

OMNI™  
COMBINED Bar Code  
and  
MAGNETIC Stripe Reader

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KEYBOARD WEDGE  
and  
USB/KEYBOARD WEDGE  
User's Manual



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Value through Innovation

## Agency Approved

Specifications for subpart B of part 15 of FCC rule for a Class A computing device.

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# SECTION 1

## INTRODUCTION

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### Description

The Omni™ slot reader can scan and decode most popular bar codes, as well as read 1, 2, or 3 tracks of magnetic stripe information. In addition, it has full data editing capabilities.

When connected to the host computer, the Omni is completely compatible with the host's software. The decoded data appears to the host as if it were entered manually by the operator through the keyboard.

The keyboard wedge unit is fully programmable through the keyboard using any document editor. The USB/Keyboard Wedge unit can be programmed through the keyboard using the ID TECH USB Reader Setup Utility. (Please see Appendix F for details.) The data can be formatted with preamble/post-amble and terminator characters to match the format expected by the host. Power is obtained from the host.

The programming codes are the same for both keyboard wedge and USB/Keyboard Wedge units. Please see Appendix F for details.

## SECTION 2

# INSTALLATION

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### Host CONNECTIONS

The Omni reader is connected between the keyboard input port of the host computer and the keyboard itself using a “Y” cable. The “Y” cable has a 6-pin mini-DIN female on one end, and a 6-pin mini-DIN male on the other end.

To connect the reader to the host, turn the power off and disconnect the keyboard from the computer. Connect the keyboard to the female end of the “Y” cable. Then insert the male end of the “Y” cable into the keyboard port. This “wedges” the reader between the host and the keyboard.

Manually-entered data from the keyboard passes through the unit to the host, leaving the keyboard fully functional at all times.

Data from either of the input heads is transmitted to the host keyboard port, where it appears to the host as coming directly from the keyboard. This makes the reader, as a data source, completely transparent to the host’s application software. In other words, if it is expecting data from the keyboard, that same data can be entered via the Omni and make no difference to the host.

Since the host computer’s application software is expecting data to be input in a particular order and format, the reader’s output can be configured to simulate the keyboard-entered data stream by adding terminating characters and special preamble and/or postamble character strings to scanned data.

# SECTION 3 OPERATION

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## Operating Procedure

The Omni reader is easy to operate. Just follow these simple steps:

1. Make sure the reader is properly connected (see sections 2 and 6) and is receiving sufficient power. (See Section 6, Troubleshooting, if there is a cabling or power problem.)
2. To read a card, slide the card, in either direction, through the reader slot, with the bar code facing the optical head (LED side) or the magnetic stripe facing the magnetic head (opposite side).
3. Once the entire bar code or magnetic stripe has been read, the LED indicator will light up as green to signal a “good read.” If a good read is not obtained, the LED indicator will light up as red.
4. A beep will also sound to indicate a good read on the bar code or each magnetic track, as appropriate. If all three tracks have been read successfully, the reader will beep three times.
5. The decoded data will be transmitted to the host application.

*Note: Output data can be verified in Notepad (or another document editor).*

## SECTION 4

# CONFIGURATION

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The Omni reader must be appropriately configured to your application. Configuration settings enable the reader to work with the host system. These settings are programmed into the reader through the keyboard. Once programmed, these configuration settings are stored in the reader's non-volatile memory (so they are not affected by the cycling of power).

### Bar Code Input

The reader may need to be configured to accept the desired bar code data and format it for transmission to the host. This includes enabling it for the correct bar code symbology, setting any check digit, start/stop codes, preamble/postamble, and min/max symbol length. Default settings enable all least restrictive settings.

### Magnetic Stripe Input

The reader may need to be configured to accept the desired magnetic stripe data and format it for transmission to the host. The encoded data can be ANSI, ISO, AAMVA, and California Drivers License magnetic stripe formats. The reader can be configured to read any track, 1 only, 2 only, 3 only, 1 & 2, 2 & 3, or 1,2 & 3. In addition, track start/stop sentinels can be sent or suppressed and track 2 account number information only can be selected along with user selectable track separator characters. Default settings enable reading on all available tracks (depending on whether the reader is equipped to read one, two, or three tracks).

## Configuration Setup Procedure

1. On an AT-compatible computer, enter any document editor. (Notepad is recommend in the Windows environment.)
2. Turn on the CAPS LOCK feature on the keyboard, as the configuration code is case sensitive.
3. Identify the settings that you wish to change. All options are covered in the various setup groups explained in this manual. (The reader's related setting features are grouped together.)
4. Enter the GROUP SETUP MODE by typing `/E/D/FX` (where X is the group name identified in Step 3).

5. Press the <Enter> key. The reader will beep twice to indicate the reader is now in the Setup Mode for group X.
6. Type the **two-character selection code** for the feature that you wish to change.
7. Press the <Enter> key. The reader will beep twice to indicate the code is accepted by the reader as a valid code for Setup Group X.
8. Type the **one-character code** for the change you wish to make.
9. Press the <Enter> key. The reader will beep twice to indicate the code is accepted by the reader as a valid code for that particular feature.
10. Repeat Steps 6 to 9 for any other features that you wish to change in the same Setup Group.
11. Save the changes and exit Setup Mode by typing **XZ**. (Of course, X must be the same group name entered in Step 4.)
12. Press the <Enter> key. The reader will sound four beeps to indicate the new settings have been saved in the reader and the reader is back to the normal reading mode.

EXAMPLE:

To set the reader's beep volume to LOW, enter following setup code in Notepad:

```
/E/D/FB<Enter>B1<Enter>1<Enter>BZ<Enter>
```

The setup routine is always the same, regardless of group:

1. Enter group setup mode.
2. Enter the feature selection code.
3. Change the setting for that feature.
4. Save the change and exit.

The reader's response is always the same, regardless of group:

- Two slow beeps indicate the code has been accepted by the reader.
- Four slow beeps indicate the reader has saved the settings and has exited the setup mode successfully.
- Four quick beeps indicate the code entered is invalid and has been rejected by the reader.

*Notes: Type codes in slowly (no more than two characters per second). If there is a typing error, do not use the BACKSPACE key to correct it. Instead, press the <ENTER> key. The reader will sound four quick beeps to indicate the error code has been rejected. Then re-enter the code correctly.*

*For the numeric character in the code, use the number keys located on top of the main alphanumeric keypad. Do not use the number keypad located on the right side of the keyboard.*

*Before proceeding to enter the next code, make sure the reader gives the correct number of beeps when <ENTER> is depressed.*

*Codes must be typed from an external keyboard when the reader is connected to a Notebook PC. (The Omni's USB keyboard interface model is the best choice for use with a Notebook PC.)*

*If a code is typed correctly, but the reader won't give the appropriate beeps, it may be necessary to press the CAPS LOCK key a few times and leave the CAPS LOCK feature on. Then try to re-enter the configuration code.*

## Default Settings

The Omni reader is shipped from the factory with the default settings already programmed. In the following sections, the default settings are shown in **boldface**. For a list of all default settings, please see Appendix A. In order to modify these settings, the host computer and keyboard must be IBM PC/AT-compatible.

By default, the reader has been programmed with the least restricted settings, thus making the Omni reader able to read most bar code labels and standard format magnetic stripe cards out of box.

The reader's output data format can be reconfigured to meet the expectations of the host application.

To reset the reader to the factory default, follow these steps:

1. On an AT-compatible computer, enter any document editor. (Notepad is recommend in the Windows environment.)
2. Turn on the CAPS LOCK feature on the keyboard, as the configuration code is case sensitive.
3. Enter the GROUP SETUP MODE by typing **/E/D/FA**.
4. Press the **<Enter>** key. The reader will beep twice.
5. Type **AW**.
6. Press the **<Enter>** key. The reader will beep twice.
7. Type **AZ**.
8. Press the **<Enter>** key. The reader will sound four beeps.

## Terminal Type Selection <Group A>

The Omni reader is set at the factory to interface as a PC/AT Keyboard Wedge. To change this setting to permit the Omni to operate without an external keyboard (as with a touch screen or laptop computer), please follow these steps:

### **01 for PC/AT Keyboard Wedge**

42 for PC boot-up without external keyboard

1. Enter GROUP SETUP MODE by typing **/E/D/FA**.
2. Press **<ENTER>**. *The reader should beep twice.*
3. For the keyboard-less (PC boot-up) feature, type **4 <ENTER>**. *The reader should beep twice.* Type **2 <ENTER>**. *The reader should beep twice.*
4. Save the changes and exit the Group Setup Mode by typing **AZ <ENTER>**. *The reader should beep four times.*

*Note: When configured to Terminal Type 42, the reader can work without an external keyboard. It will be necessary to power down and restart the Omni after unplugging the keyboard. To set up, you may plug a keyboard into the keyboard end of the wedge cable at any time.*

*Note: The review command (AY) will display the version number and date in addition to the terminal type setting while the reader is in setup mode.*

*The “reset all” command (AW) will return settings for all groups to their group defaults (as set at the factory).*

## GENERAL SELECTIONS <Group B>

The basic operating parameters of the Omni reader can be programmed with this group of selections.

1. Enter GROUP SETUP MODE by typing **/E/D/FB**.
2. Press **<ENTER>**. *The reader should beep twice.*
3. Type the two-character selection code for the feature you wish to change.
4. Press **<ENTER>**. *The reader should beep twice.*
5. Type the one-character code for the change you wish to make.
6. Press **<ENTER>**. *The reader should beep twice.*
7. Save the setting and exit the Group Setup Mode by typing **BZ**.
8. Press **<ENTER>**. *The reader should beep four times.*

*Note: To review the group's current setting(s), type **BY<ENTER>** while in Group Setup Mode. To reset the current setting(s) to its group default, type **BX<ENTER>** while in the Group Setup Mode.*

EXAMPLE:

To set the current settings to the group default, enter:

/E/D/FB<ENTER>BX<ENTER>BZ<ENTER>

**Beep Volume**

The beep volume can be adjusted to two different levels, or turned off entirely.

SELECTION CODE: B1	
Off	0
Low	1
<b>High</b>	<b>2</b>

**Intercharacter Delay**

This is the time period the reader will wait before sending the next successive character. Certain terminals and computers require an intercharacter delay to simulate human keyboard entry.

SELECTION CODE: B2	
2 ms intercharacter delay	0
<b>5 ms intercharacter delay</b>	<b>1</b>
10 ms intercharacter delay	2
20 ms intercharacter delay	3
50 ms intercharacter delay	4
100 ms intercharacter delay	5

**Interblock Delay**

This is the time period the reader will wait before transmitting the next successive data block. Some host systems need additional time between data blocks to process the information.

SELECTION CODE: B3	
<b>0 ms</b>	<b>0</b>
10 ms	1
30 ms	2
100 ms	3
300 ms	4
1 second	5

## LANGUAGE

This selection defines the scan code sent to the host for each character.

SELECTION CODE: B4	
<b>U.S.</b>	<b>0</b>
U.K.	1
Swiss	2
Swedish	3
Spanish	4
Norwegian	5
Italian	6
German	7
French	8
Japanese	9

## Code/Track ID

Each bar code symbology or MSR track can be assigned a CODE ID character. This character is added to the beginning of the scanned data. The host can use this character to ensure that the data received came from the appropriate type of symbol.

SELECTION CODE: B5	
On	A
<b>Off</b>	<b>B</b>

## Scan Verification

In order to insure accuracy of scanned data from poor-contrast bar code labels, a second confirmation swipe can be required before the reader will accept the data. When this option is enabled the reader requires the card to be swiped a second time and both swipes are compared. If they match, the data is considered good.

SELECTION CODE: B6	
On	A
<b>Off</b>	<b>B</b>

*Note: This function applies to bar codes only.*

## Function Code

The standard computer keyboard contains more keys than are supported by the ASCII code table (such as the F1-F12 function keys). The Omni reader allows the key codes for these functions to be used in message formatting and data editing. When this selection is ON, these key codes can be entered from the Function Code Table in Appendix C and be included in the data stream as part of the message string (such as preambles, postambles, or Code IDs).

SELECTION CODE: B7	
On	A
Off	B

## Code ID Definition (Group I)

If the Code ID option is enabled in General Setup, the user can select the character used to identify each symbology.

1. Enter CODE ID DEFINITION SETTINGS MODE by typing /E/D/FI.
2. Press <ENTER>. *The reader should beep twice.*
3. Enter the characters in the left column to select the symbology.
4. Press <ENTER>. *The reader should beep twice.*
5. Enter one character for the new ID.

a	UPC-A	Default = a
b	UPC-E	Default = b
c	EAN-8	Default = c
d	EAN-13	Default = d
e	Code 39	Default = e
f	Interleaved 2 of 5	Default = f
g	Industrial 2 of 5	Default = g
h	Code 128	Default = h
i	MSI/Plessey	Default = i
j	Codabar	Default = j
k	MSR Track 1	Default = k
l	MSR Track 2	Default = l
m	MSR Track 3	Default = m
n	Telepen	Default = n

6. Press <ENTER>. *The reader should beep twice.*
7. Save the change and exit the group setup mode by entering IZ<ENTER>. *The reader should beep four times.*

*Note: To review the group's current setting(s), type IY<ENTER> while in the Group Setup Mode. To reset the current setting(s) to its group default, type IX<ENTER> while in the Group Setup Mode.*

### EXAMPLE:

To change Code ID for Code 128 from h to w, enter:

/E/D/FI<ENTER>h<ENTER>w<ENTER>IZ<ENTER>

# Bar Code Message Formatting Selections <Group C >

Scanned bar code data can be formatted with the addition of preambles, postambles, and terminator characters. The settings below will augment bar code data scanned by the Omni. A fully-formatted message block reflects the following model:

{Preamble} {Code ID} {Data} {Terminator} {Postamble}

1. Enter BAR CODE MESSAGE FORMATTING SETUP MODE by typing **/E/D/FC**.
2. Press **<ENTER>**. *The reader should beep twice.*
3. Type the two-character selection code for the feature you wish to change.
4. Press **<ENTER>**. *The reader should beep twice.*
5. Type the one-character code for the change you wish to make.
6. Press **<ENTER>**. *The reader should beep twice.*
7. Save the change and exit the Bar Code Setup Mode by typing **CZ**.
8. Press **<ENTER>**. *The reader should beep four times.*

*Note: To review the group's current setting(s), type **CY<ENTER>** while in the setup mode. To reset the current setting(s) to its group default, type **CX<ENTER>** while in Bar Code Setup Mode.*

## Bar Code Terminator Character

Enter and Line Feed, Enter, Line Feed, or None: For some applications, it may be convenient to end a string of bar code scan data with a terminator character. For example, with keyboard entry, it is common to have the operator signify the end of the data input with the "Enter" keystroke. The terminator character serves this function.

SELECTION CODE: C1	
ENTER and Line Feed	A
<b>ENTER</b>	<b>B</b>
Line Feed	C
None	D

### EXAMPLE:

To set the bar code terminator character to Line Feed, enter:  
**/E/D/FC<ENTER>C1<ENTER>C<ENTER>CZ<ENTER>**

### Bar Code Preamble

0 to 16 ASCII characters: The bar code preamble is a string of characters that can be added to the beginning of scanned bar code data. These can be special characters for identifying a specific scanning station, to format a message header expected by the receiving host, or a function key from the Function Code Tables in Appendix C.

SELECTION CODE: C2
--------------------

One Character or Function Key at a time
-----------------------------------------

### Bar Code Postamble

0 to 16 ASCII characters: The bar code postamble serves the same purpose as the preamble, except it is added to the end of the scanned data after any terminator characters.

SELECTION CODE: C3
--------------------

One Character or Function Key at a time
-----------------------------------------

### EXAMPLE:

To set a four-character bar code preamble of ABCD, enter:

```
/E/D/FC<ENTER>C2<ENTER>A<ENTER>B<ENTER>C<ENTER>  
D<ENTER>CZ<ENTER>
```

# Magnetic Stripe Formatting Selections <Group D>

Magnetic stripe output can also be formatted with the addition of preambles, postambles, and terminator characters. The settings below will augment magnetic stripe data read by the Omni. A fully-formatted message block reflects the following model:

{Preamble} {T1 ID} {T1 Data} {Track Separator} {T2 ID} {T2 Data} {Track Separator} {T3 ID} {T3 Data} {Terminator} {Postamble}

1. Enter MAGNETIC STRIPE FORMATTING SETUP MODE by typing **/E/D/FD**.
2. Press **<ENTER>**. *The reader should beep twice.*
3. Type the two-character selection code for the feature you wish to change.
4. Press **<ENTER>**. *The reader should beep twice.*
5. Type the one-character code for the change you wish to make.
6. Press **<ENTER>**. *The reader should beep twice.*
7. Save the change and exit the Magnetic Stripe Setup Mode by typing **DZ**.
8. Press **<ENTER>**. *The reader should beep four times.*

*Note: To review the group's current setting(s), type **DY<ENTER>** while in the Magnetic Stripe Formatting Setup Mode. To reset the current setting(s) to its group default, type **DX<ENTER>** while in Formatting Mode.*

## Magnetic Stripe Terminator Character

Enter and LF, Enter, Line Feed, or None: For some applications, it may be convenient to end a string of magnetic stripe data with a terminator character. For example, with keyboard entry, it is common to have the operator signify the end of the data input with the "Enter" keystroke. The terminator character serves this function.

SELECTION CODE: D1	
ENTER and Line Feed	A
<b>ENTER</b>	<b>B</b>
Line Feed	C
None	D

### EXAMPLE:

To set the magnetic stripe terminator character to Line Feed, enter:  
**/E/D/FD<ENTER>D1<ENTER>C<ENTER>DZ<ENTER>**

## Magnetic Stripe Preamble

0 to 16 ASCII characters: The magnetic stripe preamble is a string of characters that can be added to the beginning of magnetic stripe data. These can be special characters for identifying a specific reading station, to format a message header expected by the receiving host, or a function key from the Function Code Tables in Appendix C.

SELECTION CODE: D2
--------------------

One Character or Function Key at a time
-----------------------------------------

## Magnetic Stripe Postamble

0 to 16 ASCII characters: The magnetic stripe postamble serves the same purpose as the preamble, except it is added to the end of the read data after any terminator characters.

SELECTION CODE: D3
--------------------

One Character or Function Key at a time
-----------------------------------------

### EXAMPLE:

To set a four-character magnetic stripe preamble of ABCD, enter:

```
/E/D/FD<ENTER>D2<ENTER>A<ENTER>B<ENTER>C<ENTER>  
D<ENTER>DZ<ENTER>
```

# Bar Code Selections

Bar code selections for the Omni are separated into two groups: Industrial and Retail. Industrial bar codes may contain a variable number of characters. Retail bar codes always contain a specific number of characters.

## Industrial Bar Codes (Group F)

1. Enter INDUSTRIAL BAR CODE SETUP MODE by typing /E/D/FF.
2. Press <ENTER>. *The reader should beep twice.*
3. Type the two-character selection code for the bar code symbology you wish to change.
4. Press <ENTER>. *The reader should beep twice.*
5. Type the one-character code for the change you wish to make.
6. Press <ENTER>. *The reader should beep twice.*
7. Save the change and exit the Industrial Bar Code Setup Mode by typing **FZ**.
8. Press <ENTER>. *The reader should beep four times.*

*Note: To review the group's current setting(s), type FY<ENTER> while in the Industrial Bar Code Setup Mode. To reset the current setting(s) to its group default, type FX<ENTER> while in Industrial Bar Code Setup Mode.*

## Minimum and Maximum Length Options

You can set minimum and maximum length standards for a particular industrial bar code symbology. (You cannot set a minimum or maximum length for a retail bar code.)

Minimum length sets the minimum number of data characters that will be accepted for this symbology. If the minimum length is set higher than the maximum length, all readings will be rejected.

Maximum length sets the maximum number of data characters that will be accepted for this symbology. If the maximum length is set lower than the minimum length, all readings will be rejected.

To set the minimum and maximum length for a particular symbology:

1. Enter Setup Mode by typing /E/D/FF.
2. Press <ENTER>. *The reader should beep twice.*
3. Enter the selection code for the particular symbology selected (such as **F4<ENTER>** for Code 128). *The reader should beep twice.*
4. Enter **FU<ENTER>** for minimum or **FV<ENTER>** for maximum. *The reader should beep twice.*

5. Enter one digit <ENTER> one digit <ENTER> from the keyboard. (The range is 01 to 60). *The reader should beep twice after each <ENTER>.*
6. Save and exit by typing **FZ**<ENTER>. *The reader should beep four times.*

**EXAMPLE:**

To set the maximum length of a Code 39 bar code to 12, enter:  
 /E/D/FF<ENTER>F1<ENTER>FV<ENTER>1<ENTER>2<ENTER>  
 FZ<ENTER>

## Code 39 Settings:

### Enable/Disable Code 39

If enabled, Code 39 symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: F1	
<b>Code 39 Enable</b>	<b>A</b>
Code 39 Disable	B

### Full ASCII

Standard Code 39 symbology supports only 43 characters. This can be expanded by using character pairs to identify the full ASCII 128 character set. When this option is ON, the reader will search for these character pairs and transmit only the Full ASCII single character equivalent to the host. If Full ASCII is enabled and used to read a standard Code 39 symbol, any combination of the defined character pairs will be reported to the host as the single character equivalent. When this option is OFF and a Full ASCII Code 39 symbol is scanned, the reader will report each of the characters in the Full ASCII pair as individual characters. The reader has no way of telling if the symbol is encoded in standard Code 39 or Full ASCII Code 39.

SELECTION CODE: F1	
<b>Full ASCII On</b>	<b>C</b>
Full ASCII Off	D

## Check Digit

When Check Digit is selected, the reader takes the last character in the decoded data stream as a check digit. It then calculates the correct check digit for the remaining data and compares it to the last data character. If it is the same, the data is accepted. If not, the data is rejected. With the Calculate and Send Check Digit option, the reader will send the check digit as part of the data stream. If the Calculate but Do Not Send Check Digit option is selected, the reader will strip it from the data stream before transmission. If the Check Digit is not calculated, the reader will assume the last data character read from the symbol is part of the data stream and will not make a comparison test.

SELECTION CODE: F1	
<b>Do Not Calculate Check Digit but Send Whole Data Stream</b>	<b>E</b>
Calculate and Send Check Digit	F
Calculate but Do Not Send Check Digit	G

## Send Start/Stop Characters

A unique character is used as the first and last character in a Code 39 symbol. It is printed as an asterisk (\*). Some applications require that these characters be transmitted with the data while others specify that they must not be sent.

SELECTION CODE: F1	
Send Start/Stop	H
<b>Do Not Send Start/Stop</b>	<b>I</b>

### EXAMPLE:

To disable the Full ASCII Code 39, enter:

```
/E/D/FF<ENTER>F1<ENTER>D<ENTER>FZ<ENTER>
```

## Interleaved 2 of 5 Settings:

### Enable/Disable Interleaved 2 of 5

If enabled, Interleaved 2 of 5 symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: F2	
<b>Interleaved 2 of 5 Enable</b>	<b>A</b>
Interleaved 2 of 5 Disable	B

### Fixed Length

Interleaved 2 of 5 symbols are commonly printed in a fixed format containing a fixed number of characters. If this option is ON, the first Interleaved 2 of 5 symbol scanned after power up will set the length of any other symbols scanned afterwards. If the succeeding scans do not match the length of the first scan, the scan is rejected by the reader. Power must be reset before an Interleaved 2 of 5 symbol of a different length will be accepted.

SELECTION CODE: F2	
Turn On Fixed Length	C
<b>Turn Off Fixed Length</b>	<b>D</b>

### Check Digit

When Check Digit is selected, the reader takes the last character in the decoded data stream as a check digit. It then calculates the correct check digit for the remaining data and compares it to the last data character. If it is the same, the data is accepted. If not, the data is rejected. With the Calculate and Send Check Digit option, the reader will send the check digit as part of the data stream. If the Calculate but Do Not Send Check Digit option is selected, the reader will strip it from the data stream before transmission. If the Check Digit is not calculated, the reader will assume the last data character read from the symbol is part of the data stream and will not make a comparison test.

SELECTION CODE: F2	
<b>Do Not Calculate Check Digit but Send Whole Data Stream</b>	<b>E</b>
Calculate and Send Check Digit	F
Calculate but Do Not Send Check Digit	G

# Industrial 2 of 5 Settings:

## Enable/Disable Industrial 2 of 5

If enabled, Industrial 2 of 5 symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: F3	
<b>Industrial 2 of 5 Enable</b>	<b>A</b>
<b>Industrial 2 of 5 Disable</b>	<b>B</b>

## Fixed Length

Industrial 2 of 5 symbols are commonly printed in a fixed format containing a fixed number of characters. If this option is ON, the first Interleaved 2 of 5 symbol scanned after power up will set the length of any other symbols scanned afterwards. If the succeeding scans do not match the length of the first scan, the scan is rejected by the reader. Power must be reset before an Interleaved 2 of 5 symbol of a different length will be accepted.

SELECTION CODE: F3	
<b>Turn On Fixed Length</b>	<b>C</b>
<b>Turn Off Fixed Length</b>	<b>D</b>

## Check Digit

When Check Digit is selected, the reader takes the last character in the decoded data stream as a check digit. It then calculates the correct check digit for the remaining data and compares it to the last data character. If it is the same, the data is accepted. If not, the data is rejected. With the Calculate and Send Check Digit option, the reader will send the check digit as part of the data stream. If the Calculate but Do Not Send Check Digit option is selected, the reader will strip it from the data stream before transmission. If the Check Digit is not calculated, the reader will assume the last data character read from the symbol is part of the data stream and will not make a comparison test.

SELECTION CODE: F3	
<b>Do Not Calculate Check Digit but Send Whole Data Stream</b>	<b>E</b>
<b>Calculate and Send Check Digit</b>	<b>F</b>
<b>Calculate but Do Not Send Check Digit</b>	<b>G</b>

## FEBRABAN CONVERSION:

If enabled, the original 44-digit Interleaved 2 of 5 data will be converted to 48- digit FEBRABAN code. Otherwise, the original 44-digit data will not be changed.

SELECTION CODE: F3	
<b>Convert to FEBRABAN Code</b>	<b>H</b>
Do Not Convert to FEBRABAN Code	I

## Code 128 Setting:

### Enable/Disable Code 128

If enabled, Code 128 symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: F4	
<b>Code 128 Enable</b>	<b>A</b>
Code 128 Disable	B

*Note: The Check Digit is mandatory for Code 128.*

## Codabar Settings:

### Enable/Disable Codabar

If enabled, Codabar symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: F5	
<b>Codabar Enable</b>	<b>A</b>
Codabar Disable	B

### Send Start/Stop Characters

Codabar uses the A, B, C, and D characters as Start and Stop characters, giving 16 unique Start/Stop character combinations. Some applications require that these characters be transmitted with the data while others specify that they must not be sent.

SELECTION CODE: F5	
Send Start/Stop	C
<b>Do Not Send Start/Stop</b>	<b>D</b>

### Check Digit

When Check Digit is selected, the reader takes the last character in the decoded data stream as a check digit. It then calculates the correct check digit for the remaining data and compares it to the last data character. If it is the same, the data is accepted. If not, the data is rejected. With the Calculate and Send Check Digit option, the reader will send the check digit as part of the data stream. If the Calculate but Do Not Send Check Digit option is selected, the reader will strip it from the data stream before transmission. If the Check Digit is not calculated, the reader will assume the last data character read from the symbol is part of the data stream and will not make a comparison test.

SELECTION CODE: F5	
<b>Do Not Calculate Check Digit but Send Whole Data Stream</b>	<b>E</b>
Calculate and Send Check Digit	F
Calculate but Do Not Send Check Digit	G

## MSI/Plessey Settings:

### Enable/Disable MSI/Plessey

If enabled, MSI/Plessey symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: F7	
<b>MSI/Plessey Enable</b>	<b>A</b>
MSI/Plessey Disable	B

### Check Digit

The MSI/Plessey symbology requires a check digit, and can optionally have two check digits. The reader can either send the check digit(s) as part of the data, or strip it before transmission to the host.

SELECTION CODE: F7	
Send Check Digit	C
<b>Do Not Send Check Digit</b>	<b>D</b>

Select only one of the following check digit schemes:

SELECTION CODE: F7	
One Mod 10 Check Digit	E
<b>Two Mod 10 Check Digits</b>	<b>F</b>
Mod 10/Mod 11 Check Digits	G

## TELEPEN Setting:

### Enable/Disable TELEPEN

If enabled, Telepen symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: F8	
<b>Telepen Enable</b>	<b>A</b>
Telepen Disable	B

### Numeric / ASCII Mode

If set to Numeric Mode, each original Telepen code will be translated into 2-digit numeric pair. Otherwise, ASCII or Numeric data will be sent out according to the AIM specification.

SELECTION CODE: F8	
<b>Numeric Mode</b>	<b>C</b>
ASCII Mode	D

## Retail Bar Codes (Group G)

Retail bar codes are based on the Uniform Code Council product code encoding algorithms. These are commonly referred to as the UPC/EAN symbologies.

1. Enter RETAIL BAR CODE SETUP MODE by typing /E/D/FG.
2. Press <ENTER>. *The reader should beep twice.*
3. Type the two-character selection code for the bar code symbology you wish to modify.
4. Press <ENTER>. *The reader should beep twice.*
5. Type the one-character code for the change you wish to make.
6. Press <ENTER>. *The reader should beep twice.*
7. Save the change and exit the Group Setup Mode by typing GZ <ENTER>. *The reader should beep four times.*

*Note: To review the current setting(s), type GY<ENTER> while in Group Setup Mode. To reset the current setting(s) to default, type GX<ENTER> while in Group Setup Mode.*

### EXAMPLE:

To set the current settings to default, enter:

/E/D/FG<ENTER>GX<ENTER>GZ<ENTER>

## UPC Settings:

### Enable/Disable UPC-A

UPC-A is a fixed format symbology and there are no variations allowed. If enabled, UPC-A symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: G1	
UPC-A Enable	A
UPC-A Disable	B

## Enable/Disable UPC-E

UPC-E is a special version of the UPC-A specification. It is a fixed format symbology and there are no variations allowed. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: G1	
<b>UPC-E Enable</b>	<b>C</b>
UPC-E Disable	D

## Send Number System Digit

The first encoded digit in the UPC-A symbol is the number system digit. If enabled, the first digit of the transmitted data stream is the number system digit followed by the manufacturer's number. If disabled, then the first digit transmitted is part of the manufacturer's number.

SELECTION CODE: G1	
<b>Send Number Digit</b>	<b>E</b>
Do Not Send Number Digit	F

## Send Check Digit

The check digit is mandatory in the UPC symbology. If enabled, the reader will send the decoded check digit as the last character in the data stream transmitted. If not, the check character will be suppressed before transmission.

SELECTION CODE: G1	
<b>Send Check Digit</b>	<b>G</b>
Do Not Send Check Digit	H

## UPC-E Expansion

The UPC-E symbology uses a special algorithm to suppress zeros in the encoded data. The suppressed information can be restored by either the Omni reader or the host system. If enabled, the reader will restore the data to its original format. If the host system is set up to do the expansion, then this option should not be used.

SELECTION CODE: G1	
Expand UPC-E	I
<b>Do Not Expand UPC-E</b>	<b>J</b>

### Read Two-Digit Addendum

If enabled, the reader will decode the two-digit secondary symbol when it is scanned with the primary symbol, and add the data to the end of the transmission. If not, any two-digit secondary symbol will be ignored.

SELECTION CODE: G1	
Read Two-Digit Addendum	K
<b>Do Not Read Two-Digit Addendum</b>	<b>L</b>

### Read Five-Digit Addendum

This option operates in the same manner as the Read Two Digit Addendum option except it enables the reading of a five digit secondary symbol.

SELECTION CODE: G1	
Read Five-Digit Addendum	M
<b>Do Not Read Five-Digit Addendum</b>	<b>N</b>

### Addendum Required

If a two or five-digit addendum is enabled, then enabling this option will require an addendum be present before a good read is registered. If not, then symbols with and without the addendum will be accepted.

SELECTION CODE: G1	
<b>Addendum Required</b>	<b>O</b>
Addendum Not Required	P

### Add Separator Space

This option is used with the Two and Five-Digit Addendum options. If enabled, an ASCII space character is inserted between the data decoded from the primary UPC symbol and the addendum symbol.

SELECTION CODE: G1	
<b>Add Space Separator</b>	<b>Q</b>
Not Add Space Separator	R

### Convert UPC-A to EAN-13

SELECTION CODE: G1	
<b>Do Not Convert to EAN-13</b>	<b>S</b>
Convert to EAN-13	T

## EAN Settings:

### Enable/Disable EAN-13

EAN-13 is a fixed format symbology and there are no variations allowed. If enabled, EAN-13 symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: G2	
<b>EAN-13 Enable</b>	<b>A</b>
EAN-13 Disable	B

### Enable/Disable EAN-8

If enabled, EAN-8 symbology will be read, subject to the reading restrictions specified by this set of options. If disabled, the data from the symbology will be disregarded.

SELECTION CODE: G2	
<b>EAN-8 Enable</b>	<b>C</b>
EAN-8 Disable	D

### Send Induced Country Code Character

The EAN symbology adds an extra digit to the beginning of the data to create a two-digit country code. If enabled, the added induced character is the first character transmitted. If disabled, the induced character is not transmitted.

SELECTION CODE: G2	
<b>Induced Character Enable</b>	<b>E</b>
Induced Character Disable	F

### Send Check Digit

The check digit is mandatory in the EAN symbology. If enabled, the reader will send the decoded check digit as the last character in the data stream transmitted. If not, the check character will be suppressed before transmission.

SELECTION CODE: G2	
<b>Send Check Digit</b>	<b>G</b>
Do Not Send Check Digit	H

### Read Two-Digit Addendum

If enabled, the reader will decode the two-digit secondary symbol when it is scanned with the primary symbol, and add the data to the end of the transmission. If not, any two-digit secondary symbol will be ignored.

SELECTION CODE: G2	
Read Two-Digit Addendum	I
<b>Do Not Read Two-Digit Addendum</b>	<b>J</b>

### Read Five-Digit Addendum

This option operates in the same manner as the Read Two Digit Addendum option except it enables the reading of a five digit secondary symbol.

SELECTION CODE: G2	
Read Five-Digit Addendum	K
<b>Do Not Read Five-Digit Addendum</b>	<b>L</b>

### Addendum Required

If a two or five-digit addendum is enabled, then enabling this option will require an addendum be present before a good read is registered. If not, then symbols with and without the addendum will be accepted.

SELECTION CODE: G2	
<b>Addendum Required</b>	<b>M</b>
Addendum Not Required	N

### Add Separator Space

This option is used with the Two and Five-Digit Addendum options. If enabled, an ASCII space character is inserted between the data decoded from the primary UPC symbol and the addendum symbol.

SELECTION CODE: G2	
<b>Add Space Separator</b>	<b>O</b>
Not Add Space Separator	P

# Magnetic Stripe Selections (Group H)

The Omni reader can accept and decode data read from a magnetic stripe. The parameters for reading the magnetic data can be programmed independently from any of the bar code selections.

1. Enter MAGNETIC STRIPE SELECTIONS SETUP MODE by typing **/E/D/FH**.
2. Press <ENTER>. *The reader should beep twice.*
3. Type the two-character selection code for the feature you wish to change.
4. Press <ENTER>. *The reader should beep twice.*
5. Type the one-character code for the change you wish to make.
6. Press <ENTER>. *The reader should beep twice.*
7. Save the change and exit the Group Setup Mode by typing **HZ** <ENTER>. *The reader should beep four times.*

*Note: To review the current setting(s), type **HY**<ENTER> while in Magnetic Stripe Selections Setup Mode. To reset the current setting(s) to default, type **HX**<ENTER> while in Magnetic Stripe Selections Setup Mode.*

## Track Selection

There are three tracks on a magnetic stripe card that can contain encoded data. This option selects the tracks that will be decoded. Note that the magnetic stripe reader must have heads aligned for reading the specified tracks.

SELECTION CODE: H1	
Track 2 Only	A
Track 1 Only	B
Track 3 Only	C
Tracks 1 & 2	D
Tracks 2 & 3	E
<b>Any Track</b>	<b>F</b>
All Tracks	G

## Send Start/Stop Sentinel

The tracks of a magnetically-encoded card contain special Start/Stop Sentinel characters. If this option is enabled, the Start/Stop Sentinel characters will be transmitted as part of the data stream. If this option is not selected, the Sentinel characters are suppressed before transmission.

SELECTION CODE: H2	
<b>Send Start/Stop Sentinels</b>	<b>A</b>
Do Not Send Start/Stop Sentinels	B

### Track Two SEND Account Number Only

Track Two of a magnetically encoded credit card includes the account number information as well as other information. If this option is selected, all other data contained on the track is suppressed before transmission.

SELECTION CODE: H3	
Track 2 Send Account Number Only	A
<b>Track 2 Not Limited to Account Number</b>	<b>B</b>

### Track Separator

One character from the Full ASCII Table: This option allows the user to select the character used to separate data decoded from each track when using multiple track magnetic stripe readers.

H4<ENTER><SELECTED CHARACTER><ENTER>

*Note: For no track separator, enter N. Default is <ENTER>.*

## REVIEWING CONFIGURATION SETTINGS

The reader's current settings can be reviewed by following these steps:

1. Locate the group that contains the settings you want to review.
2. On an AT-compatible computer, enter any document editor. (Notepad is recommended in the Windows environment.)
3. Enter the setup mode for that group by typing **/E/D/FX** <Enter>. (X in this case is the single alpha character identified with the group located in Step 1.)
4. The reader will respond with two beeps after <ENTER> is depressed.
5. Review the settings for the group by typing **XY**<ENTER>. (X is the same single alpha character as typed in Step 3.)
6. After <ENTER> is depressed, the reader will display the current settings for the group onto the screen for user to review, followed by two beeps from the reader.
7. Exit the setup mode after reviewing the settings by typing **XZ** <ENTER>. (X is the same single alpha character as typed in Step 3.)
8. The reader will respond with four beeps.

EXAMPLE:

To review the reader's current settings for the Code 39 bar code, first find the settings for Code 39 listed in the Industrial Bar Codes setup group. (The single alpha character group name is F.) Then in Notepad type:

/E/D/FF<ENTER>FY<ENTER>

A sample response is shown below.

Remember to end the review by typing: FZ<ENTER> This will take the reader out of the setup mode and bring it back into its normal reading mode.

---

Industrial Bar Code Setting

**Code 39** Enabled; Full ASCII Off  
Min Length = 01; Max Length = 60; No Check Digit; Stop-Start Send

**I 2 of 5** Enabled; Fixed Length Off  
Min Length = 01; Max Length = 60; No Check Digit

**FEBRABAN** Enabled

**S 2 of 5** Enabled; Fixed Length Off  
Min Length = 01; Max Length = 60; No Check Digit

**Code 128** Enabled  
Min Length = 01; Max Length = 60

**Codabar** Enabled; StopStart Not Send  
Min Length = 01; Max Length = 60; No Check Digit

**MSI** Enabled; Check Digit Not Send  
Min Length = 01; Max Length = 60; Check Digit Double Modulo 10

**Telepen** Enabled, ASCII Mode  
Min Length = 01; Max Length = 60

---

## SECTION 5

# DATA EDITING

---

In addition to adding preambles, postambles, and terminator characters, the Omni can also rearrange, drop, or add to the data it reads from a bar code or magnetic stripe. This enables the data to be sent to the host in the exact format expected by the application software, thus eliminating the need for software modifications.

To accomplish this, the decoded data is divided into smaller blocks of data known as “fields.” in accordance with established standards such as ISO, AAMVA, and CDL.\* With these fields of data defined, the order in which they are sent to the host can be changed. They can also be added or eliminated as needed.

Specifically, the following functions can be performed:

Validate the Data: Data read from a bar code or magnetic stripe can be checked for length, matched to a preset value, or restricted to a certain type of input (i.e., Code 39, Code 128, etc.).

Parse the Data: The data can be divided into separate fields.

Rearrange the Data: The fields that make up one track of data can be transmitted to the host in any order desired, regardless of the order in which they occur on the magnetic stripe itself.

Insert Character Strings into the Data: Additional fields of characters can be created and inserted into the data at any place on any track.

Delete Character Strings from the Data a Record: Fields of characters can be deleted from the data before it is transmitted to the host.

Search for a Character String: Data can be searched for a specified string of characters. This string of characters can then be deleted, moved, or modified using other Data Editing commands.

Duplicate Fields: Fields of data within a track can be duplicated and transmitted to the host as many times as desired—and in any order desired.

Insert Time Delay: Time delays can be inserted between fields of data to give the host time to complete an operation.

\* Please see Appendix D for standard magnetic stripe data formats.

# Data Fields

By separating decoded data into blocks known as “fields,” each block of data can be treated individually. Fields can also be added to the data, permitting user-required characters or function keys to be included.

The fields are identified by a one-character ID starting with the character “A” (up to and including “Z”) in the order they were created. These fields can then be sent to the host in the order you specified.

For example, if the credit card data on Track 2 of the magnetic stripe is:

```
;1234567890123456=9912xxxxxxx?
```

It is divided into seven fields (A, B, C, D, E, F, and G) as shown below:

```
;1234567890123456=9912xxxxxxx?  
|A|      B      |C| D | E      |F|
```

If your application software needs the data sent in the following format:

```
9912<ENTER>  
1234567890123456<ENTER>
```

You can create that format by selecting only the fields you need, reversing the order in which they are sent to the host, and then creating a new field <ENTER> to insert after each field.

We do this by using the fields as defined above and adding a new field:

```
Field B = 1234567890123456  
Field D = 9912  
Field G = <ENTER>
```

and then sending {Field D} {Field H} {Field B} {Field G} to the host.

## Data Editing Formulas

The set of instructions programmed into the reader to define data fields and then arrange them into a format is known as the data editing “formula.”

A maximum of four formulas can be resident in the reader’s memory at any one time. If more than one formula is stored in memory, the reader will apply the first formula to the decoded data. If the data format matches the format (credit card, driver’s license, etc.) of the first formula, then it will re-arrange, add, and drop the data fields as you have indicated and output the reformatted data to the host.

However, if the data does not match the criteria spelled out in the first formula, then the criteria of the second formula stored in memory will be applied. And so on. This process will continue for each of the successive formulas until a match is found. If no matches are found for any of the formulas programmed into the reader, then the unedited data record will not be transmitted to the host by default.

The number of formulas the reader will store is limited by the amount of memory available. Caution should therefore be used when entering a number of long formulas, as all might not fit.

# THE FORMULA SEQUENCE

A basic data editing formula for the Omni has the following structure. (The optional commands are enclosed in brackets):

CODE ID[LENGTH][MATCH]DIVIDE[ADD]SEND

In other words:

1. Identify the bar code symbologies and/or magnetic stripe tracks to which this formula will apply.
2. Specify data length parameters (if desired).
3. Specify the characters (if any) you would like to match.
4. Indicate how you want to divide the data record.
5. Add a character string (if desired).
6. Send the edited data record to the host computer.

Several code IDs can be specified following the CODE ID command, and several ADD commands can be programmed as long as they are grouped together and placed prior to the SEND command.

*Note: If Function Codes are to be used with any of the commands, the Function Code capability must be enabled by typing /E/D/FB<ENTER>B7<ENTER>A<ENTER>BZ<ENTER> before entering the Data Editing Setup mode.*

# Using the Data Editing Functions

The data editing function is often applied to driver's licenses, where the magnetic stripe contains three tracks of information about the license holder, and the host application may need only certain details (such as name, address, and birth date) rather than all the data the stripe holds.

In the AAMVA format, for example, the unedited output for a driver's license might look like this:

```
TRACK 1:      %CABREA^DOES$JANESR$^310 S JEFFERSON ST^?  
TRACK 2:      ;636014028198457=051219639924?  
TRACK 3:      %!!92870 C F503121BLKBRN D69119980116?
```

Track 1 contains the license holder's name and address. Track 2 includes the expiration date and the holder's birthdate. Track 3 includes such details as height, weight, sex, hair, and eye color.

You can identify exactly what fields the various bits of data occupy by referring to the AAMVA format in Appendix E. Read the data from a sample license, print it out, and then mark the fields accordingly. Now decide what fields of data you need, and what fields of data you don't need. For instance, if you don't need eye and hair colors, you can discard this data once it is read and decoded. You don't need to send it to the host.

Once you know what data you'll need for your host application, decide what order you'll need it in. Should the name come first? Should the city come last? Is there other data or formatting you need? If so, you will have to add fields that contain that data.

Knowing what fields you need to add, drop, and re-arrange will enable you to make full use of the commands on the following pages.

# Data Editing Commands

1. Enter DATA EDITING mode by typing **/E/D/FJ**
2. Press **<ENTER>**. The reader should beep twice.
3. Type the two-character selection code for the function you wish to enable or set.
4. Press **<ENTER>**. The reader should beep twice.
5. Type the command you wish to enter.
6. Press **<ENTER>**. The reader should beep twice.
7. Continue to add commands to the data editing formula as desired.
8. Save the formula and exit the data editing mode by typing **JZ <ENTER>**. The reader should beep four times.

*Note: JZ should only be entered at the end of the entire data editing formula, not after each command. See examples page 41.*

## Data Editing ON/Off

Use this command to turn the Data Editing function on or off.

SELECTION CODE: JA	
Data Editing Off	0
Data Editing On	1

EXAMPLE:

To turn the Data Editing function on, enter:

**/E/D/FJ<ENTER>JA<ENTER>1<ENTER>JZ<ENTER>**

## Unmatched Input Send/Do Not Send

This command enables or disables the transmission of data that does not meet the restrictions of the data editing formula(s). When SEND ALL DATA is selected, data that does not match any of the formulas will be transmitted anyway, along with any preambles or postambles. When DO NOT SEND is selected, unmatched data will not be sent.

SELECTION CODE: JB	
If No Formula Matches Data, Do Not Send Data	0
If No Formula Matches Data, Send All Data	1

## Select Code ID(s)

This command designates the bar code symbologies or magnetic stripe tracks that will be accepted as valid.

<b>SELECTION CODE: JC</b>	
<b>UPC-A</b>	<b>a</b>
<b>UPC-E</b>	<b>b</b>
<b>EAN-8</b>	<b>c</b>
<b>EAN-13</b>	<b>d</b>
<b>Code 39</b>	<b>e</b>
<b>Interleaved 2 of 5</b>	<b>f</b>
<b>Industrial 2 of 5</b>	<b>g</b>
<b>Code 128</b>	<b>h</b>
<b>MSI/Plessey</b>	<b>i</b>
<b>Codabar</b>	<b>j</b>
<b>MSR Track 1</b>	<b>k</b>
<b>MSR Track 2</b>	<b>l</b>
<b>MSR Track 3</b>	<b>m</b>
<b>Telepen</b>	<b>n</b>

### EXAMPLE:

To designate UPC-A, Code 39, Codabar, and MSR Track 1 as the only valid sources of data, enter:

... JC<ENTER>a<ENTER>e<ENTER>j<ENTER>k<ENTER> ...

## Set Length

Use this command to indicate a minimum and maximum number of characters allowed for valid data. The first two digits set the minimum length, and the second two digits set the maximum length. (This command is optional.)

<b>SELECTION CODE: JD</b>
<b>Two Digits for Minimum Length</b>
<b>Two Digits for Maximum Length</b>

### EXAMPLE:

To set the minimum number of characters at six, and the maximum at twelve, enter:

... JD<ENTER>0<ENTER>6<ENTER>1<ENTER>2<ENTER> ...

## Match String

This command looks for a “match” between a data string designated in the data editing formula and a data string in the data scanned by the reader. When this feature is enabled, the only data sent to the host will be data that contains the matched data string. The first two digits indicate the position in the scanned data at which the match is to begin. Up to 60 characters can then be entered to specify the actual string to be matched. If you need to match more than one character string, simply add another match command to the formula. (This command is optional.)

<b>SELECTION CODE: JF</b>
---------------------------

<b>Two Digits for Position at which to Begin Match</b>
--------------------------------------------------------

<b>Up to 60 Characters for Match String</b>
---------------------------------------------

### EXAMPLE:

To begin the match string at position 8 and designate the match string as ABCDE, enter:

```
... JE<ENTER>0<ENTER>8<ENTER>A<ENTER>B<ENTER>C<ENTER>D<ENTER>E<ENTER> ...
```

This means that input data “1234567ABCDE” will match the data string in the Match String formula and will therefore be considered valid.

*Note: The first position is 01, not 00.*

## Create a Data Field

This command allows you to create a data field that begins with the first position in the scanned data and extends a specified number of characters. For instance, if the new data field is to be eight characters long, the undivided field of data will be divided into two fields, the first eight characters long, and the second the remaining data characters.

<b>SELECTION CODE: JF</b>
---------------------------

<b>Two Digits for Position at which First Data Field Ends</b>
---------------------------------------------------------------

### EXAMPLE:

In scanned data 15 characters long, to create a first data field of 7 characters and a second data field of 8 characters, enter:

```
... JF<ENTER>0<ENTER>7<ENTER> ...
```

This means that input data “1234567ABCDEFG” will divide into two fields: 1234567 and ABCDEFG.

## Search for a Data String

This command allows you to create a data field by searching the scanned data for a data string that matches a data string specified in the formula. If a match is found, the scanned data will be divided into three fields: the data from the search start point to the character before the searched data string, the data string itself, and the data remaining.

<b>SELECTION CODE: JG</b>
---------------------------

<b>Characters that Constitute the Data String to be Searched for</b>
----------------------------------------------------------------------

### EXAMPLE:

In scanned data, to search for the data string ABCDE, enter:

... JG<ENTER>A<ENTER>B<ENTER>C<ENTER>

D<ENTER>E<ENTER> ...

This means that scanned data “1234567ABCDEFG” will be divided into three fields: 1234567 and ABCDE and FG.

## Add a Data Field

This command allows you to add a character string to scanned data before transmitting it to the host computer. The character string you add will be transmitted as a separate data field. (This command is optional.)

<b>SELECTION CODE: JJ</b>
---------------------------

<b>Characters that Constitute the Data String to be Added</b>
---------------------------------------------------------------

### EXAMPLE:

In scanned data, to add one data field “abcd” to the scanned data 1234, enter:

... JJ<ENTER>a<ENTER>b<ENTER>c<ENTER>d<ENTER> ...

This means that additional field “abcd” can be added to output data string abcd and 1234.

## Set the Sequence in which Data Fields are Sent

This command specifies the order in which data fields are transmitted to the host. Each separate field is assigned an upper case alpha letter in the order in which it is created. So the first data field created is A, the second is B, and so on.

<b>SELECTION CODE: JK</b>
---------------------------

<b>Characters Assigned to Data Fields in the Transmission Order Desired</b>
-----------------------------------------------------------------------------

### EXAMPLE:

To transmit fields A, B, and C to the host so that the second and third data fields are reversed, enter:

... JK<ENTER>A<ENTER>C<ENTER>B<ENTER> ...

This means that data fields A, B, and C will be transmitted as A, C, and B.

## Time Delay

In addition to specifying the order in which data fields are transmitted to the host, you can add a time delay between each field. The amount of time delay is two digits multiplied by 100 milliseconds. So if the time delay specified is "02" the time delay will be 200 milliseconds.

<b>SELECTION CODE: JM</b>
---------------------------

<b>Two Digits for Time Delay</b>
----------------------------------

## Delete One Formula

This command deletes a single formula stored in the reader's memory. To do this, you need to know the place the formula is stored in memory. In other words, if the formula to be deleted is the third formula stored in the reader's memory, then you'll need to enter the number 3.

<b>SELECTION CODE: JS</b>
---------------------------

<b>One Digit to Indicate which Formula to Delete</b>
------------------------------------------------------

## Reset Data Editing Group

This command will clear the reader's memory of all formulas, disable the Data Editing feature, and send the original data with the preamble, postamble, and terminator specified.

**SELECTION CODE: JX**

### EXAMPLE:

To delete all data editing formulas from the reader's memory, enter:  
/E/D/FJ<ENTER>JX<ENTER>JZ<ENTER>

## Review Configurations

This command allows you to view all the data editing formulas stored in the reader's memory, as well as all other data editing settings.

**SELECTION CODE: JY**

### EXAMPLE:

To view all data editing formulas in the reader's memory, enter:  
... JY<ENTER> ...

## Exit Data Editing Mode

Remember to enter JZ<ENTER> to save your settings and exit the Data Editing mode.

**SELECTION CODE: JZ**

## Omni Data Flow

The Omni reader processes scanned data in the following order:

1. Raw data is scanned and decoded and placed in an ASCII character format in the reader's memory.
2. The bar code symbology and magnetic stripe track tests (maximum/minimum length, check digit, send sentinels, etc.) are applied to the data.
3. Following the successful completion of these tests, the data is compared to each data editing formula stored in memory.
4. If the data matches one of the data editing formulas, it is processed and sent to the output port. If the data does not match any of the formulas and the UNMATCHED INPUT function is set to DO NOT SEND, the data will be discarded.

5. If UNMATCHED INPUT is set to SEND, the unmatched data is passed on to the message processing section of the reader, where any previously-defined postamble, preamble, and terminator characters are added before the data is sent to the output port.

## Examples

### EXAMPLE ONE

# 76440057320712

### Symbology Code 128

Desired Output: Divide the input data record into two fields with one consisting of the first six digits and the second containing the remaining data. The output should have a <ENTER> inserted after each field.

Formula                                    ID h C 06 A <ENTER> SEND ACBC

Field List                                Field A 764400  
                                          Field B 57320712  
                                          Field C <ENTER>

Prior to data editing, enable the Function Code Selection on page 9.

Enter Data Editing Setup	Keystroke Sequence
Enable Data Editing	/E/D/FJ<ENTER>
Enter Code ID as h (for Code 128)	JA<ENTER>1<ENTER>
Define first six characters as Field A, and remaining data as Field B	JC<ENTER>h<ENTER>
Enter Add Field C as the <ENTER> key	JF<ENTER>0<ENTER>
Define Field Sending Sequence of ACBC	6<ENTER>
	JJ<ENTER>\<ENTER>
	JK<ENTER>A<ENTER>
	C<ENTER>B<ENTER>
	C<ENTER>
Save Exit Setup	JZ<ENTER>
Output Data	764400<ENTER>
	57320712<ENTER>



EXAMPLE THREE

%B0123774965^FISH/MARY^96124379F?

**MSR Track 1 data**

Desired Output: Divide it up into seven fields so that the 1st field is the first two characters, 2nd field is all characters from the first field to the first “^” character, 3rd field is the first “^” character, 4th field is the data between “^” marks, 5th field is the next “^” character, 6th field is the next four characters, 7th field is the remaining characters. In addition, an <ENTER> is inserted between fields in the data output record. Only the 4th, 2nd, and 6th fields are outputted.

Formula	ID k C 02 S ^ S ^ C04 A<ENTER> SEND
	DHBHFH
Field List	Field A %B
	Field B 0123774965
	Field C ^
	Field D FISH/MARY
	Field E ^
	Field F 9612
	Field G 4379F?
	Field H <ENTER>

Prior to data editing, enable the Function Code Selection on page 9.

	Keystroke Sequence
Enter Data Editing Setup	/E/D/FJ<ENTER>
Enter Data Editing and Enable	JA<ENTER>1<ENTER>
Enter Code ID and k (for MSR Track 1)	JC<ENTER>k<ENTER>
Enter Count and 02	JF<ENTER>0<ENTER> 2<ENTER>
Enter Search String and the ^ character	JG<ENTER>^<ENTER>
Enter Search String and the ^ character	JG<ENTER>^<ENTER>
Enter Count and 04	JF<ENTER>0<ENTER> 4<ENTER>
Enter Add Field & the <ENTER> character	JJ<ENTER>\<ENTER>
Enter Field Sequence and DHBHFH	JK<ENTER>D<ENTER> H<ENTER>B<ENTER> H<ENTER>F<ENTER> H<ENTER>
Enter Exit Setup	JZ<ENTER>
Output Data	FISH/MARY<ENTER> 0123774965<ENTER> 9612<ENTER>

## SECTION 6

# TROUBLESHOOTING

---

The Omni reader is easy to install and use. Most problems encountered can be attributed to:

- Incorrect Interface Cabling
- Incorrect Configuration Setup
- Bad Magnetic Stripe Quality
- Poor Bar Code Printing Quality

## GENERAL PROCEDURES

The troubleshooting process can be simplified by following these simple diagnostic procedures.

1. The unit should emit two beeps when power is first applied and the LED should turn green. If this does not happen, then the unit is not receiving power or did not power up correctly.
2. Once it has been confirmed that the unit is correctly powered, try swiping a credit card. If the decode is successful, the LED will turn amber and the data will be sent out, accompanied by a beep. The LED will turn amber for a short moment and then back to green after the data has been transferred. If the decode fails, the LED will turn red for about 2 seconds to indicate a “bad read” with no beep or one beep if just one track fails.
3. Once the unit has indicated a “good read,” proceed to check the interface cabling connections.

# Keyboard Interface Problems

Installation of the reader is generally trouble free, but there are some things to watch for if you are experiencing problems.

*Do you have the proper cable?*

Most modern computers and terminals use a PC/XT/AT-compatible keyboard. However, the cable connecting it to the keyboard port may have variations in either the signal pins or the connector itself. Make sure that you have the proper cable for the computer/terminal with which you are interfacing.

*Does the keyboard work?*

Since the data from the keyboard must pass through the reader, the cabling connections are not correct if the keyboard is not operational.

*Can the host computer accept the data fast enough?*

Some computers and terminals are expecting the data rate from the keyboard port to come in at a keystroke rate, and might not be able to accept it as fast as the reader is transmitting. Try adjusting the intercharacter delay to simulate the effects of keystroke delays.

*Does the keyboard port supply enough power?*

Most computers supply enough power to the keyboard port to operate the reader. Occasionally you will find keyboard ports that supply only a very limited amount of power. See if the LED is lighting at full intensity; a lighter-than-usual green (or a red showing as orange) could indicate a “low power” condition.

# SCANNING CONFIGURATION PROBLEMS

One common problem is incorrect configuration setup. You may be trying to read a bar code with the check digit enabled, but the bar code was printed without it. The default settings for the reader are the most frequently-used parameters. If these work, use them. That way, when someone inadvertently changes the settings, they can be reset by entering the return to default codes. If you must use different settings, it is advisable to make a master sheet with the desired configuration keystrokes in the proper order. The operator can then enter them in sequential order to configure the reader as desired.

*1. Is the bar code properly positioned on the card?*

The reader is designed for a bar code centered 0.49" (12.5 mm) from the bottom of the card.

*2. Is the bar code printed in good quality (and straight)?*

*3. Does the bar code have a security tape or mask covering it?*

If so, be sure to use a model with an infra red light source.

*4. Is the proper bar code symbology enabled?*

Each symbology can be individually enabled or disabled. It is sometimes desirable to enable only those that will be used, thereby eliminating any errors due to the operator scanning the wrong bar code symbol.

*5. Do the selected bar code symbology format options match the symbol?*

The scanned data from each bar code symbology can be restricted to eliminate the scanning of unwanted symbols. The restrictions are individually set for each symbology.

*6. Is the desired track on the magnetic stripe enabled?*

*7. Does the output data format match the requirements of the application software?*

*8. Has the magnetic stripe been encoded in a standard format?*

Finally, if the reader gives the correct LED and beep indications but no data is transmitted to the host, check the cable connection.

# Appendix A

## BAR CODE DEFAULT SETTINGS

---

The Omni reader is shipped from the factory with the following bar code default settings already programmed:

### Terminal Selection (Group A)

Type	IBM PC/AT Keyboard Wedge
------	--------------------------

### General Selection (Group B)

Beep Volume	High
Intercharacter Delay	5 milliseconds
Interblock Delay	0 milliseconds
Language	United States
Code ID	Off
Scan Verification	Off
Function Code	Off

### Bar Code Message Formatting (Group C)

Terminator Character	<ENTER>
Preamble	None
Postamble	None

### Magnetic Stripe Message Formatting (Group D)

Terminator Character	<ENTER>
Preamble	None
Postamble	None

### Magnetic Stripe Selections (Group H)

Track Selection	Any Track
Start/Stop Selection	Send
Track 2 Send Account # Only	Not Limited to Account #
Track Separator	<ENTER>

### Data Editing (Group J)

Edit On/Off	Off
Unmatched Input	Do Not Send

## **INDUSTRIAL BAR CODES (Group F)**

<b>Code 39</b>	Enabled
Full ASCII	On
Check Digit	Off
Send Check Digit	No
Send Start/Stop	No
Minimum Length	1
Maximum Length	60
<b>Interleaved 2 of 5</b>	Enabled
Fixed Length	Off
Check Digit	None
Minimum Length	4
Maximum Length	60
<b>Industrial 2 of 5</b>	Enabled
Fixed Length	Off
Check Digit	None
Minimum Length	1
Maximum Length	60
<b>Febraban</b>	Convert
<b>Code 128</b>	Enabled
Minimum Length	1
Maximum Length	60
<b>Codabar</b>	Enabled
Send Start/Stop	No
Check Digit	None
Minimum Length	2
Maximum Length	60
<b>MSI/Plessey</b>	Enabled
Send Check Digit(s)	No
Check Digits	Modulo 10/Modulo 10
Minimum Length	1
Maximum Length	60
<b>Telepen</b>	Enabled
Numeric Mode	On

## **RETAIL BAR CODES (Group G)**

<b>UPC-A, -E</b>	Enabled, Enabled
Send Number System Digit	Yes
Send Check Digit	Yes
Expand UPC-E	No
Read 2, 5 Digit Addendum	No, No
Addendum required	Yes
Add Addendum Separator	Yes
Send UPC-A as EAN-13	No

<b>EAN-13, -8</b>	Enabled, Enabled
Send Induced Country Code Digit	Yes
Send Check Digit	Yes
Read 2, 5 Digit Addendum	No, No
Addendum Required	Yes
Add Addendum Separator	Yes

### **Code ID**

UPC-A	a
UPC-E	b
EAN-8	c
EAN-13	d
Code 39	e
Interleaved 2 of 5	f
Industrial 2 of 5	g
Code 128	h
MSI/Plessey	i
Codabar	j
MSR Track 1	k
MSR Track 2	l
MSR Track 3	m
Tepelen	n

# Appendix B

## MAGNETIC STRIPE DATA OUTPUT FORMAT

---

The Omni reader is shipped from the factory with the following magnetic stripe default settings already programmed:

### Magnetic Track Basic Data Output Format

Track 1: <SS1><T<sub>1</sub> Data><ES><TS>

Track 2: <SS2><T<sub>2</sub> Data><ES><TS>

Track 3: <SS3><T<sub>3</sub> Data><ES><Terminator>

where: SS1(start sentinel track 1) = %  
SS2(start sentinel track 2) = ;  
SS3(start sentinel track 3) = ; for ISO, ! for CDL, % for AAMVA  
ES(end sentinel all tracks) = ?  
<TS> = <ENTER> key on keyboard  
Terminator = <ENTER> key on keyboard

**Start or End Sentinel:** Characters in encoding format which come before the first data character (start) and after the last data character (end), indicating the beginning and end, respectively, of data.

**Track Separator:** A designated character which separates data tracks.

**Terminator:** A designated character which comes at the end of the last track of data in order to separate card reads.

**LRC:** Check character, following end sentinel. (The reader will verify it when decoding, but this will not be sent as part of the data.)

**CDL:** Old California Drivers License format.

# Appendix C

## FUNCTION CODE TABLE (for AT Interface)

---

Function Key	Keystroke
F1	\F1
F2	\F2
F3	\F3
F4	\F4
F5	\F5
F6	\F6
F7	\F7
F8	\F8
F9	\F9
F10	\F10
F11	\F11
F12	\F12
Home	\HOME
End	\END
Right	\RIGHT
Left	\LEFT
Up	\UP
Down	\DOWN
PgUp	\PGUP
PgDn	\PGDN
Tab	\TAB
Back Tab	\BTAB
Esc	\ESC
Enter	\ENTER
Right Ctrl	\CTRL
Left Alt	\ALT
Left Shift Make	\L-SHIFT ON
Left Shift Break	\L-SHIFT BREAK
Left Alt Make	\L-ALT ON
Left Alt Break	\L-ALT BREAK
Left Ctrl Make	\L-CTRL ON
Left Ctrl Break	\L-CTRL BREAK
Ins	\INS
Backspace	\BS

# Appendix D

## MAGNETIC STRIPE STANDARD DATA FORMATS

---

### INTERNATIONAL STANDARDS ORGANIZATION (ISO) CREDIT CARD FORMAT

#### TRACK 1

Field ID Character	Contents	Length
a	Start Sentinel (%)	1
b	Format Code "B"	1
c	Account Number	13 or 16
d	Separator "^"	1
e	Cardholder Name	variable
f	Separator "^"	1
g	Expiration date (YYMM)	4
h	Optional Discretionary data	variable
i	End Sentinel (?)	1
j	Linear Redundancy Check (LRC) Character	1

#### TRACK 2

Field ID Character	Contents	Length
a	Start Sentinel (;)	1
b	Account Number	13 or 16
c	Separator "="	1
d	Expiration date "YYMM"	4
e	Optional discretionary data	variable
f	End Sentinel (?)	1
g	Linear Redundancy Check (LRC) Character	1

# California Driver's License Format

## TRACK 1

Field ID Character	Contents	Length*
a	Start Sentinel (%)	1
b	Format Code Type C = Commercial S = Salesperson D = Driver I = Identification R = Senior Citizen	1
c	Name Line 1	29
d	Name Line 2	29
e	Address Line 1	29
f	City	13
g	End Sentinel (?)	1
h	Linear Redundancy Check (LRC) Character	1

## TRACK 2

Field ID Character	Contents	Length
a	Start Sentinel (;)	1
b	Identification Number ANSI User ID DL/ID Alpha Translated 7 position DL/ID number Check Digit	6 2 7 1
c	Field Separator “=”	1
d	Expiration Date	4
e	Field Separator “=”	1
f	Discretionary Data, 8 position birthdate	8
g	End Sentinel (?)	1
h	Linear Redundancy Check (LRC) Character	1

\* Fixed length format for each field.

**TRACK 3**

Field ID Character	Contents	Length
a	Start Sentinel (!)	1
b	Class	4
c	Endorsements	4
d	State Code	2
e	Zip Code	9
f	Sex	1
g	Hair	3
h	Eyes	3
i	Height	3
j	Weight	3
k	Restrictions	10
l	Issue Date	8
m	Office	3
n	Employee ID	2
o	LRE ID	2
p	Fee Due Year	4
q	Address Line 2	29
r	Reserved Space	10
s	End Sentinel (?)	1
t	Linear Redundancy Check (LRC) Character	1

# AAMVA Driver's LICENSE Format

## TRACK 1

Field ID Character	Contents	Length*
a	Start Sentinel (%)	1
b	State or Province	2
c	City	13
d	Name	35
e	Address	29
f	End Sentinel (?)	1
g	Linear Redundancy Check (LRC) Character	1

## TRACK 2

Field ID Character	Contents	Length
a	Start Sentinel (;)	1
b	ANSI User Code	1
c	ANSI User ID	5
d	Jurisdiction ID/DL	14
e	Expiration date	4
f	Birthdate	8
g	Remainder of Jurisdiction ID/DL	5
h	End Sentinel (?)	1
i	Linear Redundancy Check (LRC) Character	1

## TRACK 3

Field ID Character	Contents	Length
a	Start Sentinel (%)	1
b	Template Version #	1
c	Security Version #	1
d	Postal Code	11
e	Class	2
f	Restrictions	10
g	Endorsements	4
h	Sex	1
i	Height	3
j	Weight	3
k	Hair Color	3
l	Eye Color	3
m	ID #	10
n	Reserved Space	16
o	Error Correction	6
p	Security	5
q	End Sentinel (?)	1
r	Linear Redundancy Check (LRC) Character	1

\* Variable length format for each field. (Length indicated above is the maximum length for the field.)

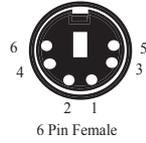
# Appendix E

## CONNECTOR PIN-OUTS

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### Keyboard Port, 6 pin DIN (FEMALE)

Connector Pin	Direction	Signal
2		Not Used
4	To Reader	+Vcc
6		Not Used
1	Both	Data
3	Reference	Signal Ground
5	Both	Clock



# Appendix F

## USB/KEYBOARD INTERFACE

---

### Installation

The Omni reader is available with a cable that terminates in a Universal Serial Bus (USB) connector. Most new computers have multiple USB ports into which a wide variety of peripherals can be installed.

Since USB devices are designed to be “plug and play,” the computer will search for a Human Interface Device (HID) driver when the Omni is first connected. If one cannot be found, the computer will prompt you to make a selection as to where the driver can be found. The Windows CD may be needed to complete the installation at this point.\*

The Omni reader is shipped from the factory with default configuration settings already programmed. (See Appendixes A and B: Default Settings Tables for details.) These settings are satisfactory for most applications. In order to change these settings, it is necessary to run the ID TECH USB Reader Setup Utility. The Reader Setup Utility allows you to enter commands through the keyboard to configure the reader. The utility is available at the ID TECH website ([www.id-tech.net](http://www.id-tech.net)).

#### **To install the ID TECH Reader Setup Utility from a download file, just follow these steps:**

1. Unzip the files in a new directory.
2. Run SETUP.EXE to install the software.
3. Follow the on-screen instructions.

\* The Omni USB/keyboard reader uses the USB/keyboard driver provided by the host operating system (Windows 98, 2000, or XP, or Mac OS).

# Operation

**To use the ID TECH USB Reader Setup Utility, follow these steps:**

1. Go to the PROGRAM menu.
2. Select ID TECH USB Reader Setup.
3. When the screen appears, enter a command in the window labeled INPUT SETUP STRING , just as you would with a standard keyboard wedge interface.
4. Click SEND and wait for the reader to beep.
5. If the command is accepted, the Omni will beep twice (or four times upon exit). If the command is rejected, the Omni will give four quick beeps.
6. You can clear the INPUT SETUP STRING window by clicking on CLEAR INPUT.
7. The HISTORY window displays previous commands. To re-use a command, highlight the command in HISTORY and right click to select COPY. Position the cursor in the INPUT SETUP STRING window and right click to select PASTE.
8. To end your session, click on EXIT. This will clear all data in the HISTORY window.
9. Test the reader in Notepad to verify the configuration is correct. To use the SEND FILE feature, enter commands into Notepad. The last line in Notepad must contain word “END” as the only entry. Save the Notepad file. Use the SEND FILE button to open & send the Notepad file.

Example Notepad text for resetting the factory default settings:

```
/E/D/FA (Enter)  
AW (Enter)  
AZ (Enter)  
END
```

*Note: When using the Omni in conjunction with a laptop computer or other battery-operated host, power to the USB port may be shut down when the battery runs low. If this happens, charge (or replace) the battery and then reboot to continue.*

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