Bar Code
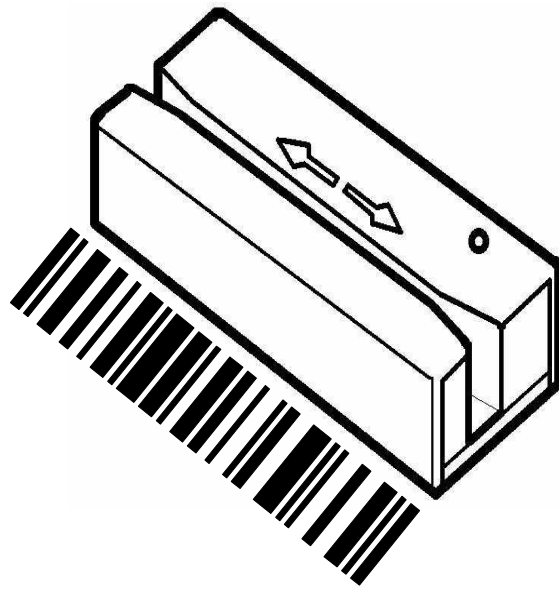# Slot Reader

for IBM AT, PS/2, USB and Compatible Keyboard Interfaces

ID Innovations Incorporated

I D   I n n o v a t i o n s   I n c o r p o r a t e d

ID Innovations Incorporated was founded in 1993 to provide low cost, high performance hardware and software solutions for the identification market. This market is ever changing and continually growing, requiring products that evolve and a manufacturer with an understanding of the market's needs. All of ID Innovations' products show our commitment to engineering excellence and attention to detail. In order to improve our products and services, we welcome any comments or suggestions that you may have.   Our goal is to become your source for providing solutions for your identification technology needs.

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Features

The ID Innovations Incorporated Bar Code Slot reader 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 Slot reader include:

✦ Simple installation, Keyboard Wedge, Serial
✦ 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 100 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 – MultiMode USB

The Slot Card Reader is available with a USB Adaptor cable that terminates in a Universal Serial Bus (USB) Type A connector. Most new computers have multiple USB ports that can be used with a wide variety of peripherals. Simply plug the adaptor into an available USB port and the PS/2 cable from the reader into the adaptor and the operating system will display a dialog box to guide you through the installation process. The device driver that Windows will install for this device is the driver used for HID keyboard devices and is part of the Operating System. In some installations Windows will locate all of the files it requires without requiring any user intervention. However, sometimes Windows will request the location of the files it needs. In these cases you may need to have your Windows Installation CD in order to complete the installation. Most of these type installations simply require you to click on the **Next** and **Finish** buttons repeatedly.

The ID Innovations Incorporated USB Bar Code Slot Reader can be installed to output data in a variety of ways. No other Bar Code Slot Reader on the market can match its versatility.

Installation – USB Keyboard Wedge (Default)

By default when you install the ID Innovations Incorporated Bar Code Slot Reader it will output Card Data as Keyboard keystrokes. This allows host applications designed to acquire Card Data from keyboard input, to seamlessly receive data from the Bar Code Slot Reader. This mode of operation requires no additional software drivers and is available on Windows, Linux and MAC operating systems.

☞ *Note: A Windows **USB Accelerated keyboard driver** is available for Free download from our Website at www.idinnovations.com for use with the ID Innovations Incorporated USB products. This driver will output Card Data 3 to 5 times faster than the standard windows keyboard driver. In addition, this driver will block the user from entering keystrokes during transmission to ensure that Card Data is not corrupted and it will allow you to modify the data from the card reader even further.*

Installation – USB Virtual COM Port

If you have a POS application that requires, or can support, an RS232 Bar Code Slot Reader, you can use the ID Innovations Incorporated USB Bar Code Slot Reader. In this mode, the Card Data will be output to a Virtual COM port on your system. Simply select this COM port in your POS application and you will be up and running in no time.

☞ *Note: In order to use this feature you will need to download the Free software driver from our Website at www.idinnovations.com*

Once you have downloaded and installed the software driver, you can create the Virtual COM port to be used by your POS software. Simply install the driver icon in your startup folder on your computer and it will be loaded each time your computer is powered up. When the driver is loaded all Card Data will be transmitted to the COM port and into your application.

☞ *Note: In most RS232 installations you have to match up the COM port settings of the Card Reader and POS software. However, when using the ID Innovations Incorporated USB Virtual COM port driver you need not concern yourself with this step. The driver will automatically present the Card Data in the proper Baud Rate, and Parity settings for your application.*

Installation – USB HID Mode

The ID Innovations Incorporated Bar Code Slot Reader can be operated in several different modes. As explained above it can be used in either a Keyboard Wedge or Virtual COM port mode of operation. In addition to these modes, you can interface to the Bar Code Slot Reader using USB Human Interface Device (HID) Class specification Version 1.1 Windows API calls. In these modes the Bar Code Slot Reader behaves like a vendor defined HID device so that a direct communication path can be established between the Host application and device without interference from other HID devices.

The ID Innovations Incorporated Bar Code Slot Reader provides a serial HID interfaces. The serial interface can be used to Sequentially receive Card Data in ASCII form in multiple 5 byte Input records. The format of the Card Data transmission is dependent on the program settings of the Bar Code Slot Reader.

☞ *Note: For more information on either of these modes and program assistance in developing your applications contact ID Innovations Incorporated.*

Installation - Keyboard Wedge (PS2 Style)

The Slot Reader is installed between the computer and the keyboard. The keyboard cable is plugged into the Slot Reader using the connector labeled "KB". The Slot Reader is then connected to the computer using the connector labeled "PC". The PS2-Y cable is a wedge cable that has two 6 pin Mini-DIN connectors for both the keyboard and the PC.

Installation – Serial (PS2 Style)

To install the Slot Reader serially you will need a ID Innovations, Serial Converter. The Serial Converter is used to convert TTL signal levels to RS-232 signal levels. The Serial Converter is readily available in a 9-pin straight cable configuration for direct connection to PCs and a 25-pin Y cable configuration for connection between a Terminal and Host devices. When connecting the Card Reader to the Serial Converter the PC side of the Card Reader cable should be connected to the 6-pin connector of the Serial Converter. If you are connecting the Card Reader to a 25-pin Serial Converter, the 25-pin connector marked TERMINAL should be connected to the Terminal side and the 25-pin connector marked HOST should be connected to the Host side. For information on cable pin-outs see Appendix D

☞ *Note: Do not connect a keyboard to the Slot Reader when operating in Serial mode. If you have a keyboard connected to the Slot Reader when power is first turned on, the Slot Reader will revert back to the Keyboard Wedge mode of operation. A keyboard should only be connected to the Slot Reader after power is turned on, so that you may configure the Slot Reader using the keyboard.*

☞ *Note: If you have a device with a powered serial port, that provides +5v @75ma, you may connect the Slot Reader directly by using a simple cable adapter and configuring the Card Reader for **Inverted Serial Output**, see I**nverted Serial Output** for more information.*

Installation - Wand Emulation (PS2 Style)

To install the Slot Reader in Wand Emulation mode you must first configure the Slot Reader for Wand Emulation and the proper segment sizes. In this mode of operation, the Slot Reader can be plugged into the Wand port of a bar code decoder and the decoded Card Data is transmitted as Code 128 bar codes. In order to connect the Slot Reader to the bar code port of a decoder you may have to use a simple cable adapter, for information on cable pin-outs see Appendix D.

☞ *Note: Do not connect a keyboard to the Slot Reader when operating in Wand Emulation mode. If you have a keyboard connected to the Slot Reader when power is first turned on, the Slot Reader will revert back to the Keyboard Wedge mode of operation. A keyboard should only be connected to the Slot Reader after power is turned on, so that you may configure the Slot Reader using the keyboard.*

Mounting The Slot Reader

The Slot reader can be mounted in one of two ways, using the Two Velcro® strips included or inserting screws into the four threaded inserts on the bottom of the reader. However, if you choose to mount the unit using the threaded inserts, do not use a long screw in the insert by the cable. There is a socket located above the insert that will be damaged by a long screw.

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

Operating The Slot Reader

To read a card, insert the card in the reader with the bar code facing away from the LED on the top of the slot reader. Slide the card through the reader slot, with a smooth stroke, in either direction. When swiping the card through the slot reader, the LED will turn off. Once you have completed swiping the entire card through the reader, the reader 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 Slot reader 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.

Using The Setup Mode To Configure The Reader

The Slot reader can be configured through the use of the computer keyboard. The reader 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**[1]

- or -

Left-Control, **F3 Right-Shift**, and **Backspace**[2]

Once you release the keys, the Slot reader 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 reader 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 reader 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.

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[1]This is a generic key sequence used to configure any ID Innovations' keyboard wedge device.
[2]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 Keyboard Country CTRL/Special Char Delay Send Numerics As Setup Mode Lockout Output Mode Serial Baud Rate Serial Data Bits Serial Parity Serial Duplex Serial Data Format Inverted Serial Output Serial Intercharacter Delay Serial Caps Lock Serial Num Lock
F2	Decoders/Scanner	Decoders On/Off Code 39 Code 128 Interleaved 2 of 5 Codabar Other
F3	Editing	Edit #1 - Edit #5
F4	Macros/Special Keys	Macro #1 - Macro #5 Keys
F5	Strings	String #1 - String #5
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 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).
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
Left Arrow & Right Arrow	The left and right arrow keys scroll through available settings for the option.
Alt Keypad	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
The Transmit speed option is used to control the speed at which bar code data is sent to the computer. In some instances the reader 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.

Keyboard Country: UNITED STATES
The Keyboard Country option is used to inform the Slot reader of the keyboard country that should be used when transmitting bar code data. The reader 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 reader sends most data to the computer as a series of ALT keypad sequences. For example, to transmit an "A" to the computer, the reader 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 Slot reader 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.*

CTRL/Special Char Delay (milliseconds): 50
The CTRL/Special Char Delay is the amount of time the Slot reader 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.

Send Numerics As: MAIN KEYBOARD KEYS
This option is used to indicate which numeric keys you want the reader 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.

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.

Output Mode: KEYBOARD WEDGE
This option is used to specify the output mode of the reader. This option may be set to KEYBOARD WEDGE and SERIAL.

KEYBOARD WEDGE
In Keyboard Wedge mode the reader will automatically detect the keyboard protocol of the host computer. The reader should be installed as specified in the **Installation - Keyboard Wedge** section of this manual on page 8.

SERIAL
In Serial mode the reader will transmit all data serially using the Serial settings below. In order for this mode typically requires you to use a Serial Converter, for more information see **Installation - Serial** on page 8. Plugging the Slot Reader into a PC or TERMINAL with a keyboard attached places the reader in keyboard wedge mode, so that you may permanently change the Output Mode.

☞ *Note: Prior to setting the **Output Mode** to **SERIAL** and connecting the decoder serially, configure all of the Serial settings to match your serial device. If you do not properly match the settings, the decoder will not output the data properly.*

Serial Baud Rate: 9600
This option is used to control the speed of the serial communications. This option may be set to 300, 600, 1200, 2400, 4800, 9600, 19200, or 38400.

Serial Data Bits: 8
This option is used to control the number of Data Bits used for each character of serial data. This option may be set to 7, or 8.

Serial Parity: NONE
This option is used to control the Parity of the serial data that is transmitted. This option can be set to NONE, ODD, EVEN, MARK, or SPACE.

Serial Duplex: FULL
This option controls the transmission of the serial data to the Terminal side of the Serial Converter. If this option is set to FULL, serial data is only transmitted to the HOST side of the serial connection. If this option is set to HALF, serial data is transmitted to both the HOST and the TERMINAL sides of the serial connection.

Serial Data Format: ASCII
This option is used to set the format of the data when it is transmitted serially. With the default setting all data is transmitted as ASCII characters. If you set this option to SCAN CODES (PCTERM), all data is transmitted as scan codes. For example, the letter A would be transmitted as the scan code for the key on the keyboard that is used to generate the letter A.

☞ *Note: The **Keyboard Country** setting effects the scan codes that are transmitted serially. Make sure that the **Keyboard Country** setting matches the Keyboard that you would normally use.*

Inverted Serial Output: OFF
This option is used to control the format of the transmitted serial data. If you are directly connecting the decoder to a serial device with a powered serial port and are not using a Serial Converter, set this option to ON.

Serial Intercharacter Delay: 1
This option is used to control the amount of delay between each of the characters transmitted serially. This option is specified in Milliseconds and ranges from 0 to 50.

Serial Caps Lock: OFF
When the Serial Data Format is set to SCAN CODES (PCTERM), this option controls the scan codes that are generated for the NUMERIC KEYPAD KEYS. When the Serial Data Format is set to ASCII this option has no effect.

Serial Num Lock: ON
When the Serial Data Format is set to SCAN CODES (PCTERM), this option controls the scan codes that are generated for the alpha keys. When the Serial Data Format is set to ASCII this option has no effect.

Decoders/Other   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, CODE 128, INTERLEAVED 2 OF 5, and CODABAR.

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 Slot reader 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: 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
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 15.

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.

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

CODE 128: Maximum Length: 164
CODE 128: Minimum Length: 0
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
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 15.

CODE 128: Control Character Override: OFF
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.

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
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
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 15.

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: 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
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 15.

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 then 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.

0123456789
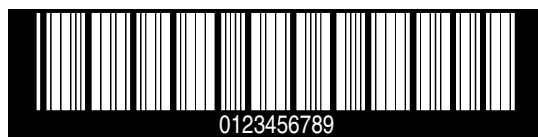
OTHER: Send Bar Code Type ID: OFF
Use this option to configure how the bar code Type IDs are transmitted to the computer. You may disable transmission, transmit them AS A SUFFIX or AS A PREFIX. If the Type ID is transmitted AS A PREFIX, the Type ID will appear before the bar code data, but after any 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 5 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 TYPESWill 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, CODE 128, 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, CODE 128, 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:
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
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
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
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 18, 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
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.

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 18, 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
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.

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 5 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, CODE 128, 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 15.

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	CODABAR	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 20. 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 20.*

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 you 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 5 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, CODE 128, 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 15. 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	CODABAR	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.

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
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 20.

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
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 20.

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 20.

*** 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 Slot reader. In the Power Save Mode the LED on the reader 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 v1.1 Checksum=87B9 05/20/99
```

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 Slot reader 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
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 Slot reader, which will beep when it has been successfully cloned. Unplug the newly cloned reader and repeat the process with the next reader. Once you have cloned all of the Slot readers, 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.*

Appendices

Appendix A - Bar Code Symbologies

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

2. Sum all of the numerical values for each character in the bar code.
3. Divide the sum by 43.
4. 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"

1. 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
2. 12+24+13+14+38+3+9=113
3. 113/43 = 3 with a remainder of 27.
4. 27=R, The resultant bar code with check digit = "CODE 39R"

Full ASCII Code 39

*   A   B   C   D   1   2   3   4   a   b   c   d   *
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

Code 128 - 13 Mil

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.)

Interleaved 2 of 5

0 1 2 3 4 5 6 7 8 9
Interleaved 2 of 5 - 13 Mil

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
Interleaved 2 of 5 Characteristics	

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.

0 1 2 3 4 5 6 7 8 9   0 1 2 3 4 5 6 7 8 9
Interleaved 2 of 5 with Bearer Bars - 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
Codabar Characteristics	

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.

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 Slot reader 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

KB Connector
End View

1. Keyboard Data   4. +5 VDC
2. Reserved   5. Keyboard Clock
3. Ground   6. Reserved
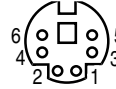
PC Connector - 5 Pin Din Male

PC Connector
End View

1. Keyboard Clock (Wand Data)
2. Keyboard Data
3. Reserved
4. Ground
5. +5 VDC
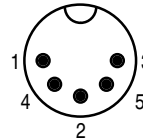
Specifications
Electrical
5 VDC ±5% @ 29 milliamp MAX(standby) - 60 milliamp MAX(operating) - 70 milliamp MAX(setup mode)

Mechanical
1.62"W X 1.08"H X 4"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)

Appendix-D Troubleshooting and Error Beeps

Troubleshooting
Problem: My computer beeps and some of my bar code data is missing.
Cause: The Slot reader's transmit speed is too fast.
Solution: Slow down the Slot reader's transmit speed.

Problem: Some of the characters of my bar code are garbled or incorrect.
Cause: The Slot reader's **Keyboard Country** setting does not match the computer's keyboard setup.
Solution: Set the Slot reader's **Keyboard Country** to the same setting as the keyboard on your computer.

Problem: My bar code cannot be read by the Slot reader.
Cause: The decoder for the bar code you are attempting to read is turned off.
Solution: Enter Setup Mode using the CTRL+F3+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 possible encoded incorrectly.
Solution: Call technical support for assistance.
        - OR -
Cause: The reader 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 Slot reader is damaged or is no longer functioning.
Solution: Disconnect the reader 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 Slot reader. 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 Slot reader.
Cause: The reader 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**, **F3**, **Right-Shift**, and **Backspace**.

Problem: The Slot reader beeps, but no data is displayed on my computer.
Cause: The reader is set to strip the same number of characters as there are in your bar code.
Solution: Reconfigure the reader to not strip characters from the bar code.
        - OR -
Cause: The reader is configured to send the numeric data as KEYPAD NUMERICS, or the **Keyboard Country** setting is set to
        UNIVERSAL.
Solution: Reconfigure the reader 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 Slot reader is installed.
Cause: The reader 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 Slot reader from the computer before programming your keyboard.

Hardware Errors
Each time the Slot reader 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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