



AMERICAN BARCODE

**ABC 900**

Hand Held Linear Imager



**User's Guide**

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# *Section 1*                      *Getting Started*

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The ABC 900 is a high performance linear imaging scanner from American Barcode. The ABC 900 marks a new performance level for hand held scanners. Linear imaging technology is defined by a bright and sharply focused aiming line, high resolution imaging, and fast reading speed. The ABC 900 is comfortable to hold, easy to use, rugged, and excellent for all general scanning applications.

## *About This Manual*

This User's Guide provides installation and programming instructions for the ABC 900. Product specifications, dimensions, warranty, and customer support information are also included.

American Barcode bar code scanners are factory programmed for the most common terminal and communications settings. If you need to change these settings, programming is accomplished by scanning the bar codes in this Guide.

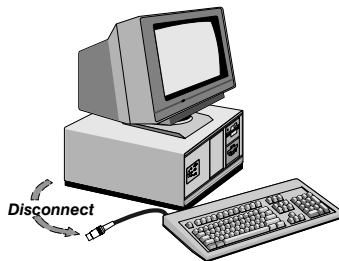
An asterisk (\*) next to an option indicates the default.

---

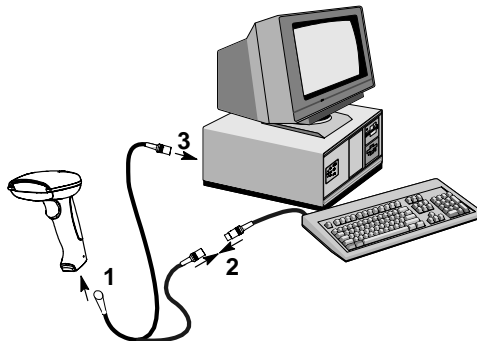
## ***Connecting the Scanner When Powered by Host (Keyboard Wedge)***

A scanner can be connected between the keyboard and PC as a “keyboard wedge,” plugged into the serial port, or connected to a portable data terminal in wand emulation or non decoded output mode. The following is an example of a keyboard wedge connection:

1. Turn off power to the terminal/computer.
2. Disconnect the keyboard cable from the back of the terminal/computer, as shown below.



3. Connect the appropriate interface cable to the scanner and to the terminal/computer.



4. Turn the terminal/computer power back on. The scanner will beep twice.
5. Verify the scanner operation by scanning a bar code from the back cover of this manual. The scanner will beep once.

The scanner is now connected and ready to communicate with your terminal/PC. You must program the scanner for your interface before bar code data can be transmitted to your terminal/PC. If you are using the scanner as a keyboard wedge, turn to page 2–1. If the scanner is connected via a serial port, turn to page 2–8. If this is a wand emulation application, turn to page 2–13, and for a non decoded output connection, turn to page 6–2.

---

## *Plug and Play*

Plug and Play bar codes provide instant scanner set up for commonly used interfaces.

*Note: After you scan one of the codes, power cycle the host terminal to have the interface in effect*

The most common interface is Keyboard Wedge. The following Keyboard Wedge bar code also programs a carriage return (CR) and line feed (LF) suffix.



Keyboard Wedge Interface for IBM PC  
AT and Compatibles  
**(Default)**

The following Plug and Play bar code for **IBM XT and Compatibles** also programs a carriage return (CR) and line feed (LF) suffix.



IBM XT and Compatibles

The following Plug and Play bar code for **IBM PS-2 and Compatibles** also programs a carriage return (CR) and line feed (LF) suffix.



IBM PS-2 and Compatibles

Use **Non Decoded Output Laser Emulation** when connecting to a secondary terminal with integral decoding. This also sets the transmission rate to 36 scans per second and the polarity to white high.



Non Decoded Output  
Laser Emulation

For most laptops, scanning the **Laptop Direct Connect** bar code allows operation of the integral keyboard. The following Laptop Direct Connect bar code also programs a carriage return (CR) and line feed (LF) suffix.



Laptop Direct Connect

---

The RS-232 Interface bar code is used when connecting to the serial port of a PC or terminal. The following RS-232 Interface bar code also programs the parameters:

<u>Option</u>	<u>Setting</u>
Baud Rate	9600 bps
Parity	Even
Data Format	7 data bits, parity bit, 1 stop bit (8 bit data)



RS-232 Interface

In Wand Emulation mode, the scanner decodes the bar code then sends data in the same format as a wand scanner. The **Same Code** format transmits UPC, EAN, Code 128 and Interleaved 2 of 5 bar codes without any changes, but converts all other symbologies to Code 39.



Wand Emulation Same Code

The following Wand Emulation bar code sets the interface to Wand Emulation mode and translates bar code data as Code 39 symbology. It also programs the Transmission Rate to 25 inches per second, and Output Polarity to black high.



Wand Emulation (Code 39 Format)

---

## ***OCIA Interface***

Scan one of the following “Plug and Play” codes to program the ABC 900 for Generic OCIA, NCR OCIA Short Format (8 bit), NCR OCIA Long Format (9 bit), and Nixdorf OCIA.

*Note: After you scan one of the codes, power cycle the cash register to have the interface in effect*



Generic OCIA Interface

The Generic OCIA bar code also programs the following prefixes for each symbology:

<b><u>Symbology</u></b>	<b><u>Prefix</u></b>	<b><u>Symbology</u></b>	<b><u>Prefix</u></b>
EAN 8	06 06	UPC A	01
EAN 13	06	UPC E	05

## ***NCR OCIA Short Format (8 Bit) Interface***



NCR OCIA Short Format (8 Bit) Interface

The NCR OCIA Short Format (8 Bit) bar code also programs the following prefixes for each symbology:

<b><u>Symbology</u></b>	<b><u>Prefix</u></b>	<b><u>Symbology</u></b>	<b><u>Prefix</u></b>
EAN 8	0F 0F	UPC A	0A
EAN 13	0F	UPC E	0E

---

## *NCR OCIA Long Format (9 Bit) Interface*



NCR OCIA Long Format (9 Bit) Interface

The NCR OCIA Long Format (9 Bit) bar code also programs the following prefixes for each symbology:

<b><u>Symbology</u></b>	<b><u>Prefix</u></b>	<b><u>Symbology</u></b>	<b><u>Prefix</u></b>
EAN 8	46 46	Code 39	42 31
EAN 13	46	I 2 of 5	42 32
UPC A	41	Code 128	42 33
UPC E	45		

## *Nixdorf OCIA Interface*



Nixdorf OCIA Interface

The Nixdorf OCIA bar code also programs the following prefixes for each symbology:

<b><u>Symbology</u></b>	<b><u>Prefix</u></b>
EAN/UPC with Addenda	44 4B
Code 39	44 49
I 2 of 5	44 48
2 of 5	44 47
Code 128	44 4A

---

## ***Serial Wedge***

The ABC 900 uses TTL signal levels to wedge into an RS-232 serial network. Use ABC 900 serial wedge cables only to prevent damage to the scanner. Refer to the serial interface programming (pages 2–9 to 2–12) to set the baud rate and communications protocol.

To set up the serial wedge terminal ID, find the terminal ID in the Supported Terminal Chart and follow the instructions on page 2–2. Set the port to which you want the scanned data to transmit. Port 1 corresponds to P1 on the output cable and Port 2 corresponds to P2 on the output cable. Choosing Both sends scanned data to P1 and P2. *Default = P1.*

\* P1



P2



Both P1 and P2



---

## ***USB Interface***

**Note:** The following USB “Plug and Play” codes (IBM SurePOS Hand Held and Tabletop Scanners) are for use with the 3800LX-15 model only.

Scan one of the following “Plug and Play” codes to program the IT3800 for IBM SurePos (USB Hand Held scanner) or IBM SurePos (USB Tabletop scanner).

**Note:** After scanning one of these codes, you must re-boot the cash register.



IBM SurePos (USB Hand Held Scanner) Interface



IBM SurePos (USB Tabletop Scanner) Interface

Each bar code above also programs the following suffixes for each symbology:

<b><u>Symbology</u></b>	<b><u>Suffix</u></b>
EAN 8	0C
EAN 13	16
UPC A	0D
UPC E	0A
Code 39	00 0A 0B
Interleaved 2 of 5	00 0D 0B
Code 128	00 18 0B

---

**Note:** The following USB “Plug and Play” codes (USB Keyboard - PC and USB Keyboard - Mac) are for use with the 3800LX-14 and 3800LX-15 models.

Scan one of the following codes to program the IT3800 for USB PC Keyboard or USB Macintosh Keyboard. *Default = USB Keyboard (PC).*



\* USB Keyboard (PC)



USB Keyboard (Mac)

## ***USB Converter***

**Note:** The USB converter is for use with the 3800/3900-11 and 3800/3900-12 models only.

The IT3800-11, -12 and IT3900-11, -12 models use a USB converter to simulate a USB keyboard. Data flows into applications as if entered from the keyboard. The USB converter is compatible with Apple iMac Series and Windows®98 and later PCs. Use cable set 42206062-01 to make the USB port connection.

To set up the USB communications, find the terminal ID in the Supported Terminal Chart on page 2-3, and follow the instructions on page 2-2. The PC and scanner automatically connect. Communications start immediately.

## ***Section 2 Terminal Interfaces***

---

### ***Keyboard Wedge Connection***

ABC 900 scanners are factory programmed for a keyboard wedge interface to an IBM PC AT with a USA keyboard. If this is your interface and you do not need to modify the settings, skip to Section 3 – Output.

If you have a different terminal and/or you want to make any keyboard wedge changes, scan the bar code below.



IBM PC AT and Compatibles  
with CR, LF suffix

---

## ***Terminal ID***

If your interface is not a standard PC AT, refer to the Supported Terminals Chart on page 2–3 and locate the Terminal ID number for your PC. Scan the **Terminal ID** bar code below, then scan the numeric bar code(s) on the inside back cover of this manual to program the scanner for your terminal ID. Scan **Save** to save your selection.

For example, an IBM PS/2 terminal has a Terminal ID of 002. You would scan the **Terminal ID** bar code, then **0, 0, 2** from the inside back cover, then **Save**. If you make an error while scanning the digits (before scanning Save), scan the **Discard** code on the back cover, scan the **Terminal ID** bar code, scan the digits, and the Save code again.



Terminal ID



Save

**Note:** *After you scan one of the codes, power cycle the host terminal to have the interface in effect*

## Supported Terminals

<b>Terminal</b>	<b>Model(s)</b>	<b>Terminal ID</b>
Apple Mac	Mac Classic, SE SE30, II (All)	049 **
Apple Mac Powerbook	5300 Series (Portable PC)	049 **
DEC	VT510, 520, 525 (PC style)	005
DEC	VT510, 520, 525 (DEC style LK411)	104
Esprit	200, 400	005
Heath Zenith	PC, AT	090
HP	Vectra	003
HP	Vectra ES	023
IBM	XT	001
IBM	PS/2 25, 30, 77DX2	002
IBM	AT, PS/2 30–286, 50, 55SX, 60, 70, 70–061, 70–121, 80	003 *
IBM 102 key	3161, 3162, 3163, 3191, 3192, 3194, 3196, 3197, 3471, 3472, 3476, 3477	006
IBM 122 key	3191, 3192, 3471, 3472	007
IBM 122 key	3196, 3197, 3476, 3477, 3486, 3482, 3488	008
IBM 122 key	3180	024
IBM 122 key	3180 data entry keyboard	114
IBM DOS/V 106 key	PC & Workstation	102
IBM SurePOS	USB Hand Held Scanner	128****
IBM SurePOS	USB Tabletop Scanner	129****
IBM Thinkpad	360 CSE, 340, 750	097
IBM Thinkpad		106
IBM Thinkpad	365, 755CV	003
I/O 122 key	2676D, 2677C, 2677D	008
ITT	9271	007
Lee Data	IIS	007
NEC	98XX Series	103
Olivetti	M19, M200	001
Olivetti	M240, M250, M290, M380, P500	003
RS-232 True		000***
RS-232 TTL		000
Serial Wedge		050
Silicon Graphics	Indy, Indigoll	005

---

## *Supported Terminals (Continued)*

<u>Terminal</u>	<u>Model(s)</u>	<u>Terminal ID</u>
Telex 88 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1483	025
Telex 88 key	Data Entry Keyboard	112
Telex 102 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1483	045
Telex 122 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1482, 1483	046
USB converter		124
USB PC Keyboard		124
USB Mac Keyboard		125
Wand Emulation		061

\* Default for -12 model

\*\* Applies to -12 models only

\*\*\* Default for -13 model (applies to -13 models only)

\*\*\*\* Applies to 3800LX-15 model only. Because special suffixes are required by the IBM SurePOS terminal, it is best to use the Plug and Play bar codes on page 1-9 to program these interfaces, rather than scanning the terminal ID listed in this table.

See page 1-9 for -11 model default.

---

## Keyboard Country

Scan the **Program Keyboard Country** bar code below, then scan the numeric bar code(s) from the inside back cover, then the **Save** bar code to program the keyboard for your country. As a general rule, the following characters are not supported by the scanner for countries other than the United States:

@ | \$ # { } [ ] = / ' \ < > ~



Program Keyboard Country

Country Code	Scan	Country Code	Scan
Belgium .....	1	Italy .....	5
Denmark .....	8	Norway .....	9
Finland .....	2	Spain .....	10
France .....	3	Switzerland .....	6
Germany/Austria ...	4	USA ( <b>Default</b> ) .....	0
Great Britain .....	7		



Save

---

## ***Keyboard Style***

This programs keyboard styles, such as Caps Lock and Shift Lock. *Default = Regular.*

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



\* Regular

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



Caps Lock

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



Shift Lock

**Automatic Caps Lock** is used if you change the Caps Lock key on and off. The software tracks and reflects if you have Caps Lock on or off (AT and PS/2 only). This selection can only be used with systems that have an LED which notes the Caps Lock status.



Automatic Caps Lock

**Emulate External Keyboard** should be scanned if you do not have an external keyboard (IBM AT or equivalent). To connect the scanner to a laptop, it may be necessary to use the Automatic Direct Connect selection on page 2-7 in conjunction with the bar code below.



Emulate External Keyboard

---

## ***Keyboard Modifiers***

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

***Control + ASCII Mode On*** – The scanner sends key combinations for ASCII control characters for values 00–1F. Refer to page 10–1 for CTRL+ ASCII Values. *Default = Off*



Control + ASCII Mode On



\* Control + ASCII Mode Off

***Turbo Mode*** – The scanner sends characters to an IBM AT terminal faster. (For use with IBM AT only.) If the terminal drops characters, do not use Turbo Mode. *Default = Off*



Turbo Mode On



\* Turbo Mode Off

***Numeric Keypad Mode*** – Sends numeric characters as if entered from a numeric keypad. *Default = Off*



Numeric Keypad Mode On



\* Numeric Keypad Mode Off

---

**Automatic Direct Connect** – Use this selection if you are using a laptop whose keyboard is disabled when you plug in the scanner. This selection can also be used if you have an IBM AT style terminal and the system is dropping characters. *Default = Off*



Automatic Direct Connect Mode On



\* Automatic Direct Connect Mode Off

---

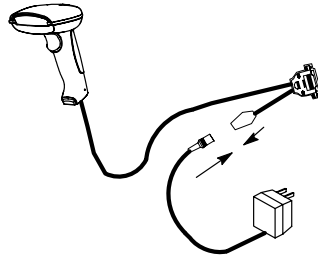
## *Serial Port Connection*

All communication parameters between the scanner and terminal must match for correct data transfer through the serial port using RS-232 protocol. Scan the RS-232 Interface bar code to program the scanner for an RS-232 installation.



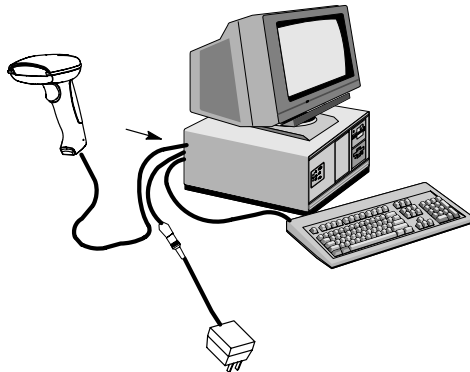
RS-232 Interface

1. Turn off power to the terminal/computer.
2. Connect the appropriate interface cable to the scanner, as shown below.



**Note:** For the scanner to work properly, you must have the correct cable for your type of terminal/computer.

3. Plug the serial connector into the serial port on the back of your computer/terminal, as shown below. Tighten the two screws to secure the connector to the port.



4. Plug the power pack into a power source.
5. Once the scanner has been fully connected, power up the terminal/computer.

---

## ***Baud Rate***

Baud Rate sends the data from the scanner to the terminal at the specified rate. The host terminal must be set for the same baud rate as the scanner.

*Default = 9600.*



300



600



1200



2400



4800



\* 9600



19200



38400

---

## ***RS-232 Word Length: Data Bits, Stop Bits, and Parity***

**Data Bits** sets the word length at 7 or 8 bits of data per character. If an application requires only ASCII Hex characters 0 through 7F decimal (text, digits, and punctuation), select 7 data bits. For applications which require use of the full ASCII set, select 8 data bits per character. *Default = 7.*

**Stop Bits** sets the stop bits at 1 or 2. *Default = 1.*

**Parity** provides a means of checking character bit patterns for validity. *Default = Even.*



\* 7 Data, 1 Stop, Parity Even



7 Data, 1 Stop, Parity None



7 Data, 1 Stop, Parity Odd



7 Data, 1 Stop, Parity Mark



7 Data, 1 Stop, Parity Space



7 Data, 2 Stop, Parity Even



7 Data, 2 Stop, Parity None



7 Data, 2 Stop, Parity Odd

---

***RS-232 Word Length: Data Bits, Stop Bits, and Parity  
(continued)***



7 Data, 2 Stop, Parity Mark



7 Data, 2 Stop, Parity Space



8 Data, 1 Stop, Parity Even



8 Data, 1 Stop, Parity None



8 Data, 1 Stop, Parity Odd



8 Data, 1 Stop, Parity Mark



8 Data, 1 Stop, Parity Space

---

## ***RS-232 Handshaking***

RS-232 handshaking is a set of rules concerning the exchange of data between serially communicating devices. *Default = RTS/CTS, XON/XOFF and ACK/NAK Off*



RTS/CTS On



\* RTS/CTS Off



XON/XOFF On



\* XON/XOFF Off



ACK/NAK On



\* ACK/NAK Off

---

## *Wand Emulation Connection*

In Wand Emulation mode, the scanner decodes the bar code then sends data in the same format as a wand scanner. The Code 39 Format converts all symbologies to Code 39. The Same Code Format transmits UPC, EAN, Code 128 and Interleaved 2 of 5 without any changes, but converts all other symbologies to Code 39. These codes set the transmission rate to 25 inches per second and the output polarity to black, high. *Default = Code 39 Format.*



\* Code 39 Format



Same Code Format

---

### *Wand Emulation Transmission Rate*

The Transmission Rate is limited by the terminal's ability to receive data without dropping characters. *Default = 25 inches/second.*



10



\* 25



40



80



120



150



200

---

### ***Wand Emulation Polarity***

The Polarity can be sent as standard with black bars high, or reversed with white bars high. *Default = Black High.*



\* Black High



White High

### ***Wand Emulation Idle***

The idle describes the state of the scanner when no data is being transmitted. When in Wand Emulation mode, you must set the scanner's idle state to match the idle state for the device to which the scanner is connected. *Default = Idle High.*



\* Idle High



Idle Low

## Section 3

## Output

---

### Scan Rate

Adjusting the scan rate changes the current draw when scanning. The slower the scan rate, the lower the current draw. (The standby current remains the same.) *Default = 270 s/s.*

*Note: The chart below applies to the –12 models only.*

<u>Scan Speed</u>	<u>Standby</u>	<u>Scanning</u>
270 s/s	125 mA	275 mA
135 s/s	125 mA	180 mA
67 s/s	125 mA	150 mA



\* 270 s/s



135 s/s



67 s/s

### Beeper Volume

Default = High.



\* High



Medium



Low



Off

---

## ***Beeper Tone***

*Default = Normal.*



\* Normal Beep



Short Bip

## ***Scan Voting***

This sets the number of times the same bar code has to be read before it is transmitted to the terminal. **Normal** uses the default values listed for the symbologies in the Default Charts in Section 10. **High** doubles the votes used below the threshold. *Default = Voting Normal.*



\* Voting Normal



Voting High

## ***Reduce Quiet Zone***

Reducing the quiet zone requirements below AIM guidelines makes it possible to read off-spec bar codes. This feature is effective with all symbologies. *Default = Don't Reduce Quiet Zone.*



\* Don't Reduce Quiet Zone



Reduce Quiet Zone

---

### ***Reread Delay***

This sets the time period before the scanner can read the *same* bar code a second time. Setting a reread delay protects against accidental rereads of the same bar code. Longer delays are effective in minimizing accidental rereads at POS (point of sale). Use shorter delays in applications where repetitive bar code scanning is required. *Default = Short.*

Reread Delay only works when in automatic trigger mode (see page 3–4).



\* Short



Medium



Long



Extra Long

### ***Good Read Delay***

This sets the minimum amount of time before the scanner can read another bar code. *Default = No Delay.*



\* No Delay



Short Delay



Medium Delay



Long Delay

---

## Trigger Mode

Default = Manual Trigger

**Manual Trigger:** You must press the scanner trigger to scan. When not scanning, idle power is maintained.



\* Manual Trigger

**Manual Trigger, Low Power:** The scanner “sleeps,” using only 5 microamps, until the trigger is pulled. When the trigger is pulled, the scanner wakes up and operates at reduced power until there is no triggering for the time set with the Low Power Time Out bar code. There is a short delay in operation when the scanner is first triggered, but there is no delay when operating in low power mode.



Manual Trigger, Low Power

*Note: Manual Trigger, Low Power cannot be used with keyboard wedge applications.*

**Low Power Time Out:** Scan the Low Power Time Out bar code to change the time out duration. Then scan the time out duration (from 0–300 seconds) from the inside back cover, and **Save**. *Default = 2 minutes.*

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Lower Power Time Out** bar code, scan the correct digits, then **Save** again.



Low Power Time Out

**Automatic Trigger:** The scanner scans continuously at full power.



Automatic Trigger

**Presentation Mode:** The LEDs are off until a bar code is presented to the scanner. Then the LEDs turn on automatically to read the code. Presentation Mode uses normal office or store ambient light to detect the bar codes.



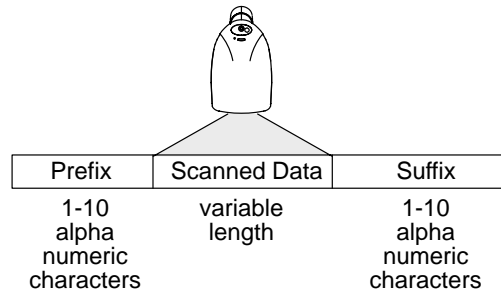
Presentation Mode

## Section 4

## Data Editing

When a bar code is scanned, additional information is sent to the host computer along with the bar code data. This group of bar code data and additional, user-defined data is called a "message string." The selections in this section are used to build the user-defined data into the message string.

Prefix and Suffix characters are data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. The following illustration shows the breakdown of a message string:



### Points to Keep In Mind

- It is not necessary to build a message string. The selections in this chapter are only used if you wish to alter the default settings. *Default prefix = None. Default suffix = None.*
- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix from the ASCII chart (pg. 4–5 ), plus Code I.D. and Aim I.D.
- You can string together several entries for several symbologies at one time.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.

---

### ***To Add a Prefix or Suffix:***

- STEP 1.** Scan the **Add Prefix** or **Add Suffix** symbol (pg. 4–4).
- STEP 2.** Determine the 2 digit Hex value from the Symbology Chart (pg. 4–5) for the symbology to which you want to apply the prefix or suffix.
- STEP 3.** Scan the 2 hex digits from the Programming Chart inside the back cover or scan **9, 9** for all symbologies.
- STEP 4.** Determine the hex value from the Decimal to Hex to ASCII Conversion Chart (pg. 4–5) for the prefix or suffix you wish to enter.
- STEP 5.** Scan the 2 digit hex value from the Programming Chart inside the back cover.  
  
*Note:* Repeat Steps 4 and 5 for every prefix or suffix character.  
  
*Note:* To add the Code I.D., scan **5, C, 8, 0**.  
To add AIM I.D., scan **5, C, 8, 1**.  
To add a backslash (\), scan **5, C, 5, C**.
- STEP 6.** Scan **Save** to exit and save, or scan **Discard** to exit without saving.

Repeat Steps 1–6 to add a prefix or suffix for another symbology.

#### ***Example: Add a Suffix to a specific symbology***

To send a CR (carriage return) Suffix for UPC only:

- STEP 1.** Scan **Add Suffix**.
- STEP 2.** Determine the 2 digit hex value from the Symbology Chart (pg. 4–5) for UPC.
- STEP 3.** Scan **6, 3** from the Programming Chart (inside back cover).
- STEP 4.** Determine the hex value from the Decimal to Hex to ASCII Conversion Chart (pg. 4–5) for the CR (carriage return).
- STEP 5.** Scan **0, D** from the Programming Chart (inside back cover).
- STEP 6.** Scan **Save**, or scan **Discard** to exit without saving.

### ***To Clear One or All Prefixes or Suffixes:***

You can clear a single prefix or suffix, or clear all prefixes/suffixes for a symbology. When you Clear One Prefix (Suffix), the specific character you select is deleted from the symbology you want. When you Clear All Prefixes (Suffixes), all the prefixes or suffixes for a symbology are deleted.

- STEP 1.** Scan the **Clear One Prefix** or **Clear One Suffix** symbol.
- STEP 2.** Determine the 2 digit Hex value from the Symbology Chart (pg. 4–5) for the symbology from which you want to clear the prefix or suffix.
- STEP 3.** Scan the 2 digit hex value from the Programming Chart inside the back cover or scan **9, 9** for all symbologies.

Your change is automatically saved.

---

### ***To Add a Carriage Return Suffix to all Symbologies***

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



Add CR Suffix  
All Symbologies

---

*Prefix Selections*



Add Prefix



Clear One Prefix



Clear All Prefixes

*Suffix Selections*



Add Suffix



Clear One Suffix



Clear All Suffixes



Save



Discard

Symbology Chart							
Symbology	Code ID	AIM ID	Hex Value	Symbology	Code ID	AIM ID	Hex Value
Codabar	a	]F0	61	Plessey	n	]P0	6E
Code 39	b	]A0	62	IATA Code 2 of 5	f	]R0	66
Code 39 PARAF	w	]X0	77	Code 11	h	]H0	68
UPC	c	]E0	63	Code 128	j	]C0	6A
EAN/JAN	d	]E0	64	Telepen	t	]B0	74
Interleaved 2 of 5	e	]I0	65	Matrix 2 of 5	m	]X0	6D
Code 93	i	]G0	89	China Postal	q	]X0	71
Code 2 of 5	f	]S0	66				
MSI	g	]M0	67	All Symbologies †			99

† Prefix/Suffix entries for specific symbologies override the All Symbologies selection. The All Symbologies selection is for Prefix/Suffix programming only.

Decimal to Hex to ASCII Conversion Chart											
DEC	Hex	ASCII	DEC	Hex	ASCII	DEC	Hex	ASCII	DEC	Hex	ASCII
0	00	NUL	32	20	SP	64	40	@	96	60	'
1	01	SOH	33	21	!	65	41	A	97	61	a
2	02	STX	34	22	"	66	42	B	98	62	b
3	03	ETX	35	23	#	67	43	C	99	63	c
4	04	EOT	36	24	\$	68	44	D	100	64	d
5	05	ENQ	37	25	%	69	45	E	101	65	e
6	06	ACK	38	26	&	70	46	F	102	66	f
7	07	BEL	39	27	'	71	47	G	103	67	g
8	08	BS	40	28	(	72	48	H	104	68	h
9	09	HT	41	29	)	73	49	I	105	69	i
10	0A	LF	42	2A	*	74	4A	J	106	6A	j
11	0B	VT	43	2B	+	75	4B	K	107	6B	k
12	0C	FF	44	2C	,	76	4C	L	108	6C	l
13	0D	CR	45	2D	-	77	4D	M	109	6D	m
14	0E	SO	46	2E	.	78	4E	N	110	6E	n
15	0F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	^	126	7E	~
31	1F	US	63	3F	?	95	5F	_	127	7F	DEL

---

### *Function Code Transmit*

When this selection is enabled and function codes are contained within the scanned data, the scanner transmits the function code to the terminal. Charts of these function codes are provided in Section 10, Supported Interface Keys. When the scanner is in keyboard wedge mode, the scan code is converted to a key code before it is transmitted.



\* Enable



Disable

---

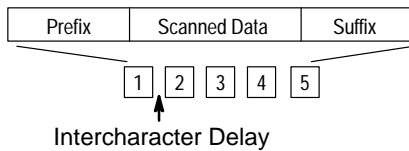
Some terminals drop information (characters) if data comes through too quickly. Intercharacter, interfunction, and intermessage delays slow the transmission of data, which increases data integrity.

Each delay is composed of a 5 millisecond step. You can program up to 99 steps (of 5 ms each).

### ***Intercharacter Delay***

This is a delay of up to 495 milliseconds (in multiples of 5) placed between the transmission of each character of scanned data. You can program up to 99 steps (of 5 ms each). Scan the Intercharacter Delay bar code below, then scan the number of steps, and the **SAVE** bar code from the inside back cover.

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the Intercharacter Delay bar code, scan the correct digits, and **Save** again.



Intercharacter Delay

To remove this delay, scan the Intercharacter Delay bar code, then set the number of steps to 00. Scan the **SAVE** bar code from the inside back cover.

---

### *User Specified Intercharacter Delay*

This is a delay of up to 495 milliseconds (in multiples of 5) placed after the transmission of a particular character of scanned data. You can program up to 99 steps (of 5 ms each) to follow the character you specify. Scan the Delay Length bar code below, then the number of steps for the delay, and the **SAVE** bar code from the inside back cover.

Next, scan the Character to Trigger Delay bar code, then the 2 digit hex value for the ASCII character that will trigger the delay (refer to the Decimal to Hex to ASCII conversion chart on page 4–5).

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the Character to Trigger Delay bar code, scan the correct digits, and **Save** again.



Delay Length



Character to Trigger Delay

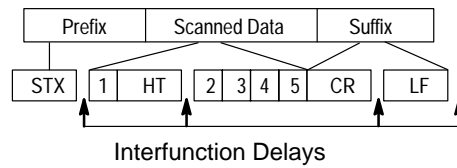
To remove this delay, scan the Delay Length bar code, and set the number of steps to 00. Scan the **SAVE** bar code from the inside back cover.

---

## Interfunction Delay

This is a delay of up to 495 milliseconds (in multiples of 5) placed between the transmission of each segment of the message string. You can program up to 99 steps (of 5 ms each). Scan the Interfunction Delay bar code below, then scan the number of steps, and the **SAVE** bar code from the inside back cover.

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the Interfunction Delay bar code, scan the correct digits, and **Save** again.



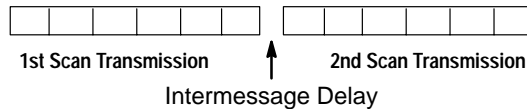
Interfunction Delay

To remove this delay, scan the Interfunction Delay bar code, then set the number of steps to 00. Scan the **SAVE** bar code from the inside back cover.

## Intermessage Delay

This is a delay of up to 495 milliseconds (in multiples of 5) placed between each scan transmission. You can program up to 99 steps (of 5 ms each). Scan the Intermassage Delay bar code below, then scan the number of steps, and the **SAVE** bar code from the inside back cover.

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the Intermassage Delay bar code, scan the correct digits, and **Save** again.



Intermessage Delay

To remove this delay, scan the Intermassage Delay bar code, then set the number of steps to 00. Scan the **SAVE** bar code from the inside back cover.

# ***Section 5***      ***Data Formatting***

---

## ***Data Format Editor Introduction***

The Data Format Editor selections are used to edit scanned data. For example, you can use the Data Format Editor to insert characters at certain points in bar code data as it is scanned.

It is not necessary to use the Data Format Editor. A set of defaults for the data format is already programmed in the scanner. The selections in the following pages are used only if you wish to alter the default settings. *Default Data Format setting = none.*

If you have changed data format settings, and wish to clear all formats and return to the defaults, scan the **Default Data Format** code.

### To Add a Data Format

**STEP 1.** Scan the **Enter Data Format** symbol (pg. 5-4).

**STEP 2. Primary/Alternate Format**

Determine if this will be your primary data format, or one of 3 alternate formats. (Alternate formats allow you "single shot" capability to scan one bar code using a different data format. After the one bar code has been read, the scanner reverts to the primary data format. See page 5-6.) If you are programming the primary format, scan **0**. If you are programming an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are programming.

**STEP 3. Terminal Type**

Refer to the Supported Terminals Chart (page 2-3) and locate the Terminal ID number for your PC. Scan three numeric bar codes on the inside back cover to program the scanner for your terminal ID (you must enter **3** digits). For example, scan **0 0 3** for an AT wedge.

*Note: The wildcard for all terminal types is 099.*

**STEP 4. Code I.D.**

On pg. 4-5, find the symbology to which you want to apply the data format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart.

**STEP 5. Length**

Specify what length (up to 9999 characters) of data will be acceptable for this symbology. Scan the four digit data length from the Programming Chart. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.)

**STEP 6. Editor Commands**

Refer to the Format Editor Commands Chart (page 5-2). Scan the symbols that represent the command you want to enter. 94 alphanumeric characters may be entered for each symbology data format.

**STEP 7.** Scan **Save** to save your entries.

---

### Other Programming Selections

- **Clear One Data Format**  
This deletes one data format for one symbology. If you are clearing the primary format, scan **0**. If you are clearing an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are clearing. Scan the Terminal Type (refer to the Supported Terminals Chart on page 2–3), Code I.D. and the length of the format you want to delete. That length data format for that symbology is deleted and all other formats are unaffected.
- **Save**  
This exits, saving any Data Format changes.
- **Discard**  
This exits without saving any Data Format changes.

## ***Data Format Editor Commands***

### **Send Commands**

- F1 Send all characters followed by “xx” key or function code, starting from current cursor position. **Syntax = F1xx** (xx stands for the hex value for an ASCII code, see Decimal to Hex to ASCII Conversion chart, page 4–5.)
- F2 Send “nn” characters followed by “xx” key or function code, starting from current cursor position. **Syntax = F2nnxx** (nn stands for the numeric value (00-99) for the number of characters and xx stands for the hex value for an ASCII code. See Decimal to Hex to ASCII Conversion chart, page 4–5.)
- F3 Send up to but not including “ss” character (Search and Send) starting from current cursor position, leaving cursor pointing to “ss” character followed by “xx” key or function code. **Syntax = F3ssxx** (ss and xx both stand for the hex values for ASCII codes, see Decimal to Hex to ASCII Conversion chart, page 4–5.)
- F4 Send “xx” character “nn” times (Insert) leaving cursor in current cursor position. **Syntax = F4xnn** (xx stands for the hex value for an ASCII code, see Decimal to Hex to ASCII Conversion chart, page 4–5, and nn is the numeric value (00-99) for the number of times it should be sent.)
- E9 Send all but the last “nn” characters, starting from the current cursor position. **Syntax = E9nn** (nn is the numeric value (00-99) for the number of characters that will not be sent at the end of the message.)

### **Move Commands**

- F5 Move the cursor ahead “nn” characters from current cursor position. **Syntax = F5nn** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved ahead.)
- F6 Move the cursor back “nn” characters from current cursor position. **Syntax = F6nn** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved back.)
- F7 Move the cursor to the beginning of the data string. **Syntax = F7.**
- EA Move the cursor to the end of the data string. **Syntax = EA**

---

## Search Commands

- F8 Search ahead for “xx” character from current cursor position, leaving cursor pointing to “xx” character. **Syntax = F8xx** (xx stands for the hex value for an ASCII code, see Decimal to Hex to ASCII Conversion chart, page 4–5.)
- F9 Search back for “xx” character from current cursor position, leaving cursor pointing to “xx” character. **Syntax = F9xx** (xx stands for the hex value for an ASCII code, see Decimal to Hex to ASCII Conversion chart, page 4–5.)
- E6 Search ahead for the first non “xx” character from the current cursor position, leaving cursor pointing to non “xx” character. **Syntax = E6xx** (xx stands for the hex value for an ASCII code, see Decimal to Hex to ASCII Conversion chart, page 4–5.)
- E7 Search back for the first non “xx” character from the current cursor position, leaving cursor pointing to non “xx” character. **Syntax = E7xx** (xx stands for the hex value for an ASCII code, see Decimal to Hex to ASCII Conversion chart, page 4–5.)

## Miscellaneous Commands

- FB Suppress all occurrences of up to 15 different characters, starting at the current cursor position, as the cursor is advanced by other commands. When the FC command is encountered, the suppress function is terminated. The cursor is not moved by the FB command. **Syntax = FBnnxxyy . .zz** where nn is a count of the number suppress characters in the list and xxyy .. zz is the list of characters to be suppressed. (xx stands for the hex value for an ASCII code, see Decimal to Hex to ASCII Conversion chart, page 4–5.)
- FC Disable suppress filter and clear all suppressed characters. **Syntax = FC.**
- E4 Replaces up to 15 characters in the data string with user specified characters. Replacement continues until the E5 command is encountered. **Syntax = E4nnxx<sub>1</sub>xx<sub>2</sub>yy<sub>1</sub>yy<sub>2</sub>...zz<sub>1</sub>zz<sub>2</sub>** where nn is the total count of both characters to be replaced plus replacement characters; xx<sub>1</sub> defines characters to be replaced and xx<sub>2</sub> defines replacement characters, continuing through zz<sub>1</sub> and zz<sub>2</sub>.
- E5 Terminates character replacement. **Syntax = E5.**
- FE Compare character in current cursor position to the character “xx.” If characters are equal, increment cursor. If characters are not equal, no format match. **Syntax = FExx** (xx stands for the hex value for an ASCII code, see Decimal to Hex to ASCII Conversion chart, page 4–5.)
- EC Check to make sure there is an ASCII number at the current cursor position. If character is not numeric, format is aborted. **Syntax = EC.**
- ED Check to make sure there is a non-numeric ASCII character at the current cursor position. If character is numeric, format is aborted. **Syntax = ED.**

---

*Data Format Editor*



Enter Data Format



Default Data Format



Clear One Data Format



Clear All Data Formats



Save



Discard

---

## ***Data Formatter***

When Data Formatter is turned off, the bar code data is output to the host as read (including prefixes and suffixes). Choose one of the following options.  
*Default = Data Formatter On.*



\* Data Formatter On,  
but Not Required



Data Formatter Off

When Data Formatter is required, all input data must conform to an edited format or the scanner does not transmit the input data to the host device.



Data Format On, Format Required

---

### *Alternate Data Formats*

Alternate formats allow you “single shot” capability to scan one bar code using a different data format than your primary format. When data formats are programmed (see page 5-1), you must input whether you are programming the primary format, or an alternate format numbered 1, 2, or 3.

An alternate format is initiated by scanning one of the 3 alternate format bar codes below. The scanner will scan the next bar code, formatting the data with the selected alternate format, then revert immediately to the primary format.



Alternate Data Format 1



Alternate Data Format 2



Alternate Data Format 3

## ***Section 6    Secondary Interface***

---

### ***Secondary Interface***

By switching interface cables, the ABC 900 scanner can communicate with a portable data terminal (secondary interface), in addition to the host terminal (primary interface).

The secondary interface can be programmed at any time.

### ***Secondary Code 39 Wand Emulation***

In Wand Emulation mode, the scanner decodes the bar code then sends data in the same format as a wand scanner. The Code 39 Format converts all symbologies to Code 39. The Same Code Format transmits UPC, EAN, Code 128 and Interleaved 2 of 5 without any changes, but converts all other symbologies to Code 39. These codes set the transmission rate to 25 inches per second and the output polarity to black, high. *Default = Code 39 Format.*



\* Wand Emulation  
Code 39 Format



Wand Emulation  
Same Code Format

### ***Secondary RS-232 Connection***

All communication parameters between the scanner and terminal must match for correct data transfer through the serial port using RS-232 protocol.

RS-232 programmable selections are used by both the primary and secondary interfaces. Changing an RS-232 parameter (e.g., baud rate or parity), while in primary *or* secondary mode will affect both interfaces.



RS-232 Interface

---

### ***Secondary Non Decoded Output Laser Emulation***

Use this selection when connecting to a secondary terminal with integral decoding. This also sets the transmission rate to 36 scans per second and the polarity to white high.



Non Decoded Output

### ***Non Decoded Output Laser Emulation Transmission Rate***

The Transmission Rate is limited by the terminal's ability to receive data without dropping characters. *Default = 36 scans/second.*



\* 36



100

### ***Non Decoded Output Laser Emulation Polarity***

The Polarity can be sent as standard with white bars high, or reversed with black bars high. *Default = White High.*



\* White High



Black High

---

### ***Non Decoded Laser Emulation Idle***

The idle describes the state of the scanner when no data is being transmitted. When in Non Decoded mode, you must set the scanner's idle state to match the idle state for the device to which the scanner is connected. *Default = High.*



Low



\* High

### ***Disabling the Secondary Interface***

You can temporarily disable the secondary interface, but still retain the secondary interface settings in the scanner's memory by scanning the Disable bar code below. To re-enable the secondary interface, scan the Enable bar code. *Default = Disable.*



\* Disable



Enable

---

## *Secondary Trigger Mode*

**Manual Trigger:** You must press the scanner trigger to scan. When not scanning, idle power is maintained. *Default = Manual Trigger.*



\* Manual Trigger

**Automatic Trigger:** The scanner scans continuously at full power.



Automatic Trigger

**Manual Trigger, Low Power:** The scanner “sleeps,” using only 5 microamps, until the trigger is pulled. When the trigger is pulled, the scanner wakes up and operates at reduced power until there is no triggering for the time set with the Low Power Time Out bar code. There is a short delay in operation when the scanner is first triggered, but there is no delay when operating in low power mode.

**Low Power Time Out:** Scan the Low Power Time Out bar code to change the time out duration. Then scan the time out duration (from 0–300 seconds) from the inside back cover and **Save**. *Default = 2 minutes.*

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the Low Power Time Out bar code, scan the correct digits, and **Save** again.



Manual Trigger, Low Power



Low Power Time Out

# *Section 7*

# *Symbologies*

---

## *Introduction*

Use this section to program the scanner for Industrial and Retail Symbology selections.

This programming section contains the following menu selections:

- Codabar
- Code 39
- Interleaved 2 of 5
- Code 93
- Code 2 of 5
- IATA Code 2 of 5
- Matrix 2 of 5
- Code 11
- Code 128
- Telepen
- UPC
- EAN/JAN
- MSI
- Plessey
- China Postal Code

---

*Industrial Symbology Selections*

**Codabar**

<Default All Codabar Settings>



---

*Codabar*



\* On

Off



*Start / Stop Characters*

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters. *Default = Don't Transmit.*



Transmit

\* Don't Transmit



---

## *Industrial Symbology Selections*

### **Codabar, *continued***

#### ***Check Character***

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

No Check Character indicates that the scanner reads and transmits bar code data with or without a check character.

When Check Character is set to Validate and Transmit, the scanner will only read Codabar bar codes printed with a check character, and will transmit this character at the end of the scanned data.

When Check Character is set to Validate, but Don't Transmit, the unit will only read Codabar bar codes printed **with** a check character, but will not transmit the check character with the scanned data.



\* No Check Character

Validate Modulo 16, but  
Don't Transmit



Validate Modulo 16 and Transmit

---

## Industrial Symbology Selections

### Codabar, *continued*

#### Concatenation

Codabar supports symbol concatenation. When you **Enable** concatenation, the scanner looks for a Codabar symbol having a “D” start character, adjacent to a symbol having a “D” stop character. In this case the two messages are concatenated into one with the “D” characters omitted. *Default = On.*



Select **Require** to prevent the scanner from decoding a lone Codabar symbol.

#### Concatenation



Off



---

## *Industrial Symbology Selections*

### **Codabar, *continued***

#### **Message Length**

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 2–60.

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)



---

***Industrial Symbology Selections***

**Code 39**

*<Default All Code 39 Settings>*



---

***Code 39***



\* On

Off



***Start / Stop Characters***

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters. *Default = Don't Transmit.*



Transmit

\* Don't Transmit



---

## *Industrial Symbology Selections*

### **Code 39, continued**

#### **Check Character**

No Check Character indicates that the scanner reads and transmits bar code data with or without a check character.

When Check Character is set to Validate, but Don't Transmit, the unit will only read Code 39 bar codes printed **with** a check character, but will not transmit the check character with the scanned data.

When Check Character is set to Validate and Transmit, the scanner will only read Code 39 bar codes printed with a check character, and will transmit this character at the end of the scanned data. *Default = No Check Character.*



\* No Check Character

Validate, but Don't Transmit



Validate and Transmit

---

## Code 39, *continued*

### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 0–48.

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =0)



Maximum (Default =48)

---

## *Industrial Symbology Selections*

### **Code 39, continued**

#### **Code 39 Append**

This function allows the scanner to append the data from several Code 39 bar codes together before transmitting them to the host computer. When this function is enabled, the scanner stores those Code 39 bar codes that start with a space (excluding the start and stop symbols), and does not immediately transmit the data. The scanner stores the data in the order in which the bar codes are read, deleting the first space from each. The scanner transmits the appended data when it reads a Code 39 bar code that starts with a character other than a space. *Default = Off.*



On

\* Off



#### **Base 32**

Base 32 is a form of the Code 39 symbology used by Italian pharmacies. This is also known as PARAF.



On

\* Off



## Industrial Symbology Selections

### Code 39, continued

#### Full ASCII

If Full ASCII Code 39 decoding is enabled, certain character pairs within the bar code symbol will be interpreted as a single character. For example: \$V will be decoded as the ASCII character SYN, and /C will be decoded as the ASCII character #. *Default = On.*

FULL ASCII Code 39 CHART															
NUL	%U	DLE	\$P	SP	SPACE	0	0	@	%V	P	P	'	%W	p	+P
SOH	\$A	DC1	\$Q	!	/A	1	1	A	A	Q	Q	a	+A	q	+Q
STX	\$B	DC2	\$R	"	/B	2	2	B	B	R	R	b	+B	r	+R
ETX	\$C	DC3	\$S	#	/C	3	3	C	C	S	S	c	+C	s	+S
EOT	\$D	DC4	\$T	\$	/D	4	4	D	D	T	T	d	+D	t	+T
ENQ	\$E	NAK	\$U	%	/E	5	5	E	E	U	U	e	+E	u	+U
ACK	\$F	SYN	\$V	&	/F	6	6	F	F	V	V	f	+F	v	+V
BEL	\$G	ETB	\$W	'	/G	7	7	G	G	W	W	g	+G	w	+W
BS	\$H	CAN	\$X	(	/H	8	8	H	H	X	X	h	+H	x	+X
HT	\$I	EM	\$Y	)	/I	9	9	I	I	Y	Y	i	+I	y	+Y
LF	\$J	SUB	\$Z	*	/J	:	/Z	J	J	Z	Z	j	+J	z	+Z
VT	\$K	ESC	%A	+	/K	;	%F	K	K	[	%K	k	+K	{	%P
FF	\$L	FS	%B	,	/L	<	%G	L	L	\	%L	l	+L		%Q
CR	\$M	GS	%C	-	/M	=	%H	M	M	]	%M	m	+M	}	%R
SO	\$N	RS	%D	.	/N	>	%I	N	N	^	%N	n	+N	~	%S
SI	\$O	US	%E	/	/O	?	%J	O	O	_	%O	o	+O	DEL	%T

Character pairs /M and /N decode as a minus sign and period respectively. Character pairs /P through /Y decode as 0 through 9.



\* On

Off



---

## *Industrial Symbology Selections*

### **Interleaved 2 of 5**

<Default All Interleaved 2 of 5 Settings>



---

### *Interleaved 2 of 5*



\* On

Off



### *Check Digit*

No Check Digit indicates that the scanner reads and transmits bar code data with or without a check digit.

When Check Digit is set to Validate, but Don't Transmit, the unit will only read Interleaved 2 of 5 bar codes printed **with** a check digit, but will not transmit the check digit with the scanned data.

When Check Digit is set to Validate and Transmit, the scanner will only read Interleaved 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default = No Check Digit.*



\* No Check Digit

Validate, but Don't Transmit



Validate and Transmit

---

## Interleaved 2 of 5, *continued*

### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 2–80.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)



### *Strict Decoding*

When Strict Decoding is used, the scanner only reads bar codes that are close to spec. This reduces the number of misreads, but also reduces the tolerance for bar codes that are slightly out of spec.



On



---

## *Industrial Symbology Selections*

### **Code 93**

<Default All Code 93 Settings>



---

### *Code 93*



\* On

Off



### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 0–80.

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =0)



Maximum (Default =80)

---

## *Industrial Symbology Selections*

### **Code 2 of 5**

<Default All Code 2 of 5 Settings>



---

#### *2 of 5*



\* On

Off



### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 1–48.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)

Maximum (Default =48)



---

## *Industrial Symbology Selections*

### **IATA Code 2 of 5**

<Default All Code IATA 2 of 5 Settings>



---

#### *IATA 2 of 5*



\* On

Off



#### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 1–48.

*Note:* If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)

Maximum (Default =48)



---

## *Industrial Symbology Selections*

### **Matrix 2 of 5**

<Default All Matrix 2 of 5 Settings>



---

### *Matrix 2 of 5*



\* On

Off



### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 1–80.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)

Maximum (Default =80)



---

***Industrial Symbology Selections***

**Code 11**

<Default All Code 11 Settings>



---

***Code 11***



\* On

Off



***Check Digits Required***

This option sets whether 1 or 2 check digits are required with Code 11 bar codes. *Default = Two Check Digits.*



One Check Digit

\* Two Check Digits



---

## Code 11, *continued*

### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 1–80.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)



---

## *Industrial Symbology Selections*

### **Code 128**

<Default All Code 128 Settings>



---

### *Code 128*



\* On

Off



### *Function Character Transmit*

If function characters are turned off, function codes are not sent with bar code data. Refer to Hex ASCII Conversion Chart on page 4–5 for function codes.  
*Default =Off.*



On

\* Off



### *<GS> Substitution*

When enabled, the scanner substitutes a <GS> for Function Character 1 when decoding EAN 128. *Default =Off.*



On

\* Off



---

## *Industrial Symbology Selections*

### **Code 128, continued**

#### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 0–90.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =0)

Maximum (Default =80)



---

## *Industrial Symbology Selections*

### **Telepen**

*<Default All Telepen Settings>*



---

### *Telepen*



\* On

Off



### *Telepen Output*

Using AIM Telepen Output, the scanner reads symbols with start/stop pattern 1 and decodes them as standard full ASCII (start/stop pattern 1). When Original Telepen Output is selected, the scanner reads symbols with start/stop pattern 1 and decodes them as compressed numeric with optional full ASCII (start/stop pattern 2). *Default = AIM Telepen Output.*



\* AIM Telepen Output



Original Telepen Output

---

## Telepen, *continued*

### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 1–60.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default = 1)



---

## Retail Symbology Selections

### UPC A

<Default All UPC A Settings>



---

### UPC A



\* On

Off



### Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



\* On

Off



### Number System

The numeric system digit of a UPC symbol is normally transmitted, but the unit can be programmed so it will not transmit it. *Default = On.*



\* On

Off



---

***Retail Symbology Selections***

**UPC A, *continued***

***Addenda***

This selection adds 2 or 5 digits to the end of all scanned UPC A data.  
*Default = Off for both 2-Digit and 5-Digit Addenda.*

***2-Digit Addenda***



On

\* Off



***5-Digit Addenda***



On

\* Off



---

## *Retail Symbology Selections*

### **UPC A, *continued***

#### ***Addenda Required***

When Addenda Required is set to on, the scanner will only read UPC A bar codes that have addenda. *Default = Off.*

#### ***Addenda Required***



On

\* Off



#### ***Addenda Separator***

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space. *Default = On.*



\* On

Off



#### ***Strict Decoding***

When Strict Decoding is used, the scanner only reads bar codes that are close to spec. This reduces the number of misreads, but also reduces the tolerance for bar codes that are slightly out of spec.



On

\* Off



---

## *Retail Symbology Selections*

### **UPC E**

*<Default All UPC E Settings>*



---

Most UPC bar codes lead with the 0 number system. For these codes, use the UPC E0 selection. If you need to read codes that lead with the 1 number system, use the UPC E1 selection. *Default = On (UPC E0) and Off (UPC E1).*

#### **UPC E0**



\* On

Off



#### **UPC E1**



On

\* Off



#### **UPC E Expand**

UPC E Expand expands the UPC E code to the 12 digit, UPC A format. *Default = Off.*



On

\* Off



---

## *Retail Symbology Selections*

### **UPC E, *continued***

#### ***Check Digit***

Check Digit specifies whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



\* On

Off



#### ***Number System***

The numeric system digit of a UPC symbol is normally transmitted, but the unit can be programmed so it will not transmit it. *Default = On.*



\* On

Off



#### ***Addenda***

This selection adds 2 or 5 digits to the end of all scanned UPC E data. *Default = Off for both 2-Digit and 5-Digit Addenda.*

##### ***2-Digit Addenda***



On

\* Off



##### ***5-Digit Addenda***



On

\* Off



---

## *Retail Symbology Selections*

### **UPC E, *continued***

#### ***Addenda Required***

When Addenda Required is set to on, the scanner will only read UPC E bar codes that have addenda. *Default = Off.*



On

\* Off



#### ***Addenda Separator***

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space. *Default = On.*



\* On

Off



---

***Retail Symbology Selections***

**EAN/JAN 13**

<Default All EAN/JAN 13 Settings>



---

***EAN/JAN 13***



\* On

Off



***Check Digit***

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



\* On

Off



***Addenda***

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN 13 data. *Default = Off for both 2-Digit and 5-Digit Addenda.*

***2-Digit Addenda***



On

\* Off



---

***Retail Symbolgy Selections***

**EAN/JAN 13, *continued***

***5-Digit Addenda***



On

\* Off



***Addenda Required***

When Addenda Required is set to on, the scanner will only read EAN/JAN 13 bar codes that have addenda. *Default = Off.*



On

\* Off



***Addenda Separator***

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space. *Default = On.*



\* On

Off



***ISBN Enable***

This symbology allows the scanner to read ISBN codes on books. *Default = Off.*



On

\* Off



---

***Retail Symbology Selections***

**EAN/JAN 8**

<Default All EAN/JAN 8 Settings>



---

***EAN/JAN 8***



\* On

Off



***Check Digit***

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



\* On

Off



***Addenda***

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN 13 data. *Default = Off for both 2-Digit and 5-Digit Addenda.*

***2-Digit Addenda***



On

\* Off



---

***Retail Symbology Selections***

**EAN/JAN 8, *continued***

***5-Digit Addenda***



On

\* Off



***Addenda Required***

When Addenda Required is set to on, the scanner will only read EAN/JAN 13 bar codes that have addenda. *Default = Off.*

***Addenda Required***



On

\* Off



***Addenda Separator***

*Default = On.*



\* On

Off



---

## Retail Symbology Selections

### MSI

<Default All MSI Settings>



---

### MSI



On

\* Off



### Check Character

Different types of check characters are used with MSI bar codes. You can program the scanner to read only MSI bar codes with Type 10 or Type 11 check characters. *Default = Validate Type 10, but Don't Transmit.*

When Check Character is set to Validate and Transmit, the scanner will only read MSI bar codes printed with the specified type check character, and will transmit this character at the end of the scanned data.

When Check Character is set to Validate, but Don't Transmit, the unit will only read MSI bar codes printed *with* the specified type check character, but will not transmit the check character with the scanned data.



\* Validate Type 10, but Don't  
Transmit

Validate Type 10 and Transmit



Validate Type 11, but  
Don't Transmit

Validate Type 11 and Transmit



---

## *Retail Symbology Selections*

### **MSI, continued**

#### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 4–48.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)

Maximum (Default =48)



---

## Retail Symbology Selections

### Plessey

<Default All Plessey Settings>



---

### Plessey



On

\* Off



### Message Length

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 4–48.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)

Maximum (Default =48)



---

## *Retail Symbology Selections*

### **China Post Code**

<Default All China Post Code Settings>



---

### *China Post Code*



On

\* Off



### *Message Length*

The message length selection is used to set the valid reading length of the bar code. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

**EXAMPLE:** Decode only those bar codes with a count of 9–20 characters.  
Min. length = 09 Max. length = 20

**EXAMPLE:** Decode only those bar codes with a count of 15 characters.  
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes below and then scan the 2–digit value and Save bar codes on the Programming Chart inside back cover. Minimum and Maximum Lengths = 0–80.

**Note:** If you make an error while scanning the digits (before scanning Save), scan **Discard** on the back cover, scan the **Minimum** or **Maximum** bar code, scan the correct digits, and **Save** again.



Minimum (Default =4)

Maximum (Default =80)



## Section 8

## Cloning

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The cloning procedure reprograms the software in the “destination” scanner’s memory with software from the “source” scanner. Before using this procedure, determine which scanner will be the source (the scanner containing the desired software). The ABC 900 supports cloning and can act as the source device. The software in the destination scanner will be updated from the source scanner. The destination scanner device must be the same model as the source.

### *Procedure:*

1. Use the cloning cable (42204559–01) to connect the two scanners for cloning.
2. Connect the destination scanner to one of the 10 pin modular connectors on the cloning cable.
3. Connect the source scanner (containing the new or updated software) to the remaining 10 pin modular connector on the cloning cable.
4. Connect the power supply to the 4 pin mini–DIN connector located on the cloning cable or the scanner cable.
5. Make sure both units are on, and then scan the “Clone Destination” bar code with the destination scanner.



**Clone Destination Bar Code**

6. Scan the Clone Source bar code below with the source scanner. The scanner’s “Good Read” LED begins blinking periodically indicating cloning is in process.



**Clone Source Bar Code**

7. When cloning is complete, the destination scanner will double beep. This procedure takes approximately two minutes.
8. Disconnect the destination scanner from the cloning cable.
9. To clone another scanner, repeat steps 1 through 8.

**Caution: DO NOT scan the “source” bar code unless you are going to clone a scanner. If you mistakenly scan this bar code, reset the scanner by turning the power off and back on to regain normal operation.**

## Section 9

## Interface Keys

---

### *Keyboard Function Relationships*

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

Function Code	HEX/ASCII Value	Full ASCII "CTRL" +
NUL	00	2
SOH	01	A
STX	02	B
ETX	03	C
EOT	04	D
ENQ	05	E
ACK	06	F
BEL	07	G
BS	08	H
HT	09	I
LF	0A	J
VT	0B	K
FF	0C	L
CR	0D	M
SO	0E	N
SI	0F	O
DLE	10	P
DC1	11	Q
DC2	12	R
DC3	13	S
DC4	14	T
NAK	15	U
SYN	16	V
ETB	17	W
CAN	18	X
EM	19	Y
SUB	1A	Z
ESC	1B	[
FS	1C	\
GS	1D	]
RS	1E	6
US	1F	-

---

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

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

---

## *Supported Interface Keys*

<i>Supported Interface Keys</i>		<b>IBM AT/XT and PS/2 Compatibles, WYSE PC/AT</b>	<b>IBM XTs and Compatibles</b>	<b>IBM, DDC, Memorex Telex, Harris*</b>
NUL	00	Reserved	Reserved	Reserved
SOH	01	Enter (KP)	CR/Enter	Enter
STX	02	Cap Lock	Caps Lock	F11
ETX	03	ALT make	Reserved	F12
EOT	04	ALT break	Reserved	F13
ENQ	05	CTRL make	Reserved	F14
ACK	06	CTRL break	Reserved	F15
BEL	07	CR/Enter	CR/Enter	New Line
BS	08	Reserved	Reserved	F16
HT	09	Tab	Tab	F17
LF	0A	Reserved	Reserved	F18
VT	0B	Tab	Tab	Tab/Field Forward
FF	0C	Delete	Delete	Delete
CR	0D	CR/Enter	CR/Enter	Field Exit/New Line
SO	0E	Insert	Insert	Insert
SI	0F	Escape	Escape	F19
DLE	10	F11	Reserved	Error Reset
DC1	11	Home	Home	Home
DC2	12	Print	Print	F20
DC3	13	Back Space	Back Space	Back Space
DC4	14	Back Tab	Back Tab	Backfield/Back Tab
NAK	15	F12	Reserved	F21
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	F6	F6
FS	1C	F7	F7	F7
GS	1D	F8	F8	F8
RS	1E	F9	F9	F9
US	1F	F10	F10	F10

\* IBM 3191/92, 3471/72, 3196/97, 3476/77, Telex (all models)

---

### *Supported Interface Keys*

<b>Supported Interface Keys</b>		<b>IBM, Memorex Telex (102)*</b>	<b>Memorex Telex (88)**</b>
NUL	00	Reserved	Reserved
SOH	01	Enter	Enter
STX	02	F11	PF10
ETX	03	F12	PF11
EOT	04	F13	PF12
ENQ	05	F14	Reserved
ACK	06	F15	Reserved
BEL	07	New Line	New Line
BS	08	F16	Field Forward
HT	09	F17	Field Forward
LF	0A	F18	Reserved
VT	0B	Tab/Field Forward	Field Forward
FF	0C	Delete	Delete
CR	0D	Field Exit	New Line
SO	0E	Insert	Insert
SI	0F	Clear	Erase
DLE	10	Error Reset	Error Reset
DC1	11	Home	Reserved
DC2	12	Print	Print
DC3	13	Back Space	Back Space
DC4	14	Back Tab	Back Field
NAK	15	F19	Reserved
SYN	16	F1	PF1
ETB	17	F2	PF2
CAN	18	F3	PF3
EM	19	F4	PF4
SUB	1A	F5	PF5
ESC	1B	F6	PF6
FS	1C	F7	PF7
GS	1D	F8	PF8
RS	1E	F9	PF9
US	1F	F10	Home

\* IBM 3196/97, 3476/77, 3191/92, 3471/72, Memorex Telex (all models) with 102 key keyboards

\*\* Memorex Telex with 88 key keyboards

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## *Supported Interface Keys*

<b>Supported Interface Keys</b>	<b>Esprit 200, 400 ANSI</b>	<b>Esprit 200, 400 ASCII</b>	<b>Esprit 200, 400 PC</b>
NUL	00	Reserved	Reserved
SOH	01	New Line	New Line
STX	02	N/A	N/A
ETX	03	N/A	N/A
EOT	04	N/A	N/A
ENQ	05	N/A	N/A
ACK	06	N/A	N/A
BEL	07	New Line	New Line
BS	08	N/A	N/A
HT	09	Tab	Tab
LF	0A	N/A	N/A
VT	0B	Tab	Tab
FF	0C	N/A	Delete
CR	0D	New Line	New Line
SO	0E	N/A	Insert
SI	0F	Escape	Escape
DLE	10	F11	F11
DC1	11	Insert	Home
DC2	12	F13	Print
DC3	13	Back Space	Back Space
DC4	14	Back Tab	Back Tab
NAK	15	F12	F12
SYN	16	F1	F1
ETB	17	F2	F2
CAN	18	F3	F3
EM	19	F4	F4
SUB	1A	F5	F5
ESC	1B	F6	F6
FS	1C	F7	F7
GS	1D	F8	F8
RS	1E	F9	F9
US	1F	F10	F10

## *To Add a Test Code I.D. Prefix to All Symbologies*

This selection allows you to turn on transmission of a Code I.D. before the decoded symbology. (See the Symbology Chart on page 4–5 for the single character code that identifies each symbology.) This action first clears all current prefixes, then programs a Code I.D. prefix for all symbologies. This is a temporary setting that will be removed when the unit is power cycled.



Add Code I.D. Prefix to  
All Symbologies

## *Show Software Revision*

Scan the bar code below to output the current software revision.



Show Revision

## *Show Data Format*

Scan the bar code below to show current data format settings.



Data Format Settings

# Section 11

# Defaults

## Resetting the Factory Settings

If you aren't sure what programming options are in your scanner, or you've changed some options and want the factory settings restored, scan the **Factory Default Settings** bar code below.



Factory Default Settings

The following chart lists the factory default settings (indicated by an asterisk (\*) on the programming pages).

<b><u>Parameter</u></b>	<b><u>Default</u></b>	<b><u>Page</u></b>
Terminal I.D. ....	003 .....	2-2
Keyboard Country .....	USA .....	2-4
Keyboard Style .....	Regular .....	2-5
Keyboard Modifiers .....	Control+ASCII Off .....	2-6
	Turbo Off .....	2-6
	Numeric Keypad Off .....	2-6
	Auto Direct Connect Off .....	2-7
<b>RS-232 Selections</b>		
Baud Rate .....	9600 bps .....	2-9
RS-232 Word Length Data Bits, Stop Bits, and Parity .....	7 Data 1 Stop Even Parity .....	2-10
RS-232 Handshaking .....	RTS/CTS off XON/XOFF off ACK/NAK off .....	2-12
<b>Wand Emulation Selections</b>		
Wand Emulation Connection .....	Code 39 Format .....	2-13
Wand Emulation Transmission Rate .....	25 inches/second .....	2-14
Wand Emulation Polarity .....	Black High .....	2-15
Wand Emulation Idle .....	High .....	2-15

---

<u>Parameter</u>	<u>Default</u>	<u>Page</u>
<b>Output Selections</b>		
Scan Rate .....	270 scans/second .....	3-1
Beeper Volume .....	High .....	3-1
Beeper Tone .....	Normal .....	3-2
Scan Voting .....	Voting Normal .....	3-2
Quiet Zone .....	Don't Reduce .....	3-2
Reread Delay .....	Short .....	3-3
Good Read Delay .....	No Delay .....	3-3
Trigger Mode .....	Manual .....	3-4
<b>Data Editing Selections</b>		
Prefix .....	None .....	4-1
Suffix .....	None .....	4-1
Function Code Transmit .....	Enable .....	4-6
<b>Data Formatter Selections</b>		
Data Formatter .....	On/None .....	5-5
<b>Secondary Interface Selections</b>		
Code 39 Wand Emulation .....	Code 39 Format .....	6-1
Non Decoded Output Laser Emulation Transmission Rate .....	36 inches/second .....	6-2
Non Decoded Output Laser Emulation Polarity .....	White High .....	6-2
Non Decoded Laser Emulation Idle .....	High .....	6-3
Disabling the Secondary Interface .....	Disabled .....	6-3
Secondary Trigger Mode .....	Manual Trigger, Low Power Timeout 2 minutes .....	6-4
<b>Codabar Selections</b>		
Codabar .....	On .....	7-2
Start/Stop .....	Don't Transmit .....	7-2
Check Character .....	Not Required .....	7-3
Concatenation .....	On .....	7-4
Message Length .....	Min 4, Max 60 .....	7-5
Voting Threshold .....	10	
Votes At or Above Threshold .....	2	
Votes Below Threshold .....	4	

---

<b><u>Parameter</u></b>	<b><u>Default</u></b>	<b><u>Page</u></b>
<b>Code 39 Selections</b>		
Code 39 .....	On .....	7-6
Start/Stop .....	Don't Transmit .....	7-6
Check Character .....	Not Required .....	7-7
Message Length .....	Min 0, Max 48 .....	7-8
Code 39 Append .....	Off .....	7-9
Base 32 .....	Off .....	7-9
Full ASCII .....	On .....	7-10
Voting Threshold .....	10	
Votes At or Above Threshold .....	2	
Votes Below Threshold .....	4	
<b>Interleaved 2 of 5 Selections</b>		
Interleaved 2 of 5 .....	On .....	7-11
Check Digit .....	Not Required .....	7-11
Message Length .....	Min 4, Max 80 .....	7-12
Strict Decoding .....	Off .....	7-12
Voting Threshold .....	10	
Votes At or Above Threshold .....	3	
Votes Below Threshold .....	5	
<b>Code 93 Selections</b>		
Code 93 .....	On .....	7-13
Message Length .....	Min 0, Max 80 .....	7-13
Voting Threshold .....	10	
Votes At or Above Threshold .....	2	
Votes Below Threshold .....	4	
<b>Code 2 of 5 Selections</b>		
Code 2 of 5 .....	On .....	7-14
Message Length .....	Min 4, Max 48 .....	7-14
Voting Threshold .....	10	
Votes At or Above Threshold .....	3	
Votes Below Threshold .....	5	
<b>IATA Code 2 of 5 Selections</b>		
IATA Code 2 of 5 .....	On .....	7-15
Message Length .....	Min 4, Max 48 .....	7-15
Voting Threshold .....	10	
Votes At or Above Threshold .....	3	
Votes Below Threshold .....	5	

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<b><u>Parameter</u></b>	<b><u>Default</u></b>	<b><u>Page</u></b>
<b>Matrix 2 of 5 Selections</b>		
Matrix 2 of 5 .....	On .....	7-16
Message Length .....	Min 4, Max 80 .....	7-16
Voting Threshold .....	10	
Votes At or Above Threshold .....	3	
Votes Below Threshold .....	5	
<b>Code 11 Selections</b>		
Code 11 .....	On .....	7-17
Check Digits Required .....	2 .....	7-17
Message Length .....	Min 4, Max 80 .....	7-18
Voting Threshold .....	10	
Votes At or Above Threshold .....	2	
Votes Below Threshold .....	4	
<b>Code 128 Selections</b>		
Code 128 .....	On .....	7-19
Function Character Transmit .....	Off .....	7-19
<GS> Substitution .....	Off .....	7-19
Message Length .....	Min 0, Max 80 .....	7-20
Voting Threshold .....	10	
Votes At or Above Threshold .....	2	
Votes Below Threshold .....	4	
<b>Telepen Selections</b>		
Telepen .....	On .....	7-21
Telepen Output .....	AIM Telepen .....	7-21
Message Length .....	Min 1, Max 60 .....	7-22
<b>UPC A</b>		
UPC A .....	On .....	7-23
Check Digit .....	On .....	7-23
Number System .....	On .....	7-23
2-Digit Addenda .....	Off .....	7-24
5-Digit Addenda .....	Off .....	7-24
Addenda Required .....	Off .....	7-25
Addenda Separator .....	On .....	7-25
Strict Decoding .....	Off .....	7-25
Votes Required .....	2	

---

<b><u>Parameter</u></b>	<b><u>Default</u></b>	<b><u>Page</u></b>
<b><i>UPC E</i></b>		
UPC E0 .....	On .....	7-26
UPC E1 .....	Off .....	7-26
UPC E Expand .....	Off .....	7-26
Check Digit .....	On .....	7-27
Number System .....	On .....	7-27
2-Digit Addenda .....	Off .....	7-27
5-Digit Addenda .....	Off .....	7-27
Addenda Required .....	Off .....	7-28
Addenda Separator .....	On .....	7-28
Votes Required .....	2	
<b><i>EAN/JAN 13</i></b>		
EAN/JAN 13 .....	On .....	7-29
Check Digit .....	On .....	7-29
2-Digit Addenda .....	Off .....	7-29
5-Digit Addenda .....	Off .....	7-30
Addenda Required .....	Off .....	7-30
Addenda Separator .....	On .....	7-30
ISBN Enable .....	Off .....	7-30
Votes Required .....	2	
<b><i>EAN/JAN 8</i></b>		
EAN/JAN 8 .....	On .....	7-31
Check Digit .....	On .....	7-31
2-Digit Addenda .....	Off .....	7-31
5-Digit Addenda .....	Off .....	7-32
Addenda Required .....	Off .....	7-32
Addenda Separator .....	On .....	7-32
Votes Required .....	2	
<b><i>MSI Selections</i></b>		
MSI .....	Off .....	7-33
Check Character .....	Validate Type 10, but Don't Transmit .....	7-33
Message Length .....	Min 4, Max 48 .....	7-34
Voting Threshold .....	10	
Votes At or Above Threshold .....	3	
Votes Below Threshold .....	5	

---

<b><u>Parameter</u></b>	<b><u>Default</u></b>	<b><u>Page</u></b>
<b><i>Plessey Selections</i></b>		
Plessey .....	Off .....	7-35
Message Length .....	Min 4, Max 48 .....	7-35
Voting Threshold .....	10	
Votes At or Above Threshold .....	2	
Votes Below Threshold .....	4	
<b><i>China Post Code</i></b>		
China Post Code .....	Off .....	7-36
Message Length .....	Min 4, Max 80 .....	7-36
Voting Threshold .....	10	
Votes At or Above Threshold .....	3	
Votes Below Threshold .....	5	

## Section 12

## Specifications

---

### *Product Specifications*

#### **Dimensions**

Height ..... 6.0 inches (15.2 cm)  
Length ..... 5.3 inches (13.5 cm)  
Weight ..... 6.3 ounces ( 179.2 g)  
Width ..... 3.1 inches ( 7.9 cm)

**Light Source** ..... 630 nm visible red LED

**Scan Rate** ..... Programmable to 270 scans per second

**Skew Angle** .....  $\pm 30$  degrees

**Pitch Angle** .....  $\pm 15$  degrees

**Horizontal Velocity** ..... 5 inches (12.7 cm) per second

#### **Minimum Reflectance**

**Difference** ..... 30% – LR/HD, 40% – PDF

**Decode Rate** ..... 270 decodes per second

**Power Requirements** ..... 5VDC  $\pm 10\%$  at scanner

#### **Current Draw (–12 models)**

@270 s/s ..... 275 mA Scanning; 125 mA Standby;  
5 microA Low Power; 300 mA In-Rush

#### **Temperature Ranges**

Operating ..... 32° F to +122° F (0° C to +50° C)  
Storage ..... –40° F to +140° F (–36° C to +60° C)

**Humidity** ..... 0 to 95% non-condensing

**Mechanical Shock** ..... Operational after 25 drops from 5 feet  
(1.53 m) to concrete

**Vibration** ..... Withstands 5G peak from 20 to 300 Hz

**ESD Sensitivity** ..... 15 kV to any external surface

**Agency Compliance** ..... FCC Class B, CE EMC Class B, CE Low  
Voltage Directive, EN60825–1,  
IEC60825-1 LED Safety: Class 1, UL, cUL,  
TÜV Certified to EN60950, C–Tic.

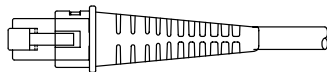
## Standard Cable Pinouts

### Laser Output only (Laser Compatible Bar Image)

Conventional laser data format is provided at the modular connector in the scanner handle.

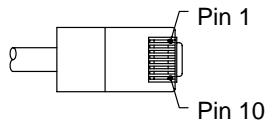
Interface cables are terminated with a 10 pin modular plug (P1) and a 9 pin Type D (squeeze to release) connector (P2). See chart below.

**P1**

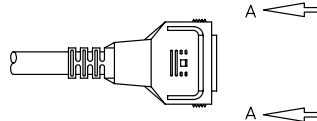


#### 10 Pin Modular Plug

**P1 connects to the scanner handle.**

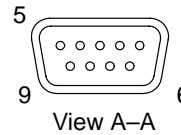


**P2**



#### 9 Pin Type D Female

**P2 connects to your terminal.**



P1	Signal	Function	P2	
9	SOS	Start of Scan	1	
6	Data	Digital Bar Code Data Output	2	
1	Good Read	Turn on Good Read LED or Beeper	3	
7	+5VDC	5 Volt Power Connection ♦	9	
2	Trigger	Trigger Signal to Decoder	5	
3	Enable	Laser Enable	6	
4	Ground	Supply Ground	7	
	N/C	Braid	Cord Shield	8
			N/C ♦	4

♦ Pins 4 and 9 are populated depending on power supply voltage option.

**Note:** Some decoders may have +12V on pins 4 or 9. **Connect to +5VDC ONLY!**

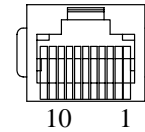
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## Standard Cable Pinouts

### Keyboard Wedge

Decoded output data format provided at 10 pin RJ41 modular connector (in scanner handle). See chart below.

10 Pin RJ41 Modular Connector



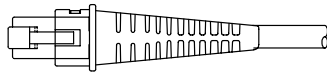
P1	Signal	Function
2	N/C	Cord Shield
3	Prog 1	
4	Ground	Supply Ground
5	Tclock	Terminal Clock
6	Tdata	Terminal Data
7	+5VDC	5 Volt Power Connection
8	Kdata	Keyboard Data
9	Kclock	Keyboard Clock

## Standard Cable Pinouts

### Wand Emulation

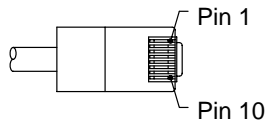
Conventional wand data format provided at 10 pin RJ41 modular connector (in scanner handle). See chart below.

**P1**

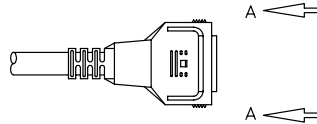


**10 Pin Modular Plug**

*P1 connects to the scanner handle.*

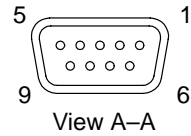


**P2**



**9 Pin Type D Female**

*P2 connects to your terminal.*



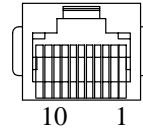
P1	Signal	Function	P2
2	N/C	Cord Shield	8
3	Prog 1	Tied to 5 Volt Power	
4	Ground	Supply Ground	7
6	Barcode	Bar Code Data Output	2
7	+5VDC	5 Volt Power Connection	4

---

## *Standard Cable Pinouts (Primary Interface Cables)*

Decoded output data format provided at 10 pin RJ41 modular connector (in scanner handle). See chart below.

**10 Pin RJ41 Modular Connector**



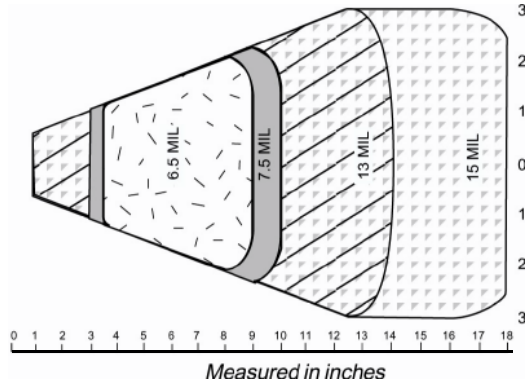
<b>P1</b>	<b>Signal</b>	<b>Function</b>
2	Braid	Cord Shield
3	Prog	Tied to 5 Volt Power
4	Ground	Supply Ground
5	RXD	Receive Data – Serial Data to Scanner
6	TXD	Transmit Data – Serial Data from Scanner
7	+5VDC	5 Volt Power Connection
8	RTS	Request to Send Data
9	CTS	Clear to Send Data

# Section 13

# Scan Maps

## Scan Maps

ABC 900 reading good quality linear bar codes



## ***Section 14    Customer Support***

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### ***Obtaining Factory Service in the United States***

American Barcode Corporation provides service for all its products through a service center located in Phoenix, Arizona.

To obtain warranty or non-warranty service, return the unit to American Barcode (postage paid) with a copy of the dated purchase record attached.

Please contact the American Barcode Corporation Customer Service Department at the address/telephone number listed below to obtain a Return Material Authorization number (RMA #).

#### **American Barcode Corporation**

4630 E. Elwood St.  
Suite 1  
Phoenix, AZ 85040

*Customer Service & Technical Support*  
Telephone: (800) 274-0324 or (480) 894-5564  
Fax: (480) 968-3983

# ***Agency Compliance Statements***

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This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## ***FCC Class B Compliance Statement***

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

**Caution: Any changes or modifications made to this device that are not expressly approved by American Barcode may void the user's authority to operate the equipment.**

**Note:** To maintain compliance with FCC Rules and Regulations, cables connected to this device must be *shielded* cables, in which the cable shield wire(s) have been grounded (tied) to the connector shell.

## ***Canadian Notice***

This equipment does not exceed the Class B limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.



The CE mark on the product indicates that the system has been tested to and conforms with the provisions noted within the 89/336/EEC Electromagnetic Compatibility Directive and the 73/23/EEC Low Voltage Directive.

For further information, please contact:

American Barcode Corporation  
4630 E. Elwood St.  
Suite 1  
Phoenix, AZ 85040  
USA

American Barcode Corporation shall not be liable for use of our product with equipment (i.e., power supplies, personal computers, etc.) that is not CE marked and does not comply with the Low Voltage Directive.

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### ***UL and cUL Statement***

UL listed UL1950 and CSA 22.2 No.950. cUL listed UL1950 and CSA 22.2 No 950.

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### ***LED Safety Statement***

This device has been tested in accordance with EN60825–1 LED safety, and has been certified to be under the limits of a Class 1 LED device.

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### ***TÜV Statement***

TÜV or GS marked to EN60950 and EN60825–1.

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### ***C–TIC Statement***

Conforms to AS/NZS 3548.

---

# *Programming Chart*

---



0



1



2



3



4



5



6



7



8



9

# *Programming Chart*

---



A



B



C



D



E



F



Save



Discard

# Sample Bar Codes

---

**Code 39**



TEST-SHEET

**Matrix 2 of 5**



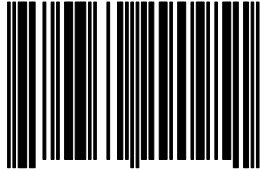
6543210

**Code 128**



CODE 128

**EAN 13**



0013557900

**Code 93**



123456-9\$

**Interleaved 2 of 5**



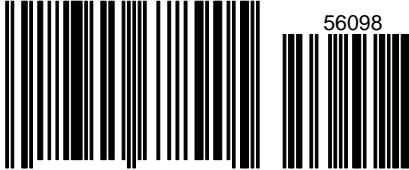
1234567890

**Code 2 of 5**



123456

**UPC A with 5 digit addenda**



0 12345 67890 5

56098