSMIT SPEED	FAST
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DIAGNOSTICS

DIAGNOSTIC SELF TEST	OFF
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OTHER OPTIONS

SEND BAR CODE TYPE ID	OFF
FUNCTION KEYS	OFF
KEYBOARD CAPS LOCK STATUS	ON
KEYBOARD NUM LOCK STATUS	OFF
SPECIAL KEYS	OFF
KEYBOARD AUTO CAPS/NUM LOCK	ON
ALTERNATE KEYBOARD SCAN CODES	OFF
TERMINATION CHARACTER OVERRIDE	OFF
READ REVERSE IMAGE BAR CODES	OFF

CHANGING THE DEFAULT SETTINGS

You can easily change the default settings by simply scanning the bar code options located on the READER SETUP MENU. The READER SETUP MENU is a laminated sheet of bar codes supplied with this manual.

The basic programming sequence is:

START / CATEGORY / OPTION (0-9) / ON/OFF (or) NUMBER ONLY / EXIT

Follow the instructions below to change the settings.

- Step 1:** Scan the START label at the top left corner of the SETUP MENU. This puts the reader into the program mode.
- Step 2:** Scan one of the CATEGORY labels (i.e. Code 39, UPC, Computer Type, Transmit Speed).
- Step 3:** Select the desired option by scanning one of the numeric labels (0 - 9).
- Step 4:** If there is an (ON/OFF) next to the description, scan an ON label to enable or OFF label to disable the option.

EXAMPLE: To enable the MOD 43 check digit on Code 39, perform the following:

- 1) Scan the "CODE 39" category label.
- 2) Scan the option "2" label to select the "MOD 43 CHECK DIGIT" option.
- 3) Scan the "ON" label to enable option (2).

If there is a range of numbers next to the option, then scan one of the numeric labels (0 - 9).

EXAMPLE: To select the OPCC check digit for Interleaved 2 of 5, perform the following:

- 1) Scan the "INT. 2 OF 5" category label.
- 2) Scan the "1" label to select the "CHECK DIGIT" option.
- 3) Scan the "2" label to select OPCC.

Step 5: If you want to make another change within the SAME CATEGORY, you can scan another option number (i.e., return to "Step 3" above). If you want to make a change in a DIFFERENT CATEGORY you MUST scan the new CATEGORY (i.e., return to "Step 2" above and repeat the steps).

Step 6: When you have finished making all of the changes, you can either:

- 1) SCAN the EXIT (Save Changes) label to save all the changes
- OR
- 2) SCAN the EXIT (Ignore Changes) label to exit without saving any changes.

NOTE: You can reset the reader to the default setting by performing the following:

- 1) Scan the START label.
- 2) Scan the RESET ALL DEFAULTS label.
- 3) Scan the EXIT (Save Changes) label.

PROGRAMMING GUIDE

START

The START bar code places the reader into the program mode. After scanning this label, the reader will emit three short BEEPS to indicate that it is in the program mode.

EXIT (SAVE CHANGES)

Scan this bar code to EXIT the program mode and save all of the changes. After scanning this label, the reader will BEEP twice, then delay approximately one second, and emit three short BEEPS to indicate that it accepted the changes.

EXIT (IGNORE CHANGES)

Scan this bar code to EXIT the program mode and DISCARD all of the current changes. The reader will use the settings that were in effect before entering the program mode.

RESET ALL DEFAULTS

Scan this bar code to RESET all options to their DEFAULT settings.

0-9 BAR CODES

These bar codes are scanned to select various options and enter programmable data into the reader.

NOTE: Scan option (9) to reset all of the options within the current CATEGORY back to their defaults.

ON

If the OPTION has an (ON/OFF) beside the description, scan the ON bar code to turn ON the current option.

OFF

If the OPTION has an (ON/OFF) beside the description, scan the OFF bar code to turn OFF the current option.

FULL ASCII CHART

The FULL ASCII CHART is located on the back of the SETUP MENU. This chart contains the entire ASCII character set (128 characters). Use this chart to enter PREAMBLE and POSTAMBLE character strings, or for a USER DEFINED TERMINATION CHARACTER.

ADDITIONAL NOTES:

If the description beside the OPTION contains:

(ON/OFF) Then scan either an ON or OFF label to set the option.

(CHART) Then scan one or more characters from the Full ASCII Chart.

(0-9) Scan the desired character from the 0-9 labels.

(0.0-9.9) Scan two characters from the 0-9 labels to set the time from 0.0 to 9.9 seconds.

* **NOTE:** Defaults are marked with " * ".

CODE 39

0) CODE 39 DECODER

- ON * Enable reading CODE 39 labels.
- OFF Disable reading CODE 39 labels.

1) FULL ASCII

- ON Enable the FULL ASCII EXTENSION to CODE 39. Option (0) above must be ON. A Full ASCII Chart is provided in Appendix C.
- OFF * Disable the FULL ASCII EXTENSION to CODE 39. This sets the reader to the standard CODE 39 mode.

2) MOD 43 CHECK DIGIT

- ON Enable the MOD 43 CHECK DIGIT for CODE 39. When this option is enabled, only CODE 39 labels that contain a valid check digit will be read.
- OFF * Disable the MODE 43 CHECK DIGIT. Check digit verification will not be performed.

3) SEND CHECK DIGIT

- ON Transmit the MOD 43 CHECK DIGIT with the bar code data. Requires option (2) above to be ON.
- OFF * Do not transmit the MOD 43 CHECK DIGIT.

4) CONCATENATE MODE

- ON Enable CONCATENATE MODE. The concatenate mode allows the reader to accumulate multiple bar codes in its buffer, then send them to the computer just like they were a single bar code. When a Code 39 label containing a leading space is read, the reader emits two short beeps and buffers the data without transmission. This process continues until a Code 39 label without a leading space is read or 128 characters are buffered. A Code 39 bar code label that only contains a single or multiple dashes (minus sign) will clear the buffer.
- OFF * Disable CONCATENATE MODE.

UPC

0) UPC DECODER

- ON * Enable reading UPC-A and UPC-E labels.
- OFF Disable reading UPC-A and UPC-E labels.

1) CONVERT UPC-E TO UPC-A

- ON Convert all UPC-E labels to their UPC-A equivalents before transmission. After conversion, the reader will follow the UPC-A programming options.
- OFF * No UPC-E conversions will be performed.

2) CONVERT UPC-A TO EAN-13

- ON Convert all UPC-A labels to an equivalent EAN-13 format by inserting a leading zero. After conversion, the reader will follow the EAN-13 programming options.
- OFF * No UPC-A conversions will be performed.

3) SEND UPC-A NUMBER SYSTEM

- ON * Transmit the UPC-A NUMBER SYSTEM character.
- OFF Do not transmit the UPC-A NUMBER SYSTEM character.

4) SEND UPC-E NUMBER SYSTEM

- ON * Transmit the UPC-E NUMBER SYSTEM character.
- OFF Do not transmit the UPC-E NUMBER SYSTEM character.

5) SEND UPC-A CHECK DIGIT

- ON * Transmit the UPC-A CHECK DIGIT character.
- OFF Do not transmit the UPC-A CHECK DIGIT character.

6) SEND UPC-E CHECK DIGIT

- ON * Transmit the UPC-E CHECK DIGIT character.
- OFF Do not transmit the UPC-E CHECK DIGIT character.

EAN

0) **EAN DECODER**

ON * Enable reading EAN-8 and EAN-13 labels.

OFF Disable reading EAN-8 and EAN-13 labels.

1) **ZERO FILL EAN-8 TO EAN-13**

ON Add five leading zeroes to EAN-8 labels. After conversion, the reader will follow the EAN-13 programming options.

OFF * No conversion is performed.

2) **SEND EAN-13 COUNTRY CODE**

ON * Transmit the EAN-13 COUNTRY CODE.

OFF Do not transmit the EAN-13 COUNTRY CODE.

3) **SEND EAN-8 COUNTRY CODE**

ON * Transmit the EAN-8 COUNTRY CODE.

OFF Do not transmit the EAN-8 COUNTRY CODE.

4) **SEND EAN-13 CHECK DIGIT**

ON * Transmit the EAN-13 CHECK DIGIT character.

OFF Do not transmit the EAN-13 CHECK DIGIT character.

5) **SEND EAN-8 CHECK DIGIT**

ON * Transmit the EAN-8 CHECK DIGIT character.

OFF Do not transmit the EAN-8 CHECK DIGIT character.

6) **ISBN CONVERSION**

ON Convert 13 DIGIT BOOKLAND/EAN (978 prefix) to its corresponding 10 DIGIT ISBN number.

EXAMPLE: BAR CODE DATA = 9780806957906
ISBN OUTPUT = 0806957905

OFF * Do not convert BOOKLAND/EAN to ISBN number.

UPC/EAN SUPPLEMENTS

0) SUPPLEMENTS DECODER

- ON Enable reading UPC & EAN supplements.
- OFF* Disable reading UPC & EAN supplements.

1) ALLOW 2 DIGIT

- ON* Enable reading 2 digit supplements. Option (0) above must be set ON.
- OFF Disable reading 2 digit supplements.

2) ALLOW 5 DIGIT

- ON* Enable reading 5 digit supplements. Option (0) above must be set ON.
- OFF Disable reading 5 digit supplements.

3) REQUIRE SUPPLEMENTS

Specifies how the reader will handle various supplements.

- 0)* UPC/EAN bar codes will be read with or without valid supplements.
- 1) UPC bar codes will not be read unless they are accompanied by a valid supplement.
- 2) EAN bar codes will not be read unless they are accompanied by a valid supplement.
- 3) Bookland EAN bar codes will not be read unless they are accompanied by a valid supplement.
- 4) All UPC/EAN bar codes will not be read unless they are accompanied by a valid supplement.

4) SEND SEPARATOR SPACE

- ON Insert a space between the standard bar code data and the supplemental data.
- OFF* No separator space is inserted.

INTERLEAVED 2 OF 5

0) **1 2 OF 5 DECODER**

- ON * Enable reading INTERLEAVED 2 OF 5 labels.
- OFF Disable reading INTERLEAVED 2 OF 5 labels.

1) **CHECK DIGIT: 0=NONE, 1=USS, 2=OPCC**

Specifies which type of check digit will be used with INTERLEAVED 2 of 5.

- 0 * NONE (no check digit required)
- 1 UNIFORM SYMBOLOGY SPECIFICATION
(3-1-3 MOD 10)
- 2 OPTICAL PRODUCT CODE COUNCIL
(2-1-2 MOD 10)

2) **SEND CHECK DIGIT**

- ON Transmit the INTERLEAVED 2 OF 5 check digit with the bar code data.
- OFF * The check digit is not transmitted.

3) **FIXED LENGTH**

- ON Read only FIXED LENGTH INTERLEAVED 2 OF 5 bar code labels that match the lengths defined in options (4) & (5) below. (The SEND CHECK DIGIT option can be ON or OFF.)
- OFF * Disable FIXED LENGTH mode. Read all INTERLEAVED 2 OF 5 labels without regard to length.

4) **SET FIXED LENGTH #1 (02-60)**

Sets the first valid FIXED LENGTH for Interleaved 2 of 5. Scan a two digit value to enter the length. Valid lengths are 02 - 60 characters. By definition, the length of INTERLEAVED 2 OF 5 labels are an even number of characters. The default FIXED LENGTH is six (06) characters.

5) **SET FIXED LENGTH #2 (02-60)**

Sets a second valid fixed LENGTH for INTERLEAVED 2 OF 5. Scan a two digit value to enter the length. The default length is set to zero (00) characters (i.e. the second FIXED LENGTH is disabled).

CODABAR

0) CODABAR DECODER

ON * Enable reading CODABAR labels.

OFF Disable reading CODABAR labels.

1) SEND START/STOP

ON Transmit the CODABAR start/stop characters.

OFF * Do not transmit the CODABAR start/stop characters.

2) CLSI FORMATTING

ON The reader will insert a blank after the 1st, 5th, and 10th characters of a 14-character CODABAR label. The label length does not include the start and stop characters.

OFF * Disable CLSI formatting.

3) CLSI CHECK DIGIT

ON Enable the CLSI check digit. When this option is enabled, all fourteen digit numeric bar codes must contain a valid check digit.

OFF* Disable the CLSI check digit. Check digit verification will not be performed.

CODE 128

0) CODE 128 DECODER

ON * Enable reading Code 128 labels.

OFF Disable reading Code 128 labels.

1) UCC-128 VERIFICATION

ON A valid MOD 10 CHECK DIGIT is required on UCC-MOD 10 bar codes. (Applies to 20-digit serial shipping container bar codes.)

OFF * UCC-MOD 10 bar codes are accepted without valid MOD 10 CHECK DIGITS.

2) SEND MOD 10 CHECK DIGIT

ON * Transmit the MOD 10 CHECK DIGIT with the bar code entry.

OFF Do not transmit the MOD 10 CHECK DIGIT.

CODE 93

0) *CODE 93 DECODER*

- ON * Enable reading CODE 93 labels.
- OFF Disable reading CODE 93 labels.

1) *CONCATENATE MODE*

- ON Enable CONCATENATE MODE. The concatenate mode allows the reader to concatenate multiple bar codes in its buffer, then send them to the computer just like they were a single bar code. When a Code 93 label with a leading space is read, the reader emits two short beeps and buffers the data without transmission. This process continues until a Code 93 label without a leading space is read or 128 characters are buffered. A Code 93 bar code label that only contains a single or multiple dashes (minus sign) will clear the buffer.
- OFF * Disable CONCATENATE MODE.

MSI/PLESSEY

0) MSI/PLESSEY DECODER

ON Enable reading MSI/PLESSEY labels.

OFF * Disable reading MSI/PLESSEY labels.

1) TWO CHECK DIGITS REQUIRED

ON Two valid CHECK DIGITS are required for each label.
The first check digit is defined by option (2) below.
The second check digit is always MOD 10.

OFF * One valid CHECK DIGIT is required for each label.
The CHECK DIGIT must be MOD 10.

2) FIRST CHECK DIGIT MOD 11

ON The FIRST CHECK DIGIT must be MOD 11.

OFF * The FIRST CHECK DIGIT must be MOD 10.

3) SEND FIRST CHECK DIGIT

ON Transmit the FIRST CHECK DIGIT.

OFF * Do not transmit the FIRST CHECK DIGIT.

4) SEND SECOND CHECK DIGIT

ON Transmit the SECOND CHECK DIGIT.

OFF * Do not transmit the SECOND CHECK DIGIT.

5) ISBN PLESSEY

ON Enable reading of Modified Plessey ISBN bar codes.
Only eleven digit ISBN bar codes will be read.

OFF* Do not read Modified Plessey ISBN bar codes.

CODE 11

0) CODE 11 DECODER

ON Enable reading CODE 11 labels.

OFF * Disable reading CODE 11 labels.

1) TWO CHECK DIGITS REQUIRED

ON Two valid CHECK DIGITS are required for each label.

OFF * One valid CHECK DIGIT is required for each label.

2) SEND FIRST CHECK DIGIT

ON Transmit the FIRST CHECK DIGIT.

OFF * Do not transmit the FIRST CHECK DIGIT.

3) SEND SECOND CHECK DIGIT

ON Transmit the SECOND CHECK DIGIT.

OFF * Do not transmit the SECOND CHECK DIGIT.

PREAMBLE

0) ENTER PREAMBLE

This set of user-defined characters is transmitted at the beginning of bar code data. To define the PREAMBLE, scan up to 15 characters from the FULL ASCII chart on the reverse side of the SETUP MENU. Scan the "ON" bar code when complete.

1) PREAMBLE SEND DELAY (0.0 - 9.9 SEC)

This option specifies the amount of delay to occur after the PREAMBLE is transmitted. The delay period is programmable from 0.0 to 9.9 seconds. The default setting is 0.0 seconds.

2) ACTIVE TYPES

Specifies the types of bar codes that use preambles. Select one of the following:

A CODE 39	E EAN-8	I CODE 93
B UPC-A	F I 2 of 5	J MSI/PLESSEY
C UPC-E	G CODABAR	K CODE 11
D EAN-13	H CODE 128	L ISBN
	X* ALL BAR CODES	

POSTAMBLE

0) ENTER POSTAMBLE

This set of user-defined characters is transmitted at the end of bar code data. To define the POSTAMBLE, scan up to 15 characters from the FULL ASCII chart on the reverse side of the SETUP MENU. Scan the "ON" bar code when complete.

1) POSTAMBLE SEND DELAY (0.0 - 9.9 SEC)

This option specifies the amount of delay to occur after the POSTAMBLE is transmitted. The delay period is programmable from 0.0 to 9.9 seconds. The default setting is 0.0 seconds.

3	CARRIAGE RETURN & LINE FEED (ASCII 13 & ASCII 10)
4	USER DEFINED TERMINATION CHARACTER

2) ACTIVE TYPES

Specifies the types of bar codes that use postambles. Select one of the following:

A CODE 39	E EAN-8	I CODE 93
B UPC-A	F I 2 of 5	J MSI/PLESSEY
C UPC-E	G CODABAR	K CODE 11
D EAN-13	H CODE 128	L ISBN
	X* ALL BAR CODES	

BAR CODE EDIT

This option allows editing bar codes before transmittal.

0) **BAR CODE EDITING**

(Must be ON for any of the editing options below to be valid.)

ON Enable Bar Code Editing.

OFF * Disable Bar Code Editing.

1) **ENTER # OF LEADING CHARS TO STRIP (0-9, A-F)**

(Option (0) above must be ON.) Refers to the number (0-15) of bar code characters to be stripped, i.e., removed, from the beginning of the data entry.

2) **ENTER # OF TRAILING CHARS TO STRIP (0-9, A-F)**

(Option (0) above must be ON.) Refers to the number (0-15) of bar code characters to be stripped, i.e., removed, from the end of the data entry.

NOTE: If the total number of strip characters (both Leading and Trailing) is greater than the number of characters of the bar code, no characters will be stripped.

3) **ENTER BAR CODE TYPE TO EDIT**

(Option (0) above must be ON.) Refers to the type of bar codes for which editing can be enabled. The choices are listed below:

A	CODE 39	G	CODABAR
B	UPC-A	H	CODE 128
C	UPC-E	I	CODE 93
D	EAN-13	J	MSI/PLESSEY
E	EAN-8	K	CODE 11
F	INTERLEAVED 2 of 5	X *	ALL BAR CODES

4) **STRIP LEADING & TRAILING SPACES**

(Option (0) above must be ON.)

ON Any LEADING & TRAILING SPACES will be stripped from the data.

OFF * No spaces will be stripped.

TERMINATION CHARACTER

The optional TERMINATION CHARACTER is transmitted at the end of the data. This option applies to bar code, mag stripe, and serial data.

If a USER DEFINED TERMINATION CHARACTER is desired, select setting (4) below, then scan a single character from the FULL ASCII section of the MENU.

- 0 NONE
- 1 HORIZONTAL TAB (ASCII 09)
- 2 * CARRIAGE RETURN (ASCII 13)
- 3 CARRIAGE RETURN & LINE FEED
(ASCII 13 & ASCII 10)
- 4 USER DEFINED TERMINATION CHARACTER

BEEP TONE

This option sets the frequency (pitch) of the beep tone. Select one of the following:

- 0 NONE
- 1 LOW
- 2 * MEDIUM
- 3 HIGH

BEEP LENGTH

This option sets the length of the beep tone. Select one of the following:

- 0 SHORT
- 1 * MEDIUM SHORT
- 2 MEDIUM LONG
- 3 LONG

COMPUTER TYPE

This option defines both the type of computer and the type of keyboard that will be used. The selections must be made properly for the data to transmit correctly. Note the UNIVERSAL keyboard setting below, which can be used for all international keyboards.

Select a COMPUTER TYPE from settings (0-3), and a KEYBOARD TYPE from setting (4):

- 0 IBM PC/XT (8088 and 8086 processors)
- 1 * IBM AT (286, 386, and 486 processors)
- 2 IBM PS/2 MODELS 25, 30, 57, & 90
(and some MODEL 70's)
- 3 IBM PS/2 MODELS 30-286, 50, 55, 60, 70, 80
- 4 KEYBOARD TYPE. Select from the following:
 - 0) * USA
 - 1) FRENCH
 - 2) GERMAN
 - 3) ITALIAN
 - 9) UNIVERSAL

NOTE: For all XT computers, select UNIVERSAL as the KEYBOARD TYPE to ensure proper upper/lower case transmission.

- 5) KEYBOARD INSTALLED
 - ON* The computer has a keyboard installed .
 - OFF The computer does not have a keyboard installed.

NOTE: Option (5) is not applicable to PC/XT computers.

TRANSMIT SPEED

This option sets the speed at which data will be transmitted to the computer. Some computer systems may require the transmission speed to be set to a slower speed. The default setting is (3), FAST.

- 0 SLOW
- 1 MEDIUM SLOW
- 2 MEDIUM FAST
- 3 * FAST

OTHER OPTIONS

0) SEND BAR CODE TYPE ID

ON Transmit the bar code identifier character at the beginning of the bar code data. There is one space between the ID character and the bar code data. The identifier characters are defined below:

A	CODE 39	G	CODABAR
B	UPC-A	H	CODE 128
C	UPC-E	I	CODE 93
D	EAN-13	J	MSI/PLESSEY
E	EAN-8	K	CODE 11
F	INTERLEAVED 2 of 5		

OFF * Do not transmit BAR CODE TYPE ID.

1) FUNCTION KEYS

ON Applies to bar code data, preambles, postambles, and user defined termination characters. FUNCTION KEYS F1 through F10 will be transmitted in place of the ASCII characters "DC1" (11H) through "SUB" (1AH). The FUNCTION KEY values are listed in the Full ASCII Chart on back of the MENU, and in *Appendix A*.

OFF * Disable FUNCTION KEYS.
(Standard ASCII characters are transmitted.)

NOTE: See option (4) for a related example.

2) KEYBOARD CAPS LOCK STATUS

Setting this function is necessary only if option (5), KEYBOARD AUTO CAPS/NUM LOCK, does not operate on your computer. See option (5) to determine whether KEYBOARD CAPS LOCK STATUS is required.

To use this option, scan either ON or OFF to match the computer keyboard's CAPS LOCK status.

ON * Scan ON to indicate that the keyboard's CAPS LOCK is turned ON. The result is lower case Alpha characters being output as Shifted characters.

OFF Scan OFF to indicate that the keyboard's CAPS LOCK is turned OFF. The result is upper case Alpha characters being output as Shifted characters.

3) **KEYBOARD NUM LOCK STATUS**

Setting this function is necessary only if option (5), KEYBOARD AUTO CAPS/NUM LOCK, does not operate on your computer. See (5) to determine whether KEYBOARD NUM LOCK STATUS is required.

To use this option, scan either ON or OFF to match the computer keyboard's NUM LOCK status.

ON Scan ON to indicate that the computer keyboard's NUM LOCK is turned ON.

OFF * Scan OFF to indicate that the computer keyboard's NUM LOCK is turned OFF.

4) **SPECIAL KEYS**

This option applies to bar code data, preambles, postambles, and user defined termination characters.

ON SPECIAL KEY characters will be transmitted in place of a specific set of ASCII characters. The SPECIAL KEYS are listed in the Full ASCII Chart provided on back of the SETUP MENU and in *Appendix A*.

OFF * Disable SPECIAL KEYS.
(Standard ASCII characters are transmitted.)

EXAMPLE: With SPECIAL KEYS ON, the bar code character "STX" will be transmitted as a right arrow, having the effect of pressing the "→" key at the keyboard.

NOTE: If the Bar Code Reader is not transmitting the special characters with SPECIAL KEYS ON, or if the computer is an XT, see option (5), "*Keyboard Auto Caps/Num Lock*".

5) **KEYBOARD AUTO CAPS/NUM LOCK**

With this option ON, data is automatically transmitted in the correct upper/lower case, whether the keyboard's settings are turned ON or OFF.

ON * Enable KEYBOARD AUTO CAPS/NUM LOCK.

OFF Disable KEYBOARD AUTO CAPS/NUM LOCK.

NOTE

The KEYBOARD AUTO CAPS/NUM LOCK option is NOT effective on some computers, such as XT's. Indications that this option is NOT functioning are as follows:

Upper/Lower Case are reversed.
SPECIAL KEY characters are not transmitted when SPECIAL KEYS are ON.

If KEYBOARD AUTO CAPS/NUM LOCK is NOT operating properly on your system, take the following steps:

Set KEYBOARD AUTO CAPS/NUM LOCK to OFF.
Set KEYBOARD CAPS LOCK STATUS. (See option (2).)
Set KEYBOARD NUM LOCK STATUS. (See option (3).)

6) ALTERNATE KEYBOARD SCAN CODES

This option is necessary ONLY for computers that use SCAN CODE Set 3. Note that it might be necessary to disable option (5), KEYBOARD AUTO CAPS/NUM LOCK.

ON Enable ALTERNATE KEYBOARD SCAN CODES.

OFF * Disable ALTERNATE KEYBOARD SCAN CODES.

7) TERM CHAR OVERRIDE

ON If any control character or special character (ie., function key, arrow key, etc...) is embedded in the bar code data, the TERMINATION CHARACTER, the PREAMBLE, and the POSTAMBLE will not be transmitted.

OFF * The TERMINATION CHARACTER, the PREAMBLE, and the POSTAMBLE will be transmitted with all bar code data.

8) READ REVERSE IMAGE BAR CODES

ON Enable reading of Reverse Image (negative image) bar codes.

OFF * Disable the reading of Reverse Image (negative image) bar codes.

DIAGNOSTICS

This option executes a self-test program which performs the following tests on the reader:

- * EPROM Version Number
- * Internal and External Ram Test
- * EPROM Checksum Test
- * Character Set Test
- * Buzzer Test

The above tests are performed and their status is displayed on the PC monitor.

NOTE: Exit your application program and return to DOS before enabling this test.

SPECIFICATIONS

BAR CODES SUPPORTED

Auto-discriminates between all of the following codes:

- Code 39
- Extended Code 39 (Full ASCII)
- Interleaved 2 of 5 (Variable and Fixed Length, Check Digit)
- UPC-A (Including 2 and 5 Character Supplements)
- UPC-E(0), UPC-E(1) (Including 2 and 5 Character Supplements)
- EAN (Including 2 and 5 Character Supplements)
- Code 128 (UCC-128 Verification, Check Digit)
- Codabar
- Code 93
- Code 11
- MSI/Plessey

INPUT DEVICES SUPPORTED

Wands (Visible and Infrared)

Slot Readers (Or Badge Readers)

USER PROGRAMMABLE FEATURES

All features are easily programmed with a bar code menu:

- | | |
|-----------------------------|---------------------------------------|
| Bar Code Selection: | Preamble (15 Chars Max) |
| - Enable/Disable | Postamble (15 Chars Max) |
| - Length | Computer Type |
| - Check Digit | Keyboard Type (US & Foreign) |
| - Start/Stop Transmit | Transmit Speed |
| Beep Tone and Length | User Defined Termination Char. |

INDICATORS

Audio "BEEP" indicates Successful Read

A Red/Green LED Indicates Status of Reader

POWER REQUIREMENTS

Reader Receives its Power from the Personal Computer Keyboard Interface.

CONNECTORS

Wand: 5 Pin DIN Style

Keyboard Interface: M1000 = 5 Pin DIN Style
M1002 = 6 Pin MINI-DIN Style

ENVIRONMENTAL

Operating Temperature: 0° to +50° C

Storage Temperature: -30° to +70° C

Relative Humidity: 5% to 95% (Non-Condensing)

PHYSICAL SPECIFICATIONS

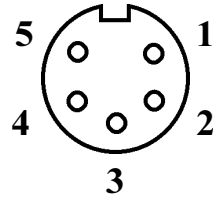
Weight: 14 Ounces Width: 5 1/8 Inches

Length: 5 1/4 Inches Height: 1 1/2 Inches

SIGNAL DEFINITIONS

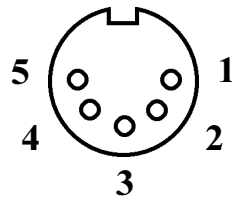
WAND INTERFACE

PIN	SIGNAL
1	+5V
2	DATA
3	GROUND
4	NO CONNECTION
5	NO CONNECTION



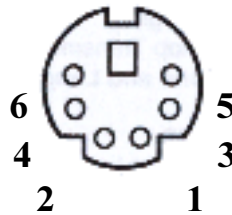
M1000 KEYBOARD/COMPUTER INTERFACE

PIN	SIGNAL
1	KEYBOARD CLOCK
2	GROUND
3	KEYBOARD DATA
4	+5V
5	SPARE



M1002 KEYBOARD/COMPUTER INTERFACE

PIN	SIGNAL
1	KEYBOARD DATA
2	RESERVED
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	RESERVED



APPENDIX A - FUNCTION & SPECIAL KEYS

With FUNCTION KEYS enabled, the decoder can accept a given ASCII character and transmit a corresponding FUNCTION KEY to the computer. The ASCII characters and values are listed in the table below.

ASCII CHARACTERS	FUNCTION KEYS	ASCII VALUES
DC1	F1	17
DC2	F2	18
DC3	F3	19
DC4	F4	20
NAK	F5	21
SYN	F6	22
ETB	F7	23
CAN	F8	24
EM	F9	25
SUB	F10	26

SPECIAL KEYS

With SPECIAL KEYS enabled, the decoder can accept a given ASCII character and transmit a corresponding SPECIAL KEY to the computer. The ASCII characters and values are listed in the table below.

ASCII CHARACTERS	SPECIAL KEYS	ASCII VALUES
SOH	(Left Arrow)	1
STX	(Right Arrow)	2
ETX	(Up Arrow)	3
EOT	(Down Arrow)	4
ENQ	HOME	5
ACK	END	6
BEL	DELETE	7
VT	PAGE UP	11
FF	PAGE DOWN	12
SO	SHIFT ON	14
SI	SHIFT OFF	15
DLE	INS	16
FS	CTRL ON	28
GS	CTRL OFF	29
RS	ALT ON	30
US	ALT OFF	31

APPENDIX B - CODE 39 SPECIFICATIONS

Code 39 is a variable length alphanumeric code. Each character is made up of nine elements, five bars and four spaces. Three of the elements are wide and six are narrow. Code 39 is a popular choice for applications because:

- it is easy to print with low cost dot matrix printers
- large character set (A-Z, 0-9, 7 special characters)
- code can be extended to include the entire 128 ASCII character set
- variable length.



CHARACTERISTICS:

Character Set:	26 uppercase letters (A - Z) 10 digits (0 - 9) 7 special characters (SPACE - ./+%)
Symbol Length:	Variable
Check Digit:	Optional
Bi-directional Decoding:	Yes
Maximum Density:	9.8 char./inch (using .0075 inch narrow element)

CODE 39 CHARACTER SET:

Char-acter	Pattern	Bars	Spaces	Char-acter	Pattern	Bars	Spaces
1		10001	0100	M		11000	0001
2		01001	0100	N		00101	0001
3		11000	0100	O		10100	0001
4		00101	0100	P		01100	0001
5		10100	0100	Q		00011	0001
6		01100	0100	R		10010	0001
7		00011	0100	S		01010	0001
8		10010	0100	T		00110	0001
9		01010	0100	U		10001	1000
0		00110	0100	V		01001	1000
A		10001	0010	W		11000	1000
B		01001	0010	X		00101	1000
C		11000	0010	Y		10100	1000
D		00101	0010	Z		01100	1000
E		10100	0010	-		00011	1000
F		01100	0010	.		10010	1000
G		00011	0010	Space		01010	1000
H		10010	0010	*		00110	1000
I		01010	0010	\$		00000	1110
J		00110	0010	/		00000	1101
K		10001	0001	+		00000	1011
L		01001	0001	%		00000	0111

An optional check character can be used for applications requiring higher levels of data security. When used, the check character immediately follows the last data character. The check digit is calculated as follows:

1. Each data character is assigned a numerical value as shown in the following table:

CHAR	VALUE	CHAR	VALUE	CHAR	VALUE
0	0	F	15	U	30
1	1	G	16	V	31
2	2	H	17	W	32
3	3	I	18	X	33
4	4	J	19	Y	34
5	5	K	20	Z	35
6	6	L	21	-	36
7	7	M	22	.	37
8	8	N	23	SPACE	38
9	9	O	24	\$	39
A	10	P	25	/	40
B	11	Q	26	+	41
C	12	R	27	%	42
D	13	S	28		
E	14	T	29		

2. Sum all of the numerical values for each data character in the bar code.
3. Divide this sum by 43.
4. The remainder is the numerical value for the check digit. Use the table in step 1 to look-up the corresponding character.

EXAMPLE: Sample Code 39 data = A394T

1. Use the table to lookup the numerical value for each character.
2. $10 + 3 + 9 + 4 + 29 = 55$
3. $55 / 43 = 1$ remainder 12
4. Check digit numerical value = 12
The check digit = C.
Bar code with check digit = A394TC

APPENDIX C - FULL ASCII EXTENSION TO CODE 39

The FULL ASCII EXTENSION expands standard CODE 39 to include the entire 128 ASCII character set. This is accomplished by pairing standard CODE 39 characters. The \$, +, /, and % characters are paired as shown in the following table:

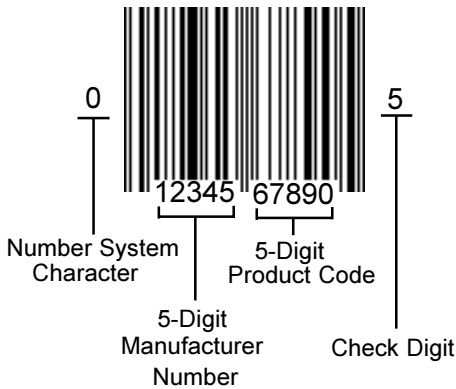
ASCII	CODE	ASCII	CODE	ASCII	CODE	ASCII	CODE
NUL	%U	!	/A	A	A	a	+A
SOH	\$A	"	/B	B	B	b	+B
STX	\$B	#	/C	C	C	c	+C
ETX	\$C	\$	/D	D	D	d	+D
EOT	\$D	%	/E	E	E	e	+E
ENQ	\$E	&	/F	F	F	f	+F
ACK	\$F	'	/G	G	G	g	+G
BEL	\$G	(	/H	H	H	h	+H
BS	\$H	)	/I	I	I	i	+I
HT	\$I	*	/J	J	J	j	+J
LF	\$J	+	/K	K	K	k	+K
VT	\$K	,	/L	L	L	l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

APPENDIX D - UPC SPECIFICATIONS

The Universal Product Code (UPC) symbols can be found on almost all retail products today. The UPC coding system was designed to uniquely identify a product and its manufacturer.

UPC VERSION A

UPC-A is a fixed length (12 digits) numeric only code with the following features:



UPC-A BAR CODE

The NUMBER SYSTEM CHARACTER indicates the type of product the symbol is identifying:

- 0,7 Regular UPC codes with numbers assigned by the Uniform Code Council (see Appendix J - Sources of Bar Code Standards).
- 2 Random-weight items such as meat and produce.
- 3 National Drug Code and National Health-Related Items Code.
- 4 For in-store marking of non-food items.
- 5 Reserved for coupons.

- 1,6,8,9 Reserved for future use.

The last digit in UPC bar codes is a MODULO 10 CHECK DIGIT. It is calculated in the following manner:

1. From right to left, sum the digits in the odd positions.
2. Multiply this sum by 3.
3. From right to left, sum the digits in the even positions.
4. Add this sum to the product of Step 2.
5. The modulo-10 check digit is the smallest number, which when added to the sum of Step 4 produces a multiple of 10.

EXAMPLE: UPC bar code = 01234567890C where C is the CHECK DIGIT.

1. Sum $0 + 8 + 6 + 4 + 2 + 0 = 20$
2. Multiply $20 \times 3 = 60$
3. Sum $9 + 7 + 5 + 3 + 1 = 25$
4. Sum $60 + 25 = 85$
5. $85 + 5 = 90$ (check digit = 5)
Therefore: UPC bar code - 012345678905

UPC VERSION E

UPC Version E is a six digit variation of the UPC symbology. The last digit indicates the type of compression used. Because of this data compression process, the Version E symbol is often referred to as a zero-suppressed symbol.



The following table illustrates the expansion process for converting UPC-E to its UPC-A equivalent:

Version E Number	Insertion Digits	Insertion Location	Resultant Version A
XXXXX0	00000	Position 3	XX00000XXX
XXXXX1	10000	Position 3	XX10000XXX
XXXXX2	20000	Position 3	XX20000XXX
XXXXX3	00000	Position 4	XXX00000XX
XXXXX4	00000	Position 5	XXXX00000X
XXXXX5	0000	Position 6	XXXXX00005
XXXXX6	0000	Position 6	XXXXX00006
XXXXX7	0000	Position 6	XXXXX00007
XXXXX8	0000	Position 6	XXXXX00008
XXXXX9	0000	Position 6	XXXXX00009



VERSION E



VERSION A EQUIVALENT

UPC/EAN SUPPLEMENTS

UPC and EAN bar codes can contain supplements that provide two or five digits of additional information. The supplements are located to the right of standard UPC/EAN labels. The reader can be programmed to either read or ignore the supplements.



APPENDIX E - EAN SPECIFICATIONS

The European Article Numbering system (EAN) is a superset of UPC. EAN has two versions: EAN-13 (13 digits) and EAN-8 (8 digits).



EAN 13



EAN 8

Country codes 00, 01, 03, 04, and 06 - 09 are assigned to the U.S. for compatibility with UPC.

APPENDIX F - INTERLEAVED 2 OF 5 SPECIFICATIONS

The Interleaved 2 of 5 bar code symbology is a numeric code (0 - 9) which has different start and stop characters. The name Interleaved 2 of 5 is derived from the fact that two characters are paired together using the bars to represent the first character and spaces to represent the second. Each character has two wide elements and three narrow elements.

CHARACTERISTICS:

- Character Set: Numeric only (0 - 9)
- Symbol Length: Variable (must be an even number of digits)
- Check Digit: Optional
- Bi-directional Decoding: Yes
- Maximum Density: 18 char./inch
(using .0075 inch narrow element)

CHARACTER SET:

The following table illustrates the data patterns. A "1" represents a wide bar or space and a "0" represents a narrow bar or space.

CHARACTER	PATTERN
0	00110
1	10001
2	01001
3	11000
4	00101
5	10100
6	01100
7	00011
8	10010
9	01010
start	0000
stop	100



OPTIONAL CHECK DIGIT:

Interleaved 2 of 5 may contain an optional check digit. The reader supports two types of check digits:

1. Uniform Symbology Specification (USS) - calculated as modulo 10 check digit based on 3-1-3 weightings.
2. Optical Product Code Council (OPCC) - calculated as modulo 10 check digit based on 2-1-2 weightings.

USS CHECK DIGIT CALCULATION:

1. From right to left, sum the digits in the odd positions.
2. Multiply this sum by 3.
3. From right to left, sum the digits in the even positions.
4. Add this sum to the product of Step 2.
5. The modulo-10 check digit is the smallest number which when added to the sum of Step 4 produces a multiple of 10.

EXAMPLE: USS check digit. Sample bar code data: 513827

1. $7 + 8 + 1 = 16$
2. $16 \times 3 = 48$
3. $2 + 3 + 5 = 10$
4. $48 + 10 = 58$
5. $58 + 2 = 60$ (check digit = 2)
Therefore: Data + check digit = 5138272

NOTE: A leading zero will be required to make it an even number of characters. The resulting bar code will be: 05138272

OPCC CHECK DIGIT CALCULATION:

1. From right to left, assign every digit a weighting factor from the sequence: 2,1,2,1,2,1,2,1...
2. Multiply each digit by its weighting factor.
3. Sum the products in step 2, treating two digit products as the sum of the individual digits.
4. The check digit is the smallest number which when added to the sum of step 3 produces a multiple of 10.

EXAMPLE: OPCC check digit

Sample bar code data: 020489713

1. Assign weighting factors: 020489713 212121212
2. Calculate the products: 0 2 0 4 16 9 14 1 6
3. Sum the products: $0+2+0+4+16+9+14+1+6 = 34$
4. $34 + 6 = 40$ (check digit = 6)
Therefore: Data + check digit = 0204897136

APPENDIX G - CODABAR SPECIFICATIONS

The Codabar bar code symbology is a numeric code (0 - 9) that also contains six special characters and four start/stop characters. The start/stop characters may or may not be transmitted. Characters are constructed of four bars and three spaces. Codabar is commonly used in libraries, blood banks, cotton and transportation industry.

CHARACTERISTICS:

- Character Set: 10 digits (0 - 9)
6 special characters (- \$: / . +)
4 stop/start characters (a b c d)
- Symbol Length: Variable
- Check Digit: Optional
- Bi-directional Decoding: Yes
- Maximum Density: 12.8 char./inch
(using .0075 inch narrow element)

CHARACTER SET:

The following table illustrates the data patterns. A "1" represents a wide bar or space and a "0" represents a narrow bar or space.

CHARACTER	PATTERN
0	000011
1	000110
2	0001001
3	1100000
4	0010010
5	1000010
6	0100001
7	0100100
8	0110000
9	1001000
-	0001100
\$	0011000
:	1000101
/	1010001
.	1010100
+	0010101
a	0011010
b	0101001
c	0001011
d	0001110



A123456B

APPENDIX H - CODE 128 SPECIFICATIONS

The CODE 128 symbology is a variable length alphanumeric code containing the full 128 ASCII character set. Each character consists of 11 modules containing three bars and three spaces. Bars and spaces can be from 1 to 4 modules wide. Three different start characters are used to select one of three character sets. Code 128 is the bar code of choice for new applications.

CHARACTERISTICS:

Character Set:	All 128 ASCII characters 4 function characters 4 code set selection characters 3 start/stop characters
Symbol Length:	Variable
Check Character:	1
Bi-directional Decoding:	Yes
Maximum Density:	12.1 alphanumeric char./inch 24.2 numeric digits/inch (using .0075 inch module element)



0123456789



ABCD123

UCC-128 MOD 10 SERIAL SHIPPING CONTAINER CODE:

FORMAT:

STARTC FNC1 0000012345555555555 8 C STOP
(1) (2) (3) (4) (5) (6)

- | | |
|-------------------|------------------------|
| 1. Start Code "C" | 4. MOD 10 Check Digit |
| 2. FNC1 Character | 5. MOD 103 Check Digit |
| 3. 19 Digits | 6. Stop Code |

00000123455555555558

CHARACTER SET:

The following table contains the character set for Code 128 subsets A, B, and C:

CODE 128 (USD-6)

VALUE	CODE A	CODE B	CODE C	BAR PATTERN					
				B	S	B	S	B	S
0	SP	SP	00	2	1	2	2	2	2
1	!	!	01	2	2	2	1	2	2
2	"	"	02	2	2	2	2	2	1
3	#	#	03	1	2	1	2	2	3
4	\$	\$	04	1	2	1	3	2	2
5	%	%	05	1	3	1	2	2	2
6	&	&	06	1	2	2	2	1	3
7	'	'	07	1	2	2	3	1	2
8	(	(	08	1	3	2	2	1	2
9	)	)	09	2	2	1	2	1	3
10	*	*	10	2	2	1	3	1	2
11	+	+	11	2	3	1	2	1	2
12	,	,	12	1	1	2	2	3	2
13	-	-	13	1	2	2	1	3	2
14	.	.	14	1	2	2	2	3	1
15	/	/	15	1	1	3	2	2	2
16	0	0	16	1	2	3	1	2	2
17	1	1	17	1	2	3	2	2	1
18	2	2	18	2	2	3	2	1	1
19	3	3	19	2	2	1	1	3	2
20	4	4	20	2	2	1	2	3	1
21	5	5	21	2	1	3	2	1	2
22	6	6	22	2	2	3	1	1	2
23	7	7	23	3	1	2	1	3	1
24	8	8	24	3	1	1	2	2	2
25	9	9	25	3	2	1	1	2	2
26	:	:	26	3	2	1	2	2	1
27	;	;	27	3	1	2	2	1	2
28	<	<	28	3	2	2	1	1	2
29	=	=	29	3	2	2	2	1	1
30	>	>	30	2	1	2	1	2	3
31	?	?	31	2	1	2	3	2	1
32	@	@	32	2	3	2	1	2	1
33	A	A	33	1	1	1	3	2	3
34	B	B	34	1	3	1	1	2	3
35	C	C	35	1	3	1	3	2	1
36	D	D	36	1	1	2	3	1	3
37	E	E	37	1	3	2	1	1	3
38	F	F	38	1	3	2	3	1	1
39	G	G	39	2	1	1	3	1	3
40	H	H	40	2	3	1	1	1	3
41	I	I	41	2	3	1	3	1	1
42	J	J	42	1	1	2	1	3	3
43	K	K	43	1	1	2	3	3	1
44	L	L	44	1	3	2	1	3	1
45	M	M	45	1	1	3	1	2	3

CODE 128 (USD-6)

VALUE	CODE A	CODE B	CODE C	BAR PATTERN					
				B	S	B	S	B	S
46	N	N	46	1	1	3	3	2	1
47	O	O	47	1	3	3	1	2	1
48	P	P	48	3	1	3	1	2	1
49	Q	Q	49	2	1	1	3	3	1
50	R	R	50	2	3	1	1	3	1
51	S	S	51	2	1	3	1	1	3
52	T	T	52	2	1	3	3	1	1
53	U	U	53	2	1	3	1	3	1
54	V	V	54	3	1	1	1	2	3
55	W	W	55	3	1	1	3	2	1
56	X	X	56	3	3	1	1	2	1
57	Y	Y	57	3	1	2	1	1	3
58	Z	Z	58	3	1	2	3	1	1
59	[	[	59	3	3	2	1	1	1
60	\	\	60	3	1	4	1	1	1
61	]	]	61	2	2	1	4	1	1
62	^	^	62	4	3	1	1	1	1
63	_	_	63	1	1	1	2	2	4
64	NUL	`	64	1	1	1	4	2	2
65	SOH	a	65	1	2	1	1	2	4
66	STX	b	66	1	2	1	4	2	1
67	ETX	c	67	1	4	1	1	2	2
68	EOT	d	68	1	4	1	2	2	1
69	ENQ	e	69	1	1	2	2	1	4
70	ACK	f	70	1	1	2	4	1	2
71	BEL	g	71	1	2	2	1	1	4
72	BS	h	72	1	2	2	4	1	1
73	HT	i	73	1	4	2	1	1	2
74	LF	j	74	1	4	2	2	1	1
75	VT	k	75	2	4	1	2	1	1
76	FF	l	76	2	2	1	1	1	4
77	CR	m	77	4	1	3	1	1	1
78	SO	n	78	2	4	1	1	1	2
79	SI	o	79	1	3	4	1	1	1
80	DLE	p	80	1	1	1	2	4	2
81	DC1	q	81	1	2	1	1	4	2
82	DC2	r	82	1	2	1	2	4	1
83	DC3	s	83	1	1	4	2	1	2
84	DC4	t	84	1	2	4	1	1	2
85	NAK	u	85	1	2	4	2	1	1
86	SYN	v	86	4	1	1	2	1	2
87	ETB	w	87	4	2	1	1	1	2
88	CAN	x	88	4	2	1	2	1	1
89	EM	y	89	2	1	2	1	4	1
90	SUB	z	90	2	1	4	1	2	1

CODE 128 (USD-6)

VALUE	CODE A	CODE B	CODE C	BAR PATTERN					
				B	S	B	S	B	S
91	ESC	{	91	4	1	2	1	2	1
92	FS	|	92	1	1	1	1	4	3
93	GS	}	93	1	1	1	3	4	1
94	RS	~	94	1	3	1	1	4	1
95	US	DEL	95	1	1	4	1	1	3
96	FNC 3	FNC 3	96	1	1	4	3	1	1
97	FNC 2	FNC 2	97	4	1	1	1	1	3
98	SHIFT	SHIFT	98	4	1	1	3	1	1
99	CODE C	CODE C	99	1	1	3	1	4	1
100	CODE B	FNC 4	CODE B	1	1	4	1	3	1
101	FNC 4	CODE A	CODE A	3	1	1	1	4	1
102	FNC 1	FNC 1	FNC 1	4	1	1	1	3	1

			B	S	B	S	B	S
103	START (CODE A)		2	1	1	4	1	2
104	START (CODE B)		2	1	1	2	1	4
105	START (CODE C)		2	1	1	2	3	2

		B	S	B	S	B	S	B
	STOP	2	3	3	1	1	1	2

APPENDIX I - CODE 93 SPECIFICATIONS

The Code 93 bar code symbology is a variable length alphanumeric code containing the full 128 ASCII character set. Each character consists of 9 modules with three bars and three spaces. The bars can be 1, 2, or 3 modules wide except for the start/stop character. The spaces can be 1, 2, 3, or 4 modules wide. Code 93 bar codes contain a mandatory two digits for data integrity.

CHARACTERISTICS

Character Set:	128 ASCII character set
Symbol Length:	Variable
Check Digit:	2
Bi-directional Decoding:	Yes
Maximum Density:	14.8 char./inch (using .0075 inch narrow element)

CHARACTER SET

The following tables represent Code 93 data. Table 1 defines all of the USS-93 character assignments. Table 2 shows the full ASCII character set with the special control characters.

Table 1. USS-93 Character Assignments

Character	Value (for Check Digit Purposes)	Pattern	Encodation	Character	Value (for Check Digit Purposes)	Pattern	Encodation
0	0		100010100	O	24		100101100
1	1		101001000	P	25		100010110
2	2		101000100	Q	26		110110100
3	3		101000010	R	27		110110010
4	4		100101000	S	28		110101100
5	5		100100100	T	29		110100110
6	6		100100010	U	30		110010110
7	7		101010000	V	31		110011010
8	8		100010010	W	32		101101100
9	9		100001010	X	33		101100110
A	10		110101000	Y	34		100110110
B	11		110100100	Z	35		100110100
C	12		110100010	-	36		100101110
D	13		110010100	.	37		111010100
E	14		110010010	Space	38		111010010
F	15		110001010	\$	39		111001010
G	16		101101000	/	40		101101110
H	17		101100100	+	41		101110110
I	18		101100010	%	42		110101110
J	19		100110100	Ⓢ	43		100100110
K	20		100011010	Ⓢ	44		111010100
L	21		101011000	Ⓢ	45		111010110
M	22		101001100	Ⓢ	46		100110010
N	23		101000110	□			101011110

Table 2. Encoding the Full ASCII Character Set

ASCII	CODE 93	ASCII	CODE 93	ASCII	CODE 93	ASCII	CODE 93
NUL	(%) U	SP	Space	@	(%) V	`	(%) W
SOH	(%) A	!	(/) A	A	A	a	(+) A
STX	(%) B	"	(/) B	B	B	b	(+) B
ETX	(%) C	#	(/) C	C	C	c	(+) C
EOT	(%) D	\$	(%) \$	D	D	d	(+) D
ENQ	(%) E	%	(%) %	E	E	e	(+) E
ACK	(%) F	&	(/) F	F	F	f	(+) F
BEL	(%) G	'	(/) G	G	G	g	(+) G
BS	(%) H	(	(/) H	H	H	h	(+) H
HT	(%) I	)	(/) I	I	I	i	(+) I
LF	(%) J	*	(/) J	J	J	j	(+) J
VT	(%) K	+	(+) +	K	K	k	(+) K
FF	(%) L	,	(/) L	L	L	l	(+) L
CR	(%) M	-	-	M	M	m	(+) M
SO	(%) N	.	.	N	N	n	(+) N
SI	(%) O	/	/	O	O	o	(+) O
DLE	(%) P	0	0	P	P	p	(+) P
DC1	(%) Q	1	1	Q	Q	q	(+) Q
DC2	(%) R	2	2	R	R	r	(+) R
DC3	(%) S	3	3	S	S	s	(+) S
DC4	(%) T	4	4	T	T	t	(+) T
NAK	(%) U	5	5	U	U	u	(+) U
SYN	(%) V	6	6	V	V	v	(+) V
ETB	(%) W	7	7	W	W	w	(+) W
CAN	(%) X	8	8	X	X	x	(+) X
EM	(%) Y	9	9	Y	Y	y	(+) Y
SUB	(%) Z	:	(/) Z	Z	Z	z	(+) Z
ESC	(%) A	;	(%) F	[	(%) K	{	(%) P
FS	(%) B	<	(%) G	\	(%) L	:	(%) Q
GS	(%) C	=	(%) H	]	(%) M	}	(%) R
RS	(%) D	>	(%) I	^	(%) N	~	(%) S
US	(%) E	?	(%) J	_	(%) O	DEL	(%) T



0123456789

APPENDIX J - SOURCES OF BAR CODE STANDARDS

ABC (American Blood Commission)
1117 North 19th Street
Suite 501
Arlington, VA 22209-1749
(703) 522-8414

- * Committee for Commonality in Blood Banking Automation (CCBBA) Report (Codabar)

AIM (Automatic Identification Manufacturers, Inc.)
1326 Freeport Road
Pittsburgh, PA 15238
(412) 963-8588

- * USD-1 (Interleaved 2 of 5)
- * USD-2 (A Subset of Code 39)
- * USD-3 (Code 39)
- * USD-4 (Codabar)
- * USD-6 (Code 128)
- * USD-7 (Code 93)
- * USD-8 (Code 11)

AIAG (Automotive Industry Action Group)
26200 Lahser Road
Suite 200
Southfield, MI 48034
(313) 358-3570

- * AIAG-B-1 1984 Bar Code Symbology Standard
- * AIAG-B-3 Shipping/Parts Identification Label Standard
- * AIAG-B-6 Standard for Bar Code Data Identifiers

ANSI (American National Standards Institute)
11 West 42nd Street
New York, NY 10036
(212) 624-4900

- * ANSI MH10.8M-1983 Specification for Bar Code Symbols on Transport Packages and Unit Loads. (Code 39, Interleaved 2 of 5, Codabar)
- * ANSI X3A1.3 Bar Code Print Quality (Draft)

DOD (Department of Defense)
Naval Publications & Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120
(215) 697-2000

- * MIL-STD-1189A (B) - Standard Department of Defense Bar Code Symbology
- * MIL-STD-129J - Military Standard - Marking for Shipment & Storage - Bar Code Markings
- * FED-STD-123D - Federal Standard - Marking for Shipment (Civil Agencies) Bar Code Markings

EAN (European Article Numbering Association)
Rue des Colonies, Bte 8
1000 Brussels
BELGIUM
011 322 218 7585

HIBCC (Health Industry Business Communications Council)
5110 North 40th Street, Suite 250
Phoenix, AZ 85018
(602) 381-1091

- * HIBC Supplier Labeling Standard
- * HIBC Provider Applications Standard
- * HIBC Guidelines

UCC (Uniform Code Council)
8163 Old Yankee Rd., Suite J
Dayton, OH 45458
(513) 435-3870

- * UPC Symbol Specification
- * UPC Location Guidelines
- * UPC Shipping Container Symbol Specifications Manual
- * UPC Industrial Code Guidelines Manual
- * UPC Film Master Verification Manual