Programmable Keyboard SERIES 8031 S

Operation Manual

Version 1.0

This equipment has been tested and found to comply with the limits for Class A digital device. Pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and if not installed and used in accordance with the instructions may cause harmful interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. The user is encouraged to try correct interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help. This booklet is available from the U.S. government Printing Office, Washington, DC 20402, Stock NO. 004-000-00345-4.

CAUTION: Any changes of modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received including interference that may cause undesired operation.

Contents

1 **Before You Install**
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The 8031 programmable keyboards have beenzz specially designed for use with personal computers or terminals in point-of-sale and industrial applications. This manual describes how to connect the keyboard to your system, how to design a keyboard layout which meets your special requirements, and how to install your

keyboard layout into the 8031 keyboard.

There are two model of 8031. One is a tactile keyboard with seven rows and fifteen columns for a maximum of 105 keys; another emulates for QWERTY keyboard layout. Both of them are with single, double, and qua-druple key caps. For the keyboard layout, key functions and key data strings are completely programmable. Each keyboard is capable of two concurrent keyboard maps with switching between the maps controlled by one designated key.
Go to Appendix I for picture reviewing.

JP-8031 has both RS232 and IBM keyboard wedge interface operation mode, and they can be set before you start to use. The 8031 keyboard is capable of receiving data from any external RS232 device (e.g., bar code scanner) and transmitting that data to a host computer via either the keyboard wedge or an RS232 interface. A magnetic stripe reading decoder is built into the circuit board of the 8031, allowing easy stripe of the built card reader.

Step 1: Turn off your computer

By shutting off your computer, you will prevent any acci-dental damage to the keyboard and your computer.

Step 2: Review packing list

Please ensure that your keyboard shipment is complete.
keyboard Model 8031 includes:
- 1 pce 8031 programmable keyboard
- 1 pce Operation Manual
- 1 pce keyboard wedge Y cable
- 1 package Key-top

2 **Preparation For Programming**

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This chapter describes the connection of Series 8031 keyboards to a host computer for programming. The 8031 keyboard may be programmed through either the RS232 port or IBM keyboard port.

Programming via the RS232 Port

Step 1: Turn off your computer

If you have not already done so, turn off your computer to avoid any accidental damage to the keyboard and your computer.

Step 2: Decide on power access

The keyboard requires +12V DC for programming via the RS232 port(Please refer to Appendix II). This may be provided through an internal connection in your computer or through an external connection to a 110V/220V adapter. The components for an internal connection are provided. If you are using an external adapter, be sure that it conforms with the specifications listed in Appendix II and then go to Step 4.

Step 3: Using internal power source

Review the RS232 installation shown in Diagram 2.1.
Plug the RS232 cable to your computer on the COM port, system will provide +12V DC to the keyboard through RS232 cable.

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Diagram 2.1

Step 4: Connect keyboard to computer

Attach the 9-pin female (DB9F) RS232 connector with built-in DC jack to an available male equivalent (DB9M) RS232 communication port on your computer. Provide power to the DC jack on the DB9F connector using either a cable connection to the +12V DC power plate or an external adapter.
Connect the 9-pin female (DB9M) side of the RS232 cable to the HOST port on the rear face of the keyboard.

Step 5: Disconnect peripherals from keyboard

While using the HOST port for programming the keyboard, be sure that no peripheral devices are connected to any of the remaining ports.

Step 6: Confirm RS232 pin assignments

Please ensure that the RS232 on your computer conform with the pin assignments of the HOST port on the 8031 keyboard:

Step 7: Turn on your computer

Once all connections are complete, turn on your computer. It should boot up normally. The key-board will "beep" three times.

The keyboard is now ready for programming. Turn to Chapter 3.

Programming via the Keyboard Port

Turn off your computer to avoid any accidental damage to the keyboard. Refer to the keyboard installation shown in Diagram 2.2.
Unplug the QWERTY keyboard cable from your computer. Plug the QWERTY keyboard cable into female side of the Y cable on the 8031 keyboard cable. Plug the male end of the Y cable into the key-board port of your computer.

Once all connections are complete, turn on your computer. It should boot up normally. The keyboard will "beep" three times.
The keyboard is now ready for programming. Turn to Chapter 3.

Keyboard Port

Diagram 2.2

3 **Programming Your Keyboard**

The 8031 keyboard may be custom programmed to meet the requirements of your application software. This chapter describes the procedure for programming custom maps into the 8031 keyboard.

The programming tool allows user define two maps; each map contains 105 keys, and each key allows length 60 characters. It also a multi-language supported keyboard.

Step 1: Install 8031 programming tool

Then run "setup.exe" of the setup file, the install shield will complete this installation, and create a shortcut to windows start menu.

When you execute the programming tool at the first time, there's a message pops up telling user which operation system is using and which mode can be operate.

Step2: Create or open a keyboard maps file(See Picture 3-1)

As picture bellowing, the main item includes "Create' Load 'Save' Auto Save" function for creating a new map file; load map file from a created file, and also save defined file to a file.

The using file will be show on the bottom of right as the "current map file":
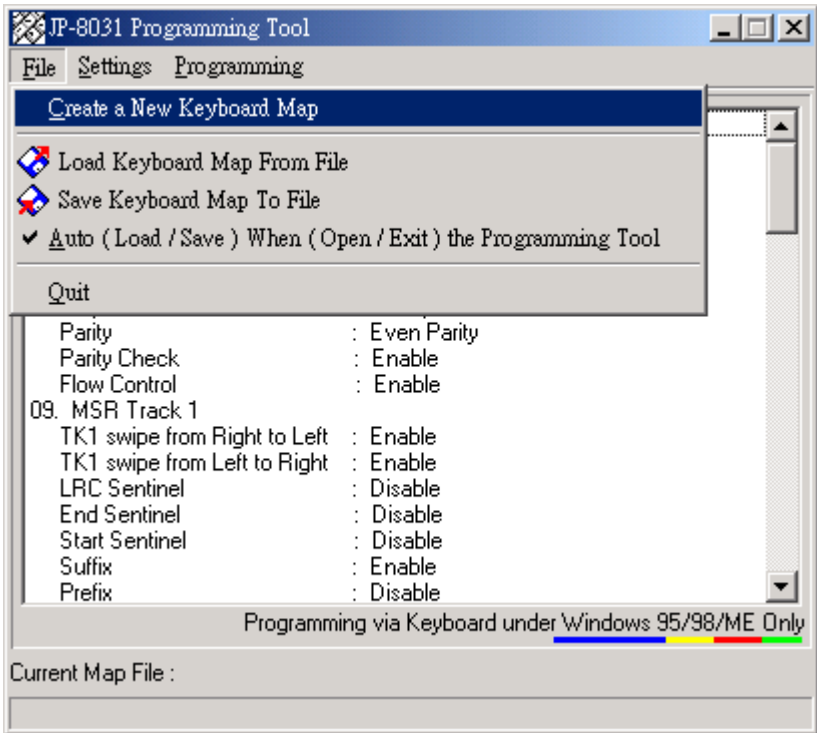
Picture 3-1

NOTE: Before you starting to define JP-8031 keyboard map, ensure you are working with Keyboard interface or RS232 mode.

Step3: Load Main Setting From JP-8031(See Picture 3-2)

The select allows user load main setting from JP-8031, and this action only executes in RS232 mode.

Step4: Detect Firmware Version

This select allows user detect JP-8031 firmware, and it can only be executing via RS232 mode.

Step5: Reset JP-8031 ToDefault Setting

The select allows user reset keyboard parameters and maps setting to be factory default value.
This action can be executing via RS232 mode and keyboard mode. and the keyboard interface can only execute with operating system Windows 95' Windows98 and WindowsME..

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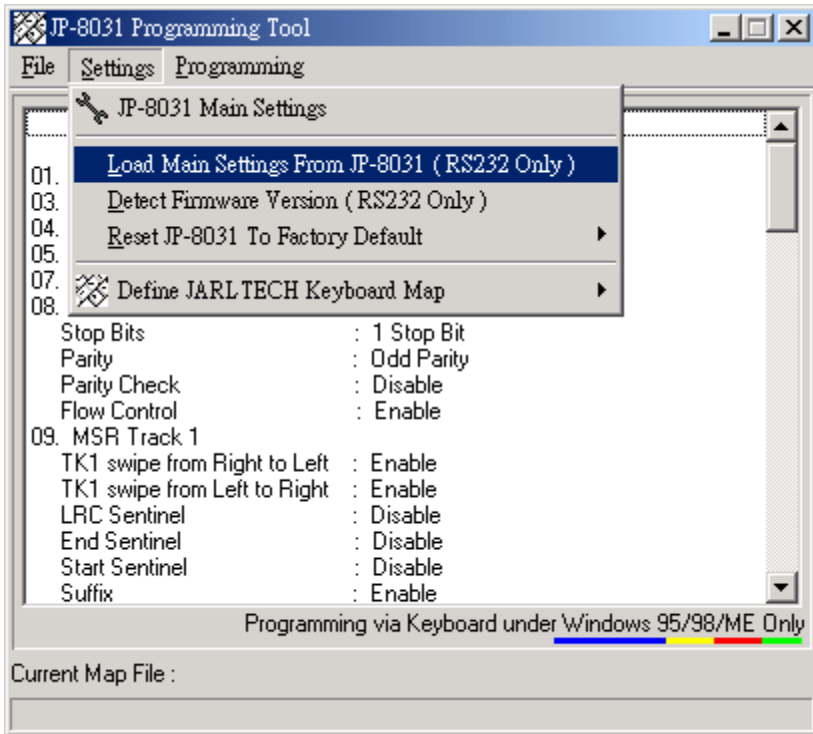
Picture 3-2

Step6: Envi[o]nment of keyboard setting(See picture 3-3)

In the"JP-8031 Main Settings" as picture shown at bellowing, customer may set all configuration items of the keyboard. The results will be shows as a list on the first programming window.

Step6-1: Main Setting Page

Operation Mode:
The Operating mode allows user designing the host of 8031.
There are two interfaces built as "RS232 mode" and "Keyboard
mode" and all the output data from 8031 will go through the interface
, which is selected by user.

Buzzer Sound:
When Buzzer Sound is enabled, it's enabled all sound of JP-8031
Keyboard, which includes key sound; card reader stripe sound;
buffer full sound etc.,
Once the function is disabled, there's no sound appeared exceping
keyboard boot-up sound(For twice).

Picture 3-3

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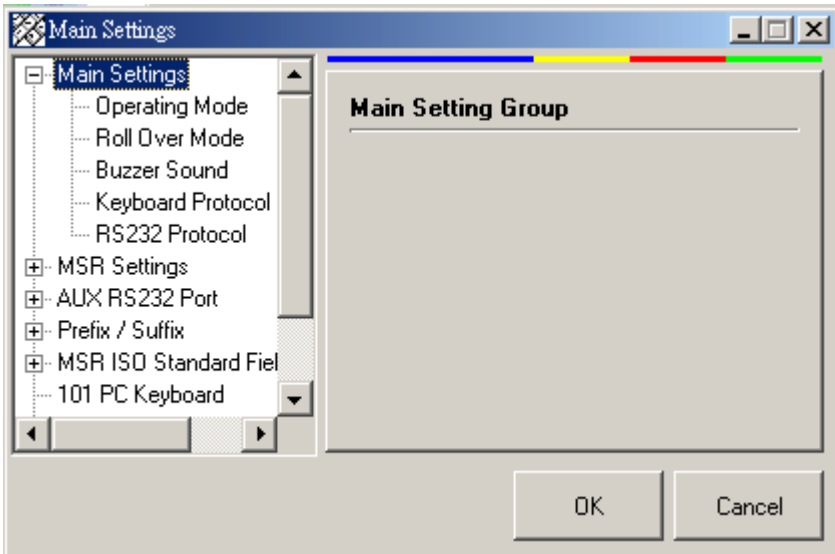
Keyboard protocol:
This selection allows user to defining "KB Mode scan code delay" and "KB mode character delay". The range is from 0 to 255.
The delay time value:

Scan Code Delay = 0~255 (X *50us*)
Character Delay = 0~255 (X *50us*)

RS232 Protocol:
This setting allows user define RS232 parameters (EX: Baud-rate). and baud rate and the RS232 parameters are required for the proper functioning of both the host and the auxiliary RS232 port.

Step6-2: MSR setting:(See picture 3-4)
The setting allows user defining MSR settings including Track1' Track2' Track3 main setting as Error Beep sounds; Prefix/Suffix enable setting; KB Data Output Mode.
And in the details Tracks setting, Each track may define track's stripe direction; enable end/start/LRC Sentinel; enable prefix/suffix; Beep sound when stripe..
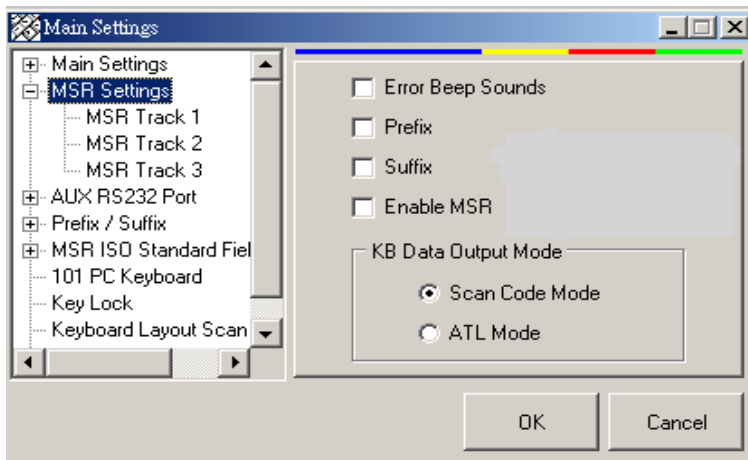
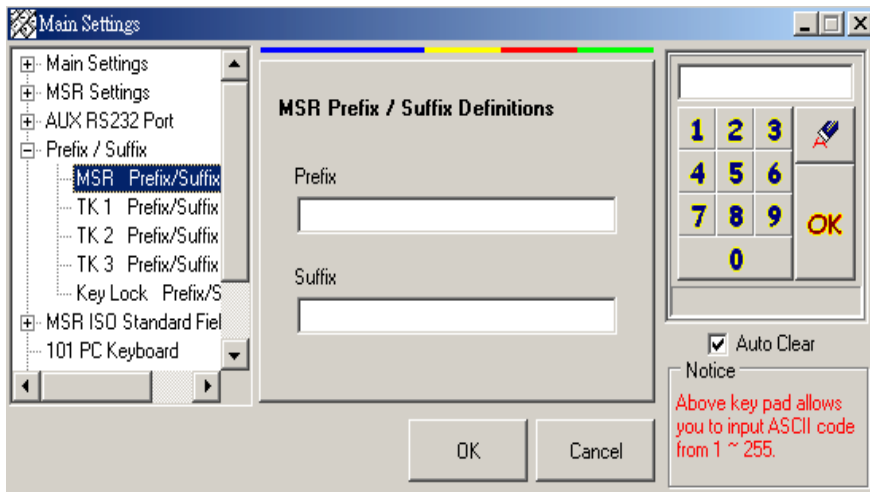**Picture 3-4**

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Step6-3: AUX setting:(See Picture 3-5)

The setting allows user defining AUX port settings including enable AUX port1/AUX port 2' ' Buffer full warning sounds. When buffer queues with full data and couldn't send them out, system will give beeps for warning.
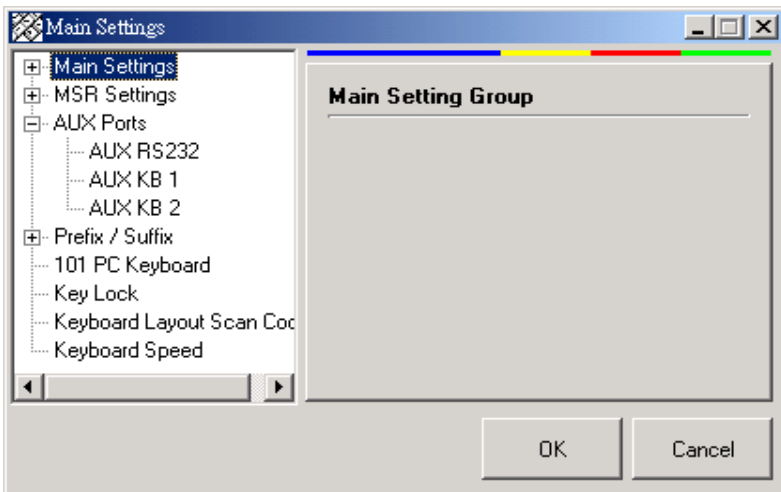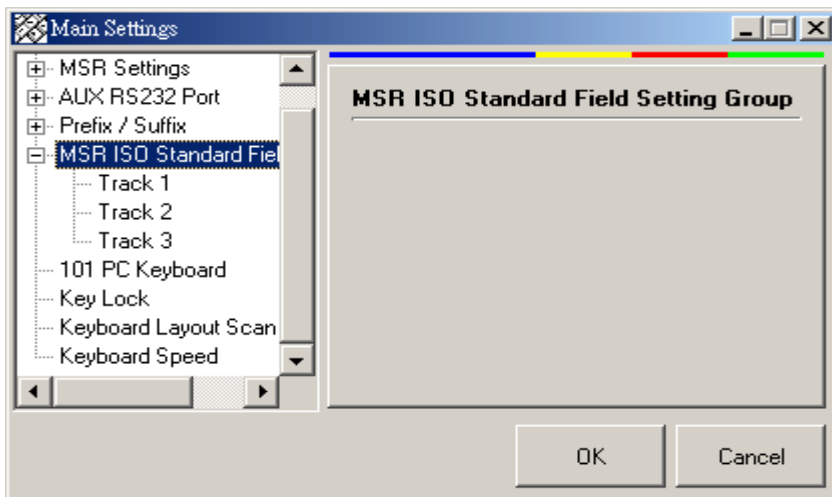

Picture 3-5

Step6-4: : Prefix/Suffix:(See Picture 3-6)

This setting allows user defining MSR prefix and suffix of Track1 Track2 Track3.

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Picture 3-6

Step6-5:MSR ISO Standard Field Splitting:(See Picture 3-7)

The setting allows user define configuration of MSR ISO Standard Field Splitting. The default settings are disable.

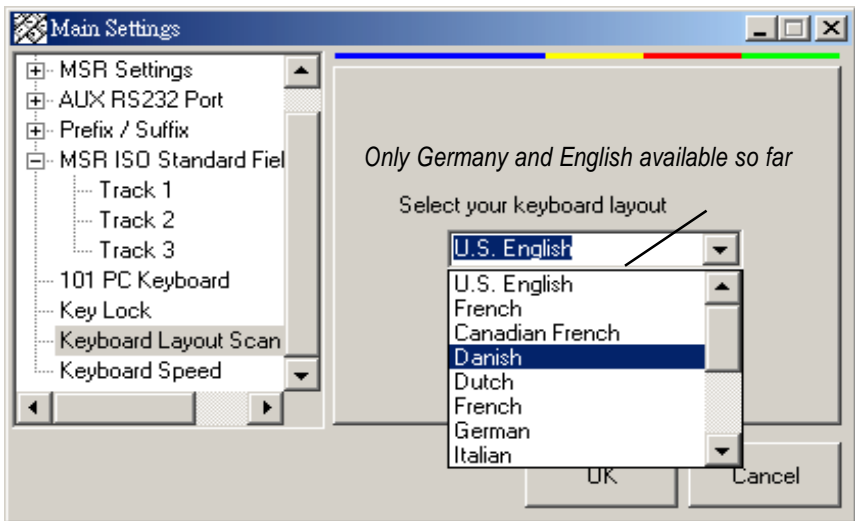**Picture 3-7**

Step6-6:QWERTY Keyboard:
The setting allows user define QWERTY PC keyboard. It includes
Enable Keyboard and Buffer full waning sounds.

Step6-7:Key Lock:
The setting is defining key lock of 8031 keys. User may define the
key locks configuration (EX: The levels of key lock) when the setting
is enabled.

Step6-8:Keyboard Layout Scan Code:(See picture 3-8)
The setting allows user define Key board scan code layout of each
language. Please select language as what language of your
operation system.

Picture 3-8

Step6-9:KeyboardSpeed
The setting allows user define Key board speed with "repeating rate"
and "Delay before repeat".

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Step7: Defined Keyboard Maps

The setting allows user define 8031 keyboard map. You may click each key, and the sub window for key maps details setting will appear for designing.

Following steps are description for the common settings of keys status.

Step7-1: Enable Key

This setting allows user active key or clear mark to disable the key activity.

Step7-2: Enable Click Sound

This setting allows user enable click sound of keys.

Step7-3: Enable Repeat

This setting allows user enable keys repeating speed.

Step7-4: Map Changing

The 8031 has two maps for designs.

This keyboard allows use defining a key to switch maps; once a key be enabled for map changing function, then, the keyboard map will be changed from map1 to map2 when press this key.

Step7-5: ALT mode output

This setting allows user enabling a function for the keyboard's ASCII code output, it can be set to "Alt" mode or "Scan code" mode. The default mode is "Scan code mode"

Note: For the details description of "ALT mode" and "Scan code mode", please see AppendixIV

Step7-6: Delay between character

When user scrolling the scale, the keyboard output speed between characters will be changed as what you adjusted.
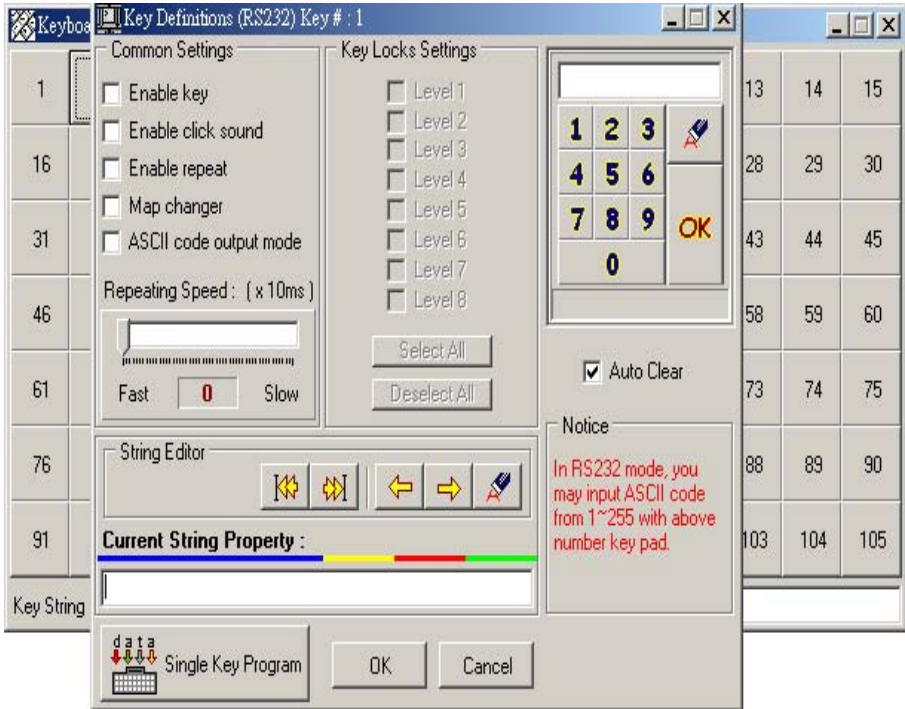
Picture 3-9

Step7-7: Key lock Setting

This setting allows user define key lock's level.

i.e. when you set key #1 to be level 1 and level 2, then the key#1 can only be use when the key lock set to be level 1 and level 2.

Note: JP-8031 allow user setting key lock with 6 level key lock.

Step7-8: Current String Property

The field allows use key in characters or string to be contents of one key. i.e. when you set key #1 as "Welcome to the Web Site", then, when you press Key #1, the output will be what you typed in this field: " Welcome to the Web Site".

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Note:

> If your operate Mode set to be RS232 interface, then, the output should be RS232 recognized tool, ex: "Windows Terminal"; When your operate Mode set to be keyboard mode. The output should be keyboard recognized tool, ex: "Windows notepad".

Above buttons of the"String Editor" field in the picture 3-9 are tools for editing key contents. You may use them to edit string or characters.

The "Special key" is as (picture 3-9) bellow, which is designed for "special function", you may use the "special key " to define each key as picture's below. i.e. In your key #1 setting field, click <F1> from the special key and add it to your "current string property", after you write it to map(you may use "single key program" to write data of a key), press key #1. the <F1> function appears as QWERTY PC keyboard behavior.
You may also set "ALT" and "Shift" functions key On/Off to fit your expect. In keyboard mode, the capital characters cannot be type on the field, and you may click "Shift ON" before the string to set them on,
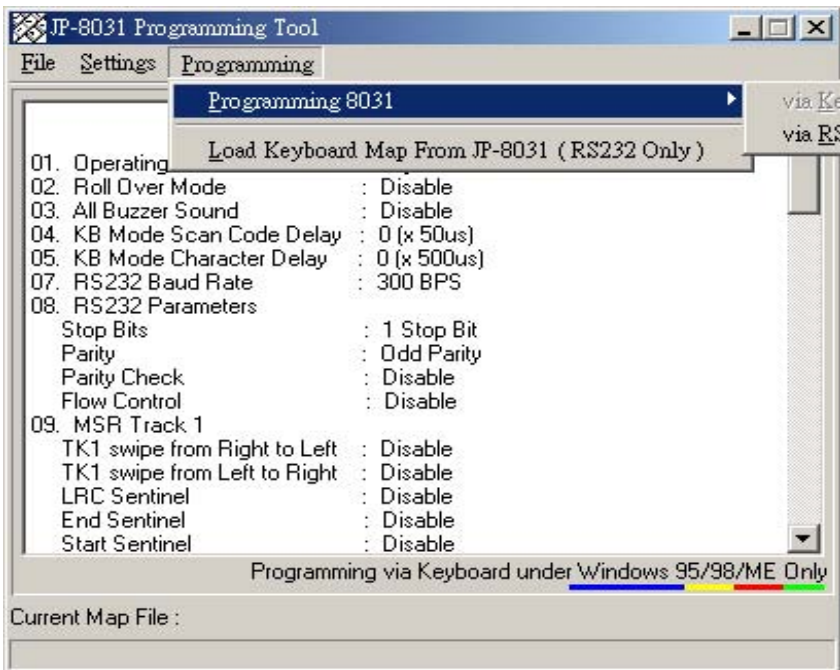ie: <shift-on> abcd<shift-off>abcd,
The result will be : ABCDabcd

NOTE: The "Special key" can only exist on keyboard interface.
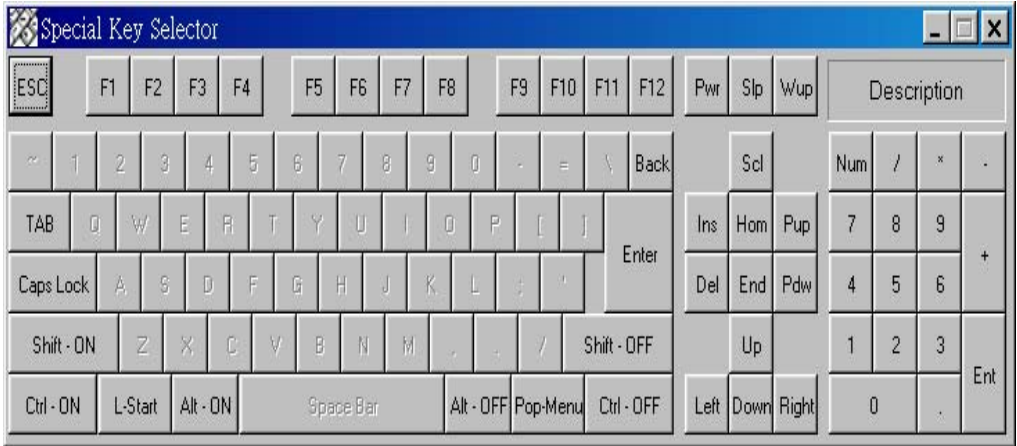
Picture 3-9

Picture 3-10

Step8: Programming(See picture 3-10)

After complete the values and maps setting of keyboard. The settings need to write in 8031 EEPROM for record.

There are two interfaces for 8031 programming.

You may select keyboard interface when you are working with Windows 95/98/ME and ensured connected Keyboard to 8031.

Another interface is RS232, you may use this interface when you are work with RS232 interface.

The following window will appear:
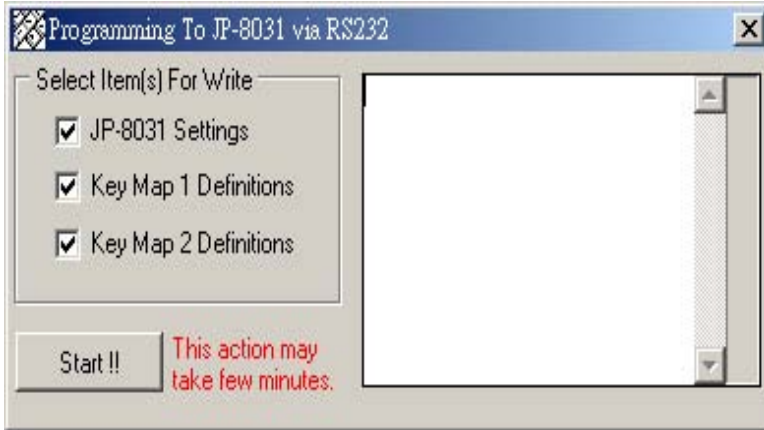
After press "Start" button, 8031 programming tool will start to write values and maps file to EEPROM.

Step9: Load keyboard map from JP-8031

When you select this item, you may load 8031 currently setting and maps to be new keyboard setting and map, and they are including maps configuration.

The following window will appear when you selected this item, and after you press "Start" button, the 8031 programming tool will start to load setting and map from 8031.

After load the map, You may save it to be a new file with another file name, so that, user can easy to restore it in the future.

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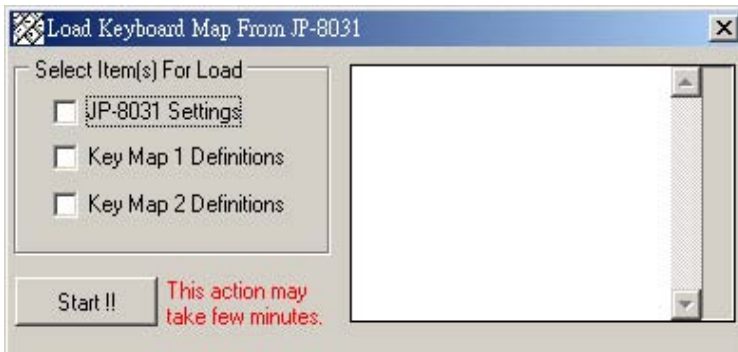
4 | **Operating Your 8031**

The Series 8031 keyboards may be operated in conjunction with your host computer or terminal using either a keyboard wedge interface or an RS232 interface. As your requirements change in the future, the keyboards may be reprogrammed to match the interface you require.

Step 1: Connect 8031 to computer

The 8031 keyboard connections for RS232 or keyboard wedge interface are the same as those described in Chapter 2. Please refer to Diagram 2.1 for RS232 mode or Diagram 2.2 for keyboard wedge mode.

Step 2: Connect RS232 Device to 8031 AUX Port (male)

The RS232 AUX port on the rear panel of the 8031 is available for an RS232 input device, as in Diagram 4.1.

RS232 AUX port

Diagram 4.1

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Step 3: Connect K/B Device to 8031 Keyboard port(Female)

The K/B port on the rear panel of the 8031 is available for an Keyboard input device, as in Diagram 4.2.

Note: The K/B AUX port 2 is optional.

Keyboard AUX port

Diagram 4.2

Step 4: Using the Card Reader

An built magnetic stripe decoder is configured on the 8031 with a card reader. User may use it with the 8031 programming tool as Chapter3 step6 defined.

Step 3: Using the Optional Key Lock

An built circuit for optional key lock. Once you set the key lock's level of 8031 programming tool. You may use it to control what level's lock for each key.

The 8031 keyboard supports key locks level from level 1 to level 6(customized)

5 **Troubleshooting**

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| **Situation**	**Solution**
• The downloading of the keyboard map from the computer to the 8031 keyboard does not work.	• Check the cable connections according to the descriptions in Chapter 2. For RS232 programming and operation, be sure that the power supply is connected. • When programming via RS232, be sure that the correct communication port has been selected. If the port selection is correct, perhaps the computer RS232 interface is defective.
• The 8031 keyboard does not transmit any data.	• Check the cable connections of the keyboard and adaptors (if used, e.g., PS/2 keyboard plug). Does the keyboard beep correctly when the power is turned on? • Open 8031 programming tool to confirm that you selected the correct operation of the 8031 keyboard (RS232 vs. keyboard wedge).

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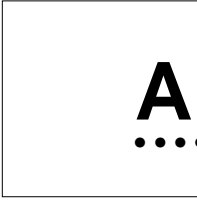
A **Appendix I**

JP-8031 Keyboard layout:

There are two keyboard layout of the 8031 keyboard.

1. QWERTY Keyboard Layout

JP-8031WPXX
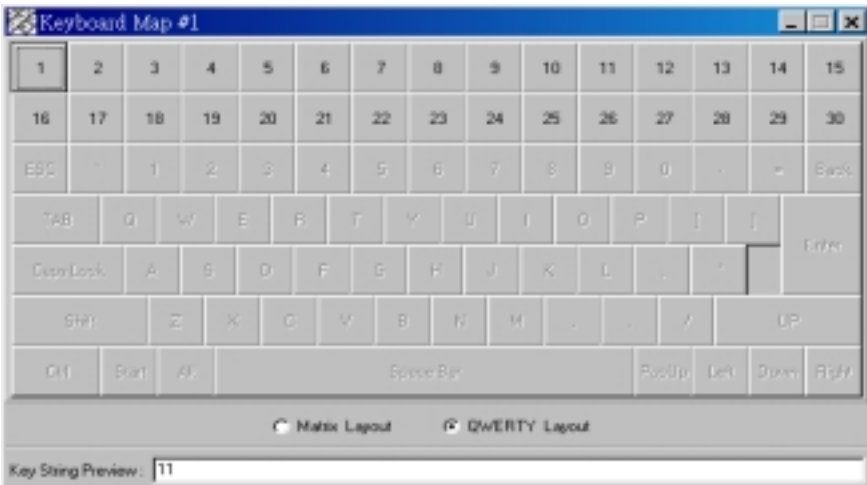
you may find the layout from programming tool for definition.
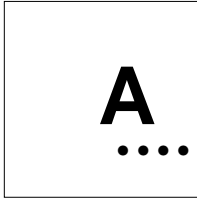
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2. Key Matix

The keyboard layout as Key Matrix design.

JP-8031WSXX

you may find the layout from programming tool for definition.

A Appendix II

Specifications

Model 8031 Keyboard
- Tactile keyboard
- 7 rows x 15 columns
- Cherry keyswitch
- ABS plastic key caps
- Single, dual and quadruple key caps available
- User-definable key layout

Power Requirements
- RS232 interface: +12V DC from host computer or through adaptor from external 110/220V AC source with polarity as follows: $-$ ⊙ $+$
- Keyboard interface: +5V DC from host computer

Physical
- Dimensions: 330mm (L) x 195mm (W) x 55mm (H)
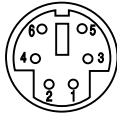- Weight: 1170g

Communication Ports
- One internal connector for TTL-signal magnetic stripe reader
- One Internal connect for KeyLock
- One RS232 input-output HOST port
- One RS232 input AUX port
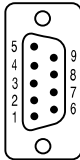- One keyboard AUX port

LED indicator
- LED1 Green -- Power ON
                      -- MAP1 ON
- LED2 Red -- MAP2 ON
- LED2 Green -- Caps Lock ON

Specifications of Connecter and Switcher
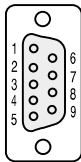**Connector Pin Assignments**

Keyboard AUX Port

#1: Keyboard data(AUX 1)
#2: Keyboard data(AUX2)
#3: Ground
#4: + 5V
#5: Keyboard clock(AUX1)
#6: Keyboard click(AUX 2)

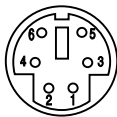## RS232 AUX Port (Male)

#1:   #6: RTS
#3: RX   #9: +12V/+5V DC power
#5: Ground

RS232 HOST Port (Female)

#1:   #7: RTS
#2: RX   #8: CTS
#3: TX   #9: +12V/+5V DC Power
#5: Ground

Keyboard Host port

#1: Keyboard data
#3: +5 V
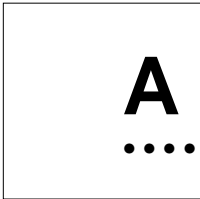#4: Ground
#5: Keyboard clock

Switcher

Switcher

SW1
ON : Enable RS232 Host Data In
     : Disable RS232 AUX Data In
OFF: Disable RS232 Host Data in
     : Enable RS232 AUX data In
SW2
ON: Reset 8031 to Default setting.
     Switch pin to ON until beep sound
     appear(around 3~5 sec.), then, switch it
     to OFF.(The switching time should be
     finished in 2 sec.)

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A Appendix III

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Scan Code mode and ALT mode

JP-8031 supports two ways for keyboard wedge data sending:

1. Scan Code Mode:

This is the standard code of PC keyboard designation, when you press a key, there are two kind of code sending. One is "make code", and another is "Break code"

when key-press-down, it makes a key data: "Make Code",
when key-press-up, it makes a key data called: " Break Code", this mode is useful for normal application design.

Note: *In scan code mode, if you design a key "A", the software will get data "A" or "a" that depends on the "Caps lock" status.*

2. ALT mode code:

Sometimes, user cannot use "Scan Code" for special application design, so, there's a "ALT mode" code for user easier to design theirs application. The ALT-mode is for sending ASCII code, and through PC keyboard. The method is use "ALT" key and the numbers of PC keypad.

For example, Code number "A" in ASCII table is "65". So, you may keep press "ALT" function key and then press number "6", and number "5", after that, release "ALT" key, the "A" will appears on the screen.

 Note: *In ALT mode, if you design a key "A", the software will only get data "A".*

A Appendix IV

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Frequently Asked Questions

1. Q : Why is there a period of blank time before the "beep" indication of successful programming?

A : The software has to initialize the download data to keyboard during this period, so please wait some seconds.

2. Q : Why we can not program this 8031 keyboard through the RS232 port?

A :   1. Check if your connection of hardware is correct.
  2. Check if your setting in 8031 programming tool is correct.
  3. Try to disable the mouse driver. May be this com port is occupied by an unreliable mouse driver.

3. Q : How to program a guard key correctly?

A : For Programming a quad key, please program one of the four keys with data only and disable the other three keys.
The double-key is set by the same method.

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