# WOMBAT™ POS

## Programmable Keyboards

# User's Manual

**KSI-1290A**
**KSI-1292**
**KSI-1293**
**KSI-1294**
**KSI-1296**

## WOMBAT POS Series Keyboards

The WOMBAT series of keyboards have a series of common characteristics.  The most prominent of the characteristics are the programming and MSR capabilities.  Other keyboards in the series have additional abilities supporting bar code, Biometric, Smart Card and OCR capabilities.

All of the keyboards are programmable in that all of the key stations can be programmed with different functions.  These functions can be in the form of standard 104 keyboard codes or in the form of non-standard hex codes.  Additionally the MSR and appropriate bar code parameters can be programmed to include headers, terminators and separators, where appropriate.

## ADDITIONAL  FEATURES

All of the keyboards can be programmed using a DOS based keyboard utility.  The keyboard utility is unique for each keyboard model in the WOMBAT POS series of keyboards.  This utility can create the programming instructions (map) that control the output codes for each key station as well as other programming that control the MSR and bar code functions as appropriate.

The keyboard utility for map creation can operate in a pure DOS mode or in a DOS Window in any Microsoft operating system.  The keyboard utility can also download the custom map in the DOS mode.  The utility can also download the map to the keyboard in the open Window mode.  We have a special utility that can download maps to the keyboard using the Microsoft NT and Windows 2000 operating systems, which do not have the ability to operate in a pure DOS mode.

## WOMBAT POS Series Overview

### KSI-1290A
Is the WOMBAT series keyboard with the most key stations (161).  It also has integrated 2 or 3 track MSR and bar code readers.

### KSI-1292
Is a smaller version of the KSI-1290A.  It has all of the KSI-1290A features with 141 key stations giving it a smaller surface area.  This keyboard is sometimes referred to the WOMBAT JR.

### KSI-1293
Is the same size as the WOMBAT JR with several added features.  With a PS/2 style compressed layout it supports an MS compatible TrackPoint pointing device and provides for a Smart Card reader.

### KSI-1294
This is the most sophisticated of the WOMBAT POS series keyboards.  It has all of the features of the KSI-1293 with the added features of a 4 track (ATB2) MSR and an OCR reader.  The OCR reader can read Passports, Checks and ARC tickets.  The KSI-1294 has a "pass-through" RS-232 serial port in place of the bar code port.

### KSI-1296
This is a KSI-1293 keyboard with 135 key stations and a Biometric fingerprint scanner.

2

# Contents

# 1. Features

The WOMBAT<sup>TM</sup> Series of programmable keyboard are multi-function-input devices. Each unit is comprised of a programmable keyboard, bar code decoder port, and magnetic stripe reader. The bar code decoder is an integrated keyboard port, and the keyboard has a built-in intelligence to auto-detect which device is being connected to it.

Below is a list of features:
- Programmable keys: Every key except <CTRL>, <ALT>, <SHIFT>, and <CapsLock> can be programmed to send up to a maximum of 20 scan codes/key/layer. Due to buffer limitation, an average of 10 scan codes/key/layer can be programmed.

- Four-layer programmability (normal, Control, Alt, and Shift)

- Macros (codes) are saved in the keyboard itself. User does not need a TSR program to define macros.

- Built-in bar code decoder in a D-sub 9-pin male connector

- Bar code decoder interface accepts TTL, Wand-emulation and RS-232 output types like Wand, CCD, and TTL laser gun

- Bar code decoder supports UPC/EAN, Code 39, Code 11, Interleave 2 of 5, Code 93, CODABAR, MSI/PLESSEY, and Code 128

- Key map is downloadable through the bar code port as well as the keyboard cable. The PC RS-232 interface converts RS-232 input data into corresponding key scan codes and sends them to PC via keyboard interface.

- Built-in magnetic stripe reader (ISO standard)

- Supports 8 different country codes

- LED indicator for Caps Lock & Number Lock

- Standard PS/2 cable connection

- Single/Dual/Quad keycap programming functions

- Mechanical, gold contact, key switch technology

- Optional EPROM and Utility program for hexadecimal custom output code programming.

# 2. Programming the Keyboard

The keyboard has a built-in intelligence to auto-detect whether the port is being connected to a PC for downloading or to a bar code scanner (pen wand, CCD, or laser gun).

A utility disk containing setup programs is provided for each keyboard in the series. This lets the user define the key map of the keyboard, program the parameters for bar code decoder and magnetic stripe reader, set delay time between characters being sent to PC, and select country code for the keyboard.

User can run this setup program from any PS/2 keyboard without having to connect the WOMBAT<sup>TM</sup> keyboard to the computer. Below is a recommended procedure to program the keyboards:

1. Run the setup program with normal PC PS/2 keyboard or the WOMBAT<sup>TM</sup> series keyboard.

2. Define the key map.

3. Save the key map.

4. Connect the WOMBAT<sup>TM</sup> series keyboard to the computer (if a normal keyboard is used to define the key map).

5. Download the key map file into the keyboard.

## 2.1 Open Setup File

1. Load the appropriate utility files into your computer HDD or a floppy a drive.

2. Assuming you are using a WOMBAT directory, at the DOS prompt (C:WOMBAT\) type: **Utilityname**.EXE <ENTER>          (WJR223 for WOMBAT JR)

3. The screen will prompt you to enter the map file name to be used. If this is your first map, press <ENTER> to use default settings. Please refer to Appendix A for the default map layout and utility files .

   To modify an existing key map file, enter its complete file name.

NOTE: If you have created a setup file, steps 1 through 3 above can be carried out by specifying the file name on the DOS command line:

   A:\**Utilityname [filename]** <ENTER>

   For example, to open a setup file called STORE1.MAP:

   **Utilityname store1.map** <ENTER>

## 2.2  Save Setup File

After defining the keyboard's setup file, run this menu option to save your keyboard setup into a setup file.  A backup file containing the old contents (before the changes are made) is created.  It will have the same name, but with a ".BAK" extension.

For example, a setup file called STORE1.MAP is opened and changes are made to it.  When the **SAVE** function is run, a backup file called STORE1.BAK is created.

## 2.3  Setup Key Map

This function allows the user to define the macros (or output codes) for the keyboard.  The screen will display the layout of the keyboard, including the key station number for each key (in hexadecimal form).  Every key that has been programmed will be
 `highlighted` .  If this setup program is being run for the first time, the key map will contain default setting as shown in Appendix A.

The setup program provides two methods for defining keys:

1.  Code Mode - uses scan codes to define keys
2.  Direct Mode - allows direct typing of the key station number to represent

### 2.3.1  Defining Keys: Code Mode

With this mode, you will be asked to enter the key station number of the keys you want to define.  These numbers are placed under every key's description on the screen.

For example: key station code for 'F1' is 107, 'Q' is 17, <SPACE> is 61.  Refer to Appendix A of this manual for the WOMBAT/WOMBAT JR<sup>TM</sup> layout.

**Important:**  There are three special keys (CTRL, ALT, and SHIFT) that must be noticed while programming the keyboard.  Once you select one of them, it will be activated throughout the programming of a particular key.  You can only deactivate it by selecting it again.

| Macro | Keystrokes | Scan Codes | # Keystrokes |
|-------|-----------|-----------|-------------|
| dir | d, i, r | 33, 24, 20 | 3 |
| Ctrl-p | <CTRL>, p | 58, 26 | 2 |
| Alt-b c | <ALT>, b, <ALT>, c | 60, 50, 60, 48 | 4 |
| ABcd | <SHIFT>, a, b, <SHIFT>, c, d | 44, 31, 50, 44, 48, 33 | 6 |

### 2.3.2  Defining Keys: Direct Mode

In this mode, you can directly press the key combinations that you want to define as your macros.

For example, to define the key location 165 (right-most key, top row) as Alt-F2, press keys <ALT> and F2 directly from your keyboard.

You can switch between this mode and Code Mode (using key station codes) by pressing the <NumLock> key.  The status of the enter mode is displayed on the bottom right of the screen.

**Important:**  There are three special keys (CTRL, ALT, and SHIFT) that must be noticed while programming the keyboard.  Once you select one of them, it will be activated throughout the programming of a particular key.  You can only deactivate it by selecting it again.

For example: Pressing <SHIFT> and 'p' results in "P".  This will activate the SHIFT status for the remainder of your keystrokes.  So if you press 'a', the result will be "A".

#### 2.3.2.1  Special Keys

There are 4 keys that **cannot** be entered directly for macro definition: <ESC>, <ENTER>, <BackSpace>, and <NumLock>.  These keys are used for the program's internal processing. *However, you can still define these keys in your macros by entering their key station codes.*

For example, the following steps would be taken to program a key to represent Alt-F2, Enter, F7:

1.  After you select the key location to edit or add, press the <NumLock> key to enter in Direct Mode.

2.  Press <ALT> key, then release it.

3.  Press F2.

4.  Press <ALT> key, then release it.

5.  Press <NumLock> key to switch to Code Mode.

6.  Enter the scan code for <ENTER>: 43.

7.  Press <NumLock> key again to switch to Direct Mode.

8.  Press F7 key.

9.  Press <ENTER> to complete the definition.

Your new contents will show: {<ALT><F2>}<ENTER><F7>

### 2.3.3 Interpreting Contents of a Key

The curly brackets {} are used to show combinations of keys that are to be pressed together, while <> are used to represent special keys (F1 through F12, arrows, number pad, Home, PageUp).

| Contents | What it represents |
| --- | --- |
| {<CTRL>{<ALT><DEL>}} | Control + Alt + Delete |
| {<ALT><F2>}<Home> | Alt + F2, Home |
| {<ALT><F2><Home>} | Alt + F2 + Home |
| <F2><Home> | F2, Home |

### 2.3.4 EDIT Function

Use this function to modify the definition (macros) of a key. You cannot use this function to change an empty key. Use **ADD** function to modify an empty key.

For example, to change the macros of key station number 11 from F11 to "Total":

1. Type "11" for the location number of the key to be changed. The current contents of key 11 (F11) will be displayed for verification that this is the key to be changed.

2. If you are using Code Mode, enter the following scan codes to represent "Total": 44, 21, 44, 25, 21, 31, 39

   In Direct Mode, press: <SHIFT>, t, <SHIFT>, o, t, a, l

3. The program will then display the new definition for the key and wait for your confirmation.

### 2.3.5 ADD Function

This function allows you to define new scan codes (macros) for empty keys. You can define a single, double, or quadruple key cap function.

For example, to define key locations 71, 78, 85, and 92 as a quad key labeled "Total":

1. Enter the location numbers of the keys to be changed. Press <ENTER> after typing each number. The location that you select will be flashing.

2. After all locations have been selected, enter the following scan codes to represent "Total": 44, 21, 44, 25, 21, 31, 39

   In Direct Mode, press: <SHIFT>, t, <SHIFT>, o, t, a, l

3. The program will then display the new definition for the key and wait for your confirmation.

### 2.3.6 MOVE Function

You can re-locate the definition of a key to another key station by selecting the **MOVE** function. Only a single key can be moved at a time. This function will copy the definition/macro of the source location to the target location and then clears the source.

### 2.3.7 DELETE Function

This function clears the definition of a key.

### 2.3.8 SET NULL Function

You can send a 'Null' code (scan code 0) to delay the transmission of the next character to the terminal. This function defines the duration of the delay for the Null code.

For example, a 'Null' code has been defined to last 25ms, and a key is defined to send "A", 'Null', "B", "C". After sending "A" to the terminal, the keyboard will wait 25ms before sending "B". The transmission between "B" and "C" will not be delayed.

### 2.3.9 REPEAT Function

You can set this function of the keyboard on or off. It is applicable only for keys defined as a single character.

For example, keys defined as "a", "1", or "G" will be repeated while being pressed for a period of time. However, keys defined as "Total", or Alt-F2 will not be repeated.

NOTE: Although "G" is defined with three separate keystrokes (<SHIFT>, g, <SHIFT>), the result is a single character.

## 2.4 Multi-Layer Programmability

The `WOMBAT/WOMBAT JR`™ has multi-layer programming capability. Each key station can be defined as four separate macros -- one each in "Normal" mode, Shift mode, Ctrl mode, and Alt mode.

## 2.5 Setup Bar Code Decoder Parameter

The bar code decoder is capable of accepting TTL, CCD, Wand-emulation CCD, Wand, and TTL laser gun. It supports the following bar code symbols available on the market:

- UPC/EAN
- CODABAR
- Interleave 2 of 5
- MSI/PLESSEY
- Code 11
- Code 39
- Code 93
- Code 128

You can also add header and suffix to the bar code data being read. The format of the bar code data to be sent by the decoder is:

[Header] + [Bar Code] + [Suffix]

To change the desired decoder's parameters:

| Select | Description | Default |
|---|---|---|
| 1 | Send first character of UPC/EAN code. | *yes* |
| 2 | Send check digit(s). (Not valid for Code 93 or Code 128) | *yes* |
| 3 | Enable check digit verification. (Not valid for Code 93 or Code 128) | *no* |
| 4 | Enable Code 39 ASCII | *no* |
| 5 | Send UPC/EAN supplemental | *no* |
| 6 | Define header for the bar code | *none* |
| 7 | Define suffix for the bar code | *<ENTER>* |

## 2.6 Setup Magnetic Stripe Reader (MSR) Parameter

The information carried by magnetic cards is usually encoded in the magnetic stripe at the back of the cards. Magnetic cards can have up to three tracks of data. Each track will carry encoded information specified by various standards of organization. The most popular standard in the market is the one used in this keyboard, ISO Standard.

The setup program provides user with functions to add header, separator between tracks, and suffix to the card's data before being sent. It also allows user to select which track(s) are to be read.

**Note:** This particular function depends on the availability of the tracks in the MSR.

If you have a multiple track reader the program will allow you to interchange the sequence of the track numbers to suit your applications requirements. The format of the card's data is as follows.

[Header] + [Track X] + [Separator] + [Track Y] + [Separator] + [Track Z] + [Suffix]
where x, y, z, = 1, 2, or 3

The default format of the track sequence is:

[Header] + [Track 2] + [Separator] + [Track 1] + [Separator] + [Track 3] + [Suffix]

To change the magnetic stripe reader parameters:

| Select | Description | Default |
|---|---|---|
| 1 | Define header to precede the card's data. | *none* |
| 2 | Define separator between tracks. (Not applicable to single track reader) | *<Tab>* |
| 3 | Define suffix for the card's data. | *<ENTER>* |
| 4 | Select which track(s) to read. | *2* |
| 5 | Define the sequence format of tracks data. | *2-1-3* |
| 6 | Strip Start and End Sentinel | *no* |

## 2.7 Define Delay Time

Some application software may be slow in processing input keys from the keyboard. This function allows user to delay the sending of a character input from the moment a key is pressed.

For example, if a delay time of 25ms is defined, and a key is programmed to send scan codes for F2, PageDown, "x", the keyboard will send F2, wait 25ms, send PageDown, wait another 25ms, then send "x".

## 2.8 Select Country Type

This function only affects the data output from bar code decoder and magnetic stripe reader. For example, if country code of France is selected, a bar code label of 'a' will be scanned as '15' hex code instead of '1c' as when in USA code.

NOTE: This function will not change you keyboard's mapping layout. To use a different country code, type the following at DOS command prompt:

**keyb** *country_code* <ENTER>

Please consult your DOS manual for details.

## 2.9 Print Setup Data

Prints the definition for every key, bar code decoder parameter, and magnetic stripe reader parameter to printer.

## 2.10 Download Map to Keyboard

After you have defined the keys for your application's requirements, you are ready to download them to the programmable keyboard. **Please save your file before downloading**. The map file may be downloaded in two ways:

- Via the keyboard's cable

- Via the computer COM port (COM1 or COM2)

Download Procedure

1. Turn off the computer.

2. Connect the keyboard to the computer.

   (If you plan to download via the COM port, connect the download cable to the computer's COM port and keyboard's port respectively. Remember to set the DIP switch correctly.)

3. Turn on the computer.

4. Run the setup program.

5. Open the setup file to download.

6. Select "Download" option from the main menu. (Wait approximately 5 seconds while connection is being established.)

7. Enter the port that you are using for the download.

NOTE: Steps 4 through 7 can also be done by specifying the file name and download port on the command line when executing the setup program. The syntax for this command is:

C:WOMBAT\\**Utilityname[filename] /d:[port]**

[filename] = file to download
[port] = 0 (COM1), 2(COM2), or 2 (keyboard's port)

For example, to open a setup file called STORE1.MAP via COM1 into the WOMBAT/WOMBAT JR$^{TM}$, type the following command:

C:WOMBAT\\**Utilityname store1.map /d:1** <ENTER>

8. When the download process is successfully completed, exit from the setup program.

9. Test the keyboard to verify that your macros are correctly installed.

## 2.10.1 Automatic Map Download Procedure
This feature is convenient if it necessary or desirable to download a map by using a batch file (such as *autoexec.bat*). If the WOMBAT$^{TM}$ utility program and the map to be downloaded (**store1.map**) are in a directory named wombat on the C drive the command to automatically start **Utilityname** and download the map would be:

C:WOMBAT\ **Utilityname store1.map /d:2**

## 2.10.2 Download Multiple Keyboards

You can download the same setup file to several keyboards without having to turn off the computer or quitting the setup program. Once one keyboard is completed, just connect another keyboard and restart the download process.

## 2.10.3 Downloading from Windows NT$^{tm}$ or Windows 2000$^{tm}$

Windows NT$^{tm}$ and Windows 2000$^{tm}$ (W2K) have a Hardware Abstraction Layer (HAL), which controls the communication between the computer and the peripheral devices. The HAL prevents the normal DOS utilities from working in a NT or W2K DOS window.

A special download (ONLY) utility has been created to work with NT$^{tm}$ and W2K$^{tm}$. The files for this utility are on the CD that includes this manual. There is a readme file that includes the instructions for installing and using the download program.

# 3. Magnetic Stripe/Credit Card Reader (MSR)

## 3.1 Specifications

1. Card Standard: ISO2 American Bankers Association (ABA) standard

2. Card Feed: Two ways

3. Read/Write: Read only

4. Track: Single, Double, or Triple (see product's model number)

5. Reliability: 300,000 passes in a clean environment.  (The life may be reduced to 1/3 to 1/5 of the above figure when operating in damp or dusty atmosphere.)

## 3.2  Track Data Format

Magnetic cards can have up to three tracks of data.  The information encoded on each track is specified by various standards organizations.  Track 1 and 2 are popularly used in the point-of-sale or PC-related applications.  Below shows how data on each track is encoded.

**Track 1 contains alphanumeric data**.

%B700111222333^SMITH/JOHN R.DR^940512399999OPTIONAL DATA?C

| | | | | | | | | | | |
1 2       3        4              5            6  7  8    9             10          11 12

| | |
| **1:** Start Sentinel | Always "%" | **7:** Expiration Date | 4 digits, YYMM |
| **2:** Format Code | Always "B" | **8:** Service Code | 3 digits |
| **3:** Account Code | 13 or 16 characters | **9:** PIN Verification # | 0 or 5 digits |
| **4:** Separator | Always "^" | **10:** Optional Discretionary Data | Variable |
| **5:** Cardholder Name | Variable length | **11:** End Sentinel | Always "?" |
| **6:** Separator | Always "^" | **12:** Check Character | 1 character |

**Track 2 contains numeric data only**.

;7000111222333=940512399999000000000000000?C

| | | | | | | | |
1        2            3   4       5        6             7           8 9

| | |
| **1:** Start Sentinel | Always ";" | **6:** PIN Verification # | 0 or 5 digits |
| **2:** Account Code | 13 or 16 characters | **7:** Optional Discretionary Data | Variable |
| **3:** Separator | Always "=" | **8:** End Sentinel | Always "?" |
| **4:** Expiration Date | 4 digits, YYMM | **9:** Check Character | 1 character |
| **5:** Service Code | 3 digits | | |

**Track 3 data format (ANSI X9.1)**

| Field Number | Field Name | Usage | Status | Length | Max. Length |
|---|---|---|---|---|---|
| 1 | Start sentinel | M | S | F | 1 |
| 2 | Format code | M | S | F | 2 |
| 3 | Primary account number (PAN) | Note 4 | S | V | 19 |
| 4 | Separator (SEP) | M | S | F | 1 |
| 5 | Country Code or SEP | Note 1 & 5 | S | F | 3 or 1 |
| 6 | Currency | M | S | F | 3 |
| 7 | Current exponent | M | S | F | 1 |
| 8 | Amount authorized per cycle period | M | S | F | 4 |
| 9 | Amount remaining this cycle | M | D | F | 4 |
| 10 | Cycle begin | M | D | F | 4 |
| 11 | Cycle length | M | S | F | 2 |
| 12 | Retry count | M | D | F | 1 |
| 13 | PINPARM or SEP | Note 1 | S | F | 6 or 1 |
| 14 | Interchange control | M | S | F | 1 |
| 15 | Type of account (TA) and service restriction (SR) - PAN | M | S | F | 2 |
| 16 | Type of account (TA) and service restriction (SR) - SAN-1 | M | S | F | 2 |
| 17 | Type of account (TA) and service restriction (SR) - SAN-2 | M | S | F | 2 |
| 18 | Expiration date or SEP | Note 1 | S | F | 4 or 1 |
| 19 | Card sequence number | M | S | F | 1 |
| 20 | Card security number or SEP | Note 1 | D | F | 9 or 1 |
| 21 | First subsidiary account number (SAN-1) | O | S | V | Note 3 |
| 22 | SEP | M | S | F | 1 |
| 23 | Second subsidiary account number (SAN-2) | O | S | V | Note 3 |
| 24 | SEP | M | S | F | 1 |
| 25 | Relay marker | M | S | F | 1 |
| 26 | Crypto check digit | Note 1 | D | F | 6 or 1 |
| 27 | Discretionary data | O | D | V | Note 3 |
| 28 | End sentinel | M | S | F | 1 |
| 29 | Longitudinal redundancy check (LRC) | M | D | F | 1 |

**MAXIMUM TOTAL     107**

M - usage is mandatory     D - status is dynamic     F - length is fixed
O - usage is optional      S - status is static       V - length is variable

NOTES:    (1)   These fields are mutually exclusive, but one or the other must be present.
            (2)   Dynamic fields shall be updated as appropriate by interchange partners. Static fields shall be updated by the card driver.
            (3)   The maximum length of this field is variable, except that the total number of characters in track 3 shall not exceed 107.
            (4)   The PAN has a maximum length dependent upon its first two digits.
            (5)   When the PAN commenced with the digits 59, the encoding of field 5 is mandatory. Otherwise it shall be a separator.

## 3.3 Handling Method

1. Hold the card with its magnetic stripe facing towards the right side of the keyboard (left side for WOMBAT JR<sup>TM</sup>).

2. Since the reading performance depends on the direction of card insertion, insert the card correctly.

3. Slide the card along the reader. Note that extreme acceleration, deceleration, and interruption on the sliding speed may cause reading error.

4. A "good read" beep will sound when data has been read correctly.

# 4. Bar Code Decoder

The bar code decoder is a unit device that translates bar code labels into readable (alphanumeric) information. After being processed, translated information is sent to the keyboard buffer. The decoder combines advanced reading performance with the flexibility to support a variety of input devices such as pen scanner (wand), pulse driven wand, badge slot reader, CCD scanner, and laser scanner.

The decoder is capable of automatically discriminating between popular bar code symbologies (see Appendix D for sample labels):

1)   UPC-A (10-12 digits), UPC-E (6-8 digits) - supplemental code supported

2)   EAN - 8 (6-8 digits), EAN-13 (11-13 digits) - supplemental code supported

3)   Code 39 - both standard and full ASCII supported

4)   Code 11

5)   Interleaved 2 of 5

6)   Code 93

7)   CODABAR

8)   MSI/PLESSEY

9)   Code 128

The decoder can be programmed to provide user with complete control capabilities of:

1)   Symbology format section

2)   Leading and check digits transmission

3)   Supplemental code support

4)   Header and suffix function

NOTE: Refer to Section 2.4 for programming procedure.

## 4.1 Elements of a Bar Code Symbol

A bar code symbol consists of a leading white space, a start character, data characters, a stop character, and a trailing white space. The white spaces are also referred to as the "quiet zone". All the above characters are represented by narrow or wide black and white bars. Generally, the maximum nominal value of wide to narrow ratio is 3:1, while the minimum in 2:1. The quiet zone must have a minimum width of ten times the width of the narrow element.

The decoder is designed to operate with bar code scanning devices such as pen wand, CCD, or laser scanner. Output generated by these scanning devices must be correct for the decoder to work successfully. It is suggested to read bar code labels from materials with matted finish and in an atmosphere which diffuses reflection. The geometric ratio between the bars and spaces must conform to the industry standard, and should be compatible to the specifications of the scanning device used.

## 4.2 Pin Assignments of the Decoder

| Pin | Symbol | Function | Input/Output |
|-----|--------|----------|--------------|
| 1 | SOS | Start of scan | Input |
| 2 | BID | Bar | Input |
| 3 | -- | Not used | -- |
| 4 | -- | Not used | -- |
| 5 | TRIG | Trigger | Input |
| 6 | SVCC | Controlled power | Output |
| 7 | GND | Ground signal | Output |
| 8 | GND | Ground signal | Output |
| 9 | VCC | Power supply (+5V) | Output |

NOTE:  1) Wand compatible devices use pins 2, 7, 8, and 9.

  2) Pulse driven wand uses pins 2, 5, 7, and 9.
  3) CCD and laser scanners use all pins.

## 4.3 Using Various Scanning Devices

The decoder combines advanced reading performance with the flexibility to support a variety of input devices such pen scanner (wand), pulse driven wand, badge slot reader, CCD scanner, and laser scanner.

### 4.3.1 Pen Scanner (Wand)

To scan the bar code labels using a pen scanner:

1. Hold the wand against the label at an angle between 10° to 30° from vertical.

2. Move the wand across the label in a uniform speed.

3. Listen for a "good read" beep from the keyboard.

4. Repeat steps 2 and 3 at different angles and speeds to learn the optimal combination.

The decoder has bi-directional scanning capability. You can scan from either direction: left to right, or right to left. It can also accommodate diagonal scans across the labels as long as the scanning path is straight and covers the entire label. This last function is particularly useful when a portion of a bar code label is void, blemished, or overused.

### 4.3.2 Pulse-Driven Wand

Scanning a bar code label using a pulse-driven wand is the same as using a normal wand. When power is turned on, the decoder always checks the signal level of pin number 5 (TRIG) on the decoder's port. If the signal is low, the decoder will assume that a pulse-driven wand is connected. It will then switch the wand's power at 18Hz increments until a transition in input data (BID) from a high to low state is detected. After the signal's transition, the decoder will maintain the wand's power at a constant high level until the wand is pointed away from the label (into the air).

### 4.3.3 Badge Slot Reader

To use a slot reader, simply slide a bar code badge through the slot in a uniform motion. The bar code side of the badge must face the sensor side of the slot reader, which is indicated by the arrow sign. Then listen from the "good read" beep from the keyboard. Your decoder can read any diagonal scans across bar code labels as long as the scanning width is straight and covers the entire bar code.

### 4.3.4  CCD Scanner

Position the CCD scanner so that it covers the entire bar code label and a small portion of the white area on both sides.  Then press the trigger switch.  This will emit rays of red light from the CCD scanner.  The trigger should remain depressed until a "good read" beep is heard.  If the CCD scanner is turned off before a good read is obtained, repeat the triggering process.  CCD scanners are especially useful in scanning bar codes which are located on lightly curved surfaces.

### 4.3.5  Laser Scanner

To read a bar code label, simply point the laser towards the label and press the trigger on the scanner.  A beam of red light will be emitted by the scanner.  Be sure to aim it so that the beam covers the entire label and a small portion of the white area on both sides.  The trigger switch should remain depressed until a "good read" beep is obtained, repeating the triggering process.

Some laser scanners come with an auto sensor and no trigger switch.  Just point the scanner to the label, and the scanner will trigger automatically.  Keep aiming until a "good read" beep in heard.  If there are several bar code labels on a line, the decoder will only recognize the left-most label within the decoder's beam.  This allows to read a single bar code by positioning the beginning of the beam just to the left of the label.

## 5.  Technical Specifications

| Keyboard | |
| --- | --- |
| Interface | Standard PS/2 keyboard<br>6 pin mini-din, male coiled cable |
| Power rating | Voltage: 5 Volts $\pm$ 5% keyboard (250 ma)  (All WOMBAT Series)<br>KSI-1294:  Aux. Power supply for OCR 5.0 VDC (2.5 A) |
| Dimension (LxWxH) | KSI-1290A:  18.5 x 9.1 x 2.0 inches (470 x 231 x 51 mm) |
| | KSI-1292:  15.6 x 8.75 x 2.0 inches (396 x 222 x 53 mm) |
| | KSI-1293:  15.6 x 8.75 x 2.0 inches  (396 x 222 x 53 mm) |
| | KSI-1294:  17.3 x 8.75 x 2.6 inches (420 x 222 x 64 mm) |
| | KSI-1296: 15.6 x 8.75 x 2.06  (396 x 222 x 53 mm) |
| Net Weight | KSI-1290A: 5 lbs. (2.3 kg) |
| | KSI-1292:  4 lbs. (1.8 kg) |
| | KSI-1293:  4 lbs. (1.8 Kg) |
| | KSI-1294:  5 lbs. (2.3 Kg) |
| | KSI-1296:  4 lbs. (1.8 Kg) |
| Operational | Temperature: 32°F to 122°F (0°C to 50°C)<br>Humidity: 10% to 85% relative humidity |
| Storage | Temperature: -4°F to 158°F (-20°C to 70°C) |
| Countries Supported | USA, UK, Germany, Italy, France, Belgium, Spain, Switzerland |
| Key Switch | Mechanical switch with linear feel<br>Lifetime: 50 million operations |
| Key Output Buffer | 340 characters |
| RS232 Buffer | 1K bytes |
| Programming Features | User-definable single, dual, and quad keycap functions.  Delay transmission time for between each character.  Macros are saved in EPROM and downloadable. |
| Multi-Layer Programmability | Each key station can be defined as four separate macros -- in "Normal" mode", Shift mode, Ctrl mode, and Alt mode |

| Magnetic Stripe/Card Reader (MSR) | |
| --- | --- |
| Tracks | ISO Standard 1, 2, 3, any dual combination, or all three tracks |
| Life | 300,000 to 400,000 passes in clean environments |
| Programming Features | Selectable track combinations<br>User-definable header, separator, and suffix for card data. |

Modifiable sequence format for card data transmission.

---

**Bar Code Decoder**

| | |
|---|---|
| Connector | Standard D-sub 9-pin male |
| Interface | 9 Pin D-sub (male), Wand, TTL |
| Symbologies | UPC/EAN, Code 39, Code 11, Code 93, Code 128, CODABAR, Interleave 2 of 5, and MSI/PLESSEY |
| Programming Features | Symbology format selection<br>Leading and check digits transmission<br>Supplemental codes support<br>Header and suffix function |

# Keyboard Layouts
## Utility and Map File Specifications

## KSI-1290A



KEY SOURCE INTERNATIONAL
KSI-1290A KEYBOARD
UTILTY: 1290A.EXE
MAP: 1290.MAP
STD. MSR: 1-2 Track

Key Cap Color Code
HL = HEI Light        CS2K263T
HD = HEI Dark         CS2K264T

All key cap colors HL unless otherwise stated

April 26, 2001
1290A.DWG

Legend

All
Clear
5A  CV

Key Cap Color
Key Station Number

# KSI-1292



KEY SOURCE INTERNATIONAL
KSI-1292 KEYBOARD

UTILITY:   1292.EXE
MAP FILE:   WJR101B.MAP
STD. MSR:   1-2 TRACK

Legend
All Clear
51  CV
Key Cap Color
Key Station Number

Key Cap Color Code
HL = HEI Light    CS2K263T
HD = HEI Dark     CS2K264T

April 26, 2001
1292.DWG

# KSI-1293

KEY SOURCE INTERNATIONAL
KSI-1292 KEYBOARD
UTILITY:   1293.EXE
MAP FILE:   1293.MAP
STD. MSR:   1-2 TRACK

April 26, 2001
1293.DWG

Legend
All
Clear
51  CV
Key Cap Color
Key Station Number

Key Cap Color Code
HL = HEI Light    CS2K263T
HD = HEI Dark     CS2K264T

# KSI-1294

| HEI Releg 01 HL | HEI Releg 02 HL | HEI Releg 03 HL | HEI Releg 04 HL | HEI Releg 05 HL | HEI Releg 06 HL | HEI Releg 07 HL | HEI Releg 08 HL | HEI Releg 09 HL | HEI Releg 0A HL | HEI Releg 8A HL | HEI Releg 8B HL | HEI Releg 8C HL | HEI Releg 8D HL | HEI Releg 8E HL | HEI Releg 8E HL | HEI Releg 90 HL | HEI Releg 91 HL | HEI Releg 92 HL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HEI Releg 0B HL | HEI Releg 0C HL | HEI Releg 0D HL | HEI Releg 0E HL | HEI Releg 0F HL | HEI Releg 10 HL | HEI Releg 11 HL | HEI Releg 12 HL | HEI Releg 13 HL | HEI Releg 14 HL | HEI Releg 96 HL | HEI Releg 97 HL | HEI Releg 98 HL | HEI Releg 99 HL | HEI Releg 9A HL | HEI Releg 9B HL | HEI Releg 9C HL | HEI Releg 9D HL | HEI Releg 9E HL |

Esc 15 HD | F1 16 HL | F2 17 HL | F3 18 HL | F4 19 HL | F5 1A HL | F6 1B HL | F7 1C HL | F8 1D HL | F9 1E HL | F10 1F HL | F11 20 HL | F12 21 HL | HEI Releg 22 HD | HEI Releg 23 HD

Insert 24 HD | Home 25 HD | PgUp 26 HD | PrtSc SysRq 27 HD
Delete 2A HD | End 2B HD | PgDn 2C HD | Scroll Lock 2D HD

~ ` HL | ! 1 HL | @ 2 HL | # 3 HL | $ 4 HL | % 5 HL | ^ 6 HL | & 7 HL | * 8 HL | ( 9 HL | ) 0 HL | _ - HL | + = HL | <- Backspace HD

Num Lock 3F HD | / 40 HD | * 41 HD | Pause Break 42 HD

Tab HD | Q HL | W HL | E HL | R HL | T HL | Y HL | U HL | I HL | O HL | P HL | { [ HL | } ] HL | | \ HD

7 Home 52 HL | 8 ^ 53 HL | 9 Pg Up 54 HL | _ 55 HD

Caps Lock HD | A HL | S HL | D HL | F HL | G HL | H HL | J HL | K HL | L HL | : ; HL | " ' HL | Enter HD

4 <-- 65 HL | 5 66 HL | 6 --> 67 HL | + 68 HD

Shift HD | Z HL | X HL | C HL | V HL | B HL | N HL | M HL | < , HL | > . HL | ? / HL | Shift HD | ↑ HD

1 End 77 HL | 2 78 HL | 3 Pg Dn 79 HL | Enter

Ctrl HD | Alt HD | Open Doc HD | Ctrl HD | ← HD | ↓ HD | → HD

0 Ins 86 HL | . Del 86 HL | 87 HD

KEY SOURCE INTERNATIONAL
KSI-1294 KEYBOARD

UTILITY:    1294.EXE
MAP FILE:    1294.MAP
STD. MSR:    1-2-3-4 TRACK

Legend
All Clear 51 CV
Key Cap Color
Key Station Number

Key Cap Color Code
HL = HEI Light    CS2K263T
HD = HEI Dark    CS2K264T

April 26, 2001
12294.DWG

17

# KSI-1296

Fingerprint
Scanner

| HEI Releg 03 HL | HEI Releg 04 HL | HEI Releg 05 HL | HEI Releg 06 HL | HEI Releg 07 HL | HEI Releg 08 HL | HEI Releg 09 HL | HEI Releg 0A HL | HEI Releg 8A HL | HEI Releg 8B HL | HEI Releg 8C HL | HEI Releg 8D HL | HEI Releg 8E HL | HEI Releg 8E HL | HEI Releg 90 HL | HEI Releg 91 HL | HEI Releg 92 HL |
| HEI Releg 0D HL | HEI Releg 0E HL | HEI Releg 0F HL | HEI Releg 10 HL | HEI Releg 11 HL | HEI Releg 12 HL | HEI Releg 13 HL | HEI Releg 14 HL | HEI Releg 96 HL | HEI Releg 97 HL | HEI Releg 98 HL | HEI Releg 99 HL | HEI Releg 9A HL | HEI Releg 9B HL | HEI Releg 9C HL | HEI Releg 9D HL | HEI Releg 9E HL |

Esc 17 HL | F1 18 HL | F2 19 HL | F3 1A HL | F4 1B HL | F5 1C HL | F6 1D HL | F7 1E HL | F8 1F HL | F9 20 HL | F10 21 HL | F11 22 HD | F12 23 HD

Insert 24 HD | Home 25 HD | PgUp 26 HD | PrtSc SysRq 27 HD

Delete 2A HD | End 2B HD | PgDn 2C HD | Scroll Lock 2D HD

~ ` 1 ! HL | @ 2 HL | # 3 HL | $ 4 HL | % 5 HL | ^ 6 HL | & 7 HL | * 8 HL | ( 9 HL | ) 0 HL | _ - HL | + = HL | <- Backspace HD

Num Lock 3F HD | / 40 HD | * 41 HD | Pause Break 42 HD

Tab HD | Q HL | W HL | E HL | R HL | T HL | Y HL | U HL | I HL | O HL | P HL | { [ HL | } ] HL | | \

7 Home 52 HL | 8 ^ 53 HL | 9 Pg Up 54 HL | _ 55 HD

Caps Lock HD | A HL | S HL | D HL | F HL | G HL | H HL | J HL | K HL | L HL | : ; HL | " ' HL | Enter HD

4 <-- 65 HL | 5 66 HL | 6 --> 67 HL | + 68 HD

Shift HD | Z HL | X HL | C HL | V HL | B HL | N HL | M HL | < , HL | > . HL | ? / HD | Shift HD | ↑ HD

1 End 77 HL | 2 ↓ 78 HL | 3 Pg Dn 79 HL | Enter

Ctrl HD | Alt HD | | Alt HD | Ctrl HD | ← HD | ↓ HD | → HD

0 Ins HL | . Del 86 HL | 87 HD

Legend
All Clear 51 CV
Key Cap Color
Key Station Number

KEY SOURCE INTERNATIONAL
KSI-1294 KEYBOARD

UTILITY:     1296.EXE
MAP FILE:    1296.MAP
STD. MSR:    1-2 TRACK

Key Cap Color Code
HL = HEI Light    CS2K263T
HD = HEI Dark     CS2K264T

April 26, 2001
12296.DWG

# Appendix B

## Pin Assignments

Pin Assignment of BARCODE Connector

| Pin | Function |
|---|---|
| 1 | start of scan (BARCODE) |
| 2 | signal (BARCODE) |
| 3 | TXD (RS232) |
| 4 | RXD (RS232) |
| 5 | trigger switch (BARCODE) |
| 6 | controlled power (BARCODE) |
| 7 | GND |
| 8 | GND |
| 9 | VCC (+5V) |

Pin Assignment of Download Cable

| Connect to keyboard port | | Connect to PC COM port | |
|---|---|---|---|
| Pin | Description | Pin | Description |
| 1 | -- | 1 | -- |
| 2 | -- | 2 | Tx Data |
| 3 | Tx Data | 3 | Rx Data |
| 4 | Rx Data | 4 | -- |
| 5 | -- | 5 | GND |
| 6 | -- | 6 | -- |
| 7 | -- | 7 | -- |
| 8 | GND | 8 | -- |
| 9 | VCC (+5V) | 9 | VCC (+5V) |

# Appendix C

**Smart Card Reader**

**PC / SC Compatable**

**Discription**

**UNDER CONSTRUCTION**

# Appendix D

**Fingerprint Scanner**

**Discription**

**UNDER CONSTRUCTION**

# Appendix E

**OCR Scanner**

**Discription**

**UNDER CONSTRUCTION**

# Key Source International
# 7711 Oakport Street
# Oakland  CA  94621

# Phone 510 562-5000
# Fax   510 562-0689

# www.ksikeyboards.com

These devices comply with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference,
and (2) this device must accept any interference
received, including that which may cause undesired
operation.

Agency Approvals:   CE, FCC and UL

*Revision April 28,*

*2001*