

# User Manual for Matrix Maker

## Version 3.1

### I. Program Installation

To install the program, run the Setup.exe file.

The default folder for installation is

“C:\Program Files\AK Matrix Maker\Programmable Keyboard”.

### II. PS/2 Keyboard and PS/2 MSR Card Reader – Driver Setup

For Windows 2000 and Windows XP® users with the PS/2 keyboard or PS/2 MSR card reader need to install the PS/2 keyboard driver. The default folder for the driver files is

“C:\Program Files\AK Matrix Maker\KB Driver”.

For detailed instructions, please refer to the file, POSKB\_DRV\_SETUP.pdf, which is in the default folder.

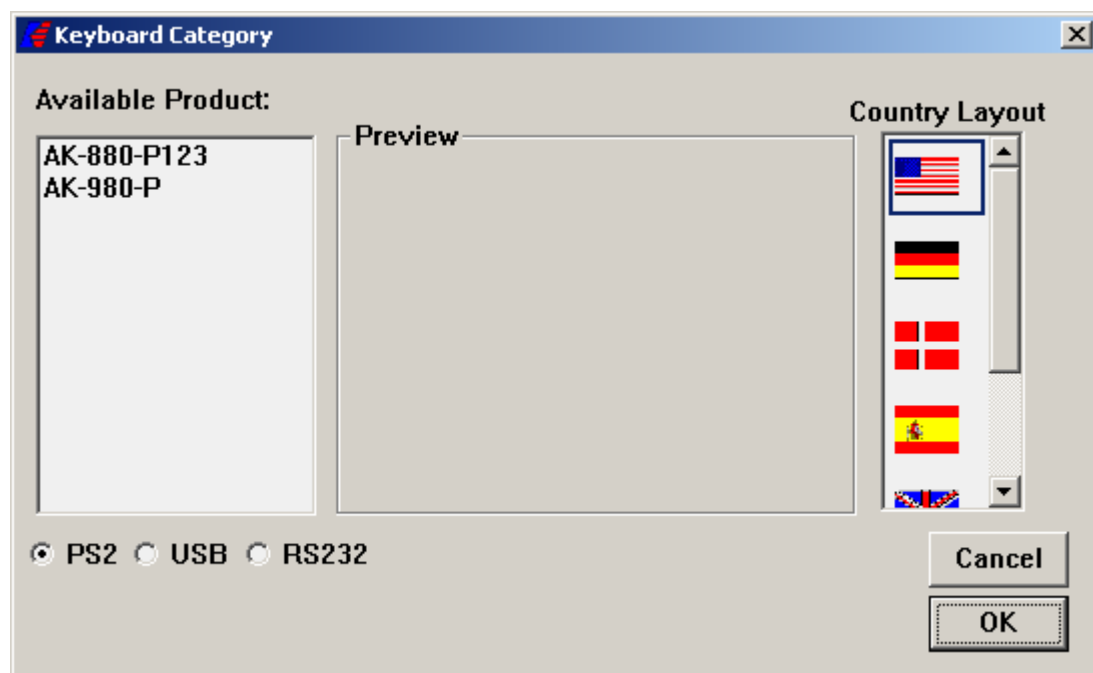
### III. Keyboard Programming Software

The default location of executable file is

“C:\Program Files\AK Matrix Maker\Programmable Keyboard\AKMatrixMaker.exe”

#### 1. Select a keyboard

When the program runs, the Keyboard Category dialogue will appear.



## 2. Keyboard Setting

(This setting will not be provided if a RS232 magnetic card reader is selected in the Keyboard Category dialogue. If a PS2 or USB magnetic card reader is selected, only “Country Code” setting is meaningful.)

On the menu bar, click ‘Keyboard’ and then ‘Keyboard Setting’, the following dialogue window will appear,



Note:

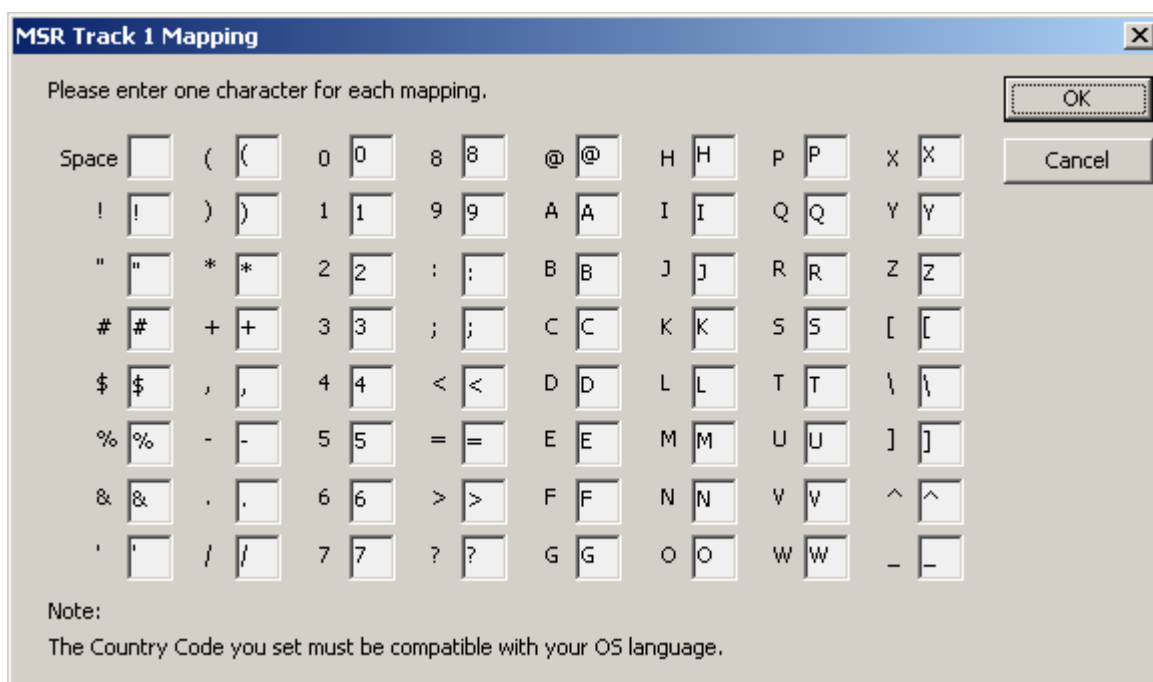
The button “MSR Track 1 Mapping” is invisible for all PS2 and RS232 devices.

If you want to have a beep sound when pressing a button on the keyboard, click ‘Beep Enable’ option. Then you can choose either ‘All Keys’ or ‘Only Programmed Keys’ option.

If you allow the key to be displayed repeatedly when pressing the button continuously, click ‘Repeat Enable’ option.

Depending on what type of keyboard chosen, you can assign a country code in the keyboard setting. This country code will affect what the magstripe card reader reads and the keys programmed by the ASCII code method.

For a USB device with MSR function, you can change the default mapping for MSR Track 1 Data by pressing the button “MSR Track 1 Mapping”.



The image shows a Windows-style dialog box titled "MSR Track 1 Mapping". It contains a grid of 80 input boxes for mapping characters to keys. The characters are arranged in 8 rows and 10 columns. The first row includes Space, (, 0, 8, @, H, P, and X. The second row includes !, ), 1, 9, A, I, Q, and Y. The third row includes ", \*, 2, :, B, J, R, and Z. The fourth row includes #, +, 3, ;, C, K, S, and [. The fifth row includes \$, ,, 4, <, D, L, T, and \. The sixth row includes %, -, 5, =, E, M, U, and ]. The seventh row includes &, ., 6, >, F, N, V, and ^. The eighth row includes ', /, 7, ?, G, O, W, and -. To the right of the grid are "OK" and "Cancel" buttons. A "Note:" section at the bottom states: "The Country Code you set must be compatible with your OS language."

Please enter one character for each mapping.

Space	(	0	8	@	H	P	X		
!	)	1	9	A	I	Q	Y		
"	*	2	:	B	J	R	Z		
#	+	3	;	C	K	S	[		
\$	,	4	<	D	L	T	\		
%	-	5	=	E	M	U	]		
&	.	6	>	F	N	V	^		
'	/	7	?	G	O	W	_		

Note:  
The Country Code you set must be compatible with your OS language.

**Note:**


To display the mapping correctly in your PC, you should choose the Country Code in the Keyboard Setting dialogue window compatible with your OS language.

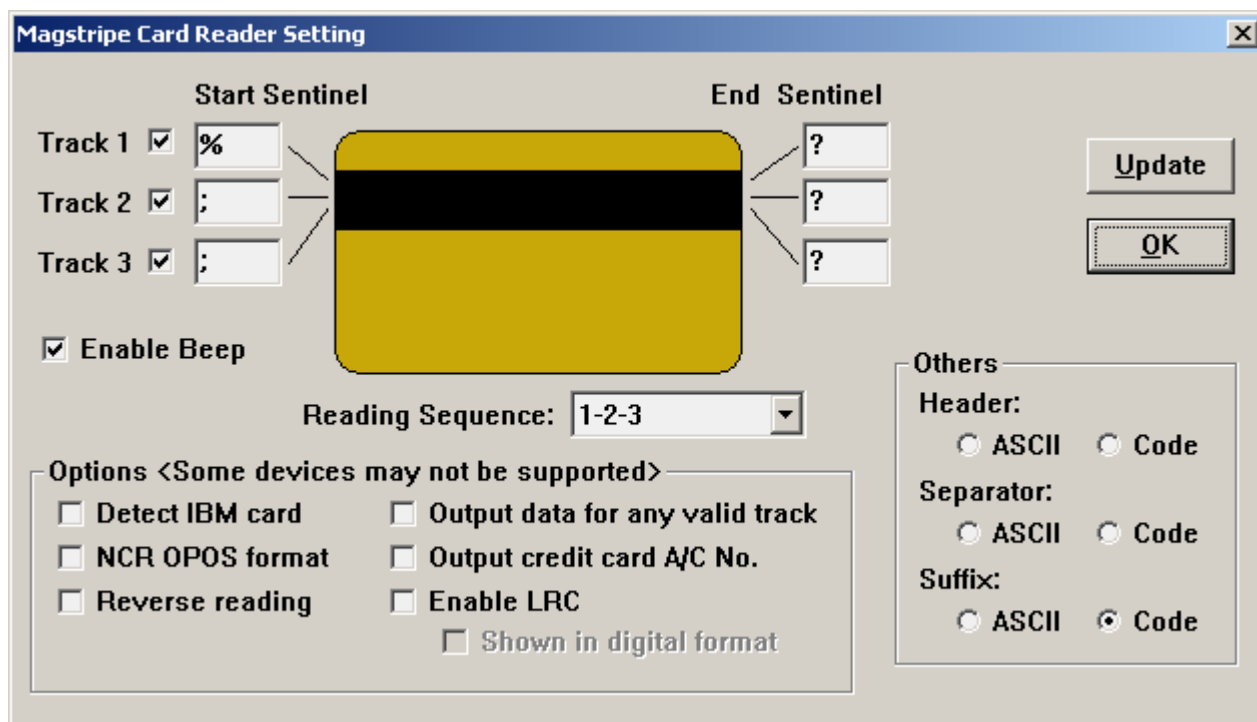
After finish the settings you like, you can press 'Update' button to send these settings to the keyboard and then the dialogue window will be automatically closed. Or you can press 'OK' button to save the setting in the program memory and then the dialogue window will be automatically closed.

**Caution:**

If you choose 'Repeat Enable' option and you assign non layer index for certain key lock position, for example, assigning "Hello" for key lock L. When the key is switched on L position, "Hello" will be generated repeatedly. If you choose 'Beep Enable' at the same time, you will hear a continuous beep sound. Therefore, it is recommended the key lock be assigned a layer index.

### 3. Magstripe Card Reader Setting (Optional)

On the menu bar, click 'Keyboard' and then 'Magstripe Card Reader Setting', or on the toolbar, click  icon, the following dialogue window will appear,



The dialog box is titled "Magstripe Card Reader Setting". It features a central graphic of a magstripe card with three horizontal bands: yellow (top), black (middle), and yellow (bottom). To the left of the card, under the heading "Start Sentinel", are three rows for "Track 1", "Track 2", and "Track 3". Each row has a checked checkbox and a text input field. Track 1's field contains "%", Track 2's contains ";", and Track 3's contains ";". To the right of the card, under the heading "End Sentinel", are three rows, each with a text input field containing "?". Below the card, there is a "Reading Sequence:" label followed by a dropdown menu showing "1-2-3". To the left of the bottom section is a group box titled "Options <Some devices may not be supported>" containing six checkboxes: "Detect IBM card", "NCR OPOS format", "Reverse reading", "Output data for any valid track", "Output credit card A/C No.", and "Enable LRC". Below "Enable LRC" is a checkbox for "Shown in digital format". To the right of the bottom section is another group box titled "Others" containing three sections: "Header:" with radio buttons for "ASCII" and "Code"; "Separator:" with radio buttons for "ASCII" and "Code"; and "Suffix:" with radio buttons for "ASCII" and "Code" (the "Code" button is selected). At the top right of the dialog are "Update" and "OK" buttons.

Header, Separator, and Suffix can be programmed similar to normal buttons on the keyboard, click on the ASCII or Code to bring up the window for input.

#### Options

The following settings are not supported by all devices. You can make a request to us if you find that your device does not support these settings.

##### 1. Detect IBM card

Some IBM cards have special formats. If you want to read the card correctly, you may try to select this option.

##### 2. NCR OPOS format

It can be used in NCR system with MSR. It adds some special codes for each sentinel.

##### 3. Reverse reading

The track data will be read from right to left, instead of from left to right. It is suitable for some languages, e.g. Hebrew.

##### 4. Output data for any valid track

If there is an invalid track in the card, it still can display the remaining valid tracks.

##### 5. Output credit card A/C No.

It can display the credit card A/C No. only for track 2.

##### 6. Enable LRC

It can display the LRC after then end sentinel for each track.

#### 7. *Shown in digital format*

If it is checked, the LRC will be displayed in the 2-byte digital format. If it is unchecked, the LRC will be displayed in the character format. For example, if the LRC in Track 1 is 0x31, it will display “31” when it is checked and it will display “Q” when it is unchecked.


Note:

1. The code length for Header, Separator, and Suffix can be up to 16 characters.
2. For all RS232 devices, you can enter 1 character for each sentinel. If you enter more than 1 character, the software will discard all characters.
3. For some PS/2 and USB devices, you can enter not more than 16 characters for each sentinel. You can use \n to represent the new line character in each sentinel.
4. RS232 devices, can be programmed by ASCII method.  
According to the settings in the above dialogue window, after you sliding a magstripe card along the reader, it will display as follows,

Header codes, Track 1 Start Sentinel, Track 1 Data, Track 1 End Sentinel, Separator codes, Track 2 Start Sentinel, Track 2 Data, Track 2 End Sentinel, Separator codes, Track 3 Start Sentinel, Track 3 Data, Track 3 End Sentinel, Suffix codes.

After finish the settings you like, you can press ‘Update’ button to send these settings to the keyboard and then the dialogue window will be automatically closed. Or you can press ‘OK’ button to save the setting in the program memory and then the dialogue window will be automatically closed.

#### 4. Firmware Update (Except for the USB device)

On the menu bar, click 'Keyboard' and then 'Update Firmware', or on the toolbar, click  icon, it will ask you the location of the firmware file.

During updating, please do not press any keys on the keyboard for better performance.

#### 5. Diagnostic

##### i. Enter Test Mode

The key pressed will show its key position. (For testing the keyboard only.) If your keyboard has key lock and the repeat feature is turned on, the keyboard will continuously send the key lock position. To stop this, you can press any other key.

##### ii. Exit Test Mode

The key pressed will show the code programmed.

##### iii. Load Factory Setting

Re-load the default factory setting to the device. This function can be used when the QUERTY section of the keymap is lost. For the USB keyboard, please re-plug

the keyboard and close the software after executing this function successfully.

##### iv. Reset

Reset the keyboard only. (For testing the keyboard only.)

##### v. Ignore the middle device (For PS/2 device)

In case two of our PS/2 devices are connected by loop-through, you can directly program the device which is connected to the PS/2 port of your PC. But if you want to program the 2<sup>nd</sup> device, you need to ignore the middle device (i.e. the one which is connected to the PS/2 port of your PC) first.

Note: Once the middle device is ignored, it will be disabled.

##### vi. Restore the middle device (For PS/2 device)

To enable the middle device, you need to restore it first.

##### vii. Firmware Version

Get the current version of the firmware.

##### viii. MCU Type (Disabled)


Get the type of the MCU being used by the device.

## 6. Update Whole Keyboard

After you assigning the codes for all or some of the buttons, configuring keyboard setting, magstripe card reader setting, and barcode reader setting, you can click 'Keyboard' on the menu bar and then 'Update Whole Keyboard'.


During updating, please do not press any keys on the keyboard for better performance.

## 7. Retrieve Keyboard

If you want to get the key code programmed in each key, keyboard setting or magstripe card reader setting, you can click 'Keyboard' on the menu bar and then 'Retrieve Keyboard' or click  icon on the toolbar.


During retrieving, please do not press any keys on the keyboard for better performance.

## 8. Clear All


If you want to clear all key mappings, the keyboard setting or the magstripe card reader setting, click 'Keyboard' on the menu bar and then 'Clear All' or click  icon on the toolbar.

This action only clears the program memory. It does not clear settings in the actual keyboard.

## 9. Save

If you want to save all key mappings, the keyboard setting or the magstripe card reader setting into a file, click 'File' on the menu bar and then 'Save' or click  icon on the toolbar.

## 10. Open

You can load the key mappings, keyboard setting or magstripe card reader setting from a file, click 'File' on the menu bar and then 'Open ....' or click  icon on the toolbar.

An error will occur if you choose to load a wrong format keymap file.

## IV. Batch Update

You can update the keymap or the firmware automatically by creating a batch file. After updating, the program will be closed automatically.

### 1. Firmware Update (Except for the USB device)

The format of the batch file for updating firmware for a PS2 device,

*“Location\_of\_Executable\_File” -2“Location\_of\_Firmware\_File” -t“Category”*

For example,

*“C:\Program Files\AK Matrix Maker\Programmable Keyboard\AKMatrixMaker.exe”*

*-2“C:\temp\poskb.bin” -t“AK-880-P123”*

The format of the batch file for updating firmware for a RS232 device,

*“Location\_of\_Executable\_File” -2“Location\_of\_Firmware\_File” -t“Category”*

*-s“Port,Baud”*

For example,

*“C:\Program Files\AK Matrix Maker\Programmable Keyboard\AKMatrixMaker.exe”*

*-2“C:\temp\poskb.bin” -t“AK-980-P” -s“1,57600”*

#### **Note:**

- a.** There is a space before -1, -2, -t, and -s but no space after -1, -2, -t and -s.
- b.** The double quotation mark is required.