Programmable Keyboard

66 Programmable Keys

USER MANUAL

LOGIC CONTROLS

NOTICE

The manufacturer of the POS programmable keyboard makes no representations or warranties, either expressed or implied, by or with respect to anything in this manual, and shall not be liable for any implied warranties of fitness for a particular purpose or for any indirect, special or consequential damages. Information in this document is subject to change without notice and does not represent a commitment on the part of the manufacturer.

FCC NOTICE

This device complies with Part 15 of FCC Rules. Operations 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 interference that may cause undesired operation.

TABLE OF CONTENTS

FEATURES

- 66 programmable keys; 2 position programmable key lock
- Re-legendable / re-programmable keyboard
- Requires no TSR programs and thus avoids software crashes.
- Requires no expensive programming kits.
- Requires no battery. Holds data over 100 years.
- Multi-level key definition.
- Program variable inter-string delay.
- Self programmable with a single key stroke.
- Records and plays back up to 119 alphanumeric characters per key.
- Provides true keyboard wedge function that operates with or without the normal computer keyboard connected.
- Uses highly reliable, full-travel, mechanical switches.
- Recognizes the XT, AT, PS/2-25 and PS/2 (models 50 to 95)* computers automatically.
- Features an optional 2 track magnetic stripe reader:
    - Reads tracks 1 and 2
    - Built-in decoder and wedge interface
    - Optional 3 track MSR available
- Provides optional output formats: Standard keyboard emulation (KB5000), or RS232 (KB5000R).
- Supports the following character sets:
    - all alphanumeric characters
    - 12 function keys
    - all IBM keyboard's special keys (Shift, CTRL, Alt, ESC, etc.)
    - 255 ASCII codes
- Permits simple field programmability.
- Downloads an entire 66 key template into the internal non-volatile memory in just 7 seconds.
- Includes replaceable legend sheet.
- Built with spill-proof construction.
- Includes cable, legend sheet, and utility software.

* (XT, AT, PS/2 are registered trademarks of International Business Machines Corporation.)

CARTON CONTENTS

KB5000

1.   POS keyboard, Model KB5000
2.   Computer interface cable
3.   Utility software disk
4.   Legend label sheet
5.   User's manual
6.   Key cap lifter
7.   2 keys for lock

KB5000M *(with optional Magnetic Stripe Reader)*

1.   POS keyboard, Model KB5000M
2.   Computer interface cable
3.   Utility software disk
4.   Legend label sheet
5.   User's manual
6.   Key cap lifter
7.   2 keys for lock

KB5000R *(RS232C interface for PC computers)*

1.   POS keyboard, Model KB5000R
2.   Computer interface cable
3.   RS232C Interface cable
4.   Utility software disk
5.   Legend label sheet
6.   Power adapter (+5vdc)
7.   User's manual
8.   Key cap lifter
9.   2 keys for lock

HARDWARE CONNECTIONS

The KB5000 can be connected to an IBM101 PC, XT, AT or clone computer, PS/2 computer, or computer terminal. The following diagram shows how the KB5000 connects to the computer and standard keyboard or other keyboard peripheral (magnetic stripe reader, scanner, etc.). When the KB5000 is used in a stand alone configuration no connections are made to J5.

To computer keyboard or other keyboard wedge devices

To computer keyboard port
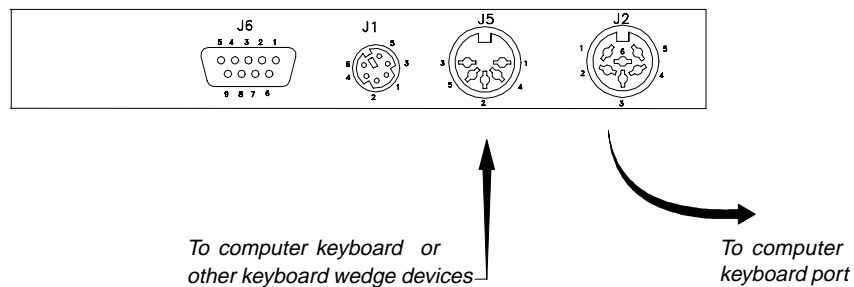
> *NOTE:* Before making any connections it is always advisable to turn off the computer.

A. Connecting the KB5000 or KB5000M to an IBM101 PC, XT, AT, or clone computer's keyboard port:

1. Use the supplied interface cable. Plug the 6-pin connector into J2 of the KB5000.
   Plug the 5-pin connector into the computer's keyboard port.
2. Connect the computer's keyboard into J5 of the KB5000.

> *NOTE:* J1 and J6 are not used in this configuration.

B. Connecting the KB5000 to a PS/2 computer:

1. Use the supplied interface cable. Plug in the 6-pin DIN connector of the interface cable into J2 of the KB5000.

2. Connect the 5 pin DIN connector of the interface cable into the 5 pin DIN of the AT-to-PS/2 adapter.

3. Plug the PS/2 connector of the adapter into the computer's keyboard port.

4. Connect the PS/2 keyboard into J1 of the KB5000.

    NOTE 1:   J5 and J6 are not used in this configuration.

    NOTE 2:   The AT-to-PS/2 adapter is not supplied but can be ordered from the manufacturer.

C. *Connecting the KB5000R to a PC serial port:*

1. Connect one end of the RS232C interface cable to J6 of the KB5000R. Connect the other end of the cable to the DB9 serial port of the computer.

    NOTE 1:   J1, J2, and J5 are not used in this configuration.

    NOTE 2:   Programming the KB5000R must be done on a PC computer using the keyboard port. When programming is completed, remove the cable going to J2 and install the RS232C interface cable into J6.

    NOTE 3:   Before writing or saving the legend file be sure to open the F3 menu and set the RS232C option to YES. Make any changes necessary to the communications protocol setup. See **Special Configuration** on page 17.

    NOTE 4:   A standard KB5000 can not be used in an RS232C environment without factory modifications.

FUNCTIONAL TEST

For testing purposes, your KB5000 keyboard was pre-programmed with a template called **KB5000.tpl**. Shown at the end of this section is the KB5000 keyboard with the pre-programmed information for each key. The following simple steps will verify that the KB5000 is in good working condition:

1. Follow the Hardware Connections procedure described earlier in this manual to connect the KB5000 to your computer.

2. Turn on your computer.

3. At the DOS prompt, press the upper left key of the keyboard.

4. The keyboard is working correctly when the words "LOGIC CONTROLS PROGRAMMABLE KEYBOARD, MODEL KB5000" appears on the monitor. To verify if the other keys are working simply press each key and verify that the information displayed on the monitor matches the template shown at the end of this section. To help you understand how to program the keyboard with special function keys the arrow keys have been programmed with their actual codes. Therefore they will not display information when depressed at a DOS prompt. However, when you enter the programming utility and select the KB5000.tpl template and select those keys, the correct programming information will be present.

5. To verify if the magnetic stripe reader is working correctly in a KB5000M model, hold a credit card with the magnetic stripe at the bottom and facing the arrow mark. Slide the card through the reader slot. Make sure the bottom card edge is continuously touching and gliding along the reader slot surface. The recorded data from the credit card will automatically be displayed at the DOS prompt.

6. To verify if a KB5000R (RS232 model) is working properly, it will be necessary to use a communications program. Set the protocol of the communications program to 9600 baud, no parity, and 8 data bits. Press the upper left key on the keyboard and verify that "LOGIC CONTROLS PROGRAMMABLE KEYBOARD, MODEL KB5000" is present.

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LOGIC CONTROLS

L1

L2

LOGIC CONTROLS

KB5000

LOGIC CONTROLS	PRICE	MFR COUPON	CHECK	CASH	QUANTITY	SIGN ON/OFF		NO ENT
KB5000 KEYBOARD	PRICE VERIFY	STORE COUPON	STORE CREDIT	AMER. EXPRESS	7	8	9	←	ST
ESC	TOP	ITEM CORRECT	TRAVEL CHECK	VISA	4	5	6	→	DEPA/MEI
MENU	INQUIRY DATA	MERCHAND CREDIT	GIFT CERT.	MASTER CARD	1	2	3	↓	ITE CORF
SHIFT	SEND	END OF MERCHAND	PAYMENT	DISCOVER	0	00	.	↑	RET
								BACK SPACE	

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UTILITY DISK CONTENTS

All KB5000 keyboards come with a utility software disk. This disk contains several important files:

KB5D.EXE -   Use this utility with or without the keyboard being attached. It is used to program the keyboard. For a complete description of how this program works see the section "Programming the KB5000 keyboard".

KB5000.TPL -   This template was pre-programmed into the keyboard and matches the legend shown on the previous page. If you have any questions on how to program a particular key you can refer back to this template to see how it was originally programmed.

DL5.COM -   This utility program allows you to download a stored template without entering the KB5.EXE utility program. Simply add the KB5 directory to the path statement of the autoexec.bat file. When you want to change the stored program simply type the download command plus the file you want to write into the keyboard. For example, to download a file called lunch, you would type **DL5 LUNCH.TPL** and press **ENTER**. The download program will take approximately 7 seconds to over-write the existing legend file and install the **lunch** file.

README.DOC - This document contains the latest information which may not be included in the manual.

INSTALLING THE KB5D.EXE UTILITY PROGRAM

The first step in using the KB5.EXE utility program is to copy the program to your hard drive.

1. Insert the KB5 utility software into drive A or B.

2. Type **MD KB5** at the "C>" prompt to make a directory named KB5.

3. Type **CD KB5** to make the KB5 directory active.

4. Type **COPY A:*.*** If the disk was inserted into drive A then all files will be copied into the hard drive's directory (KB5). If drive B is used then you must type **COPY B:*.***

STARTING THE KB5D.EXE PROGRAM

This program can be used with or without the keyboard being attached to the computer. Note that the PC must be booted up in DOS before starting the program. It will not run properly under Windows DOS prompt.

If the Windows version do not provide option to boot up computer in DOS, a DOS boot up diskette created from another computer will be required to boot up the computer.

Refer to Windows user manuals for further details.

To start the program, type KB5D and press ENTER. When the program is up, it will automatically display the the graphic screen on next page.

F2 File

F3 Configure

F5 Recover

F6 Clear

F8 Scan-code Mode

F9 Ascii-code Mode

F10 Quit

F7 Symbol/Hex

Alt+D Time Delay

Alt+S Separator

Alt+A Shift Func

Alt+C Caps Lock

KeyLock

Shift +
Up
Left ← ↑ → Right
↓ Down

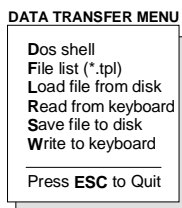| L11 | L21 | L31 | L41 | L51 | M11 | M21 | R11 | R21 | R31 | R41 | R51 | X11 |
L12	L22	L32	L42	L52	7	8	9	R12	R22	R32	R42	R52	X12
L13	L23	L33	L43	L53	4	5	6	R13	R23	R33	R43	R53
L14	L24	L34	L44	L54	1	2	3	R14	R24	R34	R44	R54
L15	L25	L35	L45	L55	0	00	.	R15	R25	R35	R45	R55

X11

ASCII Mode

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PROGRAMMING THE KB5000 KEYBOARD

The following procedure will show you how to program the KB5000 with standard (keyboard) alphanumeric characters. The keyboard can be programmed with either ASCII or Scan code information. The default mode is the ASCII code mode. The following procedure assumes both a KB5000 keyboard and a 101 keyboard are attached.

NOTE: To run this program you must exit windows completely. Do not shell out from Windows.

1. With the correct programming graphics present. Select the cell you want to program by using the arrow keys on the 101 keyboard. The Up and Down arrows will select the row while the **Shift** and either the **Right** or **Left** arrow key will select the column.

2. Enter your programming text via the 101 keyboard. Continue programming until all the keys are programmed. It is not necessary to program all the keys for the KB5000 to function properly. The maximum number of alphanumeric characters that can be programmed for any one key is limited only by the memory left.

NOTE: The maximum number of alphanumeric characters that can be programmed per standard keyboard is 1856.

DATA TRANSFER MENU

Dos shell
File list (*.tpl)
Load file from disk
Read from keyboard
Save file to disk
Write to keyboard
_____
Press **ESC** to Quit

3. Press **F2** to call up the Data Transfer Menu. There will be several choices to choose from.

4. Type **W** to write the programmed data into the KB5000's non volatile memory. A "Writing Data" screen will open showing the percentage of memory written. It will take approximately 7 seconds to copy the data into the keyboard.

5. Type **S** to save the programmed data into the KB5 directory. You can select up to an 8 character name. It will be saved with a **.TPL** extension.

6. Press **ESC** to terminate the Data Transfer Menu.

7. Press **F10** followed by **Y** to exit the utility program.

8. To verify that your program has been successfully installed, simply press any programmed key. The information stored in that key will appear on the monitor.

9. The next time you want to install the legend you just created simple press **F2** to call up the Data Transfer Menu and then press **L** to open the Load window.

10. Enter the name of the file in the legend window with its proper extension (.TPL) and press ENTER. The legend will now show on your monitor.

ADVANCED PROGRAMMING

The KB5000 POS keyboard can be programmed with all special control and function keys such as the **Shift, Ctrl, Alt, F1** through **F12,** and the **up/down/ left/right** arrow keys. The procedure to program these special keys is shown below:

1. Start the KB5 utility program.
2. Select the cell to be programmed. Press **F8** to enter the scan-code mode. The "code type" information changes from **ASCII** to **SCAN.**

NOTE: The scan-code mode will only be active for this cell. You must select F8 for each cell you want to program with scan-code information.

3. Under the scan-code mode, each alphanumeric character is enclosed in parenthesis. For special function or control keys, press **ESC** (three vertical bars will be present) followed by the special function or control key you want to program.

   For example, to program the **INS** (insert) key, press **ESC** and then the **INS** key on the 101 keyboard. To program the **ESC** key, simply press the **ESC** key twice. Special function and control keys will **not** appear inside parenthesis. The three vertical bars will disappear once the special function key is depressed.
4. You may return to the start-up graphic screen (short menu) by pressing **Ctrl-Alt-F4** again.

NOTES:

1) Special function keys require ESC as the leading code. In the scan-code mode, you can view the symbol of the special key or the hex code equivalent of the special key. To view, simply press **F7** to toggle between symbol and hex modes.

2) Once a special function key (shift, ctrl, alt, etc.) is programmed it may be necessary to un-select the function. To do so, press in sequence **ESC, f** (lower case F)**, 0** (zero)**, ESC,** followed by the special function key (shift, ctrl alt, etc.)

3) Any given programmable location may be toggled between scan-code mode and ASCII-code mode. Pressing the **F8** key on the keyboard will change the cell's programming mode to scan-code mode. Pressing **F9** on the keyboard will change the cell's programming mode to ASCII-code mode. Changing modes in a cell that has been previously programmed will erase all the information in that cell.

4) To enter hex scan-codes directly, press **ESC** followed by the 2-digit hex number. For example, to program the **CTRL** key press **ESC** followed by **1D**. The KB5 program will add the leading zero.

SPECIAL FEATURES OF THE KB5000

Besides being able to program all the keys of an IBM101 keyboard, the KB5000 has also incorporated three state-of-the-art features which will add flexibility and functionality to the keyboard.

INTER-STRING DELAY

This feature allows for a time delay(s) to be installed after a character(s) has been inserted into a cell. To use this feature follow the steps below:

1. Enter the character(s) which will precede the delay. For example, **ABC**.

2. Depress and hold the **ALT** key while pressing the letter **D**. A time delay screen will open asking for the amount of delay you require (up to 240 seconds). Select the appropriate delay and press **ENTER**. A square pixel will appear on the programming line immediately following the last character typed.

3. Type the next character(s), **DEF**. You can use more than one delay per cell and each delay time can be different.

4. Save the template and then write the template to the keyboard.

5. Exit the KB5 program by pressing **F10** followed by the letter **Y**.

6. Press the location key where the time delay character has been stored. The monitor will display **ABC** immediately. After the delay time you entered for this key has expired, **DEF** will be displayed on the monitor and the cursor will be present at the prompt.

MULTI-LEVEL DEFINITION

This feature can increase the apparent number of programmablekeys by allowing you to program different levels into any cell. For every different level you program you must select another key to be a "SHIFT LEVEL" key. Programming is accomplished in the normal manner. After programming the base level a separator bar must be entered to separate the base level from the second level. You can program more than two levels per cell. For example, if you needed to program small coffee, medium coffee, and large coffee into one cell follow the procedure outlined below:

1. Select a blank cell (**L11**) and enter the most common coffee first (**medium coffee**). Mark the legend sheet for this cell **COFFEE**.

2. Enter the separator bar by depressing and holding the **ALT** key and pressing the letter **S**. A solid line will appear on the programming line immediately following the last character typed.

3. Enter the second level (**small coffee**) followed by another separator.

4. Enter the third level of information (**large coffee**). The entire programming line should look like the following:

   L11 | MEDIUM COFFEE | SMALL COFFEE | LARGE COFFEE |

5. Select a blank location (**L14**) to become the first level shift position. Mark the legend sheet for this location **SMALL.**

6. Change the programming mode of this cell to scan-code mode (**F8**). Depress and hold the **ALT** key while pressing the letter **A**. A triangle inside brackets (< >) will appear on the programming line. This key when depressed and held will activate all keys that have a second level.

7. Select another blank location (**L15**). This will become the second level shift position (will activate the third level of information). Mark the legend sheet for this position **LARGE.**

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8. Change the programming mode of this cell to the scan-code mode (**F8**). Depress and hold the **ALT** key while depressing the letter **A** twice. Two triangles inside brackets will appear on the programming line.

9. To use this feature in your application is extremely simple. When medium coffee is desired just press the **L11** key (the first level of information stored in cell **L11** will be sent to the computer). When a small coffee is desired press and hold the **L14** key while pressing the **L11** key (the second level of information stored in cell **L11** will be sent to the computer). When a large coffee is desired press and hold the **L15** key while pressing the **L11** key (the third level of information stored in cell **L11** will be sent to the computer)

NOTE: There is no preset limit to the number of levels that can be programmed into a keyboard.

SELF PROGRAMMING

To use this feature the KB5 directory must be added to the path statement of the AUTOEXEC.BAT file. This feature is extremely helpful for applications where the keyboard files are changing on a regular basis. A programming location must be reserved on each keyboard in order to perform the self programming function.

1. Select the key location to contain the self programming information (**R51**).

2. The information to be entered into this location will be the down load command plus the name of the file to be loaded into the key board. For example, if you want to change from a breakfast menu to a lunch menu the **R51** location in the breakfast file can be programmed as follows:

    R51 | DL5 LUNCH.TPL

3. To change to the lunch menu simply press **R51**. The download program will load the lunch menu into the keyboard.

SPECIAL CONFIGURATIONS

The KB5000 can be set up with many different programming options. To activate the configuration menu screen the KB5 program must first be placed into the extended menu (**Ctrl, Alt, F4**). Press **F3** to open the configuration screen. By depressing the highlighted letter in each option the program will enable or disable that option. The default settings are shown in the graphic below.

Send **B**reak-codes for scan-codes	**Yes**
Enable beep while a key pressed	**Yes**
No beep if a key is undefined	**Yes**
Translate to code-set #2 for AT	**Yes**
Emulating **X**T keyboard always	**No**
Use **A**LT+num to generate ASCII	**No**
Enable Typematic for s**c**an codes	**No**
Enable Typematic for ASC**I**I codes	**No**
E**m**ulating Link Terminal	**No**
InterCharacter Delay (**+**/-):	**2** mS
Enable R**S**232 Output	**No**
Baud **R**ate:	**9600**
Parity:	**NONE**
Length of Data:	**8** -bits

Press a High-light Letter to select

Esc ==> Quit from this menu

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DESCRIPTION OF SPECIAL CONFIGURATION MENU F3

Send Break-code for scan-codes - Enables or disables the transmission of break codes for each scan code programmed into the keyboard.

Enable beep while a key pressed - Enables or disables the entire keyboard from beeping when any key is depressed.

No beep if a key is undefined - If a key is not programmed it will not beep when depressed.

Translate to code set #2 for AT - Enables or disables the output of the keyboard to be translated into AT scan code.

Emulating XT keyboard always - Enables or disables the output of the keyboard to be translated into XT scan code.

Use ALT +num to generate ASCII - Enables or disables the ability to use the ALT key along with the numeric keyboard to generate ASCII codes.

Enable typematic for scan codes - Enables or disables keys programmed with scan code information to repeat the programmed characters as long as the key remains depressed.

Enable typematic for ASCII codes - Enables or disables keys programmed with ASCII code information to repeat the programmed characters as long as the key remains depressed.

Emulating Link Terminal - Enables or disables the keyboards ability to emulate a link terminal.

Intercharacter Delay (+/-) - The time delay between characters can be adjusted from 1 millisecond to 266 milliseconds. This delay is set for all characters programmed into the keyboard. Do not confuse this feature with the inter-string delay feature.

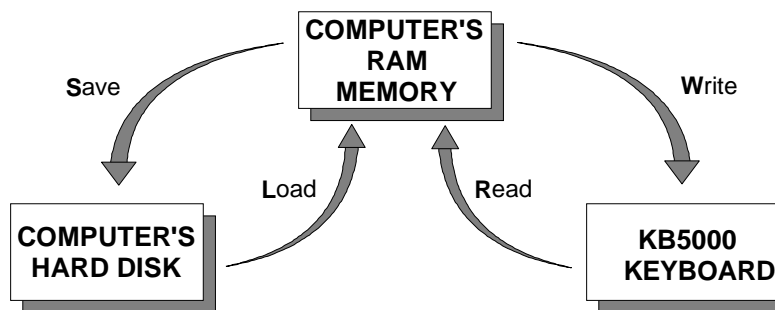## DESCRIPTION OF SPECIAL CONFIGURATION MENU F3
(CONTINUED)

Enable RS232 Output - Enables or disables the output of the keyboard to the RS232 port (DB9 connector). If this option is set to YES then the protocol settings must be set to mirror the application software.
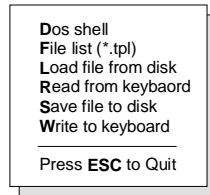
Baud Rate - This option selects 2400, 4800, 9600 and 19,200 baud rates.

Parity - This option selects ODD, EVEN or NO parity.

Length of data - This option selects either 7 or 8 data bits.

DATA TRANSFER MENU

```
Dos shell
File list (*.tpl)
Load file from disk
Read from keybaord
Save file to disk
Write to keyboard
_____
Press ESC to Quit
```

The KB5000 keyboard, working in conjunction with the KB5.EXE utility
software, can perform the following powerful functions:

*   Save programmed data as a template file (.TPL) in both the keyboard
    and the hard drive of the computer. To save programmed data to the
    keyboard use the **W** (Write to keyboard) option of the Data Transfer
    Menu. To save programmed data to the hard drive use the **S** (Save file
    to disk) option of the Data Transfer Menu.

*   Load (**L**) a previously programmed template from the hard disk into the
    computer's volatile RAM memory. The same template can then be
    written (**W**) into the non-volatile memory of the KB5000. This process,
    as an example, allows a restaurant to change from a breakfast menu to
    a lunch menu within 7 seconds.

*   Enables the computer to read (**R**) a template stored in the KB5000.
    That template can then be saved (**S**) to the hard disk for future use.

*   Display a list of templates that have been stored onto the hard disk
    within the KB5 directory. From the Data Transfer Menu select **F** for File
    List. The computer's monitor will display the list of .TPL files stored in
    the KB5 directory.

*   Interruption of the programming process to shell out to DOS (**D**) to
    perform other operations. To return to the programming process type
    EXIT at the DOS prompt.

NOTE: Never shell out of windows to work in this utility program.
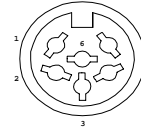
CONNECTOR PINOUTS

J1 (PS/2F) to PS/2 Keyboard
1   Keyboard Data
2   No Connection
3   Ground
4   +5VDC
5   Clock
6   No Connection
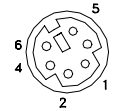
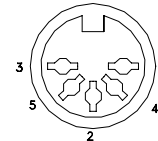**J2 (DIN 6F) to Computer ***
1   Clock
2   CPU Data
3   No Connection
4   Ground
5   +5VDC
6   No Connection
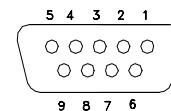* Requires an AT to PS/2 adapter to work with
   PS/2 computer.

J5 (DIN 5F) to 101 Keyboard
1   Keyboard Clock
2   Data
3   No Connection
4   Ground
5   +5VDC

J6 (DB9F) RS232C
1   DCD
2   Receive Data from computer
3   Transmit Data to computer
4   DTR
5   Ground
6   DSR
7   RTS
8   CTS
9   No Connection
Pins 1,4, and 6 are tied together internally
Pins 7 and 8 are tied together internally

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SPECIFICATIONS

MECHANICAL

Weight		2.3 lbs
Dimension (in inches)		
	Width	15.7
	Depth	6.2
	Front Height	1.2
	Rear Height	1.8
Keys		Full travel
	Life cycle	>1 million tactile operations

ELECTRICAL

Input Voltage (from computer)	+5VDC
Current (KB5000)	25ma.
Current (KB5000M)	50ma.

ENVIRONMENTAL

Operating Temperature	0 to +50°C
Storage Temperature	-20 to +70°C
Relative Humidity	
Operating	85% max., non-condensing
Non-operating	90% max., non-condensing
Vibration (10 to 55 Hz.)	4G's
Shock	40G's

INTERFACES

KB5000, KB5000M		
	(Keyboard emulation)	Standard
KB5000R (RS232C)		
	Baud Rate	9600
	Parity	None
	Data Bits	8