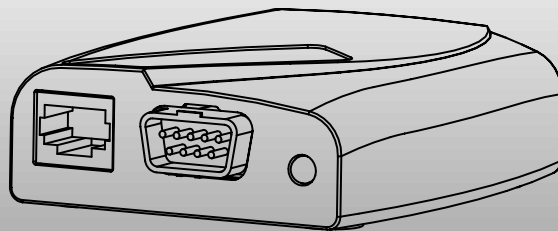


WelchAllyn[®]

SCANTEAM[®] 2010 WEDGE

Keyboard Wedge/
Commercial Decoder



User's Guide

***This User's Guide is used to operate and program the
SCANTEAM 2010 Keyboard Wedge / Commercial Decoder.***

Special Pages

A Sample Bar Codes page (located near the end of the User's Guide) contains bar code symbols you may scan to verify that your decoder has been programmed correctly.

Charts listing the factory default selections are included on the pages just before the Sample Bar Codes. On the programming menu pages, default selections are indicated by a "★" next to the bar code title.

A Bar Code Data Chart (found on the inside back cover of this manual) contains alphanumeric bar codes for setting additional programming options, such as the digits representing Symbology Message Length. The information facing the menu pages explains how to use this chart.

Disclaimer

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Data Collection Division Web Address: <http://dcd.welchallyn.com>

Compatibility

The SCANTEAM 2010 Keyboard Wedge / Commercial Decoder supports SCANTEAM 5400, 5700, 6100, and 3400/E scanners.

Note: *The 2010 supports only those scanners whose scan rate is 50 scans per second or less.*

Statement of Agency Compliance

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 A Compliance Statement

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

Caution: Any changes or modifications made to this device that are not expressly approved by Welch Allyn, Inc. 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 earth ground.

Canadian Notice

This equipment does not exceed the Class A 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 A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Statement of Agency Compliance



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.

European Contact: European Regulatory Manager
Welch Allyn Ltd.
28 Sandyford Office Park
Foxrock, Dublin 18
Ireland
or
Welch Allyn Ltd.
The Lodge, Tanners Lane
Warrington, Cheshire WA2 7NA
England

Welch Allyn 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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About Your Keyboard Wedge / Commercial Decoder

This decoder is a compact, economical, and durable solution to add bar code, magnetic stripe, keyboard wedge, and RS-232 data entry capability to point-of-sale terminals, CRT terminals, and personal computers. The decoder's features and functions are programmable, and provide advanced data editing and formatting capabilities as well.

The decoder features the following:

- support for decoding bar code data from all Welch Allyn non-decoded output digital wand, laser, and CCD scanners.
- accepts bar code data from laser or CCD scanners at a scan rate of 50 scans per second.
- a dedicated port for one, two, or three track magnetic stripe reader data input.
- a wide range of host interfaces that are compatible with many POS, keyboard wedge, and RS-232 terminals.
- a beeper for audible confirmation of a successful decode.
- a small, rugged, plastic enclosure that can be securely attached to the terminal.
- Cloning Mode to program installed decoders with new software from a "source" decoder.

The decoder recognizes and decodes 12 industry-standard bar code symbologies:

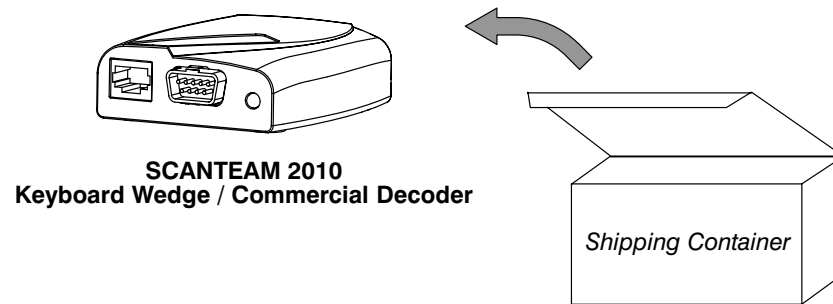
- | | | |
|----------------------|-----------------|-----------|
| • Codabar | • Code 2 of 5 | • EAN |
| • Code 39 | • Matrix 2 of 5 | • UPC |
| • Code 93 | • Code 11 | • MSI |
| • Interleaved 2 of 5 | • Code 128 | • Plessey |

The decoder can be programmed for many communications parameters and input / output protocols compatible to the host. Programming is accomplished by using the single programming bar codes in this menu.

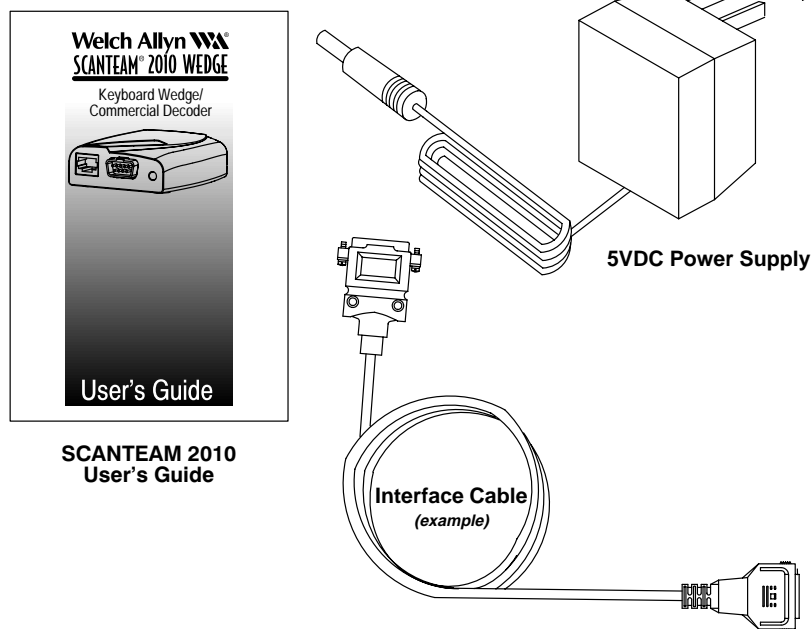
Getting Started

Unpacking Your Decoder

Open the carton. The shipping carton or container should contain:



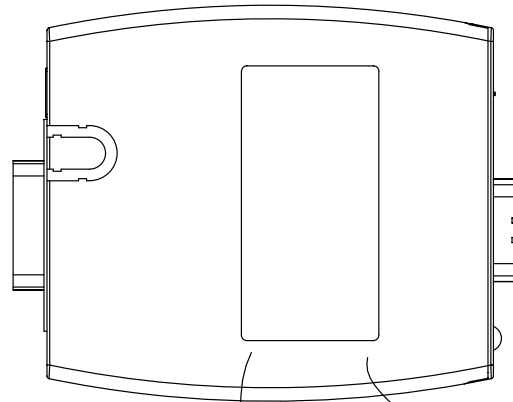
IF you ordered any of the following optional items, they should also be in the carton:





- Check to make sure everything you ordered is present.
- Keep the shipping carton to return the decoder for servicing.
- Check for damage during shipment. Report damage immediately to the carrier who delivered the carton.

Getting Started

Decoder Identification

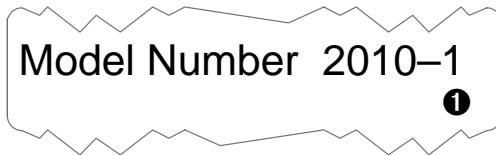


Bottom View

Welch Allyn  
SKANEATELES FALLS, NY 13153-0187, USA
MODEL: 2010-X
S/W REV: 1.0 = A S/N: XXXX
MADE IN TAIWAN

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 THAT MAY CAUSE UNDESIRE OPERATION.

SCANTEAM 2010 Identification Label



Output	1
1 = Internal Power (power provided by terminal)	
2 = External Power (power provided by power supply) †	

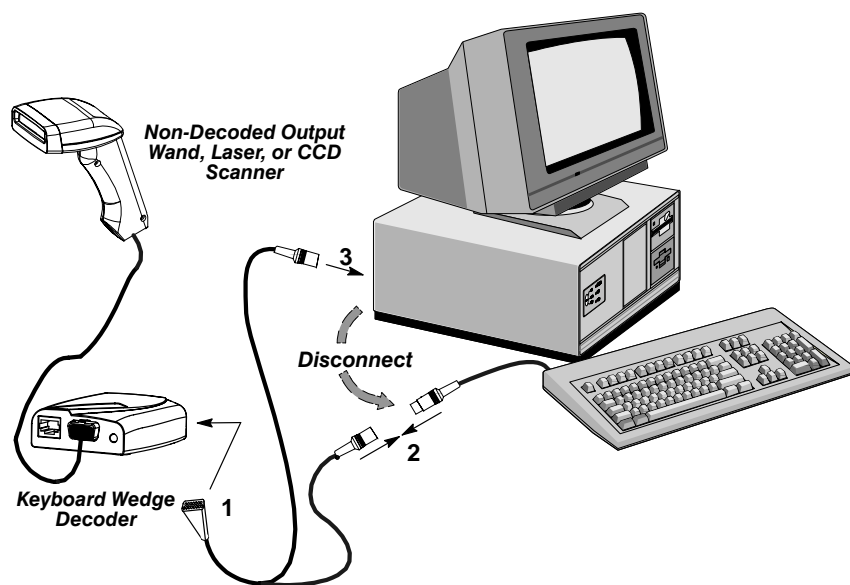
† If required, a 115V, 60Hz power supply with a +5VDC output may be ordered separately.

Getting Started

Connecting Your Decoder

Install the decoder by following the steps shown below:

- ❶ Disconnect power to the terminal/computer by turning the host system power switch to the "OFF" position.
- ❷ Connect the interface cable to the decoder and to the terminal/computer.

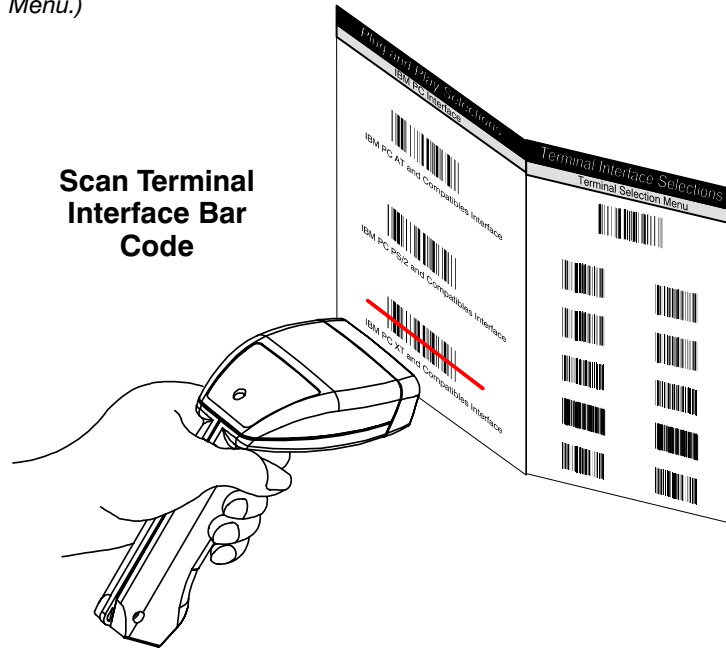


(Cable, Keyboard, and Terminal will vary.)

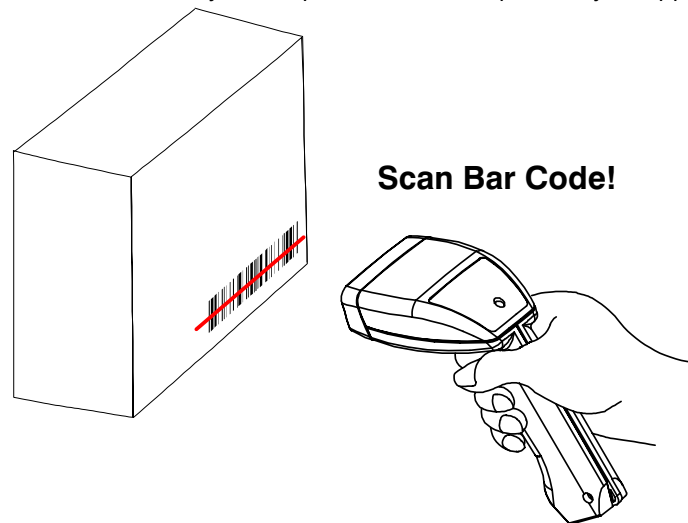
- ❸ Once the decoder has been fully connected, restore power to the terminal/computer by turning the host system power switch to the "ON" position.

Getting Started

- 4 You must program the decoder to work with your terminal or computer by scanning the appropriate programming bar code(s). (For further instructions on programming the decoder, see Section 2, Quick Start Menu.)



- 5 Your decoder is ready to accept bar code data input from your application.

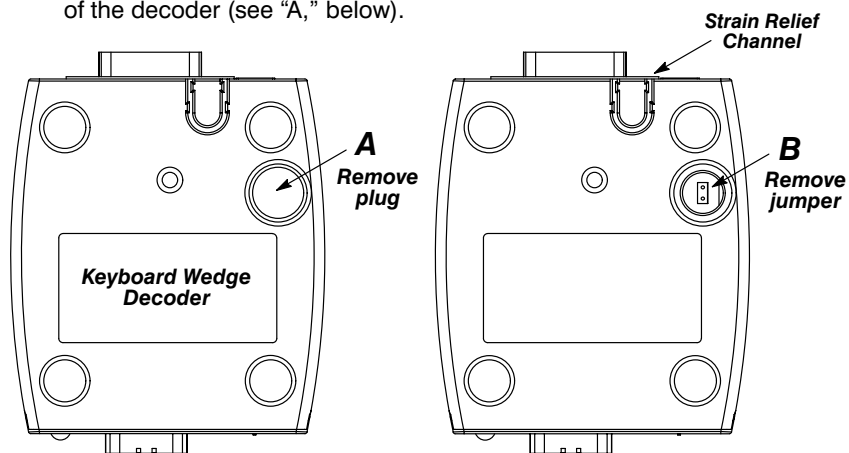


Getting Started

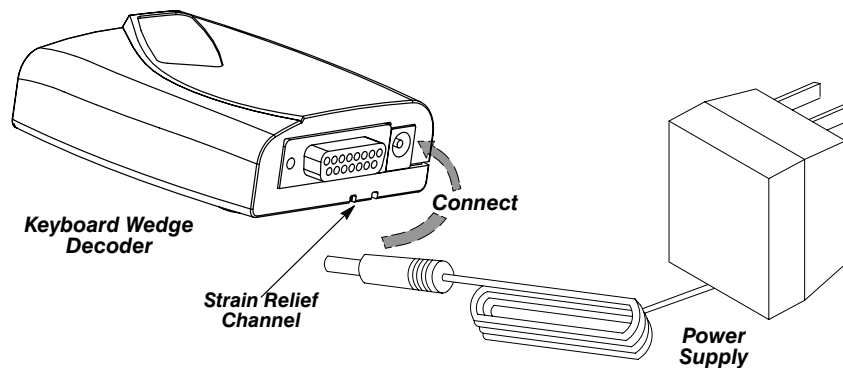
Connecting External Power to Your Decoder † (2010–2 only!)

Connect external power to the decoder by following the steps shown below:

- 1 Disconnect power to the terminal/computer by turning the host system power switch to the “OFF” position.
- 2 Using a small screwdriver, remove the external power plug from the bottom of the decoder (see “A,” below).



- 3 Using a pair of needle-nosed pliers, remove the two-position jumper that is visible below the opening in the case (see “B,” above).
- 4 Connect the power supply to the barrel connector on the decoder's rear panel (shown below). Loop the power supply cable through the strain relief channel on the bottom of the decoder to prevent cable from disconnecting.



- 5 Once the power supply has been connected, restore power to the terminal/computer by turning the host system power switch to the “ON” position.

† An external 115V, 60Hz power supply with a +5VDC output may be ordered separately.

Getting Started

Scanning Techniques: Wand Scanner

The illustration below shows where to move the wand scanner tip across the bar code for a good read.



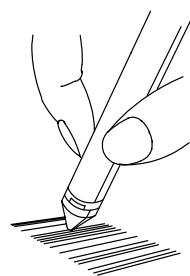
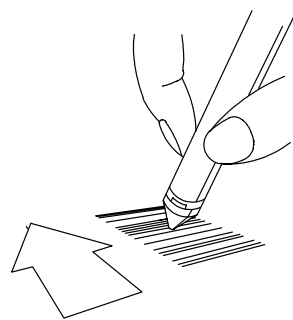
Correct



Incorrect

The scanning technique is shown below. Move the wand in either a left-to-right or right-to-left direction, keeping the tip of the wand in contact with the bar code surface.

- Begin by holding the wand in your hand at a comfortable tilt angle (from 10 to 30 degrees), just like you were writing with a pen or pencil.
- Move the wand smoothly across the entire bar code, at the same speed that you would use drawing a quick line with a felt tip pen.



Getting Started

Scanning Techniques: Laser or CCD Scanner

The illustration below shows where to aim the red illuminated beam from the Laser or CCD scanner over the bar code for a good read.



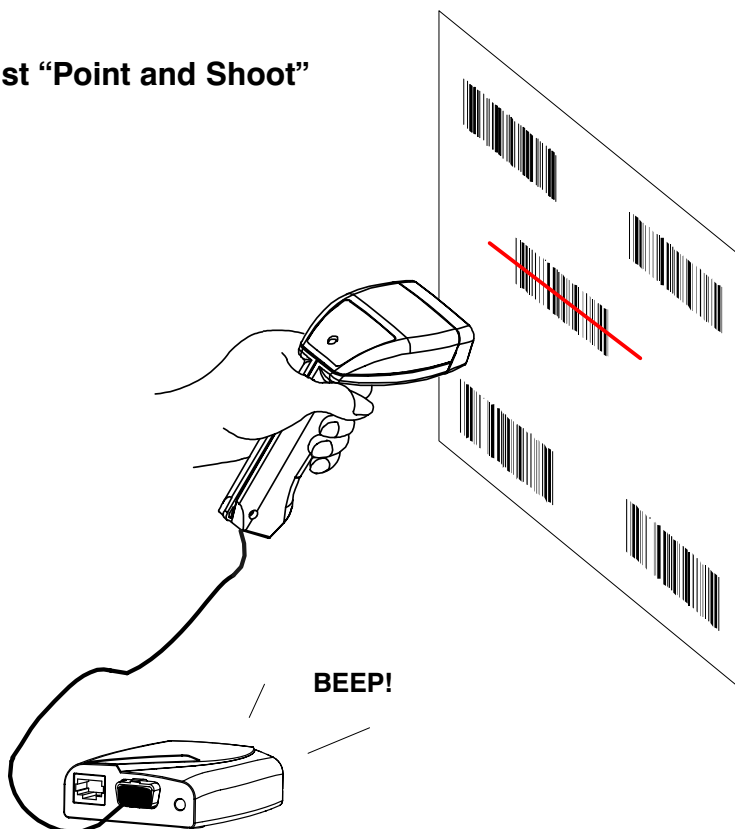
Correct



Incorrect

The scanning technique for single or multiple bar codes (on a page or on an object) is shown below. Just aim the scanner at the bar code and pull the trigger.

Just “Point and Shoot”



Introduction

Use this chapter to program the Keyboard Wedge / Commercial Decoder to work with your terminal / computer.

This programming section contains the following menuing selections:

- Plug and Play Selections.
- Terminal Interface Selections.
- Main Menu Selections.

About "Plug and Play" Programming

With "Plug and Play" programming, you connect the decoder and scan *only one* bar code to program the decoder (including required prefixes / suffixes).

About Terminal Selection Programming

With Terminal Selection programming, you program the decoder for *any* supported terminal/computer.

About Main Menu Programming

With Main Menu programming, you reset the factory default settings, set and save customer defaults, print out a status check, or abort programming changes.

Additional Programming Options

If you need additional programming options, refer to Sections 3 (Serial Interface Menu), Section 4 (General Operating Menu), or Section 5 (Symbology Menu) to configure the decoder to:

- selective factory default settings
- *any* variation of the programmable features available.

Note: Before programming your decoder, follow instructions in Section 1 to unpack and connect the decoder.

Plug and Play Selections

Programming Instructions

Plug and Play (Single Scan) Programming

“Plug and Play” bar codes are available for the following:

IBM PC Interfaces
RS-232 Interface.

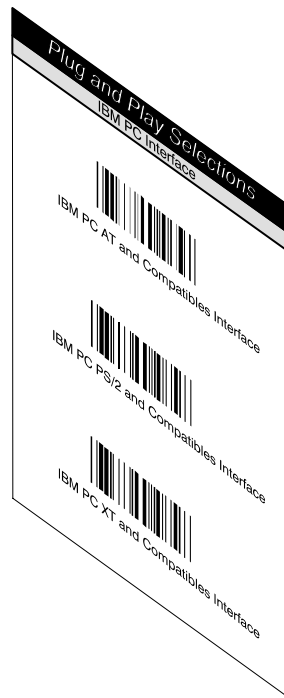
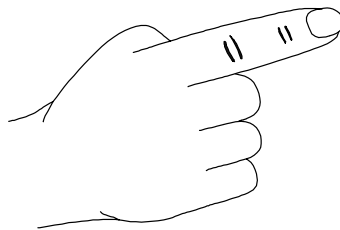
Note: If your terminal or computer isn't included in the list above, see *Terminal Interface Selections*, page 2–7.

Programming Instructions

To program the decoder using the “Plug and Play” bar codes (starting on page 2–5):

- 1 Locate the “Plug and Play” single bar code you need for your terminal or computer.

Locate Bar Code (Pages 2–5 and 2–6)

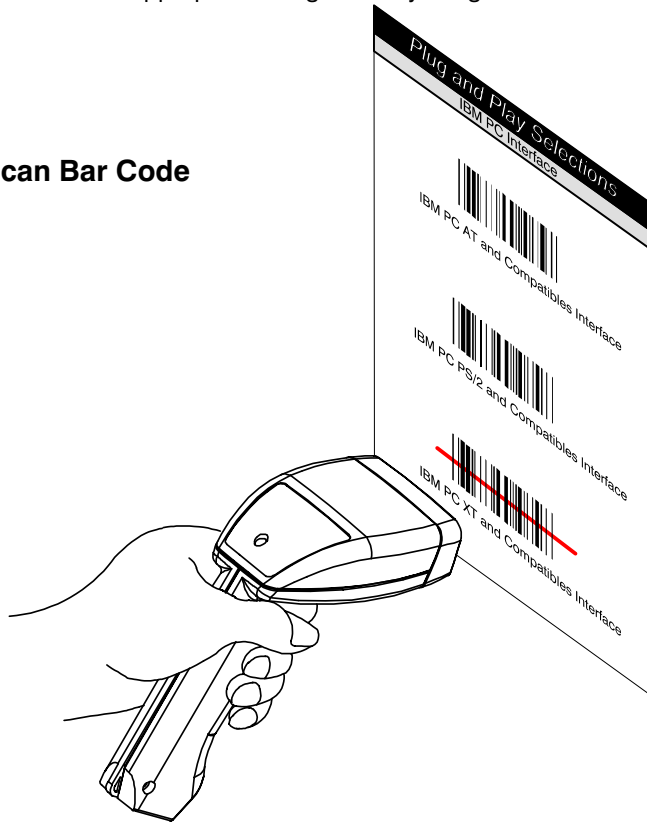


Plug and Play Selections

Programming Instructions

- 2 Scan the appropriate “Plug and Play” single bar code.

Scan Bar Code



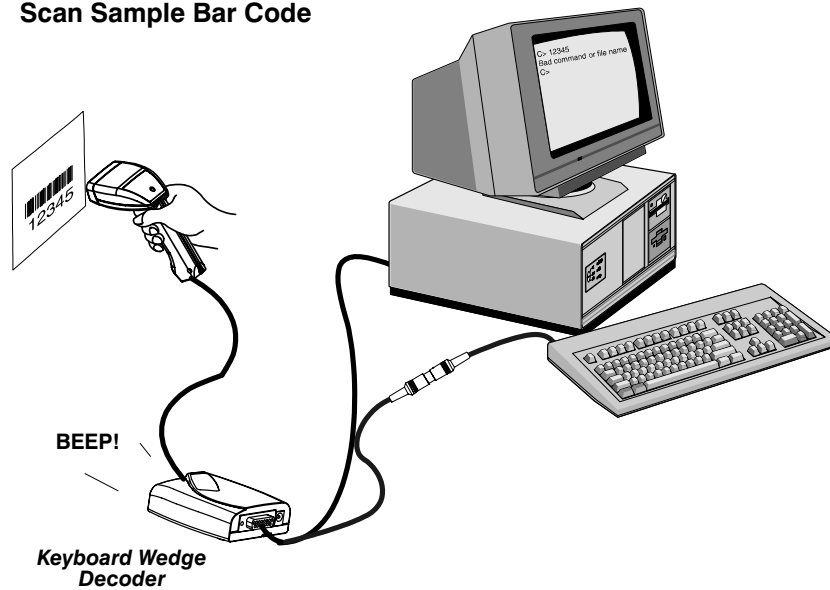
Note: Programming bar codes will not output data to your terminal!

Plug and Play Selections

Programming Instructions

- After programming the decoder for terminal interface, scan the sample bar code (below) to check that the decoder is set up correctly for your terminal.

Scan Sample Bar Code



Sample Code 39 Bar Code



12345

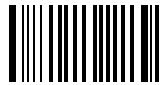
Note: Other Sample Bar Codes are near the end of this User's Guide.

Plug and Play Selections

IBM PC Interface



IBM PC AT and Compatibles Interface
(also PS/2 30-286, 50, 55SX, 60, 70, 70-061, 70-121, 80)



IBM PS/2 and Compatibles Interface
(for PS/2 25, 30 models)



IBM PC XT and Compatibles Interface

*These bar codes **also** program a carriage return (CR) suffix.*

Plug and Play Selections

RS-232 Interface



RS-232 Interface

*This bar code **also** programs the following parameters:*

Programmable Option	Setting
Baud Rate	9600 bits per second (Port 2) 2400 bits per second (Port 1)
Parity	Even
Data Format	7 Data Bits, Parity Bit, 1 Stop Bit (8 Bit Data)
Suffix	Carriage Return (CR)



End of “Plug and Play” programming...

Terminal Interface Selections

Programming Instructions



If you've already programmed the decoder using "Plug and Play," you don't need to use this programming section.

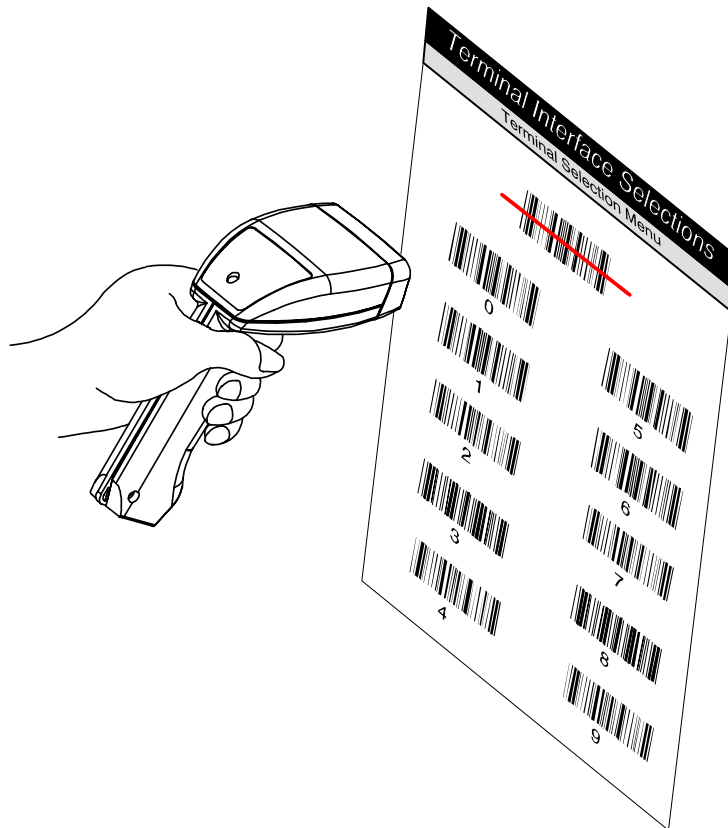
Terminal Selection Programming

Use this section to program the decoder to work with *any* supported terminal or computer.

Programming Instructions

To program the decoder using the Terminal Selection menu:

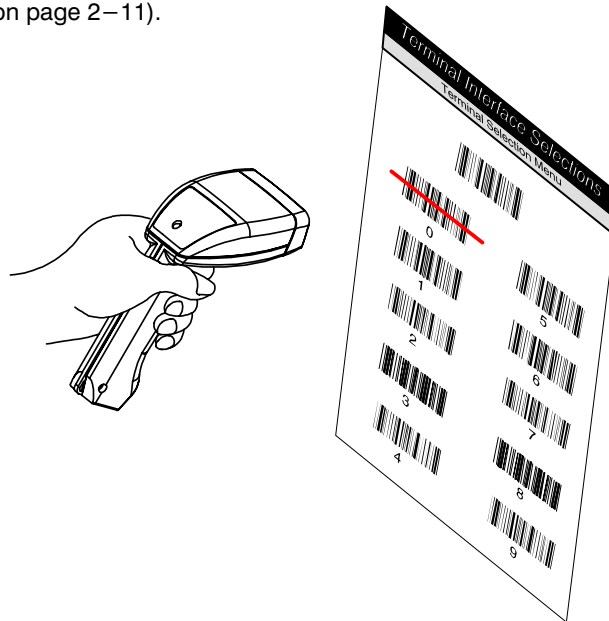
- 1 Locate the two-digit terminal I.D. number for your terminal or computer on the Supported Terminals chart (page 2–10).
- 2 Scan the "Program Terminal Interface" bar code found on the Terminal Selection menu (page 2–11).



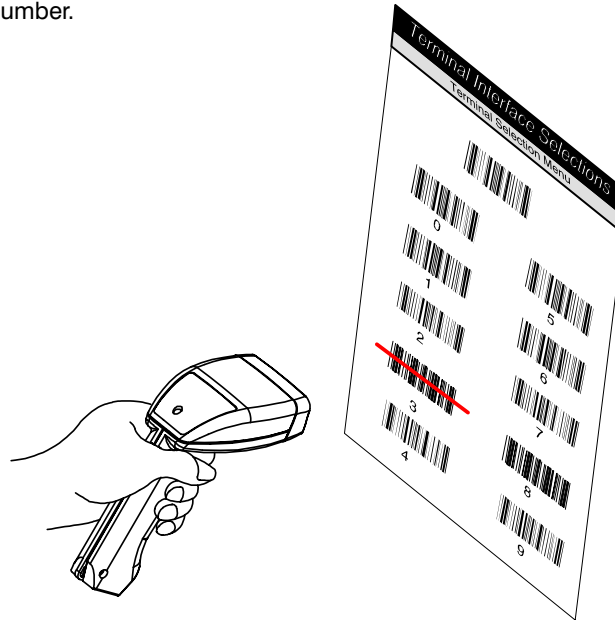
Terminal Interface Selections

Programming Instructions

- 3 Scan the bar code representing the first digit of the terminal I.D. number (also on page 2-11).



- 4 Scan the bar code representing the second digit of the terminal I.D. number.



Terminal Interface Selections

Programming Instructions

- ⑤ Your terminal interface will be set up.

If you wish to program a carriage return (CR) suffix or turn off the carriage return (or any other suffix), see the “Prefix / Suffix Selections” in the Serial Interface Menu, Section 3.

Example: Terminal Selection Programming

You want to connect the decoder to an ADI terminal, model 1496. The Supported Terminals Chart (next page) lists a terminal I.D. number of “72” for the ADI 1496 terminal.

- First, scan the ***Program Terminal Interface*** bar code (on page 2–11).
- Then scan the ***Terminal I.D. Number*** bar codes, “7” and “2”.
- The decoder has been set up, and will transmit data to the ADI 1496.

Terminal Interface Selections

Supported Terminals

Terminal	Model(s)	Terminal I.D.
ADI	1496	72
Bull	BDS-7 (HDS-7)	35
Bull Questar 310	2101 Keyboard	41
	3105 Keyboard	42
Data General	PC AT and D1400I	03
Decision Data	IS 386	07
DEC	PC Keyboard: VT 510/520/525	05
Falco	5220	47
IBM 102 Key	3151, 3161, 3162, 3163, 3179, 3191, 3192, 3194, 3196, 3197, 3471, 3472, 3476, 3477, 3482, 3486, 3488	06
IBM 122 Key	3191, 3192, 3471, 3472	07
IBM 122 Key	3196, 3197, 3476, 3477, 3482, 3486, 3487, 3488	08
IBM	3180-1	24
IBM	PC XT	01
IBM	PS/2 25, 30, 77DX2	02
IBM	PC AT, PS/2 30-286, 50, 55SX, 60, 70, 70-061, 70-121, 80	03
IDEAssociates 102 Key	276/77, 486/87, 587	84
IDEAssociates 122 Key	276/77, 486/87, 587	71
Olivetti	M19, M24, M28, M200	01
Olivetti	M240, M250, M290, M380, P500	03

Terminal Interface Selections

Program Terminal Interface



Program Terminal Interface

Terminal I.D. Number



0



1



2



3



4



5



6



7



8



9

Terminal Interface Selections

Supported Terminals

Terminal	Model(s)	Terminal I.D.
RS232 True		00
Silicon Graphics Indy	IndigoII	05
Sun Sparc Station	1+ (Type 4 & 5 U.S. Keyboard)	86
Televideo	990	02
Telex 88 Key	078, 078A, 79, 80, 191, 196, 1191, 1192, 1471, 1472, 1476	25
Telex 102 Key	078, 078A, 79, 80, 191, 196, 1151, 1191, 1192, 1471, 1472, 1476	45
Telex 122 Key	078, 078A, 79, 80, 191, 196, 1151, 1191, 1192, 1471, 1472, 1476, 1482	46

Terminal Interface Selections

Program Terminal Interface



Program Terminal Interface

Terminal I.D. Number



0



1



2



3



4



5



6



7



8



9

Main Menu Selections

Default Selection

All operating parameters are stored in non-volatile memory resident in the decoder, where they are permanently retained in the event of a power interruption. When you receive your decoder, certain operating parameters have already been set. These are the factory defaults, indicated by the symbol “★” on the programming menu pages (beneath the default bar code). Default charts may be found near the end of this programming menu.

Scanning the **Factory Defaults** bar code resets the decoder to the original factory settings, clearing any programming changes you may have made.

If you want to save your programming changes as a default, scan the **Save Current Settings As Customer Defaults** bar code. You'll be able to make further programming changes, but you can restore the saved settings.

Scanning the **Customer Defaults** bar code restores the decoder to the parameters that you saved by scanning the **Save Current Settings...** bar code.

Note: *If no customer defaults have been saved, scanning the **Customer Defaults** bar code will reset the scanner to the factory settings.*

Status Check

Scan the **Show Software Revision** bar code to transmit the software part number and revision level to the host terminal. The software part number and revision will be printed out as “WA34310XXX, Rev X.X” (The “X’s” will vary according to the firmware ID.)

Abort Programming Changes

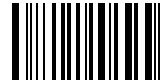
To abort programming changes you are in the process of making, scan the **Escape Programming** bar code. Programming selections previously selected and saved are **not** changed.

Main Menu Selections

Default Selection



Factory Defaults



Customer Defaults



Save Current Settings As
Customer Defaults

Status Check



Show Software Revision

Abort Programming Changes



Escape Programming

Notes...

Notes:

The space below may be used for notes. ...



A series of horizontal lines intended for writing notes.

Introduction

Use this chapter to program the Keyboard Wedge / Commercial Decoder for Output Interface operation.

This programming section contains the following menuing selections:

- Prefix and Suffix Selections.
- Country Code Selections.
- General Output Selections.
- Keyboard Selections.
- MSR Selections.
- Data Formatter Selections.

About Prefix and Suffix Programming

Prefix and Suffix programming allows you to:

- Set Prefixes and Suffixes.
- Clear One or All Prefixes.
- Clear One or All Suffixes.
- Set the default Prefix and Suffix.

About General Output Programming

General Output programming allows you to:

- Set the Good Read Beep Volume and Tone.
- Set Output Delays (Intercharacter, Interfunction, or Intermessage).
- Program Laser Voting.
- Enable or disable Code I.D. transmission.
- Enable or disable Function Code transmission.

About Magnetic Stripe Reader (MSR) Programming

Mag Stripe (MSR) programming allows you to:

- Enable or disable S/S and LRC character transmission.
- Enable or disable any or all of the three MSR tracks.
- Set up pre-edited data format for MSR track 1 and 2.
- Set up key code assignments for the pre-edited formats.

About Country Code Programming

Country Code programming allows you to:

- Select a Foreign Keyboard.

About Keyboard Programming

Keyboard programming allows you to:

- Select the Keyboard Style for your terminal.

About Data Formatter Programming

Data Formatter programming allows you to:

- Program the Data Formatter for on or off, required or not required.
- Program the decoder for Data Format Editor selections.
- Clear One or All Data Format(s).

Prefix / Suffix Selections

Prefix and Suffix Selection

The decoder will transmit a decoded message after every successful bar code read. Prefix and Suffix characters are data characters you may assign to be sent before and after the transmitted bar code data.

Transmitted data frame →

Prefix	Bar Code Message	Suffix
--------	------------------	--------

Characters for the Prefix and Suffix are selected by their hexadecimal ASCII value, up to 12 characters each. In addition, a special character (shown in Hex ASCII chart on page 3–5) is available for Code ID. Prefix and Suffix characters may be sent for a specific symbology, or may be sent with all bar code scans. *Default Prefix = none. Default Suffix = none.*

Programming Steps to Add a Prefix / Suffix:

- 1 To add a Prefix, scan the **Add Prefix** programming bar code.
To add a Suffix, scan the **Add Suffix** programming bar code.
- 2 Refer to the Symbology Chart (page 3–5) to find the Hex value that represents the symbology(s) you want transmitted with one or more Prefixes or Suffixes. Scan the two digits on the Programming Chart (on the inside of the back cover of this menu).
- 3 Refer to the Hex ASCII Chart (page 3–5) to find the Hex value that represents the ASCII characters you wish to transmit with the bar code data. Use the Programming Chart (inside back cover) to scan the alphanumeric combination that represents the ASCII characters.
- 4 To complete Prefix / Suffix programming, scan either:
 - **Save Current Prefix or Suffix Changes**† programming bar code. This exits, saving the Prefix / Suffix selections you just assigned.
 - **Discard Current Prefix or Suffix Changes** programming bar code. This exits without changing the Prefix / Suffix.

† You may also start scanning bar codes; your Prefix / Suffix selections will be saved.

Programming Steps to Clear (or Delete) One Prefix / Suffix Entry:

- 1 To clear the Prefix entry for a specific symbology, scan the **Clear One Prefix** programming bar code.
To clear the Suffix entry for a specific symbology, scan the **Clear One Suffix** programming bar code.
- 2 Refer to the Symbology Chart to find the Hex value representing the symbology's entry you want cleared. Scan the two digits on the Programming Chart (on the inside of the back cover of this menu).
- 3 You don't need to scan **Save Current ... Changes** or **Discard Current ... Changes** programming bar codes to complete programming.

Other Programming Selections: Scanning the **Default Prefix** or **Default Suffix** bar code sets the default Prefix (none) or default Suffix (none). †

Other Programming Selections: Scanning the **Clear All Prefixes** or **Clear All Suffixes** bar code deletes all Prefix or Suffix selections. †

† You don't need to scan the **Save Current ... Changes** or **Discard Current ... Changes** programming bar code to complete programming.

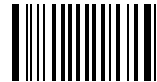
Note: Prefix / Suffix programming examples may be found on page 3–4.

Prefix / Suffix Selections

Prefix Selection



Add Prefix ‡



Default Prefix



Clear One Prefix ‡

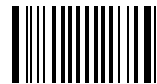


Clear All Prefixes

Suffix Selection



Add Suffix ‡



Default Suffix



Clear One Suffix ‡



Clear All Suffixes

Exit Selection for Prefix / Suffix

Save Current Prefix or Suffix Changes



Discard Current Prefix or Suffix Changes



‡ One or more two-digit numbers are required after scanning this programming bar code. Please scan your selection on the Programming Chart (inside back cover).

Prefix / Suffix Selections

Prefix and Suffix Examples

Example 1: Add Suffix for Specific Symbology

You want to send a CR (carriage return) Suffix for UPC only.

- Scan the **Add Suffix** Suffix Selection bar code.
 - The Symbology Chart indicates that the Hex value of UPC is “63”. Scan **6** and **3** on the Programming Chart (inside back cover).
 - A “CR” is equivalent to “0D” (see the Hex ASCII Chart). Scan **0** and **D** on the Programming Chart.
 - Scan the **Save Current Suffix Changes** Exit Selection bar code.
-

Example 2: Add Suffix for ALL Symbologies

You want to send a CR (carriage return) Suffix for all symbologies.

- Scan the **Add Suffix** Suffix Selection bar code.
 - The Symbology Chart indicates that the Hex value for All Symbologies is “99”. Scan **9** and **9** on the Programming Chart.
 - A “CR” is equivalent to “0D”. Scan **0** and **D** on the Programming Chart.
 - Scan the **Save Current Suffix Changes** Exit Selection bar code.
-

Example 3: Add Prefix for Specific Symbology / Suffix for ALL Symbologies

You want to send a HT (tab) Prefix for UPC only and a CR / LF (carriage return / line feed) Suffix for all symbologies.

- Scan the **Add Prefix** Prefix Selection bar code.
 - The Symbology Chart indicates that the Hex value of UPC is “63”. Scan **6** and **3** on the Programming Chart.
 - An “HT” is equivalent to “09”. Scan **0** and **9** on the Programming Chart.
 - Scan the **Add Suffix** Suffix Selection bar code.
 - The Symbology Chart indicates that the Hex value for All Symbologies is “99”. Scan **9** and **9** on the Programming Chart.
 - A “CR” is equivalent to “0D” and an “LF” is “0A”. Scan **0**, **D**, **0**, and **A** on the Programming Chart.
 - Scan the **Save Current Prefix / Suffix Changes** Exit Selection bar code.
-

Example 4: To Output Code ID as a Prefix for ALL Symbologies

You want to send the Code ID as a Prefix for all symbologies.

- Scan the **Add Prefix** Prefix Selection bar code.
- The Symbology Chart indicates that the Hex value for All Symbologies is “99”. Scan **9** and **9** on the Programming Chart.
- A “Code ID” is a special Hex character and is equivalent to “80”. Scan **8** and **0** on the Programming Chart.
- Scan the **Save Current Prefix Changes** Exit Selection bar code.

The Code ID letter (see Symbology Chart) will be sent with scanned bar code.

Example 5: To Clear a Specific Prefix Entry

You’ve programmed the decoder to send a CR / LF (carriage return / line feed) Prefix for all symbologies (Hex value, 99). This is one Prefix entry. You’ve also programmed a “#” Prefix for UPC (Hex, 63). You decide that you want to clear the UPC entry, but not the Prefix entry for all symbologies.

- Scan the **Clear Specific Prefix** Prefix Selection bar code.
 - The Symbology Chart indicates that the Hex value for UPC is “63”. Scan **6** and **3** on the Programming Chart.
-

Prefix / Suffix Selections

Symbology Chart					
Symbology	Code ID †	Hex Value	Symbology	Code ID †	Hex Value
Codabar	a	61	Code 128	j	6A
Code 39	b	62	Matrix 2 of 5	m	6D
UPC	c	63	Plessey	n	6E
EAN	d	64	RS-232D Port 1	r	72
Interleaved 2 of 5	e	65	MSR Track 1	x	78
Code 2 of 5	f	66	MSR Track 2	y	79
MSI	g	67	MSR Track 3	z	7A
Code 11	h	68	All Symbologies		99
Code 93	i	69	(Prefix / Suffix programming only)		

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

Note: Prefix / Suffix entries for specific symbologies override the universal (All Symbologies, 99) entry.

Note: Adding a Prefix or a Suffix appends that Prefix / Suffix to any existing entries for the symbology(s) you've chosen. For example, if you've already programmed and saved a CR / LF (carriage return / line feed) and add a "#" Prefix, the "#" will be sent after the CR / LF.

If you add a Prefix / Suffix but want existing entries cleared, you'll need to use the **Clear Specific Prefix / Suffix** programming selection first. Then use the **Add Prefix / Suffix** programming selection to program your new Prefix / Suffix.

General Output Selections

Default All General Output Selections

Scanning the Default bar code will program the decoder to the output options indicated by a “★” in the menu selections on this and the following two programming pages.

Good Read Beep Volume

This programming selection provides control of the decoder’s good read beep volume. The beeper volume may be turned off, or it may be set from low to high in three increments. *Default = High.*

Good Read Beep Tone

This programming selection provides control of the good read beep tone. The beeper tone may be set from low to high in three increments. *Default = High.*

General Output Selections

★ *Default All General Output Settings* ★



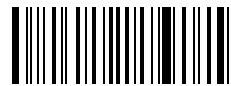
Good Read Beep Volume Selection



Off



Low



★ High

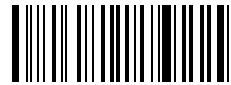
Good Read Beep Tone Selection



Low



Medium



★ High

General Output Selections

Output Delays

This programming selection provides control of the **Output Delays**, which are time delays between data output by the decoder to the host terminal. (Specific output delays are described below.) The actual delay is 5 milliseconds multiplied by the programmed value (00 – 99). *Default = 00.*

Note: To select digits 0 through 9, use the Programming Chart found on the inside of the back cover of this menu. Scan the programming selection bar code first, and then scan the bar code(s) representing the digits you wish to set.

Intercharacter Delay is the time delay between data characters output by the decoder to the host terminal.

Interfunction Delay is the time delay between function (key) codes output by the decoder to the host terminal.

Intermessage Delay is the time delay between data messages or records output by the decoder to the host terminal.

Example:

- You need a 45 millisecond delay. Scan the **Intercharacter Delay** bar code. Then scan “0” and “9” on the Programming Chart (09 x 5ms = 45 ms). Two digits are always required for a delay setting.

Laser Time-out

When this selection is enabled, the decoder turns off power to the laser scanner four seconds after the trigger has been pulled and a valid decode has not occurred. When this selection is disabled, scanning may continue until a valid decode occurs. *Default = Enable.*

Laser Voting

This programming selection allows you to set three different levels of laser voting. Level one programs laser voting for the following:

- programming menu codes,
- bar codes with lengths less than 10 characters,
- MSI code,
- UPC / EAN with addenda required,
- an incomplete bar code read,
- Interleaved 2 of 5 code.

For the codes listed above, level one laser voting requires three (3) identical, consecutive scans before the bar code data will be accepted and transmitted to the terminal.

Level two and level three laser voting apply to *all symbologies*. Level two laser voting requires two (2) identical, consecutive scans before the bar code data will be accepted and transmitted to the terminal. Level three laser voting requires three (3) identical, consecutive scans before the bar code data will be accepted and transmitted to the terminal. *Default = Level 1.*

General Output Selections

Output Delays Selection



Intercharacter Delay (x5mS) ‡



Interfunction Delay (x5mS) ‡



Intermessage Delay (x5mS) ‡

Laser Time-out Selection



★ Enable



Disable

Laser Voting Selection



★ Level One



Level Two



Level Three

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

General Output Selections

Code I.D. Transmit

This programming selection allows you to enable or disable transmission of a Code I.D. before the decoded bar code symbology. (See the Symbology Chart on page 3–5 for the single character code that identifies each symbology.)
Default = Disable.

Scanner Function Code Transmit

When this programming selection is enabled, and function codes are contained within the scanned data from the scanner, the decoder transmits the key code (which corresponds to the decoded ASCII function code) to the terminal. If this selection is disabled, any function codes contained within the scanned data are not sent to the terminal.

ASCII function codes are represented by the HEX values 00–1F. (Charts of these function codes are shown in Section 7, Supported Interface Keys.)
Default = Enable.

RS-232D Function Code Transmit

When this programming selection is enabled, and function codes are contained within the scanned data from the RS-232D device on the auxiliary data input port, the decoder transmits the key code (which corresponds to the decoded ASCII function code) to the terminal. If this selection is disabled, any function codes contained within the input data are not sent to the terminal.

ASCII function codes are represented by the HEX values 00–1F. (Charts of these function codes are shown in Section 7, Supported Interface Keys.)
Default = Enable.

Note: *More RS-232D programming may be found in Section 4, Serial Communications Menu.*

General Output Selections

Code I.D. Transmit Selection



Enable



★ Disable

Scanner Function Code Transmit



★ Enable



Disable

RS-232D Function Code Transmit



★ Enable



Disable

Mag Stripe Reader Selections

Start / Stop (S / S) Character Transmit

This programming selection allows you to enable or disable transmission of start / stop character(s) (S /S) before and after the decoded bar code data. *Default = Enable.*

Longitudinal Redundancy Check (LRC) Character Transmit

This programming selection allows you to enable or disable transmission of a longitudinal redundancy character (LRC) after the decoded bar code data. *Default = Enable.*

MSR Track 1

This programming selection allows you to enable or disable magnetic stripe reader track 1. *Default = Enable.*

MSR Track 2

This programming selection allows you to enable or disable magnetic stripe reader track 2. *Default = Enable.*

MSR Track 3

This programming selection allows you to enable or disable magnetic stripe reader track 3. *Default = Enable.*

Mag Stripe Reader Selections

S / S Character Transmit Selection



★ Enable



Disable

LRC Character Transmit Selection



★ Enable



Disable

MSR Track 1 Selection



★ Enable



Disable

MSR Track 2 Selection



★ Enable



Disable

MSR Track 3 Selection



★ Enable



Disable

Mag Stripe Reader Selections

MSR Track 1 Pre-Edited Data

This programming selection allows you to select pre-edited data. The pre-edited data formats for MSR Track 1 are shown in the table below. *There is no default.*

MSR Track 1 Pre-Edited Data Format	
Format	Data
0	Clear Pre-Edited Data Format
1	Acct# + Key Code 1 + YYMM + Key Code 2 + Name + Key Code 3
2	Acct# + Key Code 1 + MMY Y + Key Code 2 + Name + Key Code 3
3	Acct# + Key Code 1 + YYMM + Key Code 2 + Name + Key Code 3 + All Remaining Data + Key Code 4
4	Acct# + Key Code 1 + MMY Y + Key Code 2 + Name + Key Code 3 + All Remaining Data + Key Code 4

MSR Track 2 Pre-Edited Data

This programming selection allows you to select pre-edited data. The pre-edited data formats for MSR Track 2 are shown in the table below. *There is no default.*

MSR Track 2 Pre-Edited Data Format	
Format	Data
0	Clear Pre-Edited Data Format
1	Acct# + Key Code 1
2	Acct# + Key Code 1 + YYMM + Key Code 2
3	Acct# + Key Code 1 + MMY Y + Key Code 2
4	Acct# + Key Code 1 + YYMM + Key Code 2 + All Remaining Data + Key Code 3
5	Acct# + Key Code 1 + MMY Y + Key Code 2 + All Remaining Data + Key Code 3

Mag Stripe Reader Selections

MSR Track 1 Pre-Edited Data Selection



Format 0



Format 1



Format 2



Format 3



Format 4

MSR Track 2 Pre-Edited Data Selection



Format 0



Format 1



Format 2



Format 3



Format 4



Format 5

Mag Stripe Reader Selections

Key Code Assignment

This programming selection allows you to set key codes, as used for the pre-edited data formats above. *Default = Carriage return (CR) = 0D (Hex value).*

To enter a new key code value:

- Scan the **Key Code #** bar code.
- Scan the two-digit Hex representation of ASCII character you wish to program (see chart below).

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

Driver's License I.D.

This programming selection allows you to read and decode the data contained on magnetic stripe reader tracks 1, 2, and 3 of an AAMVA (American Association of Motor Vehicle Administrators) or California driver's license. Although the data format of track 3 on a driver's license does not conform to ISO card standards, the decoder accepts this information. *Default = Disable.*

Note: The AAMVA is developing a North American standard for driver's license magnetic stripe data.

Mag Stripe Reader Selections

Key Code Assignment Selection ‡



Key Code 1



Key Code 2



Key Code 3



Key Code 4

Driver's License I.D.



Enable



★ Disable

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

Country Code Selections

Foreign Keyboards

This programming selection allows you to re-map the keyboard layout for the selected country. *Default = United States.*

As a general rule, the following characters are not supported by the decoder for countries other than the United States:

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

Note: *Foreign Keyboard Selection is not available for Bull Questar 310 terminals (terminal I.D. numbers 41 and 42).*

Country Code Selections

Foreign Keyboard Selection



★ United States



Belgium



Denmark



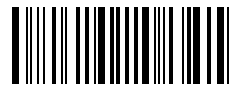
Finland



Norway



Sweden



France



Germany, Austria



Italy



Switzerland



United Kingdom

Keyboard Selections

Keyboard Style

This programming selection allows you to program the decoder to support special keyboard features, such as CAPS LOCK, SHIFT LOCK, Data Entry, and CTRL+ codes. These special keyboard features are shown in the chart on page 3–20. *Default = Style A.*

Note: *Styles A, B, and C cannot be used with one another; however they may be combined with other styles. All styles with Enable / Disable bar codes can be scanned in combination with all other styles.*

For example, you can combine style F with G. First scan F, then scan G. If Style D is combined with another style, D must be scanned first. For example, scan D before scanning B to enable both the CTRL ASCII and the CAPS LOCK functions. Scanning Style A disables Style D.

Terminal		Keyboard Style *							
ID	Name	A	B	C	D	F	G	H	I
		Primary	Secondary	Tertiary	Quaternary	DirCon	AutoCaps	NumPad	Turbo
1	IBM XT	std	CAPS LOCK	SHFT LOCK	CTRL ASCII †	No	No	Yes	No
2	IBM PS/2	std	CAPS LOCK	SHFT LOCK	CTRL ASCII †	Yes	Yes	Yes	Yes
3	IBM AT	std	CAPS LOCK	SHFT LOCK	CTRL ASCII †	Yes	Yes	Yes	Yes
5	IBM AT3 DEC VT510	std	CAPS LOCK	SHFT LOCK	CTRL ASCII †	Yes	Yes	Yes	Yes
6	IBMTerminals w/102 keys	std	CAPS LOCK	SHFT LOCK	No	No	No	Yes	No
7	IBMTerminals w/122 keys	std	CAPS LOCK	SHFT LOCK	No	No	No	Yes	No
8	IBMTerminals w/122 keys	std	CAPS LOCK	SHFT LOCK	No	No	No	Yes	No
24	IBM 3180–1	std			No	No			No
25	Telex Terminals w/88 keys	std			No	No			No
35	BULL BDS–7	std	CAPS LOCK	SHFT LOCK	No	No			No
45	Telex Terminals w/102 keys	std	CAPS LOCK	SHFT LOCK	No	No			No
46	Telex Terminals w/122 keys	std	CAPS LOCK	SHFT LOCK	No	No			No
71	IDEAS Terminals w/122 keys	std	CAPS LOCK	SHFT LOCK	No	No			No
84	IDEAS Terminals w/102 keys	std	CAPS LOCK	SHFT LOCK	No	No			No

* If terminal is not listed, then no secondary type keyboard is supported.

† ASCII function codes (00–1F) are sent to the terminal via a “CTRL+” sequence (i.e., ‘CR’=CTRL+M)

Keyboard Selections

Keyboard Style Selection



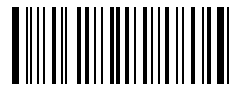
★ Style A, Primary



Style B, Secondary



Style C, Tertiary



Style D, Quaternary



Enable

Style F
Direct Connect



★ Disable



Style G, Auto-Caps Detect



Enable

Style H
Num-Pad Mode



★ Disable



Enable

Style I
Turbo Mode



★ Disable

Data Formatter Selections

Status Check

Scan the **Show Formats** bar code to transmit the existing Data Format Editor formats. One format per line will be printed out.

Data Formatter

When data formatter is off, the bar code data will be output to the host as scanned (including preambles and postambles). When data formatter is on, if the input data matches an edited format, the decoder will transmit the input data to the host device in the programmed format. *Default = On.*

Require Data Format?

When data format is required, all input data must conform to an edited format or the decoder will triple beep and will not transmit the input data to the host device. When data format is not required, any input data matching an edited format will be transmitted to the host device in the programmed format. *Default = Don't Require.*

Data Format Editor

This programming selection provides editing of all input (scanned) data. All Industrial and Retail symbologies can be formatted. You may scan the **Clear ... Data Format** bar code if you are sure you want to delete one or all formats.

To make Data Format Editor selections, you'll need to know the terminal type, code I.D., code length, and editor commands your application requires. Use the Alpha-numeric bar codes (page 3-25) to scan these options. For Hex values of ASCII characters, refer to the Hex to ASCII Conversion Chart on page 3-5.

Use the Data Format Editor by following the steps below:

- ❶ Scan the **Enter Data Format** bar code to start Format Editor selection.
- ❷ **Terminal Type**
Scan two bar codes that represent the terminal type (00-99†, page 3-25). (See Section 2, pages 2-10 and 2-12, for terminal I.D. list.)
- ❸ **Code I.D.**
Refer to the Symbology chart (page 3-5), then scan two bar codes from the "Hex Value" column that represent the Code I.D. of the symbology you want formatted. ("All Symbologies" – hex value 99 – is not supported by Data Formatter.)
- ❹ **Length**
Scan two bar codes representing the bar code length you require (00-99†). Be sure to include all spaces in the bar code length.
- ❺ **Editor Command Sequences**
Refer to the Format Editor Commands chart (page 3-24). Scan two bar codes that represent the command you need.
- ❻ **End Format**
Scan the **End Data Format** to end Format Editor selection.

† 99 is the Universal number, indicating all terminals and all code lengths.

Data Formatter Selections

Status Check



Show Formats

Data Formatter



★ On



Off

Require Data Format?



Require



★ Don't Require

Data Format Editor



Enter Data Format



End Data Format



Clear One Data Format



Clear All Data Formats

Data Formatter Selections

Format Editor Commands Chart

Send Commands

- F1 Send all characters followed by "XX" key or function code, starting from current cursor position. **Syntax = F1XX** (XX = HEX ASCII character or function code 00–FE HEX).
 - F2 Send "NN" characters followed by "XX" key or function code, starting from current cursor position. **Syntax = F2NNXX** (NN = number of characters 00–99 DEC, XX = HEX ASCII character or function code 00–EF HEX).
 - 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 = HEX ASCII Character 00–7F HEX, XX = HEX ASCII character 00–7F HEX).
 - F4 Send "XX" character "NN" times (Insert) leaving cursor in current cursor position. **Syntax = F4XXNN** (XX = HEX ASCII character 00–7F HEX, NN = number of characters 00–99 DEC).
-

Move Commands

- F5 Move cursor ahead "NN" characters from current cursor position. **Syntax = F5NN** (NN = number of characters 00–99 DEC).
 - F6 Move cursor back "NN" characters from current cursor position. **Syntax = F6NN** (NN = number of characters 00–99 DEC).
 - F7 Move cursor to the beginning of the data string. **Syntax = F7**.
-

Search Commands

- F8 Search ahead for "XX" character from current cursor position, leaving cursor pointing to "XX" character. **Syntax = F8XX** (XX = HEX ASCII character 00–7F).
 - F9 Search back for "XX" character from current cursor position, leaving cursor pointing to "XX" character. **Syntax = F9XX** (XX = HEX ASCII character 00–7F).
-

Miscellaneous Commands

- FA Leading zero suppress on. Suppress leading zeroes from current cursor position until first non-zero character. **Syntax = FA**.
 - FB Suppress "XX" character(s) (up to three) starting from current cursor position until suppress disable command "FC" or end of format. **Syntax = FBXXFB, FBXXXXFB, FBXXXXXXFB** (XX = ASCII character 00–7F).
 - FC Disable suppress filter and clear all suppressed characters. **Syntax = FC**.
 - 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 = HEX ASCII character 00–7F).
 - EC Check for numeric character at current cursor position. If true, then continue format. If false, then no format. **Syntax = EC**.
 - ED Check for non-numeric character at current cursor position. If true, then continue format. If false, then no format. **Syntax = ED**.
 - EE Leading space suppress on. Suppress leading spaces from current cursor position until first non-space character. **Syntax = EE**.
-

Data Formatter Selections



0



1



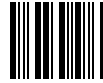
2



3



4



5



6



7



8



9



A



B



C



D



E



F

Data Formatter Selections

Data Formatter Example

You are using an IBM PC AT and are scanning a UPC A bar code with a five digit addenda (shown below). The bar code has a total of 18 characters, including the number system, the check digits, and a space between the main bar code data and the addenda bar code data.



For your application, you don't want the space between the main bar code data and the addenda bar code data transmitted. You also want the bar code data followed by a carriage return (CR).

Using the programming bar codes on pages 3–23 and 3–25, and referring to the Format Editor Commands Chart on page 3–24; scan the following to format the bar code data for your application:

- Scan the **Enter Data Format** bar code (page 3–23).
- Scan the **03** bar codes on Data Formatter Selections (page 3–25) for PC AT Terminal Type.
- Scan the **63** bar codes on Data Formatter Selections (page 3–25), the Hex value for UPC symbology.
- Scan the **18** bar codes on Data Formatter Selections (page 3–25) for the bar code length†.

(The following are the Editor Command Sequences:)

- Scan the **FB** (suppress characters command) bar codes on Data Formatter Selections (page 3–25), scan **20** (the Hex value for a space), and then scan **FB** to frame (complete) the command.
- Scan the **F7** bar codes on Data Formatter Selections (page 3–25) to move the cursor back to the beginning of the bar code data.
- Scan the **F1** and **0D** bar codes on Data Formatter Selections (page 3–25) to send all the characters followed by a carriage return (CR= 0D in Hex value).
- Scan the **End Data Format** bar code on Data Formatter Selections (page 3–23) to end Format Editor selection.

† The bar code length includes all spaces.

Introduction

Use this chapter to program the Keyboard Wedge / Commercial Decoder for Serial Communication features.

This programming section contains the following menuing selections:

- RS-232D Port 1 (Auxiliary Data Input) Selections.
- RS-232D Port 2 (Data Output / Transmission) Selections.

About RS-232D Port 1 (Auxiliary Data Input) Programming

RS-232D Port 1 programming allows you to:

- Enable or disable CTS Check.
- Set Baud Rate, RS-232 Word Length, and Parity.
- Select a data communication Protocol.
- Program the decoder for data communication character(s).

Note: *The decoder automatically determines whether the input device is a scanner or an RS-232D device. Switching from scanner to RS-232D input requires that you cycle the power to the decoder; that is, turn the unit off, then on it again after changing the input device.*

About RS-232D Port 2 (Data Output / Transmission) Programming

RS-232D Port 2 programming allows you to:

- Enable or disable CTS Check.
- Set Baud Rate, RS-232 Word Length, and Parity.

RS-232D Port 1 (Auxiliary Data Input)

Default All Serial Communications Selections

Scanning the Default bar code will program the decoder to the output options indicated by a “★” in the menu selections on this and the following two programming pages.

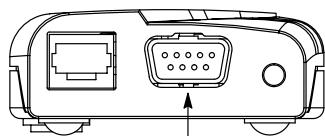
CTS Check

This programming selection allows you to disable the software programming feature that checks for a CTS signal, if your application doesn't have a CTS I/O line. *Default = Disable.*

Baud Rate

This programming selection sets the baud rate from 300 bits per second to 4,800 bits per second. Programming baud rate causes the data to be sent at the specified rate. The host terminal must be set up for the same baud rate as the decoder, to ensure reliable communication. *Default = 2400 bps.*

Decoder Front View



***RS-232 Port 1
(Auxiliary Data Input)***

Note: A pinout chart is shown in Section 8, Product Specifications and Pinouts.

RS-232D Port 1 (Auxiliary Data Input)

★ Default All RS-232 Port 1 Settings ★



CTS Check Selection



Enable



★ Disable

Baud Rate Selection



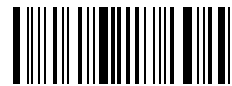
300



600



1200



★ 2400



4800

RS-232D Port 1 (Auxiliary Data Input)

Word Length Data Bits

This programming selection allows you to set the **Word Length** at seven or eight 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 requiring use of the full ASCII set, select 8 data bits per character. *Default = seven data bits.*

Word Length Stop Bits

This programming selection allows you to set the **Word Length** at one or two stop bits. *Default = one stop bit.*

Parity

This programming selection provides a means of checking character bit patterns for validity. The decoder can be configured to operate under Even, Odd, Mark / None, or Space parity options. The host terminal must be set up for the same parity as the decoder, to ensure reliable communication. *Default = Even parity.*

Note: *RS-232D Function Code Transmit programming may be found in General Output Selections, page 3–11.*

RS-232D Port 1 (Auxiliary Data Input)

Word Length Data Bits Selection



★ 7 Data Bits



8 Data Bits

Word Length Stop Bits Selection



★ 1 Stop Bit



2 Stop Bits

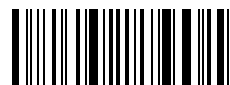
Parity Selection



None



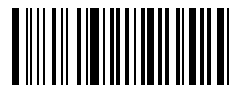
Mark



Space



Odd



★ Even

RS-232D Port 1 (Auxiliary Data Input)

Protocol

This programming selection allows you to program the decoder for whichever protocol your application requires. The protocol is a set of rules concerning the exchange of data between serially communicating devices. The decoder supports Record, Burst, Ack / Nak Record, and Ack / Nak Burst protocols when receiving data from an RS-232 device. *Default = Record.*

When **Record Protocol** is enabled, the decoder accepts a data record of variable length up to a maximum of 253 characters including preamble, postamble, and a one character delimiter. The incoming data record must end with an End of Record (EOR) character that matches the EOR character programmed into the decoder. If a Start of Record character is programmed, the decoder won't accept data until that SOR is detected.

When **Burst Protocol** is enabled, the decoder accepts one or more data records of variable lengths. Each data record must end with the EOR character programmed into the decoder. The decoder stops accepting data when an End of Block (EOB) character is received. Start of Block (SOB) and SOR characters may be programmed.

The decoder can be programmed to receive data in one of two ACK/NAK protocols, **Ack / Nak Record** mode or **Ack / Nak Burst** mode. Both are similar to the protocols described above (record = one data record, burst = one or more data records). The difference is that, in Ack / Nak mode, the decoder issues an ACK (acknowledge) when it receives a data record successfully. If an error is encountered in the data record(s), the decoder issues a NAK (not acknowledge) to the RS-232D transmitting device.

Data Characters

This programming selection allows you to select the serial output data characters that may be required by the RS-232D protocol.

The **Start of Record Character (SOR)** is one of the characters 01h–7Fh that indicates the start of an RS-232D data record. *Default SOR character = 00.*

The **End of Record Character (EOR)** is one of the characters 01h–7Fh that marks the end of an RS-232D data record. *Default EOR character = 0D (which is CR, a carriage return).*

The **Start of Block Character (SOB)** is one of the characters 01h–7Fh that indicates the start of a block of data within an RS-232D data block. *Default SOB character = 00.*

The **End of Block Character (EOB)** is one of the characters 01h–7Fh that indicates the end of a block of data within an RS-232D data block. *Default EOB character = 04 (which is EOT, End of Text).*

Note: SOB, EOB, SOR, and EOR characters are not considered data, and, therefore, are not sent to the terminal. Refer to the Hex ASCII chart (page 3–16) for the two-digit Hex representation of the ASCII data character you wish to program.

RS-232D Port 1 (Auxiliary Data Input)

Protocol Selection



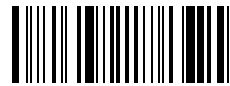
★ Record



Burst



Ack / Nak Record



Ack / Nak Burst

Data Character Selection ‡



Start of Record



End of Record



Start of Block



End of Block

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

RS-232D Port 2 (Data Output)

Default All Serial Communications Selections

Scanning the Default bar code will program the decoder to the output options indicated by a “★” in the menu selections on this and the following two programming pages.

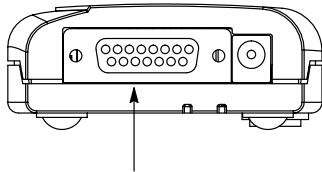
CTS Check

This programming selection allows you to disable the software programming feature that checks for a CTS signal, if your application doesn't have a CTS I/O line. *Default = Disable.*

Baud Rate

This programming selection sets the baud rate from 300 bits per second to 38,400 bits per second. Programming baud rate causes the data to be sent at the specified rate. The host terminal must be set up for the same baud rate as the decoder, to ensure reliable communication. *Default = 9600 bps.*

Decoder Back View



RS-232 Port 2 (Data Transmission / Output)

Note: A pinout chart is shown in Section 8, Product Specifications and Pinouts.

RS-232D Port 2 (Data Output)

★ Default All RS-232 Port 2 Settings ★



CTS Check Selection



Enable



★ Disable

Baud Rate Selection



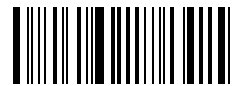
300



600



1200



2400



4800



★ 9600



19200



38400

RS-232D Port 2 (Data Output)

Word Length Data Bits

This programming selection allows you to set the **Word Length** at seven or eight 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 requiring use of the full ASCII set, select 8 data bits per character. *Default = seven data bits.*

Word Length Stop Bits

This programming selection allows you to set the **Word Length** at one or two stop bits. *Default = one stop bit.*

Parity

This programming selection provides a means of checking character bit patterns for validity. The decoder can be configured to operate under Even, Odd, Mark / None, or Space parity options. The host terminal must be set up for the same parity as the decoder, to ensure reliable communication. *Default = Even parity.*

Note: *The combination of 7 Data Bits, No Parity, and 1 Stop Bit is not supported by RS-232D Port 2.*

RS-232D Port 2 (Data Output)

Word Length Data Bits Selection



★ 7 Data Bits



8 Data Bits

Word Length Stop Bits Selection



★ 1 Stop Bit



2 Stop Bits

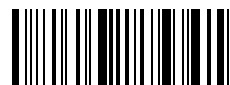
Parity Selection



None



Mark



Space



Odd



★ Even

Introduction

Use this chapter to program the Keyboard Wedge / Commercial Decoder for Industrial and Retail Symbology selections.

This programming section contains the following menuing selections:

- Codabar Selections.
- Code 39 Selections.
- Code 93 Selections.
- Interleaved 2 of 5 Selections.
- Code 2 of 5 Selections.
- Matrix 2 of 5 Selections.
- Code 11 Selections.
- Code128 Selections.
- EAN Selections.
- UPC Selections.
- MSI Selections.
- Plessey Selections.

Industrial Symbologies

About Codabar, Code 39, Interleaved 2 of 5 Programming

Codabar, Code 39, and Interleaved 2 of 5 programming allows you to:

- Enable or disable symbology decoding.
- Program all symbology options, such as Start/Stop Characters, Decoding, Check Characters/Digits, and others.
- Set minimum and maximum Message Length.

About Code 93, Code 2 of 5, Matrix 2 of 5, Code 128 Programming

Code 93, Code 2 of 5, Matrix 2 of 5, and Code 128 programming allows you to:

- Enable or disable symbology decoding.
- Set minimum and maximum Message Length.

About Code 11 Programming

Code 11 programming allows you to:

- Enable or disable symbology decoding.
- Select Check Digits Required.
- Set minimum and maximum Message Length.

Retail Symbologies

About EAN, UPC Programming

EAN and UPC programming allows you to:

- Enable or disable symbology decoding.
- Program all symbology options, such as symbology versions, 2/5 Digit Addenda, Check Digits, and others.

About MSI, Plessey Programming

MSI and Plessey programming allows you to:

- Enable or disable symbology decoding.
- Set minimum and maximum Message Length.

Industrial Symbology Selections

Default All Codabar Settings

Scanning the Default bar code will program the decoder to the symbology options indicated by a "★" in the menu selections on this and the following programming page.

Codabar

Codabar is a discrete, two-width symbology capable of encoding variable-length messages from the set of numerics 0 through 9, and the \$: / . + - characters. Any one of the four start/stop characters A,B,C, or D can be used as a start or a stop character; often the same character is used for both. *Default = On.*

Start / Stop Characters

The start and stop characters are used to identify the leading and trailing ends of the bar code. Since they are not considered part of the message they are not ordinarily transmitted, though the reader can be programmed to transmit them. *Default = Don't Transmit.*

Message Length

We recommend setting the minimum and maximum message lengths according to the smallest range [Minimum, Maximum] the application allows. The start/stop, check characters should not be counted as message characters. For a fixed-length message Minimum Length=Maximum Length. This will also help minimize the chance of a misread. *Defaults on default chart (page NO TAG).*

Note: *To select digits 0 through 9 use the Programming Chart found on the inside of the back cover of this menu. Scan the programming selection bar code first, and then scan the bar code(s) representing the digits you wish to set.*

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

★ *Default All Codabar Settings* ★



Codabar Selection



★ On

Codabar

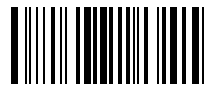


Off



Transmit

*Start / Stop
Characters*



★ Don't Transmit



Minimum ‡

*Message
Length*



Maximum ‡

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

Industrial Symbology Selections

Note: The Default bar code for this page is on the previous programming page.

Check Character

Use of a check character is optional in Codabar. For applications requiring enhanced security, symbols should be printed with a check character using the format described in the AIM specification, and the reader should be programmed to verify its value. Since it is not considered part of the message the check character is not ordinarily transmitted, though the reader can be programmed to transmit it. *Default = Don't Verify and Don't Transmit.*

Concatenation

Codabar supports symbol concatenation. When you **Enable** concatenation, the reader will look 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 = Disable and Don't Require.*



Select the **Enable** and the **Require** concatenation options to prevent the reader from decoding a lone Codabar symbol.

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

Codabar Selection, *continued*



Verify

*Check
Character*



★ Don't Verify

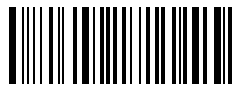


Transmit

*Check
Character*



★ Don't Transmit



Enable

Concatenation



★ Disable



Require

Concatenation



★ Don't Require

Industrial Symbology Selections

Default All Code 39 Settings

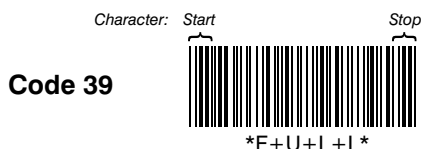
Scanning the Default bar code will program the decoder to the symbology options indicated by a “★” in the menu selections on this and the following programming page.

Code 39

Code 39 is a discrete, two-width symbology capable of encoding variable length messages from the set of alphanumerics, and the \$/ + % . – and space. The * character is used as the start and the stop character. Each Code 39 character has five bars and four internal spaces: three of these nine elements are wide, the other six are narrow. It is this structure that gives Code 39 its name. *Default = On.*

Start / Stop Characters

The start and stop characters are used to identify the leading and trailing ends of the bar code. Since they are not considered part of the message they are not ordinarily transmitted, though the reader can be programmed to transmit them. *Default = Don't Transmit.*



Full ASCII

The Code 39 specification provides a means of encoding the full ASCII set of characters by using two-character sequences made up of one of the four Code 39 characters (\$ + % /) followed by one of the 26 letters as shown in the Full ASCII Code 39 chart (on page 5–11). The decoder can't distinguish Code 39 labels encoded in full ASCII mode from those encoded in standard mode. Set this decoder option according to the mode used when the symbols were printed. *Default = Enable.*

Append

When the append option is enabled, the reader will identify Code 39 messages whose leading character is a SPACE, as *Append39* symbols. The leading SPACE is discarded and the remaining message characters are stored in a buffer. When a non-*Append39* symbol is scanned, all data is transmitted in the order it was scanned. *Default = Disable.*

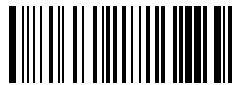
Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

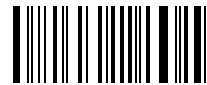
★ Default All Code 39 Settings ★



Code 39 Selection



Code 39



★ On

Off



*Start / Stop
Characters*

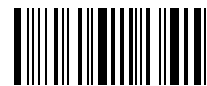


Transmit

★ Don't Transmit



Full ASCII



★ Enable

Disable



Append



Enable

★ Disable

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

Industrial Symbology Selections

Note: The Default bar code for this page is on the previous programming page.

Message Length

We recommend setting the minimum and maximum message lengths according to the smallest range [Minimum, Maximum] the application allows. The start/stop, check characters should not be counted as message characters. For a fixed-length message Minimum Length=Maximum Length. This will also help minimize the chance of a misread. *Defaults on default chart (page*

NO TAG).
Note: To select digits 0 through 9 use the Programming Chart found on the inside of the back cover of this menu. Scan the programming selection bar code first, and then scan the bar code(s) representing the digits you wish to set.

Check Character

Use of a check character is optional in Code 39. For applications requiring enhanced security, symbols should be printed with a check character using the format described in the AIM specification, and the reader should be programmed to verify its value. Since it is not considered part of the message the check character is not ordinarily transmitted, though the reader can be programmed to transmit it. *Default = Don't Verify and Don't Transmit.*

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

Code 39 Selection, *continued*



Minimum ‡

*Message
Length*



Maximum ‡



Verify

*Check
Character*



★ Don't Verify



Transmit

*Check
Character*



★ Don't Transmit

Industrial Symbology Selections

Default All Code 93 Settings

Scanning the Default bar code will program the decoder to the symbology options indicated by a “★” in the menu selections on this programming page.

Code 93

Code 93 was designed to drop into applications that use Code 39. It is a continuous, edge-to-edge symbology capable of encoding variable-length messages from the set of alphanumerics, and 12 additional characters. Each Code 93 character is nine modules wide, and is comprised of 3 bars and 3 spaces. Its characters are spatially efficient for the set of alphanumerics.

Code 93 can be used to represent all 128 ASCII characters in a fashion similar to Code 39's Full ASCII mode; however, Code 93's special shift characters distinguish full-ASCII combinations from the standard alphanumeric set. There is no need to enable full-ASCII decoding.

The Code 93 specification requires the use of two check characters; the symbology is highly secure.



Message Length

We recommend setting the minimum and maximum message lengths according to the smallest range [Minimum, Maximum] the application allows. The start/stop and check characters should not be counted. This will also help minimize the chance of a misread. *Defaults on default chart (page NO TAG).*

Note: To select digits 0 through 9 use the Programming Chart found on the inside of the back cover of this menu. Scan the programming selection bar code first, and then scan the bar code(s) representing the digits you wish to set.

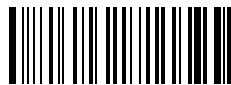
Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

★ Default All Code 93 Settings ★



Code 93 Selection



Code 93



★ On

Off



Message
Length



Minimum ‡

Maximum ‡

FULL ASCII 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	-	-	=	%H	M	M	]	%M	m	+M	}	%R
SO	\$N	RS	%D	.	.	>	%I	N	N	^	%N	n	+N	~	%S
SI	\$O	US	%E	/	/O	?	%J	O	O	_	%O	o	+O	DEL	%T

† This chart is used for encoding the above characters in Full ASCII when using Code 93 bar codes. For example, to get a "<", encode %G (which is 25 47 on the Hex ASCII chart in the Prefix / Suffix Programming section).

‡ A two-digit number is required after scanning this programming bar code. Please scan your selection on the Programming Chart (inside back cover).

Industrial Symbology Selections

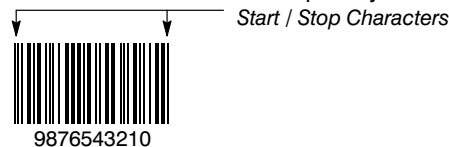
Default All 2 of 5 Settings

Scanning the Default bar code will program the decoder to the symbology options indicated by a “✳” in the menu selections on this programming page.

Interleaved 2 of 5

Interleaved 2 of 5 is a continuous, two-width symbology capable of encoding an even number of numerics. Odd-length messages are usually padded with a leading 0. Each pair of digits is represented by five bars and five spaces. The bars encode the first digit: two of these five bars are wide, the other three are narrow. Following each bar is a space; collectively, the spaces encode the second digit of the pair. Interleaved 2 of 5 characters are spatially efficient for the set of numerics.

Interleaved 2 of 5



The start/stop characters are short, but not secure. Their patterns can occur erroneously in partial scans of a symbol. As a result Interleaved 2 of 5 is prone to misreads when the scanning path does not include both quiet zones. *Default = On.*

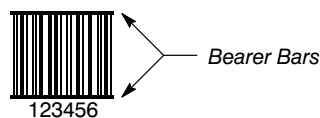
Message Length

If the application requires the ability to read variable-length messages, or some other fixed-length, then choose the minimum and Maximums accordingly. We recommend setting the range [Minimum, Maximum] as small as the application allows. *Defaults on default chart (page NO TAG).*

Note: To select digits 0 through 9 use the Programming Chart found on the inside of the back cover of this menu. Scan the programming selection bar code first, and then scan the bar code(s) representing the digits you wish to set.

Bearer bars having a width comparable to the wide elements can be printed to further enhance security.

Interleaved 2 of 5



Check Digit

Use of a check digit is optional in Interleaved 2 of 5. For applications requiring enhanced security, symbols should be printed with a check digit using the format described in the AIM specification, and the reader should be programmed to verify its value. Since it is not considered part of the message the check digit is not ordinarily transmitted, though the reader can be programmed to transmit it. *Default = Don't Verify and Don't Transmit...*

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

★ Default All Interleaved 2 of 5 Settings ★



Interleaved 2 of 5 Selection



★ On

*Interleaved
2 of 5*



Off



Minimum ‡

*Message
Length*



Maximum ‡



Verify

*Check
Digit*



★ Don't Verify



Transmit

*Check
Digit*



★ Don't Transmit



Enable

*6, 14 &
16 Only*



★ Disable

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

Industrial Symbology Selections

Default All 2 of 5 Settings

Scanning the Default bar code will program the decoder to the symbology options indicated by a “✱” in the menu selections on this programming page.

Code 2 of 5

Code 2 of 5 is a discrete, two-width symbology capable of encoding variable-length messages from the set of numerics. Each character is represented by five bars: two bars are wide, the other three are narrow. The width of the spaces carries no meaning and generally will be the same as the width of the narrow bars. The resulting characters are not spatially efficient.

In one form, Code 2 of 5 start/stop characters are represented by patterns of three bars (WWN / WNW). In another form, start/stop characters are represented by patterns of two bars (NN / WN). This reader will recognize and decode both forms of Code 2 of 5. The AIM symbology identifier can be used to distinguish which form was decoded. *Default = On.*



Matrix 2 of 5

Matrix 2 of 5 is a discrete code capable of encoding variable-length messages from the set of numerics. Each character has three bars and two internal spaces: two of these five elements are wide, the other three are narrow. Matrix 2 of 5 can be decoded as a two-width symbology, though the start/stop character has one extra-wide bar and four narrow elements. *Default = On.*



Message Length

We recommend setting the minimum and maximum message lengths according to the smallest range [Minimum, Maximum] the application allows. The start/stop characters should not be counted. This will also help minimize the chance of a misread. *Defaults on default chart (page NO TAG).*

Note: To select digits 0 through 9 use the Programming Chart found on the inside of the back cover of this menu. Scan the programming selection bar code first, and then scan the bar code(s) representing the digits you wish to set.

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

★ Default All Matrix / Code 2 of 5 Settings ★



Code 2 of 5 Selection



★ On

Code
2 of 5



Off



Minimum ‡

Message
Length



Maximum ‡

Matrix 2 of 5 Selection



★ On

Matrix
2 of 5



Off



Minimum ‡

Message
Length



Maximum ‡

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

Industrial Symbology Selections

Default All Code 11 / Code 128 Settings

Scanning the Default bar code will program the decoder to the symbology options indicated by a “✳” in the menu selections on this programming page.

Code 11

Code 11 is a discrete code capable of encoding variable-length messages from the set of numerics plus the “-” character. The symbology derived its name from the size of its character set. Each character in Code 11 has three bars and two internal spaces: two of these elements are wide, the other three are narrow. The exceptions to this are the “0”, “9”, and “-” characters, which have one extra-wide element and four narrow elements. Code 11 can be decoded as a two-width symbology, though the bars can assume one of three widths. *Default = On.*

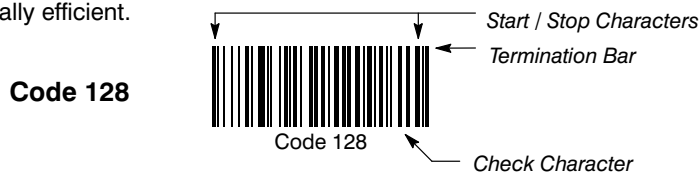
Check Digits Required

The Code 11 specification strongly recommends the use of two check digits. The decoder can be programmed to read Code 11 symbols having only one check digit. Bar code readers cannot autodiscriminate the number of check digits encoded in a symbol. *Default = 2 Check Digits.*



Code 128

Code 128 is a continuous, edge-to-edge symbology capable of encoding variable-length messages from the full 128-character ASCII set. Through the use of mode switching, the extended 256-character ASCII set can be encoded, and double-density numerics are possible. Each Code 128 character is eleven modules wide, and is comprised of three bars and three spaces. Its characters are spatially efficient.



The Code 128 specification requires the use of one check character; the symbology is highly secure. *Default = On.*

Message Length

We recommend setting the minimum and maximum message lengths according to the smallest range [Minimum, Maximum] the application allows. The start/stop and check characters should not be counted. This will also help minimize the chance of a misread. *Defaults on default chart (page NO TAG).*

Note: To select digits 0 through 9 use the Programming Chart found on the inside of the back cover of this menu. Scan the programming selection bar code first, and then scan the bar code(s) representing the digits you wish to set.

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

★ Default All Code 11 / Code 128 Settings ★



Code 11 Selection



★ On

Code 11



Off



★ 2 Check Digits

*Check Digits
Required*



1 Check Digit



Minimum ‡

*Message
Length*



Maximum ‡

Code 128 Selection



★ On

Code 128



Off



Minimum ‡

*Message
Length*



Maximum ‡

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

Retail Symbology Selections

Default All EAN and UPC Settings

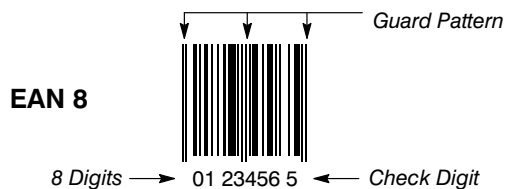
Scanning the Default bar code will program the decoder to the symbology options indicated by a “★” in the menu selections on this and on the EAN Addenda Selection programming page (page 5–21).

EAN

EAN (European Article Numbering system) is the international standard symbology and coding system for identifying goods that will be scanned at point-of-sale. It is a superset of UPC.

EAN / JAN 13 and EAN / JAN 8

EAN is a continuous, edge-to-edge symbology. EAN 13 encodes 13 numerics: 12 message digits and one check digit. EAN 8 encodes eight numerics: seven message digits and one check digit. *Default = On.*



Check Digit

The decoder always verifies the check digit and normally will transmit it. If you don't want the check digit transmitted, a programming option is provided to turn transmission off. *Default = Transmit.*

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Retail Symbology Selections

★ Default All EAN and UPC Settings ★



EAN Selection

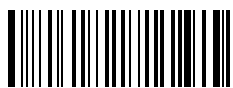


★ On

*EAN /
JAN 13*



Off



★ On

*EAN /
JAN 8*



Off



★ Transmit

*Check
Digit*



Don't Transmit

Retail Symbology Selections

Note: The Default bar codes for this page are on the EAN and UPC programming pages.

EAN Addenda

Two and five character addenda are allowed, but not required. If an addenda will always be used, we recommend selecting **Require Addenda and Enable** the appropriate format (two or five character). If an addenda won't always be used, you may select **Don't Require**, and then **Enable** or **Disable** the EAN Two and Five Digit Addenda selections. *Default = Don't Require*.

If your application needs a two or five digit addenda, select **Enable**. To make scanning faster if your application doesn't require an addenda, select **Disable**. The EAN bar code will be sent without the addenda data. *Default = Disable*.



Addenda Format

The EAN addenda may be sent with or without a space between the main bar code data and the addenda bar code data. *Default = Space*.

Retail Symbology Selections

EAN Addenda Selection



Require

*EAN
Addenda*



★ Don't Require



Enable

*Two Digit
Addenda*



★ Disable



Enable

*Five Digit
Addenda*



★ Disable



No Space

*Addenda
Format*



★ Space

Retail Symbology Selections

Default All UPC and EAN Settings

Scanning the Default bar code will program the decoder to the symbology options indicated by a “★” in the menu selections on this and on the UPC Addenda Selection programming page (page 5–25).

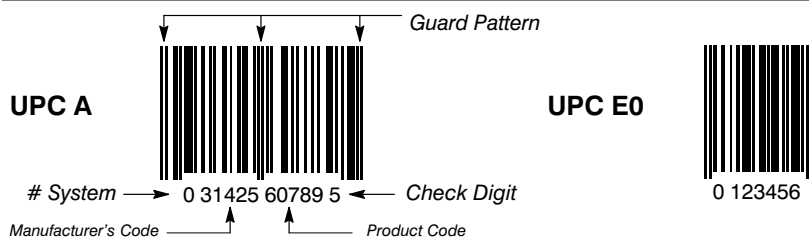
UPC

UPC (Universal Product Code) was designed to uniquely identify a product and its manufacturer. It has been successfully employed by the supermarket industry since 1973.

UPC A

UPC is a continuous, edge-to-edge symbology. UPC A encodes 12 numerics: 11 message characters and one check character. The first message character is called the number system digit, and it indicates the product type. The next five characters identify the manufacturer of the product, while the last five message characters identify the product. *Default = On.*

Note: UPC A is a subset of EAN13. UPC A symbols will be read and interpreted as EAN-13 symbols when UPC A is turned off.



UPC E0

UPC A codes having one or more zeros in the manufacturer ID, and having a number system digit of zero can use UPC E0, which encodes a limited number of product ID's in only seven numerics: six message characters and one check character. *Default = On.*

UPC E1

UPC E1 is no longer supported by the UPC specification because of a similarity to EAN 13. This decoder can be programmed to read UPC E1 as long as EAN 13 is turned off. *Default = Off.*

UPC D can encode variable-length messages, but is rarely used and is not supported by this decoder.

Check Digit

The decoder always verifies the check digit and normally will transmit it. If you don't want the check digit transmitted, a programming option is provided to turn transmission off. *Default = Transmit.*

Number System

The number system digit of a UPC symbol is normally transmitted, though the reader can be programmed to suppress it. *Default = Transmit.*

Version E Expand

The decoder can expand a UPC E message into the 12 character UPC A message format if desired. *Default = Don't Expand.*

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Retail Symbology Selections

★ Default All UPC and EAN Settings ★



UPC Selection



UPC A



★ On

Off



UPC E0



★ On

Off

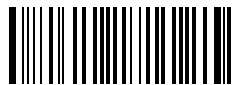


UPC E1



★ On

Off



*Check
Digit*



★ Transmit

Don't Transmit



*Number
System*



★ Transmit

Don't Transmit



*Version E
Expand*



Expand

★ Don't Expand

Retail Symbology Selections

Note: The Default bar codes for this page are on the EAN and UPC programming pages.

UPC Addenda

Two and five character addenda are allowed, but not required. If an addenda will always be used, we recommend selecting **Require Addenda and Enable** the appropriate format (two or five character). If an addenda won't always be used, you may select **Don't Require**, and then **Enable** or **Disable** the UPC Two and Five Digit Addenda selections. *Default = Don't Require*.

If your application needs a two or five digit addenda, select **Enable**. To make scanning faster if your application doesn't require an addenda, select **Disable**. The UPC bar code will be sent without the addenda data. *Default = Disable*.



Addenda Format

The UPC addenda may be sent with or without a space between the main bar code data and the addenda bar code data. *Default = Space*.

Retail Symbology Selections

UPC Addenda Selection



Require

*UPC
Addenda*



★ Don't Require



Enable

*Two Digit
Addenda*



★ Disable



Enable

*Five Digit
Addenda*



★ Disable



No Space

*Addenda
Format*



★ Space

Retail Symbology Selections

Default All MSI & Plessey Settings

Scanning the Default bar code will program the decoder to the symbology options indicated by a “★” in the menu selections on this programming page.

MSI (Sometimes referred to as Modified Plessey Code)

MSI is a discrete code capable of encoding variable-length messages (up to 14 characters) from the set of numerics. Each character has four bars and four spaces. When read from left to right, each bar-space pair represents one bit: a narrow bar / wide space combination represents a zero, a wide bar / narrow space combination represents a one. Characters are comprised of four bits each, with the MSB (most significant bit) first.



Despite the requirement of one check digit, the symbology requires high quality printing and is not secure. *Default = Off.*

Plessey

Plessey Code is a continuous code capable of encoding variable-length messages from the set of hexadecimal characters. Each character has four bars and four spaces. When read from left to right, each bar-space pair represents one bit: a narrow bar / wide space combination represents a zero, a wide bar / narrow space combination represents a one. Characters are comprised of four bits each, with the LSB (least significant bit) first.

The specification requires the use of two checksum characters. *Default = Off.*



Message Length

We recommend setting the minimum and maximum message lengths according to the smallest range [Minimum, Maximum] the application allows. The start/stop and check characters should not be counted. This will also help minimize the chance of a misread. *Defaults on default chart (page NO TAG).*

Note: To select digits 0 through 9 use the Programming Chart found on the inside of the back cover of this menu. Scan the programming selection bar code first, and then scan the bar code(s) representing the digits you wish to set.

Programming Tip: If a symbology won't be used, we recommend turning it off to minimize the chance of a misread.

Retail Symbology Selections

★ Default All MSI & Plessey Settings ★



MSI Selection



On

MSI

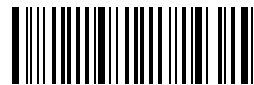


★ Off



Minimum ‡

*Message
Length*



Maximum ‡

Plessey Selection



On

Plessey



★ Off



Minimum ‡

*Message
Length*



Maximum ‡

‡ A two-digit number is required after scanning this programming bar code.
Please scan your selection on the Programming Chart (inside back cover).

Notes...

Notes:

The space below may be used for notes. ...



Introduction

The decoder's internal operational firmware is contained in a "Flash EEPROM" (a programmable / erasable ROM – Read Only Memory). This enables you to download new firmware upgrades, without opening the decoder or changing a chip (IC). A download kit that includes the software (in DOS or Windows versions) and an instruction manual is available from your sales distributor.

The decoder also has a special "cloning" capability. Cloning provides a quick, convenient way to re-program installed decoders from a master unit containing new or updated firmware, eliminating the need to use a PC for each serial download. After upgraded firmware is downloaded into the master unit, the master may be used to program other decoders. (A cloning cable is used, and may be ordered from your distributor.)

This programming section contains the following menuing selections:

- Cloning Utility.
- Temporary Serial Communication Configuration.

Firmware Utilities

Cloning Utility

Scanning the **Clone Master** bar code will transfer the firmware contents of the “master” unit to the “destination” or installed unit. First, you must follow the steps below to initiate the cloning procedure:

- 1) Connect the destination (installed) unit to one of the 15 pin D-type host connectors on the cloning cable.
- 2) Connect the master unit (containing the new or updated software) to the remaining 15 pin D-type host connector on the cloning cable.
- 3) Make sure that both units are powered **On**, and then scan the **Clone Destination** bar code with the destination unit.



Clone Destination

- 4) Now scan the **Clone Master** bar code with the master unit.



Clone Master

- 5) The master unit will start transferring its firmware contents to the installed / destination unit.
- 6) When cloning is complete, the master unit will double beep. This process takes about 30 seconds.

Temporary Serial Communication Configuration

For quick download communication configuration, scan the **W + A** bar code to temporarily configure the decoder for 9600 baud rate, no parity, 8 data bits, and 1 stop bit. Standard receive (RX) and transmit (TX) voltages are also selected. RTS / CTS handshaking is disabled. This change is *temporary*. The next time the decoder is powered down and then up, its serial communication settings are restored to the programmed settings.



W + A

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 Keyboard Wedge / Commercial Decoder.

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	-

Interface Keys

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

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

Supported Interface Keys

The following pages provide tables of Supported Interface Keys for these terminal interfaces:

ADI 1496	page 7-5
BULL BDS-7	page 7-6
BULL Questar 310 (2101 Keyboard)	page 7-7
BULL Questar 310 (3105 Keyboard)	page 7-8
DEC PC VT 510/520/525	page 7-11
Falco 5220	page 7-9
IBM PC XT	page 7-3
IBM PS/2, 25, 30, 55SX, 70	page 7-3
IBM AT and Compatibles	page 7-3
IBM 3191/92/96/97, 3471/72/76/77 (102 Keyboard)	page 7-4
IBM 3191/92/96/97, 3471/72/76/77 (122 Keyboard)	page 7-5
IDEAS (122 Keyboard)	page 7-5
Olivetti M19, M24, M28, M200, M240, M250, M290, M380, P500 .	page 7-3
Sun Sparc Station 1+	page 7-3
TELEX (All) (88 Keyboard)	page 7-10
TELEX (All) (102 Keyboard)	page 7-4
TELEX (All) (122 Keyboard)	page 7-5

Interface Keys

Supported Interface Keys

IBM PC XT, PS/2, AT and Compatibles; Olivetti M19, M24, M28, M200, M240, M250, M290, M380, P500; Sun Sparc Station 1+

<i>Supported Interface Keys</i>		<i>Key Function</i>
NUL	00	RESERVED
SOH	01	NEW LINE (ENTER)
STX	02	CAPS LOCK
ETX	03	RESERVED
EOT	04	RESERVED
ENQ	05	RESERVED
ACK	06	RESERVED
BEL	07	NEW LINE (ENTER)
BS	08	RESERVED
HT	09	TAB
LF	0A	RESERVED
VT	0B	TAB
FF	0C	DELETE
CR	0D	NEW LINE (ENTER)
SO	0E	INSERT
SI	0F	ESCAPE
DLE	10	F11
DC1	11	HOME
DC2	12	PRINT
DC3	13	BACKSPACE
DC4	14	BACK TAB
NAK	15	F12
SYN	16	F1
ETB	17	F2
CAN	18	F3
EM	19	F4
SUB	1A	F5
ESC	1B	F6
FS	1C	F7
GS	1D	F8
RS	1E	F9
US	1F	F10

Interface Keys

Supported Interface Keys

**IBM 3191/92/96/97, 3471/72/76/77; Telex (all models) with 102
key keyboards**

<i>Supported Interface Keys</i>	<i>Key Function</i>
NUL 00	RESERVED
SOH 01	ENTER
STX 02	F11
ETX 03	F12
EOT 04	F13
ENQ 05	F14
ACK 06	F15
BEL 07	NEW LINE
BS 08	F16
HT 09	F17
LF 0A	F18
VT 0B	FIELD FORWARD (TAB)
FF 0C	DELETE
CR 0D	FIELD EXIT
SO 0E	INSERT
SI 0F	CLEAR
DLE 10	RESERVED
DC1 11	HOME
DC2 12	PRINT
DC3 13	BACKSPACE
DC4 14	BACK TAB
NAK 15	F19
SYN 16	F1
ETB 17	F2
CAN 18	F3
EM 19	F4
SUB 1A	F5
ESC 1B	F6
FS 1C	F7
GS 1D	F8
RS 1E	F9
US 1F	F10

Interface Keys

Supported Interface Keys

**ADI 1496; IBM 3191/92/96/97, 3471/72/76/77; IDEAS; and Telex
(all models) with 122 key keyboards**

<i>Supported Interface Keys</i>	<i>Key Function</i>
NUL 00	RESERVED
SOH 01	ENTER
STX 02	F11
ETX 03	F12
EOT 04	F13
ENQ 05	F14
ACK 06	F15
BEL 07	NEW LINE
BS 08	F16
HT 09	F17
LF 0A	F18
VT 0B	TAB/FIELD FORWARD
FF 0C	DELETE
CR 0D	FIELD EXIT/NEW LINE
SO 0E	INSERT
SI 0F	F19
DLE 10	ERROR RESET
DC1 11	HOME
DC2 12	F20
DC3 13	BACKSPACE
DC4 14	BACKFIELD/BACK TAB
NAK 15	F21
SYN 16	F1
ETB 17	F2
CAN 18	F3
EM 19	F4
SUB 1A	F5
ESC 1B	F6
FS 1C	F7
GS 1D	F8
RS 1E	F9
US 1F	F10

Interface Keys

Supported Interface Keys

Bull BDS-7 (HDS-7)

<i>Supported Interface Keys</i>	<i>Key Function</i>
NUL 00	RESERVED
SOH 01	TRANSMIT
STX 02	RESERVED
ETX 03	RESERVED
EOT 04	RESERVED
ENQ 05	BACK TAB
ACK 06	RESERVED
BEL 07	CARRIAGE RETURN
BS 08	BACKSPACE
HT 09	TAB
LF 0A	F11
VT 0B	F12
FF 0C	DELETE CHARACTER
CR 0D	CARRIAGE RETURN
SO 0E	INSERT
SI 0F	CLEAR
DLE 10	ERROR RESET
DC1 11	HOME
DC2 12	DELETE LINE
DC3 13	ERASE EOP
DC4 14	ERASE EOF
NAK 15	INSERT LINE
SYN 16	F1
ETB 17	F2
CAN 18	F3
EM 19	F4
SUB 1A	F5
ESC 1B	F6
FS 1C	F7
GS 1D	F8
RS 1E	F9
US 1F	F10

Interface Keys

Supported Interface Keys

Bull Questar 310 (2101 Keyboard)

<i>Supported Interface Keys</i>		<i>Key Function</i>
NUL	00	RESERVED
SOH	01	RESERVED
STX	02	HOME
ETX	03	RESERVED
EOT	04	RESERVED
ENQ	05	RESERVED
ACK	06	RESERVED
BEL	07	ENTER
BS	08	BACKSPACE
HT	09	TAB
LF	0A	RESERVED
VT	0B	RESERVED
FF	0C	CARRIAGE RETURN
CR	0D	RESERVED
SO	0E	RESERVED
SI	0F	RESERVED
DLE	10	RESERVED
DC1	11	RESERVED
DC2	12	RESERVED
DC3	13	F1
DC4	14	F2
NAK	15	F3
SYN	16	F4
ETB	17	F5
CAN	18	F6
EM	19	F7
SUB	1A	F8
ESC	1B	ESCAPE
FS	1C	F9
GS	1D	F10
RS	1E	F11
US	1F	F12

Interface Keys

Supported Interface Keys

Bull Questar 310 (3105 Keyboard)

<i>Supported Interface Keys</i>	<i>Key Function</i>
NUL 00	RESERVED
SOH 01	ENTER
STX 02	HOME
ETX 03	RESERVED
EOT 04	RESERVED
ENQ 05	RESERVED
ACK 06	RESERVED
BEL 07	ENTER
BS 08	BACKSPACE
HT 09	TAB
LF 0A	LINE FEED
VT 0B	RESERVED
FF 0C	RETURN
CR 0D	RESERVED
SO 0E	RESERVED
SI 0F	RESERVED
DLE 10	RESERVED
DC1 11	RESERVED
DC2 12	RESERVED
DC3 13	F1
DC4 14	F2
NAK 15	F3
SYN 16	F4
ETB 17	F5
CAN 18	F6
EM 19	F7
SUB 1A	F8
ESC 1B	ESCAPE
FS 1C	F9
GS 1D	F10
RS 1E	F11
US 1F	F12

Interface Keys

Supported Interface Keys

Falco 5220

<i>Supported Interface Keys</i>		<i>Key Function</i>
NUL	00	RESERVED
SOH	01	ENTER
STX	02	PF1
ETX	03	PF2
EOT	04	PF3
ENQ	05	F11
ACK	06	F12
BEL	07	NEW LINE/RETURN
BS	08	PF4
HT	09	TAB
LF	0A	F13
VT	0B	F14
FF	0C	REMOVE
CR	0D	NEW LINE/RETURN
SO	0E	INSERT
SI	0F	CURSOR UP
DLE	10	CURSOR LEFT
DC1	11	CURSOR DOWN
DC2	12	CURSOR RIGHT
DC3	13	BACKSPACE
DC4	14	PRINT
NAK	15	F15
SYN	16	F1
ETB	17	F2
CAN	18	F3
EM	19	F4
SUB	1A	F5
ESC	1B	F6
FS	1C	F7
GS	1D	F8
RS	1E	F9
US	1F	F10

Interface Keys

Supported Interface Keys

Telex (all models) with 88 key keyboards

<i>Supported Interface Keys</i>	<i>Key Function</i>
NUL 00	RESERVED
SOH 01	ENTER
STX 02	PF10
ETX 03	PF11
EOT 04	PF12
ENQ 05	RESERVED
ACK 06	RESERVED
BEL 07	NEW LINE
BS 08	FIELD FORWARD
HT 09	FIELD FORWARD
LF 0A	RESERVED
VT 0B	FIELD FORWARD
FF 0C	DELETE
CR 0D	NEW LINE
SO 0E	INSERT
SI 0F	ERASE
DLE 10	ERROR RESET
DC1 11	RESERVED
DC2 12	PRINT
DC3 13	BACKSPACE
DC4 14	BACK FIELD
NAK 15	RESERVED
SYN 16	PF1
ETB 17	PF2
CAN 18	PF3
EM 19	PF4
SUB 1A	PF5
ESC 1B	PF6
FS 1C	PF7
GS 1D	PF8
RS 1E	PF9
US 1F	HOME

Interface Keys

Supported Interface Keys

DEC VT 510/520/525 PC style keyboard

<i>Supported Interface Keys</i>	<i>Key Function</i>
NUL 00	RESERVED
SOH 01	ENTER (KP)
STX 02	CAPS LOCK
ETX 03	RESERVED
EOT 04	RESERVED
ENQ 05	RESERVED
ACK 06	RESERVED
BEL 07	CR/ENTER
BS 08	RESERVED
HT 09	TAB
LF 0A	RESERVED
VT 0B	TAB
FF 0C	DELETE
CR 0D	CR/ENTER
SO 0E	INSERT
SI 0F	ESCAPE
DLE 10	F11
DC1 11	HOME
DC2 12	PRINT
DC3 13	BACKSPACE
DC4 14	BACK TAB
NAK 15	F12
SYN 16	F1
ETB 17	F2
CAN 18	F3
EM 19	F4
SUB 1A	F5
ESC 1B	F6
FS 1C	F7
GS 1D	F8
RS 1E	F9
US 1F	F10


Notes...

Notes:

The space below may be used for notes. ...

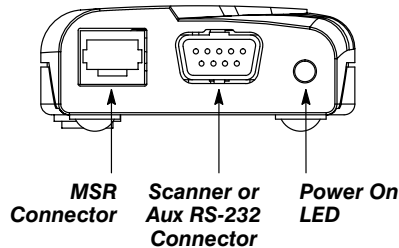


Product Specifications

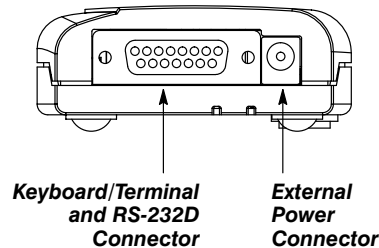
<i>Parameter</i>	<i>Specification</i>
Dimensions Weight Height Length Width	4 ounces (113.4 g) 1.2 inches (3.0 cm) 3.3 inches (8.3 cm) 2.9 inches (7.3 cm)
Enclosure Color	ABS Plastic, UL 94 V-0 flame rating Pantone #413C, IBM Pearl White
Operating Voltage	+5 VDC \pm 5%, 350 mA or greater. Supplied from terminal or optional regulated power supply +5 VDC  Ground
Power Consumption	100 mA, typical
Temperature Ranges	Operating 32° F to +104° F (-0C to +40C) Storage -40° F to +158° F (-40C to +70C)
Humidity	0 to 95% non-condensing
Mechanical Shock	12 drops from 6 feet (1.8m) to concrete
ESD Sensitivity	17.5 kV to any external surface
Reliability	MTBF = 227,000 hrs.

Connectors & Pinouts

Front View



Back View



MSR Connector

The MSR connector accepts undecoded digital signals from a one, two, or three track, bidirectional magnetic stripe reader. The input data is interpreted according to the ANSI standard formats shown in the charts below.

The decoder will beep once after valid magnetic stripe input. If there is no audio or visual indication after a scan, the input is invalid. Refer to the Troubleshooting section (page NO TAG) for help. Pinouts are shown on the next page.

Track 1 Record Formats	
Max. Record Length = 79 Char.	
Length	Name of Field
1	Start Character (%)
1	Format Character
13 or 16	Primary Acct Number
1	Field Separator (^)
2–26	Cardholder Name
1	Field Separator (^)
4	Card Expiration Date
*	Service Code
*	PIN Verification Field
*	Discretionary Data
*	VISA Reserved †
1	Stop Character (?)
1	LRC Character
* The length of these fields is card issuer dependent.	
† This is always the last 11 positions of Track 1, excluding the end sentinel and Longitudinal Redundancy Check character.	

Track 2 Record Formats	
Max. Record Length = 40 Char.	
Length	Name of Field
1	Start Character (;)
13 or 16	Primary Acct Number
1	Field Separator (=)
4	Card Expiration Date
*	Service Code
*	PIN Verification Field
*	Discretionary Data
1	Stop Character (?)
1	LRC Character
*The length of these fields is card issuer dependent.	

Track 3 Record Formats	
Max. Record Length = 107 Char.	
Length	Name of Field
1	Start Character (;)
2	Format Character
Up to 19	Primary Acct Number
1	Field Separator (=)
Up to 49	Use & Security Data
Up to 33	Additional Data
1	End Character (?)
1	LRC Character

Connectors & Pinouts

MSR Connector: RJ-45 8 Pin Modular	
Pin	Function
1	Ground
2	Mag clock 3
3	VCC (+ 5V)
4	Mag clock 2
5	Mag data 2
6	Mag data 3
7	Mag data 1
8	Mag clock 1

Scanner Connector: 9 Pin D Male	
Pin	Function
1	SOS input
2	TTL digital input (data in)
3	Good read output
4	No connection
5	Laser trigger input
6	Laser enable output
7	Ground
8	Shield ground
9	+ 5VDC (VCC)

Aux RS-232D (Port 1) Connector: 9 Pin D Male	
Pin	Function
1	RxD input
2	RTS output
3	No connection
4	No connection
5	CTS input
6	TxD output
7	Ground
8	Shield ground
9	No connection

Scanner / Auxiliary RS-232D (Port 1) Connector

The scanner / auxiliary RS-232D connector supports the attachment of a +5 volt non-decoded output scanner or an RS-232 auxiliary input device. The decoder is compatible with all Welch Allyn contact and non-contact bar code scanners, including bar code contact wands, lasers, and CCDs. The decoder will beep once after valid scanner or auxiliary device input. Three beeps indicate an invalid auxiliary device input. Pinouts are shown above.

Note: Switching from scanner to RS-232D input requires cable part number 42205531-xx. Turn the unit off, then on again after changing the input device.

Connectors & Pinouts

Keyboard /Terminal and RS-232D (Port 2) Connector: DB-15 Pin Female

Pin	Function
1	Ground
2	+ 5V from terminal
3	RxD input (RS-232)
4	CTS input (RS-232)
5	Keyboard wedge data (Input)
6	Keyboard wedge clock (Input)
7	No connection
8	Keyboard IRQ (Data General interface)
9	No connection
10	Reserved
11	TxD output (RS-232)
12	RTS output (RS-232)
13	Keyboard wedge terminal data (Output)
14	Keyboard wedge terminal clock (Output)
15	Terminal IRQ

Keyboard / Terminal and RS-232D (Port 2) Connector

The decoder can output data to keyboard wedge point-of-sale terminals, CRT terminals, and personal computers. The decoder also provides direct RS-232D output.

Terminal selection may be programming using Section 2, the Quick Start Menu. Output data can be configured for your application by using the programming menu, Sections 3 through 5 (Serial Interface, General Operating, and Symbology Menus). Pinouts are shown above.

Maintenance

The Keyboard Wedge / Commercial decoder provides reliable and efficient operation with a minimum of care. Although specific maintenance is not required, the following periodic checks insure dependable decoder operation:

Examining the Decoder Housing

Routinely examine the decoder housing for signs of damage. A damaged housing may cause the internal components to move and may result in a malfunctioning decoder.



Caution:

Do not submerge the decoder in water. The decoder's housing is not water-tight.

Never use solvents (alcohol or acetone) on the housing: solvents may damage the finish.

Inspecting Cords and Connectors

Inspect the decoder's interface cable and connector for wear or other signs of damage. A badly worn cable or damaged connector may interfere with decoder operation. Contact your Welch Allyn distributor for information about cable replacement.

Notes:

- Order replacement cables from Welch Allyn or from an authorized distributor.
- When ordering a replacement cable, specify the cable part number of the original interface cable.

Maintenance & Troubleshooting

Troubleshooting

The Hand-Held Decoded Output Laser decoder automatically performs self-tests whenever you turn it on. If your decoder is not functioning properly, review the following Troubleshooting Guide to try to isolate the problem.

Troubleshooting Guide

Is the power on?

If the power on LED on the front panel isn't illuminated, check that:

- ❶ the cable is connected properly.
- ❷ the host system power is on (if external power isn't used).

Is the decoder having trouble decoding your bar codes?

If the decoder isn't decoding bar codes well, check that the bar codes:

- ❶ aren't smeared, rough, scratched, or exhibiting voids.
- ❷ aren't coated with frost or water droplets on the surface.
- ❸ are enabled in the decoder or the scanner the decoder is connected to.

Is the bar code displayed but not "entered"?

The bar code is displayed on the host device correctly, but you still have to press a key to enter it (*the Enter/Return key or the Tab key, for example*).

You need to program a suffix.

Programming a suffix enables the decoder to output the scanned bar code *plus* the key you need (such as a "CR," carriage return) to enter the bar code into your application. (See *Suffix Selection in Section 3, Serial Interface Menu.*)

Maintenance & Troubleshooting

Does the decoder read your bar code incorrectly?

If the decoder reads a bar code (*one beep for a good read*), but the bar code is not displayed correctly on the host screen:

- 1 The decoder may not be programmed for the appropriate terminal interface.

Example: You scan "12345" and the host displays "@es%."

Reprogram the decoder with the correct "Plug and Play" or Terminal Selection bar code (see *Section 2, Quick Start Menu*).

- 2 The decoder may not be programmed to output your bar code properly.

Example: You scan "12345" and the host displays "A12345B."

Reprogram the decoder with the proper Symbology selections (see *Section 5, Symbology Menu*).

The decoder won't read your bar code at all?

If the decoder will not read your bar code:

- 1 Try scanning the Sample Bar Codes (*found near the end of the User's Guide*).

If the decoder reads the Sample Bar Codes, check that your bar code is readable. (See *"Is the decoder having trouble reading your bar codes" on the previous page.*)

Verify that your bar code symbology is enabled. (See *Sections 5, Symbology Menu.*)

If the decoder does not read the Sample Bar Codes either, continue to #2, below...

- 2 If the decoder won't read the Sample Bar Codes either:

Verify that the bar code symbologies are enabled. (See *Sections 5, Symbology Menu.*)

Scan the "Default All..." bar code on each symbology menu page in *Section 5* to enable most symbologies. (*MSI and Plessey will have to be enabled individually, as they are defaulted Off.*)

Maintenance & Troubleshooting

To Reset Factory Settings

If you aren't sure *what* programming options have been set up in your decoder, or you've changed some options and now want the factory settings restored, see the Main Menu Selections in Section 2, Quick Start Menu, and scan the **Factory Default Settings** bar code.

If All Else Fails...

If you are still experiencing problems,
call your Distributor or Welch Allyn:

Phone: 315-685-2476
(8 a.m. to 5:00 p.m. EST)

Fax: 315-685-4960

Web Site: dcd.welchallyn.com

*(For more information on Customer Support
or Warranty information, see the two sections
following this one.)*



Obtaining Factory Service

Welch Allyn provides service for all its products through a service center located at its manufacturing facilities in Skaneateles, New York. To obtain warranty or non-warranty service, return the unit to Welch Allyn (postage paid) with a copy of the dated purchase record attached.

In the United States, please contact the Welch Allyn Product Service Department at the address/telephone number listed below to obtain a Return Material Authorization number (RMA #).

Main Office

Welch Allyn, Inc.

Data Collection Division
4619 Jordan Road
P.O. Box 187
Skaneateles Falls, New York 13153-0187

General Inquiries

Telephone: (315) 685-8945
Fax: (315) 685-3172

Product Service Department

Telephone: (315) 685-4278 or 685-4360
Fax: (315) 685-4156

For service in Europe, please contact your Welch Allyn representative (at address below) or your local distributor.

European Office

Welch Allyn, Ltd.

Block 1, Bracken Business Part
Sandyford,
Co Dublin
Ireland

Telephone: Int+353-1216-0070
Fax: Int+353-1295-6353

For service in Asia, please contact your Welch Allyn representative (at address below) or your local distributor.

Asia / Pacific Office

Welch Allyn

10/F Tung Sun Commercial Centre
194-200 Lockhart Road
Wanchai, Hong Kong

Telephone: Int+852-2511-3050 or 2511-3132
Fax: Int+852-2511-3557

Customer Support

United Kingdom Offices

Dallam Court Dallam Lane
Warrington, Cheshire WA2 7LT
England

Telephone: Int+44 1925 240055
Fax: Int+44 1925 631280

Help Desk

If, after reviewing the Troubleshooting Guide (page 9–2), you still need assistance installing or troubleshooting your decoder, please call your Distributor or the Help Desk:

Telephone: (315) 685–2476 (8am to 5:00pm EST)

Limited Warranty

Welch Allyn, Inc., hereby warrants its products to be functional and free from manufacturing defects at the time of delivery. Welch Allyn, Inc. further warrants that it will replace or repair, at its option, any unit that fails to perform according to Welch Allyn's published specifications during a period of two (2) years from the time of shipment by Welch Allyn, Inc. to the user at the time it is purchased from any of Welch Allyn Inc.'s Authorized Distributors. Any attempt on the part of the user to disassemble or service the equipment shall void the warranty.

The warranty does not apply to product which have been damaged by improper handling, shipping, or misuse. The warranty does not apply, if, in the sole opinion of Welch Allyn, Inc., the unit has been damaged by accident, misuse, neglect, improper shipping and handling. Since the unit is sensitive to static, the responsibility to protect it from static damage is solely that of the user. The warranty is valid only if the unit or decoder has not been tampered with or serviced by any party unauthorized by Welch Allyn, Inc. as a repair facility.

THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE BUYER ACKNOWLEDGES THAT NO OTHER REPRESENTATIONS WERE MADE OR RELIED UPON WITH RESPECT TO THE QUALITY AND FUNCTION OF THE BOARD AND DECODER HEREIN SOLD.

In no event shall Welch Allyn, Inc. or its resellers be liable for any loss, inconvenience or damage whether direct, incidental, consequential or otherwise, and whether caused by negligence or other fault resulting from the breach of any express warranty except as set forth herein. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state or country to country.

Glossary

Alphanumeric: A character set which includes the letters A–Z and the numbers 0–9.

Autodiscrimination: The ability of the bar code scanner or decoder to recognize and correctly decode more than one symbology.

Bar: The darker element of a printed bar code symbol.

Character Set: The characters available for encoding in a particular automatic identification technology.

Check Character: A character that is included in the data message and is used as a mathematic check to ensure that the message has been decoded properly.

Concatenation: Data from two or more symbols are joined and interpreted as a single message.

Continuous Code: A bar code symbology where all spaces within the symbol are parts of characters, with no intercharacter gap. Interleaved 2 of 5 is an example of a continuous code.

Discrete Code: A bar code symbology where the spaces between characters (intercharacter gap) are not part of the symbol. Code 39 is an example of a discrete code.

Edge Roughness: A printing defect whereby the bar-space transitions are not smooth over the height of the symbol.

Edge-to-Edge Symbology: A bar code symbology which can be decoded using edge-to-similar-edge measurements, such as from the start of one bar to the start of another or from the end of one bar to the end of another. Such symbologies are relatively insensitive to uniform bar growth or shrinkage. Code 93, Code 128, Code 49, and Code 16K are examples of edge-to-edge symbologies.

Element: In a bar code symbol, a single bar or space.

Hexadecimal: A character set which includes the numbers 0–9 and letters A–F.

Intercharacter Gap: The space between two adjacent bar code characters in a discrete code. For example, the space between characters in Code 39.

Mil: One-thousandth of an inch (0.001")

Misread: The message transmitted by the scanner or decoder does not agree with the message encoded in the bar code symbol.

Numeric: A character set which includes only the numbers 0–9.

Quiet Zone: A clear space preceding the start character of a bar code symbol and following the stop character. Sometimes called the "Clear Area."

Show-Through: An undesirable effect caused by labels that are not sufficiently opaque. If a dark background shows through a label, the scanner may not be able to distinguish spaces from bars.

Glossary

Space: The lighter element of a printed bar code symbol, usually formed by the background between the bars.

Spot: The undesirable presence of ink or dirt in a space.

Start / Stop Character: Special bar code patterns that indicate the ends of the symbol as well as the scan direction. The start character is usually at the left side of a horizontally oriented symbol. The stop character is usually at the right side of a horizontally oriented symbol.

Symbology: Bar code “languages.” Codabar, UPC, MSI, and Plessey are examples of symbologies. More in-depth explanations of these symbologies and others may be found in this menu opposite the programming pages, or in the corresponding AIM symbology specifications.

Two-Width Symbology: A bar code symbology whose bars and spaces are characterized as “wide” or “narrow.” These symbologies aren’t as space-efficient as edge-to-edge symbologies, but may provide better performance when printing accuracy is poor. Codabar, Code 39, and Interleaved 2 of 5 are examples of two-width symbologies.

Uniform Bar Growth / Shrinkage: The printer consistently produces bars which are over-inked or under-inked and thus are too wide or too narrow.

Void: The undesirable absence of ink in a bar.

Wide-to-Narrow Ratio: In a two-width symbology, the width of a wide element divided by the width of a narrow element.

X Dimension: The nominal dimension of the narrow bars and spaces in a bar code symbol.

Note: Some of the above glossary terms are from AIM’s “Guidelines on Symbology Identifiers,” Copyright © AIM[®]USA 1993 (printed by permission).

Related Publications

Automatic ID Resource Catalog

AIM USA Publications
634 Alpha Drive
Pittsburgh, PA 15238–2802
Fax: (412) 963–8753
Phone: (412) 963–8588

Reading Between the Lines: An Introduction to Bar Code Technology

Craig K. Harmon and Russ Adams
© 1989 Helmers Publishing Inc.
174 Concord Street
Peterborough, NH 03458
(603) 924–9631

The Bar Code Book: Reading, Printing, and Specification of Bar Code Symbols

Roger C. Palmer
© 1989 Helmers Publishing Inc.
174 Concord Street
Peterborough, NH 03458
(603) 924–9631

Handbook of Bar Coding Systems

Harry E. Burke
© 1984 NCR Corporation
Van Nostrand Reinhold Company, Inc.
115 Fifth Avenue
New York, New York 10003

Another excellent reference is the “Ten Commandments of Bar Coding” by Richard B. Meyers from Automatic ID News, June 1994, page 6–11.

Notes...

Notes:

The space below may be used for notes. ...



Default Chart

Output Interface Menu Defaults

The following chart lists the factory default Output Interface Menu settings (indicated by a “★” on the programming menu pages).

<i>Parameter Name</i>	<i>Default Setting</i>	<i>Page Reference</i>
Prefix / Suffix Selections		
Prefix	None	Page 3–3
Suffix	None	Page 3–3
General Output Selections		
Good Read Beep Volume	High	Page 3–7
Good Read Beep Tone	High	Page 3–7
<i>Output Delays</i>		
Intercharacter Delay	00 (x5mS)	Page 3–9
Interfunction Delay	00 (x5mS)	Page 3–9
Intermessage Delay	00 (x5mS)	Page 3–9
Laser Time-out	Enable	Page 3–9
Laser Voting	Level One	Page 3–9
Code I.D. Transmit	Disable	Page 3–11
Scanner Function Code Transmit	Enable	Page 3–11
RS-232D Function Code Transmit	Enable	Page 3–11
Mag Stripe Reader Selections		
S / S Character Transmit	Enable	Page 3–13
LRC Character Transmit	Enable	Page 3–13
MSR Track 1	Enable	Page 3–13
MSR Track 2	Enable	Page 3–13
MSR Track 3	Enable	Page 3–13
MSR Track 1 Pre-Edited Data	No default	Page 3–15
MSR Track 2 Pre-Edited Data	No default	Page 3–15
Key Code Assignment	Carriage Return (CR) = 0D	Page 3–17
Driver’s License I.D.	Disable	Page 3–17
Country Code Selections		
Foreign Keyboards	United States	Page 3–19

Default Chart

Output Interface Menu Defaults, continued

The following chart lists the factory default Output Interface Menu settings (indicated by a “★” on the programming menu pages).

<i>Parameter Name</i>	<i>Default Setting</i>	<i>Page Reference</i>
Keyboard Selections		
Keyboard Style	Style A, Primary	Page 3–21
Keyboard Style: Direct Connect	Disable	Page 3–21
Keyboard Style: Num-Pad Mode	Disable	Page 3–21
Keyboard Style: Turbo Mode	Disable	Page 3–21
Data Formatter Selections		
Data Formatter	On	Page 3–23
Require Data Format?	Don't Require	Page 3–23

Serial Communications Menu Defaults

The following chart lists the factory default Serial Communications Menu settings (indicated by a “★” on the programming menu pages).

<i>Parameter Name</i>	<i>Default Setting</i>	<i>Page Reference</i>
RS-232D Port 1 (Auxiliary Data Input)		
CTS Check	Disable	Page 4–3
Baud Rate	2400	Page 4–3
Word Length Data Bits	7 Data Bits	Page 4–5
Word Length Stop Bits	1 Stop Bit	Page 4–5
Parity	Even	Page 4–5
Protocol	Record	Page 4–7
Data Character	00, 0D, 00, or 04 †	Page 4–7
RS-232D Port 2 (Data Transmission)		
CTS Check	Disable	Page 4–9
Baud Rate	9600	Page 4–9
Word Length Data Bits	7 Data Bits	Page 4–11
Word Length Stop Bits	1 Stop Bit	Page 4–11
Parity	Even	Page 4–11
† Default depends on Data Character. Refer to page reference for more information.		

Default Chart

Symbology Menu Defaults – Industrial

The following chart lists the factory default Industrial Symbology Menu settings (indicated by a “★” on the programming menu pages).

<i>Parameter Name</i>	<i>Default Setting</i>	<i>Page Reference</i>
Codabar Selections		
Codabar	On	Page 5–3
Start / Stop Characters	Don't Transmit	Page 5–3
Message Length	Min = 1, Max = 60	Page 5–3
Check Character	Don't Verify	Page 5–5
Check Character	Don't Transmit	Page 5–5
Concatenation	Disable	Page 5–5
Concatenation	Don't Require	Page 5–5
Code 39 Selections		
Code 39	On	Page 5–7
Start / Stop Characters	Don't Transmit	Page 5–7
Full ASCII	Enable	Page 5–7
Append	Disable	Page 5–7
Message Length	Min = 1, Max = 48	Page 5–9
Check Character	Don't Verify	Page 5–9
Check Character	Don't Transmit	Page 5–9
Code 93 Selections		
Code 93	On	Page 5–11
Message Length	Min = 1, Max = 64	Page 5–11
Interleaved 2 of 5 Selections		
Interleaved 2 of 5	On	Page 5–13
Message Length	Min = 4, Max = 80	Page 5–13
Check Digit	Don't Verify	Page 5–13
Check Digit	Don't Transmit	Page 5–13
6, 14 & 16 Only	Disable	Page 5–13
Code 2 of 5 Selections		
Code 2 of 5	On	Page 5–15
Message Length	Min = 4, Max = 48	Page 5–15

Default Chart

Symbology Menu Defaults - Industrial, continued

The following chart lists the factory default Industrial Symbology Menu settings (indicated by a "★" on the programming menu pages).

<i>Parameter Name</i>	<i>Default Setting</i>	<i>Page Reference</i>
Matrix 2 of 5 Selections		
Matrix 2 of 5	On	Page 5-15
Message Length	Min = 1, Max = 80	Page 5-15
Code 11 Selections		
Code 11	On	Page 5-17
Check Digits Required	2 Check Digits	Page 5-17
Message Length	Min = 4, Max = 80	Page 5-17
Code 128 Selections		
Code 128	On	Page 5-17
Message Length	Min = 1, Max = 80	Page 5-17

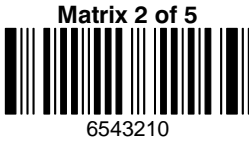
Default Chart

Symbology Menu Defaults – Retail

The following chart lists the factory default Retail Symbology Menu settings (indicated by a “★” on the programming menu pages).

<i>Parameter Name</i>	<i>Default Setting</i>	<i>Page Reference</i>
EAN Selections		
EAN / JAN 13	On	Page 5–19
EAN / JAN 8	On	Page 5–19
Check Digit	Transmit	Page 5–19
EAN Addenda Selections		
EAN Addenda	Don't Require	Page 5–21
Two Digit Addenda	Disable	Page 5–21
Five Digit Addenda	Disable	Page 5–21
Addenda Format	Space	Page 5–21
UPC Selections		
UPC A	On	Page 5–23
UPC D	On	Page 5–23
UPC E0	On	Page 5–23
UPC E1	Off	Page 5–23
Check Digit	Transmit	Page 5–23
Number System	Transmit	Page 5–23
Version E Expand	Don't Expand	Page 5–23
UPC Addenda Selections		
UPC Addenda	Don't Require	Page 5–25
Two Digit Addenda	Disable	Page 5–25
Five Digit Addenda	Disable	Page 5–25
Addenda Format	Space	Page 5–25
MSI Selections		
MSI	Off	Page 5–27
Message Length	Min = 4, Max = 48	Page 5–27
Plessey Selections		
Plessey	Off	Page 5–27
Message Length	Min = 4, Max = 48	Page 5–27

Sample Bar Codes

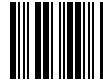


† The default is normally "Off" for this symbology.

Programming Chart



0



1



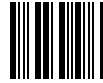
2



3



4



5



6



7



8



9



A



B



C



D



E



F



2010/UG Rev F

WelchAllyn[®]

Data Collection Division
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