

## **FCC Compliance**

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.

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# Features

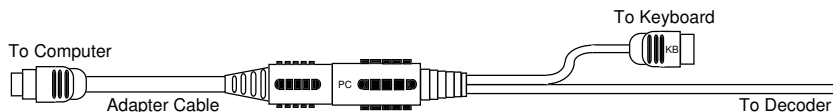
The ID Innovations Incorporated Bar Code decoder represents the state of the art in keyboard wedge and bar code decoding. The Bar Code decoder is based on ID Innovations Incorporated's True Wedge technology. The advances that True Wedge technology provide are found in enhanced functionality, such as keyboard configurable parameters, self cloning, and auto Caps Lock detection. Other features of the ID Innovations Incorporated Bar Code decoder include:

- ✦ Works with Wand, CCD, Laser, and Slot (Badge) readers
- ✦ Simple installation through the keyboard interface - sends card data as keystrokes
- ✦ Superior keyboard wedge interface - NOVELL compatible - auto Caps Lock detection ensures that the data always appears on the computer just the way it is encoded in the bar code
- ✦ Simple programming from your keyboard - no need to flip switches or scan bar codes!
- ✦ Over 180 configurable options
- ✦ Automatically clones decoders in under 10 seconds - over 300 decoders per hour
- ✦ Auto detection of the type of computer (PC, XT, AT, PS/2, and XWindow terminals with a PC compatible keyboard interface)
- ✦ Can be used with or without the keyboard
- ✦ Supports over twenty different keyboard country layouts
- ✦ Map bar code data to any key on the keyboard
- ✦ Supports editing, operations include (Insert, Stripping, Filtering, Convert Case)
- ✦ Macro support, replace a string in the bar code with another
- ✦ Programmable preamble, postamble, and termination strings
- ✦ READ/NO-READ indicators (buzzer and bright tri-color LED)
- ✦ Superior reading performance utilizing advanced decoding algorithms
- ✦ Extended ASCII support for Code 128 bar codes
- ✦ Low power consumption
- ✦ Compact size

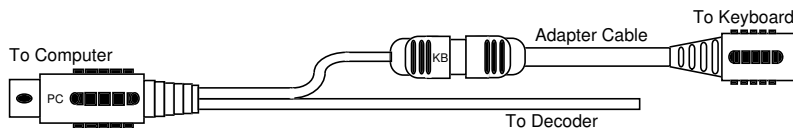
# Installation

The decoder is installed between the computer and the keyboard. The keyboard cable is plugged into the decoder using the connector labeled "KB". The decoder is then connected to the computer using the connector labeled "PC". In order to properly install the decoder on your computer system, you must use the supplied adapter cable. This adapter cable is a short 6 inch cable with a 5 pin DIN socket on one end, and a 6 pin Mini-DIN plug at the other end. Depending upon your computer system, the adapter cable will be connected to either the keyboard side or the computer side of the decoder.


For example, If your computer system uses a keyboard with a 6 pin Mini-DIN connector, then the adapter cable is connected to the cable on the decoder labeled "PC".



If your computer system uses a keyboard with a 5 pin DIN connector, then the adapter cable is connected to the cable on the decoder labeled "KB".



The decoder can be mounted using the Velcro® strip included.


 *Note: It is recommended that you mount the decoder to avoid damaging the cable. Frequent bending of the cable can break the wires within it.*

## Installing a scanner

The decoder is designed to work with any of the following standard devices:

- Wands (visible light and infrared)
- Charge-coupled device (CCD) scanners
- 5-Volt laser scanners
- ID Badge/SLOT readers

Simply plug your bar code scanner into the 9 pin connector at the front of the bar code decoder. If you are using a scanner that has a squeeze release 9 pin connector, the connector will snap when it is securely in place. To disconnect the scanner you will need to squeeze the sides of the plug and pull it out.

 *Note: If you have a scanner that has a screw on 9 pin connector, remove the two screws from the decoder's connector and remove the metal fitting. Install the hex screws provided to complete the conversion to a standard 9 pin connector. When installing your scanner, shut your PC off, plug the scanner into the decoder, and turn your PC on.*

Now that you have installed the scanner on the decoder you may begin scanning bar codes.

## Operating The Bar Code decoder

The decoder is designed to read all of the standard bar code symbologies. The method you use for reading a bar code will depend on the scanner you are using. If you are using a Wand reader, swipe the pen over the entire length of the bar code. While swiping the wand through the bar code, the LED will turn off, indicating that it is going active. Once you have completed swiping the entire bar code, the decoder will then set the LED to either green (for good read) or red (for no read). In addition to the green LED on a good read, the decoder will sound the buzzer to give you an audible indication that the card was successfully read, and the data is being transmitted to the computer. If you are using a Laser/CCD device, point the scanning window towards the bar code and press the trigger on the Laser/CCD device to begin scanning. If you are using a SLOT (Badge) reader, swipe your bar coded card through the SLOT (Badge) reader to begin scanning.

## Using The Setup Mode To Configure The Decoder

The decoder can be configured through the use of the computer keyboard. The decoder must be installed and powered to enter the setup mode. Once the unit is powered up, press and hold the following keys:

**Left-Control, Caps Lock, Right-Shift, and Backspace<sup>1</sup>**

- or -

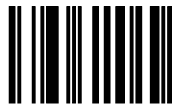
**Left-Control, F2, Right-Shift, and Backspace<sup>2</sup>**

Once you release the keys, the decoder will produce a series of beeps, change the LED to orange and display a message similar to the following on your display:

F1-F10=Options, Use ARROW KEYS to Toggle/Move, ESC=Exit

To ensure that you have enough space on your command line for the decoder options to be displayed, we recommend that you either have your command prompt located at the root directory, or that you load an editor with a new file. This will allow the decoder to use most of the characters on your computer display. For example, in Windows load Windows Write and in OS/2 load the Notepad program.

 *Note: In addition to using your keyboard to enter Setup Mode, you may scan the bar code below.*



Enter Setup Mode

<sup>1</sup>This is a generic key sequence used to configure any ID Innovations' keyboard wedge device.


<sup>2</sup>This key sequence is used to configure ID Innovations' keyboard wedge Bar Code decoders only.


Setup is separated into many different categories ranging from "Interface" to "Cloning". The following is a list of function keys and the setup category for which they apply:

Key	Category	Options
F1	Interface	Transmit Speed CTRL/Special Char Delay Wedge Interface Send Numerics As Keyboard Country Wand Emulation Setup Mode Lockout
F2	Decoders/Scanner	Decoders On/Off Code 39 UPC/EAN/JAN UPC/EAN/JAN Supplements Code 128 Interleaved 2 of 5 Industrial 2 of 5 Codabar Code 93 MSI/Plessey Code 11 Laser/CCD Other
F3	Editing	Edit #1 - Edit #10
F4	Macros/Special Keys	Macro #1 - Macro #10 Keys
F5	Strings	String #1 - String #10
F6	Reserved	
F7	Buzzer/LED	Power Up Beep Good Read Beep Tone Beep Duration No Read LED Delay LED Power Save Mode
F8	Status/Diagnostics	Firmware Version and Release Date Laser/CCD Scanner Testing Keyboard Information Show Scan Codes
F9	Cloning	Lockout Cloned Reader Setup Mode Press ENTER To Begin Cloning
F10	Reset All Defaults	Reset All Defaults?

For those categories which have more than one option, the UP and DOWN arrow and ENTER keys are used to move from one option to the next. In addition to the UP and DOWN arrow keys, the CTRL UP and CTRL DOWN arrow keys are used to move to the bottom and the top of the list. The following is a list of all special editing keys and a description of their function:

Key	Description
Left Arrow, Right Arrow	Toggles through the settings for the current option.
Up & Down Arrow	Moves from one option to the previous or next within the category or group.
CTRL Up & Down Arrow	Moves to the top or bottom of the category or group.
Home & End	Moves to the beginning or end of an input field.
ALT Backspace	Toggles the output mode during configuration, between destructive backspace and non-destructive backspace. Defaults to non-destructive backspace.
CTRL + Keypad	Increases transmit speed during setup.
CTRL - Keypad	Decreases transmit speed during setup.
CTRL F7	Test the current Beep Tone and Beep Duration
CTRL F10	Resets the current option to the default setting.
SHIFT F10	If you are in a category with groups (F2-F5), SHIFT F10 resets the current group. If you are in a category without groups (F1, F7-F10), SHIFT F10 resets the entire category.
ALT F10	Resets all options in current category to default settings.
CTRL Escape	Exit configuration, saving changes (Permanent).
SHIFT Escape	Exit configuration, saving changes (Temporary).
ALT Escape	Exit configuration, without saving changes.

 *Note: If you experience some character loss during setup, you may press the CTRL-(Keypad Minus) key to slow character transmission. To speed up character transmission, press the CTRL-(Keypad Plus) key.*

 *Note: After 5 minutes of inactivity (no key presses) the decoder will exit setup mode and save all changes.*

The following sections document all of the setup mode categories and the groups and individual options within each category. Next to the option name is the default setting for the option. In addition to the default setting, the keys that are used for editing are listed to the right of the option name. The meaning of each of the key icons is as follows:

Key Icon	Meaning
<>	The left and right arrow keys scroll through available settings for the option.
ALT	An ALT keypad sequence may be used to enter characters for the setting.
ASCII	All ASCII data is valid for the option. All characters are available for entry into the field.
GROUP	Used to indicate that the option represents a group of sub-options. The left and right arrows scroll through the list of option groups. After selecting the option group, up and down arrows are used to configure the sub-options.
OPERATION	Used to indicate that the option represents an edit operation and that all of the options listed below it are specific to that operation until the next operation is defined.
STRING TYPE	Used to indicate that the option represents a string type and that all of the options listed below it are specific to that type of string until the next string type is defined.

## Interface

F1

### Transmit Speed, 0=Fastest: 0

&lt;&gt;

The Transmit speed option is used to control the speed at which bar code data is sent to the computer. In some instances the decoder may overrun the computer if this setting is too fast, or if the computer is busy performing some lengthy operation. This option ranges from 0 to 99, with 0 being the fastest and 99 being the slowest.

### CTRL/Special Char Delay (milliseconds): 50


&lt;&gt;

The CTRL/Special Char Delay is the amount of time the decoder will delay after sending a special character or a CTRL key sequence before sending the next character of data. This option ranges from 0 to 255 milliseconds. The characters that are affected by this option are those that are non-printable. For a complete list of the characters, refer to *Appendix-B, Special Characters Table*. This feature is used to prevent overrunning the keyboard buffer when sending function keys and other non-data characters.

### Wedge Interface: AUTODETECT

&lt;&gt;

This option is used to control the operating mode of the keyboard interface on the decoder. The default for this option is AUTODETECT. The decoder can operate in one of two modes, wedge mode and passthru mode. In wedge mode (AUTODETECT, AT, PC/XT), the decoder monitors all data transmitted between the keyboard and the host computer allowing the decoder to operate without a keyboard and to be moved between computers without needing to reconfigure the **Wedge Interface**. In passthru mode, the decoder does not monitor any data transmitted between the keyboard and the host computer. In this mode, you may have to reconfigure the **Wedge Interface** when moving the decoder from one computer to another. To enter setup when the **Wedge Interface** is in passthru mode, you must scan the **Enter Setup Mode** bar code on page 5.

 *Note: If the Wedge Interface is incorrectly configured, scan the following Interface Reset (PC/KBD) bar code to temporarily reset the interface to AUTODETECT mode. Enter setup mode and then reconfigure the Wedge Interface to the proper setting.*



Interface Reset (PC/KBD)

### Send Numerics As: MAIN KEYBOARD KEYS

&lt;&gt;

This option is used to indicate which numeric keys you want the decoder to use when transmitting bar code data to the computer. If this option is set to MAIN KEYBOARD KEYS, then all numeric data will be sent as numerics on the main keyboard. If this option is set to NUMERIC KEYPAD KEYS, then all numerics will be sent from the numeric keypad.

### Keyboard Country: UNITED STATES

&lt;&gt;


The Keyboard Country option is used to inform the decoder of the keyboard country that should be used when transmitting bar code data. The decoder supports 26 different settings (PC compatible layout) for the Keyboard Country, ranging from "Belgium" to "Universal". It is important to note that changing this setting and not changing your computer to the same setting will result in garbled or lost characters. The settings for this option are as follows:

BELGIUM


GERMANY

SLOVENIA

BRAZIL	HUNGARY	SPAIN
CANADIAN-FRENCH	ITALY	SWEDEN
CROATIA	LATIN AMERICA	SWITZERLAND (FRENCH)
CZECHOSLOVAKIA (CZECH)	NETHERLANDS	SWITZERLAND (GERMAN)
CZECHOSLOVAKIA (SLOVAK)	NORWAY	UNITED KINGDOM
DENMARK	POLAND	UNIVERSAL
FINLAND	PORTUGAL	UNITED STATES
FRANCE	SERBIA/YUGOSLAVIA	

 *Note: If you set the **Keyboard Country** to BELGIUM, FRENCH, or GERMANY, then numeric data is sent faster by setting the **Send Numerics As:** option to NUMERIC KEYPAD KEYS.*

The UNIVERSAL Keyboard Country is not actually a country setting. In this mode, the decoder sends most data to the computer as a series of ALT keypad sequences. For example, to transmit an "A" to the computer, the decoder performs the ALT 065 key sequence on the numeric keypad. It is important to note that this method of communication may not work with your computer hardware and software. It is possible that no data will appear on your computer if you set the decoder to output in this mode. If this is the case, you will have to reenter the setup mode and press F1, ALT F10 and CTRL ESC. This will reset the Interface category and reset the Keyboard Country back to the UNITED STATES default setting.

 *Note: In order for the **Keyboard Country** changes to take effect, you must exit the setup mode and save changes.*

#### Wand Emulation: OFF <>

When this option is enabled and no keyboard is present, the decoder will output all data in Wand Emulation mode. In this mode of operation, the decoder can be plugged into a Wand port of another bar code decoder and the data is transmitted as a Code 128 bar code. Plugging the decoder into a PC with a keyboard attached places the reader in keyboard wedge mode. For information on cable pin-outs see Appendix-C.


#### Setup Mode Lockout: OFF <>

This option is used to allow you to lock out the setup mode until the unit is turned off and then powered back on. Once this option is activated and a bar code is read, the setup mode will be locked out. This feature is used to prohibit unauthorized changes from being made to the reader's setup parameters.

## Decoders/Scanner F2

### Select Option Group: DECODERS ON/OFF <> GROUP

This group of options is used to quickly enable and disable individual bar code decoders. Cursoring down into this group and using the left and right arrows, allows you to enable and disable each of the following decoders: CODE 39, UPC-A, UPC-E, EAN-13/JAN-13, EAN-8/JAN-8, UPC/EAN/JAN Supplements, CODE 128, INTERLEAVED 2 OF 5, INDUSTRIAL 2 OF 5, CODABAR, CODE 93, MSI/PLESSEY, and CODE 11.

 *Note: The UPC/EAN/JAN Supplements decoder can be configured to read No supplement, 2 digit supplements only, 5 digit supplements only, or 2 and 5 digit supplements.*

### Select Option Group: CODE 39 GROUP

Select this option group to modify the individual settings for the CODE 39 decoder. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

#### CODE 39: Decoder: ON <>

Use this option to enable or disable the CODE 39 decoder. The default for this option is ON.

#### CODE 39: Full ASCII: OFF <>

The CODE 39 symbology by default can encode the 26 upper case letters (A-Z), 10 digits (0-9), and 7 special characters (SPACE - . + \$ / %). Full ASCII CODE 39 is an extension of CODE 39 that can encode the full 128 ASCII character set. This is accomplished by using two character sequences of characters from the standard CODE 39 character set. Enabling this option will allow the decoder to properly read Full ASCII CODE 39 bar codes. With this option disabled (Default), Full ASCII bar codes cannot be read properly.

 *Note: You cannot properly read both CODE 39 and Full ASCII CODE 39 bar codes at the same time. Since Full ASCII CODE 39 is an extension of standard CODE 39, the decoder must be used to read one or the other at any given time.*



**CODE 39: Check Digit: OFF** <>


For applications requiring enhanced data security, a Modulo 43 check digit can be used on CODE 39 and Full ASCII CODE 39 bar codes. When used, the check digit immediately follows the last data character. Use this option to enable or disable the check digit requirement for CODE 39 bar codes. When the decoder decodes a CODE 39 bar code it will calculate the Modulo 43 check digit and verify it against the decoded data.


**CODE 39: Send Check Digit: OFF** <>

Some applications may require that you use a check digit in the bar code for security but do not require the check digit be transmitted to the computer. Use this option to have the decoder either send the check digit to the computer or remove the check digit from the transmitted data.

**CODE 39: Append Mode: OFF** <>

It is sometimes advantageous to break up long messages into multiple, shorter symbols. If the first data character of a CODE 39 bar code is a SPACE, the decoder may be programmed to append the data following the space to a concatenation buffer. Each time a CODE 39 bar code with a leading space is read, the decoder will sound two short beeps to indicate it has appended the bar code to the concatenation buffer. This operation continues for all successive CODE 39 bar codes with a leading SPACE. When a CODE 39 bar code is read which does not contain a leading SPACE, the contents are appended to the buffer, the entire buffer is transmitted, and the buffer is cleared. Use this option to enable the message append mode of the decoder.

 *Note: If you scan a bar code from a different symbology the data in the concatenation buffer will be discarded and the bar code just read will be output.*

 *Note: If you scan a bar code that begins with a - (dash), the concatenation buffer will be cleared and no data will be output.*

**CODE 39: Secondary Start/Stop Char: NONE** <>

Standard CODE 39 uses the \* character as its primary start/stop characters. If you are attempting to read CODE 39 bar codes that use another type of Start/Stop character, use this option to specify the character. The default for this option is NONE, which allows the CODE 39 decoder to only read the standard CODE 39 bar codes. You may choose between \$, %, /, and + as secondary Start/Stop characters.

**CODE 39: Send Start/Stop Chars: OFF** <>

Use this option to configure the decoder to transmit the CODE 39 Start/Stop characters to the computer. The default for this option is OFF, to not transmit Start/Stop characters.

**CODE 39: Maximum Length: 49** <>**CODE 39: Minimum Length: 0** <>

Use these options to configure the minimum and maximum lengths of CODE 39 bar codes that can be read. If you configure the Maximum Length to 10 characters and the Minimum Length to 5 characters, the decoder will not read CODE 39 bar codes with less than 5 characters and more than 10 characters. When calculating length requirements, do not include any Start/Stop characters.

**CODE 39: Type ID: a DEC 97 HEX 61** <>**ASCII ALT**


Use this option to configure the Type ID for the CODE 39 bar code. If the Full ASCII option is enabled then this Type ID is used as the Type ID for Full ASCII CODE 39 bar codes. Sometime it may be necessary to transmit a Type ID for the type of the bar code that was just read, this will allow a system to determine what to do with the data for the bar code. For example, CODE 39 bar codes could be used for employee identification purposes and UPC bar codes could be used for product codes. The Type ID for CODE 39 and UPC bar codes would be different allowing the system to automatically use the information in the appropriate modules. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.

**CODE 39: Control Character Override: OFF** <>

Use this option to disable all Edits, Macros, Strings, and the Type ID for CODE 39 bar codes that contain control characters. When this option is enabled and a CODE 39 containing control characters is read, the special key macros are applied, and the data is transmitted to the computer. With this option enabled, you can use bar codes with special control characters to control the computer system without going through the standard editing procedures.

**CODE 39: Laser/CCD Redundancy: OFF** <>

Use this option to control the Laser/CCD redundancy for CODE 39 bar codes. With this option enabled, a CODE 39 bar code must be read twice in a row when using a Laser or CCD device, to be considered a good read. This option provides additional security when scanning poorly printed or damaged CODE 39 bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

**Select Option Group: UPC/EAN/JAN****GROUP**

Select this option group to modify the individual settings for the UPC/EAN/JAN decoders. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

**UPC/EAN/JAN: UPC-A Decoder: ON** <>**UPC/EAN/JAN: UPC-E Decoder: ON** <>**UPC/EAN/JAN: EAN-13/JAN-13 Decoder: ON** <>**UPC/EAN/JAN: EAN-8/JAN-8 Decoder: ON** <>

Use these options to enable or disable the UPC-A, UPC-E, EAN-13/JAN-13, and EAN-8/JAN-8 decoders. The default for these options is ON.

**UPC/EAN/JAN: Expand UPC-E To UPC-A: OFF** <>

Use this option to expand UPC-E bar codes into their UPC-A equivalents. UPC-E is an eight digit variation of the UPC symbology. The first digit in a UPC-E represents the number system, the last digit indicates the check digit, and the next to the last digit is the type of compression used or compression character. The UPC-E bar code can be expanded into a UPC-A bar code by using the Expansion Table in Appendix-A, see page 36.

**UPC/EAN/JAN: Expand UPC-A To EAN-13/JAN-13: OFF** <>

UPC-A is a subset of the EAN-13 bar code, a UPC-A bar code is the same as an EAN-13 bar code with the first character set to 0. Enabling this option will insert a leading 0 at the beginning of all UPC-A bar codes.

**UPC/EAN/JAN: Send UPC-A Number System Char: ON** <>

Use this option to enable or disable the transmission of the UPC-A number system character. The number system character is the first character in the UPC-A bar code.

**UPC/EAN/JAN: Send UPC-E Number System Char: ON** <>

Use this option to enable or disable the transmission of the UPC-E number system character. The number system character is the first character in the UPC-E bar code.

**UPC/EAN/JAN: Send UPC-A Check Digit: ON** <>

Use this option to enable or disable the transmission of the UPC-A check digit. The check digit is the twelfth character in the UPC-A bar code.

**UPC/EAN/JAN: Send UPC-E Check Digit: ON** <>

Use this option to enable or disable the transmission of the UPC-E check digit. The check digit is the eighth character in the UPC-E bar code.

**UPC/EAN/JAN: Send EAN-13/JAN-13 Country Code: ON** <>

Use this option to transmit the country code of an EAN-13/JAN-13 bar code. The country code represents the country of origin and is encoded as the first two characters in an EAN/JAN bar code.

**UPC/EAN/JAN: Send EAN-8/JAN-8 Country Code: ON** <>

Use this option to transmit the country code of an EAN-8/JAN-8 bar code. The country code represents the country of origin and is encoded as the first two characters in an EAN/JAN bar code.

**UPC/EAN/JAN: Send EAN-13/JAN-13 Check Digit: ON** <>**UPC/EAN/JAN: Send EAN-8/JAN-8 Check Digit: ON** <>

Use these options to enable or disable the transmission of the EAN-13/JAN-13 and EAN-8/JAN-8 check digits. With this option set to ON the check digit is transmitted to the computer. In an EAN-13/JAN-13 bar code the check digit is the thirteenth character, in an EAN-8/JAN-8 the check digit is the eighth character in the bar code.

**UPC/EAN/JAN: Convert EAN-13 To ISBN: OFF**

&lt;&gt;

Use this option to control how EAN-13 bar codes that begin with 978 are handled. With this option enabled, an EAN-13 bar code beginning with 978 will have the 978 and the EAN-13 check digit removed. The ISBN check digit is calculated using the remaining numbers, then the ISBN number along with check digit is then transmitted to the computer. If the EAN-13 bar code contains a supplement and the ISBN supplement decoder is enabled, the supplement and supplement separator string will be transmitted immediately following the ISBN check digit.

**UPC/EAN/JAN: UPC-A Type ID: b DEC 98 HEX 62**

ASCII ALT

&lt;&gt;

**UPC/EAN/JAN: UPC-E Type ID: c DEC 99 HEX 63**

ASCII ALT

&lt;&gt;

**UPC/EAN/JAN: EAN-13/JAN-13 Type ID: e DEC 101 HEX 65**

ASCII ALT

&lt;&gt;

**UPC/EAN/JAN: EAN-8/JAN-8 Type ID: d DEC 100 HEX 64**

ASCII ALT

&lt;&gt;

**UPC/EAN/JAN: ISBN Type ID: f DEC 102 HEX 66**

ASCII ALT


&lt;&gt;

Use these options to configure the Type IDs for the UPC-A, UPC-E, EAN-13/JAN-13, and EAN-8/JAN-8 bar codes. Sometime it may be necessary to transmit a Type ID for the type of the bar code that was just read, this will allow a system to determine what to do with the data for the bar code. For example, CODE 39 bar codes could be used for employee identification purposes and UPC bar codes could be used for product codes. The Type ID for CODE 39 and UPC bar codes would be different allowing the system to automatically use the information in the appropriate modules. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.

**UPC/EAN/JAN: Laser/CCD Redundancy: OFF**

&lt;&gt;

Use this option to control the Laser/CCD redundancy for UPC/EAN/JAN bar codes. With this option enabled, a UPC bar code must be read twice in a row when using a Laser or CCD device, to be considered a good read. This option provides additional security when scanning poorly printed or damaged bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

**Select Option Group: UPC/EAN/JAN SUPPLEMENTS**

GROUP

Select this option group to modify the individual settings for the UPC/EAN/JAN SUPPLEMENTS decoders. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

**UPC/EAN/JAN SUPPLEMENTS: Decoder: OFF**

&lt;&gt;

Use this option to configure the UPC/EAN/JAN supplements decoder. The supplements decoder can be configured to decode No Supplement (OFF), 2 digit, 5 digit, or 2 and 5 digit supplements. Use the left and right arrow keys to select the appropriate option for your application.

**UPC/EAN/JAN SUPPLEMENTS: UPC-A Supplements: OPTIONAL**

&lt;&gt;

**UPC/EAN/JAN SUPPLEMENTS: UPC-E Supplements: OPTIONAL**

&lt;&gt;

**UPC/EAN/JAN SUPPLEMENTS: EAN-13/JAN-13 Supplements: OPTIONAL**

&lt;&gt;

**UPC/EAN/JAN SUPPLEMENTS: EAN-8/JAN-8 Supplements: OPTIONAL**

&lt;&gt;

**UPC/EAN/JAN SUPPLEMENTS: ISBN Supplements: OPTIONAL**

&lt;&gt;

Use these options to configure the individual supplements decoders. The supplements decoder can be configured in one of the following modes:

**OPTIONAL** In this mode of operation the supplement is optional, allowing bar codes to be read with and without supplements.

**REQUIRED** In this mode the supplements are required, therefore no bar code of the specified type can be read without a supplement.

**OFF** In this mode bar codes of the specified type with and without supplements may be read, but no supplement data is transmitted to the computer.

 *Note: If the supplements decoder is configured to be OPTIONAL, it is possible to read a bar code that is printed with a supplement and not read the supplement.*

### UPC/EAN/JAN SUPPLEMENTS: Separator String:

ASCII

Enter up to 9 characters to be transmitted before any supplemental data in a UPC/EAN/JAN bar code. If you need to enter more than 9 characters of data you may use one of the Macros, see page 22, to expand the length of this string by embedding a character that would not normally appear in the bar code and then using a Macro to expand the character.

### Select Option Group: CODE 128

GROUP

Select this option group to modify the individual settings for the CODE 128 decoder. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

#### CODE 128: Decoder: ON

&lt;&gt;

Use this option to enable or disable the CODE 128 decoder. The default for this option is ON.

#### CODE 128: Field Separator: DEC 29 HEX 1D

ASCII ALT

This is the character that is output in place of the CODE 128 FNC 1 function character if the FNC 1 function character is not in the first or second character position in the bar code. The default for this character is DEC 29 HEX 1D, which is the ASCII group separator character GS.

#### CODE 128: Maximum Length: 164

&lt;&gt;

#### CODE 128: Minimum Length: 0

&lt;&gt;

Use these options to configure the minimum and maximum lengths of CODE 128 bar codes that can be read. If you configure the Maximum Length to 10 characters and the Minimum Length to 5 characters, the decoder will not read CODE 128 bar codes with less than 5 characters and more than 10 characters.

#### CODE 128: Type ID: g DEC 103 HEX 67

ASCII ALT

Use this option to configure the Type ID for the CODE 128 bar code. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.

#### CODE 128: UCC/EAN Output Prefix:

ASCII

When you scan a UCC/EAN Code 128 bar code, this string is inserted at the beginning of the bar code data. You may enter up to 3 characters of data, if you require a long string, you may use a Macro to expand this string, see page 22 for more information.

#### CODE 128: Control Character Override: OFF


&lt;&gt;

Use this option to disable all Edits, Macros, Strings, and the Type ID for CODE 128 bar codes that contain control characters. When this option is enabled and a CODE 128 containing control characters is read, the special key macros are applied, and the data is transmitted to the computer. With this option enabled, you can use bar codes with special control characters to control the computer system without going through the standard editing procedures.

#### CODE 128: Laser/CCD Redundancy: OFF

&lt;&gt;

Use this option to control the Laser/CCD redundancy for CODE 128 bar codes. With this option enabled, a CODE 128 bar code must be read twice in a row when using a Laser or CCD device, to be considered a good read. This option provides additional security when scanning poorly printed or damaged bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

### Select Option Group: INTERLEAVED 2 OF 5

GROUP

Select this option group to modify the individual settings for the INTERLEAVED 2 of 5 decoder. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

#### INTERLEAVED 2 OF 5: Decoder: ON

&lt;&gt;

Use this option to enable or disable the INTERLEAVED 2 of 5 decoder. The default for this option is ON.

**INTERLEAVED 2 OF 5: Check Digit: OFF** <>

For applications requiring enhanced data security, a check digit can be used on INTERLEAVED 2 of 5 bar codes. When used, the check digit immediately follows the last data character. Use this option to choose between the type of INTERLEAVED 2 of 5 check digit, select from **MOD 10**, **OPCC**, or **OFF** (None).

**INTERLEAVED 2 OF 5: Send Check Digit: OFF** <>

Some applications may require that you use a check digit in the bar code for security but do not require the check digit be transmitted to the computer. Use this option to have the decoder either send the check digit to the computer or remove the check digit from the transmitted data.

**INTERLEAVED 2 OF 5: Maximum Length: 100** <>**INTERLEAVED 2 OF 5: Minimum Length: 4** <>

Use these options to configure the minimum and maximum lengths of INTERLEAVED 2 of 5 bar codes that can be read. If you configure the Maximum Length to 10 characters and the Minimum Length to 5 characters, the decoder will not read INTERLEAVED 2 of 5 bar codes with less than 5 characters and more than 10 characters.

 *Note: The Maximum and Minimum Length options are ignored if you enable the **Fixed Length** option.*

**INTERLEAVED 2 OF 5: Fixed Length: OFF** <>

Use this option to configure the INTERLEAVED 2 of 5 decoder to read only fixed length bar codes. When this option is enabled the following two prompts (Fixed Length #1 and Fixed Length #2) are used to set the two different sizes of INTERLEAVED 2 of 5 bar codes that will be allowed.

**INTERLEAVED 2 OF 5: Fixed Length #1: 6** <>**INTERLEAVED 2 OF 5: Fixed Length #2: 14** <>


These options are used to define the Fixed Length requirements for INTERLEAVED 2 of 5 bar codes. These two options are only used if the **Fixed Length** option is set to ON.

**INTERLEAVED 2 OF 5: Type ID: i DEC 105 HEX 69** <>**ASCII ALT**

Use this option to configure the Type ID for the INTERLEAVED 2 of 5 bar code. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.

**INTERLEAVED 2 OF 5: Laser/CCD Redundancy: ON** <>

Use this option to control the Laser/CCD redundancy for INTERLEAVED 2 of 5 bar codes. With this option enabled, a INTERLEAVED 2 of 5 bar code must be read twice in a row when using a Laser or CCD device, to be considered a good read. This option provides additional security when scanning poorly printed or damaged bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

**Select Option Group: INDUSTRIAL 2 OF 5****GROUP**

Select this option group to modify the individual settings for the INDUSTRIAL 2 of 5 decoder. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

**INDUSTRIAL 2 OF 5: Decoder: ON** <>

Use this option to enable or disable the INDUSTRIAL 2 of 5 decoder. The default for this option is ON.


**INDUSTRIAL 2 OF 5: Start/Stop Characters: STANDARD (3 BAR)** <>

Use this option to configure the type of Start/Stop characters the Industrial 2 of 5 decoder will use when decoding Industrial 2 of 5 bar codes. You may choose from STANDARD (3 BAR) Start/Stop characters and 2 BAR Start/Stop characters.

 *Note: The 2 BAR Start/Stop version of Industrial 2 of 5 is also referred to as Airline Code.*

**INDUSTRIAL 2 OF 5: Maximum Length: 49** <>**INDUSTRIAL 2 OF 5: Minimum Length: 2** <>

Use these options to configure the minimum and maximum lengths of INDUSTRIAL 2 of 5 bar codes that can be read. If you configure the Maximum Length to 10 characters and the Minimum Length to 5 characters, the decoder will not read INDUSTRIAL 2 of 5 bar codes with less than 5 characters and more than 10 characters.

 *Note: The Maximum and Minimum Length options are ignored if you enable the **Fixed Length** option.*

**INDUSTRIAL 2 OF 5: Fixed Length: OFF** <>

Use this option to configure the INDUSTRIAL 2 of 5 decoder to read only fixed length bar codes. When this option is enabled the following two prompts (Fixed Length #1 and Fixed Length #2) are used to set the two different sizes of INDUSTRIAL 2 of 5 bar codes that will be allowed.

**INDUSTRIAL 2 OF 5: Fixed Length #1: 6** <>**INDUSTRIAL 2 OF 5: Fixed Length #2: 10** <>


These options are used to define the Fixed Length requirements for INDUSTRIAL 2 of 5 bar codes. These two options are only used if the **Fixed Length** option is set to ON.

**INDUSTRIAL 2 OF 5: Type ID: j DEC 106 HEX 6A** <>**ASCII ALT**

Use this option to configure the Type ID for the INDUSTRIAL 2 of 5 bar code. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.

**INDUSTRIAL 2 OF 5: Laser/CCD Redundancy: ON** <>

Use this option to control the Laser/CCD redundancy for INDUSTRIAL 2 of 5 bar codes. This option provides additional security when scanning poorly printed or damaged bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

**Select Option Group: CODABAR****GROUP**

Select this option group to modify the individual settings for the CODABAR decoder. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

**CODABAR: Decoder: ON** <>

Use this option to enable or disable the CODABAR decoder. The default for this option is ON.

**CODABAR: Send Start/Stop Chars: OFF** <>

Use this option to configure the decoder to transmit the CODABAR Start/Stop characters to the computer. The default for this option is OFF, to not transmit Start/Stop characters.

**CODABAR: Check Digit: OFF** <>

For applications requiring enhanced data security, a check digit can be used on CODABAR bar codes. When used, the check digit immediately follows the last data character. Use this option to choose between the type of CODABAR check digit, select from **MOD 16**, **MOD 10 (CLSI)**, or **OFF** (None).

**CODABAR: Send Check Digit: OFF** <>

Some applications may require that you use a check digit in the bar code for security but do not require the check digit be transmitted to the computer. Use this option to have the decoder either send the check digit to the computer or remove the check digit from the transmitted data.

**CODABAR: CLSI Formatting: OFF** <>

Use this option to format 14 digit CODABAR bar codes using the Columbia Library System spacing. The CLSI spacing inserts a space between the first and second, fifth and sixth, and tenth and eleventh character positions in the bar code.

**CODABAR: Allow Wide Intercharacter Gaps: OFF** <>

Allows reading CODABAR bar codes with large intercharacter gaps that do not meet the CODABAR specification.

**CODABAR: Concatenate: OFF** <>

The American Blood Commission (ABC) adopted a convention for concatenating data from adjacent symbols. This convention, often referred to as "ABC Codabar," uses a "D" stop character to indicate that data from that symbol should be concatenated with data from an adjacent symbol with a "D" start character. Use this option to enable or disable the ABC convention.

**CODABAR: Maximum Length: 62** <>**CODABAR: Minimum Length: 1** <>

Use these options to configure the minimum and maximum lengths of CODABAR bar codes that can be read. If you configure the Maximum Length to 10 characters and the Minimum Length to 5 characters, the decoder will not read CODABAR bar codes with less than 5 characters and more than 10 characters. When calculating length requirements, do not include any Start/Stop characters.


**CODABAR: Type ID: k DEC 107 HEX 6B** <>

ASCII ALT

Use this option to configure the Type ID for the CODABAR bar code. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.

**CODABAR: Laser/CCD Redundancy: OFF** <>

Use this option to control the Laser/CCD redundancy for CODABAR bar codes. This option provides additional security when scanning poorly printed or damaged bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

**Select Option Group: CODE 93** <>

GROUP


Select this option group to modify the individual settings for the CODE 93 decoder. Once you have selected this option group, you may cursor down to configure each of the following decoder options.


**CODE 93: Decoder: ON** <>

Use this option to enable or disable the CODE 93 decoder. The default for this option is ON.

**CODE 93: Append Mode: OFF** <>

It is sometimes advantageous to break up long messages into multiple, shorter symbols. If the first data character of a CODE 93 bar code is a SPACE, the decoder may be programmed to append the data following the space to a concatenation buffer. Each time a CODE 93 bar code with a leading space is read, the decoder will sound two short beeps to indicate it has appended the bar code to the concatenation buffer. This operation continues for all successive CODE 93 bar codes with a leading SPACE. When a CODE 93 bar code is read which does not contain a leading SPACE, the contents are appended to the buffer, the entire buffer is transmitted, and the buffer is cleared. Use this option to enable the message append mode of the decoder.

 *Note: If you scan a bar code from a different symbology the data in the concatenation buffer will be discarded and the bar code just read will be output.*

 *Note: If you scan a bar code that begins with a - (dash), the concatenation buffer will be cleared and no data will be output.*

**CODE 93: Maximum Length: 81** <>**CODE 93: Minimum Length: 0** <>

Use these options to configure the minimum and maximum lengths of CODE 93 bar codes that can be read. If you configure the Maximum Length to 10 characters and the Minimum Length to 5 characters, the decoder will not read CODE 93 bar codes with less than 5 characters and more than 10 characters.

**CODE 93: Type ID: h DEC 104 HEX 68** <>

ASCII ALT


Use this option to configure the Type ID for the CODE 93 bar code. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.

**CODE 93: Control Character Override: OFF** <>

Use this option to disable all Edits, Macros, Strings, and the Type ID for CODE 93 bar codes that contain control characters. When this option is enabled and a CODE 93 containing control characters is read, the special key macros are applied, and the data is transmitted to the computer. With this option enabled, you can use bar codes with special control characters to control the computer system without going through the standard editing procedures.

**CODE 93: Laser/CCD Redundancy: OFF** <>

Use this option to control the Laser/CCD redundancy for CODE 93 bar codes. With this option enabled, a CODE 93 bar code must be read twice in a row when using a Laser or CCD device, to be considered a good read. This option provides additional security when scanning poorly printed or damaged bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

**Select Option Group: MSI/PLESSEY****GROUP**

Select this option group to modify the individual settings for the MSI/PLESSEY decoder. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

**MSI/PLESSEY: Decoder: ON** <>

Use this option to enable or disable the MSI/PLESSEY decoder. The default for this option is ON.

**MSI/PLESSEY: Check Digit: MOD 10** <>

MSI/PLESSEY bar codes can contain a few different combinations of check digits. Use this option to configure the combinations of check digits, choose from "**MOD 10**", "**MOD 10, MOD 10**", or "**MOD 11, MOD 11**".

**MSI/PLESSEY: Send Check Digit: OFF** <>

Use this option to have the decoder either send the **FIRST**, **FIRST & SECOND**, or No (**OFF**) check digit to the computer.

**MSI/PLESSEY: ISBN Decoder: OFF** <>

Use this option to enable decoding of 11 digit MSI/Plessey bar codes that contain a 10 digit ISBN number with an additional MOD 11 check digit.

**MSI/PLESSEY: Maximum Length: 63** <>**MSI/PLESSEY: Minimum Length: 3** <>

Use these options to configure the minimum and maximum lengths of MSI/PLESSEY bar codes that can be read. If you configure the Maximum Length to 10 characters and the Minimum Length to 5 characters, the decoder will not read MSI/PLESSEY bar codes with less than 5 characters and more than 10 characters.

 *Note: The Maximum and Minimum Length options are ignored if you enable the **Fixed Length** option.*

**MSI/PLESSEY: Fixed Length: OFF** <>

Use this option to configure the MSI/PLESSEY decoder to read only fixed length bar codes. When this option is enabled the following two prompts (Fixed Length #1 and Fixed Length #2) are used to set the two different sizes of MSI/PLESSEY bar codes that will be allowed.

**MSI/PLESSEY: Fixed Length #1: 6** <>**MSI/PLESSEY: Fixed Length #2: 14** <>

These options are used to define the Fixed Length requirements for MSI/PLESSEY bar codes. These two options are only used if the **Fixed Length** option is set to ON.


**MSI/PLESSEY: Type ID: I DEC 108 HEX 6C** <>  
**ASCII ALT****MSI/PLESSEY: ISBN Type ID: f DEC 102 HEX 66** <>  
**ASCII ALT**

Use these options to configure the Type IDs for MSI/PLESSEY and MSI/PLESSEY ISBN bar codes. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.



**MSI/PLESSEY: Laser/CCD Redundancy: ON** <>

Use this option to control the Laser/CCD redundancy for MSI/PLESSEY bar codes. This option provides additional security when scanning poorly printed or damaged bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

**Select Option Group: CODE 11****GROUP**

Select this option group to modify the individual settings for the CODE 11 decoder. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

**CODE 11: Decoder: ON** <>

Use this option to enable or disable the CODE 11 decoder. The default for this option is ON.

**CODE 11: Check Digit: MOD 11** <>

MSI/PLESSEY bar codes can contain a few different combinations of check digits. Use this option to configure the combinations of check digits, choose from "**MOD 11**" or "**MOD 11, MOD 11**".

**CODE 11: Send Check Digit: OFF** <>

Use this option to have the decoder either send the **FIRST**, **FIRST & SECOND**, or No (**OFF**) check digit to the computer.

**CODE 11: Maximum Length: 83** <>**CODE 11: Minimum Length: 2** <>


Use these options to configure the minimum and maximum lengths of CODE 11 bar codes that can be read. If you configure the Maximum Length to 10 characters and the Minimum Length to 5 characters, the decoder will not read CODE 11 bar codes with less than 5 characters and more than 10 characters.

**CODE 11: Type ID: m DEC 109 HEX 6D** <>**ASCII ALT**

Use this option to configure the Type ID for the CODE 11 bar code. Type ID's can be transmitted as a prefix or a suffix to the bar code data, for more information see **OTHER: Send Bar Code Type ID** on page 18.

**CODE 11: Laser/CCD Redundancy: OFF** <>

Use this option to control the Laser/CCD redundancy for CODE 11 bar codes. This option provides additional security when scanning poorly printed or damaged bar codes.

 *Note: Using this option does not require you to physically read the same bar code twice to get a good read. The scanner continuously sweeps across the bar code the number of times necessary when this mode is enabled, therefore requiring no additional operator intervention.*

**Select Option Group: LASER/CCD****GROUP**


Select this option group to modify the individual settings for LASER/CCD operation. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

**LASER/CCD: Operating Mode: SINGLE SCAN** <>

The decoder can be set to operate in one of seven modes when used with a Laser/CCD scanner:

SINGLE SCAN	Once you press the trigger, the scanner is activated until a bar code is read, the Laser/CCD Timeout is reached, or the trigger is released.
SINGLE SCAN NO TRIGGER	Once you press the trigger, the scanner is activated until a bar code is read or the Laser/CCD Timeout is reached. Releasing the trigger does not end scanning.
MULTI-SCAN	Once you press the trigger, the scanner is activated and will continue to read bar codes until the trigger is released or the Laser/CCD Timeout is reached.
MULTI-SCAN NO TRIGGER	Once you press the trigger, the scanner is activated and will continue to read bar codes until the Laser/CCD Timeout is reached. Releasing the trigger does not end scanning.

CONTINUOUS SCAN	Once you press the trigger, the scanner is activated and will continuously scan and read bar codes. If the Laser/CCD that you are using has a thermal shutdown the device will pause scanning and resume scanning from time to time.
PULSE	Once you press the trigger, the scanner will activate and deactivate itself or pulse at regular intervals.

 *Note: When operating the Laser/CCD in modes other than the SINGLE SCAN mode, the **Duplicate Read Delay** controls the amount of time required between presentations of the bar code to be read.*

**LASER/CCD: Timeout (SEC): 2** <>

Use this option to control the amount of time the Laser/CCD will remain active after being activated until a bar code is read. This option is used in conjunction with the Laser/CCD **Operating Mode** option.

**LASER/CCD: Duplicate Read Delay (.1 SEC): 5** <>

Use this option to specify the amount of time that must pass before the same bar code can be presented to be read again. For example, if the **Operating Mode** is MULTI-SCAN and **Duplicate Read Delay** is 5, then after reading a bar code you must point the scanner away for 1/2 second before attempting to scan the same bar code again. Setting the Duplicate Read Delay to 0 will not allow duplicate bar codes to be read.

 *Note: When operating the Laser/CCD in SINGLE SCAN operating mode this option has no effect.*

**Select Option Group: OTHER** **GROUP**

Select this option group to modify the individual settings for the Quiet Zones, Reverse Image Decoding, and bar code Type IDs. Once you have selected this option group, you may cursor down to configure each of the following decoder options.

**OTHER: Quiet Zones: LARGE** <>

Use this option to configure all decoders to use LARGE or SMALL quiet zones. Quiet zones are the amount of space to both sides of the bar code. Generally the quiet zones should be no smaller than 10 times the narrow element size of the bar code.

**OTHER: Reverse Image Decoding: OFF** <>

Use this option to enable and disable reverse image decoding. Reverse image decoding is where the spaces are in printed in a darker color than the bars. This is the case when a bar code is etched into glass or printed on a film master. With this option enabled you may read both reverse image and normal image bar codes at the same time.



**OTHER: Send Bar Code Type ID: OFF** <>

Use this option to configure how the bar code Type IDs are transmitted to the computer. You may disable transmission, transmit them AS A SUFFIX or AS A PREFIX. If the Type ID is transmitted AS A PREFIX, the Type ID will appear before the bar code data, but after any PREAMBLE strings that you have defined. If this option is set to AS A SUFFIX the Type ID will appear after any bar code data including supplements but before any POSTAMBLE strings.

**Editing** **F3**

**Select Edit Number: 1** **GROUP**

The editing category is divided up into 10 different edit groups. Each edit group can contain a separate operation. When a bar code is decoded, the decoder will pass through each of the edits that have been defined and determine if it needs to be executed. Each of the edits are additive, the results of the previous edits can be modified by the next edit executed. For example if Edit #1 is defined to insert a leading zero and Edit #2 is defined to filter all leading zero and they are both defined to be active for CODE 39 bar codes of ANY size, the first edit will always be canceled out by the second. The first edit will insert the leading zero and the second will remove the leading zero.

**Edit #1: Operation: OFF** <>


The first step in defining an edit is setting the operation. You may choose from 9 different operations ranging from STRIP LEADING CHARACTERS to CONVERT TO LOWERCASE. Each operation is described below and all of its unique sub-options

are defined after each operation description. Every operation shares four common sub-options the **Active For**, **Bar Code Length**, **Bar Code Contains String**, and **String Found At** options.

### Edit #1: Active For: ALL BAR CODE TYPES <>

Use this option to specify the bar code types for which the edit is active. You may choose a specific symbology or you may choose to have the edit active for all bar code symbologies or all bar code symbologies always. For example, if you define an edit as Active For CODE 39 and you read a CODE 128 bar code, the edit will not be executed. The following is a more detailed description of each of the settings for this option:

ALL BAR CODE TYPES	Will activate the edit for all bar code types except when an edit is defined for the specific bar code type that was read. For example, if you have defined Edit #1 as Active For ALL BAR CODE TYPES and Edit #2 as Active For CODE 39 and you read a CODE 39 bar code, then Edit #2 will be executed and Edit #1 will be ignored.
ALL BAR CODE TYPES - ALWAYS	Will activate the edit for all bar code types, whether an edit was defined for the specific bar code type that was read or not. For example, if you defined Edit #1 as Active For ALL BAR CODE TYPES - ALWAYS and Edit #2 as Active For CODE 39 and you read a CODE 39 bar code, both Edit #1 and Edit #2 will be executed.
CODE 39, UPC-A, UPC-E, etc	Setting the Active For to a specific bar code symbology will activate the edit for bar codes that are read that match the symbology. If you define more than a single edit to be Active For the same bar code type, each edit is executed in turn. For example, if you define edits #1 and #2 as Active For CODE 39 and you read a CODE 39 bar code, then Edit #1 is executed and then Edit #2 is executed.

 *Note: If you define an edit as Active For a specific symbology it will override any edits that are Active For ALL BAR CODE TYPES.*

### Order of Precedence

When performing edits the decoder will follow a specific order of precedence. The decoder will make multiple passes through the defined edits.

On the first pass, the decoder will search for any edits that match the current symbology (CODE 39, UPC-A, UPC-E, etc). If it finds an edit that matches the symbology it will execute it and then proceed to the next. Therefore if Edit #2, Edit #4, and Edit #6 are all setup for a CODE 39 symbology and you read a CODE 39 bar code, the order of precedence is #2, #4, and #6.

If no symbology specific edits are defined for the bar code type just read, the decoder will make a second pass looking for any edits that are Active For ALL BAR CODE TYPES. If Edit #1 and Edit #3 are defined as Active For ALL BAR CODE TYPES and you read a CODE 128 bar code and no edits are defined as Active For CODE 128, the order of precedence is #1 and then #3.


The decoder will then make a final pass on the edits looking for any edits that are defined as Active For ALL BAR CODE TYPES - ALWAYS. For example, if you define Edit #5 and Edit #7 as Active For ALL BAR CODE TYPES - ALWAYS and you read a CODE 39 bar code, the decoder will make the first two passes on the edits as required and will then execute #5 and #7.

The following table is an example of the order of precedence that the decoder will execute the edits. The Edit # column is the number of the edit in the decoder. The Active For column is the setting for the Active For option for the edit. The CODE 39 and CODE 128 columns represent the order that the decoder will execute the edits when CODE 39 and CODE 128 bar codes are read respectively, those marked with NA are not executed.

Edit #	Active For	CODE 39	CODE 128
1	ALL BAR CODE TYPES	NA	1
2	CODE 39	1	NA
3	ALL BAR CODE TYPES - ALWAYS	4	3
4	ALL BAR CODE TYPES	NA	2
5	CODE 39	2	NA
6	CODE 39	3	NA
7	ALL BAR CODE TYPES - ALWAYS	5	4

**Edit #1: Bar Code Length: ANY** <>

Use this option to define the length of the bar code for which the edit is active. Setting this option to 5 will make the edit for active for bar codes that have a length of 5 data characters. The default for this option is ANY, meaning that the length of the bar code is unimportant and that the edit will be executed for any length bar code.

 *Note: If you are entering a specific length requirement for your edit operation, the Length that you specify should be the original unmodified bar code length.*

**Edit #1: Bar Code Contains String:**

ASCII

Use this option to define a string that must be present in the bar code in order for the edit to be executed. Leaving this option blank will not require any string to be found in the bar code data. For example, entering 123 in this option will make the edit active only for bar codes that contain 123 in the bar code.

**Edit #1: String Begins At: ANY LOCATION** <>

This option is used in conjunction with the **Bar Code Contains String** option to define the beginning location of the string. Setting this option to ANY LOCATION will inform the decoder to search for the **Bar Code Contains String** anywhere in the bar code. You may define the location for the string to begin as an offset from the start of the bar code or an offset from the end of the bar code.

**Edit #1: Operation: STRIP LEADING CHARACTERS**

OPERATION

This operation allows you to strip leading characters from the beginning of the bar code. You define the number of characters to strip and the offset from the start of the bar code to begin stripping. The stripping will begin at the **Strip From Position** location and will continue to the right until the specified number of characters are stripped.

**Edit #1: # Of Leading Chars to Strip: 0** <>

Enter the number of leading characters that you would like to have stripped from the bar code.

**Edit #1: Strip From Position: START + 0** <>

Enter the offset from which to begin the stripping. START + 0, is used to indicate the very beginning of the bar code data. START + n will begin stripping after the nth character in the bar code, where n is a number between 1 and 255.

**Edit #1: Operation: STRIP TRAILING CHARACTERS**

OPERATION

This operation allows you to strip trailing characters from the end of the bar code. You define the number of characters to strip and the offset from the end of the bar code to begin the stripping. The stripping will begin at the **Strip From Position** location and will continue to the left until the specified number of characters are stripped.

**Edit #1: # Of Trailing Chars to Strip: 0** <>

Enter the number of trailing characters to be stripped from the bar code.

**Edit #1: Strip From Position: END - 0** <>

Enter the offset from which to begin the stripping. END - 0, is used to indicate the very end of the bar code data. END - n will begin stripping before the nth character from the end of the bar code, where n is a number between 1 and 255.

**Edit #1: Operation: FILTER LEADING CHARACTERS**

OPERATION

This operation is used to remove characters of a matching type from the beginning of bar code data. Where STRIP LEADING CHARACTERS is used to strip a specific number of characters from the bar code, FILTER LEADING CHARACTERS is used to remove matching characters from the bar code such as leading zeros.

**Edit #1: Leading Filter Character: DEC 0 HEX 00** <>

ASCII ALT

Enter the matching character to remove from the beginning of the bar code data. To remove leading zeros from the bar code data, set this option to **0 DEC 48 HEX 30**.

**Edit #1: Operation: FILTER TRAILING CHARACTERS**

OPERATION

This operation is used to remove characters of a matching type from the end of the bar code data. Where STRIP TRAILING CHARACTERS is used to strip a specific number of characters from the bar code, FILTER TRAILING CHARACTERS is used to remove matching characters from the bar code such as trailing spaces.

**Edit #1: Trailing Filter Character: DEC 0 HEX 00****ASCII ALT**

Enter the matching character to remove from the end of the bar code data. To remove trailing spaces from the bar code data, set this option to **DEC 32 HEX 20**.

**Edit #1: Operation: FILTER CHARACTERS**


This operation is used to remove matching characters from anywhere in the bar code data. For example if you wish to remove all dashes (-) from the data in a bar code, define an edit as FILTER CHARACTERS and enter the - **DEC 45 HEX 2D** as the **Filter Character**.

**Edit #1: Filter Character: DEC 0 HEX 00****ASCII ALT**

Enter the character to be filtered from the bar code data. Any occurrences of the **Filter Character** in the bar code will be removed no matter where they are located in the bar code.


**Edit #1: Operation: INSERT LEADING CHARACTER****OPERATION**

This operation is used to insert a character into a bar code at a specific offset from the start of the bar code. When you define this operation you must specify the position for insertion, the character to be inserted, and the direction from which the bar code was scanned.

 *Note: This operation when used in conjunction with a Macro, see page 22, can be used to insert a string into a bar code at a specific location. Simply insert a character that would not normally appear in the bar code and then use a Macro to replace the inserted character with the required string.*

**Edit #1: Insert Position: START + 0**

Enter the offset to indicate where you wish to insert the character. START + 0, is used to indicate the very beginning of the bar code data. START + n will insert the character after the nth character in the bar code, where n is a number between 1 and 255.


 *Note: When inserting characters in the bar code data, the Insert Position is always relative to the position of the unmodified data. If you insert a character at START + 1 and you wish to insert a character after the original 3rd character, you simply define another insert character operation at START + 3.*

**Edit #1: Insert Leading Character: DEC 0 HEX 00****ASCII ALT**

Enter the character to be inserted in the bar code, to insert a space enter **DEC 32 HEX 20** for this option. You may press the spacebar to enter the space or use the cursor keys to position to the space character.


**Edit #1: Scan Direction: ANY**

Select the direction from which the bar code must be scanned in order for the insertion to take place. To insert a character on bar codes that are read from the forward direction only, set this option to FORWARD.

 *Note: It does not make sense to use this option when the input device used for scanning is a Laser or CCD. This option is only useful for SLOT (Badge) or WAND readers.*


**Edit #1: Operation: INSERT TRAILING CHARACTER****OPERATION**

This operation is used to insert a character into a bar code at a specific offset from the end of the bar code. When you define this operation you must specify the position for insertion, the character to be inserted, and the direction from which the bar code was scanned.

 *Note: This operation when used in conjunction with a Macro, see page 22, can be used to insert a string into a bar code at a specific location. Simply insert a character that would not normally appear in the bar code and then use a Macro to replace the inserted character with the required string.*

**Edit #1: Insert Position: END - 0**

Enter the offset to indicate where you wish to insert the character. END - 0, is used to indicate the very end of the bar code data. END - n will insert the character before the nth character from the end of the bar code, where n is a number between 1 and 255.

 *Note: When inserting characters in the bar code data, the Insert Position is always relative to the position of the unmodified data. If you insert a character at END - 1 and you wish to insert a character before the original 5th character from the end, simply define another insert character operation at END - 5.*

### Edit #1: Insert Trailing Character: DEC 0 HEX 00


<>  
ASCII ALT

Enter the character to be inserted in the bar code, to insert a space enter **DEC 32 HEX 20** for this option. You may press the spacebar to enter the space or use the cursor keys to position to the space character.

### Edit #1: Scan Direction: ANY

<>

Select the direction from which the bar code must be scanned in order for the insertion to take place. To insert a character on bar codes that are read from the forward direction only, set this option to FORWARD.

 *Note: It does not make sense to use this option when the input device used for scanning is a Laser or CCD. This option is only useful for SLOT or WAND readers.*

### Edit #1: Operation: CONVERT TO UPPERCASE

OPERATION

This operation is used to convert the bar code data to all uppercase characters. There are no operation specific parameters other than the **Active For** and the **Bar Code Length** options.

### Edit #1: Operation: CONVERT TO LOWERCASE

OPERATION

This operation is used to convert the bar code data to all uppercase characters. There are no operation specific parameters other than the **Active For** and the **Bar Code Length** options.


## Macros/Special Keys

F4

### Select Macro Number: 1

<>  
GROUP

The Macros/Special Keys category is divided up into 10 different Macros and 1 Special Keys group. When a bar code is decoded, the decoder will pass through each of the Macros that have been defined and determine if it needs to be executed. Each of the Macros are additive, the results of the previous Macro can be modified by the next Macro executed. For example if Macro #1 is defined to replace "ABC" with "0123" and Macro #2 is defined to replace "0" with "12345" then the "0" in the replacement string for Macro #1 will be replaced with "12345" from Macro #2. For each Macro you need to define the bar code types for which the macro is active, the find string or text you are attempting to find, and the replacement text. The last group in the Macros/Special Keys category is the KEYS group, this group is used to define the characters in the bar code and the keys on the keyboard that they represent.

 *Note: You can use a Macro and the INSERT LEADING CHARACTER or INSERT TRAILING CHARACTER edits to insert a string anywhere in a bar code. Simply insert a character such as DEC 254 HEX FE in the bar code using the Edit and then use a Macro to replace DEC 254 HEX FE with a string.*

### Macro #1: Active For: NONE

<>

Use this option to specify the bar code types for which the Macro is active. You may choose a specific symbology or you may choose to have the macro active for all bar code symbologies or all bar code symbologies always. For example, if you define a macro as Active For CODE 39 and you read a CODE 128 bar code, the macro will not be executed. The following is a more detailed description of each of the settings for this option:


**ALL BAR CODE TYPES** Will activate the macro for all bar code types except when another macro is defined for the specific bar code type that was read. For example, if you have defined Macro #1 as Active For ALL BAR CODE TYPES and Macro #2 as Active For CODE 39 and you read a CODE 39 bar code, then Macro #2 will be executed and Macro #1 will be ignored.

**ALL BAR CODE TYPES - ALWAYS** Will activate the macro for all bar code types, whether another macro was defined for the specific bar code type that was read or not. For example, if you defined Macro #1 as Active For ALL BAR CODE TYPES - ALWAYS and Macro #2 as Active For CODE 39 and you read a CODE 39 bar code, both Macro #1 and Macro #2 will be executed.

**CODE 39, UPC-A, UPC-E, etc** Setting the Active For to a specific bar code symbology will activate the macro for bar codes that are read that match the symbology. If you define more than a single macro to be Active For the same bar code type, each macro is executed in turn. For example, if you define macros #1 and #2 as

---

Active For CODE 39 and you read a CODE 39 bar code, then Macro #1 is executed and then Macro #2 is executed.

 *Note: If you define a Macro as Active For a specific symbology it will override any macros that are Active For ALL BAR CODE TYPES.*

### **Order of Precedence**

When performing macros the decoder will follow a specific order of precedence. The decoder will make multiple passes through the defined macros. The manner by which the decoder executes each of the macros is identical to that of the Edits, for more information see **Order of Precedence** on page 19.

The following table is an example of the order of precedence for a sample set of Macros and the bar codes scanned. The Macro # column is the number of the macro in the decoder. The Active For column is the setting for the Active For option for the macro. The CODE 39 and CODE 128 columns represent the order that the decoder will execute the macros when CODE 39 and CODE 128 bar codes are read respectively, those marked with NA are not executed.

Macro #	Active For	CODE 39	CODE 128
1	ALL BAR CODE TYPES	NA	1
2	CODE 39	1	NA
3	ALL BAR CODE TYPES - ALWAYS	3	3
4	ALL BAR CODE TYPES	NA	2
5	CODE 39	2	NA
6	UPC-A	NA	NA
7	ALL BAR CODE TYPES - ALWAYS	4	4


**Macro #1: Find String:**

Enter the text that you are attempting to replace, any matches on this text in the bar code will be replaced with the **Replace With** string below. The text that you enter here must exactly match the text in the bar code in order for the **Replace With** string to be used. You may enter up to 15 characters of text.

 *Note: You may use any of the string special characters when entering the text for this field, for more information see Strings page 24. For example, to Match on DEC 254 HEX FE, enter #FE as the Find String.*

**Macro #1: Replace With:**

Enter the text that is to replace the **Find String** when found in the bar code. You may enter up to 15 characters of replacement text in the field. If this is not enough you may include a unique character at the end of the text and have the next macro replace the character with another 15 characters.

 *Note: You may use any of the string special characters when entering the text for this field, for more information see Strings page 24.*

**Select Macro Number: KEYS****GROUP**

This group is not really a macro but a list of keys on the keyboard, and the data in the bar codes that are used to represent the keys. You will need to modify these fields any time you want to include a function key or special key on your keyboard in a bar code that you create. For example, if you want to create a bar code that when scanned will press the F1 key on the keyboard, you can set a single character to map to the F1 key on the keyboard. Any occurrence of the character in the bar code will be replaced with the F1 key when the data in the bar code is transmitted to the computer. This group contains a list of all the Function Keys, the special keys like HOME, PAGEUP, PAGEDOWN, CTRL, SHIFT, ALT, and many more. Simply cursor down to the key that you want to encode in a bar code and enter the character in the bar code that you want to have mapped to the key selected.

**Strings****F5****Select String Number: 1****GROUP**


The Strings category is divided into 10 different string groups. Each string group can be defined as a 32 character TERMINATION, PREAMBLE, or POSTAMBLE string. Each of the strings has a **Type**, **Active For**, **Scan Direction**, and **String**. When editing the **String** option, you may use any of the standard keys on your keyboard. The HOME and END keys will take you to the beginning and end of the string. In order to allow you to embed any key on the keyboard as part of the string, the decoder uses certain ASCII characters as special function characters. Special function characters are followed by a two digit HEX value that specifies the attributes of the function. These characters and their function are as follows:

- \$ Specifies special characters in the string. A special character is a character that performs a special operation or is a special key on the keyboard, such as a numeric keypad key. For example, to include an F1 key in a string, enter \$80 in the string. For a list of all of the HEX values and the keys that they represent, refer to *Appendix-B, Special Characters Table*.
- # Specifies an ALT keypad sequence. This is useful when you wish to transmit a graphic character to the computer. For example, to send ASCII 65, HEX 41 as an ALT keypad sequence, enter #41 sequence in the string. For a list of all of the HEX values and the keys that they represent, refer to *Appendix-B, ALT Keypad Table*.
- % Specifies international characters for the current **Keyboard Country**. International keys are keys such as the ACCENT key. These keys are specific to the **Keyboard Country** that is currently being used. The only time that you must use this key sequence to enter an international character is when your current **Keyboard Country** setting does not match the one that you wish to use to generate the character. If there are international characters in an input string and you



change the **Keyboard Country**, the decoder will convert the international characters to % sequences for display purposes when configuring the unit.

- \* Indicates a delay in the string. This is useful if you desire the decoder to delay momentarily while transmitting the string to the computer. The HEX number that follows the \* in the string is the number of hundredths of a second to delay before resuming transmission of the string and card data. The delay ranges from \*00 (No delay) to \*FF (2.55 second delay).
- & Specifies a keyboard Scan Code to be sent. This option can be used to emulate a key if it cannot be sent with one of the above special characters. We recommend you use this option with caution because Scan Codes change for keyboard countries as well as keyboard interfaces and protocols. To determine the Scan Codes sent for a specific key, use **Show Scan Codes** in the Status/Diagnostics category (F8). The HEX number that follows the & in the string is the Scan Code to be sent, to send multiple Scan Codes you must use & once for each Scan Code.

 *Note: In order to include the \$, #, %, \* and & characters in the string, you must double the character. For example, to include a dollar sign and then a carriage return in a string, enter \$\$ \$0D at the string prompt. The consecutive dollar signs indicate that you want to transmit an actual \$ and not a special character.*


### String #1: Active For: All Bar Code Types <>

Use this option to specify the bar code types for which the String is active. You may choose a specific symbology or you may choose to have the string active for all bar code symbologies or all bar code symbologies always. For example, if you define a string as Active For CODE 39 and you read a CODE 128 bar code, the string will not be inserted. The following is a more detailed description of each of the settings for this option:

**ALL BAR CODE TYPES** Will activate the string for all bar code types except when another string is defined for the specific bar code type that was read. For example, if you have defined String #1 as Active For ALL BAR CODE TYPES and String #2 as Active For CODE 39 and you read a CODE 39 bar code, then String #2 will be inserted and String #1 will be ignored.

**ALL BAR CODE TYPES - ALWAYS** Will activate the string for all bar code types, whether another string was defined for the specific bar code type that was read or not. For example, if you defined String #1 as Active For ALL BAR CODE TYPES - ALWAYS and String #2 as Active For CODE 39 and you read a CODE 39 bar code, both String #1 and String #2 will be inserted.

**CODE 39, UPC-A, UPC-E, etc** Setting the Active For to a specific bar code symbology will activate the string for bar codes that are read that match the symbology. If you define more than a single string to be Active For the same bar code type, each string is inserted in turn. For example, if you define strings #1 and #2 as Active For CODE 39 and you read a CODE 39 bar code, then String #1 is inserted and then String #2 is inserted.

 *Note: If you define a String as Active For a specific symbology it will override any strings that are Active For ALL BAR CODE TYPES.*

### Order of Precedence

When inserting strings the decoder will follow a specific order of precedence. The decoder will make multiple passes through the defined strings. The manner by which the decoder inserts each of the strings is similar to that of the Edits, for more information see **Order of Precedence** on page 19. For each type of string PREAMBLE, POSTAMBLE, and TERMINATION, the decoder will make the three passes over the bar code data as described in Edits.

The following table is an example of the order of precedence for a sample set of Strings and the bar codes scanned. The String # column is the number of the macro in the decoder. The Active For column is the setting for the Active For option for the macro. The Type column is the type of the string, see below for complete explanation of string types. The CODE 39 and CODE 128 columns represent the order that the decoder will insert the strings when CODE 39 and CODE 128 bar codes are read respectively, those marked with NA are not inserted.

String #	Active For	Type	CODE 39	CODE 128
1	ALL BAR CODE TYPES	Postamble	4	1
2	CODE 39	Preamble	1	NA
3	ALL BAR CODE TYPES - ALWAYS	Termination	6	3
4	ALL BAR CODE TYPES	Postamble	5	2
5	CODE 39	Preamble	2	NA
6	UPC-A	Termination	NA	NA
7	ALL BAR CODE TYPES - ALWAYS	Preamble	3	4

The strings are inserted into the output according to their type, Preambles are inserted at the front, Postambles are inserted at the back, and Termination strings are inserted at the back just after Postambles. The output for the two bar codes in the table above would be as follows:

Code 39


<String #2><String #5><String #7><bar code data><String #1><String #4><String #3>

Code 128

<String #7><bar code data><String #1><String #4><String #3>

### String #1: Scan Direction: ANY <>

Select the direction from which the bar code must be scanned in order for the string to be inserted in the output. To add a string to bar codes that are read from the forward direction only, set this option to FORWARD.

 *Note: It does not make sense to use this option when the input device used for scanning is a Laser or CCD. This option is only useful for SLOT (Badge) or WAND readers.*

### String #1: Type: TERMINATION

#### STRING TYPE

The TERMINATION string is a 32 character string that is sent after all bar code data and all POSTAMBLES. The default Termination String is the ENTER key. You may define more than one TERMINATION string, each TERMINATION string will be appended to the previous when transmitted to the computer.

### String #1: Termination String: \$0D

#### ASCII

Key in the string that you wish to use as a termination string. You may use any of the special characters as described above on page 24.

### String #1: Type: PREAMBLE

#### STRING TYPE

The PREAMBLE string is a 32 character string that is sent before all bar code data. You may define more than one PREAMBLE string, each PREAMBLE string will be appended to the previous when transmitted to the computer.

### String #1: Preamble String: \$0D

#### ASCII

Key in the string that you wish to use as a preamble string. You may use any of the special characters as described above on page 24.

### String #1: Type: POSTAMBLE

#### STRING TYPE

The POSTAMBLE string is a 32 character string that is sent after bar code data but before any TERMINATION strings that may be defined. You may define more than one POSTAMBLE string, each POSTAMBLE string will be appended to the previous when transmitted to the computer.

### String #1: Postamble String: \$0D

<>

Key in the string that you wish to use as a postamble string. You may use any of the special characters as described above on page 24.

\*\*\* F6 - Reserved For Future Use \*\*\*

F6

\*\*\* F6 - Reserved For Future Use \*\*\*

---

**Buzzer/LED**F7

---

**Power Up Beep: ON** <>

Use this option to configure the initial power up beep on the decoder. When the decoder is first powered up it will emit a series of beeps to indicate that it is up and running and ready to take input. If you do not wish to have the decoder beep on start up, set this option to OFF.

**Good Read Beep Tone: MEDIUM** <>

This option is used to change the tone that is generated on a good read. The available settings are NONE, LOW, MEDIUM, HIGH, LOW-HIGH, and HIGH-LOW. Change this option to the desired setting, to test the setting press CTRL+F7.

**Beep Duration: MEDIUM** <>

This options is used to change the duration of the good read beep. The available durations are SHORT, MEDIUM, and LONG.

**No Read LED Delay: 20** <>

The No Read LED delay is the amount of time that the LED displays red before returning to the ready green state. This input is in 10ths of a second and ranges from 0 to 65. The default is 20 for 2 seconds. A value of 0 will set the LED to red and it will not change back to green until a good read occurs.

**LED Power Save Mode: OFF** <>

Use this option to enable or disable the LED Power Save Mode on the decoder. In the Power Save Mode the LED on the decoder will only light up on a good or bad read. If you have a bad or no read the LED will remain lit until the **No Read LED Delay** time has expired. In the Power Save Mode the unit will consume as little power as possible, this mode is excellent for use with LAPTOP computers where power consumption is a primary concern.

---

**Status/Diagnostics**F8

---

**Firmware Version and Release Date**

This option is an information only option, it displays the internal Firmware version and the Release Date of that firmware. This is useful when you wish to know the version and release date of a decoder. A message similar to the following will be displayed:

```
:Firmware v1.0 Checksum=F025 07/30/96
```

**Press Arrow Keys To Test Laser/CCD:** <>

Use this option to test the trigger and scan rate of the Laser/CCD input device connected to the decoder. To test the scans per second of the Laser/CCD input device press the left or right arrow keys without pressing the trigger on the Laser/CCD. After the test has been completed the decoder will display a message similar to the following:

```
:Press Arrow Keys To Test Laser/CCD: SCANS PER SECOND = 38
```

To test the trigger on the Laser/CCD hold down the trigger and press the left or right arrow keys on your keyboard. If the trigger is working correctly the following message will be displayed:

```
:Press Arrow Keys To Test Laser/CCD: TRIGGER IS PRESSED
```

Otherwise the decoder will begin testing the Laser/CCD scans per second.

**Keyboard Information**

This option displays the Keyboard ID, Protocol and Scan Code Set that the Bar Code decoder is using. For example, a message similar to the following is displayed when connected to a standard IBM AT or Compatible:

```
:Keyboard ID=83AB Protocol=AT Scan Code Set=2
```

**Show Scan Codes, SHIFT+ESC=Exit: 5A F0 5A**

Use this option to determine the Scan Codes the keyboard sends for each key. Press and release any key or combination of keys to view the Scan Codes sent. This option will display a maximum of 10 Scan Codes at a time. Some keys send different Scan Codes depending on the NumLock, Shift, Control, and Alt key states.

---

**Cloning**F9

---

The decoder possesses the exceptional ability to configure another decoder automatically. This option, known as Cloning, is extremely useful if you are configuring several decoders with the same setup. With Cloning, you setup the first decoder and copy its setup to additional decoders.

**Lockout Cloned Reader Setup Mode: OFF**

This option is used to lock out the setup mode on the cloned reader. Once the reader has been cloned the only method of changing the setup is by cloning a different setup into the reader, so use this option with caution. This option is useful for configuring readers to be used in an environment where the setup must not be changed.

**Press ENTER To Begin Cloning****ENTER**

Press the Enter key to activate the cloning mode, from this point, all you need to do is unplug the keyboard and plug in the decoder to be configured. The cloning reader will then copy its settings to the other decoder, which will beep when it has been successfully cloned. Unplug the newly cloned decoder and repeat the process with the next reader. Once you have cloned all of the decoders, plug the keyboard back into the cloning reader and press the ESC key to exit Cloning.

**Reset All Defaults****F10****Reset All Defaults?: YES**

Reset All Defaults returns the unit to initial factory settings.

**Exiting Setup Mode and Saving Changes**



Once you have configured the decoder, press the ESC key until you see the following prompt:

```
Exit Setup? (Press ENTER): YES
```

Use the LEFT and RIGHT arrow keys to toggle between YES and NO, and ENTER once you make your selection. If you have made any changes to any of the settings, the decoder will prompt you to save changes. If you do not save changes, the decoder will discard all changes and display the following message:

```
Setup Aborted - Changes Not Saved
```

If you save changes, the decoder will display a message indicating that all changes were saved.

-  *Note: A faster method of exiting setup mode is to use the ESC key in conjunction with the CTRL and ALT keys. Use CTRL ESC to exit setup mode and save all changes, and ALT ESC to exit setup mode without saving changes.*
-  *Note: If you wish to exit setup and temporarily save changes you may use SHIFT + ESC. Using this mode to exit you may change around the options and not have to worry about making mistakes until you exit using CTRL + ESC to exit saving changes. If you do make a mistake and want to return the program back to its prior state, enter Setup Mode and exit without saving changes, or power down the decoder.*

# Appendices

# Appendix A - Bar Code Symbolologies

## Code 39



Code 39 - 13 Mil

Encodable Character Set	26 upper case letters (A-Z) 10 digits (0-9) 7 special characters (SPACE - . + \$ / %)
Data Character Density	6.25 CPI (based on X = 0.010 inch (0.25 mm), 3:1)
Non-Data Overhead	Equivalent to 2 symbol characters
Symbol Length	Variable
Check Digit	Optional (Modulo 43)
Special Features	Message Append

### Code 39 Characteristics

Code 39 is a variable length alphanumeric code, supporting numbers, capital letters, and seven special characters. Each character consists of nine elements, made up of five bars and four spaces. Three out of nine elements are wide, thus the 3 of 9 designation.

Code 39 is a discrete code, meaning there is a space (intercharacter gap) between each character. The size of the intercharacter gap is generally the size of one narrow element. This code requires a unique start and stop character at the beginning and end of the bar code. This character is the '\*' character and may not appear in the data for the bar code.

It is sometimes advantageous to break up long messages into multiple, shorter symbols. If the first data character of a Code 39 symbol is a SPACE, the reader may be programmed to append the data following the space to a concatenation buffer. This operation continues for all successive Code 39 symbols with a leading SPACE, with messages being added to the end of the previously stored messages. When a Code 39 message is read which does not contain a leading SPACE, the contents are appended to the buffer, the entire buffer is transmitted, and the buffer is cleared.

*Note: Scanning a bar code that begins with a - (dash) will clear the concatenation buffer and no data will be output. In addition if you scan a bar code with a different symbology, the concatenation buffer will be cleared and the new bar code will be output.*

For applications requiring enhanced data security, a Modulo 43 check digit can be used. When used, the check digit immediately follows the last data character. The check digit is calculated as follows:

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

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

**Char values for Modulo 43 check digit calculation**

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

**For example, to calculate the check digit when the Code 39 data = "CODE 39"**

- Use the table to look up the numerical value for each character:  
C=12, O=24, D=13, E=14, SPACE=38, 3=3, 9=9
- 12+24+13+14+38+3+9=113
- 113/43 = 3 with a remainder of 27.
- 27=R, The resultant bar code with check digit = "CODE 39R"

**Full ASCII Code 39**



**Full ASCII Code 39 - 13 Mil**

Encodable Character Set	Entire 128 ASCII character set
Data Character Density	6.25 CPI (Code 39) 3.125 CPI (Extended chars) (based on X = 0.010 inch (0.25 mm), 3:1)
Non-Data Overhead	Equivalent to 2 symbol characters
Symbol Length	Variable
Check Digit	Optional (Modulo 43)
Special Features	Message Append

**Full ASCII Code 39 Characteristics**

Full ASCII Code 39 expands on Code 39 to include the full 128 ASCII character set. This is accomplished 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 table below. Note that the characters follow the standard order of ASCII characters.

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

**Full ASCII Code 39 Character Set**



## Code 128



Encodable Character Set	Entire 128 ASCII character set Extended ASCII character set Four non-data function characters
Data Character Density	9.1 CPI 18.2 CPI (numeric only) (based on X = 0.010 (0.25 mm))
Non-Data Overhead	Equivalent to 3.18 alphanumeric characters
Symbol Length	Variable
Check Digit	One, Mandatory (Modulo 103)
Special Features	FNC 2 Message Append FNC 3 Reader Initialization FNC 4 Extended ASCII

**Code 128 Characteristics**

Code 128 is a bar code symbology capable of encoding the full 128 ASCII character set, the extended ASCII character set, and four non-data function characters. It allows numeric data to be represented in a compact double-density mode, with two data digits for every symbol character. Each character is made up of 3 bars and 3 spaces for a total width of 11 modules. Each bar or space (element) may consist of one to four modules.

Code 128 has three different character code subsets A, B, and C. The valid characters for each of the code subsets are outlined in the following table:

Code Subset	Valid Characters
A	All of the standard upper case alphanumeric keyboard characters together with the ASCII control characters (i.e. ASCII character values 0-95) and four special function codes ( FNC 1 - FNC 4).
B	All of the standard upper case alphanumeric keyboard characters together with lower case alphabetic characters (i.e. ASCII character values 32-127) and four special function codes (FNC 1 - FNC 4).
C	Numeric data (0-9) and one special function code FNC 1.

**Code 128 Subset Valid Characters**


Code 128 provides four special non-data function codes, FNC 1 through FNC 4, which have been given a variety of functions to extend the capabilities of Code 128.

FNC 1 in the first or second position following the start character identifies symbols which conform to a specific industry standard, such as SCC-14 and SSCC-18. FNC 1 in any other position is used as a field separator.

FNC 2 (Message Append) instructs the decoder to temporarily store data from the symbol containing the FNC 2 character and transmit it as a prefix to the next symbol data. This operation continues for all successive Code 128 symbols with FNC 2, with messages being added to the end of the previously stored messages. When a Code 128 message is read which does not contain FNC 2, the contents are appended to the buffer, the entire buffer is transmitted, and the buffer is cleared. This character can occur anywhere in the symbol.

*Note: Scanning a bar code that begins with a - (dash) will clear the concatenation buffer and no data will be output. In addition, scanning a bar code of a different symbology will clear the concatenation buffer and output the new bar code.*

FNC 3 (Reader Initialization) instructs the decoder to interpret the data from the symbol containing the FNC 3 character as instructions for programming the reader. This character can occur anywhere in the symbol. The data from the symbol is not transmitted by the decoder.

 *Note: Do not create bar codes with the FNC 3 character unless instructed to do so by Technical Support. These bar codes are used to control and configure the decoder.*

FNC 4 provides access to the extended ASCII mode. Data encoded in code set A and B have their values increased by 128 from the normal ASCII values. For example, code set B value 65 normally encodes an "a" or ASCII data value 97; therefore, using FNC 4, it would encode an extended ASCII data value 225 or 97+128. Code subset C's numeric characters (ASCII values 48 - 57) are not changed by using FNC 4.

A single FNC 4 toggles in or out of extended ASCII mode for the next data character. Two consecutive FNC 4 symbol characters toggle the extended ASCII mode state for all succeeding data characters until another double FNC 4 or the end of the symbol. (A single FNC 4 changes back to normal mode for a single character.)

**UPC**



**UPC-A**  
100 percent



**UPC-E Version 0**  
100 percent



**UPC-E Version 0**  
100 percent

**UPC-E Version 1**

Encodable Character Set	All 10 digits (0-9)
Data Character Density	9.72 CPI (based on 100% UPC-A) 12.07 CPI (based on 100% UPC-E)
Non-Data Overhead	Equivalent to 2.57 digits (UPC-A) Equivalent to 2.29 digits (UPC-E)
Symbol Length	Fixed 12 (UPC-A) Fixed 6 (UPC-E Version 1 or 0)
Check Digit	One, Mandatory (Modulo 10)
Special Features	2 or 5 digit supplement
<b>UPC Characteristics</b>	

The Universal Product Code (UPC) symbols can be found on almost all retail products. The UPC coding system was designed to uniquely identify a product and its manufacturer. There are three different types of UPC bar codes: UPC-A, UPC-E Version 0, and UPC-E Version 1.

UPC-A is a fixed length (12 digits) numeric only code, the first (high order) digit being the number system character, the next ten being information characters, and the last (low order) digit being the Modulo 10 check digit. In the above example, the number system is 0 and the check digit is 9. The 10 information digits represent the manufacturer (11112 above) and the product code (35674 above). The number system is used in the following manner:

Number System	Specified Use
0	Regular UPC codes (Version A and E)
2	Random weight items, such as meat and produce, symbol-marked at store level (Version A)
3	National Drug Code and National Health Related Items Code in current 10-digit code length (Version A)
4	For use without code format restriction and with check digit protection for in-store marking of non-food items (Version A)
5	For use on coupons (Version A)
6,7	Regular UPC codes (Version A)
1,8,9	Reserved for uses unidentified at this time
<b>UPC Number System</b>	

UPC-E Version 0 and UPC-E Version 1 are eight digit variations of the UPC symbology. Version 0 is used on retail products and Version 1 is used on catalogs and shelf labels. The first digit represents the number system, the last digit indicates the check digit, and the next to the last digit is the type of compression used. The UPC-E symbol can be expanded into a UPC-A symbol by using the compression character and the following table:

Compression Character	Insertion Digits	Insertion Position	Resultant Version A
0	00000	3	XX00000XXX
1	10000	3	XX10000XXX
2	20000	3	XX20000XXX
3	00000	4	XXX00000XX
4	00000	5	XXXX00000X
5	0000	6	XXXXX00005
6	0000	6	XXXXX00006
7	0000	6	XXXXX00007
8	0000	6	XXXXX00008
9	0000	6	XXXXX00009

Note: "X" represents each of the 5 digits of the UPC-E number from left to right.

**UPC-E to UPC-A Expansion Table**

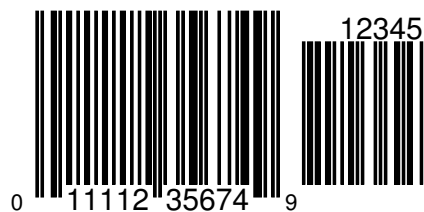


UPC-E Version 0 - 100 percent



UPC-A Equivalent - 100 percent

In addition to the standard fixed data that can be encoded in a UPC bar code, you may encode 2 or 5 digits of additional information. To include a supplement on the end of any UPC bar code, enter the digits at the end of the data.



UPC-A 5 digit supplement - 100 percent



UPC-E Version 0 2 digit supplement 100 percent

**EAN/JAN**



EAN/JAN 13 - 100 percent



EAN/JAN 8 - 100 percent

Encodable Character Set	All 10 digits (0-9)
Data Character Density	10.52 CPI (based on 100% EAN 13) 8.79 CPI (based on 100% EAN 8)
Non-Data Overhead	Equivalent to 2.57 data digits
Symbol Length	Fixed 12 (EAN 13) Fixed 8 (EAN 8)
Check Digit	One, Mandatory (Modulo 10)
Special Features	2 or 5 digit supplement

**EAN/JAN Characteristics**

The European/Japanese Article Numbering system (EAN) is used for products that require a country origin. The UPC-A is a subset of the EAN/JAN symbol. A UPC-A symbol is an EAN/JAN symbol with the first character set to 0. EAN/JAN has two versions, EAN/JAN 13 (13 digits) and EAN/JAN 8 (8 digits).

EAN/JAN 13 is used to encode 13 characters. The first two characters represent the country of origin, the next ten characters are data characters, and the last character is the checksum character. Country codes 00, 01, 03, 04, and 06-09 are assigned to the United States for compatibility with UPC-A.

EAN/JAN 8 is an 8 digit version of EAN/JAN-13, which encodes 2 country characters, 5 data characters, and a check digit.

**Bookland-EAN**



Bookland-EAN bar codes are a subset of EAN 13. All Bookland-EAN bar codes begin with 978 followed by the International Standard Book Number (ISBN) number. In addition, the EAN bar code may contain 2 or 5 digit supplemental information encoded in the EAN supplement.

**Interleaved 2 of 5**

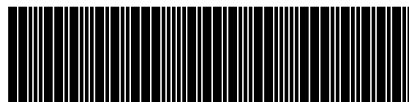


Encodable Character Set	All 10 digits (0-9)
Data Character Density	11.11 CPI (based on X = 0.010 (0.25 mm), 3:1)
Non-Data Overhead	Equivalent to 1 data digit
Symbol Length	Variable, Even number of digits
Check Digit	One, Optional
	USS Modulo 10
	OPCC Modulo 10
Special Features	Bearer Bars
<b>Interleaved 2 of 5 Characteristics</b>	

Interleaved 2 of 5 (also called I 2/5 or ITF) is a bar code symbology with a numeric character set and unique start and stop patterns. Interleaved 2 of 5 symbols always contain an even number of digits. In the symbol, two characters are paired together using bars to represent the first character and spaces to represent the second. Each character has two wide and three narrow elements. To enhance bar code integrity a check digit and Bearer Bars can be present.



**Industrial 2 of 5**



0123456789

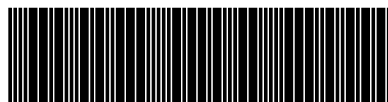
**Industrial 2 of 5 - 13 Mil**

Encodable Character Set	All 10 digits (0-9)
Data Character Density	6.25 CPI (based on X = 0.010 (0.25 mm), 3:1)
Non-Data Overhead	Equivalent to 1.38 data digits Equivalent to 1.08 data digits (two bar start/stop)
Symbol Length	Variable
Check Digit	None
Special Features	Bearer Bars

**Industrial 2 of 5 Characteristics**

Industrial 2 of 5 is a bar code symbology with a numeric character set and unique start and stop patterns. Unlike Interleaved 2 of 5, Industrial 2 of 5 may have an odd number of digits. Each character has two wide bars and 3 narrow bars. Industrial 2 of 5 is a discrete code, meaning there is a space (intercharacter gap) between each character. The size of the intercharacter gap is generally the size of one narrow element.

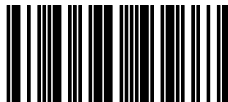
A variant of standard Industrial 2 of 5 is an Industrial 2 of 5 with a two bar start and stop characters or Airline Code. The two bar start and stop characters are the same start and stop characters that are used for Interleaved 2 of 5.



0123456789

**Industrial 2 of 5 Two Bar Start Stop - 13 Mil**

**Codabar**



A12345B

**Codabar - 13 Mil**

Encodable Character Set	All 10 digits (0-9) 4 Start/Stop characters: A B C D 6 Additional characters: - \$ : / . +
Data Character Density	8.33 CPI (based on X = 0.010 (0.25 mm), 3:1)
Non-Data Overhead	Equivalent to 2 symbol characters
Symbol Length	Variable, Fixed 14 digits (CLSI)
Check Digit	Optional, One Modulo 16 or Modulo 10 (CLSI)
Special Features	Symbol Concatenation
<b>Codabar Characteristics</b>	

Codabar is a bar code symbology that offers 16 data characters, including the numeric digits 0-9 and - \$ : / . +. There are also four unique start/stop characters designated A, B, C, and D. Codabar is a discrete code, meaning there is a space (intercharacter gap) between each character. Characters are constructed of four bars and three spaces.

The American Blood Commission (ABC) adopted a convention for concatenating data from adjacent symbols. This convention, often referred to as "ABC Codabar," uses a "D" stop character to indicate that data from that symbol should be concatenated with data from an adjacent symbol with a "D" start character.

In addition to standard Codabar, a CLSI Codabar can be created using a Modulo 10 (CLSI) check digit. CLSI Codabar is a fixed length (14 digits) numeric code.



**MSI/Plessey**



0123456789

**MSI/Plessey - 13 Mil**

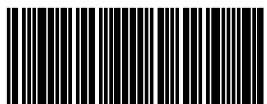
Encodable Character Set	All 10 digits (0-9) All 10 digits; check digit "X" (ISBN)
Data Character Density	7.89 CPI (based on X = 0.010 (0.25 mm))
Non-Data Overhead	Equivalent to 1.5 data characters (based on single check digit)
Symbol Length	Variable, Fixed 11 digits (ISBN)
Check Digit	One Mandatory, 2nd Optional
Special Features	None

**MSI/Plessey Characteristics**

MSI/Plessey is a variable length numeric only bar code, with a recommended length between 3 to 15 digits. A single check digit is required, and an optional check digit may be used. When two check digits are used, the first check digit can be either a Modulo 10 or 11.

The decoder supports the ISBN variant of MSI/Plessey. Enable the ISBN Decoder, see page 16 to read the ISBN variant of MSI/Plessey. The MSI/Plessey ISBN bar code is a fixed length numeric only bar code. When using the ISBN check digits, "X" is a valid check digit character.

## Code 11



0123456789

**Code 11 - 13 Mil**

Encodable Character Set	All 10 digits (0-9) - (dash character)
Data Character Density	10.68 CPI (based on X = 0.010 (0.25 mm))
Non-Data Overhead	Equivalent to 3 symbol characters (based on one check digit)
Symbol Length	Variable
Check Digit	One Mandatory, 2nd Optional
Special Features	None
<b>Code 11 Characteristics</b>	

The Code 11 bar code symbology is a high density, variable length, numeric code which includes the dash character. Each character is a fixed width of five elements, three bars and two spaces. Code 11 requires at least one check digit, and may be encoded with a second optional check digit.

## Code 93



0123456789

**Code 93 - 13 Mil**

Encodable Character Set	All 128 ASCII characters
Data Character Density	5.56 to 11.11 CPI (based on X = 0.010 (0.25 mm))
Non-Data Overhead	Equivalent to 4.1 symbol characters
Symbol Length	Variable
Check Digit	Two, Mandatory
Special Features	Message Append
<b>Code 93 Characteristics</b>	

Code 93 is a bar code symbology which encodes the full 128 ASCII character set. Code 93 derives its name from the fact that every character is constructed from 9 modules arranged into 3 bars with their adjacent spaces. Every Code 93 symbol includes two check digits.

It is sometimes advantageous to break up long messages into multiple, shorter symbols. If the first data character of a Code 93 symbol is a SPACE, the reader may be programmed to append the data following the space to a concatenation buffer. This operation continues for all successive Code 93 symbols with a leading SPACE, with messages being added to the end of the previously stored messages. When a Code 93 message is read which does not contain a leading SPACE, the contents are appended to the buffer, the entire buffer is transmitted, and the buffer is cleared.

*Note: Scanning a bar code that begins with a - (dash) will clear the concatenation buffer and no data will be output. In addition if you scan a bar code with a different symbology, the concatenation buffer will be cleared and the new bar code will be output.*

# Appendix-B Special Characters

## Special Characters Table

The Special Characters Table is a list of all of the characters that can be entered with the \$ special character designator. The \$ special character can be used in any of the string inputs in the decoder. Locate the key that you want to embed and enter the value in the Hex column of the table.

Hex	Dec	Description	Hex	Dec	Description	Hex	Dec	Description
\$00	0	NUL (CTRL @)	\$81	129	F2	\$A3	163	5 Keypad
\$01	1	SOH (CTRL A)	\$82	130	F3	\$A4	164	6 Keypad
\$02	2	STX (CTRL B)	\$83	131	F4	\$A5	165	7 Keypad
\$03	3	ETX (CTRL C)	\$84	132	F5	\$A6	166	8 Keypad
\$04	4	EOT (CTRL D)	\$85	133	F6	\$A7	167	9 Keypad
\$05	5	ENQ (CTRL E)	\$86	134	F7	\$A8	168	Insert Keypad
\$06	6	ACK (CTRL F)	\$87	135	F8	\$A9	169	Delete Keypad
\$07	7	BEL (CTRL G)	\$88	136	F9	\$AA	170	Home Keypad
\$08	8	BS (Backspace)	\$89	137	F10	\$AB	171	End Keypad
\$09	9	HT (Tab)	\$8A	138	F11	\$AC	172	Page Up Keypad
\$0A	10	LF (CTRL J)	\$8B	139	F12	\$AD	173	Page Down Keypad
\$0B	11	VT (CTRL K)	\$8C	140	Left Shift Make	\$AE	174	Up Arrow Keypad
\$0C	12	FF (CTRL L)	\$8D	141	Left Shift Break	\$AF	175	Down Arrow Keypad
\$0D	13	CR (Enter)	\$8E	142	Right Shift Make	\$B0	176	Left Arrow Keypad
\$0E	14	SO (CTRL N)	\$8F	143	Right Shift Break	\$B1	177	Right Arrow Keypad
\$0F	15	SI (CTRL O)	\$90	144	Left ALT Make	\$B2	178	Center Keypad
\$10	16	DLE (CTRL P)	\$91	145	Left ALT Break	\$B3	179	Insert
\$11	17	DC1 (CTRL Q)	\$92	146	Right ALT Make	\$B4	180	Delete
\$12	18	DC2 (CTRL R)	\$93	147	Right ALT Break	\$B5	181	Home
\$13	19	DC3 (CTRL S)	\$94	148	Left Control Make	\$B6	182	End
\$14	20	DC4 (CTRL T)	\$95	149	Left Control Break	\$B7	183	Page Up
\$15	21	NAK (CTRL U)	\$96	150	Right Control Make	\$B8	184	Page Down
\$16	22	SYN (CTRL V)	\$97	151	Right Control Break	\$B9	185	Up Arrow
\$17	23	ETB (CTRL W)	\$98	152	/ Keypad	\$BA	186	Down Arrow
\$18	24	CAN (CTRL X)	\$99	153	* Keypad	\$BB	187	Left Arrow
\$19	25	EM (CTRL Y)	\$9A	154	- Keypad	\$BC	188	Right Arrow
\$1A	26	SUB (CTRL Z)	\$9B	155	+ Keypad	\$BD	189	
\$1B	27	ESC (ESC)	\$9C	156	. Keypad	\$BE	190	Num Lock
\$1C	28	FS (CTRL \)	\$9D	157	Enter Keypad	\$BF	191	Caps Lock
\$1D	29	GS (CTRL ])	\$9E	158	0 Keypad	\$C0	192	Scroll Lock
\$1E	30	RS (CTRL ^)	\$9F	159	1 Keypad	\$C1	193	Print Screen
\$1F	31	US (CTRL _)	\$A0	160	2 Keypad	\$C2	194	Pause
\$7F	127	DEL (CTRL BkSpc)	\$A1	161	3 Keypad			
\$80	128	F1	\$A2	162	4 Keypad			

### ALT Keypad Table

The # designator is used to output any character value between 1 and 255. The following table shows the keypad sequence sent to the computer for the # sequence entered. The actual character displayed will depend upon on the software running and the country setting of your computer. In some cases, no actual character is displayed.

Hex	Keypad	Hex	Keypad	Hex	Keypad	Hex	Keypad	Hex	Keypad	Hex	Keypad	Hex	Keypad
#01	ALT 001	#26	ALT 038	#4B	ALT 075	#70	ALT 112	#95	ALT 149	#BA	ALT 186	#DF	ALT 223
#02	ALT 002	#27	ALT 039	#4C	ALT 076	#71	ALT 113	#96	ALT 150	#BB	ALT 187	#E0	ALT 224
#03	ALT 003	#28	ALT 040	#4D	ALT 077	#72	ALT 114	#97	ALT 151	#BC	ALT 188	#E1	ALT 225
#04	ALT 004	#29	ALT 041	#4E	ALT 078	#73	ALT 115	#98	ALT 152	#BD	ALT 189	#E2	ALT 226
#05	ALT 005	#2A	ALT 042	#4F	ALT 079	#74	ALT 116	#99	ALT 153	#BE	ALT 190	#E3	ALT 227
#06	ALT 006	#2B	ALT 043	#50	ALT 080	#75	ALT 117	#9A	ALT 154	#BF	ALT 191	#E4	ALT 228
#07	ALT 007	#2C	ALT 044	#51	ALT 081	#76	ALT 118	#9B	ALT 155	#C0	ALT 192	#E5	ALT 229
#08	ALT 008	#2D	ALT 045	#52	ALT 082	#77	ALT 119	#9C	ALT 156	#C1	ALT 193	#E6	ALT 230
#09	ALT 009	#2E	ALT 046	#53	ALT 083	#78	ALT 120	#9D	ALT 157	#C2	ALT 194	#E7	ALT 231
#0A	ALT 010	#2F	ALT 047	#54	ALT 084	#79	ALT 121	#9E	ALT 158	#C3	ALT 195	#E8	ALT 232
#0B	ALT 011	#30	ALT 048	#55	ALT 085	#7A	ALT 122	#9F	ALT 159	#C4	ALT 196	#E9	ALT 233
#0C	ALT 012	#31	ALT 049	#56	ALT 086	#7B	ALT 123	#A0	ALT 160	#C5	ALT 197	#EA	ALT 234
#0D	ALT 013	#32	ALT 050	#57	ALT 087	#7C	ALT 124	#A1	ALT 161	#C6	ALT 198	#EB	ALT 235
#0E	ALT 014	#33	ALT 051	#58	ALT 088	#7D	ALT 125	#A2	ALT 162	#C7	ALT 199	#EC	ALT 236
#0F	ALT 015	#34	ALT 052	#59	ALT 089	#7E	ALT 126	#A3	ALT 163	#C8	ALT 200	#ED	ALT 237
#10	ALT 016	#35	ALT 053	#5A	ALT 090	#7F	ALT 127	#A4	ALT 164	#C9	ALT 201	#EE	ALT 238
#11	ALT 017	#36	ALT 054	#5B	ALT 091	#80	ALT 128	#A5	ALT 165	#CA	ALT 202	#EF	ALT 239
#12	ALT 018	#37	ALT 055	#5C	ALT 092	#81	ALT 129	#A6	ALT 166	#CB	ALT 203	#F0	ALT 240
#13	ALT 019	#38	ALT 056	#5D	ALT 093	#82	ALT 130	#A7	ALT 167	#CC	ALT 204	#F1	ALT 241
#14	ALT 020	#39	ALT 057	#5E	ALT 094	#83	ALT 131	#A8	ALT 168	#CD	ALT 205	#F2	ALT 242
#15	ALT 021	#3A	ALT 058	#5F	ALT 095	#84	ALT 132	#A9	ALT 169	#CE	ALT 206	#F3	ALT 243
#16	ALT 022	#3B	ALT 059	#60	ALT 096	#85	ALT 133	#AA	ALT 170	#CF	ALT 207	#F4	ALT 244
#17	ALT 023	#3C	ALT 060	#61	ALT 097	#86	ALT 134	#AB	ALT 171	#D0	ALT 208	#F5	ALT 245
#18	ALT 024	#3D	ALT 061	#62	ALT 098	#87	ALT 135	#AC	ALT 172	#D1	ALT 209	#F6	ALT 246
#19	ALT 025	#3E	ALT 062	#63	ALT 099	#88	ALT 136	#AD	ALT 173	#D2	ALT 210	#F7	ALT 247
#1A	ALT 026	#3F	ALT 063	#64	ALT 100	#89	ALT 137	#AE	ALT 174	#D3	ALT 211	#F8	ALT 248
#1B	ALT 027	#40	ALT 064	#65	ALT 101	#8A	ALT 138	#AF	ALT 175	#D4	ALT 212	#F9	ALT 249
#1C	ALT 028	#41	ALT 065	#66	ALT 102	#8B	ALT 139	#B0	ALT 176	#D5	ALT 213	#FA	ALT 250
#1D	ALT 029	#42	ALT 066	#67	ALT 103	#8C	ALT 140	#B1	ALT 177	#D6	ALT 214	#FB	ALT 251
#1E	ALT 030	#43	ALT 067	#68	ALT 104	#8D	ALT 141	#B2	ALT 178	#D7	ALT 215	#FC	ALT 252
#1F	ALT 031	#44	ALT 068	#69	ALT 105	#8E	ALT 142	#B3	ALT 179	#D8	ALT 216	#FD	ALT 253
#20	ALT 032	#45	ALT 069	#6A	ALT 106	#8F	ALT 143	#B4	ALT 180	#D9	ALT 217	#FE	ALT 254
#21	ALT 033	#46	ALT 070	#6B	ALT 107	#90	ALT 144	#B5	ALT 181	#DA	ALT 218	#FF	ALT 255
#22	ALT 034	#47	ALT 071	#6C	ALT 108	#91	ALT 145	#B6	ALT 182	#DB	ALT 219		
#23	ALT 035	#48	ALT 072	#6D	ALT 109	#92	ALT 146	#B7	ALT 183	#DC	ALT 220		
#24	ALT 036	#49	ALT 073	#6E	ALT 110	#93	ALT 147	#B8	ALT 184	#DD	ALT 221		
#25	ALT 037	#4A	ALT 074	#6F	ALT 111	#94	ALT 148	#B9	ALT 185	#DE	ALT 222		

 Note: The char #00 cannot be output as an ALT keypad character.

# Appendix-C Decoder Pinouts and Specifications

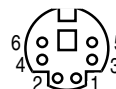
## Pinouts

The following drawing details the pinouts of the keyboard (KB) and the computer (PC) end of the decoder cable. Both the keyboard and computer connectors are wired identically to the standard PC keyboard and computer connectors.

KB Connector - 6 Pin Mini-Din Female

- |                  |                   |
|------------------|-------------------|
| 1. Keyboard Data | 4. +5 VDC         |
| 2. Reserved      | 5. Keyboard Clock |
| 3. Ground        | 6. Reserved       |

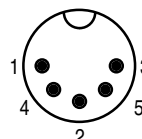
KB Connector  
End View



PC Connector - 5 Pin Din Male

1. Keyboard Clock (Wand Data)
2. Keyboard Data
3. Reserved
4. Ground
5. +5 VDC

PC Connector  
End View

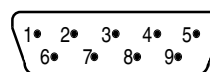


The following drawing details the pinout of the scanner port (9 Pin D) of the decoder:

Scanner Connector - 9 Pin D Male

- |                                    |                          |
|------------------------------------|--------------------------|
| 1. Laser Sync In                   | 6. Laser-Scan Enable Out |
| 2. Bar code Data In (Wand Data In) | 7. Ground (Wand Ground)  |
| 3. Good Read Out                   | 8. Shield Ground         |
| 4. No Connection                   | 9. +5 VDC                |
| 5. Laser Trigger In                |                          |

Scanner Connector  
End View



## Specifications

### Electrical

5 VDC  $\pm$ 5% @ 20 milliamp MAX(standby) - 5 milliamp MAX(standby-LED Power Save Mode) - 60 milliamp MAX(operating)

### Mechanical

1.65"W X 0.90"H X 3.75"L

6' Y-Cable with 6" adapter for 5 pin DIN and 6 pin Mini-DIN connections

### Environmental

0 - 60° C operation temperature

10 - 90% relative humidity (non condensing)

### Regulatory

FCC Class A tested and verified

## Appendix-D Troubleshooting and Error Beeps

### Troubleshooting

**Problem:** My computer beeps and some of my bar code data is missing.

**Cause:** The decoder's transmit speed is too fast.

**Solution:** Slow down the decoder's transmit speed.

**Problem:** Some of the characters of my bar code are garbled or incorrect.

**Cause:** The decoder's **Keyboard Country** setting does not match the computer's keyboard setup.

**Solution:** Set the decoder's **Keyboard Country** to the same setting as the keyboard on your computer.

**Problem:** My bar code cannot be read by the decoder.

**Cause:** The decoder for the bar code you are attempting to read is turned off.

**Solution:** Enter Setup Mode using the CTRL+F2+SHIFT+BACKSPACE key sequence, press F2, select the DECODERS ON/OFF group, cursor down each decoder and set it to on. Press CTRL+ESC to exit configuration and save changes and attempt to read the bar code. You may also use the Bar Code Type ID to determine the type of the bar code that was just read.

- OR -

**Cause:** Your bar code is possibly encoded incorrectly.

**Solution:** Call technical support for assistance.

- OR -

**Cause:** The decoder is damaged or is no longer functioning.

**Solution:** Call technical support for assistance.

**Problem:** My computer gets a keyboard error while booting up.

**Cause:** The decoder is damaged or is no longer functioning.

**Solution:** Disconnect the decoder from your computer and use your keyboard only. Reboot your computer. If your computer still gets a keyboard error, then the problem may not be the decoder. Call technical support for assistance.

**Problem:** My Caps Lock LED on my keyboard flickers when I read a bar code.

**Cause:** The **Keyboard Country** that you are using requires shifting in and out of the Shift Lock mode to send the data properly.

**Solution:** This is normal operation. You can reduce the flickering and speed the data transmit by sending numerics as keypad numerics, or setting the **Keyboard Country** to UNIVERSAL mode.

**Problem:** I can't activate the Setup Mode on the decoder.

**Cause:** The decoder is currently configured to lockout the Setup Mode after a bar code is read.

**Solution:** Turn the power off and then back on to your computer, and reenter the Setup Mode before reading any bar codes.

- OR -

**Cause:** The keyboard that you are using does not work properly when you hold down the **Left-Control** and **Caps Lock** keys.

**Solution:** Use the alternate programming key sequence: **Left-Control, F2, Right-Shift, and Backspace**.

**Problem:** The decoder beeps, but no data is displayed on my computer.

**Cause:** The decoder is set to strip the same number of characters as there are in your bar code.

**Solution:** Reconfigure the decoder to not strip characters from the bar code.

- OR -

**Cause:** The decoder is configured to send the numeric data as KEYPAD NUMERICS, or the **Keyboard Country** setting is set to UNIVERSAL.

**Solution:** Reconfigure the decoder to **Send Numerics As MAIN KEYBOARD KEYS** and set the **Keyboard Country** setting to the country setting of your computer.

**Problem:** My programmable keyboard fails to program when the decoder is installed.

**Cause:** The decoder responds to valid keyboard commands from the computer. Most programmable keyboard software programs send characters to the keyboard that are not valid commands.

**Solution:** Remove the decoder from the computer before programming your keyboard.

## Hardware Errors

Each time the decoder is powered it will go through a system check and verify that all of its hardware is functioning properly. If the decoder finds a problem it will sound a series of error beeps and/or LED changes. The following is a list of error beeps and LED changes and their meaning.

SLOW BLINKING ORANGE LED	CPU ERROR
LOW,MED,HIGH BEEP	PROM ERROR
FAST BLINKING ORANGE LED	RAM ERROR
LOW FOLLOWED BY 2 HIGHER BEEPS	EEPROM ERROR

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