# Application Note AN0001

## Instruction to Configure FlexMatrix Keyboard Controllers to Support Selective Suspend

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**Associated Part Family:** SK5100, SK5101

## Overview

Sprintek FlexMatrix keyboard controllers such as SK5100 and SK5101 support selective suspend to let laptop computer shut down USB stack to maximize total system power saving about 10%. This feature of selective suspend is transparent to users; keyboard and its attached PS/2 devices such as touchpad, pointing stick will response to user input immediately when the device is in selective suspend. The SK5100/5101 power consumption is only 230uA typically when it is in suspend mode.

Step 1 and 2 is designed to keep LEDs on when the device is selective suspend. The Support software FlexMatrix Editor, Programmer are needed to configure the device to support selective suspend with LED on. You may download latest version from the link http://www.sprintek.com/support/Downloads.aspx.

Step 3 is to manually enable the power management policy for the device through inf method because windows disable power management feature at default for composite device. Programmatic method could be developed upon request.

## Procedures

### Step 1 - Edit FlexMatrix Binary File

This step edits keyboard matrix file to set suspend control parameter to 0x01. The parameter enables that the device keep LEDs on when the device is in selective suspend mode.

1) Open FlexMatrix Editor to edit your matrix file or use the default;
2) Goto tabpage "SFunc" and change register "suspend control" to 01;
3) Save the file.

### Step 2 - Download FlexMatrix File to SK5100/5101

This step download
1) Plug the keyboard with SK5100/5101 to a PC/Laptop;
2) Open FlexMatrix Programmer;
3) Load the matrix file;
4) Click "Program and Verify" button.
5) Unplug the device and plug it back

## Step 3 – Manually enable selective suspend support for Windows
This step enables the power management feature for this composite device.

1) Plug the device to the laptop;
2) Open windows "Device Manager" - "Human Interface Devices";
3) Right click "USB Human Interface Device" item with VID (1C40) and PID (04D0); Goto "Properties" - "Detail" to check VID and PID
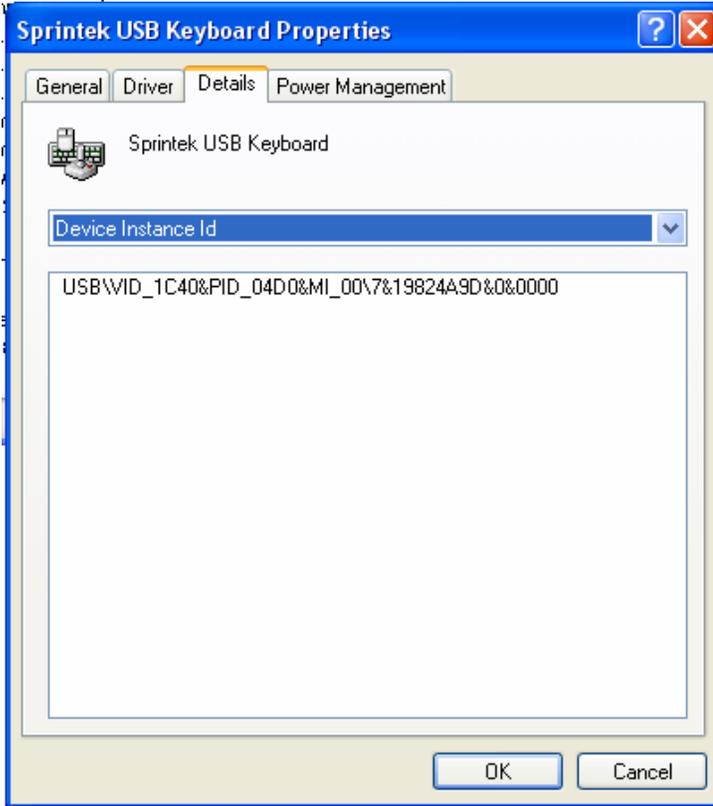


4) Update driver manually to select driver inf file "sprkhid.inf";
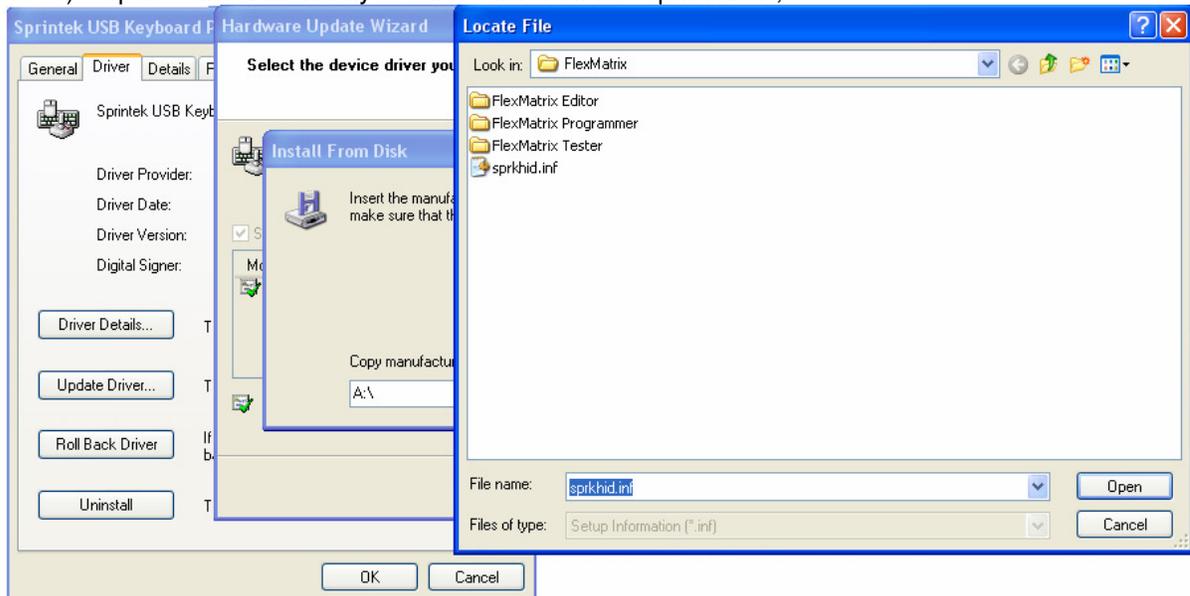
5)   Repeat step 3 and 4 for other "USB Human Interface Device" item with VID (1C40) and PID (04D0). There are 3 items in total.