OMNI™

Combined Bar Code

and

Magnetic Stripe Reader

Keyboard Wedge

User's Manual

IDTECH™

Value through Innovation

Agency Approved

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

Limited Warranty

ID TECH warrants this product to be in good working order for a period of one year from the date of purchase. If this product is not in good working order as warranted above, or should this product fail to be in good working order at any time during the warranty period, repair or replacement shall be provided by ID TECH.

This warranty does not cover incidental or consequential damages incurred by consumer misuse, or modification of said product. For limited warranty service during the warranty period, please contact ID TECH to obtain an RMA number and instructions for returning the product.

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Section 1
INTRODUCTION

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 as a keyboard wedge, 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.

This unit is fully programmable through the keyboard. The data can be formatted with preamble/postamble and terminator characters to match the format expected by the host. Power, when the scanner is configured as a keyboard wedge, is obtained from the host.

Section 2
INSTALLATION

Host Connections

The Omni reader is connected between the keyboard input port of the host computer and the keyboard itself using a "Y" adapter cable. The "Y" cable has a 5-pin DIN male connector on one end, and a 6-pin mini-DIN female on the other.

The supplied adapter cable has a 5-pin DIN female connector on one end, and a 6-pin mini-DIN male connector on the other end. The adapter cable is used in all installations on one end of the "Y" cable or the other. This converts the available cable ends for use on either PS/2-style 6-pin mini-DIN keyboards, or AT-style 5-pin DIN keyboards.

To connect the reader to the host, turn the power off and disconnect the keyboard from the computer. Insert the male end of the "Y" cable into the keyboard port. Then connect the keyboard to the female end of the "Y" connector. 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
CONFIGURATION

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 must 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 symblogy, setting any check digit, start/stop codes, preamble/postamble, and min/max symbol length.

Magnetic Stripe Input

The reader must 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

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 default settings, see Appendix A (for bar codes) and/or Appendix B (for magnetic stripes). In order to modify these settings, the host computer and keyboard must be IBM PC/AT compatible.

If you have a different keyboard, you must use an AT-compatible keyboard to first change the configuration settings, and changing the default terminal type last. After changing terminal type, you must then connect the reader to the appropriate computer. (Most keyboards on PCs with 5 pin DIN and 6 pin MiniDIN connectors are AT compatible.)

To enter the setup mode and change the configuration via keystroke entry, specific syntax is used. Each setup command starts with /E/D/FX where "X" is a different upper case character for each command. The E, D, and F characters must also be upper case. This initial character string is followed by ENTER and the specific characters for the setting desired. Selections for each group take effect when you press enter.

If you unplug the Omni while you are in the middle of a command and have not pressed enter, your custom configuration for that command will not be saved. If, however, you press ENTER after a correct command, but before unplugging the reader, your selections for that command will remain programmed until you change them or reset all commands to default.

When entering keyboard commands, type no more than two characters per second. After entering each group, wait one second before moving to the next group. All commands are case sensitive, so use upper case for all commands. Two beeps indicate an accepted command, four beeps indicate a successful exit of a group (when you have typed the EXIT command for a particular group), and four quick beeps indicate an incorrect or rejected command. If you make a mistake in entering a command, you must re-enter the entire command. Do not use backspace and retype the character.

Configuration Setup Sets

1. On an AT-compatible computer, enter any edit mode. (When running Windows, the Notepad accessory will work fine.)

2. Enter GROUP SETUP MODE by typing /E/D/FX, remembering the "X" will be different every time, depending on the setting you wish to make and the group it is in. Applicable groups are: Terminal Type Selection, General Selections, Industrial Bar Code Selections, Retail Bar Code Selections, Magnetic Stripe Selections, and Code ID Definition.

3. Press <ENTER>.

4. Type the code for the setting you wish to change.

5. When finished, save your new selection by pressing <ENTER>.

6. Exit the group setup mode by typing XZ<ENTER> (where, again, the "X" will be different every time).

EXAMPLE:

To set the beep volume to LOW, enter:
/E/D/FB<ENTER>1<ENTER>BZ<ENTER>

The setup routine is always the same, regardless of group.
1. Enter group.
2. Enter subgroup.
3. Choose option or reset to default.
4. Exit

Terminal Type Selection

The Omni reader can be programmed to interface to a number of different terminals. Simply enter the two-digit terminal number. The terminal types supported are:

00 for PC/XT
01 for PC/AT
02 for PS/2 Models 25 and 30
03 for PS/2 Models 50, 60, and 80
04 for PS/2 Model 70
09 for IBM 3196
27 for IBM 4614 POS
08 for Macintosh with ADB
26 for Notebook PC

1. Enter GROUP SETUP MODE by typing /E/D/FA.
2. Press <ENTER>.
3. Type the two-digit code for the selection you wish to make.
4. Save your selection by pressing <ENTER>.
5. To review the current setting, type AY<ENTER>.
6. To reset the terminal type setting to default, type AX<ENTER>.
7. Exit the group setup mode by typing AZ<ENTER>.
8. To reset all settings in all groups to default, enter AW<ENTER>.

General Selections

The basic operating perameters 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>.
3. Type the one or two-character code for the selection you wish to make.
4. Save your selection by pressing <ENTER>.
5. To review the current setting, enter BY<ENTER>.
6. Exit the group setup mode by entering BZ<ENTER>.
7. To reset the terminal type setting to default, enter BX<ENTER>.

Beep Volume

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

B1<ENTER>0 for Off.
B1<ENTER>1 for Low
B1<ENTER>2 for High

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 their keyboard's intercharacter delay.

B2<ENTER>0 for 2 ms intercharacter delay
B2<ENTER>1 for 5 ms intercharacter delay
B2<ENTER>2 for 10 ms intercharacter delay
B2<ENTER>3 for 20 ms intercharacter delay
B2<ENTER>4 for 50 ms intercharacter delay
B2<ENTER>5 for 100 ms intercharacter delay

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.

B3<ENTER>0 for 0 ms
B3<ENTER>1 for 10 ms
B3<ENTER>2 for 30 ms
B3<ENTER>3 for 100 ms
B3<ENTER>4 for 300 ms
B3<ENTER>5 for 1 second

Language

This selection defines the scan code sent to the host for each character.
B4 <ENTER>0 for U.S.
B4 <ENTER>1 for U.K.
B4 <ENTER>2 for Swiss
B4 <ENTER>3 for Swedish
B4 <ENTER>4 for Spanish
B4 <ENTER>5 for Norwegian
B4 <ENTER>6 for Italian
B4 <ENTER>7 for German
B4 <ENTER>8 for French
B4 <ENTER>9 for Japanese

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.

B5<ENTER>A for On
B5<ENTER>B for Off

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 a good read.

B6<ENTER>A for On
B6<ENTER>B for Off

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. When this selection is ON, these key codes can be entered from the Function Code Table in Appendix A and be included in the data stream as part of the message string (such as pre/postambles or Code IDs).

B7<ENTER>A for On
B7<ENTER>B for Off

Bar Code Message Formatting Selections

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 SETUP MODE by typing /E/D/FC .
2. Press <ENTER>.
3. Type the one or two-character code for the selection you wish to make.
4. Save your selection by pressing <ENTER>.
5. To review the current setting, enter CY<ENTER>.
6. Exit the group setup mode by entering CZ<ENTER>.
7. To reset the terminal type setting to default, enter CX<ENTER>.

Bar Code Terminator Character

Enter (CRLF), Return (CR), Field Exit (LF), 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.

C1<ENTER>A for ENTER
C1<ENTER>B for CR
C1<ENTER>C for LF
C1<ENTER>D for None

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 A.

C2<ENTER><SELECTED CHARACTERS OR FUNCTION KEY>

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.

C3<ENTER><SELECTED CHARACTERS OR FUNCTION KEY>

Magnetic Stripe Formatting Selections

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

1. Enter MAGNETIC STRIPE SETUP MODE by typing /E/D/FD .
2. Press <ENTER>.
3. Type the one or two-character code for the selection you wish to make.
4. Save your selection by pressing <ENTER>.
5. To review the current setting, enter DY<ENTER>.
6. Exit the group setup mode by entering DZ<ENTER>.
7. To reset the terminal type setting to default, enter DX<ENTER>.

Magnetic Stripe Terminator Character

Enter (CRLF), Return (CR), Field Exit (LF), 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.

D1<ENTER>A for ENTER
D1<ENTER>B for CR
D1<ENTER>C for LF
D1<ENTER>D for None

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 A.

D2<ENTER><SELECTED CHARACTERS OR FUNCTION KEY>

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.

D3<ENTER><SELECTED CHARACTERS OR FUNCTION KEY>

Track Separator

One character: This option allows the user to select the character used to separate data from different tracks. The default is **<CR>**.

D4<ENTER><SELECTED CHARACTER>

Note: For no track separator, enter N.

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

1. Enter INDUSTRIAL BAR CODE SETUP MODE by typing /E/D/FF .
2. Press <ENTER>.
3. Type the one or two-character code for the selection you wish to make.
4. Save your selection by pressing <ENTER>.
5. To review the current setting, enter FY<ENTER>.
6. Exit the group setup mode by entering FZ<ENTER>.
7. To reset the terminal type setting to default, enter FX<ENTER>.

Minimum and Maximum Length Options

You can set minimum and maximum length standards for a particular 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.

1. Enter the characters for the symbology (such as F4<ENTER> for Code 128).
2. Enter FU<ENTER> for minimum or FV<ENTER> for maximum.
3. Enter one digit<ENTER>one digit <ENTER> from the keyboard. (The range is 01 to 60).

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.

F1<ENTER>A for Code 39 Enable
F1<ENTER>B for Code 39 Disable

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.

F1<ENTER>C for Full ASCII On
F1<ENTER>D for Full ASCII Off

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 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.

F1<ENTER>E to Not Calculate Check Digit and send whole data stream
F1<ENTER>F to Calculate and Send Check Digit
F1<ENTER>G to Calculate but not send Check Digit

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.

F1<ENTER>H to Send Start/Stop
F1<ENTER>I Do Not Send Start/Stop

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.

F2<ENTER>A for Interleaved 2 of 5 Enable
F2<ENTER>B for Interleaved 2 of 5 Disable

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.

F2<ENTER>C to Turn Off Fixed Length
F2<ENTER>D to Turn On Fixed Length

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 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.

F2<ENTER>E to Not Calculate Check Digit and send whole data stream
F2<ENTER>F to Calculate and Send Check Digit
F2<ENTER>G to Calculate but not send Check Digit

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.

F3<ENTER>A for Industrial 2 of 5 Enable
F3<ENTER>B for Industrial 2 of 5 Disable

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.

F3<ENTER>C to Turn Off Fixed Length
F3<ENTER>D to Turn On Fixed Length

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 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.

F3<ENTER>E to Not Calculate Check Digit and send whole data stream
F3<ENTER>F to Calculate and Send Check Digit
F3<ENTER>G to Calculate but not send Check Digit

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.

F4<ENTER>A for Code 128 Enable
F4<ENTER>B for Code 128 Disable

Note: The Check Digit is manditory 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.

F5<ENTER>A for Codabar Enable
F5<ENTER>B for Codabar Disable

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.

F5<ENTER>C to Send Start/Stop
F1<ENTER>D Do Not Send Start/Stop

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 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.

F1<ENTER>E to Not Calculate Check Digit and send whole data stream
F1<ENTER>F to Calculate and Send Check Digit
F1<ENTER>G to Calculate but not send Check Digit

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.

F7<ENTER>A for MSI/Plessey Enable
F7<ENTER>B for MSI/Plessey Disable

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.

F7<ENTER>C for Send Check Digit
F7<ENTER>D for Do Not Send Check Digit

Select only one of the following check digit schemes:
F7<ENTER>E for Single Mod 10 Check Digit
F7<ENTER>F for Two Mod 10 Check Digits
F7<ENTER>G for Mod 10/Mod 11 Check Digits

Retail Bar Codes

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>.
3. Type the one or two-character code for the selection you wish to make.
4. Save your selection by pressing <ENTER>.
5. To review the current setting, enter GY<ENTER>.
6. Exit the group setup mode by entering GZ<ENTER>.
7. To reset the terminal type setting to default, enter GX<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.

G1<ENTER>A for UPC-A Enable
G1<ENTER>B for UPC-A Disable

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.

G1<ENTER>C for UPC-A Enable
G1<ENTER>D for UPC-A Disable

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.

G1<ENTER>E for Send Number Digit
G1<ENTER>F for Do Not Send Number Digit

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.

G1<ENTER>G for Send Check Digit
G1<ENTER>H for Do Not Send Check Digit

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.

G1<ENTER>I for Expand UPC-E
G1<ENTER>J for Do Not Expand UPC-E

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.

G1<ENTER>K for Read Two-Digit Addendum
G1<ENTER>L for Do Not Read Two-Digit Addendum

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.

G1<ENTER>M for Read Five-Digit Addendum
G1<ENTER>N for Do Not Read Five-Digit Addendum

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.

G1<ENTER>O for Addendum Required
G1<ENTER>P for Addendum Not Required

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.

G1<ENTER>Q to Add Space Separator
G1<ENTER>R to Not Add Space Separator

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.

G2<ENTER>A for EAN-13 Enable
G2<ENTER>B for EAN-13 Disable

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.

G2<ENTER>C for EAN-8 Enable
G2<ENTER>D for EAN-8 Disable

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.

G2<ENTER>E for Induced Character Enable
G2<ENTER>F for Induced Character Disable

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.

G2<ENTER>G for Send Check Digit
G2<ENTER>H for Do Not Send Check Digit

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.

G2<ENTER>I for Read Two-Digit Addendum
G2<ENTER>J for Do Not Read Two-Digit Addendum

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.

G2<ENTER>K for Read Five-Digit Addendum
G2<ENTER>L for Do Not Read Five-Digit Addendum

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.

G2<ENTER>M for Addendum Required
G2<ENTER>N for Addendum Not Required

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.

G2<ENTER>O to Add Space Separator
G2<ENTER>P to Not Add Space Separator

Magnetic Stripe Selections

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 RETAIL BAR CODE SETUP MODE by typing /E/D/FH.
2. Press <ENTER>.
3. Type the one or two-character code for the selection you wish to make.
4. Save your selection by pressing <ENTER>.
5. To review the current setting, enter HY<ENTER>.
6. Exit the group setup mode by entering HZ<ENTER>.
7. To reset the terminal type setting to default, enter HX<ENTER>.

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.

H1<ENTER>A for Track 2 Only
H1<ENTER>B for Track 1 Only
H1<ENTER>C for Track 3 Only
H1<ENTER>D for Tracks 1 & 2
H1<ENTER>E for Tracks 2 & 3
H1<ENTER>F for Any Track
H1<ENTER>G for All Tracks

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.

H2<ENTER>A for Send Start/Stop Sentinels
H2<ENTER>B for Do Not Send Start/Stop Sentinels

Send Accout Number Only

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

H3<ENTER>A for Send Account Number Only
H3<ENTER>B for Send All Track 2 Information

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>

Note: For no track separator, enter N.

Code ID Definition

If the Code ID option is enabled in General Setup, the user can select the character used to identify each symbology. These characters may be read from the ASCII Table in Appendix A.

1. Enter CODE ID DEFINITION SETTINGS MODE by typing /E/D/FI.
2. Press <ENTER>.
3. Type the one or two-character code for the selection you wish to make.
4. Enter the characters in the left column to select the symbology.
5. Enter one character from Appendix A 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

6. Save your selection by pressing <ENTER>.
7. Exit the group setup mode by entering IZ<ENTER>.
8. To review the current setting, enter IY<ENTER>.
9. To reset the terminal type setting to default, enter IX<ENTER>.

Reviewing Configuration Settings

The settings for each group can be reviewed by first entering the ENTER SETUP MODE command for that group followed by the REVIEW SETTINGS command in the menu sheets. The reader will then send a list of the settings to the host. The COPY CON command is programmed to precede the listing and is needed to prevent the "Bad command or file name" DOS error message.

copy con

```
Omni Reader Version 1.X 07/15/98
Industrial Bar code Setting
Code 39..... Enabled; Full ASCII Off
Min Length = 01; Max Length = 60; No Check Digit; Stop-Start
Send
I 2 0f 5..... Enabled; Fixed Length Off
Min Length = 01; Max Length = 60; No Check Digit
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
```

Resetting to Defaults

There are two ways to reset the Omni reader to its default settings. The first is to enter the individual group RESET commands included with the configuration menus for the group. This will reset only that group to the default settings. If you want to reset all groups to their default settings, first enter the Terminal Type Group SETUP command, then enter the RESET ALL command from the Terminal Selections Group menu, or swipe on Code 39 bar code /E/D/FW.

Section 4
DATA EDITING

The Omni can format data by adding preambles, postambles, and terminator characters. It can also edit data, breaking it into blocks that can be rearranged, added to, deleted, or duplicated prior to being sent to the host computer.

In short, the data editing feature allows the data read from a bar code or magnetic stripe to be sent to the host in the exact format expected by the host software, eliminating the need for modifications to the application software. It can also be divided according to established standards (such as ISO, ANSI, AAMVA, and CDL).

The edited data fields can then be transmitted to the host computer in any order desired, regardless of their position on the original bar code or magnetic stripe.

Data Editing Functions

The following data editing functions can be performed by the Omni:

Validation of the Input Data: The input data 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 separate fields of data can be transmitted to the host in any order desired, regardless of the order in which they occurred in the bar code or magnetic stripe.

Insert Character Strings into the Output Data Record: Character strings can be defined and inserted at any place in the data output record before it is transmitted to the host.

Delete a Character String from a Record: You can delete a pre-defined string of characters, or charcters from specified positions in the data input record, before it is transmitted to the host.

Search for a Character String: You can search the data input record for a specified string of characters. These characters can then be deleted, moved, or modified using the other Data Editing commands.

Duplicate Fields: A field can be transmitted to the host as many times as desired and in any desired order

Insert Time Delay: Time delays can be inserted between fields to allow the host to complete an operation.

Data Fields

By separating the data record into smaller blocks called “fields,” each separate portion of the data record can be edited or otherwise treated differently. Fields can also be added to the record, allowing specific functions, such as carriage returns or keyboard function keys, to be inserted at any point. 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. This allows as many as 26 fields to be defined. These fields are then sent to the host computer in the order specified by the user.

For example, if the input data record is:

12345ABC

and your application software is looking for the data to be in the following format:

ABC<CR>
12345<CR>

...then we must break the input data record up into two fields, reverse the order they are sent to the host, and insert a <CR> after each field.

We do this by defining the following fields:

Field A = 12345
Field B = ABC
Field C = <CR>

and sending the sequence {Field B}{Field C}{Field A}{Field C}

Data Editing Formulas

The set of instructions programmed into the Omni to edit the data record is referred to as the data editing "formula." More than one formula can be resident in the reader at one time. If more than one formula resides in memory, the reader will apply the first formula to the input data. If the scanned data matches the format (credit card, driver's license, etc.) of the first formula, then it will apply the data editing functions and output the reformatted data to the host. If the data does not match the criteria spelled out in the first formula, then the criteria of the second formula is applied. This process continues for each of the successive formulas until a match is found. If no matches are found to any of the formulas programmed into the reader, then either nothing will be transmitted to the host, unless the "Send Unmatched" mode is enabled, in which case the input data will be transmitted in its original format.

The number of formulas that can be entered into the Omni is limited by the amount of memory available. Caution should be used when entering a number of long formulas as the amount of non-volatile memory available for formula storage is very limited. In this case, the last programmed formula(s) will be valid until the unit is powered off and then it will be lost.

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 to which this formula will apply.
2. Specify 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.

Multiple conditions may be programmed for each major group of commands (i.e. several code IDs can be used following the CODE ID command), but all like commands must be grouped together. For example, several ADD commands can be programmed, but all of them must be 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 B7<ENTER>A<ENTER> before entering the Data Editing Setup mode.

Commands for Building Formulas

The following commands are invoked, followed by the appropriate value entry.

CODE ID JC<ENTER>

This command identifies the bar code symbologies or magnetic stripe tracks that will be accepted as valid. Enter the desired Code ID character(s) from the Code ID definition table on page XX after entering JC and <ENTER>. The reader will then limit data input to those symbologies and tracks specified.

SET LENGTH JD<ENTER>n<ENTER>n<ENTER>m<ENTER>m

This command sets the upper and lower limits on the number of characters that will be accepted as valid data. The value of nn (first two digits) sets the minimum length and the value of mm the maximum length. Two digits must be entered for nn and mm so that the reader can correctly parse the command, so if you want the minimum length to be two characters, you must enter a value of "02" for nn. This command is optional.

MATCH STRING

JE<ENTER>n<ENTER>n<ENTER>[STRING TO MATCH]<ENTER>

This command allows you to "match" any subset of characters (up to a maximum of 60) contained in the scanned input data. The value of nn (first two digits) specifies the position in the input data record that the match is to start. The value of "string" can be any combination of characters (including control and function codes) that can be entered from the ASCII table in Appendix B. Two digits must be entered for nn so that the reader can correctly parse the command, so if you want the match to begin at position 2, you must enter a value of "02" for nn). If you need to match more than one character string, simply add another MATCH command to the formula. This command is optional.

Note: The first position is 01, not 00.

Divide Commands:

These commands are used to divide the data record into separate fields for processing by the data editing program. A DIVIDE command is required in each formula. There are two methods that can be used to divide the record.

1. COUNT JF<ENTER>n<ENTER>n<ENTER>

If you enter the COUNT command followed by two numeric digits, you will create one output field, starting at the first position in the input record, that is nn digits long. The dividing pointer will be moved to position nn+1 in the input record. Two digits must be entered for nn so that the reader can correctly parse the command, so if you want to move the dividing pointer two positions to the right, you must enter a value of "02" for nn).

2. SEARCH STRING JG<ENTER>[CHARACTER STRING]

If you enter the SEARCH command followed by any character string, the program will search the input data record for a matching string. If a successful match is found, two output fields will be created. The first output field starts at the current position of the dividing pointer and ends at the beginning of the character string. The second field consists of the "matched" string, and the divide pointer is moved to the end of the matched string.

ADD FIELD JJ<ENTER>

This command allows you to add a character string to the output record. After entering the ADD FIELD command, enter sequentially the characters you wish to include in the output record. Any character (or characters) from the ASCII or Function Code tables can be used. An output field is created containing the character string. This command is optional.

Note: Enter Ctrl-N for <CR>.

SEND FIELD SEQUENCE
JK<ENTER>[FIELD ID CHARACTER]
<ENTER>[FIELD ID CHARACTER]
<ENTER>[FIELD ID CHARACTER]<ENTER>

This command specifies the order in which the defined output fields created will be transmitted. Each output field is assigned an upper case alpha character in the order it is created, so the first output field created is assigned the identification character “A”, the second “B”, etc.

TIME DELAY JM<ENTER>n<ENTER>n<ENTER>

In addition to specifying the output field order, you can also add time delays between fields. By entering the TIME DELAY command followed by two numeric digits (nn), you can add a time delay between fields to accommodate the processing time required by the host. The amount of time delay added is equal to the value of “nn” multiplied by 100 milliseconds, so a value of “04” would give a delay of 400 milliseconds.

Data Editing General Commands

The following commands are used to set the operating parameters for data editing:

DATA EDITING ENABLED
JA<ENTER>1 or 2

Entering the DATA EDITING command followed by entering the ENABLE or DISABLE character will enable or disable the entire data editing feature. When disabled, the data edit formula will be inactive, but will still be retained in the Omni’s memory. When enabled, the data edit formula will be used to format the data record.

SEND/SUPPRESS UNMATCHED
JB<ENTER>0 or 1

Entering the UNMATCHED INPUT command followed by the SEND or DO NOT SEND character will enable or disable the transmission of data that does not match the restrictions of the data editing formula. When SEND is selected, unmatched data will be transmitted along with any preamble or postamble settings. When DO NOT SEND is selected, none of the unmatched data will be transmitted.

DELETE LINE JS<ENTER>n

This command allows you to delete the n^{th} formula stored in data editing memory. In this command, “n” is a numeric digit (such as 2 or 3) that represents the formula to be removed.

CLEAR JX<ENTER>

Entering the CLEAR character from the Data Editing Menu will remove all the data editing formulas from the decoder memory, disable the data editing feature, and set the UNMATCHED INPUT option to DO NOT SEND.

REVIEW CONFIGURATION
JY<ENTER>

Entering the REVIEW CONFIGURATION command will send the resident data editing formulas—each on its own line—and all other data editing settings to the host computer, allowing you to review the settings. The reader must be connected as a keyboard wedge, or connected to an RS-232 serial port running software that takes RS-232 input and places it in the keyboard buffer, for the information to be displayed on screen.

EXIT DATA EDITING JZ<ENTER>

After the data editing formula has been created and reviewed, entering the EXIT command will terminate the DATA EDITING SETUP mode and return the Omni to normal operation.

Data Flow

The Omni processes input data in the following order:

1. Raw scan input data is decoded and placed in an ASCII character format in the
memory of the reader.

2. The symbology and magnetic track tests (maximum /minimum length, check digit, send sentinels, etc.) are applied to the scanned input.

3. Following a successful completion of these tests, the input record data is processed by the data editing formula, if enabled.

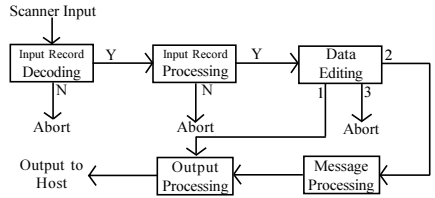
4. If the input data “matches” one of the resident data editing formulas, it is processed and sent to the output port. If not, and the UN-MATCHED INPUT function is set to DO NOT SEND and input data is discarded.

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

6. If the data editing mode is enabled and UNMATCHED INPUT is set to DO NOT SEND, no data is passed to the output port unless it “matches” exactly one of the data editing formulas.

Note: No data formatting (i.e. postamble, preamble, or terminator character) is done when the data editing feature is enabled.

Data Processing Flow Diagram



1. Data Edit conditions met
2. Data Edit disabled or fail with Send Unmatch On
3. Data Edit fail and Send Unmatch Off

Data Editing Command List

Enter Setup Mode	/E/D/FJ<ENTER> Clear JX<ENTER>
Review Configuration	JY<ENTER>
Exit Data Editing	JZ<ENTER>
Delete Line	JS<ENTER>

Data Editing	JA<ENTER>
Enabled	1<ENTER>
Disabled	0<ENTER>

Unmatched Input	JB<ENTER>
Do Not Send	0<ENTER>
Send	1<ENTER>

Code IDs JC<ENTER>
Enter JC<ENTER> and the default Code ID(s) from Code ID Definition on page 29.

Set Length JD<ENTER>
Enter JD<ENTER>and two digits from the keyboard to indicate length.

Match String JE<ENTER>
Enter JE<ENTER>, one digit <ENTER> one digit <ENTER> for the start position, and the string to match each character, followed by a <ENTER> (maximum 60 characters).

Count JF<ENTER>
Type JF<ENTER> and enter two digits from the keyboard to indicate the next end of field, each followed by a <ENTER>.

Search String JG<ENTER>
Enter JG<ENTER> and enter characters for the search criteria from the keyboard or function character chart, each character follo wed by a <ENTER>.

Add Field JJ<ENTER>
Enter JJ<ENTER> and sequentially the characters to be included in the new field from the keyboard or function character chart, each followed by a <ENTER>.

Send Field Sequence JK<ENTER>
Enter JK<ENTER> and the field ID characters, each followed by <ENTER> in the order to be sent (use upper case alphabetic characters).

Add Delay JM<ENTER>
Enter JM<ENTER> and two digits, each followed by a <ENTER> from the keyboard. Each unit equals 100 milliseconds. Examples

Examples

EXAMPLE ONE

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>

Keystroke Sequence

Enter Data Editing Setup	/E/D/FJ
Enter Data Editing and Enable	JA 1
Enter Track_ID and h (for Code 128)	JC h
Enter Count and 06	JF 0<ENTER> 6<ENTER>
Enter Add Field and <ENTER> character	JJ ^N<CR>
Enter Field Sequence and ACBC	JKA<ENTER>C<ENTER>B<CR>C<CR>
Enter Exit Setup	JZ

Output Data	764400<ENTER> 57320712<ENTER>

EXAMPLE TWO

Symbology Code 39

Desired Output: The input record must be Code 39 and be exactly seven characters in length with the seventh character being an "X". It is divided into three fields; the first three characters, the next three characters, and the last character. The output should reverse the order of the first two fields, delete the last character, and add an F1 function code at the end of each field. In addition, a time delay of 900 milliseconds should be added between the fields (after the F1) and another delay of 2000 milliseconds added to the end of the record.

Formula	ID e LEN 07 07 M 07 X C 03 C 03 A <F1> SEND BD DLY 09 AD DLY 20
Field List	Field A AST Field B 798 Field C X Field D <F1>

Keystroke Sequence

Prior to data editing, enable function codes in general selection	
Enter Data Editing Setup	/E/D/FJ<ENTER>
Enter Data Editing and Enable	JA<ENTER>1<ENTER>
Enter Code ID and e (for Code 39)	JC<ENTER>e<ENTER>
EnterLengthand 0707	JD<ENTER>0<ENTER>7<ENTER>0<ENTER >7<ENTER>
Enter Match and 07X	JE<ENTER>0<ENTER>7<ENTER>X<ENTER
Enter Count and 03	JF<ENTER>0<ENTER>3<ENTER>
Enter Count and 03	JF<ENTER>0<ENTER>3<ENTER>
Enter Add Field & <F1> character	JJ<ENTER>\F1<ENTER>
Enter Field Sequence and BD	JK<ENTER>B<ENTER>D<ENTER>
Enter Add Delay and 09	JM<ENTER>0<ENTER>9<ENTER>
Enter B and C characters	BC<ENTER>
Enter Add Delay and 20	JM<ENTER>2<ENTER>0<ENTER>
Enter Exit Setup	JZ<ENTER>

Output Data 798<<F1>>.9s delay AST<<F1>>2s delay

EXAMPLE THREE

Track 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>

Keystroke Sequence

Enter Data Editing Setup	/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> ^N<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 5
OPERATION

Operating Procedure

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

1. Make sure the reader is properly cabled and is receiving sufficient power. (See Section 5, 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 magnetic stripe facing the magnetic head (LED side) or the bar code facing the optical head (opposite side).

3. While swiping the card through the reader, the LED will go off.

4. Once the entire 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.

5. 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.

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

General Procedures

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

1. The unit should emit one long beep when power is first applied. If it does not, then the unit is not receiving power.

2. Once it has been confirmed that the unit is correctly powered, try swiping a credit card. The LED will go off while decoding, then light green to indicate a “good read,” accompanied by a beep, or red to indicate a “bad read,” with no beep.

3. Once the unit has indicated a “good read,” then 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 correct if the keyboard is 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 Configurations

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 the sequential order to return to the original configuration.

Is the proper bar code symbology enabled?

Each symbology is 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.

Does the selected 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.

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	
Type	IBM PC/AT Keyboard
General Selection	
Beep Volume	High
Intercharacter Delay	5 milliseconds
Interblock Delay	0 milliseconds
Language	United States
Code ID	Off
Scan Verification	Off
Automatic Verification	0l
Function Code	Off
Message Formatting	
Terminator Character	CRLF
Preamble	None
Postamble	None
Wand Emulation	
Emulation Mode	Code 39
Scan Rate	10 inches per second
Bar Code Polarity	Black = High
Wide/Narrow Ratio	2.5:1
Code 39	Enabled
Full ASCII	On
Check Digit	Off
Send Check Digit	No
Send Start/Stop	No
Minimum Length	1
Maximum Length	60

Interleaved 2 of 5	Enabled
Fixed Length	Off
Check Digit	None
Minimum Length	4
Maximum Length	60
Industrial 2 of 5	Enabled
Fixed Length	Off
Check Digit	None
Minimum Length	1
Maximum Length	60
Code 128	Enabled
Minimum Length	1
Maximum Length	60
Codabar	Enabled
Send Start/Stop	No
Check Digit	None
Minimum Length	2
Maximum Length	60
MSI/Plessy	Enabled
Send Check Digit(s)	No
Check Digits	Modulo 10/Modulo 10
Minimum Length	1
Maximum Length	60
Code 93	Enabled
Minimum Length	1
Maximum Length	60
Code 11	Enabled
Check Digit(s)	2
Send Check Digit(s)	No
Minimum Length	1
Maximum Length	60
BC412	Enabled
Minimum Length	1
Maximum Length	60
Send Check Digit	Yes

UPC-A, -E	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
EAN-13, -8	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
Code 11	k
Code 93	l
BC412	m
Data Editing	
Edit On/Off	Off
Unmatched Input	Do Not Send

Appendix B
MAGNETIC STRIPE DEFAULT SETTINGS

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

Magnetic Track Basic Data Format
Track 1: <SS1><T_1 Data><ES><CR>*
Track 2: <SS2><T_2 Data><ES><CR>*
Track 3: <SS3><T_3 Data><ES><Enter>*

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) = ?
<Enter> = (CR/LF) key on keyboard

Keyboard Wedge Communication Default Settings
Terminal type: IBM PC/AT
Intercharacter delay: 5 ms
Language: US English

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, to separate card reads.

LRC: Check character, following end sentinel.

CDL: Old California Drivers License format.

**Note: The <CR> commands shown above for tracks 1 & 2 and 2 & 3 denote the default character for this position, the Track Separator position. The <Enter> command shown for track 3 denotes the default character for this position, the Terminator position.*

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	4
h	Optional Discretionary data	variable
i	End Sentinel	1
j	Linear Redundancy Check (LRC) Character	1

Track 2

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	1
	C = Commercial	
	S = Salesperson	
	D = Driver	
	I = Identification	
	R = Senior Citizen	
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

a	Start Sentinel	1
b	Identification Number	
	ANSI User ID	6
	DL/ID Alpha Translated	2
	7 position DL/ID number	7
	Check Digit	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

Track 3

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

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

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

Appendix E
CONNECTOR PIN-OUTS

Keyboard Port, 5 pin DIN (MALE)

5 Pin Male

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

Keyboard Port, 6 pin DIN (FEMALE)

6 Pin 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

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