

# Manual

*K2724 (-B), K2724S, K272U (-B), K2726 (-B)*

*Multi function Keyboard Magnetic Stripe Card Reader/  
Bar Code Slot Reader & built-in Bar Code Decoder  
for IBM or compatible computers*

Date: March 2001

Version: 2.9 V2

# Preface

## General Advice

Improper handling, storage, external influences and /or further processing can lead to disturbances and defects during use.

This is also especially valid if trained personnel do not perform repairs and maintenance work.

We reserve the right to make any technical alterations to in accordance with technological advancements.

## Information to the user

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

\* All information is subject to change without prior notice.

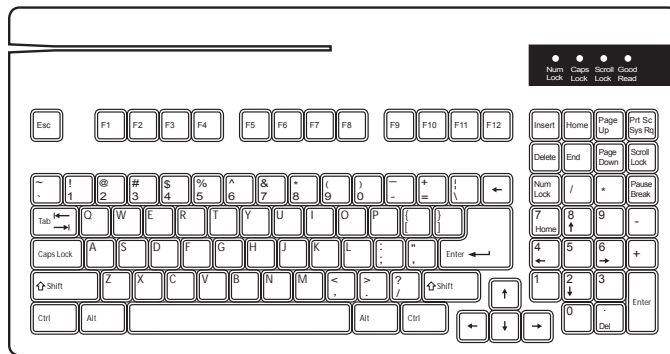
\* All brand names and trademarks are the property of their respective owners.

## Contents

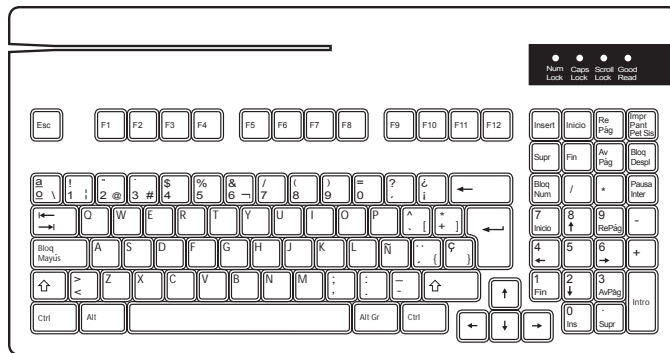
1.	Overview	Page	1
1.1.	Ports and Input Device		2
1.2.	Decoding Capability		2
1.2.1.	Bar Code		2
1.2.2.	Magnetic Stripe		3
1.3.	Scanning Mode		3
1.4.	Setup		4
2.	Understanding the Operation Parameters		4
2.1.	Intercharacter Delay		4
2.2.	Function Code		5
2.3.	Caps-Lock		5
2.4.	Alt Key Mode		5
2.5.	Code ID		5
2.6.	Scanning Mode		6
2.7.	Track 1 Output Sequence		7
2.8.	Track 2 Output Sequence		8
2.9.	Fix Length of 2 of 5 Codes		8
2.10.	CLSI Format of Code bar		9
2.11.	Zero Expansion of UPC-E		9
2.12.	Bookland EAN		9
3.	Setup		9
3.1.	Setup from Keyboard (for DOS environment)		9
3.2.	Setup the Keyboard from Bar Code Menu		10
3.2.1.	General Settings		10
3.2.2.	Bar Code Length Setting (example)		10
3.2.3.	Code ID Setting (example)		11
3.2.4.	Preamble, Postamble, and Output Sequence		11
3.3.	Data Editing		12
3.4.	Batch Setup		20
3.5.	Scanner Configuration Manager Software		21
4.	Using the Magnetic Stripe Card Reader		22
5.	Pin assignment of the scanner port		22
6.	Specification		23
	Appendix A. – Function Codes		
	Appendix B. – Setup Menu		
	Appendix C. – Full ACPI Chart		
	Appendix D. – Bar Code Test Chart		

## 1. Overview

This is a family of multifunction keyboards with 104/105 keys (US/International version) enhanced layout. The keyboards feature re-legendable keys, integrated Magnetic Stripe Card Reader (or Bar Code Slot Reader), and built-in Bar Code scanning input port. The keyboards also feature a minimal footprint and protection against damage from liquid spillage.



English Language Keyboard



Spanish Language Keyboard

### Typical Applications

- \* Point-of-sale system
- \* Banking, financial, and insurance data input
- \* ID entry and security
- \* Industrial control and automated process applications
- \* Inventory control
- \* Shipping and receiving product identification

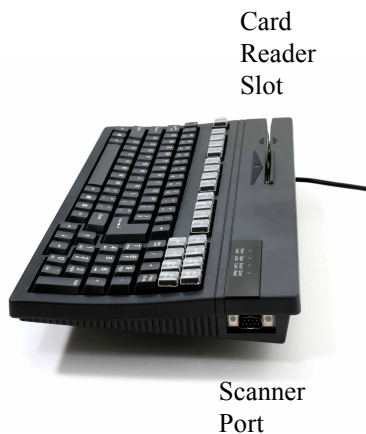
## 1.1 Ports and Input Device

The keyboard has two input ports to accept a variety of input devices:

A port with DB-9 squeeze release type connector at the upper-right hand side of the keyboard supports barcode scanner input. Wand, CCD, or Laser scanners are supported. An open slot at the upper-left corner of the keyboard can support a standard dual track magnetic card reader. Alternatively, this open slot can be configured to support a single track magnetic reader, triple track magnetic reader, or a bar code slot reader.

The following procedures should be followed when connecting an undecoded barcode scanner to the scanner port:

- Plug the connector of the scanner into the DB-9 connector located at the right hand side of the keyboard.
- Switch the computer off.
- Switch the computer back on.



## 1.2 Decoding Capability

### 1.2.1 Bar Code:

- \* Code 39 Standard and Full ASCII
- \* UPC\EAN with supplement codes
- \* Interleaved 2 of 5
- \* Standard 2 of 5
- \* MSI Code
- \* Plessey Code

- \* China Postal Code (Toshiba Code).
- \* Codabar.
- \* UCC/EAN128
- \* Code 32 (Italian pharmacy).
- \* Code 93.
- \* Code 128.
- \* Label Code IV and V
- \* Delta Distance Code.

### **1.2.2. Magnetic Stripe:**

- \* Track 1 – IATA.
- \* Track 2 – ABA.
- \* Track 3 – THRIFT.

### **1.3. Scanning Mode:**

The keyboard provides seven scanning modes for CCD/Laser scanners:

#### \* Trigger Mode:

Depressing the scanner's trigger to activate the scanner and automatically turn off the scanner after successful label read. Releasing the trigger will manually de-activate the scanner.

#### \* Flash Mode:

The Keyboard triggers the scanner to scan periodically - providing a trigger-less scanning method. The scanner will strobe on and off until a label is detected. Note – this feature may not work properly with older laser scanners.

#### \* Multiscan:

The scanner's trigger is held down during the reading of multiple labels - and the scanner is turned off when trigger is released.

#### \* One Press, One Scan:

The scanner's trigger is pressed once and the scanner remains on until a successful input.

#### \* Test Mode:

The scanner's trigger is pressed once and the scanner remains on to read whatever label is presented and then sent to computer.

#### \* Old Laser Flash Mode:

This feature is designed to work with older laser scanners. Some models may not work properly with this feature.

#### \* Continuous Mode:

The scanner's trigger is pressed once and scanner remains on to read a label only once. Subsequent presentations of the same label will be ignored.

## 1.4. Setup

There are several ways to configure the Keyboard to fit the user's requirements:

\* **Keyboard: (Setup Magnetic Stripe Reader)**

Setup via any text editor, such as Notepad or WordPad under Microsoft Windows environment. Keyboard setup provides an interactive way to setup the keyboard's magnetic stripe reader through screen prompting.

\* **Bar code menu:**

Besides the keyboard setup, the keyboard can be programmed by scanning a sequence of bar code labels from the user's manual. Refer to the Bar Code Menu in Setup Menu of appendix B. Scan the following label to reset the build-in wedge to the **Factory Default** setting.



Factory Default

\* **Batch Setup:**

Produce custom setup labels and then scan these labels to duplicate the settings on other keyboards

\* **Software Setup:**

Scanner Configuration Manager is a utility program to configure scanner settings on a computer using the Windows 95/98 operating system. Use Scanner Configuration Manager to define the settings and then download the parameters to the scanner.

The "GOOD READ" LED will blink when the Keyboard enters setup mode.

## 2. Understanding the Operating Parameters

This section describes the operating parameters of the Keyboard.

### 2.1. Intercharacter Delay

Intercharacter delay is the time period that the keyboard will wait before transmitting the next character. For some applications, an intercharacter delay is necessary in order for a system to keep pace with data transmitted from the Keyboard.

If incomplete data is sent from the Keyboard, increasing the value of this parameter may correct the problem.

## 2.2. Function Code

The keyboard can emulate special keys, such as function keys and cursor keys, by scanning pre-defined bar code labels - which can be found in Appendix A. Print these bar code labels by printing their corresponding Code 39 characters (in brackets).

## 2.3. Caps-Lock

This parameter will set the Caps-Lock state of the keyboard so that the character transmitted by the keyboard is in the correct case.

\* Auto Trace:

Normally the keyboard will trace the Caps-Lock state by itself, but some PC's scanning performance may be compromised because of Auto Tracing. If scanning performance is poor (or not functioning at all) or if the keyboard cannot output the upper/lower case characters correctly, select one of the next two choices as an alternative to Auto Tracing.

\* Lower Case:

When the Keyboard is in the unshifted state (CapsLock is not pressed), select "Lower Case".

\* Upper Case:

When Keyboard has the CapsLock key on, select "Upper Case".

## 2.4. Alt Key Mode

Alt Key Mode is an option found under Language Selection. Sending characters by Alt key plus keys on the numeric keypad is a feature in MS-DOS. When "Alt Key Mode" is selected, the keyboard outputs the native ASCII combination codes to represent each character of the bar code scanned. If your system accepts Alt key sending, you can enable this mode and ignore the "Upper/Lower Case" and "Language" selections.

## 2.5. Code ID

The keyboard can add code IDs to data strings via the following pre-defined IDs for bar code and magnetic stripe card readers. These IDs can be modified via bar code setup.

<u>Symbology</u>	<u>Pre-Defined</u>
UPC-A	A
UPC-E	E
EAN-13	F
EAN-8	FF
I 2 of 5	I
S 2 of 5	H



Code 39	M
Codabar	N
Code 93	L
Code 128	K
UCC/EAN128	JC1
MSI	O
Code 32	T
Delta Code	D
Pressey Code	P
Label Code IV, V	B
China Postal Code	C
Track I	None
Track II	None
Track III	None

## 2.6. Scanning Mode

For CCD or Laser scanners, the keyboard provides the following seven scanning modes:

### \* Trigger Mode:

When the trigger is pressed, the keyboard will power up the CCD or laser scanner to read the bar code. If the bar code is decoded, the Keyboard will turn off the scanner and upload the data. The Keyboard will turn off the scanner if the label cannot be read within approximately 3 seconds.

To read the next label, release and press the trigger again.

### \* Flash Mode:

When Flash Mode is enabled, the keyboard causes the photo LEDs of the CCD to strobe until it detects a label. When a bar code is detected and read, the keyboard uploads the data and attempts to read the next bar code during the next 5 seconds. If no bar code is read during that period, the photo LEDs begin to strobe again.

In Flash Mode, the keyboard is designed to not double-read the same barcode. In order to deliberately re-read the same barcode, the barcode must be removed from the scanner's readable area for at least one second.

Pressing and releasing the trigger will stop the flashing and turn off the photo LEDs. Pressing and releasing the trigger again will resume the flashing.

**Note:** The flash function is for CCD scanners only. It cannot support Wand or laser scanners. Set the keyboard to Switch Mode in order to operate the scanner.

### \* Multiscan:

When Multiscan is enabled, pressing the trigger enables the scanner to read

multiple labels, and the scanner will continue to read until the trigger is released. This is useful to users that prefer multiple inputs during scanning.

**\* One Press, One Scan:**

With this feature enabled, pressing the scanner's trigger causes the scanner to remain on until a successful input. This is useful because once the trigger is pressed, the trigger can be released and the scanner will remain "On" until the scanner performs a successful data input and then turns itself off.

**\* Test Mode:**

The test mode tests the scanner or the system. The scanner will remain "On" when the scanner's trigger is pressed and will read whatever label is presented, and then uploads the data to the computer.

**\* Old Laser Flash Mode:**

This feature is designed to work with some older laser scanners. It will turn off the laser scanner to avoid damaging the scan engine. Some very old models of laser scanners may not work properly with this feature.

**\* Continuous Mode:**

When Continuous Mode is enabled, user presses the scanner's trigger once and the scanner will remain "On" to read a label, but will not read the same label twice. This is designed to avoid erroneous repeat data input.

## **2.7. Track 1 Output Sequence**

Track 1 of magnetic cards contain account number, last name, first name, and expiration date information. Programming the Output Sequence tells the keyboard how to output those messages. The numbers corresponding to each message are as follows:

<u>Message</u>	<u>Number</u>
Account Number	1
Last Name	2
First Name	3
Expiration Year	4
Expiration Month	5
Discretionary Data	6

Use the assigned number and a separator character to produce your required output.

Example: To get the following output from track 1:

Account Number<Enter>

Last Name, First Name<Enter>

Expiration Month/Expiration Year<Enter>

Program the Output Sequence as:

1<CR>2,3<CR>5/4<CR>

Here <CR> is hexadecimal 0D if the bar code menu is used for setup. Scan CR from full ASCII chart to get this character. Or press Ctrl-M if you use keyboard setup.

The last <CR> will not be necessary if Terminator is set to Enter.

For a card with following messages:

%B012345678901234^ABEL/STEVE L MGR ^90010129999999?

You will get:

012345678901234

ABEL, STEVE

01/90

The maximum number of characters that can be input in Track 1 Output Sequence is 16. If nothing is defined, all messages will be output.

## 2.8 Track 2 Output Sequence

The same implementation as Track 1 Output Sequence, but with the following message-number match:

<u>Message</u>	<u>Number</u>
Account Number	1
Expiration Year	2
Expiration Month	3
Discretionary Data	4

The maximum number of characters that can be input in Track 2 Output Sequence is 8. If nothing is defined, all messages will be output.

## 2.9. Fix Length of 2 of 5 Codes

For Interleaved 2 of 5 and Standard 2 of 5 codes, specifying the decoding length is strongly recommended. By using a fixed length (default), the keyboard will accept lengths of first three I 2 of 5 or S 2 of 5 after powering up as valid decoding lengths. If a bar code has a different length than the first three lengths, the keyboard will not accept that label.

## 2.10. CLSI Format of Codabar

If selected, 14 characters Codabar (Start/Stop not included) will be output to CLSI format with spaces inserted.

For example

Label content:

01234567890123

CLSI format:

0 1234 56789 0123

### **2.11. Zero Expansion of UPC-E**

When selected, UPC-E will be converted to UPC-A format.

### **2.12. Bookland EAN (ISBN):**

When enabled, the EAN-13 with “978” as first three digits will be converted to ISBN format.

For example:

EAN-13 label: 9781234567897

ISBN format: 123456789X

## **3.Setup**

The keyboard can be configured to fit the user’s specific applications. All configuration parameters are stored in a non-volatile memory (256 bytes), which is retained even if power is lost.

### **3.1 Setup MSR Port from Keyboard**

The Magnetic Stripe Reader can be setup by using the keyboard itself. The setup process can be done under any text editor software, such as Notepad or WordPad.

To activate keyboard setup, press **Left Shift** key and **Right Shift** key at the same time immediately after system power-up. Setup messages will be displayed on the screen when both Shift keys are released. Instructions on the screen make programming the keyboard simple.

Hamster V2.6 Nov.18, 99

Use numeric keys on the top of alphabetic keys for digit input.

0-MCR 1-Others 2-Default 3-dump 4-Exit

Select→ \_

**Note: Keyboard setup must be activated within 10 keystrokes after system**

**power-up. After 10 keys (other than Shift keys) are pressed, setup will not be activated except by a system restart or by simply unplugging and re-plugging the keyboard connector on your computer.**

**During setup, only Numeric keys (0 to 9) on the top row of keyboard are accepted; Numeric keypad on the right of keyboard is not supported.**

### **3.2. Setup the Keyboard from Bar Code Menu**

The Menu setup lets the user configure the Reader by scanning labels into a setup menu from Appendix B. The setup menu contains 8 groups as following:

Group 1: Beep and Delay

Group 2: Keyboard Interface

Group 3: Scanner Port

Group 4: Magnetic Reader

Group 5: Code 39, I 2 of 5, S 2 of 5, code 32, and EAN128

Group 6: Code 128, MSI, Code 93, Codabar, and Label Code

Group 7: UPC/EAN, and Delta Distance Code

Group 8: Data Editing

#### **3.2.1. General Settings**

For most parameters, follow the steps below:

- 1) Locate a group that contains the parameter to be changed.
- 2) Scan the “Enter Group” label to enter setup. The Keyboard will beep three times to indicate that setup has begun.
- 3) Scan the label (on the right side) representing the parameter to be changed.
- 4) Scan the labels (number) representing the desired parameter value.
- 5) Repeat step 3 and 4, if necessary, to change the parameters in the same group.
- 6) Scan the “Exit” label to end the group setup. The Keyboard will beep twice and return to normal.

#### **3.2.2. Bar Code Length setting (example)**

The following example illustrates how to set Code 39 with a minimum length of 5 and a maximum length of 20:

- \* Scan Enter Group 5
- \* Scan F1 to select Code 39
- \* Scan MIN LENGTH to enter minimum length setting
- \* Scan 0 and 5 to select length 5
- \* Scan MIN LENGTH to end minimum length setting
- \* Scan MIN LENGTH to enter maximum length setting
- \* Scan 2 and 0 to select length 20

\* Scan Exit to end setup

### 3.2.3. Code ID Setting (example)

The following example shows how to set Code 93 with ID O and Code 128 without ID

\* Scan Enter Group 3

\* Scan D2 to select Code ID

\* Scan 1 for “Yes”

\* Scan D3 to define IDs

\* Scan 0 and 9 for selecting Code 93

\* Scan O from Full ASCII Table (Appendix D) for new ID

\* Scan 0 and “8” to select Code 128

\* Scan NULL character from ASCII Table (Appendix D) for none ID

\* Scan Exit to end setup

### 3.2.4. Preamble, Postamble, and Output Sequence

Setting of Output Sequence is the same procedure as setting preamble and postamble.

The Following is an example to set STX as preamble and ETX as postamble for the scanner port:

\* Scan Enter Group 3

\* Scan PP to start preamble setting

\* Scan STX character from Full ASCII Table

\* Scan PP to end preamble setting

\* Scan OO to start postamble setting

\* Scan ETX from Full ASCII Table

\* Scan OO to end postamble setting

\* Scan Exit to end setup

The next example shows set track 1 output sequence as:

Account Number<Enter>

Expiration Month/Expiration Year<Enter>

\* Scan Enter Group 4

\* Scan E1 to select Terminator

\* Scan 1 for None

\* Scan “PP” to start track output sequence setting

\* Scan 1 to select account number

\* Scan CR from Full ASCII table

\* Scan 5 for expiration month

\* Scan / from Full ASCII table

- \* Scan           4 for expiration Year
- \* Scan           CR from Full ASCII table for <Enter>
- \* Scan           PP to end output sequence setting
- \* Scan           “Exit: to end setup

### 3.3. Data Editing

The purpose of Data Edit is to enable you to define and modify a data record that results from the decoding of a bar code. By using a combination of Formulas, you can perform the following functions on the data received by the scanner:

- A. Rearrange the output sequences.
- B. Delete characters from the record.
- C. Insert characters into the record, including function codes.
- D. Duplicate characters in the record.
- E. Insert a time delay into the record

#### Formula

Formula is a structure that tells the scanner what and how to process the original data record to produce the desired output. The built-in wedge allows multiple **Formulas**, but the number of the **Formulas** that can be defined depends upon the memory size allocated for Data Editing.

#### Original Data Structure

The original data structure is the decoded data plus preamble and postamble. The original data structure is as follows:



#### Formula Structure:

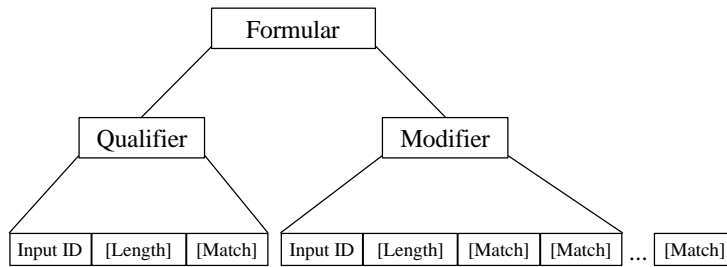
A **Formula** consists of two parts: **Qualifier** and **Modifier** (See Figure 7.1).

**Qualifier** is used to verify if the data record meets the conditions specified, and

**Modifier** is processed only if all conditions in Qualifier are met.

#### Execution Sequence

If several Formulas are defined, data editing will perform sequentially from the first Formula to the last Formula. If a Formula is qualified and executed, the subsequent formulas will be ignored. If none of the Formulas are executed, the data record will be discarded and there will be no output to the host.



A-String: String to be added.  
 O-String: Modified original data.  
 [] : Optional.

Figure 3.3 Formula Structure

**Programming Sequence:**

Each Formula is entered into the Reader in the following sequence:

**Input\_ID>>Length>>Match>>A-String>>O-String>>...>>O-String >>Enter**

A Formula starts with **Input\_ID** and ends with “**Enter**”(label included in the programming sheet). If a field is optional and missing, the next one in the sequence can be entered. “**Enter**” must be the last input of a formula.

**Preparation**

To begin the Data Editing, the following barcode sheets are required:

- Programming Sheet. (Setup Sheet in Appendix B).
- Full ASCII Sheet (Appendix C).

Before programming Data Editing, you should know the format of the original data record that may be altered by the setup groups.

**Programming Sheet**

The bold and italicized characters in the following sections refer to barcode labels on the Programming Sheet.

***Enter Group*** Scan this label to begin the formula input.

***10***

***Group*** Erase all formulas.

***Default***



<b>Review</b>	To view the formulas programmed in the Wedge. By scanning this label during a formula input (prior to scanning “ <b>Enter</b> ” and thereby finishing), the current formula will be displayed. Otherwise, all programmed formulas will be displayed.
<b>Backspace_</b>	Delete the last character.
,	Delimiter to separate parameters.
”	String specifier.
*	Wild character to specify any digit or any position.
#	Wild character to specify any letter (A--Z, a--z) or last position
<b>Enter</b>	To end the current formula.
<b>0 to 9</b>	For digit input.
<b>IN_ID</b>	For ID field input.
<b>LEN</b>	For Length field input.
<b>MATCH</b>	For Match field input.
<b>O-STR</b>	For O-String input.
+	For O-String input.
-	For O-String input.
<b>Exit</b>	Save all formulas and exit setup.

Note: The '\*', '#', ''' ' and ',' on the Programming Sheet have special meanings as mentioned above, and are different from those represented in the Full ASCII chart. Always use characters in the Full ASCII chart for string parameters unless a special function is required.

### **Parameter Entry**

#### a) Digit Parameters and Numbers

Each digit parameter or number is represented by one to three digits with ‘,’ as the terminator. For example:

1,  
023,

#### b) String Parameters

A string is a set of characters, wild characters, or sequence of adjacent characters enclosed in double quotation marks, which are included in the Programming Sheet. For example:

”A\*B# ”

Here \* and # are wild characters on the setup sheet.

### **Qualifier**

There are three conditional fields in the Qualifier:

Input ID, Length and Match

### **Input ID**

Format:

*IN\_ID*,ID1, ... ,IDi,

Input ID is required and the original data record must correspond to Input ID of a formula in order to be processed.

ID1 to IDi are represented by digits. The following Input IDs are available:

- 0 = Code 39 Full ASCII
- 1 = Code 39 Standard
- 2 = EAN 13
- 3 = EAN 8
- 4 = UPC A
- 5 = UPC E
- 6 = I 2 of 5
- 7 = Codabar
- 8 = Code 128
- 9 = Code 93
- 10 = S 2 of 5
- 11 = MSI
- 19 = UCC/EAN128
  
- 28 = All Inputs

There is no limitation on the number of IDs to be defined.

Example:

*IN\_ID*,0,11,

means the original data can be Code 39 or MSI.

### **Length:**

Format:

*LEN*,Min,Max,

Length field consists of two length parameters: minimum length (Min) and

maximum length (Max). When defined, a formula will be performed if the length of the original data falls between MIN and MAX.

When missing, the following fields of current Formula are always processed.

Example:

*LEN,9,48,*

means the length of original data must be within 9 and 48.

## **Match**

Format:

*MATCH, P0 , "C0" ,P1, "C1" ,...,Pn, "Cn" ,*

a pair of Pn and Cn forms a Match field (n indicates a sequential integer number).

To define a Match field, two parameters are required. The first is character position (Pn) and the second is a string (Cn). Character position means the number of characters, counting from the first character to the one to be positioned in the data record.

For example, in the following data

BARCODE

'B' has position 1.

'A' has position 2.

...

'E' has position 7.

When Match field is defined, the original data string starts at the position specified by the first parameter P and will be compared with string "C". If the match is identical, processing of the current Formula continues.

The position parameter P could be a wild character \* for any position or # for the last position in the original data. If # is used,

*#-N*

is valid. Here N is a digit parameter.

The string parameter C can include \* for any digit or # for any letter.

Examples:

*MATCH,3,"AB",#,"?"*,

Checks if the original data has 'A' at position 3, 'B' at position '4' and last character is '?'.

*MATCH , 10 , " \*A\*"*,

Checks if the original data includes a string with a digit as first character and "A\*"

followed at position 10.

### **Modifier**

Modifier has two types of fields: A-String and O-String to define the output contents.

### **A-String**

Format:

*"abc..."*

'a', 'b' and 'c' in the string can be any character.

A-String defines a string of characters to be added to the output. For example, if the original data is:

BCD

and the output string is

BarCoDe

"ar", 'o' and 'e' in output string are added strings and can be defined by A-Strings.

Note: If '\*' on Programming Sheet are included in A-String, one interblock delay defined by Group 2 will be inserted.

### **O-String**

Format:

*O-STR* , P, N,

O-String always applies to the original data. It contains two parameters: The first is position parameter (P) that specifies the start output position in the original data.

Parameter N tells how many characters will be included beginning from P.

Example:

Original data is:

Barcode

Then

*O-Str* , 4, 4,

Gives output as

code

Note:

-- N can be '#' for all remaining characters from P.

-- If P greater than the length of original data, the O-String will be skipped.

-- If N is greater than the number of remaining characters counting from P, the remaining characters are included as valid.

## Examples

### Example 1

If the original data is Code 39 and content is "AA", output "ABC Company", and otherwise output the original data as it is.

*IN\_ID,0,LEN,2,2,MATCH,1,"AA","ABC company",Enter*  
*IN\_ID,19,O-STR,1,#,Enter*

### Example 2

If the original data is Code 128 and is logically divided into:

- First six characters are personal ID,
- Other characters are person's name.

The output will be:

- Personal ID first,
- A 'CR' character,
- Two interblock delay,
- Name,
- A 'CR' character.

The Formula will be:

*IN\_ID,8,O-STR,1,6,"<CR>\*\*",O-STR,7,#,"<CR>",Enter*

<CR> is a Carriage Return character scanned from the Full ASCII Chart.

## Advanced Features

The O-String has the format:

*O-STR,P,N,*

Both parameters of the **O-String** mentioned above are numbers. But both parameters can be specified as strings. If N is a string, it becomes a position and the meaning of **O-String** will be "Output from position P to position N".

If P is defined as:

*"ab...ik"*

a, b, , i and k can be any character, the position will be evaluated as

- Start from the first position of the original string and search character 'a'.
- From the position next to 'a' in original data, search for 'b'.
- ....

-- From the position next to 'i', search for k.  
-- If above searches are all found, the result of the parameter will be the position where 'k' is located.

If N is a string, the position evaluation of N is the same as P except that the searching position starts from P+1.

For both P and N, if string is defined, a value can be added to or subtracted from the position. That following O-Strings:

"ab...ik"+M,

And

"ab...ik"-M,

Are meaningful. M is an integer number.

**Example:**

Suppose the following is a message to be modified:

%B012345678901234^ABEL/STEVE L MGR ^90010129999999?

in this message:

"%" is start sentinel.  
"012345678901234" is account number.  
"^" is a separator  
6. "ABEL" is surname.  
"/" is a separator.  
"STEVE" is first name.  
"L" is initial.  
"MGR" is title  
"^" is a separator.  
"9001" is expiration date.  
"?" is end sentinel.

The output sequence desired is:

Surname, First Name [CR] Account Number [CR] Expiration Date [CR]

The formula input will be:

*IN\_ID,0,O-STR,"^"+1,"/"-1,"",O-STR,"/" +1,"<SP>"-1,"<CR>",O-STR,3,"^"-1,"<CR>",O-STR,"^"+1,4,"<CR>",Enter*

Here <SP> is a Space character and <CR> is a Carriage Return character.

The output of above input will be

```
ABEL,STEVE[CR]
012345678901234[CR]
9001[CR]
```

### 3.4. Batch Setup

Having configured a keyboard, you may duplicate the settings of the keyboard (master) to the others. You can do this by producing a set of custom setup labels derived from the master keyboard and scanning these labels from other keyboards.

Contents of custom setup labels are represented by a set of ASCII strings produced by the master keyboard. There are two ways to get the strings:

- By scanning the following bar code label the settings of the keyboard will dump to the screen as one or several ASCII strings.
- From keyboard setup, select choice 7 to produce the strings

Print the strings into bar code label in Code 39, you get the batch setup labels to duplicate other keyboards.

The Following issues should be observed:

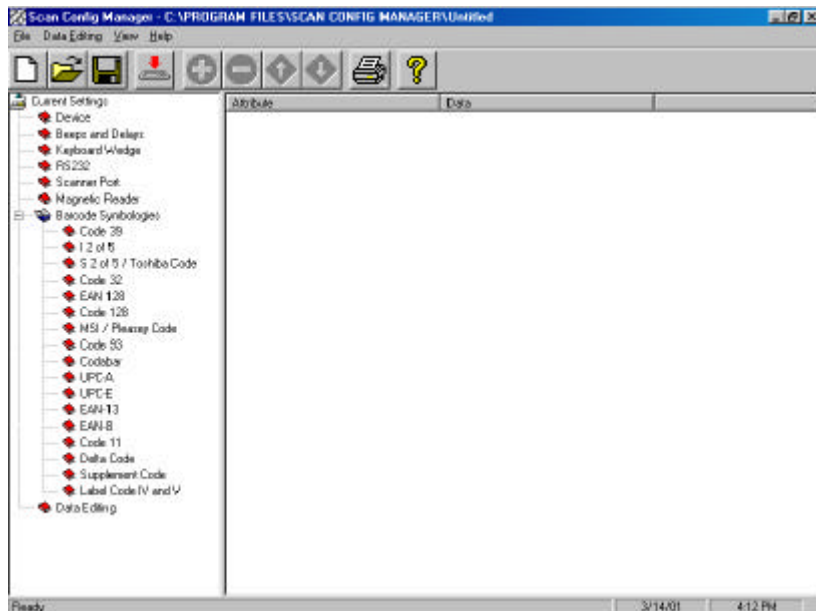
- The sequence of the strings dumped by the keyboard is important. Print the bar code labels and scan them in the same sequence as the one that the master keyboard dumped.
- Only those settings that are different from the default values will be dumped. The number of labels produced depends on how many settings are being changed.
- Adjust the length of the dumped strings by combining multiple strings into one string or breaking up one string into multiple strings. You cannot delete any character from or add any character into multiple strings. You cannot delete any character from or add any character into the strings, and ... must be the first three characters in the first string.
- All characters in dumped strings are upper case. If lower case characters are present in dumped strings, change them to upper case.
- When scanning the batch setup labels to configure a keyboard, the previous settings on that keyboard are reset to default and then replaced by the settings contained in the batch labels.

The following is an example of the dumped strings:

```
...I800C06D51DJ8080
80A007C005354415254.
```

### 3.5. Scanner Configuration Manager Software

Scanner Configuration Manager is a utility program to configure scanner settings on a computer using the Windows 95/98 operating system. Use the program to define the settings and then download the parameters to the scanner. Download the program from our web site at [www.unitech-adc.com](http://www.unitech-adc.com).



### 4. Using the Magnetic Stripe Card Reader

- \* Hold the card with the side of magnetic stripe downwards toward you. (As shown in the diagram below.)
- \* Slide the magnetic stripe card through the reader from right to left at a constant, moderate speed. Note that extreme acceleration, deceleration and interruption on the slide speed may cause reading error.
- \* An audible signal will be emitted and the “Good Read” LED will blink when the card has been correctly slid.

### 5. Pin Assignment of the Scanner Port

The scanner port, which is a DB-9 squeeze-release type connector, accepts an undecoded bar code scanner and an RS232 input.

#### 5.1. Wand

<u>Pin Number</u>	<u>Signal</u>
2	Data
7	GND
9	VCC



<u>Pin Number</u>	<u>Signal</u>
1	Start Of Scan
2	Data
3	Good Read
4	N/C
5	Switch Detect
6	Power Control
7	GND
8	VCC

## **6. Specification**

---

### **Keyboard**

---

Interface	Enhanced AT, PS/2 keyboard 5-pin DIN / 6-pin mini DIN male coiled cable
Power	Voltage: 5 VDC +/- 5% Current: 250mA (including magnetic stripe reader)
Dimension (LxWxH)	400x210x43 mm (15.74x8.26x1.69 inches)
Net Weight	1.30 kg (2.86 lbs)
Operating	Temperature: 0°C to 55°C Humidity: 10% to 90% RH
Storage	Temperature: -20°C to 55°C Humidity: 10% to 95% RH

---

### **Magnetic Stripe Card Reader**

---

Card Standard	ISO 7811/2 through 5
Track Configuration	Read ISO single track, dual track, Triple Track
Card Feed	Bi-direction for ISO card
Card Swipe Speed	5 to 60 IPS (inch per second)

Bit Density	Reads 75 to 210 BPI
Reliability	300000 passes in a clean environment (minimum)

---

---

**Bar Code Decoder Unit**

---

---

Connector	DB-9 male type
Interface	TTL
Symbologies	Code 39 Standard and Full ASCII, UPC\EAN, Codabar, Interleaved 2 of 5, Standard 2 of 5, MSI, Code 128, Code 93, MSI code, Code 32, Delta Distance Code, Label IV & V, Toshiba Code, UCC/EAN128.

## Appendix A. Function Codes

### Function Codes for PC



F1 (%VA)



F3 (%VC)



F5 (%VE)



F7 (%VG)



F9 (%VI)



F11 (%VK)



Cursor Right (/FC)



Cursor Up (/FE)



PgUp (/FG)



TAB (/FI)



Esc (/FK)



Right Ctrl (/FO)



Shift Make (/FP)



Ctrl Make (/FQ)



Alt Make (/FR)



Del (/FX)



F2 (%VB)



F4 (%VD)



F6 (%VF)



F8 (%VH)



F10 (%VJ)



F12 (%VL)



Cursor Left (/FD)



Cursor Down (/FF)



PgDn (/FH)



Back Tab (/FJ)



Left Enter (/FL)



Right Enter (/FM)



Ins (/FW)



Shift Break (/FS)



Ctrl Break (/FT)



Alt Break (/FU)

# Appendix B. Setup Menu

## B.1 Beeps and Delays



Enter Group 1



Group Default



0

### Beep Tone:

- 0 -- None
- 1 -- Low
- 2 -- Medium**
- 3 -- High
- 4 -- Low to High
- 5 -- High to Low



A 1



1



2

### Interblock Delay:

- 0 -- 0 ms**
- 1 -- 10 ms
- 2 -- 50 ms
- 3 -- 100 ms
- 4 -- 500 ms
- 5 -- 1 seconds
- 6 -- 3 seconds
- 7 -- 5 seconds



A 2



3



4

### Intercharacter Delay:

- 0 -- 0 ms**
- 1 -- 1 ms
- 2 -- 2 ms
- 3 -- 5 ms
- 4 -- 10 ms
- 5 -- 30 ms
- 6 -- 50 ms
- 7 -- 100 ms



A 3



5



6



7



8



9



Exit

## B.2 Keyboard Interface:



Enter Group 2



Group Default



0

---

**Function Code:**

0 -- Off  
1 -- ON



B1



1

---

**Caps-Lock:**  
**0 – Auto Trace(PC/XT,AT)**

1 – Lower Case  
2 – Upper Case



B2



2

---

**Language (For PC/XT/AT):**

**0-U.S.**      5-Norwegian      :-Danish  
1-U.K.      6-Italian  
2-Swiss      7-German  
3-Swedish      8-French  
4-Spanish      9-Alt Key Mode



B3



3

---

**Reserve:**

B4



4

---

**Reserve:**

B5



5

---

**Reserve:**

B6



6

---

**Pre-define Label:**

0—Label 0    1—Label 1    2—Label 2  
(See “Pre-defined label” section for detail)



B7



7

---

**Use number keypad digits:**

**0—Disable**    1—Enable



B8



8



Exit



9



## B.4 Magnetic Reader



Enter Group 4



Group Default



0

---

### Terminator

**0—Enter**                    1—Return (on digits keypad)  
 2—Field Exit or Right Ctrl    3—None



E1



1

---

### Start/Stop Sentinel

0—No Send

**1—Send**



E2



2

---

### Track Selection

**0—All Tracks**                    1—Track 1 & track 2

2—Track 1 & track 3    3—Track 2 & track 3

4—Track 1

5—Track 2

6—Track 3



E3



3

---

### Track 2 Account Number Only

**0—No**

1—Yes



E4



4

---

### Separator Character

Scan a character from Full ASCII table.

**Default: None**



E5



5

---

### Output Data even other selected tracks may have some errors.

0—No

**1—Yes**



E6



6

---

### Track I Output Sequence:

Scan characters from full ASCII Table. Maximum is 16 character. Scan right to end. Default: None.



PP



7

---

### Track II Output Sequence:

Scan characters from full ASCII Table. Maximum is 8 character. Scan right to end. Default: None.



OO



8



Exit



9

# B.5 Code 39 / I 2 of 5 / S 2 of 5 / Code 32 / EAN128



Enter Group 5



Group Default



0

**Code 39:** 0/1--Disable/Enable.  
 2/3--Full ASCII/ Standard.  
 4--Check Digit (CD) Calculate & Send.  
 5--CD Calculate, not send. **6--CD not Calculate**.  
 7/8 -- Send/No Send Start/Stop  
 9/: -- Double labels decoding Off/On  
 0 - 48 -- Min length **0** / Max length **48**



F1



1

**I 2 of 5 (ITF):** 0/1--Disable/Enable  
 2/3--Fix Length On/Off ( by first three reads)  
 4--Check Digit (CD) Calculate & Send  
 5--CD Calculate, not send. **6--CD not Calculate**  
 7--First Digit Suppressed. 8--Last Digit Suppressed  
**9 -- Not Suppressed**  
 2 - 64 -- Min length **10** / Max length **64**



F2



2

**S 2 of 5 / China Postal Code(Toshiba Code):**

0/1--Disable/Enable  
 2/3 -- Fix Length On/Off ( by first three reads)  
 4--Check Digit (CD) Calculate & Send  
 5--CD Calculate, not send. **6--CD not Calculate**  
 1 - 48 -- Min length **4** / Max length **48**



F3



3

**Code 32(Italian pharmacy):**

0/1 -- Disable/Enable  
 2/3 -- Leading Character Send / No Send  
 4/5 -- Tailing Character Send / No Send



F4



4

**Telepen:**

0/1 -- Disable/Enable 2/3 -- Standard/Numeric Set



F5



5

**UCC/EAN 128:** 0/1--disable/Enable

2/3--Code ID disable/Enable  
 Note: If EAN128 be disabled, the EAN128 labels will be decoded as Code 128



F6



6

**Define the EAN128 Fields separator:**

Scan a ASCII code in full ASCII code chart to select a new Fields Separator



F7



7

**Define a separator for double labels:**

Scan a ASCII code in full ASCII code chart to select a new definition of Func1



F8



8

Min Length



MM

Max Length



NN



Exit



**B.6 Code 128 / MSI Code / Code 93 / Codabar/ Label Code:**



Enter Group 6



Group Default



0

**Code 128:**

0/1 -- Disable/**Enable**  
1-64 -- Min Length 1 / Max Length **64**



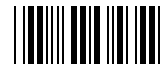
G1



1

**MSI/Plaseey Code:**

0/1 -- **Disable**/Enable  
2/3 -- Check Digit Send / **No Send**  
**4 -- Check Digit Double Module 10**  
5 -- Check Digit Module 11 plus 10  
6 -- Check Digit Single Module 10  
1-16 -- Min Length 1 / Max Length **16**



G2



2

**Code 93:**

0/1 -- Disable/**Enable**  
1-48 -- Min Length 1 / Max Length **48**



G3



3

**Code 11: (Special)**

0/1 -- **Disable**/Enable  
2/3 -- One / **Two** Check Digit  
4/5 -- Check Send / **No Send**  
1-48 -- Min Length 1 / Max Length **48**



G4



4

**Codabar:**

0/1 -- **Disable**/Enable  
2/3 -- Start & Stop Send / **No Send**  
4 -- Check Digit Calculate & Send  
5 -- Check Digit Calculate but not Send  
**6 -- Check Digit not Calculate**  
7/8 -- CLSI Format On / **Off**  
3-48 -- Min Length 3 / Max Length **48**



G5



6

**Label Code IV and V:**

0/1 -- **Disable**/Enable  
2/3 -- **Checksum send**/ No send



G6



8

Min Length



MM



Max Length

NN



9



Exit

## B.7 UPC / EAN / Delta Code



Enter Group 7



Group Default



0

### UPC-A:

- 0/1 -- Disable/Enable
- 2/3 -- Leading Digit Send / No Send
- 4/5 -- Check Digit Send / No Send



H1



1

### UPC-E:

- 0/1 -- Disable/Enable
- 2/3 -- Leading Digit Send / No Send
- 4/5 -- Check Digit Send / No Send
- 6/7 -- Zero Expansion On / Off
- 8/9 -- Disable/Enable NSC=1



H2



2

### EAN-13:

- 0/1 -- Disable/Enable
- 2/3 -- Leading Digit Send / No Send
- 4/5 -- Check Digit Send / No Send
- 6/7 -- Bookland EAN Enable / Disable



H3



4

### EAN-8:

- 0/1 -- Disable/Enable
- 2/3 -- Leading Digit Send / No Send
- 4/5 -- Check Digit Send / No Send



H4



5

### Supplement Code:

- 0/1 -- Two Supplement Code Off / On
- 2/3 -- Five Supplement Code Off / On
- 4 -- Transmitted if Present
- 5 -- Must Present.
- 6/7 -- Space Separator Inserted / Not Inserted



H5



6

### Delta Distance Code:

- 0/1 -- Disable/Enable
- 2/3 -- Check Digit Calculated / Not Calculated
- 4/5 -- Check Digit Send / No Send



H6



8

### Reserved:



H7



9



Exit

# B.8 Data Editing:



Enter Group 8



0



1



2



3



4



5



6



7



8



9



+



-

**Code Type:**

- 0 -- Code 39 Full
- 1 -- Code 39 Std.
- 2 -- EAN-13
- 3 -- UPC-A
- 4 -- EAN-8
- 5 -- UPC-E
- 6 -- I 2 of 5
- 7 -- Codabar
- 8 -- Code 128
- 9 -- Code 93
- 10 -- S 2 of 5
- 11 -- MSI Code
- 12 -- EAN 128
- 13 -- Code 32
- 14 -- Delta Code
- 15 -- Label Code
- 16 -- Plessey Code
- 17 -- Code 11(Special)
- 18 -- China Postal Code
- 19 -- All Inputs

**Formula Format:**

- Input ID: *IN\_ID*, ID1, ..., IDi,
- Length: *LEN*, MIN, MAX,
- Match: *MATCH*, P1,S1, ..., Pi, Si,
- A-String: "abc...",
- O-String: *O-STR*, P, N,

- IDi -- number for Code ID.
- Pi -- position.
- Si -- string, "abc...".
- P -- number or string for start position.
- N -- number of char. or string to end position.

**Special Characters on this sheet:**

- , -- delimiter to separate parameters.
- string specifier.
- \* -- specify any digit or any position.
- # -- specify any letter or last position.



Review



Group Default



*IN\_ID*



*LEN*



*MATCH*



*O-STR*



"



\*



#



*Enter*



*Backspace*



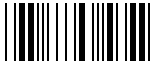
,



Exit

## Appendix C. Full ASCII Chart

(Characters in parentheses represent Code 39 bar code printing)



NUL (%U)



LF (\$)



DC4 (\$) (T)



SOH (\$) (A)



VT (\$) (K)



NAK (\$) (U)



STX (\$) (B)



FF (\$) (L)



SYN (\$) (V)



ETX (\$) (C)



CR (\$) (M)



ETB (\$) (W)



EOT (\$) (D)



SO (\$) (N)



CAN (\$) (X)



ENQ (\$) (E)



SI (\$) (O)



EM (\$) (Y)



ACK (\$) (F)



DLE (\$) (P)



SUB (\$) (Z)



BEL (\$) (G)



DC1 (\$) (Q)



ESC (%A)



BS (\$) (H)



DC2 (\$) (R)



FS (%B)



HT (\$) (I)



DC3 (\$) (S)



GS (%C)



RS (%D)



) (/I)



4



US (%E)



\* (/J)



5



SP



+



6



! (/A)



,( /L)



7



” (/B)



-



8



# (/C)



.



9



\$



/



: (/Z)



%



0



; (%F)



& (/F)



1



< (%G)



' (/G)



2



= (%H)



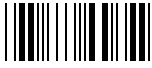
( (/H)



3



> (%I)



? (%J)



J



U



@ (%V)



K



V



A



L



W



B



M



X



C



N



Y



D



O



Z



E



P



[ (%K)



F



Q



\ (%L)



G



R



] (%M)



H



S



^ (%N)



I



T



\_ (%O)



` (%W)



k (+K)



v (+V)



a (+A)



l (+L)



w (+W)



b (+B)



m (+M)



x (+X)



c (+C)



n (+N)



y (+Y)



d (+D)



o (+O)



z (+Z)



e (+E)



p (+P)



{ (%P)



f (+F)



q (+Q)



| (%Q)



g (+G)



r (+R)



} (%R)



h (+H)



s (+S)



~ (%S)



i (+I)



t (+T)



DEL (%T)



j (+J)



u (+U)

# Appendix D. Bar Code Test Chart

EAN-13



Code 39



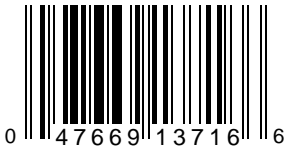
EAN-8



Code 39 with C/D



UPC-A



EAN 128



UPC-E



Code 128



ISBN 957-630-239-0



Codabar



Interleaved 2 of 5



MSI Code

