Adam Barnett
EEL5666
Student ID# 4862-6520

Special Sensor Report

Product: KaneScan Barcode Reader
Source: KaneCal.net
Website: http://www.kanecal.net/CCD-bar-code-scanner.html

The KaneScan barcode scanner is the perfect and affordable way to read barcodes accurately into any RS-232 port. Kevin Phillipson, the person who used this idea for card reading last semester, showed me how through using a bar code scanner and placing bar codes (presumably not readable to the average person) on each card my robot can be able to easily "read" which card is being dealt out.

One GREAT feature about the scanner I found is first, it's relatively cheap (it costs $60). But even better is it connects to a PC (or microprocessor) through RS-232 interface. The default communications settings for the reader are 9600 baud, 8 data bits, no parity. I have dealt with these very specifications in EEL4744 so implementation of this device should be relatively simple once it arrives.

The scanner passes values in ASCII by default. This made reading things into the HC12 very simple once the hardware was set up properly. The scanner supports different data type modes to allow for characters outside of standard ASCII. However, since for blackjack I was only concerned with barcodes of values 0 through 9 ASCII was just fine.

I mounted the barcode scanner to the dealer shoe using Velcro. I did this as opposed to glue in case I wanted to adjust it. The scanner is sensitive enough that I haven't had to do too much moving once it's in place, but I'm still happy with the Velcro. For added support, though, I do use some scotch tape over the top. It might not be necessary but the scanner sits a lot more secured with the tape on it.

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The following section describes how to wire the KaneScan barcode scanner to an RS 232 port.

For the DB9 connection all pins are used with the exceptions of 4 and 6. Table 1 lists the rest of the pins and their functions.

Pin #	Function
1	Ground
2	TxD
3	RxD
5	Ground
7	CTS
8	RTS
9	VCC

Table 1

The barcode scanner acts as the communications device while the micro-controller acts as the terminal device. When connecting the scanner to the UART, remember that CTS and RTS have to be crossed. Otherwise you won't get any communication.

The scanner comes with its own power supply. However, to avoid having two plugs (assuming your micro-controller will be plugged in as mine was) I simply wired pin 9 (VCC) to the power bus on the development board. The barcode scanner only draws 84 mA so there were no power issues with a 500 mA power supply.

In conclusion, I would highly recommend this scanner to anyone who wishes to use barcodes. Cheap $5 barcode scanners (as seen in other projects) are not nearly sensitive enough to get consistent, reliable results. Other barcode scanners can cost upward of $300 and still be considered "cheap" by the industry. This scanner was reliable, easy to connect, and affordable.

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Here are the physical an operational specs for the scanner. All specs were copied directly from the website listed above.

Optical

Resolution: 0.1 mm (4 mils) 0.3 PCS
Scanning width: up to 75 mm
Depth of field: up to 40 mm; 0.25 mm (10 mil) 0.9 PCS
Light source: Red LED Array 660nm
Sensor: 2048 pixel CCD array
Scan rate: up to 100 scans/second

Electrical

Operating voltage: 5V ± 5%
Operating consumption: 84 mA
Standby consumption: 14 mA
EMI protection: Complies with FCC class A and CE approved

Mechanical

Weight: 120g without cable, 220g with cable
Dimensions: 170 x 82 x 52 mm (L x W x H)
Cable: 1.8m straight

Environmental

Operating temperature: 0 ~ 50° C
Storage temperature: -10 ~ 60° C
Humidity: 5% to 95% RH non-condensing