

Re: Low cost weight sensor ?

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- *From:* Frnak McKenney <frnak@xx>
 - *Date:* Thu, 25 May 2006 13:24:42 GMT
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On Thu, 25 May 2006 10:06:06 GMT, Peter Dickerson <first{dot}surname@xxxxxxxxxx> wrote:

"Anton Erasmus" <nobody@xxxxxxxxxxxxxxxx> wrote in message
news:42g97292vmtg52rbbu4negmk2nev5jaai@xxxxxxxxxx
[snip]

Thanks for all the ideas. It looks like all the weight measuring sensors uses some sort of spring form material which deflects under the weight. One then measures the amount of deflection, from which the weight can be calculated. The less deflection one can accommodate, the more expensive the sensor. Have anyone used piezo electric material to measure weight ? Would a piezo speaker be suitable ?

How about placing a piezo disk under the paper stack with the piezo wired as an electro-mechanical oscillator. The frequency of oscillation will depend on the load mass. Under excessive load the oscillator may not start though.

Anton,

As Peter points out, a piezo sensor is a "change" sensor: it produces an output when its state changes. If you want to use this approach to measure something static (e.g. paper stack size) you have to find or create a changing characteristic (e.g. movement in response to vibration).

If this were a mechanically-created stack one could use a simple photointerruptor to count the sheets coming in and those going out. You'd still want some way to "zero out" the up/down counter for those occasions when the count stopped reflecting reality, though.
<grin>

If you're not going to count sheets, that leaves thickness and weight (and three other characteristics I haven't thought of or forgot <grin!>). The first two vary across types of paper (20lb? 24lb? cheap copier I-don-t-know-how-heavy?), which makes an exact measurement tricky.

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Thickness: Someone previously mentioned capacitance varying according to the stack height. Several photocell approaches (or even a simple switch) can detect "paper present" vs. "no paper present".

If you can handle the mechanics (and the situation allows), you could add a "paddle" that lays down on top of the stack and use that to mechanically translate height to light intensity, resistance, or encoder ticks. (Paddle needs to be out of the way when adding more paper, of course.)

Thickness also translates to light intensity, but only up to a limit, and it'll vary strongly with paper color. I'd expect resistance and moisture content to vary even more widely. <gack!>

Weight: Not sure I can add much here to previous postings. Convert it to air or fluid pressure and measure that? (but remember that waterbeds leak from time to time. <grin>)

Again, good luck.

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"Very few things happen at the right time, and the rest do not happen at all. The conscientious historian will correct these defects." — Herodotus
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